SALMONID DISEASE INVESTIGATIONS

Federal Aid Project F-394-R7

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Job Progress Report

Colorado Division of Wildlife

Fish Research Section

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State: **Colorado**

Project No. **F-394-R6**

Project Title: **Salmonid Disease Studies/ Whirling Disease-Resistant Rainbow Trout Studies**

Period Covered: **July 1, 2007-June 30, 2008**

Project Objective: **Development of rainbow trout brood stocks resistant to *M. cerebralis* for both hatchery and wild fish management applications.**

Job No. 1: Breeding and Maintenance of Whirling Disease Resistant Rainbow Trout Stocks

Job Objective: Rear and maintain stocks of whirling disease resistant rainbow trout stocks.

Hatchery Production

The whirling disease resistant rainbow trout brood stocks reared at the Fish Research Hatchery, Bellvue, CO (BFRH) are unique and each requires physical isolation to avoid unintentional mixing of stocks. Extreme caution is used throughout the rearing process and during on-site spawning operations to ensure complete separation of these different brood stocks. All lots of fish are uniquely fin-clipped and some unique stocks are individually marked with Passive Integrated Transponder (PIT) tags before leaving the main hatchery. This allows for definitive identification before the fish are subsequently used for spawning.

Starting in the middle of October 2007, BFRH personnel checked all of the Hofer[1] (GR) and Harrison Lake brood fish (2, 3, 4 and 5 year-olds) weekly for ripeness.

Maturation is indicated by eggs or milt flowing freely with slight pressure applied to the abdomen of the fish. The first females usually maturate two to four weeks after the first group of males. As males are identified, they are moved into a separate section of the raceway to reduce handling and fighting injuries. On October 24, 2007, the fish from the first group of GR females were ripe and ready to spawn. Before each fish was spawned, it was examined for the proper identification (fin-clip or PIT tag). This procedure was repeated each time ripe females were spawned throughout the winter.

The wet spawning method was used, where eggs from the female are stripped into a bowl along with the ovarian fluid. After collecting the eggs, milt from several males is

[1] Hofer is used interchangeably with GR throughout this document to describe the resistant strain of rainbow trout obtained in 2003 from facilities in Germany.

added to the bowl. Water is poured into the bowl to activate the milt. The bowl of eggs and milt is then covered and not disturbed for several minutes while the fertilization process takes place. The eggs are then rinsed with fresh water to expel old sperm, feces, egg shells and dead eggs. The eggs are then poured into an insulated cooler to water-harden for approximately one hour.

The water-hardened fertilized (green eggs) from all the different crosses of the GR and Harrison Lake strains were moved to the BFRH main hatchery building. Extreme caution was used to keep each individual cross totally separate from all others. Upon reaching the hatchery the green eggs are tempered and then disinfected (PVP Iodine, Western Chemical Inc., Ferndale, Washington, at 100 ppm for 10 minutes at a pH of 7). Eggs were then put into vertical incubators (Heath Tray, Mari Source, Tacoma, Washington) with 5 gpm of 12.2º C (54º F) of flow-through water. The total number of eggs was calculated using number of eggs per ounce (Von Bayer trough count minus 10%) times total ounces of eggs. Separate daily egg-takes and specific individual crosses were put into separate trays and recorded. To control fungus, eggs received a prophylactic flow-through treatment of formalin (1,667 ppm for 15 minutes) every other day until eye-up.

On the 14th day in the incubator at 12.2º C (54º F), the eggs reach the eyed stage of development. The eyed eggs are removed from the trays and physically shocked to detect dead eggs, which turn white when disturbed. Dead eggs were removed (both by hand and with a Van Gaalen fish egg sorter, VMG Industries, Grand Junction, Colorado) on the 15th day. The total number of good eyed eggs was calculated using the number of eggs per ounce times total ounces. On the 16th day the eyed eggs were shipped via insulated coolers to other state agency hatcheries. The whole process was repeated throughout the spawning season with separate crosses of GR and Harrison Lake rainbow trout.

The GR and Harrison Lake rainbow trout production on-site spawn started on October 24, 2007 with ripe GR females. The last group of Harrison Lake females was spawned on January 24, 2008. With a goal in the fall to produce @ 525,000 eyed eggs, the egg take far exceeded the production needs with over 962,400 eyed eggs produced (Table 1.1). With the availability of both ripe males and females of several year classes and combinations of previous years crosses of GR and Harrison Lake strains, BFRH personnel produced over 35 different lots during the spawn take. Surprisingly the overall egg quality remained quite good with 1st egg pick-off of only 12% overall. BFRH personnel were able to fill all GR egg requests for Colorado, California, and Utah for both production and research directed projects in 2007-2008.

Table 1.1. Fish Research Hatchery on-site spawning information for GR and Harrison Lake rainbow trout strains during the winter 2007-2008 spawning season.

STRAIN (CROSSES)	DATE SPAWNED	# OF SPAWNED FEMALES	# OF GREEN EGGS	# OF EYED EGGS	SHIPPED TO
100% GR	11/16/07-12/14/07	32	98,600	78,400	CO Hatcheries/ Research
GR x Harrison Lake	10/24/07-1/24/08	316	972,800	870,100	CO, CA and UT State Hatcheries/Research
100% Harrison Lake	1/04/08-1/24/08	11	20,800	13,900	CO Hatcheries/ Research
Total	10/24/07-1/24/08	359	1,092,200	962,400	

Research Projects

Eggs produced specifically for research projects comprise a large proportion of the total production from the BFRH. Specific details of those individual crosses and families created for the laboratory and field experiments are described in their respective sections of this report. The bulk of these family group descriptions appear in the following section, Job 2: Whirling Disease Resistance Laboratory Experiments.

Job No. 2. Whirling Disease Resistance Laboratory Experiments

Job Objective: Evaluate the inheritability and stability of whirling disease resistance in selected strains of rainbow trout.

Experiment 1**:** Physiological characteristics and inheritance of *Myxobolus cerebralis* resistance among multiple generational crosses of the Hofer (GR) and Colorado River (CRR) rainbow trout strains.

INTRODUCTION

A laboratory experiment was conducted through 2007 and into 2008, at the Colorado Cooperative Fish and Wildlife Unit wet lab (or Quonset hut) in Fort Collins, Colorado to test the resistance of the German "Hofer" rainbow (GR) and Colorado River rainbow (CRR) trout strains, and crosses of these strains, to whirling disease. CRRs have historically been used for stocking in Colorado and they retain many of the desired wild rainbow trout characteristics needed to survive in Colorado's waterways. However, CRRs are highly susceptible to whirling disease and their populations have experienced dramatic declines over the past decade. The GR strain has demonstrated very strong resistance to whirling disease in past exposure experiments. However, because the GRs are a highly domesticated food fish, their survival and viability in the wild is uncertain. Also, the consequences of stocking this strain directly into the wild are unknown. In 2003, a breeding program was established to examine various crosses between the GR and CRR trout strains, with the ultimate goal of identifying those crosses that have the correct combination of resistant rainbow trout characteristics and wild rainbow trout characteristics to survive and reproduce in the wild in areas where heavy *Myxobolus cerebralis* infection exists.

The resistance of two of these crosses, F1s and B2s, has been examined in previous exposure experiments. F1s are the first filial generation cross between a pure GR individual and a pure CRR individual. Genetically, an F1 individual is heterozygous across all of their genotypes. Effectively, they are 50% GR and 50% CRR at any given locus, expressing characteristics of both, assuming a lack of dominance for either allele. B2s are the second generation backcross between an F1 individual and a pure CRR individual. Genetically, a B2 individual is effectively one-quarter GR and three-quarters CRR, with any individual genotype at a given locus having a 50% chance of being homozygous CRR, expressing only CRR characteristics, or a 50% chance of being heterozygous GR and CRR, expressing characteristics of both. These crosses have been included in this exposure experiment to gain more knowledge about their inherited resistance to whirling disease. In addition, a third cross has been included to gain a better understanding of how resistant trout characteristics and wild trout characteristics are inherited in subsequent generations. This third cross is termed the F2s, which are the second filial generation cross between two F1 individuals. Genetically, an F2 individual is effectively 50% GR and 50% CRR, with any individual genotype at a given locus having a 25% chance of being homozygous CRR, expressing only CRR characteristics, a 50% chance of being heterozygous GR and CRR, expressing characteristics of both, or a

25% chance of being homozygous GR, expressing only GR characteristics. The large amount of genetic variability within these crosses leads to a lot of individual variation in resistance and physiological characteristics.

In addition, reciprocal families of the F1 and B2 crosses were also evaluated for their resistance to whirling disease. A F1 reciprocal family is created by spawning a GR male with a CRR female, or a CRR male with a GR female. A B2 reciprocal family is created by spawning an F1 male with a CRR female, or a CRR male with an F1 male. Reciprocal crosses were not possible to create for the F2 strain because these are created by spawning two F1 individuals. These reciprocal crosses were included in the experiment to determine if the direction of spawning leads to differences in inheritance of resistance to whirling disease, or differences in performance in their physiological characteristics.

The ultimate goal of this laboratory experiment was to further evaluate the resistance of the GR and CRR trout strains, and their crosses, to whirling disease, and to evaluate other characteristics that may play an important role in their survival in the wild including growth, swimming performance, and predator avoidance. Growth and swimming performance were evaluated both to test the difference in the growth and swimming potential of each of the crosses and their pure ancestors, and to determine if there is a cost of resistance that affects other physiological functions. Predator avoidance was evaluated to determine which of the crosses can recognize and avoid piscine and other forms of predation, as well as to determine whether there is a difference in an infected and non-infected individual's ability to avoid predation. Quantitative genetics will be used to estimate the heritability of whirling disease resistance for each of the three crosses.

METHODS

Infection Experiment

Spawning of all families occurred at the Colorado Division of Wildlife Bellevue Fish Research Hatchery (BFRH) from mid-November 2006 through the end of January 2007. Both male and female pure GR and F1 fish are held on site. F1 individuals had been tagged with Passive Integrated Transponder (PIT) tags prior to spawning, and were identified by their 10 digit alpha numeric code (Appendix I, Table A1.1). All spawned individuals, tagged or untagged, were also numbered in the order that they were spawned for fin clip and parental identification. Pure CRR individuals were held at the Colorado Division of Wildlife Glenwood Springs Hatchery (GWSH). Males were spawned at the GWSH and their milt was transported in individual, numbered container back to the BFRH for mixing with GR and F1 eggs. In addition, live males and females were transported back to the BFRH and spawned with each other as well as GR and F1 males. An anal fin clip was taken from each spawned individual for later genetic analysis. Eggs were placed in incubators at the BFRH or Quonset hut and held until they were eyed (Appendix I, Table A1.1). Once eyed, eggs were placed in 20 gallon (76 liter) tanks,

containing short standpipes for a greater amount of water turnover, at the Quonset hut, where they were hatched.

One hundred tanks total were used in the exposure and growth experiments, 80 tanks containing infected families, and 20 tanks containing uninfected control families. The GR and CRR strains were represented by 10 tanks, each containing an individual family, and the F1, F2 and B2 crosses were each represented by 20 tanks, each containing an individual family. The 20 F1 families and 20 B2 families were made up of two sets of reciprocal families, ten of each, to test whether there was a difference in performance of the fish when exposed to whirling disease. All five strains were represented by four tanks of uninfected controls, each containing an individual family, and were split out from one of the pre-existing families pre-exposure to whirling disease.

Tanks were reduced to 25 fish per tank, and the fish were infected at an average of 678 degree days (ºC) post-hatch (Appendix I, Table A1.1). Triactinomyxons (TAMs) for infections beginning on February 15, 2007 and continuing through April 20, 2007 came from Dr. Ron Hedrick's lab at U.C. Davis. TAMs for infections after April 20, 2007 came from R. Barry Nehring with the Colorado Division of Wildlife in Montrose, Colorado. Cultures of TAMs in both cases were produced from Mt. Whitney *Tubifex tubifex* worms. TAMs were counted by mixing 1,000 µl of filtrate containing the TAMs and 60 µl of crystal violet used to dye the TAMs to make them easier to see; 84.6 µl of this mixture was then placed on a slide and TAMs per slide were counted. Ten counts were conducted in this fashion to get a good mix of TAM concentrations in the filtrate. An average of the counts was taken, and this number was used to calculate the number of TAMs per ml. Fish were infected with 2,000 TAMs per individual, a total of 50,000 TAMs per tank. Before exposure, the water flow to each aquarium was stopped and each aquarium received aeration with an air stone to ensure full mixing of the TAMs and equal exposure of all fish. The approximate ml of filtrate to deliver 2,000 TAMs per fish was measured out, placed in a 1,000 ml beaker, and evenly distributed throughout each aquarium. This was done in two passes to ensure equal distribution of TAMs in the tank and to account for a possible unequal distribution of TAMs within the filtrate. Water remained stopped for one hour to ensure complete infection of all fish. Twenty tanks, four tanks of each of the five crosses, were used as controls and with the exception of not being infected with whirling disease, were treated in the same manner as the infection tanks used in the experiment (Appendix I, Table A1.2).

The exposure experiment concluded once the fish reached approximately 2,000 degree-days (ºC) post-exposure, or approximately five months post-exposure. During this time, developing signs of disease and mortalities were recorded daily. The first individuals sacrificed for exposure evaluation were sacrificed on August 8th, 2007, and the evaluations concluded with the last sacrifice on October 24th, 2007. At the time of evaluation, 15 individuals from each tank were removed and sacrificed. Ten individuals were used for spore count enumeration using the pepsin-trypsin digest (PTD) method and five individuals were kept for histological analysis if necessary. The heads were removed by severing the head from the body just behind the operculum and pectoral fins.

Each head was placed into an individually labeled bag that allowed for later identification of each individual. The bodies were also placed into similarly labeled bags to be used for later protein and lipid analyses. Heads to be used for spore count enumeration were sent to the Colorado Division of Wildlife Brush Fish Health Laboratory in Brush, Colorado.

The lengths, weights, and disease signs were recorded for each individual at the time of evaluation. Lengths were measured to the nearest millimeter, and weights were measured to the nearest gram. Disease signs recorded included cranial, spinal, lower jaw and opercular deformities, exopthalmia, cleft peduncles, and black tail. Cranial deformities were defined as sunken in facial features and indentations in the cranium. Spinal deformities were defined as unusual bends or curves of the spine. Lower jaw deformities were defined by shortened lower jaws, or lower jaws that were extended to one side or the other. Opercular deformities were defined by the operculum being indented or pulled back exposing the gills. Exopthalmia is defined by the eyes being inflated in their sockets, extending past the orbitals. This condition is commonly known as pop-eye. Cleft peduncles were defined by a larger than 45 degree bend in the ventral direction of the spine around or just beyond the location of the adipose fin. Blacktail is a condition commonly displayed when many other deformities are present. It is caused by pressure being placed on the caudal nerves that control pigmentation and is defined by the posterior quarter of the fish turning black. This condition was identified pre-mortem in the sampled individuals because it disappears upon death and a loss of circulation in the fish. Disease signs were recorded as 0 if absent and 1 if present (Appendix I, Table A1.3).

The fish that remained in each tank after the conclusion of the exposure experiment were kept alive for later use in the predator avoidance experiment conducted in spring 2008.

Spore count data was analyzed using a Duncan's Multiple Range Test in SAS Proc GLM. Percent mortalities was calculated using the equation, $m = 1 - (S/N)$ for each of the crosses, where m is the percent mortality experienced by a cross, S is the number of fish surviving at the conclusion of the exposure experiment in a given cross, and N is the number of fish at the beginning of the exposure experiment, starting on the day of exposure, in a given cross. Total percent deformities was calculated for each cross by adding up the number of individuals showing any sign of disease, and dividing this by the total number of individuals in a cross. The percentage of fish showing a given deformity within a cross was calculated by adding up the number of individuals showing that deformity, and dividing it by the number of individuals showing any kind of deformity, giving the percentage of individuals with a given deformity of those deformed individuals within a cross. Length and weight analysis was also conducted using a Duncan's Multiple Range Test in SAS Proc GLM.

Growth Experiment

Once hatched, small standpipes were left in the tanks until the first individuals began to swim-up. Upon swim-up, tall standpipes were placed in the tanks and the fish

were started on size 0 trout diet. After approximately 335 degree days (ºC), fish were started on size 1 trout diet (Appendix I, Table A1.4). At this time, families were reduced to 50 fish per family. This was considered the beginning of the growth experiment. Each family was batch weighed and fed four percent of the total batch weight. Families were held at 50 fish until the day before infection in order to account for any mortality that may occur as a result of being fed a larger feed size. In addition, an additional 50 fish from four of the families from each strain were split out and placed in uninfected control tanks. The day before infection, families were reduced to 25 fish. Again, fish were batch weighed and fed four percent of the total batch weight. Control families were also reduced to 25 fish at this time (Appendix I, Table A1.4).

Fish were reweighed every two weeks and feed amount was changed accordingly. Fish started on size 2 trout diet at a batch weight of 75 grams, size 3 trout diet at a batch weight of 162.5 grams, and size 4 trout diet at a batch weight of 500 grams, according to hatchery trout feed guidelines (Appendix I, Tables A1.5, A1.6 and A1.7). Changing a given tank to a different feed size at these batch weights helped to avoid any feeding related mortalities due to fish being too small for the next feed size. If any mortality occurred in a tank, the fish were reweighed so that the four percent batch weight feed amount remained constant for every tank over the course of the experiment. On July 9th, 2007, one of the tanks included in the experiment experienced an almost complete die-off. This was exactly four months from the start of the growth experiment. The die-off occurred because of low flow conditions creating lowered water quality in the tank. The fish had reached fairly large sizes for the tanks, and were more susceptible to subtle changes in water quality because of the large proportion of the tank the fish occupied. To avoid more losses from increasing fish sizes, the growth experiment was concluded at four months post-exposure. When a tank reached the four month post-exposure point, the tank was batch weighed, and this was the final weight used for analysis. After the conclusion of the growth experiment, fish continued to be batch weighed every two weeks and were fed a maintenance diet of two percent of their batch weight for the remainder of the exposure experiment. If a batch weight exceeded 1,875 grams, the tank was put on size 5 trout diet. This batch weight was only exceeded during the maintenance feeding stage and not during the actual growth experiment.

The growth analysis was conducted using a Duncan's Multiple Range Test in SAS Proc GLM. In addition, a feed conversion ratio and feed efficiency was calculated for each of the crosses. The feed conversion ratio was calculated by summing up the total grams of feed fed over the course of the growth experiment for a given individual, and dividing this by the total weight that an individual gained over the course of the growth experiment. The individuals within a given cross were then averaged for a feed conversion ratio for a given cross. Feed efficiency is the reciprocal of the feed conversion ratio and is calculated by the equation $FE = 1/FCR$. The feed conversion ratio shows how many grams of feed is required by an individual to gain one gram of weight, and feed efficiency shows how efficient an individual is at converting feed into body mass.

Swimming Experiment

The swimming experiment was begun on April 9, 2007 and was conducted using the same fish included in the exposure and growth experiments described above. Five fish from four tanks of each strain (20 fish/strain), both infected and control, were swam during each of four time periods: 14 days post-exposure, 30 days post-exposure, 74 days post-exposure and 134 days post-exposure. All four control tanks for each strain were swum, and four infected tanks for each strain were chosen at random to be used in the swimming experiment (Appendix I, Table A1.8). A total of 735 fish were swum over the course of the six month swimming experiment.

Three days prior to swimming, five fish were chosen randomly from each of the tanks to be swum in the swimming experiment. Each fish was marked with a Visual Implant Elastomer (VIE) tag for individual identification at each of the swimming times. The five unique identification colors used were green, red, pink, orange, and green/orange. Fish were marked in both the adipose fin and in the adipose tissue behind the right eye. Green/orange fish were marked with orange in the adipose fin, green along the base of the dorsal fin, green in the adipose tissue behind the right eye, and orange in the adipose tissue behind the left eye. Identification of the colors was visually possible without aid for the first two swimming periods. As fish grew, the marks became harder to see, and identification of the colors was made using a UV light and UV reflection filtering glasses. Orange reflected orange/yellow, green reflected yellow, red reflected burnt orange, and pink reflected bright red, and identification of the reflecting colors was made easier by identifying the reflections in the dark. Approximately 10% of the tags were no longer visible at 134 days post-exposure. If a tag was lost, a fish was randomly chosen from the same tank to be swum in place of the missing color in order to keep sample sizes consistent out of each tank at each of the four time periods.

Two Loligo® swimming flumes were used to conduct the swimming experiments, one for infected fish and one for control fish. The following protocol was used for each individual fish, in either of the two flumes, on any given swimming day: First, a fish was identified and removed from a tank and placed in the swimming flume chamber. The time at which the fish was placed in the chamber and the temperature of the flume was recorded. The flume was then started on the lowest speed setting of 2 cm/sec and run for one hour in order to allow the fish to acclimate to the flowing conditions of the flume and recover from handling. At the conclusion of the one hour acclimation period, flume speed was increased to 5 cm/sec, the starting speed for the swimming trials; this was also the starting time for the swimming trial. After ten minutes, the flume speed was increased by 5 cm/sec. This procedure continued until the end of the swimming trial. The swimming trial was considered completed when the fish was no longer able to swim against the current and became impinged on the screen at the back of the swimming chamber. At this time the flume was stopped and the fish was removed. The flume speed and length of time at that speed were also recorded (Appendix I, Table A1.9). Weights and lengths were taken on the fish before it was placed into a well aerated bucket of water where it was allowed to recover before being returned to the tank.

A rating scale was also created to rank an individual in terms of the number of deformities that it had. Rating was determined after the swimming trial while the fish was being handled for measuring weights and lengths. A ranking of "1" meant that the individual had no visual deformities, nor displayed any whirling behavior in the tank or the swimming chamber. A ranking of "2" meant that the individual had one visual deformity, most commonly, cranial, opercular, or lower jaw deformities, blacktail, or displayed whirling behavior either in the tank or in the swimming chamber. A rating of "3" meant that the individual had two visual deformities, or had a spinal deformity between 0 and 15 degrees. A rating of "4" meant that an individual had three visual deformities, or had a spinal deformity between 15 and 45 degrees. A rating of "5" meant that an individual had four or more visual deformities, had a spinal deformity that was greater than 45 degrees, or had multiple spinal deformities of varying degrees of severity. The rating scale was used to determine if individuals with fewer deformities swam better than individuals with more deformities.

The critical swimming velocity (U_{crit}), or fatigue speed, was calculated for each individual using the equation,

$$U_{crit} = V_p + (t_f/t_i)*V_i$$

where V_p is the penultimate velocity reached at fatigue (cm/s), t_f is the time elapsed from the velocity increase to fatigue, t_i the time between velocity increments (in this case, 10 minutes), and V_i is the velocity step (in this case, 5 cm/sec). The U_{crit} was then used to calculate body lengths per second for each individual, which was calculated by dividing the U_{crit} by the total length of the individual. Body lengths per second was used as the standard measure because it removes the variation in body length between individuals. Analysis of the swimming results was done using an ANOVA test and a Duncan's Multiple Range Test in SAS Proc GLM.

Pond Predation Experiment

The pond predation experiment was begun on March 12, 2008 and conducted in ponds located at the Foothills Fisheries Laboratory on the Colorado State University Foothills Campus in Fort Collins, Colorado. The ultimate goal of this experiment was to determine which of the strains used in the experiments described above could recognize and avoid predation.

The rainbow trout, both infected and control, came from the previous exposure experiments conducted in 2007. After the conclusion of the exposure experiment, fish within a strain were divided into multiple tanks so that each tank contained fish that were roughly the same size. Each tank was then fed a different amount of feed, depending on their size difference from the average. The goal was to get all of the crosses to roughly the same size. Because the GR strain individuals had grown much faster during the exposure experiment, these fish were kept in cooler water (average of 4˚C) and fed much less per week than were the other strains. The F1, F2 and B2 crosses were smaller than the GR strain individuals, but larger than the CRR strain individuals. These three crosses

were held in cool water (average of 7˚C) and fed different feed amounts depending on whether the tanks contained small, medium or large individuals within that cross. The CRR strain individuals were much smaller than the GR strain individuals. This strain was kept in larger round tanks in warmer water (average 10.5˚C) and fed a larger amount of feed to promote growth. The CRR tanks did not respond to the larger amount of dry feed, and therefore, their diets were supplemented by live feed, including eggs, fry and fingerlings supplied by several hatcheries around Colorado.

The growth phase prior to the start of the pond experiments lasted roughly three months. Two weeks prior to the start of the pond experiment, individuals from all five strains were weighed and measured to determine which fish were to be used in the pond experiment. Because only 40 fish per strain were left in the control tanks at the end of the exposure experiment, the control fish were limiting in terms of the number of fish that could be used per strain. The minimum number of fish was 36 individuals, seen in the CRR and B2 strains. All 36 individuals were used from these two control strains, and the same number was chosen from the GR, F1 and F2 strains so that the averages and ranges of sizes were as close as possible (Appendix I, Table A1.10). The same process was used to sort through the infected fish, choosing 36 individuals from each strain that were within the average and ranges set for the control individuals (Appendix I, Table A1.11).

Four ponds were used for the predation experiment, two control and two infected. The locations of the control and infected ponds, within the four, were chosen using a random number generator. The ponds are numbered in order from east to west, with Pond 1 containing the large control rainbows (Appendix I, Table A1.12), Pond 2 containing the small whirling disease infected rainbows (Appendix I, Table A1.13), Pond 3 containing the large whirling disease infected rainbows (Appendix I, Table A1.14), and Pond 4 containing the small control rainbows (Appendix I, Table A1.15). Each pond contained 18 fish of each strain. Pond 1 included CRR individuals with an average length of 20.1 cm, GR individuals with an average length of 27.8 cm, F1 individuals with an average length of 26.5 cm, F2 individuals with an average length of 27.3 cm, and B2 individuals with an average 25.8 cm. Pond 2 included CRR individuals with an average length of 15.3 cm, GR individuals with an average length of 25 cm, F1 individuals with an average length of 22.8 cm, F2 individuals with an average length of 21.7 cm, and B2 individuals with an average 21.1 cm. Pond 3 included CRR individuals with an average length of 20 cm, GR individuals with an average length of 27.4 cm, F1 individuals with an average length of 26.3 cm, F2 individuals with an average length of 26.9 cm, and B2 individuals with an average 25.7 cm. Pond 4 included CRR individuals with an average length of 15.1 cm, GR individuals with an average length of 25.1 cm, F1 individuals with an average length of 22.9 cm, F2 individuals with an average length of 21.9 cm, and B2 individuals with an average 21.1 cm. All CRR individuals were marked with a pink VIE tag in the right eye, GR individuals with a red VIE tag in the left eye, F1 individuals with a green VIE tag in the right eye, F2 individuals with an orange VIE tag in the left eye, and B2 individuals with a green VIE tag in the left eye and an orange VIE tag in the right eye. The rainbows were placed in their respective ponds on March 7, 2008.

The pike for the experiment were caught out of Lake Ladora on the Rocky Mountain Arsenal National Wildlife Refuge in Denver, Colorado on March 10, 2008. A group of 16 people, consisting of Colorado Division of Wildlife personnel, U.S. Fish and Wildlife personnel, and volunteer fisherman, were used to catch the pike. A total of 22 pike over the 26 inch minimum (in order to have a 3:1 predator to prey ratio) were caught, and 12 pike ranging between 28 and 32 inches was brought back to Fort Collins for use in the experiment. Three pike were placed in net pens in each of the four ponds before introduction to the ponds to give them time to acclimate to the pond environment, and to allow them to digest whatever food may have been in their stomachs before they were caught (Table 2.1).

Pond 1	Pond 2	Pond 3	Pond 4
31.75	28.75	29	27.75
30.5	28.5	29	28.5
31.25	28.25	29.25	28.5

Table 2.1. Length (in inches) for each of three pike placed in the net pens in four separate ponds used in the predation experiment on March 10, 2008.

The two larger pike of the three were introduced into the ponds two days later, on March 12, 2008, which marked the beginning of the pond experiment. A 31.75 inch and 31.25 inch pike were introduced into Pond 1, a 28.75 inch and 28.5 inch pike were introduced into Pond 2, a 29.25 inch and 29 inch pike were introduced into Pond 3, and two 28.5 inch pike were introduced into Pond 4. Pike size for each of the ponds was chosen based on whether the pond contained large or small rainbows which had been previously introduced to the pond.

Over the course of the experiment, the ponds were seined several times to determine how many of the rainbows had been lost to predation. The goal was to have 50% predation of the rainbows in each of the ponds. If there was no differential predation, all of the strains would have approximately equal numbers at the end of the experiment, whereas if there was differential predation, at least one, if not two, strains would be completely missing, while the other strains would be relatively untouched. In addition, secchi disk depth, temperature, and dissolved oxygen where measured in each pond every day. This is an ongoing experiment, which has been changed to track the trout population as it declines to zero to determine if the patterns seen in the first 50% of rainbows predated continues in the second 50%.

Protein and Lipid Analysis

Protein and lipid analyses were run on 100 fish, ten of each cross, infected and control, to determine if there were differences in the way the fish process their food. To start, a range of fish sizes were selected out of each cross. The fins were removed in order to ease the grinding process. The standard lengths of the fish (minus the heads) were taken on each fish after fin removal. The fish were ground, frozen, in a food processor, and alcohol (95% ETOH) was added during the grinding process to help break up the

chunks and clean the processor. The samples were then placed into a large oven set at 60˚F and dried for approximately five days. Once the samples no longer lost weight during the drying process, the samples were removed from the oven. The ground material dried into a hard, round disk that was broken up and ground down to a fine powder using a food chopper and mortar and pestle. The powder was then placed into individually labeled bags, and ready for analysis (Appendix I, Table A1.16).

Lipid analyses were conducted in the Animal Science Laboratory run by Terry Engle at Colorado State University. Two lipid bags per individual were labeled and filled with approximately one gram of sample. First, the bags were weighed and the scale tared. The sample was then added to the bag. Once the goal weight of the bag was reached, the bag was removed from the scale and sealed using a heat sealer. The second bag, which was used as a replicate, was treated in the same manner and the weight was measured to the same tenth of a gram. The bag weight and the sample weight were added together to obtain a total weight. Twelve bags were run through the lipid analysis machine at a time. The lipid analysis machine used 350 ml of petroleum ether to remove the lipids from the sample in the bag and was run for 30 minutes. The run time was ten minutes longer than a usual run for beef and other mammals because the fish were suspected to have more lipids, requiring a longer run time. Upon conclusion of a run, the bags were removed from the machine, placed under a flume hood to cool and dry for two hours, and then placed in an oven set at 100˚F to dry completely. After the four hour drying period, the samples were placed in a decanter that kept the samples from absorbing moisture from the air, and cooled to room temperature. The bags were then weighed and total weight recorded. Total lipid content for a bag was calculated using the equation,

$$TL = ((W_{sample} - (W_{final} - W_{bag}))/W_{sample})*100$$

where W_{sample} was the weight of the sample put into a bag, W_{final} was the final weight of the bag containing the sample after a run, and W_{bag} was the initial weight of the bag not containing the sample. This equation gave percent lipid content for each bag (Appendix I, Table A1.17). If the two bag replicates for an individual were off by more than 15 percent, than the samples were rerun. The two replicates for each individual were then averaged together to get one estimate of total lipid content for each individual.

Protein analyses were conducted in the Animal Science Laboratory run by Terry Engle at Colorado State University. As with the lipid analysis, two replicates were run per individual. The same 100 samples were run with the exception of a few samples where there was not enough sample after the lipid run. For these few samples, fish were reground from those crosses missing individuals. Aluminum tins were filled with approximately 0.1 grams of sample and placed in wells in the protein analysis machine. The samples were then incinerated, and the various components of the protein, nitrogen and carbohydrates were caught in gas filled tubes and analyzed for their content. The results given were percent protein, percent nitrogen, and percent carbohydrate of the sample (Appendix I, Table A1.18). The two replicates for each individual were then

averaged together to get one estimate of the aforementioned percentages for each individual.

Heritability

Heritability of resistance will be estimated for each cross using quantitative genetics. Quantitative genetics approach allows measurement of traits without the aid of the various DNA analyzing techniques, but based on phenotypic expression. This approach allows estimation of the trait without requiring knowledge of the specific genes involved. This is especially helpful when several genes control the desired trait, meaning that the trait is additive. This appears to be the case with whirling disease resistance. The basic equation for the quantitative genetics approach is,

$$P = G + E$$

Where P is the phenotypic trait, G is the genetics that underlie the trait, and E is made up of the environmental effects that may influence the trait.

Heritability and quantitative genetics have their basis in the variability seen in the different components that make up the phenotypic variance. The basic equation for narrow sense heritability is,

$$h^2 = V_P/V_A$$

where V_P is the phenotypic variance and V_A is the additive genetic variance. In addition, there are three variance components that make up the genetic component of the phenotype. Therefore the genetic variance is represented by the equation,

$$V_G = V_A + V_D + V_I$$

where V_A is the additive genetic variance, V_D is the dominance variance, and V_I is the interaction or epistatic variance. In our case, V_I should be nonexistent, and V_D should be minimal due to the design of the spawning structure. Therefore, only V_A and V_D will need to be estimated. Finally, the environmental component of phenotype is composed of two components, general and special environmental variance, and is represented by the equation,

$$V_E = V_{Eg} + V_{Es}$$

where V_{Eg} is the general environmental variance, representing the between-individual component arising from permanent or non-localized circumstances, and V_{Es} is the special environmental variance, representing the within individual variance arising from temporary or localized circumstances. Estimations of heritability attempt to separate environmental variance from genetic variance via laboratory control of conditions. Because everything was kept constant throughout the experiment, including quantity of

TAMs per exposure, water temperature, and food ration, environmental variance should be negligible and unnecessary to estimate.

A second way to estimate heritability using quantitative genetics is using parent-offspring regression. In this method, the trait value of the parent is plotted against the trait value of the offspring, and the regression line through these trait values is the estimate of heritability. The trait value in this case will be the number of *M. cerebralis* myxspores found in a parent or offspring. Once the variance components have been estimated, as well as heritability using the parent-offspring regression technique, a bootstrap method can be used to re-estimate the components for as many runs as have been set. The bootstrapping method allows the experiment conducted above to be run thousands of times over, and then estimates a confidence interval which shows the range under which the mean values for heritability would fall 95% of the time. Heritability estimates will be calculated within the next few months.

RESULTS

Exposure Experiment

Fish in the exposure experiment were held for an average of 2,240 degree-days post-exposure before sacrificing for disease evaluation. The CRR strain had significantly higher mean myxospores per fish than did any of the other strains. The B2 strain had significantly higher mean myxospores per fish than did the F2, F1 or GR strains, but were significantly lower than the CRR strain in mean myxospore count. The F2, F1 and GR strains did not differ significantly from each other in mean myxospore count, but all had significantly lower mean myxospore counts than the CRR or B2 strains (Table 2.2). In all of the strains, the control families did not show any spores.

Cross	Spore Count	Confidence Interval
CRR (N=10)	187,209	(171,222, 203,196)
B2 (N=20)	97,588	(83,402, 111,774)
F2 (N=20)	46,227	(40,621, 51,883)
F1 (N=20)	9,566	(7,603, 11,529)
GR (N=10)	275	(211, 339)

Table 2.2. Mean myxospore counts and confidence intervals by strain, for the 2007 *Myxobolus cerbralis* exposure experiment. N-value represents number of replicate tanks per strain.

Variation in mean myxospores per family also differed among the strains. The GR strain showed the lowest range of variability in their mean myxospore counts, ranging from 0 to 1,177 mean myxospores per family. The F1 strain showed slightly higher variation, ranging from 0 to 51,418 mean myxospores per family. Variation doubled between the F1 and F2 strains, with the F2 strain ranging from 0 to 135,064

mean myxospores per family. The largest variation in mean myxospore count was seen in the B2 and CRR strains, with the B2 strain ranging from 0 to 338,128 mean myxospores per family, and the CRR strain ranging from 15,090 to 350,423 mean myxospores per family (Appendix I, Figure A1.1).

The strains also showed variation in percent mortality and number and kinds of deformities seen in the infected and control fish (Table 2.3). The control families showed significantly higher mortality than did the infected families in the GR strain. In the CRR, F2 and B2 strains, mortality was significantly higher in the infected families than in the control families. There was no significant difference in mortality between the infected and control families within the F1 strain.

There were no significant differences in percent deformities between the infected and control families of the GR strain. In the CRR, F1, F2 and B2 strains, there was a significantly higher number of deformities seen in the infected families than in the control families (Table 2.3). The most common deformity experienced by all the strains was a cranial deformity. In the CRR and F2 strains, infected families exhibited significantly higher cranial deformities than did the control families. The GR, F1 and B2 strains did not differ significantly in the number of cranial deformities between infected and control families. The two most common deformities, other than cranial deformities, in order of number of fish exhibiting the deformity, were spinal deformities and opercular deformities. The F2, B2 and CRR strains exhibited a significantly higher number of spinal deformities in infected families than in the control families; there was no significant difference in the number of spinal deformities in the infected and control families in the F1 and GR strains. Infected and control families in the GR strain did not differ significantly in the number of opercular deformities, whereas in the other four strains, infected families exhibited a significantly higher number of opercular deformities than the control families. Other deformities seen in a much smaller proportion of fish included exopthalmia, lower jaw deformities, cleft peduncles and missing eyes. Blacktail, experienced in only the CRR, F2 and B2 strains, was exhibited by a significantly higher number of fish in the infected families than in the control families, and the CRR strain experienced a significantly higher occurrence of blacktail than did the F2 or B2 strains (Table 2.4).

Strain	N	% Mortality	N	% Deformity
Infected GR	250	3.6	241	96.5
Control GR	100	10.0	90	98.1
Infected CRR	250	12.8	218	100.0
Control CRR	100	2.0	98	20.7
Infected F1	500	1.8	491	85.6
Control F1	100	2.0	98	55.2
Infected F2	500	8.8	433	88.4
Control F2	100	2.0	98	25.9
Infected B2	500	6.2	472	85.8
Control B2	100	3.0	97	29.3

Table 2.3. Percent mortality and percent of individuals with deformities by strain, in both the infected and control fish, in the 2007 *Myxobolus cerbralis* exposure experiment.

	N	Cranial	Spinal	Exo.	Lower Jaw	Opercular	Peduncle	No Eye	Black Tail
Infected GR	241	97.8	9.6	8.1	5.9	17.6	0.7	0.0	0.0
Control GR	90	98.0	3.9	2.0	0.0	9.8	0.0	3.9	0.0
Infected CRR	218	91.4	85.2	8.6	8.6	82.0	0.0	0.0	35.2
Control CRR	98	33.3	50.0	0.0	8.3	8.3	0.0	0.0	0.0
Infected F1	491	94.4	19.7	4.4	3.6	17.3	0.8	0.0	0.0
Control F1	93	93.8	6.3	0.0	0.0	3.1	0.0	3.1	0.0
Infected F2	433	95.0	37.1	5.9	7.2	39.8	0.0	0.0	4.5
Control F2	98	46.7	0.0	0.0	53.3	0.0	0.0	0.0	0.0
Infected B2	472	85.5	55.7	5.5	5.5	43.0	0.9	0.9	7.7
Control B2	97	100.0	5.9	0.0	0.0	0.0	0.0	5.9	0.0

Table 2.4. Percentage of fish exhibiting each of the deformities, both control and infected, within each of the strains in the 2007 *Myxobolus cerbralis* exposure experiment. Percentages represent the percentage of fish exhibiting a given deformity out of the total number of fish that exhibited a deformity, not the percentage of all the fish examined upon conclusion of the exposure experiment.

Final weights and lengths were also recorded for the infected and control families within each of the strains. These results are presented separately from the growth experiment results because the growth experiment was not carried out to the conclusion of the exposure experiment.

Within the F1, F2, B2 and CRR strains, there were no significant differences in weight between the infected and control families in terms of grams per fish. In the GR strain, the control families weighed significantly more than did the infected families

(Appendix I, Figure A1.2). In addition, the GR strain, both infected and control individuals, weighed significantly more than all of the other strains. The F1 strain, infected and control individuals, did not differ significantly in weight from the control individuals in the F2 strain. F1 strain infected individuals did not differ significantly in weight from either the infected or control individuals in the F2 strain. F2 strain individuals, infected and control, did not differ significantly in weight from the B2 strain control individuals. Finally, the B2 strain infected individuals did not differ significantly in weight from either the infected or control individuals in the CRR strain.

Within the F1, F2 and CRR strains, there were no significant differences in total length per individual between the infected and control fish. In the GR and B2 strains, the control families were significantly longer in terms of total length per individual than were the control families (Appendix I, Figure A1.3). In addition, the GR strain, both infected and control individuals, were significantly longer than any of the other strains. The F1 strain, infected and control individuals, did not differ significantly in total length from the control individuals in the F2 strain. F1 strain infected individuals did not differ significantly in total length from either the infected or control individuals in the F2 strain. F2 strain infected individuals did not differ significantly in weight from the B2 strain control individuals. Finally, the B2 strain infected individuals were significantly shorter than the GR, F1 and F2 strains, and significantly longer than the CRR strain infected and control individuals.

Growth Experiment

Growth in the growth experiment was measured and analyzed in two ways, average batch weight per strain and average grams per individual per strain. In terms of average batch weight per strain, the F1, F2, B2 and CRR strains did not differ significantly between infected and control families. The control families in the GR strain weighed significantly more, in terms of their batch weight per tank, than did the infected individuals (Appendix I, Figure A1.4). In addition, both infected and control individuals weighed significantly more than all of the other strains. The F1 individuals, both infected and control, also weighed significantly more than the F2, B2 and CRR strains. The B2 control and infected individuals did not differ significantly in batch weight per tank from the F2 strain infected or control individuals, or the CRR strain control individuals. Finally, the F2 strain control individuals did not differ significantly in batch weight per tank from the B2 strain infected individuals or the CRR strain infected and control individuals. The same general pattern was seen in the grams per individual per strain with the exception that the F2 strain infected and control individuals, along with the B2 strain infected and control individuals, weighed significantly more than the CRR strain control individuals (Appendix I, Figure A1.5). The reciprocal families in the F1 cross, as well as those in the B2 cross, did not show any significant differences in growth (Appendix I, Figure A1.6).

A large amount of variation is seen within a family of all of the strains. However, more variation is seen in some of the strains than others. In terms of length, the GR and CRR show only a small amount of variation, whereas the F1, F2 and B2 groups show an

increasing amount of variation in length, respectively (Appendix I, Figure A1.7). In terms of weight, more variation is seen in the GR strain. The CRR strain shows similar variation in weight as is seen with length. The F1, F2 and B2 strains also generally show the same pattern in weight as is seen with length, with variation increasing from the F1 to F2, and F2 to B2 strains (Appendix I, Figure A1.8).

The feed conversion ratio was the lowest in the GR strain individuals, both infected and control. Conversely, feed efficiency was highest in infected and control individuals within the GR strain. The feed conversion ratio in the control individuals of the CRR, F1 and B2 strains were similar, as were the feed efficiencies for these same individuals. The feed conversion ratio for the control individuals within the F2 strain was slightly higher than the CRR, F1 and B2 strains. The feed efficiency for these same individuals was slightly lower than the CRR, F1 and B2 strains. The feed conversion ratio for the infected CRR strain individuals was much higher than the infected individuals in the F1, F2 and B2 strains, with increasing feed conversion ratios in the F1, F2 and B2 strains respectively. Conversely, the feed efficiency for the infected CRR strain individuals was much lower than the infected individuals in the F1, F2 and B2 strains, with decreasing feed efficiencies in the F1, F2 and B2 strains respectively (Table 2.5).

Cross	N		F.C.R		F.E	
	Control	**Infected**	**Control**	**Infected**	**Control**	**Infected**
GR	90	241	1.06	1.08	0.94	0.93
CRR	98	218	1.39	1.96	0.72	0.51
F1	98	491	1.31	1.19	0.76	0.84
F2	98	433	1.53	1.26	0.65	0.79
B2	97	472	1.42	1.44	0.70	0.69

Table 2.5. Feed conversion ratios (F.C.R.) and feed efficiency (F.E.) for infected and control fish within each of the strains in the growth experiment.

Swimming Experiment

Critical swimming speed reached, in terms of body lengths per second, decreased within all five strains as fish length increased. Previous studies on swimming with rainbow trout have shown that this result is not uncommon. There was no significant difference in critical swimming speed between infected and control fish for any of the strains, at any of the four time periods. Therefore, analyses of swimming data combined infected and control fish from a strain into an overall representation of the stain, which was used for a comparison across the strains.

At all time periods, the CRR strain reached a significantly faster speed, in terms of body lengths per second, than did the GR strain. In the first time period, fourteen days post-exposure to whirling disease, the F1, F2 and B2 crosses did not differ significantly from each other, or the CRR strain. The F2 cross reached significantly higher speeds

than the GR strain. In the second time period, thirty days post-exposure to whirling disease, the CRR strain reached significantly higher speeds than did the F1, F2, B2 or GR strains. The F1, F2, B2 and GR strains did not differ significantly from each other in this time period. Between the second and third time period, signs of disease began to become more prominent in all of the crosses. In the third and fourth time periods, after signs of disease became more prominent, the CRR strain reached the highest speeds, and the GR strain reached significantly lower speeds, and the F1, F2 and B2 crosses fell in between these two speeds, not differing significantly from the CRR, the GR, or each other (Appendix I, Figure A1.9).

The deformity rating at the final swimming time, when infection severity was highest of the four time periods, only had a small effect in three of the strains. In two of these, the effect was seen only in infected fish, and in one, in both infected and control fish. The F2 strain infected fish ranged in deformity rating from "1" to "4", with seven individuals having a rating of"1", ten individuals having a rating of "2", two individuals having a rating of"3", and one individual having a rating of"4". Those individuals having a rating of three did not differ significantly in critical swimming speed from those individuals having a rating of "1", "2", or "4". However, the individual with a rating of "4" reached a significantly lower critical swimming speed than those individuals with a rating of "1' or "2". The B2 strain infected fish ranged in deformity rating from "1" to "5" with nine individuals having a rating of "1", three individuals having a rating of "2", five individuals having a rating of "3", two individuals having a rating of "4", and one individual having a rating of"5". Those individuals having a rating of "2", "three" or "4", did not differ significantly in critical swimming speed from each other, or individuals having a rating of "1" or "5". However, the individual with a rating of "5" reached a significantly lower critical swimming speed than those individuals having a rating of "1". The CRR infected fish ranged in deformity rating from "1" to "5", with one individual having a rating of "1", three individuals having a rating of "2", ten individuals having a rating of "3", four individuals having a rating of "4", and two individuals having a rating of "5". Those individuals having a rating of "3", "4" or "5" did not differ in critical swimming speed from each other or those individuals having a rating of "1" or "2". The individual with a rating of "1" reached a significantly lower critical swimming speed than the individuals having a rating of "2". The CRR control fish ranged in deformity rating from "1" to "3", with individuals having a rating of "1", zero individuals having a rating of "2", and one individual having a rating of "3". The individual with a rating of "3" reached a significantly lower critical swimming speed than did the individuals with a rating of "1". The GR strain, both infected and control, the F1 strain, both infected and control, the F2 strain control, and the B2 strain control fish did not show any significant differences in swimming speed due to the number or severity of deformities.

Pond Experiment

The condition of all four ponds has been kept as constant as possible throughout the course of the experiment. Pond 1 had an average secchi depth of 103 cm, ranging from 42.5 cm to 178 cm, an average dissolved oxygen level of 7.90 ppm (parts per million), ranging from 4.2 ppm to 10.74 ppm, and an average temperature of 8.86˚C,

ranging from 4˚C to 14.2˚C (Appendix I, Figure A1.10). Pond 2 had an average secchi depth of 136.75 cm, ranging from 60 cm to 178.5 cm, an average dissolved oxygen level of 7.24 ppm, ranging from 3.75 ppm to 10.34 ppm, and an average temperature of 8.98˚C, ranging from 4.2˚C to 14.3˚C (Appendix I, Figure A1.11). Pond 3 had an average secchi depth of 118.82 cm, ranging from 47.5 cm to 178 cm, an average dissolved oxygen level of 7.51 ppm, ranging from 4.13 ppm to 9.84 ppm, and an average temperature of 9.26˚C, ranging from 4.2˚C to 14.7˚C (Appendix I, Figure A1.12). Pond 4 had an average secchi depth of 128.31 cm, ranging from 45.25 cm to 178 cm, an average dissolved oxygen level of 7.63 ppm, ranging from 4.67 ppm to 10.54 ppm, and an average temperature of 9.47, ranging from 3.6 to 15.5 (Appendix I, Figure A1.13). In addition, calibration temperatures, which generally reflect the environmental temperature, comments on weather conditions, processes, such as seining and running water, and comments on the biotic environment around the ponds was recorded every day (Appendix I, Tables A1.19 and A1.20).

The first seining event in the ponds took place on March 19, 2008, approximately one week after the experiment started. This was used as the baseline data to determine how quickly the rainbows may be consumed by the pike. After seining Pond 3 the first time, the fish were counted and returned to the pond. The second pass through pond 3 took place after seining pond 4 which allowed the fish in pond 3 to redistribute throughout the pond. Pond 3 was seined twice to determine if seining would give an accurate, repeatable measure of the number of fish left in the pond. The results of the two seining events in pond 3 were very similar (Table 2.6), indicating that seining was a good method of capture for accurately measuring the populations in the ponds.

Species	Pond 1	Pond 2	Pond 3	Pond 3 (2)	Pond 4
Rainbow Live	69	67	75	73	61
Pike	2	0	1	2	2
Rainbow Dead	0	0	1	0	0

Table 2.6. Results showing the number of each species caught in each of the ponds in the first seining event that took place on March 19, 2008.

The second seining event took place on March 26, 2008, approximately two weeks after the experiment started. In this seining event, the number of which cross was recorded for each of the ponds. In addition, two passes were made through each pond in order to get a more accurate removal estimate of the trout population left in the ponds (Table 2.7). The proportion of each cross left in the ponds was also estimated. In the control ponds, Ponds 1 and 4, of the 36 individuals that were stocked per strain, 94% of the GR individuals, 94% of the F1 individuals, 100% of the F2 individuals, and 89% of the B2 individuals were still left in the ponds, compared to the CRR individuals, which only had 50% of the stocked population left in the ponds. In the infected ponds, Ponds 2 and 3, 94% of the GR individuals, 94% of the F1 individuals, 94% of the F2 individuals, and 89% of the B2 individuals stocked were still left in the ponds, compared to the CRR individuals, which only had 56% of the stocked population left in the ponds. Total, 94% of the GR individuals, 94% of the F1 individuals, 97% of the F2 individuals, 89% of the

B2 individuals and 53% of the CRR individuals, of the 72 individuals stocked per strain, were left at this time. Numbers of trout in each pond were similar to or slightly higher than the first seining event, likely due to the addition of the second pass through each pond which helped to estimate the population more accurately.

The third seining event took place on April 9, 2008, approximately four weeks after the experiment started. Again, the number of which cross was recorded for each of the ponds after a two pass removal (Table 2.8). The proportion of each cross remaining in the ponds was also estimated. In the control ponds, 83% of the GR individuals, 83% of the F1 individuals, 80% of the F2 individuals, and 72% of the B2 individuals stocked were still left in the ponds, compared to the CRR individuals, which only had 39% of the stocked population left in the ponds. In the infected ponds, 92% of the GR individuals, 83% of the F1 individuals, 86% of the F2 individuals, and 80% of the B2 individuals stocked were still left in the ponds, compared to the CRR individuals, which only had 44% of the stocked population left in the ponds. In total, 88% of the GR individuals, 83% of the F1 individuals, 83% of the F2 individuals, 76% of the B2 individuals and 42% of the CRR individuals were left at this time. An average of 10 fish per pond, five fish per pike, was consumed between the second and third seining events.

Species	**Pond 1**		**Pond 2**		**Pond 3**		**Pond 4**	
	Pass 1	**Pass 2**	**Pass 1**	**Pass 2**	**Pass 1**	**Pass 2**	**Pass 1**	**Pass 2**
GR	17	1	17	0	17	0	16	0
CRR	8	2	8	2	10	0	8	0
F1	16	0	17	0	17	0	18	0
F2	18	0	17	0	17	0	18	0
B2	16	0	14	0	18	0	16	0
Pike	1	1	0	2	2	0	2	0
	75	3	73	2	79	0	76	0

Rainbows	78	75	79	76
Pike	2	2	2	2

Table 2.7. Results showing the number of each strain/species caught in the two passes through each pond in the second seining event that took place on March 26, 2008. The results of the two passes through each pond are combined and summarized at the bottom.

Species	Pond 1		Pond 2		Pond 3		Pond 4	
	Pass 1	Pass 2	Pass 1	Pass 2	Pass 1	Pass 2	Pass 1	Pass 2
Hofer	16	0	16	0	17	0	14	0
CRR	7	0	9	2	4	1	7	0
F1	15	0	14	0	16	0	15	0
F2	14	1	13	1	17	0	13	1
B2	14	0	11	0	18	0	12	0
Pike	1	1	2	0	2	0	2	0
	66	1	63	3	72	1	61	1

Rainbows	67	66	73	62
Pike	2	2	2	2
	Eggs in pike	Milt in pike		Milt in pike

Table 2.8. Results showing the number of each strain/species caught in the two passes through each pond in the third seining event that took place on April 9, 2008. The results of the two passes through each pond are combined and summarized at the bottom along with comments on the spawning condition of the pike in each pond.

The forth seining event took place on April 23, 2008, approximately six weeks after the experiment began. Again, the number of fish for each cross was recorded for each of the ponds after a two pass removal. In addition, weights and standard, fork and total lengths were recorded for each individual (Appendix I, Table A1.21). The proportion of each cross left in the ponds was also estimated. In the control ponds, 61% of the GR individuals, 64% of the F1 individuals, 64% of the F2 individuals, and 42% of the B2 individuals stocked were still left in the ponds, compared to the CRR individuals, which only had 6% of the stocked population left in the ponds. In the infected ponds, 72% of the GR individuals, 81% of the F1 individuals, 56% of the F2 individuals, and 69% of the B2 individuals stocked were still left in the ponds, compared to the CRR individuals, of which only 11% of the stocked population was left in the ponds. In total, 67% of the GR individuals, 72% of the F1 individuals, 60% of the F2 individuals, 56% of the B2 individuals and 8% of the CRR individuals were left at this time. An average of 20 fish per pond, ten fish per pike, was consumed between the third and forth seining events.

These predation trials are an ongoing experiment. The goal is to track which of the strains are disappearing over time, and how the proportions relate to one another over time. This experiment will be concluded once the rainbow trout are no longer present in the pond, or are present in low enough numbers that consumption by the pike has ceased.

Protein and Lipid Analysis

The protein and lipid analyses used calculated the percent total lipids, and the percent protein and nitrogen content, in a given amount of a dry sample. For lipids, there was no significant difference in percent lipid content in the CRR infected, B2 control,

CRR control, and F1 control individuals. The GR control and infected individuals had a significantly lower percent lipid content than did the F2 infected and control individuals. In addition, the GR infected individuals had a significantly lower percent lipid content than did the F1 infected and B2 infected individuals (Appendix I, Figure A1.14). For protein, the GR control and infected, and F2 control individuals had a significantly higher percent protein content than did the F1 infected and control, B2 infected and control, CRR infected and control, and F2 infected individuals (Appendix I, Figure A1.15). For nitrogen, the GR control and infected, and F2 control individuals had a significantly higher percent nitrogen content than did the F1 infected and control, B2 infected and control, CRR infected and control, and F2 infected individuals (Appendix I, Figure A1.16).

DISCUSSION

The ultimate goal of this research project was to determine which of the strains perform better, in terms of certain physiological characteristics that are important for survival, when exposed to and not exposed to whirling disease. The myxospore count results revealed that the CRR rainbow trout are very susceptible to whirling disease, having higher spore counts, higher mortality, and a greater number of deformities as a result of the disease. In addition, the more CRR genetics a cross has, the less resistance it shows when exposed to whirling disease, as is the case with the B2s. Conversely, the more GR genetics a strain has, as in the case of the F1s, the more resistance to whirling disease the cross exhibits. The pattern that is likely to develop from this trend is that heritability of resistance also decreases when a cross has more of the CRR and less of the GR genetics.

Growth characteristics tend to follow the same trend. The GR individuals were the largest of the strains in both length and weight at the end of the growth experiment. In conjunction with this, the GR individuals had the highest percent protein and lowest percent lipid content of the strains, as well as the lowest feed conversion ratio and highest feed efficiency of all the strains. This is likely a result of a century of selection in the German Hofer fish hatchery where the GR was grown as a food fish. Hatchery practices have likely resulted in selection of the largest and fastest growing fish for spawning. The F1 individuals were the second largest of the strains in both length and weight. They also had the second lowest feed conversion ratio and second highest feed efficiency of all the strains. This is likely a result of their genetic makeup, which consists of approximately 50% of the GR genetic alleles. The fewer GR alleles the cross has, the slower the growth, the higher the food conversion ratio and the lower the feed efficiency. The CRR individuals were the slowest growing individuals, having a fairly high feed conversion ratio and lower feed efficiency, especially in the infected individuals. This is probably caused by a combination of the historical growth characteristics of the strain, and a trade-off between growth and the body's ability to cope with whirling disease, diverting energy needed to convert food into body mass to combating the disease.

A different pattern was revealed in the swimming experiments. In this case, the CRR strain was able to reach higher critical swimming speeds than was the GR strain.

This is likely a result of the selection pressure that requires wild-strain fish to adapt to changing water conditions in natural river systems where high flows and seasonal fluctuations are common. These conditions are a strong contrast to the constant, slower running, water conditions of hatchery raceways to which the GR strain has been confined for over a century. The fact that there are no differences in critical swimming speeds between infected and control individuals within a strain indicates that whirling disease is not likely to affect the ability of a fish to reach typical critical swimming speeds. However, whirling disease probably still has an effect on swimming, especially when individuals that are heavily infected display whirling behavior. Whirling behavior in a river situation may cause the fish to be swept downstream if they are unable to correct themselves fast enough. Given that the F1, F2 and B2 crosses reached swimming speeds that did not differ from either the GR or CRR, these crosses are likely able to survive the same flow conditions as the wild CRR.

The pond experiment has also yielded some unexpected results. The original theory was that since the CRR strain is a wild strain, they were more likely to be able to identify and avoid predators. Conversely, the GR strain, having not been exposed to piscine predators for over a century, may not recognize a predator nor avoid it if it approached. However, based on the results, the CRR is the most susceptible to predation of all of the strains. One explanation for this is the large difference in size between the CRR individuals, and the individuals of the other strains stocked into the ponds. Because the CRR is a very slow growing fish, it was not possible to grow them to the same size as the other strains, especially the GR, before the start of the pond experiment. Because of their smaller size, the pike may have been more likely to consume these fish based on their gape size. The CRR strain fish in both the infected and control ponds were less numerous than the other strains at this stage of the experiment. If this were simply a function of disease effects, the proportion of CRR individuals should be much higher in the control ponds than in the infected ponds. The individuals in the infected ponds are heavily infected, more likely to whirl, thereby attracting attention and making it hard for them to escape from an approaching predator. Also, the other strains being in equal proportions, and fairly close in size, indicates that one strain is not more susceptible to predation than another. The final results of this experiment will provide more insight as to which of these strains, if any, are more susceptible to predation, especially now that most of the smaller fish in the ponds have been selectively eaten.

The results of the pond experiment do suggest that there is a minimum stocking size for susceptibility to predation. The majority of the individuals that have been consumed thus far have been on the smaller range of those stocked, whereas the larger individuals have been disappearing at a much slower rate. Larger size at stocking is an important concept to recognize, not only in the case of waters that contain pike as the top predator, but also in waters that have predators, such as brown trout, that can be just as voracious. As further introduction to wild situations occurs, this will be a major component in the survival of these fish, in addition to their ability to survive exposure to whirling disease.

Based on the results of this experiment, we conclude that the F1 cross is the best candidate for repopulating Colorado's rivers. This cross has the lowest spore counts of the tested strains. The F1 strain has better growth than the pure CRR strain, and its swimming ability does not differ from the CRRs. In addition, it is still well represented in the pond experiment suggesting that these individuals may be able to identify and avoid predation. Their rate of growth allows them to grow fast enough to possibly exceed many of the wild predator's gape limitations. In addition, lower spore counts allow them to survive better when infected with whirling disease. The production of fewer mature myxospores will also result in fewer spores contributed back to natural systems where they are stocked. Finally, the F2 cross performed similarly in the infection and swimming trials, and still had a faster growth rate than the B2 or CRR strains. This indicates that some of the GR resistance and growth characteristics can be passed through the F1 generation onto subsequent generations, possibly leading to a self-sustaining wild trout population in areas where one has not existed for over a decade. Further research with these fish in the field will lead to a better understanding of their survival under natural conditions, both physiologically and in the face of whirling disease.

Job No. 3. Whirling Disease Resistant Domestic Brood Stock Development and Evaluation

Job Objective: These experiments are focused on the performance of the Hofer (GR) strain and GR-Harrison strain as domestic production fish compared with other commonly used production fish.

Hatchery Performance Evaluations: Summaries of growth data for GR and GR-cross varieties at participating State Fish Hatcheries

Multiple lots of GR, GR-Harrison, and GR-Colorado River rainbow trout were produced at the Research Hatchery during 2006 and 2007. Many of these lots were distributed to the Fish Production Section for rearing as brood fish replacements or as part of the typical fish production schedule. Field trials with catchable plants of the pure GR strain strongly suggest that the GR strain or slightly outbred varieties of this strain would be good replacements for existing domestic strains currently used for catchable production. Performance of these strains in the State of Colorado hatchery system is important. The large numbers of fish produced each year by the Colorado Division of Wildlife represents a substantial investment. Efficient hatchery production is necessary to minimize costs and produce the greatest benefit to anglers. Growth and anecdotal information is reported here for those locations where data was compiled and reported by the respective hatchery managers. All data collected thus far has been generally positive with respect to the use of these strains as replacements for other strains that are more susceptible to *Myxobolus cerebralis* infection.

Bellvue-Watson

Two lots of pure GR strain rainbow trout have been reared at the Bellvue-Watson Rearing Unit, in 2006 and 2007. Growth results of the GR strain compared with other production rainbow strains are depicted in Figure 3.1. The lots reared at this facility are reported to be exceptionally fast-growing, with only five to six months required to reach the subcatchable size (13 cm; 5 inches). The pure GR strain tends to swim near the surface, making them more vulnerable to bird predation. Some questions have been raised about the susceptibility of the GR strain to formalin due to higher mortality is some lots treated for gill parasites with the chemical. Outbreeding of the pure GR strain with other strains such as the Harrison Lake strain seems to result in reduction of the unconventional swimming behavior.

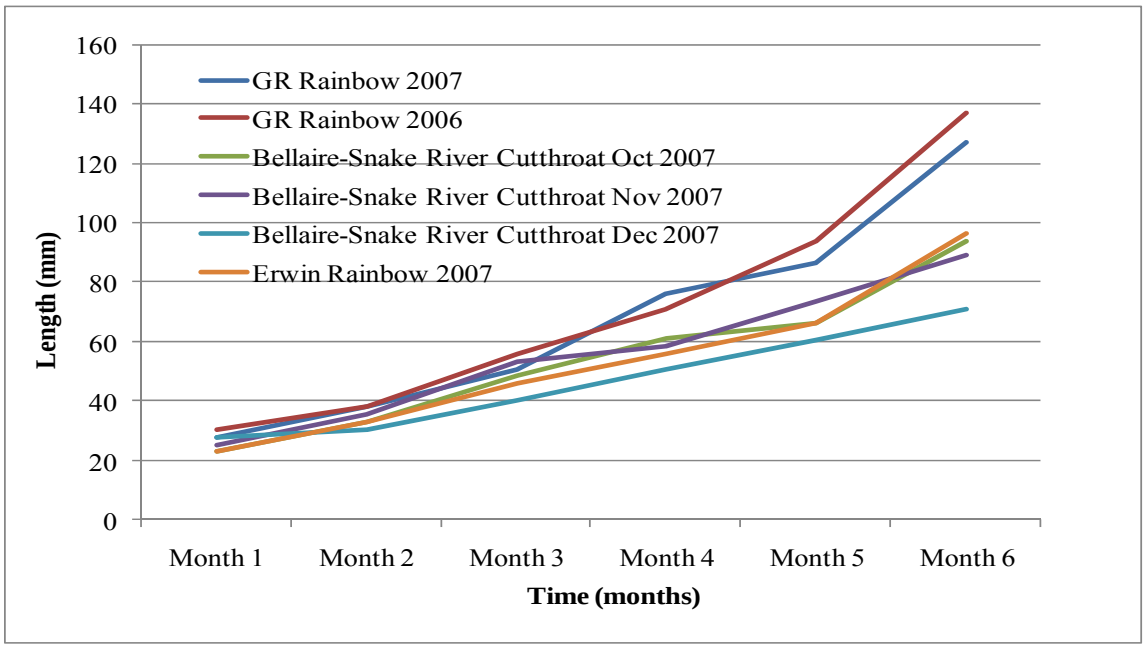

Figure 3.1. Growth of GR rainbow, Bellaire-Snake River cutbows, and Erwin rainbow trout at Bellvue-Watson in 2006 and 2007.

Crystal River Fish Hatchery

The ongoing field and laboratory trials have suggested that the GR-Harrison (75:25) strain rainbow trout would be a potentially good production fish and could be used to replace some existing production strains that normally carry much higher myxospore burdens when exposed to *M. cerebralis*. Eggs of this variety were sent to the Crystal River Hatchery in both 2006 and 2007 to be used as a future brood source. Growth results of the GR strain compared with other strains used as brood lots are depicted in Figure 3.2.

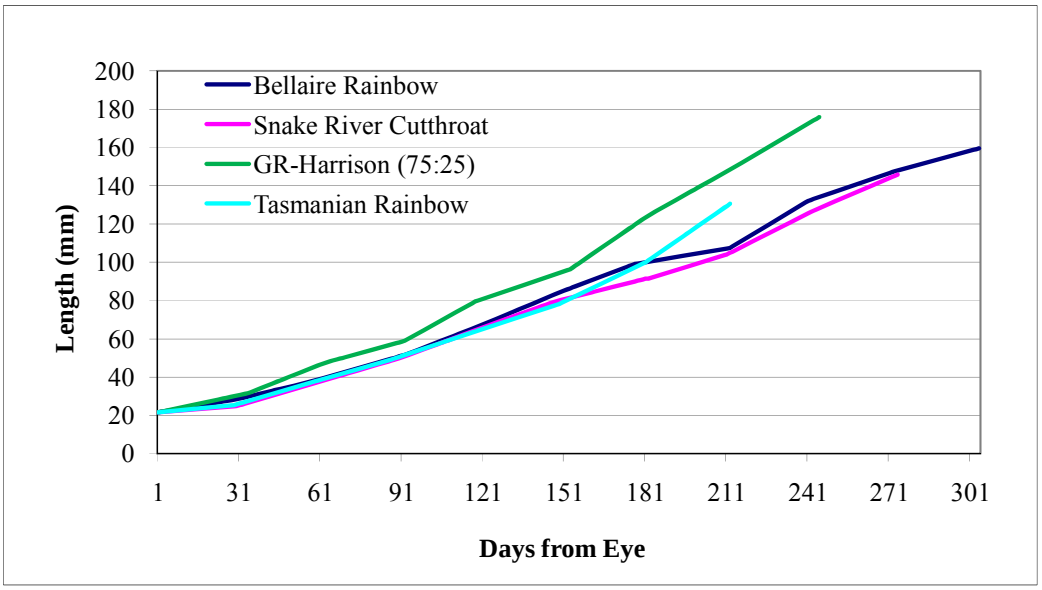

Figure 3.2. Growth of Bellaire rainbow, Snake River cutthroat, GR-Harrison (75:25) cross rainbow and Tasmanian rainbow trout at Crystal River Hatchery in fall, 2007, through spring, 2008.

Mt. Shavano Fish Hatchery

GR-Harrison (50:50) strain rainbow trout were sent to the Mount Shavano rearing Facility to be reared as part of a normal production run for stocking purposes. Growth results of the GR-Harrison strain compared with other strains used as brood lots are depicted in Figure 3.3. The GR-Harrison strain did grow quite well at the facility, but not as fast as the Puget Sound strain (Trout Lodge).

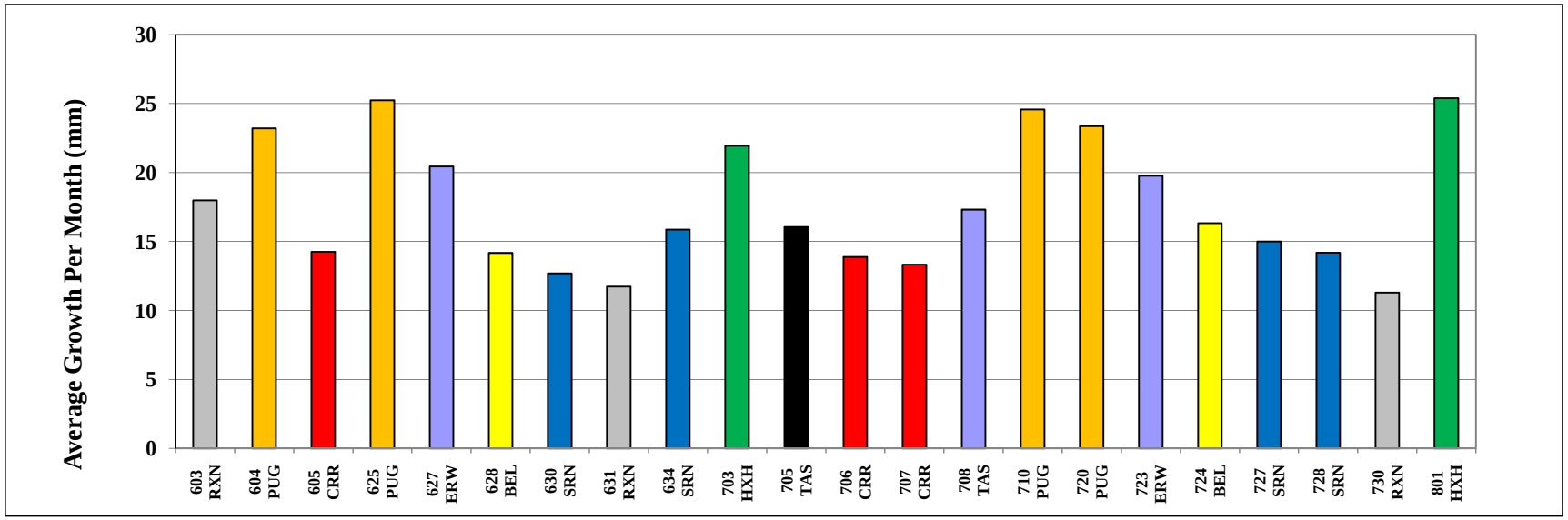

Figure 3.3. Growth of Bellaire-Snake River cutbow (RXN), Puget Sound rainbow (PUG), Colorado River rainbow (CRR), Erwin rainbow (ERW), Bellaire rainbow (BEL), Snake River cutthroat (SRN), GR-Harrison (50:50) cross rainbow (HXH), and Tasmanian rainbow trout at Mount Shavano Rearing Facility in 2007.

Durango Fish Rearing Unit

A lot of GR-Colorado River rainbow (B2) eyed eggs were sent to Durango Fish Hatchery on December 24, 2008. Growth through the end of June, 2008, is depicted below, compared with Bellaire strain rainbow trout.

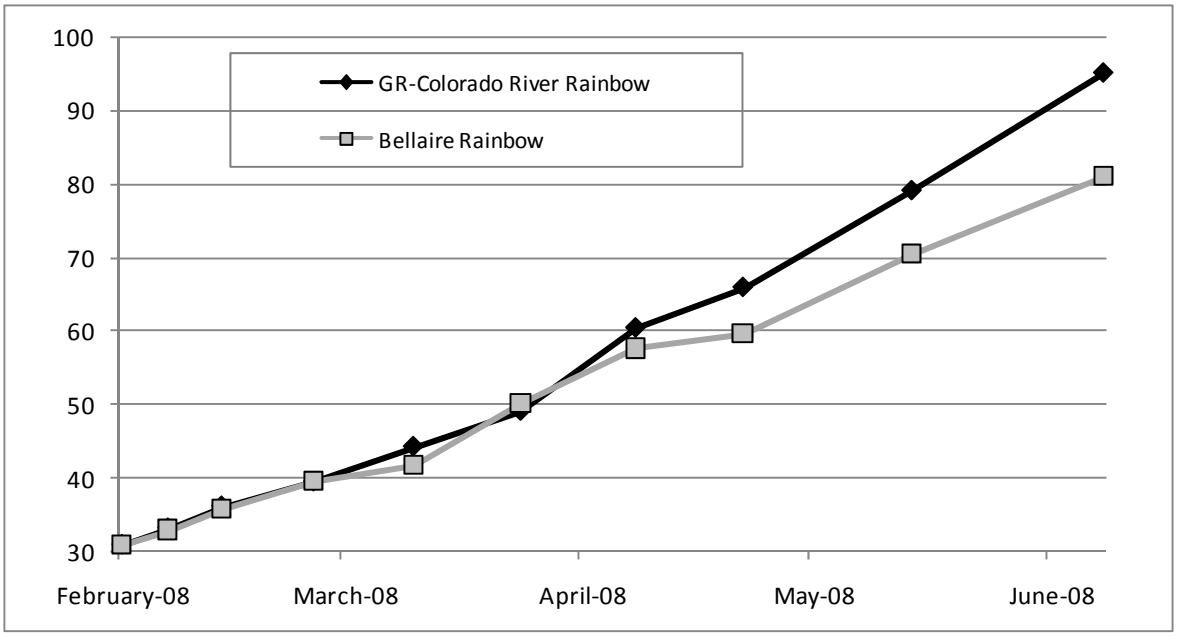

Figure 3.4 Growth of GR-Colorado River rainbow (F1 strain) compared with Bellaire rainbow at Durango Fish Rearing Unit, from February through June, 2008.

Field Performance Evaluations: Comparison of GR and Tasmanian strain rainbow trout as catchable plants in two put-and-take waters in Colorado.

INTRODUCTION

The GR strain rainbow trout has been identified as a strain that is highly resistant to *M. cerebralis* (Hedrick et al. 2003, Schisler et al. 2006). Other characteristics observed in laboratory experiments such as aggressive feeding behavior and rapid growth suggests that the strain may be useful as a catchable rainbow trout product. The GR rainbow trout appears to be a suitable replacement for other domestic strains used in Colorado from the standpoint of hatchery performance. However, performance of the GR strain compared to other standard domestic strains after it has been released to receiving waters has not yet been evaluated. In Colorado, approximately 3.2 million catchable-sized rainbow trout are produced per year for recreational angling. Catchable production fish raised for put-and-take use in Colorado are usually Tasmanian or Bellaire strain rainbow trout. In 2006, a study was designed to compare the GR rainbow trout with another standard domestic strain, the Tasmanian rainbow trout, as a catchable

product in typical put-and-take waters. In 2007, the GR-Harrison strain was evaluated in the same manner as the pure GR strain in 2006.

METHODS

2006

Hatchery Rearing.- GR and Tasmanian strain rainbow trout were reared in parallel from egg to catchable size at Chalk Cliffs Rearing Unit, a facility that is positive for *M. cerebralis*. Eggs from both strains were hatched during the same week, and the conditions were identical for both strains throughout the rearing period of 16 months.

Stocking and Creel Surveys.- Two front-range reservoirs, Flatiron and Pinewood reservoirs, were used as study locations for the catch and return to creel portion of the experiment. Both reservoirs are typical of coolwater reservoirs on the front range of Colorado in which fish are stocked for immediate recreational angling and harvest. These reservoirs, located northwest of Berthoud, Colorado, are typical high-use locations managed as put-and-take fisheries. Historical stocking rates have been from 15,000-30,000 catchable rainbow trout per year in each of the reservoirs. Pinewood Reservoir has also been stocked with 200-800 tiger muskie (*Esox lucius x Esox masquinongy*) fingerlings per year.

A reduced number of fish were stocked into the reservoirs for the purposes of this experiment, rather than the full allocation of catchable and subcatchable fish normally stocked into these reservoirs. Fish of each strain were stocked in the reservoirs every two to four weeks from the beginning of April until the end of June. Equal numbers of each strain were stocked into each reservoir during each stocking event, with the exception of the last plant (Table 4.1).

	Flatiron Reservoir		**Pinewood Reservoir**	
	GR	Tasmanian	GR	Tasmanian
April 5, 2006	1000	1000	1000	1000
May 4, 2006	874	874	874	874
May 17, 2006	700	700	700	700
June 7, 2006	700	700	700	700
June 28, 2006	861	861	612	362
Totals	4135	4135	3886	3636

Table 4.1. GR and Tasmanian strain rainbow trout stocked from April through June, 2006, at Flatiron and Pinewood reservoirs.

One half of the fish stocked on each occasion were of the GR strain, and the other half were of the Tasmanian strain. The fish had been marked prior to stocking with fin clips to identify the fish by strain, GR fish with adipose clips, and Tasmanian stain with pelvic fin clips.

A creel schedule was created in which anglers were surveyed on both weekend days of every week, and two randomly chosen weekdays per week for the months of April through August. Two weeks at the end of March, 2006, were also included in the survey, prior to the official start of the study, to familiarize the creel clerks with the process. Angler counts were conducted five times daily throughout the daylight hours. Angler interviews were conducted between count times. Because the strains were differentially marked with fin clips, the creel clerk could easily distinguish between the two strains and catch estimates were made for both strains. During the angler interviews, additional questions were asked to determine if there was an angler preference between the strains. If there was a preference, the anglers were asked to describe which characteristics were most important in making that determination.

Supplemental Questionnaire Information.- Supplemental questions were also asked to provide information on other unrelated topics. These were questions requested by management or hatchery section personnel. One question was an inquiry as to the number of days the angler ice-fished in the previous year. This was asked because relatively little statewide data exists on the proportion of anglers in Colorado that participate in ice fishing.

A second question was asked to determine if there was a preference for fish flesh color in catchable rainbow trout. This was asked because some preliminary work conducted by the Colorado Division of Wildlife Hatchery Section with Roxanthin-enhanced feed demonstrated that flesh color in catchable-sized trout could be changed from white to pink for nominal cost per pound (Matt Schehrer, Mt. Shavano hatchery manager, personal communication).

Holdover Evaluation.- Boat-mounted electroshocking was conducted at the end of the summer fishing season to evaluate fish remaining of each strain. Proportions of fish remaining were compared between strains. Samples were collected from surviving fish for analysis with pepsin-trypsin digest to determine myxospore counts in holdover fish.

Creel Survey Analysis.- As part of the Technical Assistance portion of this Federal Aid project (Job 5), a new creel survey computer program was developed, based on the Colorado Division of Wildlife's DOS-based version of the original program. This program was used to generate creel survey analysis results for this study. Details of work conducted to develop the program are included in the Job 5 portion of the report.

2007

Hatchery Rearing.- Fry of both the Tasmanian and GR-Harrison strains were hatched under identical conditions at the Chalk Cliffs Rearing Unit in the same manner as the Tasmanian and pure GR fish in 2006. A pelvic fin clip was used to mark the Tasmanian strain fish, and an adipose fin clip was used to mark the GR-Harrison strain fish. At eight months of age, and at 16 months of age, 30 fish of each strain were collected from the facility for growth and infection severity evaluations. Weight and length of each fish was recorded, and the pepsin-trypsin digest method was used to quantify the myxospore load of each fish.

Stocking and Creel Surveys.- Flatiron and Pinewood reservoirs were again used as the study areas for the comparisons. A creel survey schedule was generated to sample all weekend days, and two weekdays per week from April through September. The experimental fish were stocked three times in each reservoir from April through June, 2008 (Table 4.2). Fish were sorted to size match as closely as possible, although the average size of the GR-Harrison strain was larger due to their more rapid growth than the Tasmanian strain. Snake River finespot cutthroat trout x Bellaire rainbow trout (RXN) were stocked for management purposes after the experimental stocking was complete (Table 4.2).

The creel survey schedule for 2007 was similar to that in 2006, with two weekdays and both weekend days being surveyed during each week, although during 2007 the survey was conducted from April through September. Angler counts were conducted as in 2006, except the frequency was reduced to four per day rather than five. Interviews were conducted between counts as in 2006. The fin clips used for 2007 were the same as in 2006, so the clerk was able to distinguish between strain of fish based on the fin clips, as in 2006.

Supplemental Questionnaire Information.- Supplemental questions were asked during the interviews exactly as in 2006. More emphasis was placed on obtaining responses to each question during the interviews to produce larger samples all of the questions asked.

Flatiron Reservoir						
	GR		Tasmanian		RXN	
	Number	Length	Number	Length	Number	Length
April 11, 2007	1000	11.4	1000	9.3	0	.
April 30, 2007	1001	11.8	1001	10.1	0	.
June 18, 2007	1281	12.6	1281	11.8	0	.
July 15, 2007	0	.	0	.	1254	10.3
July 22, 2007	0	.	0	.	1863	10.3
August 14, 2007	0	.	0	.	1834	10.3
September 5, 2007	0	.	0	.	1486	11.9
Totals	3282		3282		6437	

Pinewood Reservoir						
	GR		Tasmanian		RXN	
	Number	Length	Number	Length	Number	Length
April 11, 2007	1000	11.4	1000	9.7	0	.
April 30, 2007	1001	11.8	1001	10.1	0	.
June 18, 2007	1281	12.6	1281	10.5	0	.
July 18, 2007	0	.	0	.	1430	9.9
July 24, 2007	0	.	0	.	1930	10.4
August 13, 2007	0	.	0	.	707	11.6
August 14, 2007	0	.	0	.	1834	10.3
September 5, 2007	0	.	0	.	1364	10.9
September 18, 2007	0	.	0	.	809	10.1
Totals	3282		3282		8074	

Table 4.2 GR and Tasmanian rainbow trout and RXN cutbow trout stocked from April through September, 2007, at Flatiron and Pinewood reservoirs.

RESULTS

2006

Hatchery Rearing.- The GR strain rainbow trout developed an average myxospore count of 5,175 (SD = 7,644) and the Tasmanian rainbow trout developing an average myxospore count of 48,883 (SD = 50,825) after 10 months of growth at the Chalk Cliffs rearing facility. Growth in the GR strain rainbow trout was significantly faster than in the Tasmanian rainbow trout with the GR strain reaching an average length of 282 mm (11.1 inches) and the Tasmanians reaching an average length of 234 mm (9.2 inches) at the time the first fish were stocked from the facility.

Catch by Strain.- Raw data indicated that a much higher percent of the GR rainbow trout were captured than the Tasmanian rainbow trout (Figures 4.1 and 4.2). This was especially true during the months that stocking occurred. After stocking was halted, numbers of fish captured of each strain were more closely matched. Total catch reported was 34.6% higher for the GR strain than the Tasmanian strain in Pinewood Reservoir (549 GR versus 359 Tasmanian strain reported catch). Total reported catch was 19.2% higher for the GR strain than the Tasmanian strain in Flatiron Reservoir (1011 GR versus 817 Tasmanian strain reported catch).

Creel Survey Analysis.- Reports were produced by using the Creel Survey Analysis Program (C-SAP) in 2006 for the Flatiron and Pinewood data and reported in the 2007 Federal Aid Report. Those reports were re-run with the newest version of the program in 2007 for this report (see Job 5: Technical Assistance and Appendix II). Fish returns by strain were compared with numbers of fish stocked to determine the rate of return for each of the two strains (Figure 4.5).

Holdover Evaluation.-Low numbers of both strains were found during the end-of-season electrofishing samples. In Flatiron Reservoir, only two GR and three Tasmanian rainbow trout were collected. In Pinewood Reservoir, only six GR and 26 Tasmanian rainbow trout were collected. These front-range reservoirs are subject to intense fishing pressure that typically results in seasonal depletions of stocked fish. It is notable, however, that more Tasmanian rainbow trout remained in both reservoirs at the end of the experiment. These results support the creel survey data, which indicated that the GR rainbow trout were caught more readily than the Tasmanian strain. Myxospores found in the Tasmanian rainbow trout averaged 122,074 (SD = 70,628) per fish, while those found in the GR rainbow trout averaged 210 (SD = 595) per fish at the conclusion of the experiment. In reservoirs where large numbers of holdover fish or mortality occurs, contribution of myxospores to the system could be quite different for the two strains. This could occur due to both the higher holdover rate and higher average myxospore count in the Tasmanian rainbow trout. Holdovers were not evaluated in 2007.

Angler Preference.- Responses for each question were summarized separately. Not all questions were answered by all contacts, so number of respondents is not the same for each question. When asked about strain preference based on the fin clip marks, 22.6% of the 1,831 respondents chose the GR rainbow, compared with 3.2% that chose

the Tasmanian rainbow. The remaining 74.2% had no preference. When asked about which characteristics they preferred with regard to the two strains, fighting ability was reported as the most important by 25.0% of 1,843 respondents. Only 1.8% reported that fish size was the most important characteristic. Catch rate was regarded as most important by 1.2% of the respondents, and appearance was most important to 0.3% of the respondents.

Other Questionnaire Responses.- Angler participation in ice–fishing among the respondents was low. Of the 1,880 respondents, only 113 (6.0%) had ice-fished in the previous year. Average number of days fished per person that participated in ice-fishing was 5.06. When asked which color flesh was preferred, the anglers overwhelmingly chose pink flesh as the color of choice. Of the 1,918 respondents, 1,221 preferred pink flesh, 407 preferred white, and 141 preferred red. Only 149 anglers had no preference.

2007

Hatchery Rearing.- Growth of the GR-Harrison strain in the 2007 lot was substantially greater than in the Tasmanian strain. Average length was 145 mm (SD = 19.1) in the Tasmanian strain compared with 182 mm (SD = 28.9) in the GR-Harrison strain after eight months (Table 4.3). At 16 months, average length of the Tasmanian strain fish was 221 mm (SD = 37.0), and average length of the GR-Harrison strain was 315 mm (SD = 28.6) (Table 4.4). Weight differences were even more dramatic, with average weight at eight months for Tasmanians at 35.8 g (SD = 13.5 compared with 75.7 g (SD = 27.1) for the GR-Harrison strain. At 16 months, average weight was 123.6 g (SD = 51.7), compared with 332.4 g (SD = 94.20) for the GR-Harrison strain.

Tasmanian rainbow trout developed an average myxospore count of 5,106 (SD = 8,999) after eight months on the facility (Table 4.5). No myxospores were found in any of the GR-Harrison strain trout tested. The Tasmanian rainbow trout developed average spore counts of 158,437 (SD = 239,901) after 16 months of growth at the Chalk Cliffs rearing facility. No myxospores could be found in any of the GR strain rainbow trout reared in 2007 (Table 4.6).

Catch by Strain.- In 2007, raw data followed the same pattern for the GR-Harrison strain as was observed with the pure GR strain in the previous year. Higher catch was observed for the GR-Harrison strain than the Tasmanian strain at both reservoirs. At Flatiron Reservoir, 27.7% higher catch was reported for the GR-Harrison strain than for the Tasmanian strain (784 reported catch for the GR-Harrison strain versus 567 reported catch for the Tasmanian strain). At Pinewood Reservoir, a 24.7% higher catch was reported for the GR-Harrison strain than for the Tasmanian strain (548 reported catch for the GR-Harrison strain versus 440 reported catch for the Tasmanian strain).

Creel Survey Analysis.- As with data collected in 2006, creel analysis reports for 2007 data were created using the newest version of the Creel Survey Analysis Program (C-SAP, See Job 5: Technical Assistance and Appendix II). Fish returns by strain were

compared with numbers of fish stocked to determine the rate of return for each of the two strains (Figure 4.5).

Angler Preference.- As in 2006, responses for each question were summarized separately. In 2007, the creel clerk was instructed to ensure that a response was provided for each question, which improved the reporting for the survey questions. When asked about strain preference based on the fin clip marks, 9.5% of the 2,441 respondents chose the GR-Harrison rainbow, compared with 1.1% that chose the Tasmanian rainbow. The remaining 89.3% had no preference. These responses were very similar to those received in 2006. When asked about which characteristics they preferred with regard to the two strains, fighting ability was reported as the most important by 9.2% of 2,441 respondents. Only 1.1% reported that fish size was the most important characteristic. Catch rate was regarded as most important by 0.2% of the respondents, and appearance was most important to 0.5% of the respondents. These results were also strikingly similar to those received in 2006 (Figure 4.7).

Other Questionnaire Responses.- Angler participation in ice–fishing among the respondents was low. Of the 2,441 respondents, only 160 (6.6%) had ice-fished in the previous year. When asked which color flesh was preferred, the anglers overwhelmingly chose pink flesh as the color of choice. Of the 2,441 respondents, 1,733 preferred pink flesh, 341 preferred white, and 149 preferred red. Only 218 anglers had no preference. Again, these results are nearly identical to the questionnaire responses received in 2006 (Figure 4.8).

Tasmanian			GR-Harrison		
Fish #	Length (mm)	Weight (g)	Fish #	Length (mm)	Weight (g)
1	153	38	1	184	72.5
2	160	44	2	152	37.5
3	149	34	3	200	84.8
4	122	22	4	223	133.1
5	154	41	5	205	96.2
6	135	28	6	190	70.3
7	158	42	7	198	85.2
8	145	30	8	165	47.8
9	173	50	9	194	89
10	161	46	10	179	70
11	115	18	11	163	51
12	129	23	12	210	105
13	168	53	13	204	100
14	169	51	14	172	62
15	144	34	15	204	87
16	150	36	16	205	94
17	169	63	17	185	74
18	165	51	18	210	116
19	128	23	19	137	30
20	145	37	20	163	48
21	149	38	21	154	42
22	132	25	22	196	82
23	143	33	23	187	74
24	123	23	24	197	91
25	180	66	25	220	122
26	130	21	26	177	58
27	144	32	27	175	68
28	137	25	28	142	33
29	97	10	29	93	72
30	127	23	30	137	30
Average	145.7586207	35.758621	Average	182.2068966	75.703448
St. Dev.	5.738528374	0.0787635	St. Dev.	7.173499864	0.1667477

Table 4.3. Length and weight of Tasmanian and GR-Harrison (50:50) strain rainbow trout at the Chalk Cliffs Fish rearing Unit, August 15, 2006.

Tasmanian			GR-Harrison		
Fish #	Length (mm)	Weight (g)	Fish #	Length (mm)	Weight (g)
1	212	106	1	365	500
2	235	130	2	355	520
3	216	102	3	345	460
4	255	165	4	275	220
5	207	100	5	345	420
6	255	180	6	330	360
7	230	120	7	310	320
8	255	175	8	285	220
9	205	102	9	350	460
10	236	140	10	350	440
11	225	120	11	335	420
12	210	100	12	315	300
13	265	200	13	305	300
14	215	100	14	315	340
15	225	120	15	300	260
16	145	30	16	350	440
17	245	150	17	320	360
18	220	130	18	335	400
19	220	120	19	305	280
20	215	90	20	270	220
21	115	35	21	305	300
22	200	90	22	305	300
23	185	65	23	300	280
24	165	60	24	310	300
25	220	130	25	305	300
26	205	75	26	250	180
27	290	265	27	325	320
28	270	215	28	275	200
29	270	170	29	295	220
30	250	155	30	280	240
Average	221.0689655	123.62069	Average	314.8275862	332.41379
St. Dev.	8.703502579	0.2722923	St. Dev.	12.39478686	0.732189

Table 4.4. Length and weight of Tasmanian and GR-Harrison (50:50) strain rainbow trout at the Chalk Cliffs Fish rearing Unit, March 27, 2007.

Case History Number			06-179		Location			Chalk Cliffs Hatchery	
Date Collected			08/15/06		Water Code				
Lot	Species	Age (Months)	Sample #	No. of Spores	No. of Grids	Measured Volume of Suspension (ml)	Final Volume	Spores per Head	Comments
1	TAS		1	0	18	0.00	0.00	0	Bag marked J
			2	1	18	3.00	3.03	1,683	
			3	8	18	3.00	3.03	13,467	
			4	0	18	0.00	0.00	0	
			5	2	18	3.00	3.03	3,367	
			6	2	18	3.00	3.03	3,367	
			7	0	18	0.00	0.00	0	
			8	1	18	3.00	3.03	1,683	
			9	0	18	0.00	0.00	0	
			10	5	18	3.00	3.03	8,417	
			11	0	18	0.00	0.00	0	
			12	0	18	0.00	0.00	0	
			13	2	18	3.00	3.03	3,367	
			14	18	18	3.00	3.03	30,300	
			15	0	18	0.00	0.00	0	
			16	0	18	0.00	0.00	0	
			17	0	18	0.00	0.00	0	
			18	18	18	3.00	3.03	30,300	
			19	12	18	3.00	3.03	20,200	
			20	0	18	0.00	0.00	0	
			21	1	18	3.00	3.03	1,683	
			22	0	18	0.00	0.00	0	
			23	0	18	0.00	0.00	0	
			24	0	18	0.00	0.00	0	
			25	0	18	0.00	0.00	0	
			26	13	18	3.00	3.03	21,883	
			27	6	18	3.00	3.03	10,100	
			28	2	18	3.00	3.03	3,367	
			29	0	18	0.00	0.00	0	
			30	0	18	0.00	0.00	0	
						Average Spores per Head		5,106	
						St. Dev.		8,999.9	
2	GR-HAR		1	0	18	0.00	0.00	0	Bag marked K
			2	0	18	0.00	0.00	0	
			3	0	18	0.00	0.00	0	
			4	0	18	0.00	0.00	0	
			5	0	18	0.00	0.00	0	
			6	0	18	0.00	0.00	0	
			7	0	18	0.00	0.00	0	
			8	0	18	0.00	0.00	0	
			9	0	18	0.00	0.00	0	
			10	0	18	0.00	0.00	0	
			11	0	18	0.00	0.00	0	
			12	0	18	0.00	0.00	0	
			13	0	18	0.00	0.00	0	
			14	0	18	0.00	0.00	0	
			15	0	18	0.00	0.00	0	
			16	0	18	0.00	0.00	0	
			17	0	18	0.00	0.00	0	
			18	0	18	0.00	0.00	0	
			19	0	18	0.00	0.00	0	
			20	0	18	0.00	0.00	0	
			21	0	18	0.00	0.00	0	
			22	0	18	0.00	0.00	0	
			23	0	18	0.00	0.00	0	
			24	0	18	0.00	0.00	0	
			25	0	18	0.00	0.00	0	
			26	0	18	0.00	0.00	0	
			27	0	18	0.00	0.00	0	
			28	0	18	0.00	0.00	0	
			29	0	18	0.00	0.00	0	
			30	0	18	0.00	0.00	0	
						Average Spores per Head		0	
						St. Dev.		0.0	

Table 4.5. Myxospore count results for Tasmanian and GR-Harrison rainbow trout at the Chalk Cliffs Fish Rearing Unit, August 15, 2006.

Case History Number			07-094		Location			Chalk Cliffs Rearing Unit	
Date Collected			03/27/07		Water Code			29341	
Lot	Species	Age (Months)	Sample #	No. of Spores	No. of Grids	Measured Volume of Suspension (ml)	Final Volume	Spores per Head	Comments
1	GR-HAR	16	1	0	18	0.00	0.00	0	
			2	0	18	0.00	0.00	0	
			3	0	18	0.00	0.00	0	
			4	0	18	0.00	0.00	0	
			5	0	18	0.00	0.00	0	
			6	0	18	0.00	0.00	0	
			7	0	18	0.00	0.00	0	
			8	0	18	0.00	0.00	0	
			9	0	18	0.00	0.00	0	
			10	0	18	0.00	0.00	0	
			11	0	18	0.00	0.00	0	
			12	0	18	0.00	0.00	0	
			13	0	18	0.00	0.00	0	
			14	0	18	0.00	0.00	0	
			15	0	18	0.00	0.00	0	
			16	0	18	0.00	0.00	0	
			17	0	18	0.00	0.00	0	
			18	0	18	0.00	0.00	0	
			19	0	18	0.00	0.00	0	
			20	0	18	0.00	0.00	0	
			21	0	18	0.00	0.00	0	
			22	0	18	0.00	0.00	0	
			23	0	18	0.00	0.00	0	
			24	0	18	0.00	0.00	0	
			25	0	18	0.00	0.00	0	
			26	0	18	0.00	0.00	0	
			27	0	18	0.00	0.00	0	
			28	0	18	0.00	0.00	0	
			29	0	18	0.00	0.00	0	
			30	0	18	0.00	0.00	0	
						Average Spores per Head		0	
						St. Dev.		0	
2	TAS	16	1	0	18	10.00	10.03	0	
			2	27	18	10.00	10.03	150,450	
			3	0	18	10.00	10.03	0	
			4	73	18	10.00	10.03	406,772	
			5	3	18	10.00	10.03	16,717	
			6	2	18	10.00	10.03	11,144	
			7	45	18	10.00	10.03	250,750	
			8	10	18	10.00	10.03	55,722	
			9	5	18	10.00	10.03	27,861	
			10	177	18	10.00	10.03	986,283	
			11	1	18	10.00	10.03	5,572	
			12	4	18	10.00	10.03	22,289	
			13	20	18	10.00	10.03	111,444	
			14	52	18	10.00	10.03	289,756	
			15	12	18	10.00	10.03	66,867	
			16	6	18	10.00	10.03	33,433	
			17	149	18	10.00	10.03	830,261	
			18	3	18	10.00	10.03	16,717	
			19	9	18	10.00	10.03	50,150	
			20	0	18	10.00	10.03	0	
			21	3	18	10.00	10.03	16,717	
			22	30	18	10.00	10.03	167,167	
			23	91	18	10.00	10.03	507,072	
			24	4	18	10.00	10.03	22,289	
			25	42	18	10.00	10.03	234,033	
			26	1	18	10.00	10.03	5,572	
			27	14	18	10.00	10.03	78,011	
			28	17	18	10.00	10.03	94,728	
			29	28	18	10.00	10.03	156,022	
			30	25	18	10.00	10.03	139,306	
						Average Spores per Head		158,437	
						St. Dev.		239,901.1	

Table 4.6. Myxospore count results for Tasmanian and GR-Harrison rainbow trout at the Chalk Cliffs Fish Rearing Unit, March 27, 2007.

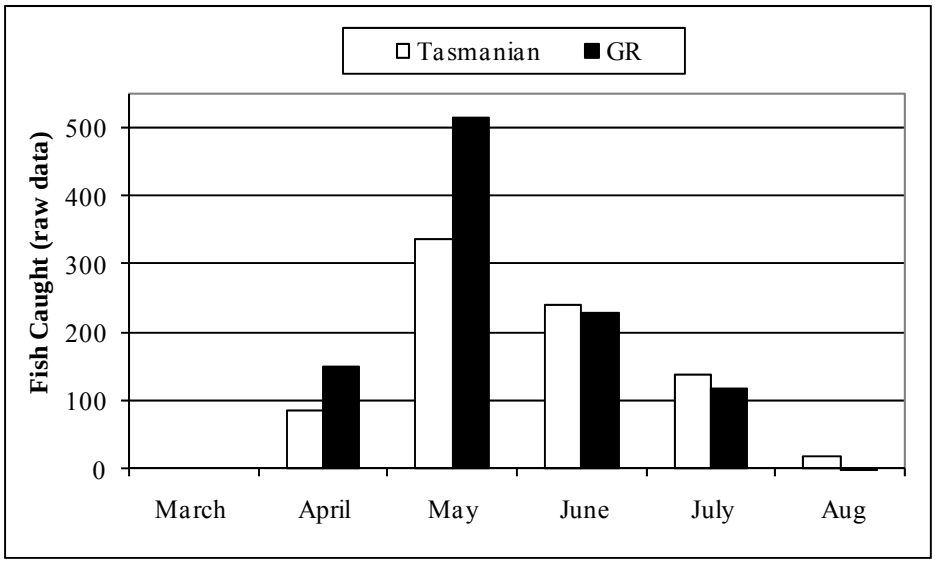

Figure 4.1. Catch data (raw data) for number of rainbow trout caught by strain at Flatiron Reservoir in 2006.

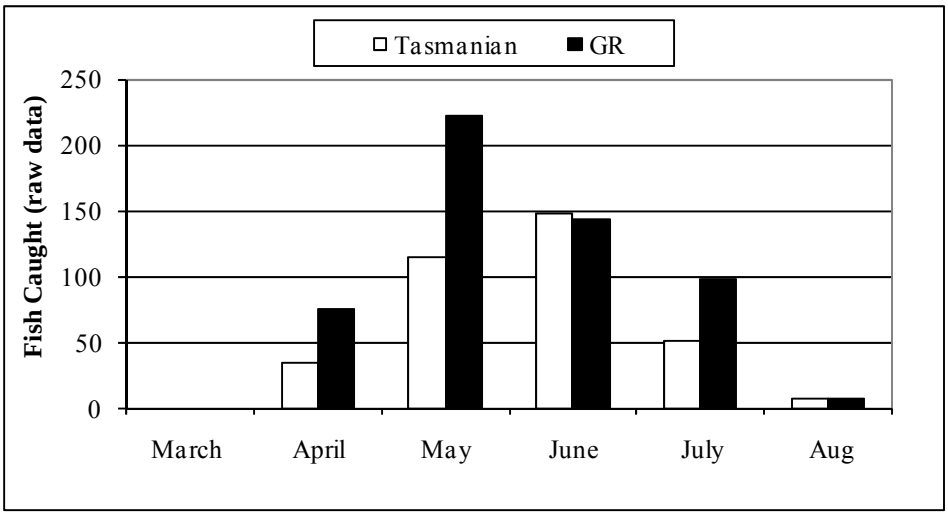

Figure 4.2. Catch data (raw data) for number of rainbow trout caught by strain at Pinewood Reservoir in 2006.

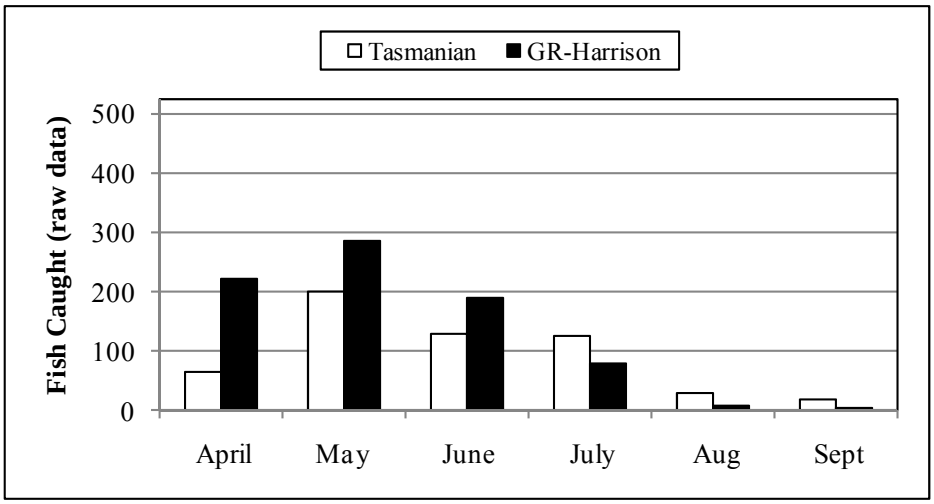

Figure 4.3. Catch data (raw data) for number of rainbow trout caught by strain at Flatiron Reservoir in 2007.

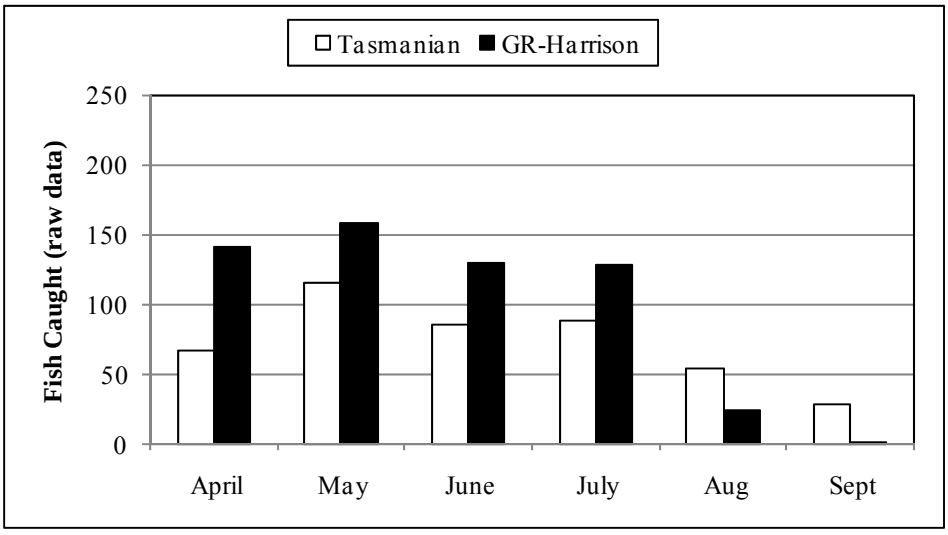

Figure 4.4. Catch data (raw data) for number of rainbow trout caught by strain at Pinewood Reservoir in 2007.

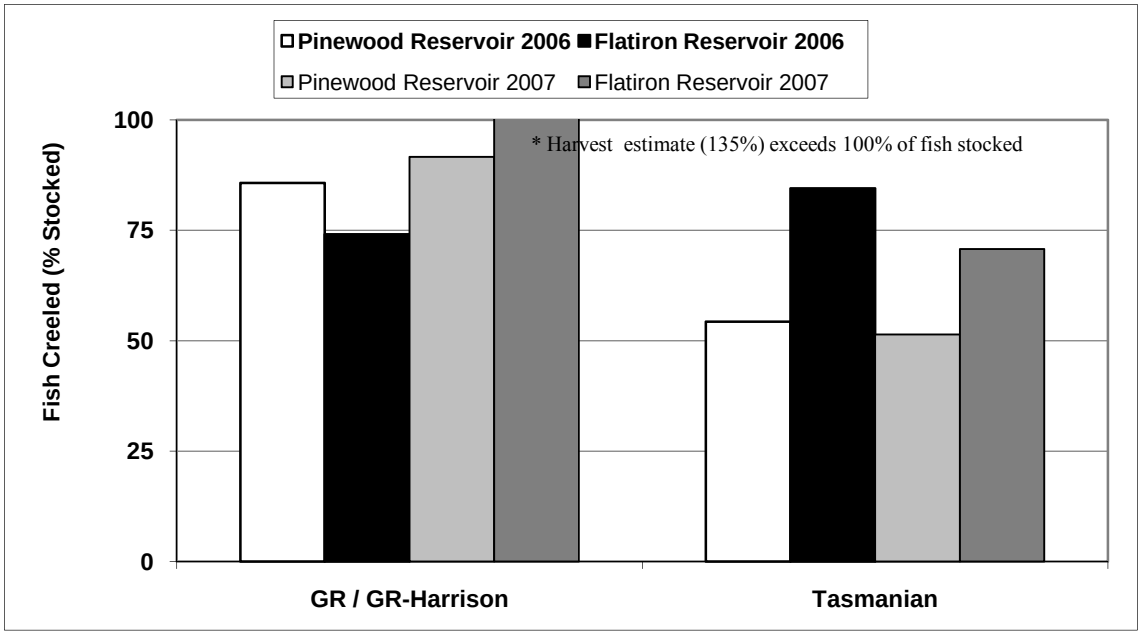

Figure 4.5. Proportion of fish returned to creel by strain for Flatiron and Pinewood reservoirs in 2006 and 2007 as estimated by the C-SAP Creel Survey Program.

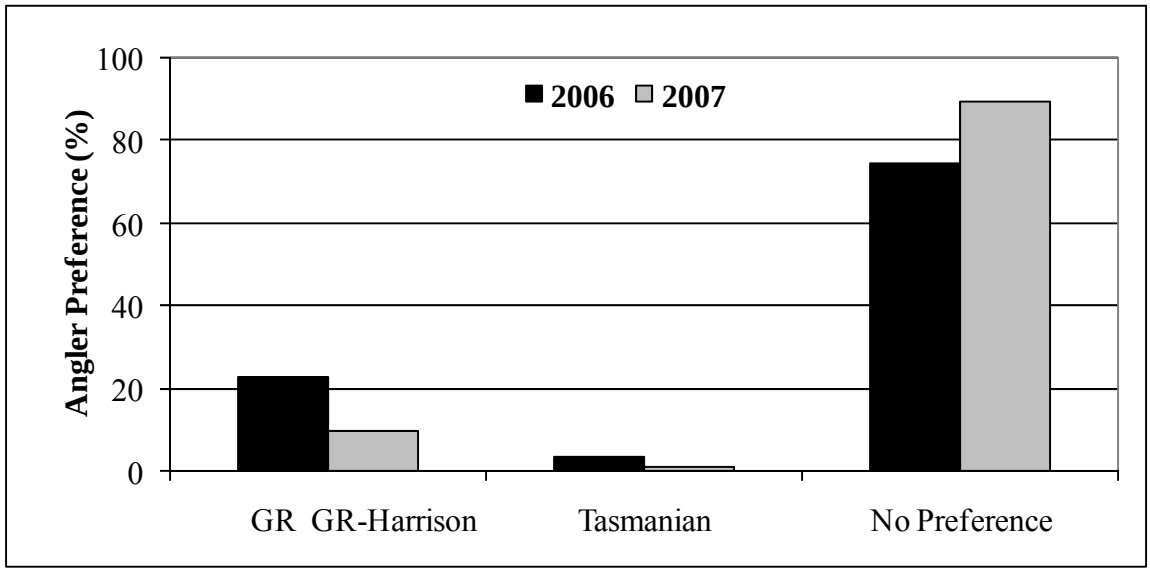

Figure 4.6. Angler preference by strain, as defined by fin clip, for Flatiron and Pinewood reservoirs in 2006 and 2007.

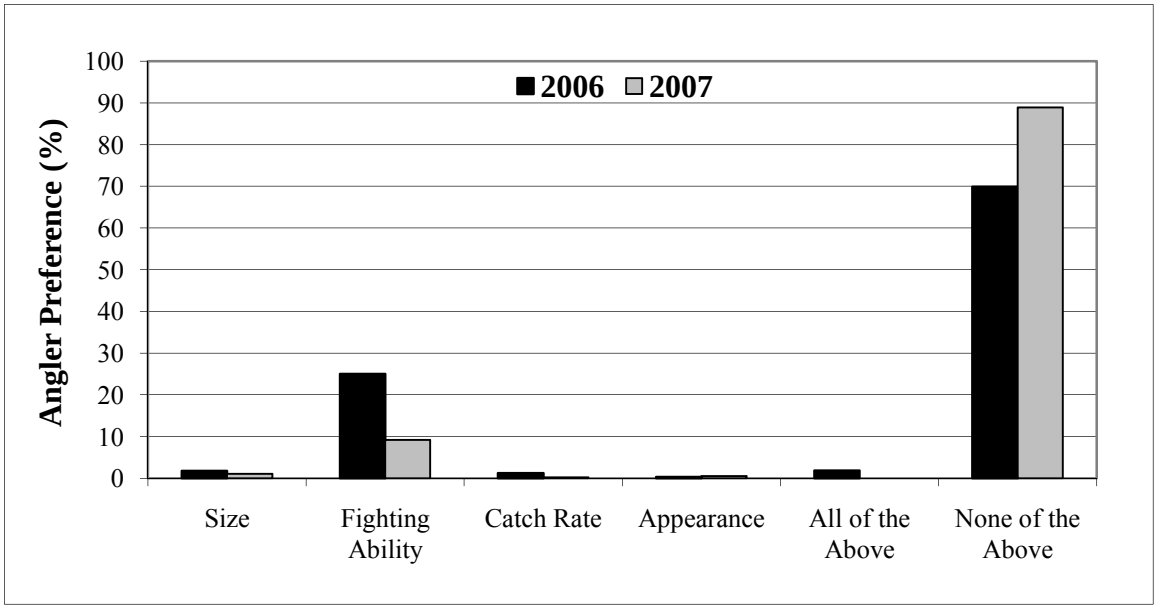

Figure 4.7. Characteristics of fish contributing to angler preference at Flatiron and Pinewood reservoirs in 2006 and 2007.

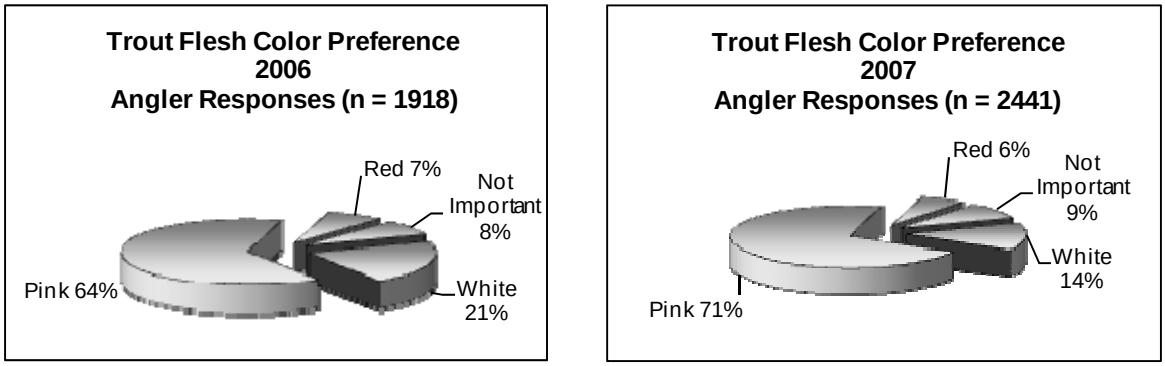

Figure 4.8. Angler preference for trout flesh color, Flatiron and Pinewood reservoir questionnaire results, 2006 and 2007.

DISCUSSION

Rapid growth, high return to creel and angler satisfaction, and low myxospore production all support the conclusion that the GR or GR-Harrison strain could be useful replacements for other domestic strains used in Colorado for catchable rainbow trout production. The unofficial evaluations reported by the State Fish Production facilities support the conclusion that these strains of fish will be acceptable replacements as well.

The myxospore counts obtained from samples taken at the Chalk Cliffs Rearing Unit are very encouraging. The identification of no myxospores at all in the GR-Harrison lot, compared with 90% infection prevalence and an average spore count of 158,437 in the Tasmanian lot after 16 months on the facility, is very encouraging. These sorts of differences in infection severity further support the argument that resistant strains are a useful tool in reducing parasite burden in stocked fish.

Total catch, as defined by the raw data and by the Creel Survey estimates, was higher for the GR and GR-Harrison strain during both years and at both reservoirs. The only exception was for the Creel Survey estimate at Flatiron Reservoir in 2006, where the overall catch estimate for the Tasmanian strain was slightly higher than that of the GR strain. The average across both years and both reservoirs resulted in a total return to creel of 96.5% of the stocked GR and GR-Harrison fish, and a total return to creel of 65.25% of the stocked Tasmanian strain fish. This difference represents a higher recreational value provided by the GR strains in addition to the lower potential spore burden added to the system.

Lower returns were observed with both strains in Pinewood Reservoir during both years of the evaluations. Pinewood Reservoir is a little farther for fishermen to travel and the camping facilities are not as extensive, which could influence angler use. The outlet of Pinewood reservoir is also not conducive to retaining fish in the reservoir, with a vortex-like outlet structure having the potential to draw out fish. The principle difference between the two reservoirs, however, is the presence of large numbers of tiger muskies in Pinewood Reservoir. The impact of these fish on the catchable and fingerling plants in the reservoir is unknown, although predation on hatchery-produced trout would presumably be quite high.

Reported angler preference by strain favored the GR and GR-Harrison groups over the Tasmanian strain in both years, although the vast majority of anglers did not have a preference. GR strain and GR-Harrison strain were larger on average than the Tasmanian strain fish when stocked. This was unavoidable because of the rapid growth of the GR strain in the Chalk Cliffs Rearing Unit prior to stocking. While the anglers did not perceive fish size to be a major factor in preference between the two strains in either year, it is possible that the larger size of the fish affected their perception of the strain. Surprisingly, fighting ability was the only reported factor that influenced the angler's preference to any measurable degree during both years of the survey. Another interesting anecdote from the survey is that anglers preferred fish with pink flesh over white flesh by

a very large margin during both years of the survey, suggesting that feed additives may indeed be worthwhile to increase angler satisfaction.

Further evaluations of GR and GR-Harrison strain rainbow trout are ongoing. Specific work initiated in 2007 is focused on evaluation of fingerling plants of these strains compared with other domestic varieties in reservoirs. These evaluations will help identify which varieties have the best survival and are the most cost-effective for sub-catchable plants in reservoirs where put-grow-and-take is the preferred management strategy.

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Schisler, G. J., Myklebust, K. A., and R. P. Hedrick. 2006. Inheritance of resistance to *Myxobolus cerebralis* among F1-generation crosses of whirling disease resistant and susceptible strains of rainbow trout. Journal of Aquatic Animal Health 18:109-115.

Job No. 4. Whirling Disease Resistant Wild Strain Brood Stock Development and Evaluation

Job Objective: These experiments are designed to develop and evaluate "wild" strain whirling disease resistant rainbow trout for reintroduction into areas where self-sustaining populations have been lost due to whirling disease.

INTRODUCTION

One of the highest priorities for whirling disease research is to ultimately re-establish wild rainbow trout populations in locations where they have been destroyed due to whirling disease. Some locations of particular interest are the Gunnison, South Platte, Yampa, Colorado, Rio Grande, and Fryingpan rivers. All of the stocking and sampling events were conducted by, or in cooperation with the respective area fisheries biologists. Dan Kowalski, area biologist for the Gunnison River, Jeff Spohn, area biologist for the South Platte River, and Billy Atkinson, the area biologist for the upper Colorado and Yampa rivers, and Jon Ewert, the area biologist for the upper Colorado River, were all instrumental in the collection of the data reported herein.

A few locations have been stocked with fingerling fish of various GR-cross varieties as pilot experiments, to determine if these strains would have post-stocking survival success. A small-scale survival experiment was conducted on an artificial stream channel on the South Platte River upstream of Spinney Mountain Reservoir in 2004 and 2005. Higher survival rates were observed among the F1 generation fish than either the pure GR or pure CRR rainbow trout strains in this experiment (Schisler 2006). Additional GR-Harrison crosses were stocked upstream of Antero Reservoir on the South Platte River in 2006. GR-cross fingerlings of both the GR-Harrison and GR-CRR varieties have been stocked into the Yampa River in an attempt to help re-establish wild rainbow trout populations there. Additional F1 and B2 variety fish were stocked into locations where re-establishment of wild rainbow trout populations is desirable such as the Rio Grande and Fryingpan Rivers. The survival and performance of fish stocked in these locations are not being rigorously evaluated because of limited resources and personnel. However, any successful recruitment of wild rainbow trout in the future may be evaluated as to origin through the use of genetic markers that identify the offspring of the GR-strain fish.

The following is a summary of live-release trials intended to re-establish wild rainbow trout populations in the Gunnison and upper Colorado Rivers. These locations are being monitored more closely than the other test sites and more detailed evaluations can be conducted at these sites due to the marking of specific lots of fish planted in these waters.

METHODS

Gunnison River

Myxobolus cerebralis was first identified in the Gunnison River in 1994 (Nehring 2006). Natural recruitment of rainbow trout has declined dramatically as a result of the heavy infection in the system. Wild rainbow trout estimates for the 3.2 kmUte Park section of the river have dropped from highs of over 10,000 fish in the late 1980's, to less than 100 fish in recent years. Very large numbers of rainbow trout fingerlings of the Colorado River variety have been stocked into the river on an annual basis to maintain a residual rainbow trout population. In 2004, the first lots of GR-Colorado River rainbow strain were stocked into the river at the Ute Park section of the Gunnison Gorge as part of the first attempts to re-establish a self-sustaining population with GR-cross variety rainbow trout. Early plants of smaller lots of fish (both in size and numbers) produced relatively weak results with regard to power of detecting differences in survival. This was primarily due to tag loss and small numbers of fish. The work has continued through 2008, with the largest plant introduced in the fall of 2007 with highly reliable coded wire tags. In spite of the poor tag retention from the early plants, a molecular-based test for genetic markers (AFLP) has been used to identify offspring in the river that have originated from these stocked GR-variety fish. A description of this molecular technique, as well as a blind test used to evaluate the technique is provided in Appendix IV. This technique could prove to be quite useful to determine if reproduction is occurring in other lots of GR-variety fish stocked elsewhere in Colorado.

2004-2005

F1 (GR-CRR) fish were hatched on March 14, 2004, at the FRH and marked with red visible implant elastomer (VIE) marks after reaching 76-102 mm (3-4 inches) in length. Pure CRR fish were hatched at the Colorado Division of Wildlife Rifle Falls Hatchery (RIF) on March 13, 2004, and similarly marked with green VIE marks. The two strains were given these marks to distinguish between the strains during population estimates. In this experiment, 10,104 pure CRR and 10,115 CRR-GR rainbow trout were stocked as 13.6 cm and 11.9 cm fingerlings, respectively, into a 2,823 m section of the Gunnison Gorge at Ute Park on October 21, 2004. The fish were mixed together prior to stocking to prevent bias due to handling, then spread throughout the stream section using helicopter plants.

2005-2006

Growth, survival, and infection severity of the two strains planted in 2004 were evaluated from samples collected during the annual population estimate, conducted on September 27, 2005. Estimates were conducted using mark-recapture sampling with boat-mounted electroshocking gear. All rainbow trout were carefully examined for evidence of VIE marks. A subsample of fish with red (F1 fish) and green (pure CRR

fish) VIE marks were collected for myxospore evaluation. Infection severity was evaluated by myxospore count analysis on seven pure CRR and 10 F1 fish.

Because of the low survival of the previous year's plant, larger fish were stocked in 2005 to potentially reduce predation. B2 [GR-CRR (25:75)] fish, hatched on April 10, 2005 at the BFRH, were marked with an adipose clip after reaching 7.6 – 10.0 cm (3-4 inches). Pure CRR hatched at RIF on March 28, 2005, were similarly given right pelvic clip. Stocking was conducted a second time at Ute Park using 5,000 pure CRR and 5,000 B2 fish on November 17, 2005. Fish were again mixed together immediately prior to stocking. As in 2004, fish were lowered into the stream section using a helicopter. However, during this stocking event, all of the fish were stocked into a holding cage and allowed to acclimate for 30-45 minutes prior to being released. All fish were released in the same location at the Ute Park station.

2006-2007

Population estimates were conducted again on September 26, 2006, using the same methods as in 2005. Particular attention was given to any rainbow trout captured to identify VIE marks from the 2004 plant, and fin clips from the 2005 plant. Many rainbow trout were captured that did not show any evidence of fin clips. This could have been due to either re-growth of fins, or some fish being stocked without receiving the appropriate clip. In order to determine the strain of the unmarked fish, a sample of these fish were collected to be tested with the AFLP technique (see Appendix IV). Additional fish with obvious fin clips were also collected. These fish were also tested for severity of *M. cerebralis* infection with myxospore counts obtained from the PTD technique.

On November 20, 2006, B2 fish were again stocked in the Ute Park section of the Gunnison River. This was to determine if the slightly larger B2 strain fish would perform better than the first (2005) plant of B2 fish. The pure CRR fish were not marked in this plant, while the B2 fish were given an adipose clip and a red VIE mark. The fish were stocked in the same manner as those in 2005, with fish allowed to acclimate in holding cages before release.

2007-2008

Fingerling rainbow trout were collected during a spot-sampling event on June 15, 2007 to be submitted for AFLP testing to determine if these fry produced in 2007 were offspring of any of the earlier F1 or B2 plants. Annual fry shocking estimates were conducted on August 29, 2007 at standard stations at Ute Park and Smith Fork Sites. Multiple-pass removal estimates were conducted on 15.2 m (50 ft) sections of riffle habitat to quantify fry abundance. Samples were also taken during these estimates for AFLP analysis and PCR testing for *M. cerebralis* infection severity.

The annual population estimate was conducted on October 2-5, 2007. A mark-recapture estimate using boat-mounted electroshocking gear was conducted in the same manner as in previous years to obtain population estimates for marked fish. Additional fry and a sample of 30 age-1 rainbow trout were collected during this event for AFLP analysis.

Because of the low returns found for the plants made in 2005 and 2006, a marking technique that would result in higher tag retention was desirable for fish stocked in 2007. The number of fish stocked was also increased to 20,000 of pure CRR and 20,000 F1 rainbow trout to improve the power of the evaluation. Coded wire tags were used to batch-mark the F1 and the pure CRR fish. Additionally, the F1 fish were adipose clipped to provide a second mark in case the first was lost. The fish were all marked at the Rifle Falls Rearing Unit. Marked fish were re-examined for tag retention before stocking. The fish (2,763 lbs) were stocked with a helicopter in the same manner as in previous years on November 8, 2007 throughout a 2.7 mile reach of river at Ute Park.

Upper Colorado River

Natural recruitment of rainbow trout in the upper Colorado River has not occurred since the mid-1990's, and even brown trout fingerlings have exhibited severe signs of whirling disease in the reaches immediately downstream of Windy Gap Reservoir. Brown trout numbers have increased over the past decade, and fingerling plants of Colorado River Rainbow trout to augment the rainbow trout population have exhibited low survival. In 2006, a single lot of catchable-sized GR-Colorado River rainbow trout were stocked in to the upper Colorado River to evaluate the survival of these larger GR-variety fish in an area dominated by brown trout and with an extremely high prevalence of *Myxobolus* cerebralis.

2006

Because of the concern about heavy brown trout predation on fingerling rainbow trout plants in the upper Colorado River, a decision was made to stock larger fish in this location. F1 strain (GR-CRR) were selected for this trial. Long term survival and growth evaluations were also considerations for this experiment, so fish were reared to 24.0 cm (9.5 inches) in length before stocking. Each fish was measured to the nearest 0.5 cm, and marked with an individually numbered fine filament Floy anchor tag, along with an adipose clip. Half of the tags used were grey, and the other half were pink. This was done in an effort to determine if tag color had any effect on survival. Three thousand of these F1 fish were then stocked on June 2, 2006, in the upper Colorado River between Windy Gap Reservoir and the town of Hot Sulphur Springs, just upstream of Byers Canyon.

In November of 2006, a standard two-pass removal population estimate was conducted on a 305 meter (1000 ft) section of the upper Colorado River at the Chimney

Rock station using bank-mounted electroshocking gear. Marked fish were estimated separately for the purposes of this experiment.

2007

On November 3, 2007, the same 305 meter section was sampled as in 2006 using bank-mounted electroshocking gear. Because of the large numbers of brown trout in the section coupled with time and personnel constraints, only one pass was completed. As a result, only minimum numbers of fish could be calculated, rather than an actual two-pass population estimate.

2008

Because of the encouraging survival results from the sampling events in 2006 and 2007, a more extensive estimate was conducted in spring, 2008. This was designed to evaluate the growth and survival of the F1 fish stocked in 2006, and also to determine what proportions of the fish were sexually mature. The population estimate consisted of a mark-recapture procedure from the Hitchin' Post Bridge, downstream to the Sheriff Ranch. The total sampled distance was 6.28 river km (3.9 river miles). Two raft-mounted electrofishing units were used for both the mark and recapture runs. All trout captured during the mark run were given a caudal fin punch for identification on the recapture run. Proportions of marked to unmarked fish in the recapture run are used to estimate the overall population of fish in the river larger than 15.2 cm (6 inches).

RESULTS

Gunnison River

2004 -2005

The 2005 population estimate indicated that survival of both groups of fish stocked in 2004 was relatively low, with only 12 of the pure CRR, and 24 of the F1 (GR-CRR) fish being found in the 2,375 m sampling area. The sampling resulted in an estimate with 95% CI of 9.9 ± 19.9 fish/km (16.0 ± 32.0 fish/mile) or an estimated 23.5 ± 47.5 fish of the CRR strain in the sampling reach. The estimates for F1 strain were 13.7 ± 14.3 fish/km (22 ± 23 fish/mile) or an estimated 32.3 ± 33.4 fish in the sampling reach. The average total length for CRR fish was 24.8 cm, and 28.3 cm for the F1 fish.

All of the pure CRR fish were found to be infected, with an average spore count of 124,603 (SD= 129,406). Only six of the 10 F1 fish were found to be infected, with an average spore count of 4,055 (SD = 8,336). Proc GLM in SAS system software was used to test for differences in myxospore counts between strains, which resulted in highly significant differences ($F_{[1,16]}$=8.88, P = 0.0094).

2005-2006

The population estimate conducted in 2006 resulted in an estimate with 95% CI of 1.24 fish ± 0.0 fish/km (2 ± 0 fish/mile) of the pure CRR strain remaining from the 2004 plant. Similarly small numbers of the F1 strain were found from the 2004 plant, with an average of 1.86 ± 1.2 fish/km (3 ± 2 fish/mile).

The loss of marks (regeneration of fin clips or poor marking) in fish stocked in 2005 resulted in a difficult evaluation of their survival. AFLP results correctly identified the one fish collected with a good pelvic fin clip as pure CRR fish (Table 4.1). The fish collected with good adipose clips were also correctly identified as GR-CRR crosses. Of the 10 fish with no marks from the 2005 plant that were collected and evaluated with AFLP, six were identified as pure CRR, and four were identified as GR-CRR crosses. Applying the 60:40 ratio to all of the fish captured in the size class of fish 170 to 280 mm that did not have visible marks (in addition to the estimate for the fish that actually retained their marks) resulted in a total estimate of 32.9 fish/km (53 fish/mile) of the pure CRR strain and 21.8 fish/km (35 fish/mile) of the B2 strain, originating from the 2005 plant.

An average of 83,929 myxospores (SD = 149,719) was found in the pure CRR fish planted in 2005, including the fish identified as such by AFLP analysis. The average myxospore count among B2 fish, including those identified as GR-CRR crosses by AFLP, was 40,480 (SD = 48,121).

SAMPLE	FIN CLIP	SPORE COUNT	STRAIN	AFLP CLASS
1	Age 2+ fish	DNA sample only	Unknown	CRR
2	Pelvic	368,667	CRR	CRR
3	Adipose	58,372	B2	B2
4	Adipose	15,361	B2	B2
5	Adipose	52,228	B2	F2
6	Adipose	0	B2	B2
7	Adipose	175,117	B2	B2
8	Adipose	36,867	B2	F2
9	Adipose	0	B2	B2
10	Adipose	82,950	B2	B2
11	Adipose	0	B2	B2
12	Adipose	76,806	B2	F2
13	None	218,833	Unknown	CRR
14	None	0	Unknown	CRR
15	None	0	Unknown	CRR
16	None	21,883	Unknown	B2
17	None	0	Unknown	CRR
18	None	0	Unknown	CRR
19	None	35,350	Unknown	B2
20	None	11,783	Unknown	B2
21	None	0	Unknown	B2
22	None	0	Unknown	CRR

Table 5.1. Myxospore counts and classification of age 1+ and 2+ rainbow trout based on fin clips and AFLP analysis in the Gunnison River, 2006.

2006-2007

Fry shocking events revealed that rainbow trout fry in the Smith Fork reach of the Gunnison River were much larger on average in 2007 than in previous years (Figure 5.1). Samples collected for AFLP analysis produced a wide variety of results, depending on the location and date of collection. Individual rainbow trout fry collect in June, 2007 at or downstream of Ute Park ranged from 3% to 31% GR genetic markers. Individual rainbow trout fry collected in August, 2007 near Ute Park ranged from 0% to 19% GR genetic markers. Samples collected in August and October, 2007 in the Smith Fork reach ranged from 0% to 27% GR markers. Thirty age 1+ rainbow trout that were collected in October, 2007 from the Ute Park section ranged from 0% to 2% GR markers. These results show that while no reproduction from the GR-variety fish occurred in the spring of 2006, offspring were produced in spring of 2007, and were still present by October of that year. AFLP analysis on age-1 rainbow trout in 2008 will determine if any of those offspring survived through their first year. Additional sampling for offspring in the fall of 2008 will provide more information as to the reproductive success of the GR-variety rainbow trout.

The rainbow trout population estimate conducted in October, 2007, with 95% CI (fish 150 mm or larger) was 135 ± 63.75 fish/km (217.4 ± 102.6 fish/mile). Once again, poor tag retention and low numbers of marked fish made estimating numbers of stocked fish of each strain difficult and potentially misleading. As a result, only numbers of marked fish caught are reported here, rather than population estimates. Numbers of fish collected with known marks are shown in Figure 5.3. Of the 144 age 1+ rainbow trout sampled, only 16 (11.1%) were identified as GR-cross fish (9 adipose-clipped and 7 red-eye marks), and three (2.1%) were identified as pure CRR fish (green-eye marks) from the previous plants. Rainbow trout population estimates for fall, 2008, should be much more informative, as larger numbers of fish and coded wire tags were used for the November, 2007 stocking event.

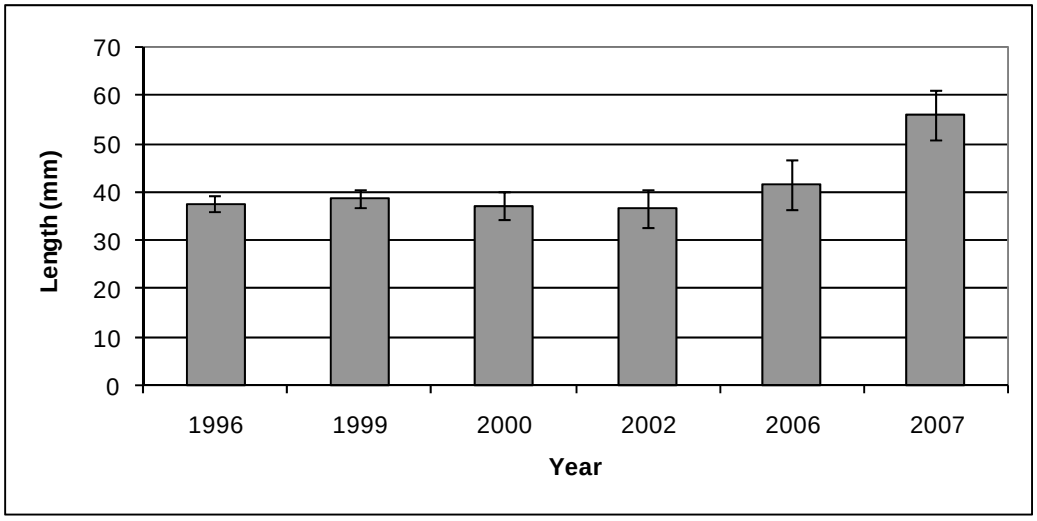


Figure 5.1. Average length of rainbow trout fry collected during August fry shocking events at the Smith Fork Site, Gunnison River from 1996 through 2007.

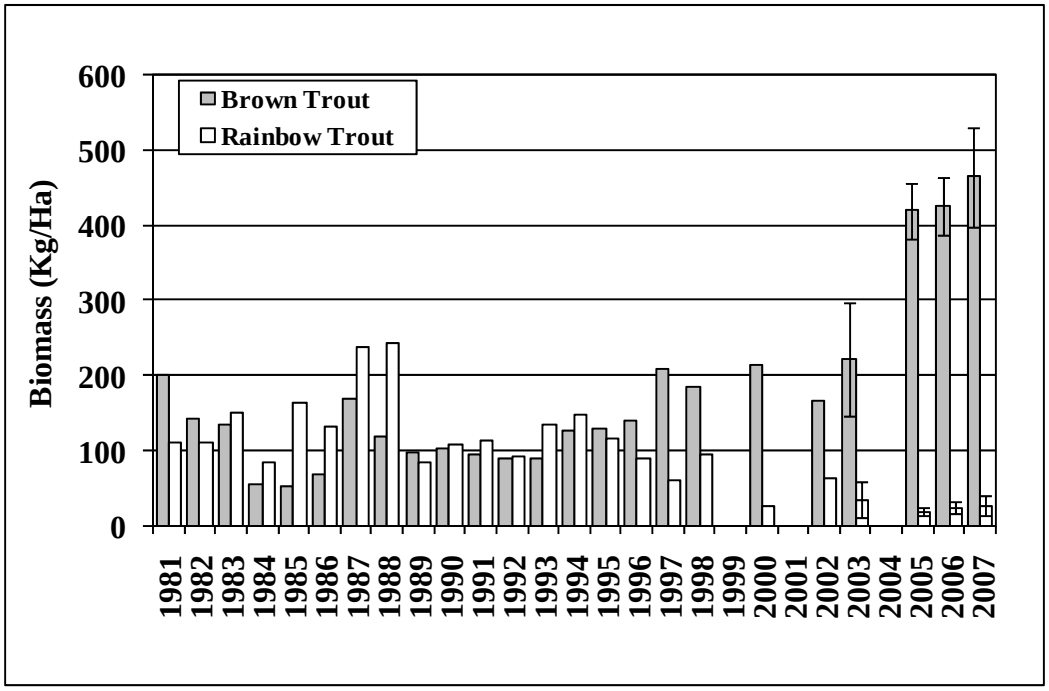


Figure 5.2. Rainbow and brown trout biomass estimates for the Gunnison River, Ute Park section, from 1981 through 2007.

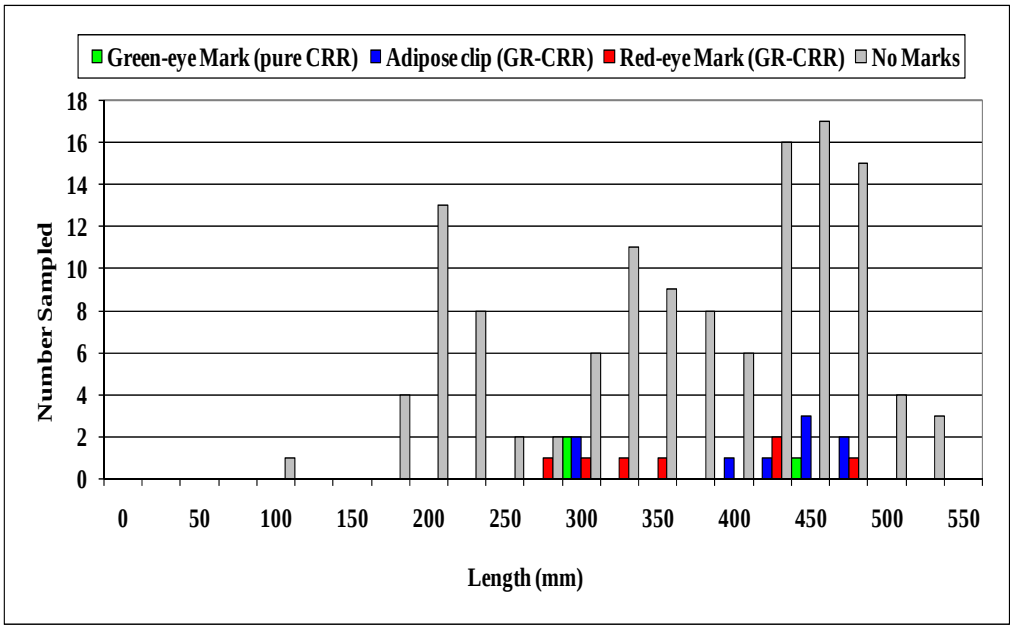


Figure 5.3. Length-frequency of rainbow trout caught, with and without marks, in the Ute Park section of the Gunnison River, October, 2007.

Description	Date	Samples	Location	Pisces sample	qCRR	qGR	qGR low	qGR high
Ute Park Fingerlings	6/15/2007	14	UUP 1-14	73401-73414	0.89	0.11	0.06	0.23
Ute Park Fingerlings	6/15/2007	6	UUP 15-20	73498-73503	0.88	0.12	0.05	0.23
Ute Park Fingerlings (Bobcat)	8/29/2007	5	B1-5	76027-76031	0.92	0.08	0.05	0.19
Ute Park Fingerlings (Chukar)	8/29/2007	10	C1-10	76032-76041	0.96	0.04	0.01	0.18
Ute Park Fingerlings (Ute Park)	8/29/2007	25	U 1-25	75143-75167	0.99	0.01	0.00	0.02
Ute Park Fingerlings (Ute Park)	8/29/2007	5	U 26-30	76042-76046	0.99	0.01	0.01	0.01
Ute Park Unmarked Age 1+	10/19/2007	30	Buttermilk	78170-78199	0.99	0.01	0.00	0.02
Below Ute Park Fingerlings	6/15/2007	11	BUP 1-11	73415-73425	0.89	0.11	0.03	0.31
Smith Fork Samples	8/29/2007	10	SF1	75168-75177	0.99	0.01	0.00	0.02
Smith Fork Samples	8/29/2007	8	SF2	75142, 75178-75184	0.98	0.02	0.01	0.07
Smith Fork Samples	8/29/2007	3	SF3	75139-75141	0.76	0.24	0.19	0.27
Smith Fork Samples	8/29/2007	12	SF4	75128-75138, 75210	0.87	0.13	0.05	0.24
Smith Fork Samples	10/23/2007	28	SF 1-28	78200-78227	0.90	0.10	0.04	0.25

Table 5.2. AFLP results for fry samples collected in the Gunnison River, 2007. The designations "qCRR" and "qGR" refer to the proportions of genetic markers associated with Colorado River rainbow or GR strain rainbow in the sample collections. The "qGR low" and "qGR high" designations refer to the lowest and highest proportions of GR-strain markers identified in individual fish from those sample groups.

Upper Colorado River

2006

The standard two-pass removal population estimate was conducted in November at the Chimney Rock station resulted in capture of eighty-three fish from the June, 2006, stocking event. The fish had grown an average of 5.1 cm (2.0 inches). The effort resulted in an estimate of 272 fish per km (438 fish per mile) of the planted F1 fish, which was quite good compared with previous stocking events using smaller 12.7 cm (5-inch) fish in the Gunnison River.

2007

Because of the large numbers of brown trout in the section coupled with time and personnel constraints, only one pass was completed during the November 3, 2007 sampling event. As a result, only minimum numbers of fish could be calculated, rather than an actual two-pass population estimate. Twenty-five marked F1 variety rainbow trout were found. Of these, 12 retained their original tags, and 13 were identified by their adipose clip. The fish had grown an average of 5.3 cm (2.1 inches) since the previous year.

2008

The spring 2008 sampling event was very successful, with good estimates of brown trout, Colorado River rainbow trout, and stocked F1 strain rainbow trout calculated for the section (Figure 5.4). Brown trout, which have increased dramatically in the river with the decline in rainbow trout numbers, were present in the reach at a density of 1,307.5 fish per kilometer (2,092 fish per mile). Colorado River rainbow trout (residual wild fish and fish present due to repeated stocking of Colorado River rainbow fingerlings) were estimated to exist at a density of 109.4 fish per kilometer (175 fish per mile). The F1 rainbow trout from the 2006 plant were present at a density of 92.5 fish per kilometer (148 fish per mile). They had not grown in length measurably over the winter, averaging 34.3 cm (13.5 inches) and ranging from 30.0 cm to 40.9 cm (11.8 to 16.1 inches). However, they were on average 38.5 g heavier than during the previous November (Figure 5.5).

Of the 257 F1 fish examined, 32 (12.5 %) were found to be sexually mature. Of these, nine were females and 23 were males. The relatively high proportion of surviving F1 fish and onset of sexual maturity of many of these fish is very encouraging. Typically, rainbow trout become sexually mature at age two or three under hatchery conditions, and later in natural environments. The identification of sexually mature rainbow trout from the 2006 stocking event is favorable with respect to reestablishing a wild rainbow trout population. Offspring from these spawning fish could be present in the river during sampling events in the summer and fall of 2008. Laboratory experiments have demonstrated that offspring of these F1 fish have the potential to be highly resistant to *M. cerebralis*, and may survive exposure to the parasite. If this occurs, these surviving fish would represent the first natural recruitment in the river for over a decade. Larger numbers of maturing fish are expected to be found in spring of 2009. Further monitoring

and evaluation of the marked fish and any new reproduction in the upper Colorado River is necessary to determine if the strategy of using F1 fish will be successful in returning natural recruitment to locations where wild rainbow trout populations have been lost due to *M. cerebralis*.

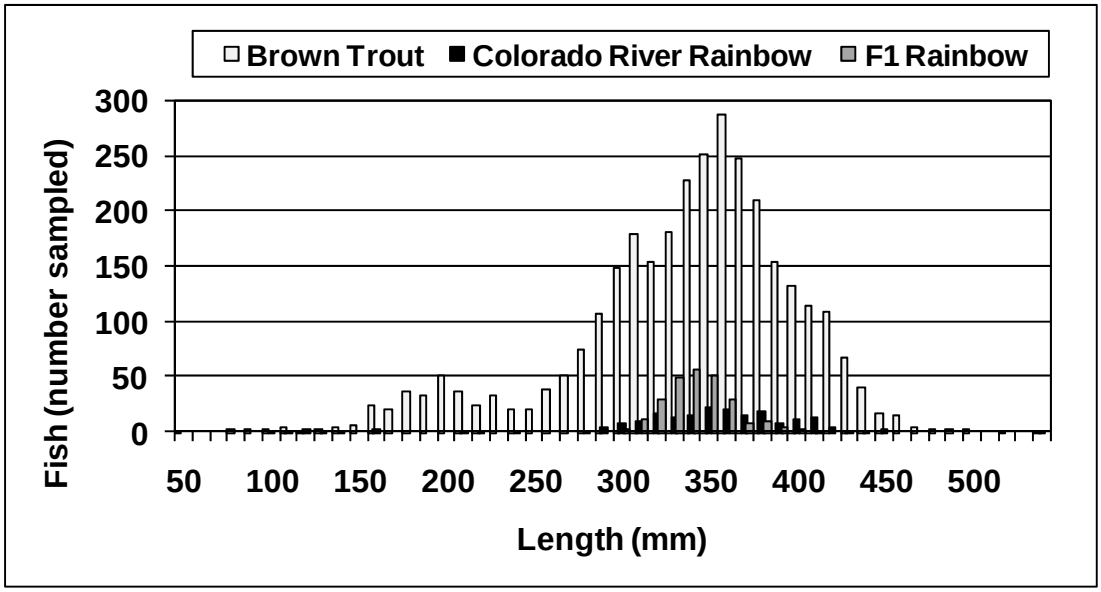


Figure 5.4. Length-frequency distribution for brown trout, Colorado River rainbow trout, and F1 (resistant strain) rainbow trout in the upper Colorado River from the Hitchin' Post Bridge, downstream to the Sheriff Ranch.

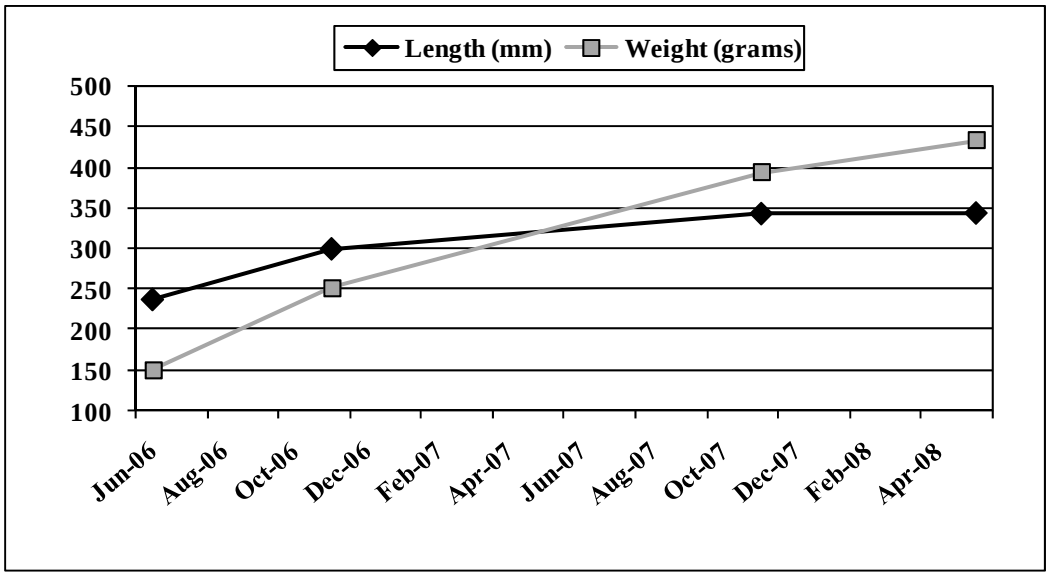


Figure 5.5. Average length and weight of F1 (resistant strain) rainbow trout in the upper Colorado River from June 6, 2006 through May 6, 2008.

DISCUSSION

These results are encouraging, and demonstrate that the F1 generation fish can survive at least as well as the pure CRR rainbow trout when planted as fingerlings. It also demonstrates that the myxospore counts produced after stocking are much lower in the F1 fish than in the pure CRR rainbow trout.

High densities of brown trout continue to contribute to the poor survival of the stocked rainbow trout in the Gunnison River, and poor mark retention has caused problems with producing reliable estimates of survival. However, reproduction from the GR-variety fish has been confirmed in several locations at and downstream of the stocking sites. These results are extremely promising, and could lead to re-establishment of a wild rainbow trout population in the Gunnison River despite the presence *M. cerebralis*. Evaluations of the 2004 through 2007 plants will continue over the next several years, and genetic markers will be used to test surviving fingerlings to identify any rainbow offspring with GR origins. The myxospore counts in B2 fish released into the wild were similar to the results found in the laboratory experiments. It is unfortunate, but not unexpected, that fish with higher proportion of CRR to GR strain genetic background would be less resistant to infection from the parasite. This reinforces the notion that allowing natural selection of the resistant offspring of the F1 generation fish in the wild may be a more effective method to producing sufficient resistance and wild behaviors than creating these subsequent crosses artificially. These results are consistent with the laboratory studies and predator-avoidance trials described in Job 1.

The high survival and good post-stocking growth of the F1 fish stocked as catchable-sized fish in the upper Colorado River is particularly encouraging, as it is quite possible that these fish are capable of surviving and reproducing in large numbers when they reach sexual maturity. These results also demonstrate that stocking larger fish increases survival in the presence of predatory brown trout. Additional evaluations are planned for the upper Colorado River using marked fish. Fry evaluations with the AFLP technique will also be initiated on a large scale in 2008 to determine if the F1 strain fish are reproducing in this location.

The resistant strain evaluations are still in the early stages with regard to re-establishment of wild rainbow trout populations. Work conducted in the next several years will be very important to determine which combinations of the GR and wild strains are effective for establishing self-sustaining rainbow trout populations. Improved marking techniques, especially the use of coded wire tags in locations like the Gunnison River, should provide much better comparisons and estimates of survival in the future.

REFERENCES

Nehring, R. B. 2006. Colorado's cold water fisheries: Whirling disease case histories and insights for risk management. Special Report No. 79. Colorado Division of Wildlife Aquatic Wildlife Research. February 2006, 46 pp.

Job No. 5: Technical Assistance

Job Objective: Provide information on impacts of fish disease on wild trout populations to fisheries managers and hatchery personnel of the Colorado Division of Wildlife and other resource agencies. Provide specialized information or assistance to the Hatchery Section. Contribute editorial assistance to various professional journals and other organizations upon request.

Technical Assistance Milestones

The work described in this Federal Aid Project is closely associated with work conducted by Ron Hedrick, Bernie May, and Melinda Baerwald at the University of California-Davis to identify markers for WD resistance in select families of fish. The Colorado Division of Wildlife continues to work with these individuals, as well as with other agencies, such as the Utah Department of Natural Resources, the California Department of Fish and Game and the Montana Department of Fish, Wildlife, and Parks, to enhance and accelerate research on rainbow trout strains.

Major contributions in the area of technical assistance included various public and professional meeting presentations, including the following:

1) Schisler, G. J. 2007. Resistant rainbow trout brood stock development for fisheries management in Colorado. Trout Unlimited-Cherry Creek Anglers, July 21, 2007. Parvin Lake Research Station. Red Feather Lakes, CO.
2) Schisler, G. J. 2007. Resistant rainbow trout brood stock development for fisheries management in Colorado. Colorado State University Student Chapter of the American Fisheries Society. October 17, 2007. Fort Collins, CO.
3) Schisler, G. J. 2008. Resistant rainbow trout brood stock development for fisheries management in Colorado. American Fly Fishing Trade Association meeting. January 4, 2008. Denver, CO.
4) Schisler, G. J. 2007. Resistant rainbow trout brood stock development for fisheries management in Colorado. Colorado Aquaculture Association Meeting. January 18, 2008. Mt. Princeton, CO.
5) Schisler, G. J., K. B. Rogers, and R. P. Hedrick. 2008. Early development of mountain whitefish (*Prosopium williamsoni*) and effects of *Myxobolus cerebralis* exposure. 14th Annual Whirling Disease Symposium: Solving the Puzzle, Denver, Colorado, February 4-5, 2008**.**
6) Kowalski, D. A, R. B. Nehring, and G. J. Schisler. 2008. Preliminary results on the introduction of *Myxobolus cerebralis* resistant rainbow trout in the Gunnison River, Colorado. 14th Annual Whirling Disease Symposium: Solving the Puzzle. February 4-5, 2008**,** Denver, CO.

7) Fetherman, E. F., D. L. Winkelman, and G. J. Schisler. 2008. The physiological effects of whirling disease in resistant and susceptible crosses of rainbow trout. 14th Annual Whirling Disease Symposium: Solving the Puzzle. February 4-5, 2008**,** Denver, CO.
8) Fetherman, E. F., D. L. Winkelman, and G. J. Schisler. 2008. The physiological effects of whirling disease in resistant and susceptible crosses of rainbow trout. Colorado-Wyoming Annual American Fisheries Society meeting, March 3-7, 2008 Cheyenne, WY.
9) Fetherman, E. F., D. L. Winkelman, and G. J. Schisler. 2008. The physiological effects of whirling disease in resistant and susceptible crosses of rainbow trout. Western Division Annual American Fisheries Society meeting, May 4-9, 2008 Portland, OR.
10) Bartholomew, J., G. Schisler, R. B. Nehring, R. Hedrick, and M. El-Matbouli. 2008. Fisheries management approaches for control of *Myxobolus cerebralis:* resistant rainbow trout and worms. Western Division Annual American Fisheries Society meeting, May 4-9, 2008 Portland, OR.

This Federal Aid project has generated considerable public interest. Interviews and materials for popular articles were provided for several periodicals including Sports Afield, North American Fisherman Magazine, and American Angler Magazine. Additional media interviews and popular articles have been published in the Denver Post, Rocky Mountain News, Fort Collins Coloradoan, Vail Daily News, Summit Daily News, Glenwood Springs Post-Independent, Pueblo Chieftain, and many other newspapers. A full–feature article appeared in Headwaters Magazine. The project was also mentioned on CBS News 4 television and Denver 9 News.

Creel Survey Computer Program

Development of a new Creel Survey Computer Program (C-SAP) was included as part of the technical assistance portion of this Federal Aid project. The original C-SAP program was last updated in February of 1990. The software has become increasingly difficult to run on newer computers. The data entry portion of the program was problematic and interpretation of the reports was complicated. Accurate creel information and efficient data entry were necessary for this particular project and the Colorado Division of Wildlife as a whole would benefit from an updated format of the program. As a result, efforts were initiated to create a Windows-based version of the original C-SAP program. All estimates used in the programming of the new C-SAP program are the same as in the prior version. The new version, written in the Microsoft .NET platform, was released in several different early versions. Data entered in the fall of 2006 into the program was run, for the purposes of the 2007 report, in the release dated June 26, 2007.

Because of the extensive re-write, a variety of problems with the original code were identified. Additional functions were added to the program in 2007-2008, including the capability to run estimates for fish of the same species with different marks. This

allows the user to make direct estimates of fish with different marks, rather than extrapolating from overall species estimates.

The data collected in 2006 were run again, along with the data collected in 2007, in the most recent version, dated August 7, 2008. Options chosen for the output included selection of all available species, selection of "Statistical Method 1" and de-selection of the finite population correction factor. Report results for Flatiron Reservoir (water code 54851) and Pinewood Reservoir (water code 55928) are attached as Appendix II for both 2006 and 2007. In addition, a draft user's manual was written to help those running the new versions of the program navigate the menus and produce valid reports (Appendix III).

APPENDIX I.

Ancillary Data for Whirling Disease Resistance Laboratory Experiments: 2006-2008

Table A1.1. Family groups created for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2006-2007.

Group	Strain	Male	Female	Male Origin	Female Origin	Spawn Date	Location of Eggs	Status	Hatched	Dosed	Number	Degree Days	Tank
RH15	B2 (CRR♂ x F1♀)	M15	F3 - 133653755A	GWSH	Group 35	12/12/2006	Research	Original	1/9/2007	3/21/2007	25	629.30	40
RH16	B2 (CRR♂ x F1♀)	M17	F10 - 133957222A	GWSH	Group 11	12/12/2006	Research	Original	1/9/2007	3/13/2007	25	661.50	63
RH17	B2 (CRR♂ x F1♀)	M18	F11 - 133661673A	GWSH	Group 25	12/12/2006	Research	Original	1/9/2007	3/21/2007	25	629.30	3
RH18	B2 (CRR♂ x F1♀)	M19	F12 - 134919273A	GWSH	Group 36	12/12/2006	Research	Original	1/9/2007	3/21/2007	25	629.30	16
RH19	B2 (CRR♂ x F1♀)	M20	F4 - 134836296A	GWSH	Group 36	12/12/2006	Research	Original	Dead as eggs				
RH20	B2 (CRR♂ x F1♀)	M21	F2 - 134521446A	GWSH	Group 11	12/12/2006	Research	Original	1/9/2007	3/13/2007	25	661.50	55
RH37	B2 (CRR♂ x F1♀)	M37	F29 - 133662650A	GWSH	Group 31	12/28/2006	Research	Original	1/27/2007	4/3/2007	25	718.00	66
RH39	B2 (CRR♂ x F1♀)	M38	F30 - 133723393A	GWSH	Group 1	12/28/2006	Research	Original	1/27/2007	4/6/2007	25	677.90	30
RH41	B2 (CRR♂ x F1♀)	M39	F31 - 134546717A	GWSH	Group 31	12/28/2006	Research	Original	1/27/2007	4/6/2007	25	677.90	32
RH43	B2 (CRR♂ x F1♀)	M40	F32 - 134519513A	GWSH	Group 1	12/28/2006	Research	Original	1/27/2007	4/6/2007	25	677.90	41
RH48	B2 (CRR♂ x F1♀)	M48	F36 - 134616152A	GWSH	Group 27	1/11/2007	Research	Replaced RH19	2/8/2007	4/13/2007	25	668.3	68
QT71	B2 (F1♂ x CRR♀)	M31 - 133752472A	F53	Group 43	GWSH	1/17/2007	Quonset	Original	3/6/2007	5/4/2007	25	616.20	71
QT72	B2 (F1♂ x CRR♀)	M45 - 135126471A	F54	Group 1	GWSH	1/17/2007	Quonset	Original	3/13/2007	5/25/2007	25	716.80	8
QT73	B2 (F1♂ x CRR♀)	M13 - 133648333A	F49	Group 35	GWSH	1/17/2007	Quonset	Original	3/6/2007	5/4/2007	25	616.20	76
QT74	B2 (F1♂ x CRR♀)	M1 - 133874590A	F48	Group 30	GWSH	1/17/2007	Quonset	Original	3/15/2007	5/29/2007	25	754.20	35
QT75	B2 (F1♂ x CRR♀)	M3 - 134567394A	F52	Group 35	GWSH	1/17/2007	Quonset	Original	3/6/2007	5/4/2007	25	616.20	74
QT76	B2 (F1♂ x CRR♀)	M43 - 134746323A	F50	Group 11	GWSH	1/17/2007	Quonset	Original	3/13/2007	5/25/2007	25	716.80	36
QT77	B2 (F1♂ x CRR♀)	M42 - 134961377A	F47	Group 30	GWSH	1/17/2007	Quonset	Original	3/7/2007	5/8/2007	25	646.70	79
QT78	B2 (F1♂ x CRR♀)	M5 - 133669695A	F45	Group 11	GWSH	1/17/2007	Quonset	Original	3/5/2007	5/4/2007	25	626.50	57
QT79	B2 (F1♂ x CRR♀)	M41 - 134936464A	F46	Group 30	GWSH	1/17/2007	Quonset	Original	3/6/2007	5/4/2007	25	616.20	69
QT80	B2 (F1♂ x CRR♀)	M14 - 134921616A	F44	Group 32	GWSH	1/17/2007	Quonset	Original	3/14/2007	5/29/2007	25	762.70	31
RH101	B2 (F1♂ x CRR♀)	M41 - 134936464	F63	Group 30	GWSH	1/30/2007	Research	Extras	Not Needed				
RH102	B2 (F1♂ x CRR♀)	M43 - 134746323	F61	Group 11	GWSH	1/30/2007	Research	Extras	Not Needed				
RH103	B2 (F1♂ x CRR♀)	M3 - 134567394	F62	Group 35	GWSH	1/30/2007	Research	Extras	Not Needed				
QT61	CRR	M54	F44	GWSH	GWSH	1/17/2007	Quonset	Original	3/14/2007	5/29/2007	25	762.70	28
QT62	CRR	M55	F45	GWSH	GWSH	1/17/2007	Quonset	Original	3/7/2007	5/8/2007	25	646.70	78
QT63	CRR	M56	F46	GWSH	GWSH	1/17/2007	Quonset	Original	3/14/2007	5/29/2007	25	762.70	27
QT64	CRR	M57	F47	GWSH	GWSH	1/17/2007	Quonset	Original	3/17/2007	5/29/2007	25	736.70	47

Table A1.1 (continued). Family groups created for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2006-2007.

Group	Strain	Male	Female	Male Origin	Female Origin	Spawn Date	Location of Eggs	Status	Hatched	Dosed	Number	Degree Days	Tank
QT65	CRR	M58	F48	GWSH	GWSH	1/17/2007	Quonset	Original	3/13/2007	5/25/2007	25	716.80	15
QT66	CRR	M59	F49	GWSH	GWSH	1/17/2007	Quonset	Original	3/12/2007	5/25/2007	25	725.20	39
QT67	CRR	M60	F50	GWSH	GWSH	1/17/2007	Quonset	Original	3/5/2007	5/4/2007	25	626.50	79
QT68	CRR	M61	F51	GWSH	GWSH	1/17/2007	Quonset	Original	3/5/2007	5/4/2007	25	626.50	80
QT69	CRR	M62	F52	GWSH	GWSH	1/17/2007	Quonset	Original	3/5/2007	5/4/2007	25	626.50	56
QT70	CRR	M63	F53	GWSH	GWSH	1/17/2007	Quonset	Original	3/10/2007	5/25/2007	25	742.30	5
RH85	CRR	M64	F56	GWSH	GWSH	1/30/2007	Research	Extras	Not Needed				
RH86	CRR	M65	F57	GWSH	GWSH	1/30/2007	Research	Extras	Not Needed				
RH87	CRR	M66	F58	GWSH	GWSH	1/30/2007	Research	Extras	Not Needed				
RH21	F1 (CRR♂ x GR♀)	M22	F13	GWSH	BFRH - RW9	12/12/2006	Research	Original	1/9/2007	3/21/2007	25	629.30	13
RH22	F1 (CRR♂ x GR♀)	M23	F14	GWSH	BFRH - RW9	12/12/2006	Research	Original	Dead as eggs				
RH23	F1 (CRR♂ x GR♀)	M24	F15	GWSH	BFRH - RW9	12/12/2006	Research	Original	Dead as eggs				
RH24	F1 (CRR♂ x GR♀)	M25	F16	GWSH	BFRH - RW9	12/12/2006	Research	Original	1/9/2007	3/21/2007	25	629.30	33
RH25	F1 (CRR♂ x GR♀)	M26	F17	GWSH	BFRH - RW9	12/12/2006	Research	Original	1/9/2007	3/13/2007	25	661.50	61
RH26	F1 (CRR♂ x GR♀)	M29	F18	GWSH	BFRH - RW9	12/12/2006	Research	Original	1/9/2007	3/13/2007	25	661.50	54
RH27	F1 (CRR♂ x GR♀)	M30	F19	GWSH	BFRH - RW9	12/12/2006	Research	Original	1/9/2007	3/21/2007	25	629.30	2
RH28	F1 (CRR♂ x GR♀)	M31	F20	GWSH	BFRH - RW9	12/12/2006	Research	Original	1/9/2007	3/21/2007	25	629.30	48
RH29	F1 (CRR♂ x GR♀)	M33	F21	GWSH	BFRH - RW9	12/12/2006	Research	Original	Dead as eggs				
RH30	F1 (CRR♂ x GR♀)	M34	F22	GWSH	BFRH - RW9	12/12/2006	Research	Original	1/9/2007	3/21/2007	25	629.30	37
RH56	F1 (CRR♂ x GR♀)	M49	F39	GWSH	BFRH - RW9	1/11/2007	Research	Replaced RH22	2/12/2007	4/27/2007	25	691.20	11
RH57	F1 (CRR♂ x GR♀)	M50	F40	GWSH	BFRH - RW9	1/11/2007	Research	Extras	Not Needed				
RH58	F1 (CRR♂ x GR♀)	M51	F41	GWSH	BFRH - RW9	1/11/2007	Research	Replaced RH23	2/8/2007	4/24/2007	25	697.10	14
RH59	F1 (CRR♂ x GR♀)	M52	F42	GWSH	BFRH - RW9	1/11/2007	Research	Extras	Dead as eggs				
RH60	F1 (CRR♂ x GR♀)	M53	F43	GWSH	BFRH - RW9	1/11/2007	Research	Replaced RH29	2/8/2007	4/24/2007	25	697.10	25
RH100	F1 (GR♂ x CRR♀)	M79	F70	BFRH - RW6	GWSH	1/30/2007	Research	Replaced RH93	2/27/2007	5/1/2007	25	679.30	52
RH88	F1 (GR♂ x CRR♀)	M67	F58	BFRH - RW6	GWSH	1/30/2007	Research	Original	2/26/2007	5/11/2007	25	734.20	9
RH89	F1 (GR♂ x CRR♀)	M68	F59	BFRH - RW6	GWSH	1/30/2007	Research	Original	Dead as eggs				
RH90	F1 (GR♂ x CRR♀)	M69	F59	BFRH - RW6	GWSH	1/30/2007	Research	Original	Dead as eggs				

Table A1.1 (continued). Family groups created for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2006-2007.

Group	Strain	Male	Female	Male Origin	Female Origin	Spawn Date	Location of Eggs	Status	Hatched	Dosed	Number	Degree Days	Tank
RH91	F1 (GR♂ x CRR♀)	M70	F61	BFRH - RW6	GWSH	1/30/2007	Research	Original	2/27/2007	5/11/2007	25	722.80	20
RH92	F1 (GR♂ x CRR♀)	M71	F62	BFRH - RW6	GWSH	1/30/2007	Research	Original	2/27/2007	5/1/2007	25	679.30	62
RH93	F1 (GR♂ x CRR♀)	M72	F63	BFRH - RW6	GWSH	1/30/2007	Research	Original	Dead as eggs				
RH94	F1 (GR♂ x CRR♀)	M73	F64	BFRH - RW6	GWSH	1/30/2007	Research	Original	2/27/2007	5/11/2007	25	722.80	38
RH95	F1 (GR♂ x CRR♀)	M74	F65	BFRH - RW6	GWSH	1/30/2007	Research	Original	2/27/2007	5/11/2007	25	722.80	34
RH96	F1 (GR♂ x CRR♀)	M75	F66	BFRH - RW6	GWSH	1/30/2007	Research	Original	2/27/2007	5/1/2007	25	679.30	73
RH97	F1 (GR♂ x CRR♀)	M76	F67	BFRH - RW6	GWSH	1/30/2007	Research	Original	2/27/2007	5/11/2007	25	722.80	44
RH98	F1 (GR♂ x CRR♀)	M77	F68	BFRH - RW6	GWSH	1/30/2007	Research	Replaced RH89	2/27/2007	5/1/2007	25	679.30	64
RH99	F1 (GR♂ x CRR♀)	M78	F69	BFRH - RW6	GWSH	1/30/2007	Research	Replaced RH90	2/27/2007	5/11/2007	25	722.80	17
RH2	F1 x B2	M2 - 146147570A	F2 - 134521446A	Group 14	Group 11	11/28/2006	Research	Extras	Not Needed				
RH4	F1 x B2	M4 - 146216311A	F3 - 133653755A	Group 20	Group 35	11/28/2006	Research	Extras	Not Needed				
RH7	F1 x B2	M7 - 146217514A	F4 - 1348362296A	Group 29	Group 36	11/28/2006	Research	Extras	Not Needed				
RH1	F2	M1 - 133874590A	F1 - 133735465A	Group 30	Group 25	11/21/2006	Research	Original	12/19/2006	2/15/2007	25	640.40	49
RH13	F2	M13 - 133648333A	F10 - 133957222A	Group 35	Group 11	12/6/2006	Research	Original	1/3/2007	3/6/2007	25	670.50	65
RH14	F2	M14 - 134921616A	F11 - 133661673A	Group 32	Group 25	12/6/2006	Research	Original	1/3/2007	3/6/2007	24	670.50	67
RH3	F2	M3 - 134567394A	F2 - 134521446A	Group 35	Group 11	11/28/2006	Research	Original	12/27/2006	3/6/2007	26	640.40	7
RH38	F2	M41 - 134936464A	F29 - 133662650A	Group 30	Group 31	12/28/2006	Research	Original	2/3/2007	4/24/2007	25	707.80	46
RH40	F2	M42 - 134961377A	F30 - 133723393A	Group 30	Group 1	12/28/2006	Research	Original	2/5/2007	4/24/2007	25	692.60	12
RH42	F2	M43 - 134746323A	F31 - 134546717A	Group 11	Group 31	12/28/2006	Research	Original	1/30/2007	4/20/2007	25	700.30	6
RH44	F2	M44 - 134757611A	F32 - 134519513A	Group 36	Group 1	12/28/2006	Research	Original	1/27/2007	4/6/2007	25	677.90	41
RH45	F2	M45 - 135126471A	F33 - 134835230A	Group 1	Group 43	12/28/2006	Research	Original	2/3/2007	4/24/2007	25	707.80	21
RH46	F2	M46 - 133611735A	F34 - 133961091A	Group 1	Group 31	12/28/2006	Research	Original	1/29/2007	4/3/2007	25	662.30	77
RH47	F2	M47 - 133736183A	F35 - 134963295A	Group 36	Group 28	12/28/2006	Research	Original	Dead as eggs				
RH49	F2	M31 - 133752472A	F36 - 134616152A	Group 43	Group 27	1/11/2007	Research	Original	2/13/2007	4/17/2007	25	646.50	72
RH5	F2	M5 - 133669695A	F3 - 133653755A	Group 11	Group 35	11/28/2006	Research	Original	12/27/2006	3/6/2007	25	640.40	4
RH50	F2	M14 - 134921616A	F36 - 134616152A	Group 32	Group 27	1/11/2007	Research	Original	2/19/2007	5/8/2007	25	710.30	18
RH51	F2	M46 - 133611735A	F37 - 134511752A	Group 1	Group 30	1/11/2007	Research	Original	2/20/2007	5/8/2007	25	702.40	26
RH52	F2	M13 - 133648333A	F37 - 134511752A	Group 35	Group 30	1/11/2007	Research	Original	2/13/2007	4/17/2007	25	646.50	53

Table A1.1 (continued). Family groups created for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2006-2007.

Group	Strain	Male	Female	Male Origin	Female Origin	Spawn Date	Location of Eggs	Status	Hatched	Dosed	Number	Degree Days	Tank
RH53	F2	M3 - 134567394A	F37 - 134511752A	Group 35	Group 30	1/11/2007	Research	Original	2/18/2007	5/4/2007	25	679.20	1
RH54	F2	M44 - 134757611A	F38 - 134963512A	Group 36	Group 28	1/11/2007	Research	Original	2/25/2007	5/11/2007	25	692.60	43
RH55	F2	M54 - 133728447A	F38 - 134963512A	Group 27	Group 28	1/11/2007	Research	Original	2/22/2007	5/11/2007	25	715.70	29
RH6	F2	M6 - 134569186A	F4 - 134836296A	Group 28	Group 36	11/28/2006	Research	Original	12/27/2006	3/6/2007	25	640.40	42
RH81	F2	M46 - 133611735A	F54 - 134961627A	Group 1	Group 31	1/17/2007	Research	Replaced RH47	2/17/2007	4/20/2007	25	639.80	51
RH82	F2	M44 - 134757611A	F54 - 134961627A	Group 36	Group 31	1/17/2007	Research	Extras	Not Needed				
RH83	F2	M6 - 134569186A	F55 - 133668221A	Group 28	Group 43	1/17/2007	Research	Extras	Not Needed				
RH84	F2	M54 - 133728447A	F55 - 133668221A	Group 27	Group 43	1/17/2007	Research	Extras	Not Needed				
RH10	GR	M10	F7	BFRH - RW2	BFRH - RW6	11/29/2006	Research	Original	12/27/2006	3/6/2007	25	640.40	22
RH11	GR	M11	F8	BFRH - RW2	BFRH - RW6	11/29/2006	Research	Original	12/27/2006	2/23/2007	25	661.90	60
RH12	GR	M12	F9	BFRH - RW2	BFRH - RW6	11/29/2006	Research	Original	12/27/2006	3/6/2007	25	640.40	23
RH31	GR	M31	F23	BFRH - RW6	BFRH - RW9	12/13/2006	Research	Original	1/11/2007	3/13/2007	25	656.20	70
RH32	GR	M32	F24	BFRH - RW6	BFRH - RW9	12/13/2006	Research	Original	1/11/2007	3/13/2007	25	656.20	75
RH33	GR	M33	F25	BFRH - RW6	BFRH - RW9	12/13/2006	Research	Original	Dead as eggs				
RH34	GR	M34	F26	BFRH -RW6	BFRH - RW9	12/13/2006	Research	Original	1/10/2007	3/13/2007	25	668.20	50
RH35	GR	M35	F27	BFRH - RW6	BFRH - RW9	12/13/2006	Research	Original	1/11/2007	4/11/2007	24	797.8	19
RH36	GR	M36	F28	BFRH - RW6	BFRH - RW9	12/13/2006	Research	Replaced RH33	1/11/2007	4/11/2007	25	797.8	45
RH8	GR	M8	F5	BFRH - RW2	BFRH - RW6	11/29/2006	Research	Original	12/27/2006	2/23/2007	25	661.90	58
RH9	GR	M9	F6	BFRH - RW2	BFRH - RW6	11/29/2006	Research	Original	12/27/2006	3/6/2007	25	640.40	10

Table A1.2. Control groups separated from family groups created for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2006-2007.

Group	Strain	Male	Female	Male Origin	Female Origin	Spawn Date	Location of Eggs	Status	Hatched	Dosed	Number	Degree Days	Tank
RH8	GR	M8	F5	BFRH - RW2	BFRH - RW6	11/29/2006	Research	Original	12/27/2006	N/A	25	N/A	C1
RH11	GR	M11	F8	BFRH - RW2	BFRH - RW6	11/29/2006	Research	Original	12/27/2006	N/A	25	N/A	C14
RH34	GR	M34	F26	BFRH -RW6	BFRH - RW9	12/13/2006	Research	Original	1/10/2007	N/A	25	N/A	C4
RH36	GR	M36	F28	BFRH - RW6	BFRH - RW9	12/13/2006	Research	Replaced RH33	1/11/2007	N/A	25	N/A	C11
QT68	CRR	M61	F51	GWSH	GWSH	1/17/2007	Quonset	Original	3/5/2007	N/A	25	N/A	C15
QT62	CRR	M55	F45	GWSH	GWSH	1/17/2007	Quonset	Original	3/7/2007	N/A	25	N/A	C16
QT70	CRR	M63	F53	GWSH	GWSH	1/17/2007	Quonset	Original	3/10/2007	N/A	25	N/A	C10
QT63	CRR	M56	F46	GWSH	GWSH	1/17/2007	Quonset	Original	3/14/2007	N/A	25	N/A	C7
RH27	F1 (CRR♂ x GR♀)	M30	F19	GWSH	BFRH - RW9	12/12/2006	Research	Original	1/9/2007	N/A	25	N/A	C19
RH30	F1 (CRR♂ x GR♀)	M34	F22	GWSH	BFRH - RW9	12/12/2006	Research	Original	1/9/2007	N/A	25	N/A	C20
RH92	F1 (GR♂ x CRR♀)	M71	F62	BFRH - RW6	GWSH	1/30/2007	Research	Original	2/27/2007	N/A	25	N/A	C17
RH97	F1 (GR♂ x CRR♀)	M76	F67	BFRH - RW6	GWSH	1/30/2007	Research	Original	2/27/2007	N/A	25	N/A	C2
RH1	F2	M1 - 133874590A	F1 - 133735465A	Group 30	Group 25	11/21/2006	Research	Original	12/19/2006	N/A	25	N/A	C9
RH5	F2	M5 - 133669695A	F3 - 133653755A	Group 11	Group 35	11/28/2006	Research	Original	12/27/2006	N/A	25	N/A	C13
RH3	F2	M3 - 134567394A	F2 - 134521446A	Group 35	Group 11	11/28/2006	Research	Original	12/27/2006	N/A	26	N/A	C3
RH14	F2	M14 - 134921616A	F11 - 133661673A	Group 32	Group 25	12/6/2006	Research	Original	1/3/2007	N/A	25	N/A	C6
QT78	B2 (F1♂ x CRR♀)	M5 - 133669695A	F45	Group 11	GWSH	1/17/2007	Quonset	Original	3/5/2007	N/A	25	N/A	C5
QT72	B2 (F1♂ x CRR♀)	M45 - 135126471A	F54	Group 1	GWSH	1/17/2007	Quonset	Original	3/13/2007	N/A	25	N/A	C8
RH16	B2 (CRR♂ x F1♀)	M17	F10 - 133957222A	GWSH	Group 11	12/12/2006	Research	Original	1/9/2007	N/A	25	N/A	C12
RH17	B2 (CRR♂ x F1♀)	M18	F11 - 133661673A	GWSH	Group 25	12/12/2006	Research	Original	1/9/2007	N/A	25	N/A	C18

Table A1.3. Raw data collected from individuals sacrificed for evaluation on October 24, 2007 in the *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Date	Tank #	Total Weight	No. Fish	Fish	Code on Bags/Tubes	Histo.	Spores	Color	Weight	SL	FL	TL	Sign	Cr	Sp	Xo	Lj	Op	Cl. Ped.	No Eye	BT	DD @ Kill
10/24/2007	C7	416	25	1	TC7-H1 and B1 and F1		x	R	10	8.7	9.5	10.1	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C7	416	25	2	TC7-H2 and B2 and F2		x	P	19	10.7	11.6	12.3	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C7	416	25	3	TC7-H3 and B3 and F3		x	G	18	10.4	11.2	11.8	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C7	416	25	4	TC7-H4 and B4 and F4		x	G/O	13	9.4	10.2	10.9	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C7	416	25	5	TC7-H5 and B5 and F5		x	O	25	11.2	12	12.6	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C7	416	25	6	TC7-H6 and B6 and F6		x	No	25	11.2	12	12.8	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C7	416	25	7	TC7-H7 and B7 and F7		x	No	10	8.8	9.1	9.6	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C7	416	25	8	TC7-H8 and B8 and F8		x	No	16	10.1	10.9	11.6	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C7	416	25	9	TC7-H9 and B9 and F9		x	No	13	9.5	10.3	10.9	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C7	416	25	10	TC7-H10 and B10 and F10		x	No	20	10.5	11.4	11.9	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C7	416	25	11	TC7-H11 and B11 and F11	x		No	14	9.6	10.3	11	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C7	416	25	12	TC7-H12 and B12 and F12	x		No	12	9.4	10.1	10.8	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C7	416	25	13	TC7-H13 and B13 and F13	x		No	21	11	11.8	12.1	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C7	416	25	14	TC7-H14 and B14 and F14	x		No	14	9.7	10.4	11	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C7	416	25	15	TC7-H15 and B15 and F15	x		No	13	9.1	9.9	10.5	0	0	0	0	0	0	0	0	0	2163.4
10/24/2007	C10	462	25	1	TC10-H1 and B1 and F1		x	G	33	13	14	14.8	1	1	0	0	0	0	0	0	0	2219.8
10/24/2007	C10	462	25	2	TC10-H2 and B2 and F2		x	O	9	8	8.7	9.4	1	0	1	0	0	0	0	0	0	2219.8
10/24/2007	C10	462	25	3	TC10-H3 and B3 and F3		x	G/O	23	11.3	12.2	12.9	1	1	0	0	0	0	0	0	0	2219.8
10/24/2007	C10	462	25	4	TC10-H4 and B4 and F4		x	R	29	12.4	13.3	14.1	1	1	0	0	0	0	0	0	0	2219.8
10/24/2007	C10	462	25	5	TC10-H5 and B5 and F5		x	P	23	11.6	12.5	13.3	1	1	0	0	0	0	0	0	0	2219.8
10/24/2007	C10	462	25	6	TC10-H6 and B6 and F6		x	No	25	11.8	12.7	13.4	0	0	0	0	0	0	0	0	0	2219.8
10/24/2007	C10	462	25	7	TC10-H7 and B7 and F7		x	No	12	9.1	9.9	10.5	0	0	0	0	0	0	0	0	0	2219.8
10/24/2007	C10	462	25	8	TC10-H8 and B8 and F8		x	No	18	10.4	11.3	12	1	0	1	0	0	0	0	0	0	2219.8
10/24/2007	C10	462	25	9	TC10-H9 and B9 and F9		x	No	20	10.7	11.5	12.2	0	0	0	0	0	0	0	0	0	2219.8
10/24/2007	C10	462	25	10	TC10-H10 and B10 and F10		x	No	23	11.1	12.1	12.8	0	0	0	0	0	0	0	0	0	2219.8
10/24/2007	C10	462	25	11	TC10-H11 and B11 and F11	x		No	24	11.6	12.4	13.1	0	0	0	0	0	0	0	0	0	2219.8
10/24/2007	C10	462	25	12	TC10-H12 and B12 and F12	x		No	12	9.1	9.9	10.5	0	0	0	0	0	0	0	0	0	2219.8
10/24/2007	C10	462	25	13	TC10-H13 and B13 and F13	x		No	16	9.8	10.7	11.3	0	0	0	0	0	0	0	0	0	2219.8

Table A1.3 (continued). Raw data collected from individuals sacrificed for evaluation on October 24, 2007 in the *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Date	Tank #	Total Weight	No. Fish	Fish	Code on Bags/Tubes	Histo.	Spores	Color	Weight	SL	FL	TL	Sign	Cr	Sp	Xo	Lj	Op	Cl. Ped.	No Eye	BT	DD @ Kill
10/24/2007	C10	462	25	14	TC10-H14 and B14 and F14	x		No	14	9.7	10.5	11.1	0	0	0	0	0	0	0	0	0	2219.8
10/24/2007	C10	462	25	15	TC10-H15 and B15 and F15	x		No	10	8.5	9.2	9.7	0	0	0	0	0	0	0	0	0	2219.8
10/24/2007	27	566	23	1	T27-H1 and B1 and F1		x	No	28	11.9	12.7	13.4	1	1	1	0	0	1	0	0	1	2206.8
10/24/2007	27	566	23	2	T27-H2 and B2 and F2		x	No	23	11.1	12	12.7	1	1	1	0	0	1	0	0	1	2206.8
10/24/2007	27	566	23	3	T27-H3 and B3 and F3		x	No	14	10.1	10.9	11.6	1	1	1	0	0	0	0	0	1	2206.8
10/24/2007	27	566	23	4	T27-H4 and B4 and F4		x	No	39	13.2	14.2	15	1	1	0	0	0	1	0	0	0	2206.8
10/24/2007	27	566	23	5	T27-H5 and B5 and F5		x	No	11	9	9.8	10.3	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	27	566	23	6	T27-H6 and B6 and F6		x	No	27	11.7	12.6	13.3	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	27	566	23	7	T27-H7 and B7 and F7		x	No	29	11.4	12.3	12.8	1	0	1	1	0	1	0	0	0	2206.8
10/24/2007	27	566	23	8	T27-H8 and B8 and F8		x	No	19	10.6	11.3	11.9	1	0	0	0	1	1	0	0	0	2206.8
10/24/2007	27	566	23	9	T27-H9 and B9 and F9		x	No	30	12.1	13.1	13.9	1	1	0	1	0	1	0	0	0	2206.8
10/24/2007	27	566	23	10	T27-H10 and B10 and F10		x	No	16	10.3	11.2	11.8	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	27	566	23	11	T27-H11 and B11 and F11	x		No	22	11.2	12	12.7	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	27	566	23	12	T27-H12 and B12 and F12	x		No	20	10.7	11.5	12.2	1	0	1	0	0	1	0	0	0	2206.8
10/24/2007	27	566	23	13	T27-H13 and B13 and F13	x		No	11	9	9.7	10.3	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	28	387	24	1	T28-H1 and B1 and F1		x	P	20	11.1	11.9	12.6	1	1	1	0	0	1	0	0	1	2206.8
10/24/2007	28	387	24	2	T28-H2 and B2 and F2		x	R	22	11.6	12.5	13.1	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	28	387	24	3	T28-H3 and B3 and F3		x	O	16	10.2	10.9	11.6	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	28	387	24	4	T28-H4 and B4 and F4		x	G/O	26	12.1	13	13.6	1	0	1	1	0	1	0	0	0	2206.8
10/24/2007	28	387	24	5	T28-H5 and B5 and F5		x	G	10	8.7	9.4	9.9	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	28	387	24	6	T28-H6 and B6 and F6		x	No	22	11	11.9	12.6	1	1	1	0	0	1	0	0	1	2206.8
10/24/2007	28	387	24	7	T28-H7 and B7 and F7		x	No	11	9.2	9.9	10.2	1	1	1	0	0	1	0	0	1	2206.8
10/24/2007	28	387	24	8	T28-H8 and B8 and F8		x	No	17	10.2	11	11.6	1	1	1	0	0	1	0	0	1	2206.8
10/24/2007	28	387	24	9	T28-H9 and B9 and F9		x	No	15	9.9	-	10.4	1	1	1	0	0	1	0	0	1	2206.8
10/24/2007	28	387	24	10	T28-H10 and B10 and F10		x	No	4	6.9	7.5	8	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	28	387	24	11	T28-H11 and B11 and F11	x		No	14	9.7	10.5	11.1	1	1	1	0	0	1	0	0	1	2206.8
10/24/2007	28	387	24	12	T28-H12 and B12 and F12	x		No	21	10.9	11.7	12.3	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	28	387	24	13	T28-H13 and B13 and F13	x		No	15	9.8	10.6	11.1	1	1	1	0	0	0	0	0	0	2206.8

Table A1.3 (continued). Raw data collected from individuals sacrificed for evaluation on October 24, 2007 in the *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Date	Tank #	Total Weight	No. Fish	Fish	Code on Bags/Tubes	Histo.	Spores	Color	Weight	SL	FL	TL	Sign	Cr	Sp	Xo	Lj	Op	Cl. Ped.	No Eye	BT	DD @ Kill
10/24/2007	28	387	24	14	T28-H14 and B14 and F14	x		No	19	10.8	11.6	12.21	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	31	488	23	1	T31-H1 and B1 and F1		x	No	18	10.5	11.3	12	1	1	1	0	0	1	0	0	1	2206.8
10/24/2007	31	488	23	2	T31-H2 and B2 and F2		x	No	42	13.5	14.5	15.3	1	1	0	0	0	0	0	0	0	2206.8
10/24/2007	31	488	23	3	T31-H3 and B3 and F3		x	No	12	9.1	9.9	10.4	0	0	0	0	0	0	0	0	0	2206.8
10/24/2007	31	488	23	4	T31-H4 and B4 and F4		x	No	19	10.8	11.7	12.3	1	1	0	0	0	0	0	0	0	2206.8
10/24/2007	31	488	23	5	T31-H5 and B5 and F5		x	No	17	10.2	11	11.5	1	1	1	0	0	0	0	0	0	2206.8
10/24/2007	31	488	23	6	T31-H6 and B6 and F6		x	No	18	10.2	11	11.6	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	31	488	23	7	T31-H7 and B7 and F7		x	No	24	11.3	12.2	13	1	1	1	0	0	0	0	0	0	2206.8
10/24/2007	31	488	23	8	T31-H8 and B8 and F8		x	No	13	9.2	9.9	10.4	0	0	0	0	0	0	0	0	0	2206.8
10/24/2007	31	488	23	9	T31-H9 and B9 and F9		x	No	14	9.5	10.2	10.8	1	1	0	0	0	0	0	0	0	2206.8
10/24/2007	31	488	23	10	T31-H10 and B10 and F10		x	No	20	10.5	11.3	11.8	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	31	488	23	11	T31-H11 and B11 and F11	x		No	44	14.1	15.1	15.9	1	1	1	0	0	0	0	0	0	2206.8
10/24/2007	31	488	23	12	T31-H12 and B12 and F12	x		No	18	10.2	11.1	11.6	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	31	488	23	13	T31-H13 and B13 and F13	x		No	14	9.7	10.4	11	0	0	0	0	0	0	0	0	0	2206.8
10/24/2007	35	581	25	1	T35-H1 and B1 and F1		x	No	36	12.8	13.8	14.5	1	1	0	0	0	0	0	0	0	2206.8
10/24/2007	35	581	25	2	T35-H2 and B2 and F2		x	No	7	7.5	8.1	8.7	1	0	0	0	0	1	0	0	0	2206.8
10/24/2007	35	581	25	3	T35-H3 and B3 and F3		x	No	34	12.4	13.3	14.1	1	1	0	0	0	0	0	0	0	2206.8
10/24/2007	35	581	25	4	T35-H4 and B4 and F4		x	No	9	8.1	8.8	9.4	1	1	1	0	0	0	0	0	0	2206.8
10/24/2007	35	581	25	5	T35-H5 and B5 and F5		x	No	34	13	14	14.8	1	1	1	0	0	0	0	0	0	2206.8
10/24/2007	35	581	25	6	T35-H6 and B6 and F6		x	No	31	12.1	13.1	13.8	1	1	1	0	0	0	0	0	0	2206.8
10/24/2007	35	581	25	7	T35-H7 and B7 and F7		x	No	17	10.1	11	11.7	1	1	0	0	0	1	0	0	0	2206.8
10/24/2007	35	581	25	8	T35-H8 and B8 and F8		x	No	22	10.8	11.7	12.5	1	1	1	0	0	0	0	0	0	2206.8
10/24/2007	35	581	25	9	T35-H9 and B9 and F9		x	No	23	11.3	12.1	12.8	1	1	1	0	0	0	0	0	0	2206.8
10/24/2007	35	581	25	10	T35-H10 and B10 and F10		x	No	20	10.7	11.5	12.2	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	35	581	25	11	T35-H11 and B11 and F11	x		No	22	10.8	11.6	12.3	1	0	1	0	0	0	0	0	0	2206.8
10/24/2007	35	581	25	12	T35-H12 and B12 and F12	x		No	32	12.2	13.2	13.8	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	35	581	25	13	T35-H13 and B13 and F13	x		No	9	7.9	8.6	9.1	1	1	0	0	0	1	0	0	0	2206.8
10/24/2007	35	581	25	14	T35-H14 and B14 and F14	x		No	13	9.2	10	10.6	1	0	1	0	0	1	0	0	0	2206.8

Table A1.3 (continued). Raw data collected from individuals sacrificed for evaluation on October 24, 2007 in the *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Date	Tank #	Total Weight	No. Fish	Fish	Code on Bags/Tubes	Histo.	Spores	Color	Weight	SL	FL	TL	Sign	Cr	Sp	Xo	Lj	Op	Cl. Ped.	No Eye	BT	DD @ Kill
10/24/2007	35	581	25	15	T35-H15 and B15 and F15	x		No	14	9.6	10.3	11	1	1	0	0	0	0	0	0	0	2206.8
10/24/2007	47	328	23	1	T47-H1 and B1 and F1		x	No	18	10.4	11.1	11.8	1	1	0	0	0	1	0	0	1	2206.8
10/24/2007	47	328	23	2	T47-H2 and B2 and F2		x	No	5	7	-	7.2	1	1	1	0	0	1	0	0	1	2206.8
10/24/2007	47	328	23	3	T47-H3 and B3 and F3		x	No	8	-	-	8	1	1	1	0	0	1	0	0	1	2206.8
10/24/2007	47	328	23	4	T47-H4 and B4 and F4		x	No	12	8.9	9.5	9.7	1	1	1	1	0	1	0	0	1	2206.8
10/24/2007	47	328	23	5	T47-H5 and B5 and F5		x	No	16	10.3	11	11.7	1	1	1	0	0	1	0	0	1	2206.8
10/24/2007	47	328	23	6	T47-H6 and B6 and F6		x	No	7	7.9	8.4	8.7	1	1	1	0	0	1	0	0	1	2206.8
10/24/2007	47	328	23	7	T47-H7 and B7 and F7		x	No	10	8.8	9.3	9.8	1	1	1	0	0	0	0	0	1	2206.8
10/24/2007	47	328	23	8	T47-H8 and B8 and F8		x	No	8	8.4	9	9.5	1	1	1	0	1	1	0	0	1	2206.8
10/24/2007	47	328	23	9	T47-H9 and B9 and F9		x	No	11	9	-	9.7	1	1	1	0	0	1	0	0	1	2206.8
10/24/2007	47	328	23	10	T47-H10 and B10 and F10		x	No	23	11.6	12.4	13.1	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	47	328	23	11	T47-H11 and B11 and F11	x		No	13	9.5	10.2	10.6	1	1	0	0	0	1	0	0	0	2206.8
10/24/2007	47	328	23	12	T47-H12 and B12 and F12	x		No	20	11	11.8	12.6	1	1	1	0	0	1	0	0	0	2206.8
10/24/2007	47	328	23	13	T47-H13 and B13 and F13	x		No	15	10.2	10.9	11.7	1	1	1	0	0	1	0	0	0	2206.8

Table A1.4. Batch weights and feed amounts for families on size 1 Rangen trout diet for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Tank #	Group	Strain	Date on Size 1	DD @ Size 0	# Fish	Batch Weight	Feed 4% (grams)	Date Reduced	# Fish	Batch Weight	Feed 4% (grams)
40	RH15	B2 CRR(m) x F1(f)	3/3/2007	327.7	50	12	0.48	3/20/2007	25	10	0.4
63	RH16	B2 CRR(m) x F1(f)	2/25/2007	347.4	50	22	0.88	3/12/2007	25	18	0.72
C12	RH16	B2 CRR(m) x F1(f)	2/25/2007	347.4	50	22	0.88	3/12/2007	25	20	0.8
3	RH17	B2 CRR(m) x F1(f)	3/3/2007	327.7	50	21	0.84	3/20/2007	25	15	0.6
C18	RH17	B2 CRR(m) x F1(f)	3/3/2007	327.7	50	21	0.84	3/20/2007	25	17	0.68
16	RH18	B2 CRR(m) x F1(f)	3/3/2007	327.7	50	18	0.72	3/20/2007	25	15	0.6
55	RH20	B2 CRR(m) x F1(f)	2/25/2007	347.4	50	13	0.52	3/12/2007	25	12	0.48
66	RH37	B2 CRR(m) x F1(f)	3/11/2007	349.2	50	15	0.6	3/29/2007	25	15	0.6
30	RH39	B2 CRR(m) x F1(f)	3/15/2007	331.5	50	21	0.84	4/5/2007	25	20	0.8
32	RH41	B2 CRR(m) x F1(f)	3/15/2007	331.5	50	15	0.6	4/5/2007	25	15	0.6
41	RH43	B2 CRR(m) x F1(f)	3/15/2007	331.5	48	23	0.92	4/5/2007	25	21	0.84
68	RH48	B2 CRR(m) x F1(f)	4/3/2007	383.2	50	18	0.72	4/10/2007	25	12	0.48
71	QT71	B2 F1(m) x CRR(f)	4/30/2007	352.4	50	17	0.68	5/3/2007	25	9	0.36
8	QT72	B2 F1(m) x CRR(f)	5/13/2007	358	50	19	0.76	5/24/2007	25	15	0.6
C8	QT72	B2 F1(m) x CRR(f)	5/13/2007	358	50	18	0.72	5/24/2007	25	14	0.56
76	QT73	B2 F1(m) x CRR(f)	4/30/2007	342.2	50	17	0.68	5/3/2007	25	10	0.4
35	QT74	B2 F1(m) x CRR(f)	5/13/2007	358	50	23	0.92	5/29/2007	25	20	0.8
74	QT75	B2 F1(m) x CRR(f)	5/1/2007	333.2	50	15	0.6	5/3/2007	25	8	0.32
36	QT76	B2 F1(m) x CRR(f)	5/13/2007	358	50	21	0.84	5/24/2007	25	16	0.64
59	QT77	B2 F1(m) x CRR(f)	4/30/2007	342.2	50	18	0.72	5/7/2007	25	11	0.44
57	QT78	B2 F1(m) x CRR(f)	4/30/2007	352.4	50	21	0.84	5/3/2007	25	12	0.48
C5	QT78	B2 F1(m) x CRR(f)	4/30/2007	352.4	50	21	0.84	5/3/2007	25	12	0.48
69	QT79	B2 F1(m) x CRR(f)	5/1/2007	333.2	50	17	0.68	5/3/2007	25	11	0.44
31	QT80	B2 F1(m) x CRR(f)	5/17/2007	363.1	50	16	0.64	5/29/2007	25	14	0.56
28	QT61	CRR	5/13/2007	358	50	17	0.68	5/29/2007	25	15	0.6
78	QT62	CRR	4/30/2007	352.4	50	17	0.68	5/7/2007	25	10	0.4
C16	QT62	CRR	4/30/2007	352.4	50	18	0.72	5/7/2007	25	10	0.4
27	QT63	CRR	5/13/2007	358	50	18	0.72	5/29/2007	25	16	0.64

Table A1.4 (continued). Batch weights and feed amounts for families on size 1 Rangen trout diet for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Tank #	Group	Strain	Date on Size 1	DD @ Size 0	# Fish	Batch Weight	Feed 4% (grams)	Date Reduced	# Fish	Batch Weight	Feed 4% (grams)
C7	QT63	CRR	5/13/2007	358	50	18	0.72	5/29/2007	25	16	0.64
47	QT64	CRR	5/17/2007	363.1	50	16	0.64	5/29/2007	25	11	0.44
15	QT65	CRR	5/13/2007	358	50	17	0.68	5/24/2007	25	13	0.52
39	QT66	CRR	5/13/2007	358	50	18	0.72	5/24/2007	25	13	0.52
79	QT67	CRR	4/30/2007	352.4	50	16	0.64	5/3/2007	25	9	0.36
80	QT68	CRR	4/30/2007	352.4	50	17	0.68	5/3/2007	25	11	0.44
C15	QT68	CRR	4/30/2007	352.4	50	18	0.72	5/3/2007	25	10	0.4
56	QT69	CRR	5/1/2007	333.2	50	17	0.68	5/3/2007	25	9	0.36
5	QT70	CRR	5/8/2007	341.2	50	18	0.72	5/24/2007	25	16	0.64
C10	QT70	CRR	5/8/2007	341.2	50	18	0.72	5/24/2007	25	14	0.56
13	RH21	F1 CRR(m) x HOF(f)	3/3/2007	327.7	50	21	0.84	3/20/2007	25	17	0.68
33	RH24	F1 CRR(m) x HOF(f)	3/3/2007	327.7	37	19	0.76	3/20/2007	25	20	0.8
61	RH25	F1 CRR(m) x HOF(f)	2/25/2007	347.4	50	21	0.84	3/12/2007	25	20	0.8
54	RH26	F1 CRR(m) x HOF(f)	2/25/2007	347.4	50	22	0.88	3/12/2007	25	18	0.72
2	RH27	F1 CRR(m) x HOF(f)	3/3/2007	327.7	50	21	0.84	3/20/2007	25	18	0.72
C19	RH27	F1 CRR(m) x HOF(f)	3/3/2007	327.7	50	22	0.88	3/20/2007	25	20	0.8
48	RH28	F1 CRR(m) x HOF(f)	3/3/2007	327.7	27	15	0.6	3/20/2007	25	20	0.8
37	RH30	F1 CRR(m) x HOF(f)	3/3/2007	327.7	50	22	0.88	3/20/2007	25	17	0.68
C20	RH30	F1 CRR(m) x HOF(f)	3/3/2007	327.7	50	22	0.88	3/20/2007	25	18	0.72
11	RH56	F1 CRR(m) x HOF(f)	4/4/2007	338.6	50	22	0.88	4/26/2007	25	24	0.96
14	RH58	F1 CRR(m) x HOF(f)	4/4/2007	338.6	50	23	0.92	4/23/2007	25	24	0.96
25	RH60	F1 CRR(m) x HOF(f)	4/4/2007	338.6	50	20	0.8	4/23/2007	25	17	0.68
52	RH100	F1 HOF(m) x CRR(f)	4/19/2007	346.7	50	19	0.76	4/30/2007	25	14	0.56
9	RH88	F1 HOF(m) x CRR(f)	4/23/2007	333.6	50	23	0.92	5/10/2007	25	22	0.88
20	RH91	F1 HOF(m) x CRR(f)	4/23/2007	333.6	50	20	0.8	5/10/2007	25	19	0.76
62	RH92	F1 HOF(m) x CRR(f)	4/22/2007	358.1	50	30	1.2	4/30/2007	25	21	0.84
C17	RH92	F1 HOF(m) x CRR(f)	4/22/2007	358.1	50	28	1.12	4/30/2007	25	20	0.8

Table A1.4 (continued). Batch weights and feed amounts for families on size 1 Rangen trout diet for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Tank #	Group	Strain	Date on Size 1	DD @ Size 0	# Fish	Batch Weight	Feed 4% (grams)	Date Reduced	# Fish	Batch Weight	Feed 4% (grams)
38	RH94	F1 HOF(m) x CRR(f)	4/23/2007	333.6	50	18	0.72	5/10/2007	25	18	0.72
34	RH95	F1 HOF(m) x CRR(f)	4/23/2007	333.6	50	15	0.6	5/10/2007	25	12	0.48
73	RH96	F1 HOF(m) x CRR(f)	4/19/2007	346.7	50	19	0.76	4/30/2007	25	13	0.52
44	RH97	F1 HOF(m) x CRR(f)	4/23/2007	333.6	50	24	0.96	5/10/2007	25	21	0.84
C2	RH97	F1 HOF(m) x CRR(f)	4/23/2007	333.6	50	24	0.96	5/10/2007	25	20	0.8
64	RH98	F1 HOF(m) x CRR(f)	4/22/2007	358.1	50	16	0.64	4/30/2007	25	11	0.44
17	RH99	F1 HOF(m) x CRR(f)	4/23/2007	333.6	50	19	0.76	5/10/2007	25	16	0.64
44	RH2	F1xB2	2/14/2007	338.5	50	23	0.92	N/A - Killed	N/A	N/A	N/A
30	RH4	F1xB2	2/14/2007	338.5	50	19	0.76	N/A - Killed	N/A	N/A	N/A
34	RH7	F1xB2	2/14/2007	338.5	50	20	0.8	N/A - Killed	N/A	N/A	N/A
49	RH1	F2 F1(m) x F1(f)	1/30/2007	337.2	50	19	0.76	2/14/2007	25	24	0.96
C9	RH1	F2 F1(m) x F1(f)	1/30/2007	337.2	50	20	0.8	2/14/2007	25	19	0.76
65	RH13	F2 F1(m) x F1(f)	2/18/2007	340.5	50	18	0.72	3/5/2007	25	15	0.6
67	RH14	F2 F1(m) x F1(f)	2/18/2007	340.5	50	19	0.76	3/5/2007	25	17	0.68
C6	RH14	F2 F1(m) x F1(f)	2/18/2007	340.5	50	20	0.8	3/5/2007	25	19	0.76
7	RH3	F2 F1(m) x F1(f)	2/14/2007	338.5	50	22	0.88	3/5/2007	26	17	0.68
C3	RH3	F2 F1(m) x F1(f)	2/14/2007	338.5	50	23	0.92	3/5/2007	25	20	0.8
46	RH38	F2 F1(m) x F1(f)	4/15/2007	344.8	50	19	0.76	4/23/2007	25	10	0.4
12	RH40	F2 F1(m) x F1(f)	4/15/2007	344.8	50	22	0.88	4/23/2007	25	14	0.56
6	RH42	F2 F1(m) x F1(f)	4/4/2007	338.6	50	14	0.56	4/19/2007	25	12	0.48
21	RH45	F2 F1(m) x F1(f)	4/12/2007	341.5	50	14	0.56	4/23/2007	25	9	0.36
77	RH46	F2 F1(m) x F1(f)	3/23/2007	334.1	50	19	0.76	4/2/2007	25	14	0.56
72	RH49	F2 F1(m) x F1(f)	4/14/2007	330.7	50	12	0.48	4/16/2007	25	7	0.28
4	RH5	F2 F1(m) x F1(f)	2/14/2007	338.5	50	20	0.8	3/5/2007	25	15	0.6
C13	RH5	F2 F1(m) x F1(f)	2/14/2007	338.5	50	19	0.76	3/5/2007	25	19	0.76
18	RH50	F2 F1(m) x F1(f)	4/23/2007	333.6	50	18	0.72	5/7/2007	25	15	0.6
26	RH51	F2 F1(m) x F1(f)	4/30/2007	343.2	50	14	0.56	5/7/2007	25	9	0.36
53	RH52	F2 F1(m) x F1(f)	4/10/2007	331.4	50	17	0.68	4/16/2007	25	11	0.44

Table A1.4 (continued). Batch weights and feed amounts for families on size 1 Rangen trout diet for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Tank #	Group	Strain	Date on Size 1	DD @ Size 0	# Fish	Batch Weight	Feed 4% (grams)	Date Reduced	# Fish	Batch Weight	Feed 4% (grams)
1	RH53	F2 F1(m) x F1(f)	4/30/2007	343.2	50	20	0.8	5/3/2007	25	12	0.48
43	RH54	F2 F1(m) x F1(f)	5/3/2007	346.3	50	17	0.68	5/11/2007	25	12	0.48
29	RH55	F2 F1(m) x F1(f)	4/30/2007	343.2	50	16	0.64	5/10/2007	25	12	0.48
42	RH6	F2 F1(m) x F1(f)	2/14/2007	338.5	50	21	0.84	3/5/2007	25	19	0.76
51	RH81	F2 F1(m) x F1(f)	4/14/2007	330.7	50	10	0.4	4/19/2007	25	5	0.2
24	RH83	F2 F1(m) x F1(f)	4/30/2007	343.2	50	12	0.48	5/11/2007	24	9	0.36
22	RH10	GR	2/14/2007	338.5	50	19	0.76	3/5/2007	25	15	0.6
60	RH11	GR	2/8/2007	335.9	50	18	0.72	2/22/2007	25	18	0.72
C14	RH11	GR	2/8/2007	335.9	50	20	0.8	2/22/2007	25	20	0.8
23	RH12	GR	2/14/2007	338.5	50	22	0.88	3/5/2007	25	19	0.76
70	RH31	GR	3/1/2007	329.6	50	14	0.56	3/12/2007	25	11	0.44
75	RH32	GR	3/3/2007	329.3	50	30	1.2	3/12/2007	25	21	0.84
50	RH34	GR	3/1/2007	329.6	50	14	0.56	3/12/2007	25	11	0.44
C4	RH34	GR	3/1/2007	329.6	50	13	0.52	3/12/2007	25	9	0.36
19	RH35	GR	3/11/2007	331	50	14	0.56	4/10/2007	25	19	0.76
45	RH36	GR	3/15/2007	334.1	50	13	0.52	4/10/2007	25	16	0.64
C11	RH36	GR	3/15/2007	334.1	50	13	0.52	4/10/2007	25	16	0.64
58	RH8	GR	2/8/2007	335.9	50	21	0.84	2/22/2007	25	19	0.76
C1	RH8	GR	2/8/2007	335.9	50	20	0.8	2/22/2007	25	21	0.84
10	RH9	GR	2/14/2007	338.5	50	22	0.92	3/5/2007	25	19	0.76

Table A1.5. Batch weights and feed amounts for families on size 2 Rangen trout diet for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Tank #	Group	Strain	Date on Size 2	Degree Days @ Size 1	# Fish	Grams	Feed 4% (grams)
40	RH15	B2 CRR(m) x F1(f)	6/12/2007	988.8	25	103	4.12
C12	RH16	B2 CRR(m) x F1(f)	5/7/2007	727.6	25	89	3.56
63	RH16	B2 CRR(m) x F1(f)	5/7/2007	727.6	25	81	3.24
C18	RH17	B2 CRR(m) x F1(f)	5/15/2007	751.6	25	92	3.68
3	RH17	B2 CRR(m) x F1(f)	5/15/2007	682.5	25	83	3.32
16	RH18	B2 CRR(m) x F1(f)	5/29/2007	833.2	25	78	3.12
55	RH20	B2 CRR(m) x F1(f)	6/5/2007	1047.4	27	99	3.96
66	RH37	B2 CRR(m) x F1(f)	5/29/2007	825.4	23	80	3.2
30	RH39	B2 CRR(m) x F1(f)	5/17/2007	605	25	80	3.2
32	RH41	B2 CRR(m) x F1(f)	6/1/2007	766.5	25	83	3.32
41	RH43	B2 CRR(m) x F1(f)	6/1/2007	766.5	25	90	3.6
68	RH48	B2 CRR(m) x F1(f)	6/19/2007	844.2	25	87	3.48
71	QT71	B2 F1(m) x CRR(f)	7/27/2007	1090.1	21	92	3.68
C8	QT72	B2 F1(m) x CRR(f)	7/19/2007	840.6	24	81	3.24
8	QT72	B2 F1(m) x CRR(f)	7/19/2007	840.1	25	86	3.44
76	QT73	B2 F1(m) x CRR(f)	7/17/2007	948.3	25	94	3.76
35	QT74	B2 F1(m) x CRR(f)	7/23/2007	900.4	25	89	3.56
74	QT75	B2 F1(m) x CRR(f)	7/17/2007	937.9	25	99	3.96
36	QT76	B2 F1(m) x CRR(f)	7/19/2007	840.1	25	85	3.4
59	QT77	B2 F1(m) x CRR(f)	7/18/2007	962.3	24	83	3.32
C5	QT78	B2 F1(m) x CRR(f)	7/17/2007	948.3	25	104	4.16
57	QT78	B2 F1(m) x CRR(f)	7/17/2007	948.3	24	100	4
69	QT79	B2 F1(m) x CRR(f)	7/17/2007	937.9	25	91	3.64
31	QT80	B2 F1(m) x CRR(f)	8/6/2007	1087.3	24	94	3.76
28	QT61	CRR	8/6/2007	1128.8	25	89	3.56
C16	QT62	CRR	7/30/2007	1135.3	24	98	3.92
78	QT62	CRR	7/30/2007	1135.3	24	96	3.84
C7	QT63	CRR	8/6/2007	1109.3	25	96	3.84

Table A1.5 (continued). Batch weights and feed amounts for families on size 2 Rangen trout diet for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Tank #	Group	Strain	Date on Size 2	Degree Days @ Size 1	# Fish	Grams	Feed 4% (grams)
27	QT63	CRR	8/6/2007	1128.8	25	106	4.24
47	QT64	CRR	8/6/2007	1087.3	25	104	4.16
15	QT65	CRR	8/2/2007	1060.7	25	85	3.4
39	QT66	CRR	8/2/2007	1060.7	25	84	3.36
79	QT67	CRR	7/27/2007	1090.1	25	90	3.6
C15	QT68	CRR	7/17/2007	948.3	25	91	3.64
80	QT68	CRR	7/17/2007	948.3	25	83	3.32
56	QT69	CRR	7/17/2007	937.9	23	75	3
5	QT70	CRR	7/19/2007	892.1	25	76	3.04
C10	QT70	CRR	8/2/2007	1099.6	25	94	3.76
13	RH21	F1 CRR(m) x HOF(f)	5/15/2007	682.5	25	99	3.96
33	RH24	F1 CRR(m) x HOF(f)	5/15/2007	682.5	25	98	3.92
61	RH25	F1 CRR(m) x HOF(f)	4/23/2007	590.9	25	88	3.52
54	RH26	F1 CRR(m) x HOF(f)	5/7/2007	727.6	25	97	3.88
C19	RH27	F1 CRR(m) x HOF(f)	5/1/2007	605.8	24	82	3.28
2	RH27	F1 CRR(m) x HOF(f)	5/15/2007	682.5	25	103	4.12
48	RH28	F1 CRR(m) x HOF(f)	5/15/2007	682.5	25	110	4.4
C20	RH30	F1 CRR(m) x HOF(f)	5/1/2007	605.8	24	76	3.04
37	RH30	F1 CRR(m) x HOF(f)	5/15/2007	682.5	25	89	3.56
11	RH56	F1 CRR(m) x HOF(f)	6/7/2007	646.5	25	94	3.76
14	RH58	F1 CRR(m) x HOF(f)	6/5/2007	624.1	25	83	3.32
25	RH60	F1 CRR(m) x HOF(f)	6/18/2007	778.3	25	109	4.36
52	RH100	F1 HOF(m) x CRR(f)	7/9/2007	954	25	90	3.6
9	RH88	F1 HOF(m) x CRR(f)	6/21/2007	639	25	84	3.36
20	RH91	F1 HOF(m) x CRR(f)	6/21/2007	639	25	75	3
62	RH92	F1 HOF(m) x CRR(f)	6/11/2007	547.9	24	76	3.04
C17	RH92	F1 HOF(m) x CRR(f)	6/25/2007	713.9	25	101	4.04
38	RH94	F1 HOF(m) x CRR(f)	7/5/2007	830.7	25	89	3.56

Table A1.5 (continued). Batch weights and feed amounts for families on size 2 Rangen trout diet for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Tank #	Group	Strain	Date on Size 2	Degree Days @ Size 1	# Fish	Grams	Feed 4% (grams)
34	RH95	F1 HOF(m) x CRR(f)	7/19/2007	1040.1	25	112	4.48
73	RH96	F1 HOF(m) x CRR(f)	6/25/2007	746.3	25	83	3.32
C2	RH97	F1 HOF(m) x CRR(f)	7/5/2007	853.7	24	102	4.08
44	RH97	F1 HOF(m) x CRR(f)	7/5/2007	830.7	25	98	3.92
64	RH98	F1 HOF(m) x CRR(f)	7/9/2007	921.6	24	95	3.8
17	RH99	F1 HOF(m) x CRR(f)	7/5/2007	830.7	25	113	4.52
49	RH1	F2 F1(m) x F1(f)	4/12/2007	740.5	25	97	3.88
C9	RH1	F2 F1(m) x F1(f)	4/12/2007	740.5	25	106	4.24
65	RH13	F2 F1(m) x F1(f)	4/30/2007	727	25	106	4.24
67	RH14	F2 F1(m) x F1(f)	4/16/2007	574.7	24	79	3.16
C6	RH14	F2 F1(m) x F1(f)	4/16/2007	574.7	25	89	3.56
C3	RH3	F2 F1(m) x F1(f)	4/30/2007	767.4	25	96	3.84
7	RH3	F2 F1(m) x F1(f)	5/14/2007	804.6	26	85	3.4
46	RH38	F2 F1(m) x F1(f)	7/2/2007	865.8	25	106	4.24
12	RH40	F2 F1(m) x F1(f)	6/18/2007	680.3	25	101	4.04
6	RH42	F2 F1(m) x F1(f)	6/14/2007	727	25	86	3.44
21	RH45	F2 F1(m) x F1(f)	7/2/2007	892.7	25	83	3.32
77	RH46	F2 F1(m) x F1(f)	5/29/2007	703.7	25	97	3.88
72	RH49	F2 F1(m) x F1(f)	7/9/2007	1009.9	14	78	3.12
C13	RH5	F2 F1(m) x F1(f)	4/30/2007	767.4	25	100	4
4	RH5	F2 F1(m) x F1(f)	5/14/2007	804.6	25	84	3.36
18	RH50	F2 F1(m) x F1(f)	7/2/2007	787.9	25	96	3.84
26	RH51	F2 F1(m) x F1(f)	7/18/2007	958.7	26	109	4.36
53	RH52	F2 F1(m) x F1(f)	6/25/2007	841.9	25	99	3.96
1	RH53	F2 F1(m) x F1(f)	6/28/2007	664.3	25	81	3.24
43	RH54	F2 F1(m) x F1(f)	7/5/2007	741.9	25	75	3
29	RH55	F2 F1(m) x F1(f)	7/5/2007	763.4	25	81	3.24
42	RH6	F2 F1(m) x F1(f)	4/30/2007	661.4	25	95	3.8

Table A1.5 (continued). Batch weights and feed amounts for families on size 2 Rangen trout diet for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Tank #	Group	Strain	Date on Size 2	Degree Days @ Size 1	# Fish	Grams	Feed 4% (grams)
51	RH81	F2 F1(m) x F1(f)	7/17/2007	1122.2	24	94	3.76
24	RH83	F2 F1(m) x F1(f)	7/19/2007	972.8	23	91	3.64
22	RH10	GR	4/30/2007	661.4	25	104	4.16
60	RH11	GR	4/6/2007	586.5	25	92	3.68
C14	RH11	GR	4/6/2007	586.5	25	115	4.6
23	RH12	GR	4/16/2007	525.5	25	90	3.6
70	RH31	GR	5/7/2007	687.1	24	99	3.96
75	RH32	GR	4/23/2007	530.5	25	108	4.32
50	RH34	GR	5/7/2007	687.1	24	99	3.96
C4	RH34	GR	5/7/2007	687.1	19	81	3.24
19	RH35	GR	5/22/2007	694.4	24	89	3.56
45	RH36	GR	5/22/2007	660.5	25	81	3.24
C11	RH36	GR	5/22/2007	707.2	25	88	3.52
58	RH8	GR	4/6/2007	586.5	25	103	4.12
C1	RH8	GR	4/6/2007	586.5	25	122	4.88
10	RH9	GR	4/16/2007	525.5	25	78	3.12

Table A1.6. Batch weights and feed amounts for families on size 3 Rangen trout diet for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Tank #	Group	Srain	Date on Size 3	Degree Days @ Size 2	# Fish	Grams	Feed 4% (grams)
40	RH15	B2 CRR(m) x F1(f)	7/10/2007	403.3	25	186	7.44
C12	RH16	B2 CRR(m) x F1(f)	6/18/2007	477.9	24	222	8.88
63	RH16	B2 CRR(m) x F1(f)	6/18/2007	477.9	25	194	7.76
C18	RH17	B2 CRR(m) x F1(f)	6/12/2007	463.2	24	167	6.68
3	RH17	B2 CRR(m) x F1(f)	6/26/2007	483.4	25	192	7.68
16	RH18	B2 CRR(m) x F1(f)	7/18/2007	654.4	24	196	7.84
55	RH20	B2 CRR(m) x F1(f)	7/2/2007	344.6	27	167	6.68
66	RH37	B2 CRR(m) x F1(f)	7/5/2007	468	22	164	6.56
30	RH39	B2 CRR(m) x F1(f)	6/28/2007	490.1	25	185	7.4
32	RH41	B2 CRR(m) x F1(f)	6/28/2007	328.8	24	163	6.52
41	RH43	B2 CRR(m) x F1(f)	7/17/2007	607.9	25	229	9.16
68	RH48	B2 CRR(m) x F1(f)	7/31/2007	589.1	25	196	7.84
71	QT71	B2 F1(m) x CRR(f)	8/23/2007	419.4	20	185	7.4
C8	QT72	B2 F1(m) x CRR(f)	8/16/2007	424	24	189	7.56
8	QT72	B2 F1(m) x CRR(f)	8/16/2007	451	25	178	7.12
76	QT73	B2 F1(m) x CRR(f)	7/23/2007	84.4	25	176	7.04
76	QT73	B2 F1(m) x CRR(f)	8/9/2007	343	24	195	7.8
35	QT74	B2 F1(m) x CRR(f)	8/20/2007	455.6	25	179	7.16
74	QT75	B2 F1(m) x CRR(f)	8/9/2007	343	23	210	8.4
36	QT76	B2 F1(m) x CRR(f)	8/16/2007	451	25	171	6.84
59	QT77	B2 F1(m) x CRR(f)	8/13/2007	391.4	24	192	7.68
C5	QT78	B2 F1(m) x CRR(f)	8/9/2007	343	25	207	8.28
57	QT78	B2 F1(m) x CRR(f)	8/9/2007	343	23	181	7.24
69	QT79	B2 F1(m) x CRR(f)	8/9/2007	343	26	189	7.56
31	QT80	B2 F1(m) x CRR(f)	9/3/2007	459.3	24	195	7.8
28	QT61	CRR	9/17/2007	695.9	24	213	8.52
C16	QT62	CRR	8/27/2007	438.4	23	185	7.4
78	QT62	CRR	8/27/2007	438.4	23	167	6.68

Table A1.6 (continued). Batch weights and feed amounts for families on size 3 Rangen trout diet for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Tank #	Group	Srain	Date on Size 3	Degree Days @ Size 2	# Fish	Grams	Feed 4% (grams)
C7	QT63	CRR	9/3/2007	459.3	25	183	7.32
27	QT63	CRR	9/3/2007	459.3	24	210	8.4
47	QT64	CRR	9/3/2007	459.3	25	184	7.36
15	QT65	CRR	9/13/2007	698.4	25	209	8.36
39	QT66	CRR	8/31/2007	481.9	25	175	7
C15	QT68	CRR	8/9/2007	343	25	183	7.32
80	QT68	CRR	8/23/2007	561.2	24	209	8.36
56	QT69	CRR	8/23/2007	561.2	24	174	6.96
C10	QT70	CRR	8/29/2007	425	25	180	7.2
5	QT70	CRR	8/31/2007	702.5	24	201	8.04
13	RH21	F1 CRR(m) x HOF(f)	6/12/2007	306.3	25	183	7.32
33	RH24	F1 CRR(m) x HOF(f)	6/12/2007	306.3	25	167	6.68
61	RH25	F1 CRR(m) x HOF(f)	5/21/2007	307.4	25	183	7.32
54	RH26	F1 CRR(m) x HOF(f)	6/5/2007	319.8	24	181	7.24
C19	RH27	F1 CRR(m) x HOF(f)	5/29/2007	300.4	24	169	6.76
2	RH27	F1 CRR(m) x HOF(f)	6/12/2007	306.3	25	212	8.48
48	RH28	F1 CRR(m) x HOF(f)	6/12/2007	306.3	24	198	7.92
C20	RH30	F1 CRR(m) x HOF(f)	6/12/2007	317.4	24	234	9.36
37	RH30	F1 CRR(m) x HOF(f)	6/12/2007	306.3	25	184	7.36
11	RH56	F1 CRR(m) x HOF(f)	7/5/2007	387.4	25	181	7.24
14	RH58	F1 CRR(m) x HOF(f)	7/2/2007	367	24	170	6.8
25	RH60	F1 CRR(m) x HOF(f)	7/18/2007	423.6	25	233	9.32
52	RH100	F1 HOF(m) x CRR(f)	8/6/2007	408.4	25	200	8
9	RH88	F1 HOF(m) x CRR(f)	7/19/2007	401.1	25	192	7.68
20	RH91	F1 HOF(m) x CRR(f)	8/2/2007	621.7	25	215	8.6
C17	RH92	F1 HOF(m) x CRR(f)	7/23/2007	393.3	25	217	8.68
62	RH92	F1 HOF(m) x CRR(f)	7/23/2007	570.4	24	216	8.64
38	RH94	F1 HOF(m) x CRR(f)	8/2/2007	430	25	189	7.56

Table A1.6 (continued). Batch weights and feed amounts for families on size 3 Rangen trout diet for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Tank #	Group	Srain	Date on Size 3	Degree Days @ Size 2	# Fish	Grams	Feed 4% (grams)
34	RH95	F1 HOF(m) x CRR(f)	8/16/2007	451	24	260	10.4
73	RH96	F1 HOF(m) x CRR(f)	7/23/2007	393.3	25	176	7.04
44	RH97	F1 HOF(m) x CRR(f)	8/2/2007	430	25	198	7.92
C2	RH97	F1 HOF(m) x CRR(f)	8/2/2007	402.7	24	215	8.6
64	RH98	F1 HOF(m) x CRR(f)	8/6/2007	408.4	24	226	9.04
17	RH99	F1 HOF(m) x CRR(f)	7/19/2007	209.4	25	169	6.76
49	RH1	F2 F1(m) x F1(f)	5/10/2007	296.9	25	169	6.76
C9	RH1	F2 F1(m) x F1(f)	5/10/2007	296.9	25	181	7.24
65	RH13	F2 F1(m) x F1(f)	5/29/2007	310.8	25	200	8
C6	RH14	F2 F1(m) x F1(f)	5/14/2007	298	25	178	7.12
67	RH14	F2 F1(m) x F1(f)	5/29/2007	463.1	22	182	7.28
C3	RH3	F2 F1(m) x F1(f)	6/11/2007	462.3	25	212	8.48
7	RH3	F2 F1(m) x F1(f)	6/25/2007	480.6	25	210	8.4
46	RH38	F2 F1(m) x F1(f)	7/30/2007	422.8	25	225	9
12	RH40	F2 F1(m) x F1(f)	7/18/2007	423.6	25	220	8.8
6	RH42	F2 F1(m) x F1(f)	7/17/2007	486.9	25	204	8.16
21	RH45	F2 F1(m) x F1(f)	7/30/2007	422.8	24	177	7.08
77	RH46	F2 F1(m) x F1(f)	6/25/2007	318.6	25	190	7.6
72	RH49	F2 F1(m) x F1(f)	8/6/2007	408.4	13	186	7.44
C13	RH5	F2 F1(m) x F1(f)	5/29/2007	310.8	25	182	7.28
4	RH5	F2 F1(m) x F1(f)	6/25/2007	480.6	25	216	8.64
18	RH50	F2 F1(m) x F1(f)	7/30/2007	422.8	25	204	8.16
26	RH51	F2 F1(m) x F1(f)	8/13/2007	417.6	26	246	9.84
53	RH52	F2 F1(m) x F1(f)	7/23/2007	393.3	25	215	8.6
1	RH53	F2 F1(m) x F1(f)	7/27/2007	429.6	24	198	7.92
43	RH54	F2 F1(m) x F1(f)	8/16/2007	660.4	22	234	9.36
29	RH55	F2 F1(m) x F1(f)	8/16/2007	660.4	25	257	10.28
42	RH6	F2 F1(m) x F1(f)	5/29/2007	304.3	25	174	6.96

Table A1.6 (continued). Batch weights and feed amounts for families on size 3 Rangen trout diet for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Tank #	Group	Srain	Date on Size 3	Degree Days @ Size 2	# Fish	Grams	Feed 4% (grams)
51	RH81	F2 F1(m) x F1(f)	8/9/2007	343	24	207	8.28
24	RH83	F2 F1(m) x F1(f)	8/16/2007	451	22	196	7.84
22	RH10	GR	5/14/2007	143.2	25	170	6.8
C14	RH11	GR	4/20/2007	145.5	25	190	7.6
60	RH11	GR	5/4/2007	294.4	25	234	9.36
23	RH12	GR	5/14/2007	279.1	25	208	8.32
70	RH31	GR	5/21/2007	160.7	24	163	6.52
75	RH32	GR	5/7/2007	146.7	25	178	7.12
C4	RH34	GR	6/5/2007	319.8	18	201	8.04
50	RH34	GR	6/5/2007	319.8	22	232	9.28
19	RH35	GR	6/19/2007	316.8	25	183	7.32
C11	RH36	GR	6/19/2007	329.1	25	219	8.76
45	RH36	GR	6/19/2007	316.8	25	199	7.96
C1	RH8	GR	4/20/2007	145.5	25	193	7.72
58	RH8	GR	5/4/2007	294.4	25	243	9.72
10	RH9	GR	5/14/2007	279.1	25	207	8.28

Table A1.7. Batch weights and feed amounts for families on size 4 Rangen trout diet for *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Tank #	Group	Strain	Date on Size 4	Degree Days @ Size 3	# Fish	Grams	Feed 4% (grams)
11	RH56	F1 CRR(m) x HOF(f)	8/16/2007	660.4	24	528	21.12
14	RH58	F1 CRR(m) x HOF(f)	8/13/2007	655.7	24	531	21.24
25	RH60	F1 CRR(m) x HOF(f)	8/13/2007	417.6	25	519	20.76
9	RH88	F1 HOF(m) x CRR(f)	8/31/2007	702.5	25	661	26.44
62	RH92	F1 HOF(m) x CRR(f)	8/20/2007	429.7	24	501	20.04
17	RH99	F1 HOF(m) x CRR(f)	8/31/2007	702.5	25	661	26.44
22	RH10	GR	6/25/2007	480.6	24	502	20.08
C14	RH11	GR	6/1/2007	451.5	25	660	26.4
60	RH11	GR	6/15/2007	469.6	25	617	24.68
23	RH12	GR	6/25/2007	480.6	25	527	21.08
75	RH32	GR	7/2/2007	664.4	25	716	28.64
50	RH34	GR	7/2/2007	344.6	22	525	21
19	RH35	GR	7/31/2007	613.8	24	621	24.84
C11	RH36	GR	7/18/2007	400.7	25	512	20.48
45	RH36	GR	7/31/2007	613.8	25	709	28.36
C1	RH8	GR	6/1/2007	451.5	25	595	23.8
58	RH8	GR	6/1/2007	303.1	25	515	20.6
10	RH9	GR	6/25/2007	480.6	25	600	24

Table A1.8. Tanks used in the swimming experiment of the *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Strain	Tank
GR	19
GR	45
GR	50
GR	75
GR Control	C1
GR Control	C14
GR Control	C11
GR Control	C4
CRR	56
CRR	78
CRR	15
CRR	28
CRR Control	C15
CRR Control	C16
CRR Control	C10
CRR Control	C7
F1	48
F1	14
F1	64
F1	9
F1 Control	C19
F1 Control	C20
F1 Control	C17
F1 Control	C2
F2	77
F2	51
F2	21
F2	26
F2 Control	C13
F2 Control	C3
F2 Control	C6
F2 Control	C9
B2	30
B2	68
B2	71
B2	8
B2 Control	C18
B2 Control	C12
B2 Control	C5
B2 Control	C8

Table A1.9. Raw data collected from the swimming experiments for the two week swimming period in the *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Strain	Tank	Date	Swim Date	Day	Color	Rating	Weight	Sd Length	Fk Length	Ttl Length	Flume	Begin Temp	Final Temp	Time In	Time Out	Flume Time	CSV	Time @ CSV
2week - GR	19	4/25/2007	4/25/2007	14	G	1	1	4.5	5	5.2	2	11	9.1	9:28	10:53	1:25	0.2	5
2week - GR	19	4/25/2007	4/25/2007	14	O	1	2	4.7	5.1	5.3	2	9.1	9.4	11:25	13:28	2:03	0.4	3
2week - GR	19	4/25/2007	4/25/2007	14	G/O	1	1	4.3	4.9	5.1	2	9.4	9.2	14:15	16:16	2:01	0.4	1
2week - GR	19	4/25/2007	4/26/2007	15	R	1	1	4.5	5	5.2	2	10.5	9.2	9:50	11:22	1:32	0.2	2
2week - GR	19	4/25/2007	4/26/2007	15	P	1	1.5	4.2	4.7	4.9	2	9.2	9.1	11:49	13:18	1:29	0.2	9
2week - GR	45	4/25/2007	4/27/2007	16	G	1	2	4.4	4.9	5.1	2	9.8	9.1	8:37	10:11	1:34	0.2	4
2week - GR	45	4/25/2007	4/27/2007	16	O	1	1	4.1	4.6	4.7	2	9.1	9.1	11:36	13:25	1:49	0.3	9
2week - GR	45	4/25/2007	4/27/2007	16	G/O	1	2	4.4	5	5.1	2	9.1	9.1	12:52	14:37	1:45	0.3	5
2week - GR	45	4/25/2007	4/30/2007	19	R	1	1.5	4.3	4.8	5	2	10.3	10.2	11:05	13:01	1:56	0.3	6
2week - GR	45	4/25/2007	4/30/2007	19	P	1	1	4.2	4.6	4.8	2	11.3	10.3	9:00	10:52	1:52	0.3	2
2week - GR Control	C11	4/25/2007	4/26/2007	15	R	1	1	4.5	5	5.2	1	9.8	9	9:47	11:30	1:43	0.3	3
2week - GR Control	C11	4/25/2007	4/26/2007	15	P	1	1	4.4	4.9	5.1	1	9	9	11:46	13:22	1:36	0.2	6
2week - GR Control	C11	4/25/2007	4/27/2007	16	G	1	1	4.2	4.7	4.8	1	9.5	9	8:48	10:27	1:39	0.2	9
2week - GR Control	C11	4/25/2007	4/27/2007	16	O	1	2	5	5.6	5.9	1	9	9	11:39	13:33	1:54	0.3	4
2week - GR Control	C11	4/25/2007	4/27/2007	16	G/O	1	1	4.3	4.7	5	1	9	9	12:51	14:23	1:32	0.2	2
2week - CRR	56	5/18/2007	5/21/2007	17	G	1	1	3.8	4.2	4.4	2	9.8	10.1	16:21	18:16	1:55	0.3	5
2week - CRR	56	5/18/2007	5/21/2007	17	R	1	0.5	3.5	3.9	4	2	10.6	10	9:22	11:15	1:53	0.3	3
2week - CRR	56	5/18/2007	5/21/2007	17	O	1	1	3.7	4	4.1	2	10	10.3	11:28	13:19	1:51	0.3	1
2week - CRR	56	5/18/2007	5/21/2007	17	P	1	0.5	3.6	4	4.1	2	9.8	9.7	21:35	23:17	1:42	0.3	2
2week - CRR	56	5/18/2007	5/21/2007	17	G/O	1	1	3.7	4.1	4.2	2	10.3	9.8	14:40	16:15	1:35	0.2	5
2week - CRR	78	5/22/2007	5/26/2007	18	G	1	0.5	3.3	3.6	3.7	2	10.5	10	10:44	13:06	2:22	0.5	2
2week - CRR	78	5/22/2007	5/27/2007	19	R	1	1	4.2	4.6	4.8	2	11.8	10.8	10:52	12:54	2:02	0.4	2
2week - CRR	78	5/22/2007	5/28/2007	20	O	1	1	3.6	4	4.2	2	13.7	10.2	6:05	8:16	2:11	0.4	1
2week - CRR	78	5/22/2007	5/28/2007	20	P	2	0.5	3.7	4.1	4.2	2	10.2	10.2	8:23	10:17	1:54	0.3	4
2week - CRR	78	5/22/2007	5/28/2007	20	G/O	2	0.5	3.9	4.3	4.5	2	10.2	10.1	10:23	12:13:30	1:50:30	0.3	0.5
2week - CRR	15	6/7/2007	6/16/2007	23	G	2	1	3.8	4.2	4.4	2	11.9	11.8	19:33	21:11	1:38	0.2	8
2week - CRR	15	6/7/2007	6/17/2007	24	R	1	1	3.8	4.2	4.4	2	15.1	12.4	15:32	17:24	1:52	0.3	2
2week - CRR	15	6/7/2007	6/17/2007	24	O	1	1	4.3	4.7	4.9	2	12.4	12.2	17:28	19:42	2:14	0.4	4

Table A1.9 (continued). Raw data collected from the swimming experiments for the two week swimming period in the *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Strain	Tank	Date	Swim Date	Day	Color	Rating	Weight	Sd Length	Fk Length	Ttl Length	Flume	Begin Temp	Final Temp	Time In	Time Out	Flume Time	CSV	Time @ CSV
2week - CRR	15	6/7/2007	6/17/2007	24	P	1	1	4.2	4.7	4.9	2	12.2	11.9	19:46	21:27	1:41	0.3	1
2week - CRR	15	6/7/2007	6/18/2007	25	G/O	1	2	4.8	5.3	5.5	2	13.6	11.8	12:45	14:58	2:13	0.4	3
2week - CRR	28	6/12/2007	6/21/2007	23	G	1	1	3.9	4.3	4.5	2	18.2	12.8	12:31	14:15	1:44	0.3	4
2week - CRR	28	6/12/2007	6/21/2007	23	R	1	1	4.5	5	5.2	2	12.8	12.3	14:28	16:43	2:15	0.4	5
2week - CRR	28	6/12/2007	6/21/2007	23	O	1	2	4.5	4.9	5.2	2	12.3	12.6	16:47	19:11	2:24	0.5	4
2week - CRR	28	6/12/2007	6/21/2007	23	P	1	1	4.3	4.8	5	2	12.6	12.3	18:32	20:35	2:03	0.4	3
2week - CRR	28	6/12/2007	6/22/2007	24	G/O	1	2	4.8	5.3	5.5	2	17.5	12.7	10:15	12:04	1:49	0.3	9
2week - CRR Control	C15	5/18/2007	5/21/2007	17	G	1	0.5	3.7	4.2	4.3	1	11.1	10	9:14	11:28	2:14	0.4	4
2week - CRR Control	C15	5/18/2007	5/21/2007	17	R	1	0.5	3.7	4.1	4.3	1	10	10	11:38	13:39	2:01	0.4	1
2week - CRR Control	C15	5/18/2007	5/21/2007	17	O	1	0.5	3.8	4.3	4.4	1	10	9.9	13:50	15:48	1:58	0.3	8
2week - CRR Control	C15	5/18/2007	5/21/2007	17	P	1	1	3.7	4.1	4.3	1	9.9	10	15:58	18:10	2:12	0.4	2
2week - CRR Control	C15	5/18/2007	5/21/2007	17	G/O	1	1	4	4.5	4.7	1	10	9.9	21:31	23:19	1:48	0.3	8
2week - CRR Control	C16	5/22/2007	5/29/2007	21	G	1	0.5	3.5	3.8	4	1	12	10.2	6:00	7:52	1:52	0.3	2
2week - CRR Control	C16	5/22/2007	5/29/2007	21	R	1	1	4.2	4.6	4.7	1	10.2	10.1	8:07	9:54	1:47	0.3	7
2week - CRR Control	C16	5/22/2007	5/29/2007	21	O	1	0.5	3.9	4.3	4.5	1	10.1	10.1	10:11	11:54	1:43	0.3	3
2week - CRR Control	C16	5/22/2007	5/29/2007	21	P	1	1	3.8	4.2	4.4	1	10.1	10.1	12:08	14:12	2:04	0.4	4
2week - CRR Control	C16	5/22/2007	5/29/2007	21	G/O	1	1	4.2	4.7	4.9	1	10.1	10	14:12	15:46	1:34	0.3	4
2week - CRR Control	C10	6/7/2007	6/18/2007	25	G	1	1	4.5	5	5.2	1	13	11.4	12:45	14:38	1:53	0.3	3
2week - CRR Control	C10	6/7/2007	6/18/2007	25	R	1	2	4.7	5.1	5.4	1	11.4	11.2	17:22	19:40	2:18	0.4	8
2week - CRR Control	C10	6/7/2007	6/19/2007	26	O	1	1	3.9	4.3	4.5	1	12	11.1	8:02	10:14	2:12	0.4	2
2week - CRR Control	C10	6/7/2007	6/19/2007	26	P	1	2	4.7	5.4	5.6	1	11.1	11.1	10:26	12:30	2:04	0.4	4
2week - CRR Control	C10	6/7/2007	6/19/2007	26	G/O	1	1	4.6	5.1	5.3	1	11.1	11.2	12:40	14:33	1:53	0.3	3
2week - CRR Control	C7	6/12/2007	6/20/2007	22	G	1	2	4.8	5.3	5.5	1	11.8	12	15:50	18:01	2:11	0.4	1
2week - CRR Control	C7	6/12/2007	6/21/2007	23	R	1	1	4.1	4.5	4.7	1	15	12	12:30	14:22	1:52	0.3	2
2week - CRR Control	C7	6/12/2007	6/21/2007	23	O	1	1	4.3	4.7	5	1	12	11.8	14:37	16:20	1:43	0.3	3
2week - CRR Control	C7	6/12/2007	6/21/2007	23	P	1	1.5	4.5	5.1	5.3	1	11.8	11.8	16:30	18:16	1:46	0.3	6
2week - CRR Control	C7	6/12/2007	6/21/2007	23	G/O	1	2	4.3	4.7	4.9	1	11.8	11.8	18:32	20:35	2:03	0.4	3
2week - F1	48	4/4/2007	4/13/2007	24	G	1	2	4	5.2	5.4	2	9.5	9.5	9:04	11:25	2:21	0.4	1

Table A1.9 (continued). Raw data collected from the swimming experiments for the two week swimming period in the *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Strain	Tank	Date	Swim Date	Day	Color	Rating	Weight	Sd Length	Fk Length	Ttl Length	Flume	Begin Temp	Final Temp	Time In	Time Out	Flume Time	CSV	Time @ CSV
2week - F1	48	4/4/2007	4/13/2007	24	R	1	1.5	4.4	4.8	5	2	9.5	9.5	11:35	13:28	1:53	0.3	3
2week - F1	48	4/4/2007	4/13/2007	24	O	1	2	5	5.6	5.8	2	9.5	9.6	13:52	15:44	1:52	0.3	2
2week - F1	48	4/4/2007	4/13/2007	24	P	1	2	4.5	5.1	5.3	2	9.6	9.5	16:01	17:53	1:52	0.3	2
2week - F1	48	4/4/2007	4/14/2007	25	G/O	1	2	4.8	5.4	5.6	2	10.6	9.7	9:34	11:23	1:49	0.3	9
2week - F1	14	5/8/2007	5/10/2007	16	G	1	2	4.5	4.9	5.1	2	10.2	10.2	15:41	17:15	1:34	0.2	4
2week - F1	14	5/8/2007	5/10/2007	16	R	2	1	3.7	4.1	4.2	2	10.2	10.3	17:23	19:04	1:41	0.3	1
2week - F1	14	5/8/2007	5/10/2007	16	O	1	1	3.9	4.2	4.3	2	10.3	9.9	19:12	20:56	1:44	0.3	4
2week - F1	14	5/8/2007	5/11/2007	17	P	1	2	4.7	5.1	5.3	2	10.1	10.5	11:21	13:05	1:44	0.3	4
2week - F1	14	5/8/2007	5/11/2007	17	G/O	1	2	5.2	5.6	5.8	2	10.5	10.7	13:14	15:14:30	2:00:30	0.4	0.5
2week - F1	64	5/15/2007	5/17/2007	16	G	1	1	3.8	4.2	4.4	2	10.1	9.9	15:41	17:20	1:39	0.2	9
2week - F1	64	5/15/2007	5/18/2007	17	R	1	1	3.9	4.4	4.6	2	11.3	10	10:56	12:38	1:42	0.3	2
2week - F1	64	5/15/2007	5/18/2007	17	O	1	1	4	4.4	4.6	2	10	10.1	13:01	15:10:30	2:09:30	0.4	9
2week - F1	64	5/15/2007	5/19/2007	18	P	1	1	4.2	4.6	4.8	2	11.9	10.2	10:40	12:17	1:37	0.2	7
2week - F1	64	5/15/2007	5/19/2007	18	G/O	1	1	4.1	4.5	4.7	2	10.2	10.2	12:50	14:39	1:49	0.3	9
2week - F1	9	5/25/2007	6/1/2007	21	G	1	2	4.7	5.3	5.5	2	11.3	11.3	13:12	14:54	1:42	0.3	2
2week - F1	9	5/25/2007	6/1/2007	21	R	1	2	4.7	5.1	5.4	2	11.3	11.5	15:01	16:47	1:46	0.3	6
2week - F1	9	5/25/2007	6/1/2007	21	O	1	3	5.3	5.9	6.1	2	11.5	11.6	16:51	18:57	2:06	0.4	6
2week - F1	9	5/25/2007	6/3/2007	23	P	1	2	4.8	5.4	5.6	2	12.1	10.8	11:57	13:48	1:51	0.3	1
2week - F1	9	5/25/2007	6/3/2007	23	G/O	1	2	5.9	6.4	6.6	2	10.8	10.7	14:47	16:40	1:53	0.3	3
2 week - F1 Control	C19	4/4/2007	4/9/2007	19	G	1	2	4.7	5.3	5.5	1	10.4	9.9	13:31	15:36	2:05	0.4	5
2 week - F1 Control	C19	4/4/2007	4/9/2007	19	R	1	3	4.9	5.5	5.7	2	10.5	9.2	13:34	16:06	2:32	0.5	2
2 week - F1 Control	C19	4/4/2007	4/10/2007	20	O	1	2	5.1	5.7	5.9	1	10.9	9.2	8:20	10:12	1:52	0.3	2
2 week - F1 Control	C19	4/4/2007	4/10/2007	20	P	1	2	5	5.5	5.8	2	10.5	9.2	8:27	10:24	1:57	0.3	7
2 week - F1 Control	C19	4/4/2007	4/10/2007	20	G/O	1	3	4.7	5.3	5.5	1	9.2	9.1	12:02	13:46	1:44	0.3	4
2 week - F1 Control	C20	4/4/2007	4/11/2007	21	G	1	2	4.7	5.2	5.4	1	10.1	9.1	8:13	9:44	1:31	0.2	1
2 week - F1 Control	C20	4/4/2007	4/11/2007	21	R	1	1	4.5	4.9	5.1	2	9.9	9.1	8:16	10:27	2:11	0.4	1
2 week - F1 Control	C20	4/4/2007	4/10/2007	20	O	1	2	4.1	4.5	4.7	2	9.2	9.1	11:37	13:30	1:53	0.3	3
2 week - F1 Control	C20	4/4/2007	4/10/2007	20	P	1	2	4.8	5.4	5.6	1	9.1	9.1	14:08	15:23	1:15	0.1	4

Table A1.9 (continued). Raw data collected from the swimming experiments for the two week swimming period in the *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Strain	Tank	Date	Swim Date	Day	Color	Rating	Weight	Sd Length	Fk Length	Ttl Length	Flume	Begin Temp	Final Temp	Time In	Time Out	Flume Time	CSV	Time @ CSV
2 week - F1 Control	C20	4/4/2007	4/10/2007	20	G/O	1	2	4.7	5.3	5.5	2	9.1	9.1	16:40	18:36	1:56	0.3	6
2 week - F1 Control	C17	5/15/2007	5/15/2007	14	G	1	1	4.4	4.9	5.2	1	10	10	16:58	18:39	1:41	0.3	1
2 week - F1 Control	C17	5/15/2007	5/15/2007	14	R	1	1	4.4	4.9	5.1	1	10	10	19:18	21:02	1:44	0.3	4
2 week - F1 Control	C17	5/15/2007	5/17/2007	16	O	1	1	4.2	4.7	4.8	1	11.1	10	9:52	11:25	1:33	0.2	3
2 week - F1 Control	C17	5/15/2007	5/17/2007	16	P	1	1	4.6	5.1	5.3	1	10	10.1	13:28	15:32	2:04	0.4	4
2 week - F1 Control	C17	5/15/2007	5/17/2007	16	G/O	1	2	5	5.5	5.7	1	10.1	10.1	15:44	17:28	1:44	0.3	4
2 week - F1 Control	C2	5/25/2007	5/29/2007	18	G	1	1.5	4.7	5.2	5.4	1	10	10	16:15	18:06	1:51	0.3	1
2 week - F1 Control	C2	5/25/2007	5/30/2007	19	R	1	1	4.5	4.9	5.1	1	10.2	10.2	11:06	13:01	1:55	0.3	5
2 week - F1 Control	C2	5/25/2007	5/30/2007	19	O	1	2	4.7	5.2	5.5	1	10.2	10.1	13:54	15:40	1:46	0.3	6
2 week - F1 Control	C2	5/25/2007	5/31/2007	20	P	1	2	4.7	5.1	5.3	1	11	10	11:14	12:40	1:26	0.2	6
2 week - F1 Control	C2	5/25/2007	5/31/2007	20	G/O	1	2	4.9	5.4	5.6	1	10	10	13:04	15:06	2:02	0.4	2
2week - F2	77	4/17/2007	4/18/2007	15	G	1	1.5	4.2	4.6	4.8	2	11.5	9.5	12:30	14:52	2:22	0.5	2
2week - F2	77	4/17/2007	4/18/2007	15	R	1	1	4.3	4.8	5	2	9.5	9.4	15:05	16:53	1:48	0.3	8
2week - F2	77	4/17/2007	4/19/2007	16	O	1	2	4.6	5	5.2	2	10.9	9.9	10:21	12:02	1:41	0.3	1
2week - F2	77	4/17/2007	4/19/2007	16	P	1	1	4	4.4	4.6	2	9.9	10	12:08	14:20	2:12	0.4	2
2week - F2	77	4/17/2007	4/19/2007	16	G/O	1	1	4.2	4.6	4.8	2	10	9.5	14:28	16:25	1:57	0.3	7
2week - F2	51	5/4/2007	5/6/2007	16	G	1	0.5	3.6	4.1	4.2	2	9.4	9.4	15:33	17:26	1:53	0.3	3
2week - F2	51	5/4/2007	5/6/2007	16	R	1	0.5	2.9	3.3	3.4	2	9.4	9.3	17:32	19:15	1:43	0.3	3
2week - F2	51	5/4/2007	5/7/2007	17	O	1	1	3.9	4.2	4.3	2	11	9.3	10:53	12:56	2:03	0.4	3
2week - F2	51	5/4/2007	5/7/2007	17	P	1	0.5	3.5	3.9	4.1	2	9.3	9.4	13:03	15:02	1:59	0.3	9
2week - F2	51	5/4/2007	5/7/2007	17	G/O	1	1	3.6	4	4.1	2	9.4	9.4	15:09	17:13	2:04	0.4	4
2week - F2	21	5/8/2007	5/11/2007	17	G	1	1	3.9	4.4	4.5	2	10.7	10.7	15:23	17:04	1:41	0.3	1
2week - F2	21	5/8/2007	5/13/2007	19	R	1	0.5	3.8	4.2	4.3	2	12.4	10.9	12:20	14:03	1:43	0.3	3
2week - F2	21	5/8/2007	5/13/2007	19	O	1	1	4	4.4	4.5	2	10.9	10.5	14:17	16:28	2:11	0.4	1
2week - F2	21	5/8/2007	5/13/2007	19	P	2	1	3.9	4.3	4.5	2	10.5	10.5	16:41	18:54	2:13	0.4	3
2week - F2	21	5/8/2007	5/13/2007	19	G/O	1	1	3.9	4.3	4.4	2	10.5	10.3	19:00	20:45	1:45	0.3	5
2week - F2	26	5/22/2007	5/25/2007	17	G	2	1	3.9	4.2	4.4	2	10.1	9.9	11:24	13:12	1:48	0.3	8
2week - F2	26	5/22/2007	5/25/2007	17	R	1	1	3.9	4.4	4.6	2	9.9	10.1	13:30	#######	1:50:30	0.3	0.5

Table A1.9 (continued). Raw data collected from the swimming experiments for the two week swimming period in the *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Strain	Tank	Date	Swim Date	Day	Color	Rating	Weight	Sd Length	Fk Length	Ttl Length	Flume	Begin Temp	Final Temp	Time In	Time Out	Flume Time	CSV	Time @ CSV
2week - F2	26	5/22/2007	5/25/2007	17	O	1	1	3.7	4.1	4.3	2	10.1	10.3	15:27	17:19	1:52	0.3	2
2week - F2	26	5/22/2007	5/25/2007	17	P	1	1	3.7	4.2	4.3	2	10.1	10.4	17:25	19:28	2:03	0.4	3
2week - F2	26	5/22/2007	5/25/2007	17	G/O	1	1	3.8	4.2	4.3	2	10.4	9.7	19:33	21:33:30	2:00:30	0.3	0.5
2week - B2	30	4/20/2007	4/20/2007	14	G	1	2	4.6	4.9	5.2	2	10.5	9.3	7:52	9:34	1:42	0.3	2
2week - B2	30	4/20/2007	4/20/2007	14	R	1	2	4.7	5.3	5.5	2	9.3	9.3	10:02	11:56	1:54	0.4	4
2week - B2	30	4/20/2007	4/20/2007	14	O	1	1	4.2	4.7	4.8	2	9.3	9.3	12:17	14:13	1:56	0.3	6
2week - B2	30	4/20/2007	4/20/2007	14	P	1	1	4.4	4.8	5.1	2	9.3	9.3	14:29	16:23	1:54	0.3	4
2week - B2	30	4/20/2007	4/22/2007	16	G/O	1	2	46	5.1	5.3	2	11.2	9.3	9:12	10:55	1:43	0.3	3
2week - B2	68	4/27/2007	4/30/2007	17	G	2	1	3.9	4.3	4.5	2	10.2	10.6	13:14	15:04:30	1:50:30	0.3	0.5
2week - B2	68	4/27/2007	4/30/2007	17	R	1	1	3.9	4.3	4.5	2	10.6	10.6	15:30	17:13	1:43	0.3	3
2week - B2	68	4/27/2007	5/1/2007	18	O	1	1	4	4.4	4.6	2	10.7	9.9	8:30	10:11	1:41	0.3	1
2week - B2	68	4/27/2007	5/1/2007	18	P	1	2	4.4	4.9	5.1	2	9.9	10.2	15:38	18:00	2:22	0.5	2
2week - B2	68	4/27/2007	5/1/2007	18	G/O	1	1	4.3	4.7	4.9	2	10.2	10	18:05	19:57	1:52	0.3	2
2week - B2	71	5/18/2007	5/22/2007	18	G	2	1	3.3	3.5	3.7	2	10.5	9.5	9:32	11:21:30	1:49:30	0.3	9.5
2week - B2	71	5/18/2007	5/22/2007	18	R	1	1	3.8	4.2	4.4	2	9.5	9.6	11:37	13:18	1:41	0.3	1
2week - B2	71	5/18/2007	5/22/2007	18	O	1	0.5	3.2	3.6	3.7	2	9.6	9.6	14:24	15:55	1:31	0.2	1
2week - B2	71	5/18/2007	5/22/2007	18	P	1	1	4	4.5	4.6	2	9.6	9.6	16:01	17:38	1:37	0.2	7
2week - B2	71	5/18/2007	5/23/2007	19	G/O	1	1	4	4.5	4.7	2	12.1	9.7	17:02	18:44	1:42	0.3	2
2week - B2	8	6/7/2007	6/15/2007	22	G	2	1	3.8	4.3	4.5	2	12.3	11.3	11:21	13:24	2:03	0.4	3
2week - B2	8	6/7/2007	6/15/2007	22	R	2	2	4.6	5.1	5.3	2	11.3	11.6	13:42	15:58	2:16	0.4	6
2week - B2	8	6/7/2007	6/15/2007	22	O	2	2	4.4	4.9	5.1	2	11.6	11.5	16:23	18:24	2:01	0.4	1
2week - B2	8	6/7/2007	6/16/2007	23	P	1	1	3.9	4.3	4.5	2	13.4	12	14:53	16:52:30	1:59:30	0.3	9.5
2week - B2	8	6/7/2007	6/16/2007	23	G/O	1	2	4.7	5.2	5.4	2	12	11.9	17:15	19:29	2:14	0.4	4
2week - B2 Control	C18	4/4/2007	4/11/2007	21	G	1	1	4.5	4.9	5.1	1	9.2	9.3	13:02	14:32:30	1:30:30	0.2	0.5
2week - B2 Control	C18	4/4/2007	4/11/2007	21	R	1	1	4.5	5	5.2	2	9.1	9.2	13:06	14:35	1:29	0.2	9
2week - B2 Control	C18	4/4/2007	4/10/2007	20	O	1	2	4.7	5.2	5.4	1	9.1	9.1	15:36	17:28	1:52	0.3	2
2week - B2 Control	C18	4/4/2007	4/12/2007	22	P	1	1.5	4.6	5.1	5.3	1	10.7	9.5	9:28	11:26	1:58	0.3	8
2week - B2 Control	C18	4/4/2007	4/12/2007	22	G/O	1	2	4.5	5	5.2	2	10.6	9.5	9:26	11:20	1:54	0.3	4

Table A1.9 (continued). Raw data collected from the swimming experiments for the two week swimming period in the *M. cerebralis* resistance experiment conducted at the Colorado Cooperative Fish and Wildlife Unit (COOP) wet lab in 2007.

Strain	Tank	Date	Swim Date	Day	Color	Rating	Weight	Sd Length	Fk Length	Ttl Length	Flume	Begin Temp	Final Temp	Time In	Time Out	Flume Time	CSV	Time @ CSV
2week - B2 Control	C5	5/18/2007	5/18/2007	14	G	1	1	3.9	4.3	4.5	1	10.5	10	10:52	12:26	1:34	0.2	4
2week - B2 Control	C5	5/18/2007	5/18/2007	14	R	1	1	3.7	4.1	4.2	1	10	9.8	13:00	14:59:30	1:59:30	0.3	9.5
2week - B2 Control	C5	5/18/2007	5/19/2007	15	O	1	0.5	3.6	4	4.1	1	10.8	9.9	10:37	12:29	1:52	0.3	2
2week - B2 Control	C5	5/18/2007	5/19/2007	15	P	1	1	4.2	4.6	4.8	1	9.9	10	12:47	14:35	1:48	0.3	8
2week - B2 Control	C5	5/18/2007	5/19/2007	15	G/O	1	1	4.1	4.6	4.7	1	10	10	14:52	16:33	1:41	0.3	1
2week - B2 Control	C8	6/7/2007	6/16/2007	23	G	1	1	4.4	4.9	5.1	1	11	11	17:09	19:15	2:06	0.4	6
2week - B2 Control	C8	6/7/2007	6/16/2007	23	R	1	1	4.4	4.8	5.1	1	11	11	19:25	21:22	1:57	0.3	7
2week - B2 Control	C8	6/7/2007	6/17/2007	24	O	1	2	4.6	5.1	5.4	1	14	11.6	15:27	17:13	1:46	0.3	6
2week - B2 Control	C8	6/7/2007	6/17/2007	24	P	1	1	3.9	4.4	4.6	1	11.6	11.5	17:23	19:26	2:03	0.4	3
2week - B2 Control	C8	6/7/2007	6/17/2007	24	G/O	1	2	4.5	5	5.2	1	11.5	11.2	19:37	21:30	1:53	0.3	3

Table A1.10. Control weights and lengths for determining which individuals from each strain were to be used in the pond predation experiment conducted in 2008.

Strain	Current Tank	Weight	Std. L.	Fork L.	Total L.	Color	Where	New Tank
B2	SB2	40	13.9	15.3	16	G,O	L.Eye G,R.Eye O	C4 or C9
B2	SB2	41	14.7	15.8	16.8	G,O	L.Eye G,R.Eye O	C4 or C9
B2	SB2	64	16.2	17.5	18.4	G,O	L.Eye G,R.Eye O	C4 or C9
B2	SB2	62	16.8	18.1	19.1	G,O	L.Eye G,R.Eye O	C4 or C9
B2	SB2	86	17.2	18.8	19.6	G,O	L.Eye G,R.Eye O	C4 or C9
B2	SB2	84	18	19.4	20.4	G,O	L.Eye G,R.Eye O	C4 or C9
B2	SB2	95	18.3	19.7	20.9	G,O	L.Eye G,R.Eye O	C4 or C9
B2	SB2	100	18.4	20	20.9	G,O	L.Eye G,R.Eye O	C4 or C9
B2	SB2	103	19	20.5	21.5	G,O	L.Eye G,R.Eye O	C4 or C9
B2	C4	92	19	20.4	21.7	G,O	L.Eye G,R.Eye O	C4 or C9
B2	SB2	113	19.5	21.1	22.1	G,O	L.Eye G,R.Eye O	C4 or C9
B2	C4	106	19.5	20.9	22.3	G,O	L.Eye G,R.Eye O	C4 or C9
B2	SB2	121	20	21.4	22.4	G,O	L.Eye G,R.Eye O	C4 or C9
B2	SB2	135	20.6	22.3	23.4	G,O	L.Eye G,R.Eye O	C4 or C9
B2	C9	121	20.8	22.4	23.6	G,O	L.Eye G,R.Eye O	C4 or C9
B2	C9	135	20.9	22.5	23.7	G,O	L.Eye G,R.Eye O	C4 or C9
B2	SB2	146	21	22.6	23.7	G,O	L.Eye G,R.Eye O	C4 or C9
B2	C4	145	21.3	23	23.9	G,O	L.Eye G,R.Eye O	C4 or C9
B2	C4	119	21.4	23	24	G,O	L.Eye G,R.Eye O	SB2
B2	SB2	139	21.3	22.7	24	G,O	L.Eye G,R.Eye O	SB2
B2	C9	132	21.2	23	24.1	G,O	L.Eye G,R.Eye O	SB2
B2	C9	144	21.7	23.3	24.3	G,O	L.Eye G,R.Eye O	SB2
B2	C4	142	21.9	23.4	24.7	G,O	L.Eye G,R.Eye O	SB2
B2	SB2	156	22	23.6	25	G,O	L.Eye G,R.Eye O	SB2
B2	SB2	168	22.3	23.8	25	G,O	L.Eye G,R.Eye O	SB2
B2	C9	160	22	23.8	25.2	G,O	L.Eye G,R.Eye O	SB2
B2	SB2	161	22.4	24	25.2	G,O	L.Eye G,R.Eye O	SB2
B2	SB2	168	22.6	24.3	25.2	G,O	L.Eye G,R.Eye O	SB2
B2	SB2	170	23	24.6	25.9	G,O	L.Eye G,R.Eye O	SB2
B2	C9	197	23.8	25.4	26.7	G,O	L.Eye G,R.Eye O	SB2
B2	C4	188	24.3	26	27.1	G,O	L.Eye G,R.Eye O	SB2
B2	C9	224	24.2	26	27.2	G,O	L.Eye G,R.Eye O	SB2
B2	C4	192	24.5	26.1	27.3	G,O	L.Eye G,R.Eye O	SB2
B2	C4	177	24.6	26.1	27.4	G,O	L.Eye G,R.Eye O	SB2
B2	C4	228	25.4	27.3	28.3	G,O	L.Eye G,R.Eye O	SB2
B2	C4	247	25.5	27.3	28.6	G,O	L.Eye G,R.Eye O	SB2

Table A1.10 (continued). Control weights and lengths for determining which individuals from each strain were to be used in the pond predation experiment conducted in 2008.

Strain	Current Tank	Weight	Std. L.	Fork L.	Total L.	Color	Where	New Tank
CRR	SB1	13	9.1	10	10.7	P	R.Eye	C12
CRR	SB1	18	10.7	11.6	12.4	P	R.Eye	C12
CRR	SB1	20	11	12	12.9	P	R.Eye	C12
CRR	SB1	26	11.7	12.8	13.3	P	R.Eye	C12
CRR	SB1	26	11.6	12.6	13.4	P	R.Eye	C12
CRR	SB1	25	11.9	12.9	13.6	P	R.Eye	C12
CRR	SB1	29	12.4	13.5	14.3	P	R.Eye	C12
CRR	SB1	28	12.7	13.8	14.7	P	R.Eye	C12
CRR	SB1	33	13.5	14.4	15.4	P	R.Eye	C12
CRR	SB1	37	13.7	14.8	15.7	P	R.Eye	C12
CRR	SB1	41	13.7	15	15.9	P	R.Eye	C12
CRR	SB1	45	14	15.4	16.2	P	R.Eye	C12
CRR	SB1	39	14.2	15.3	16.4	P	R.Eye	C12
CRR	SB1	43	14.7	15.7	16.7	P	R.Eye	C12
CRR	SB1	48	14.9	16	17.1	P	R.Eye	C12
CRR	SB1	46	15.1	16.3	17.5	P	R.Eye	C12
CRR	SB1	54	15.6	16.8	17.7	P	R.Eye	C12
CRR	SB1	53	15.7	16.8	18	P	R.Eye	C12
CRR	SB1	70	15.9	17.3	18.2	P	R.Eye	SB1
CRR	SB1	59	16.2	17.3	18.4	P	R.Eye	SB1
CRR	SB1	60	16.3	17.6	18.4	P	R.Eye	SB1
CRR	SB1	70	16.6	18	19.2	P	R.Eye	SB1
CRR	SB1	70	17.1	18.4	19.3	P	R.Eye	SB1
CRR	SB1	76	17.1	18.3	19.4	P	R.Eye	SB1
CRR	SB1	72	17.4	18.7	19.6	P	R.Eye	SB1
CRR	SB1	80	17	18.4	19.6	P	R.Eye	SB1
CRR	SB1	75	17.4	18.7	19.7	P	R.Eye	SB1
CRR	SB1	78	17.4	18.8	20	P	R.Eye	SB1
CRR	SB1	86	18	19.9	20.4	P	R.Eye	SB1
CRR	SB1	81	18.3	19.7	20.8	P	R.Eye	SB1
CRR	SB1	96	18.2	19.5	20.8	P	R.Eye	SB1
CRR	SB1	92	18.8	20.2	21.3	P	R.Eye	SB1
CRR	SB1	94	18.7	20.2	21.3	P	R.Eye	SB1
CRR	SB1	96	19	20.5	21.5	P	R.Eye	SB1
CRR	SB1	102	19.2	20.7	21.7	P	R.Eye	SB1
CRR	SB1	107	19.3	20.7	21.8	P	R.Eye	SB1

Table A1.10 (continued). Control weights and lengths for determining which individuals from each strain were to be used in the pond predation experiment conducted in 2008.

Strain	Current Tank	Weight	Std. L.	Fork L.	Total L.	Color	Where	New Tank
F1	C1	85	17.2	18.5	19.3	G	R.Eye	C5
F1	C1	101	18	19.4	20.1	G	R.Eye	C5
F1	C2	99	19.6	20.9	21.7	G	R.Eye	C7
F1	C2	108	19.7	21.1	21.9	G	R.Eye	C7
F1	C1	124	19.7	21.1	22.1	G	R.Eye	C5
F1	C1	129	19.4	21.1	22.1	G	R.Eye	C5
F1	C2	126	19.7	21.2	22.3	G	R.Eye	C7
F1	C1	140	20.4	21.6	22.7	G	R.Eye	C5
F1	C7	152	20.5	22	23	G	R.Eye	C7
F1	C2	114	20.5	22.1	23.2	G	R.Eye	C7
F1	C2	142	21.3	22.9	23.8	G	R.Eye	C7
F1	C1	145	20.9	22.5	23.9	G	R.Eye	C5
F1	C2	133	21.5	23.2	24.1	G	R.Eye	C7
F1	C7	141	21.7	23.2	24.2	G	R.Eye	C7
F1	C7	147	21.6	23.4	24.3	G	R.Eye	C7
F1	C1	149	21.5	23.1	24.3	G	R.Eye	C5
F1	C7	181	21.8	23.5	24.4	G	R.Eye	C7
F1	C5	135	21.8	23.5	24.6	G	R.Eye	C5
F1	C5	142	22	23.5	24.7	G	R.Eye	
F1	C7	172	22	23.6	24.7	G	R.Eye	
F1	C5	160	23.7	24.5	25.4	G	R.Eye	
F1	C5	177	22.6	24.7	25.4	G	R.Eye	C1
F1	C2	174	22.5	24.3	25.5	G	R.Eye	C2
F1	C1	179	22.5	24.3	25.5	G	R.Eye	C1
F1	C7	175	23.2	24.8	25.9	G	R.Eye	C2
F1	C2	182	23	24.8	25.9	G	R.Eye	C2
F1	C7	178	23.2	24.8	26	G	R.Eye	C2
F1	C5	185	23.4	25.1	26	G	R.Eye	C1
F1	C2	209	23.2	25	26.1	G	R.Eye	C2
F1	C5	165	23.5	25.3	26.2	G	R.Eye	C1
F1	C5	172	23.3	25.1	26.3	G	R.Eye	C1
F1	C7	189	23.5	25.3	26.3	G	R.Eye	C2
F1	C5	177	23.5	25.5	26.4	G	R.Eye	C1
F1	C5	180	23.7	25.6	26.4	G	R.Eye	C1
F1	C1	202	23.7	25.4	26.6	G	R.Eye	C1
F1	C1	207	24.2	26	27	G	R.Eye	C1
F1	C5	195	24.2	26.1	27.5	G	R.Eye	C1
F1	C7	224	24.9	26.7	28.1	G	R.Eye	C2
F1	C7	240	25.3	28.1	29	G	R.Eye	C2

Table A1.10 (continued). Control weights and lengths for determining which individuals from each strain were to be used in the pond predation experiment conducted in 2008.

Strain	Current Tank	Weight	Std. L.	Fork L.	Total L.	Color	Where	New Tank
F2	C10	22	10.7	11.5	12.3	O	L.Eye	
F2	C10	20	11	12	12.7	O	L.Eye	C10
F2	C10	57	15.7	16.9	17.9	O	L.Eye	C10
F2	C10	88	18.8	19.2	20.3	O	L.Eye	C10
F2	C8	96	18.3	19.7	20.7	O	L.Eye	C10
F2	C11	101	18.2	19.7	20.8	O	L.Eye	C10
F2	C10	104	19	20.4	21.3	O	L.Eye	C6
F2	C6	84	18.8	20.2	21.4	O	L.Eye	C6
F2	C11	133	19.2	20.6	21.6	O	L.Eye	C10
F2	C11	132	19.6	21.4	22.3	O	L.Eye	C10
F2	C8	114	20	21.5	22.5	O	L.Eye	C6
F2	C3	137	20.2	21.9	22.8	O	L.Eye	C6
F2	C3	127	20.4	21.9	23.2	O	L.Eye	C6
F2	C6	107	20.7	22.1	23.6	O	L.Eye	C6
F2	C11	147	20.9	22.3	23.6	O	L.Eye	C10
F2	C3	138	21.3	22.9	24.2	O	L.Eye	C6
F2	C3	135	21.9	23.7	25	O	L.Eye	C6
F2	C8	146	22	23.9	25	O	L.Eye	C6
F2	C11	172	22.2	24	25.1	O	L.Eye	C10
F2	C3	138	22.4	23.9	25.2	O	L.Eye	
F2	C8	173	22.2	24.1	25.2	O	L.Eye	C8
F2	C8	158	22.8	24.6	25.8	O	L.Eye	C8
F2	C8	175	22.6	24.5	25.9	O	L.Eye	C8
F2	C3	166	23	24.8	26	O	L.Eye	C3
F2	C8	178	22.8	24.8	26.1	O	L.Eye	C8
F2	C3	160	23.3	25.2	26.4	O	L.Eye	C8
F2	C3	166	23.8	25.5	26.6	O	L.Eye	C3
F2	C8	200	23.5	25.5	26.7	O	L.Eye	C8
F2	C6	200	23.5	25.5	26.8	O	L.Eye	C3
F2	C6	173	23.9	25.7	27.2	O	L.Eye	C3
F2	C8	196	24	26.1	27.2	O	L.Eye	C8
F2	C3	183	24.2	26	27.4	O	L.Eye	C3
F2	C6	176	24.3	26	27.6	O	L.Eye	C3
F2	C8	214	24.8	26.8	28	O	L.Eye	C8
F2	C6	195	25.5	27.4	29	O	L.Eye	C3
F2	C6	228	26	27.9	29.1	O	L.Eye	C3
F2	C6	252	26.5	28.2	29.6	O	L.Eye	C3
F2	C6	239	26.4	28.6	30	O	L.Eye	C3
F2	C3	249	26.5	28.7	30.1	O	L.Eye	
F2	C6	241	26.9	28.8	30.3	O	L.Eye	

Table A1.10 (continued). Control weights and lengths for determining which individuals from each strain were to be used in the pond predation experiment conducted in 2008.

Strain	Current Tank	Weight	Std. L.	Fork L.	Total L.	Color	Where	New Tank
GR	BB1	167	21.8	23.2	23.4	R	L.Eye	C13 or 61
GR	BB1	144	21	22.7	23.7	R	L.Eye	C13 or 61
GR	BB1	143	21.2	23	24	R	L.Eye	C13 or 61
GR	BB1	170	21	22.9	24.2	R	L.Eye	C13 or 61
GR	BB1	167	22	23.6	24.7	R	L.Eye	C13 or 61
GR	BB1	154	22	24.1	25	R	L.Eye	C13 or 61
GR	BB1	160	22	23.9	25	R	L.Eye	C13 or 61
GR	BB1	196	22.4	24.2	25	R	L.Eye	C13 or 61
GR	BB1	174	22.7	24.4	25.2	R	L.Eye	C13 or 61
GR	BB1	204	23	24.8	25.3	R	L.Eye	C13 or 61
GR	BB1	168	22.5	24.3	25.5	R	L.Eye	C13 or 61
GR	BB1	210	23.7	24.7	25.6	R	L.Eye	C13 or 61
GR	BB1	172	22.9	24.7	25.7	R	L.Eye	C13 or 61
GR	BB1	205	22.6	24.6	25.7	R	L.Eye	C13 or 61
GR	BB1	188	23.2	25	25.8	R	L.Eye	C13 or 61
GR	BB1	213	22.9	24.8	25.9	R	L.Eye	C13 or 61
GR	BB1	189	23.5	25.3	26.4	R	L.Eye	C13 or 61
GR	BB1	231	24	26	26.5	R	L.Eye	C13 or 61
GR	BB1	200	23.4	25.4	26.6	R	L.Eye	BB1
GR	BB1	214	23.9	25.8	27	R	L.Eye	BB1
GR	BB1	219	24.2	26	27.2	R	L.Eye	BB1
GR	BB1	252	24	26.1	27.2	R	L.Eye	BB1
GR	BB1	240	24.2	26	27.3	R	L.Eye	BB1
GR	BB1	229	24.5	26.3	27.4	R	L.Eye	BB1
GR	BB1	217	24.5	26.7	27.5	R	L.Eye	BB1
GR	BB1	212	24.5	26.6	27.6	R	L.Eye	BB1
GR	BB1	238	24.2	26.5	27.9	R	L.Eye	BB1
GR	BB1	244	24.8	27	28	R	L.Eye	----
GR	BB1	248	25	27.1	28	R	L.Eye	BB1
GR	BB1	225	24.5	26.8	28.1	R	L.Eye	BB1
GR	BB1	245	24.4	26.8	28.1	R	L.Eye	BB1
GR	BB1	252	25.2	27	28.1	R	L.Eye	BB1
GR	BB1	252	25.2	27.3	28.3	R	L.Eye	BB1
GR	BB1	278	25.2	27.4	28.3	R	L.Eye	BB1
GR	BB1	279	25.5	27.5	28.5	R	L.Eye	BB1
GR	BB1	249	25.5	27.5	28.6	R	L.Eye	BB1
GR	BB1	279	26.1	28.1	29.1	R	L.Eye	BB1

Table A1.11. Infected individual weights and lengths for determining which individuals from strain were to be used in the pond predation experiment conducted in 2008.

Strain	Current Tank	Weight	Std. L.	Fork L.	Total L.	Color	Where	New Tank
B2	T5	129	21.2	22.8	24	G,O	L.Eye G,R.Eye O	T5
B2	T5	131	20.3	21.6	22.9	G,O	L.Eye G,R.Eye O	T5
B2	T5	136	20.9	22.6	23.6	G,O	L.Eye G,R.Eye O	T5
B2	T9	141	21.1	22.5	23.7	G,O	L.Eye G,R.Eye O	T5
B2	T9	96	19.6	21.1	22	G,O	L.Eye G,R.Eye O	T5
B2	T9	93	18.4	19.7	20.8	G,O	L.Eye G,R.Eye O	T5
B2	T9	135	20.9	22.5	23.4	G,O	L.Eye G,R.Eye O	T5
B2	T9	106	18.1	19.5	20.5	G,O	L.Eye G,R.Eye O	T5
B2	T9	120	20	21.5	22.4	G,O	L.Eye G,R.Eye O	T5
B2	T9	75	15.9	17.8	18.2	G,O	L.Eye G,R.Eye O	T5
B2	T18	140	19.8	21.5	22.5	G,O	L.Eye G,R.Eye O	T40
B2	SB5	46	14	15	16	G,O	L.Eye G,R.Eye O	T40
B2	SB5	100	19.3	20.6	21.9	G,O	L.Eye G,R.Eye O	T40
B2	SB5	51	15	16.3	17.1	G,O	L.Eye G,R.Eye O	T40
B2	SB5	41	15	16.1	17	G,O	L.Eye G,R.Eye O	T40
B2	SB5	78	17.1	18.5	19.6	G,O	L.Eye G,R.Eye O	T40
B2	SB5	84	18.8	20.1	21.2	G,O	L.Eye G,R.Eye O	T40
B2	SB5	111	20.3	21.7	22.8	G,O	L.Eye G,R.Eye O	T40
B2	T5	149	21.7	23.3	24.4	G,O	L.Eye G,R.Eye O	T9
B2	T5	194	23.3	25	26.2	G,O	L.Eye G,R.Eye O	T9
B2	T5	167	22.1	23.6	24.8	G,O	L.Eye G,R.Eye O	T9
B2	T5	169	21.7	23.4	24.4	G,O	L.Eye G,R.Eye O	T9
B2	T5	144	21.9	23.5	24.5	G,O	L.Eye G,R.Eye O	T9
B2	T5	168	22.3	23.9	25.1	G,O	L.Eye G,R.Eye O	T9
B2	T5	141	21.3	22.9	24.1	G,O	L.Eye G,R.Eye O	T9
B2	T9	173	22.6	24.1	25	G,O	L.Eye G,R.Eye O	T9
B2	T9	148	21.9	23.6	24.6	G,O	L.Eye G,R.Eye O	T9
B2	T18	220	24.2	25.8	26.7	G,O	L.Eye G,R.Eye O	T9
B2	T18	199	23.5	25.2	26	G,O	L.Eye G,R.Eye O	T18
B2	T18	167	22.5	24.3	25.2	G,O	L.Eye G,R.Eye O	T18
B2	T18	191	23.5	25.2	25.9	G,O	L.Eye G,R.Eye O	T18
B2	T53	170	22.8	24	25.3	G,O	L.Eye G,R.Eye O	T18
B2	T53	225	24.9	26.6	28.2	G,O	L.Eye G,R.Eye O	T18
B2	T53	210	24.4	26.3	27.7	G,O	L.Eye G,R.Eye O	T18
B2	T53	195	24.4	26.2	27.5	G,O	L.Eye G,R.Eye O	T18
B2	T53	202	23.8	25.6	26.9	G,O	L.Eye G,R.Eye O	T18

Table A1.11 (continued). Infected individual weights and lengths for determining which individuals from each strain were to be used in the pond predation experiment conducted in 2008.

Strain	Current Tank	Weight	Std. L.	Fork L.	Total L.	Color	Where	New Tank
CRR	SB3	53	15.3	16.5	17.5	P	R. Eye	T39
CRR	SB3	30	13.2	14.1	15.1	P	R. Eye	T39
CRR	SB3	53	15.2	16.4	17.3	P	R. Eye	T39
CRR	SB3	41	14.4	15.3	16.4	P	R. Eye	T39
CRR	SB3	23	12.2	13	14	P	R. Eye	T39
CRR	SB3	20	11.3	12.3	13	P	R. Eye	T39
CRR	SB3	53	15.4	16.7	17.6	P	R. Eye	T39
CRR	SB3	48	15.9	16.9	17.7	P	R. Eye	T39
CRR	SB3	42	14.1	15.3	16	P	R. Eye	T39
CRR	SB3	41	14.7	15.7	16.7	P	R. Eye	T39
CRR	SB3	14	10	10.8	11.5	P	R. Eye	T39
CRR	SB3	30	12.8	13.7	14.5	P	R. Eye	T39
CRR	SB3	45	14.8	15.9	16.7	P	R. Eye	T39
CRR	SB3	16	10.1	11.1	11.8	P	R. Eye	T39
CRR	SB3	26	12.1	13.2	14	P	R. Eye	T39
CRR	SB3	38	13.8	14.7	15.7	P	R. Eye	T39
CRR	SB3	30	13	14	15	P	R. Eye	T39
CRR	SB3	27	12.3	13.3	14.1	P	R. Eye	T39
CRR	SB3	96	18.8	20.1	21.3	P	R. Eye	SB3
CRR	SB3	72	17.7	19	19.9	P	R. Eye	SB3
CRR	SB3	59	16.4	17.5	18.5	P	R. Eye	SB3
CRR	SB3	60	16.5	17.7	18.8	P	R. Eye	SB3
CRR	SB3	107	19	20.5	21.7	P	R. Eye	SB3
CRR	SB3	84	18.6	19.9	21	P	R. Eye	SB3
CRR	SB3	98	19.5	20.9	22	P	R. Eye	SB3
CRR	SB3	68	17.1	18.3	19.4	P	R. Eye	SB3
CRR	SB3	59	16.5	17.7	18.5	P	R. Eye	SB3
CRR	SB3	68	17	18.2	19.5	P	R. Eye	SB3
CRR	SB4	75	17.4	18.7	20	P	R. Eye	SB3
CRR	SB4	91	17.7	19.4	20.4	P	R. Eye	SB3
CRR	SB4	83	17.5	19	20.3	P	R. Eye	SB3
CRR	SB4	80	17	18.5	19.6	P	R. Eye	SB3
CRR	SB4	90	18.7	20.1	21.1	P	R. Eye	SB3
CRR	SB4	82	18.1	19.8	20.4	P	R. Eye	SB3
CRR	SB4	89	17.8	19	20	P	R. Eye	SB3
CRR	SB4	66	16.7	17.5	18.4	P	R. Eye	SB3

Table A1.11 (continued). Infected individual weights and lengths for determining which individuals from each strain were to be used in the pond predation experiment conducted in 2008.

Strain	Current Tank	Weight	Std. L.	Fork L.	Total L.	Color	Where	New Tank
F1	T23	158	21.5	23.2	23.9	G	R.Eye	T23
F1	T23	102	19	20.2	21.1	G	R.Eye	T23
F1	T23	142	21.2	22.7	23.8	G	R.Eye	T23
F1	T14	137	21.3	23	24.1	G	R.Eye	T23
F1	T14	142	21.3	23	23.9	G	R.Eye	T23
F1	T14	157	22.3	24.1	24.9	G	R.Eye	T23
F1	T14	144	21.7	23.3	24.3	G	R.Eye	T23
F1	T14	172	21.2	23.1	23.8	G	R.Eye	T23
F1	T19	122	20	21.6	22.4	G	R.Eye	T23
F1	T19	154	21.9	23.4	24.4	G	R.Eye	T23
F1	T19	131	19.5	21.2	22	G	R.Eye	T50
F1	T22	85	17.7	19.2	20.3	G	R.Eye	T50
F1	T22	81	17.2	18.5	19.6	G	R.Eye	T50
F1	T22	82	17.3	18.7	19.8	G	R.Eye	T50
F1	T50	111	19	20.4	21.5	G	R.Eye	T50
F1	T57	135	21.1	22.8	23.7	G	R.Eye	T50
F1	T57	120	20.3	21.7	22.7	G	R.Eye	T50
F1	T57	137	21.7	22.8	23.8	G	R.Eye	T50
F1	T23	192	22.8	24.5	25.4	G	R.Eye	T14
F1	T23	144	22	23.5	24.6	G	R.Eye	T14
F1	T23	160	22.1	23.9	24.8	G	R.Eye	T14
F1	T23	163	22.5	24.2	25.3	G	R.Eye	T14
F1	T14	166	22.4	24.2	25.1	G	R.Eye	T14
F1	T14	170	22.5	24.3	25.1	G	R.Eye	T14
F1	T14	254	25	27	28.4	G	R.Eye	T14
F1	T14	169	22.3	24.2	25.2	G	R.Eye	T14
F1	T8	188	23.9	25.6	26.6	G	R.Eye	T14
F1	T8	205	23.9	25.6	26.5	G	R.Eye	T14
F1	T19	199	23.7	25.7	26.8	G	R.Eye	T21
F1	T55	205	23.5	25.6	26.6	G	R.Eye	T21
F1	T55	207	24.8	26.8	27.7	G	R.Eye	T21
F1	T55	214	24.6	26.6	27.6	G	R.Eye	T21
F1	T6	209	24	26.1	27.1	G	R.Eye	T21
F1	T6	192	23.6	25.6	26.7	G	R.Eye	T21
F1	T21	223	23.8	25.7	26.8	G	R.Eye	T21
F1	T21	237	24.5	26.4	27.5	G	R.Eye	T21

Table A1.11 (continued). Infected individual weights and lengths for determining which individuals from each strain were to be used in the pond predation experiment conducted in 2008.

Strain	Current Tank	Weight	Std. L.	Fork L.	Total L.	Color	Where	New Tank
F2	T12	140	21.2	22.9	24.1	O	L.Eye	T12
F2	T12	125	19.5	20.9	21.9	O	L.Eye	T12
F2	T12	142	21.2	23	23.7	O	L.Eye	T12
F2	T12	137	21	22.5	23.5	O	L.Eye	T12
F2	T12	139	21.8	22.6	23.5	O	L.Eye	T12
F2	T12	142	21.5	22.5	23.6	O	L.Eye	T12
F2	T28	151	21.9	23.7	24.6	O	L.Eye	T12
F2	T28	155	21.6	23.3	24.5	O	L.Eye	T12
F2	T28	139	21.3	22.9	24.1	O	L.Eye	T12
F2	T17	96	18	19.4	20.6	O	L.Eye	T12
F2	T17	87	17.4	18.9	19.8	O	L.Eye	T41
F2	T17	109	17.7	19.2	20	O	L.Eye	T41
F2	SB6	45	15	16.2	17.1	O	L.Eye	T41
F2	SB6	71	17	18.5	19.5	O	L.Eye	T41
F2	SB6	67	17.1	18.3	19.3	O	L.Eye	T41
F2	SB6	50	15.1	16.1	17	O	L.Eye	T41
F2	SB6	65	16.4	17.9	18.7	O	L.Eye	T41
F2	T15	152	22	23.4	24.7	O	L.Eye	T41
F2	T12	191	23.6	25.5	26.6	O	L.Eye	T28
F2	T12	184	23.5	25.3	26.1	O	L.Eye	T28
F2	T12	183	22.5	24.2	25.2	O	L.Eye	T28
F2	T12	187	23.2	24.9	26.2	O	L.Eye	T28
F2	T28	181	23.1	24.9	25.9	O	L.Eye	T28
F2	T28	158	22.3	24	25.2	O	L.Eye	T28
F2	T28	162	22.7	24.4	25.3	O	L.Eye	T28
F2	T28	181	23.3	25	26.1	O	L.Eye	T28
F2	T28	193	24.3	26.1	27.1	O	L.Eye	T28
F2	C12	192	24.3	26.1	27.2	O	L.Eye	T28
F2	C12	204	24.5	26.5	27.5	O	L.Eye	T2
F2	C12	211	25.4	27.3	28.6	O	L.Eye	T2
F2	T2	211	24.2	26.1	27.1	O	L.Eye	T2
F2	T2	289	27	28.8	29.8	O	L.Eye	T2
F2	T59	182	24.3	26	27.5	O	L.Eye	T2
F2	T59	179	24.1	25.9	27.1	O	L.Eye	T2
F2	T59	216	25	26.8	27.7	O	L.Eye	T2
F2	T49	202	24.4	26.3	27.4	O	L.Eye	T2

Table A1.11 (continued). Infected individual weights and lengths for determining which individuals from each strain were to be used in the pond predation experiment conducted in 2008.

Strain	Current Tank	Weight	Std. L.	Fork L.	Total L.	Color	Where	New Tank
GR	BB2	200	23.1	25	26.1	R	L.Eye	T30
GR	BB2	134	20.3	23.2	24.2	R	L.Eye	T30
GR	BB2	157	22.9	24.5	25.6	R	L.Eye	T30
GR	BB2	188	22.7	24.5	25.6	R	L.Eye	T30
GR	BB2	151	20.6	22.2	23.3	R	L.Eye	T30
GR	BB2	188	23.5	25.3	26.3	R	L.Eye	T30
GR	BB2	152	21.6	23.3	23.9	R	L.Eye	T30
GR	BB2	161	22.3	24	24.9	R	L.Eye	T30
GR	BB2	171	22.3	23.9	25	R	L.Eye	T30
GR	BB2	158	22.2	24	25.2	R	L.Eye	T30
GR	BB2	121	21	22.9	24.1	R	L.Eye	T26
GR	BB2	133	21.2	22.9	23.7	R	L.Eye	T26
GR	BB2	149	22.2	23.8	24.9	R	L.Eye	T26
GR	BB2	187	22.7	24.6	25.6	R	L.Eye	T26
GR	BB2	153	21.8	23.6	24.2	R	L.Eye	T26
GR	BB2	163	22.9	24.7	25.6	R	L.Eye	T26
GR	BB2	199	23.6	25.6	26.4	R	L.Eye	T26
GR	BB2	172	23	24.8	25.7	R	L.Eye	T26
GR	BB2	219	24.5	26.4	27.2	R	L.Eye	T38
GR	BB2	237	24.4	26.3	27.5	R	L.Eye	T38
GR	BB2	223	24	25.9	26.9	R	L.Eye	T38
GR	BB2	264	24	26.4	27.4	R	L.Eye	T38
GR	BB2	247	24.3	26.2	27.3	R	L.Eye	T38
GR	BB2	221	24.5	26.3	27.2	R	L.Eye	T38
GR	BB2	219	23.9	25.8	26.8	R	L.Eye	T38
GR	BB2	215	25	26.8	27.8	R	L.Eye	T38
GR	BB2	219	23.7	25.8	26.7	R	L.Eye	T38
GR	BB2	183	24.1	26	27.1	R	L.Eye	T37
GR	BB2	214	24.2	26.3	27.4	R	L.Eye	T37
GR	BB2	210	23.9	25.7	27.1	R	L.Eye	T37
GR	BB2	224	25	27.1	28.3	R	L.Eye	T37
GR	BB2	234	24.2	26.1	27	R	L.Eye	T37
GR	BB2	216	24.5	26.2	27.3	R	L.Eye	T37
GR	BB2	254	25.7	27.7	28.6	R	L.Eye	T37
GR	BB2	202	24	26	27.1	R	L.Eye	T37
GR	BB2	226	24.5	26.6	27.7	R	L.Eye	T37

Table A1.12. Weights and lengths of fish from all five strains released into Pond One of the predator pond experiment at the Foothills Fisheries Lab in 2008.

Strain	Weight	Std. L.	Fork L.	Total L.	Color	Where	Pond #
B2	119	21.4	23	24	G,O	L.Eye G,R.Eye O	P1
B2	139	21.3	22.7	24	G,O	L.Eye G,R.Eye O	P1
B2	132	21.2	23	24.1	G,O	L.Eye G,R.Eye O	P1
B2	144	21.7	23.3	24.3	G,O	L.Eye G,R.Eye O	P1
B2	142	21.9	23.4	24.7	G,O	L.Eye G,R.Eye O	P1
B2	156	22	23.6	25	G,O	L.Eye G,R.Eye O	P1
B2	168	22.3	23.8	25	G,O	L.Eye G,R.Eye O	P1
B2	160	22	23.8	25.2	G,O	L.Eye G,R.Eye O	P1
B2	161	22.4	24	25.2	G,O	L.Eye G,R.Eye O	P1
B2	168	22.6	24.3	25.2	G,O	L.Eye G,R.Eye O	P1
B2	170	23	24.6	25.9	G,O	L.Eye G,R.Eye O	P1
B2	197	23.8	25.4	26.7	G,O	L.Eye G,R.Eye O	P1
B2	188	24.3	26	27.1	G,O	L.Eye G,R.Eye O	P1
B2	224	24.2	26	27.2	G,O	L.Eye G,R.Eye O	P1
B2	192	24.5	26.1	27.3	G,O	L.Eye G,R.Eye O	P1
B2	177	24.6	26.1	27.4	G,O	L.Eye G,R.Eye O	P1
B2	228	25.4	27.3	28.3	G,O	L.Eye G,R.Eye O	P1
B2	247	25.5	27.3	28.6	G,O	L.Eye G,R.Eye O	P1
CRR	70	15.9	17.3	18.2	P	R.Eye	P1
CRR	59	16.2	17.3	18.4	P	R.Eye	P1
CRR	60	16.3	17.6	18.4	P	R.Eye	P1
CRR	70	16.6	18	19.2	P	R.Eye	P1
CRR	70	17.1	18.4	19.3	P	R.Eye	P1
CRR	76	17.1	18.3	19.4	P	R.Eye	P1
CRR	72	17.4	18.7	19.6	P	R.Eye	P1
CRR	80	17	18.4	19.6	P	R.Eye	P1
CRR	75	17.4	18.7	19.7	P	R.Eye	P1
CRR	78	17.4	18.8	20	P	R.Eye	P1
CRR	86	18	19.9	20.4	P	R.Eye	P1
CRR	81	18.3	19.7	20.8	P	R.Eye	P1
CRR	96	18.2	19.5	20.8	P	R.Eye	P1
CRR	92	18.8	20.2	21.3	P	R.Eye	P1
CRR	94	18.7	20.2	21.3	P	R.Eye	P1
CRR	96	19	20.5	21.5	P	R.Eye	P1
CRR	102	19.2	20.7	21.7	P	R.Eye	P1
CRR	107	19.3	20.7	21.8	P	R.Eye	P1
F1	177	22.6	24.7	25.4	G	R.Eye	P1
F1	174	22.5	24.3	25.5	G	R.Eye	P1
F1	179	22.5	24.3	25.5	G	R.Eye	P1
F1	175	23.2	24.8	25.9	G	R.Eye	P1
F1	182	23	24.8	25.9	G	R.Eye	P1
F1	178	23.2	24.8	26	G	R.Eye	P1
F1	185	23.4	25.1	26	G	R.Eye	P1
F1	209	23.2	25	26.1	G	R.Eye	P1
F1	165	23.5	25.3	26.2	G	R.Eye	P1

Table A1.12 (continued). Weights and lengths of fish from all five strains released into Pond One of the predator pond experiment at the Foothills Fisheries Lab in 2008.

Strain	Weight	Std. L.	Fork L.	Total L.	Color	Where	Pond #
F1	172	23.3	25.1	26.3	G	R.Eye	P1
F1	189	23.5	25.3	26.3	G	R.Eye	P1
F1	177	23.5	25.5	26.4	G	R.Eye	P1
F1	180	23.7	25.6	26.4	G	R.Eye	P1
F1	202	23.7	25.4	26.6	G	R.Eye	P1
F1	207	24.2	26	27	G	R.Eye	P1
F1	195	24.2	26.1	27.5	G	R.Eye	P1
F1	224	24.9	26.7	28.1	G	R.Eye	P1
F1	240	25.3	28.1	29	G	R.Eye	P1
F2	173	22.2	24.1	25.2	O	L.Eye	P1
F2	158	22.8	24.6	25.8	O	L.Eye	P1
F2	175	22.6	24.5	25.9	O	L.Eye	P1
F2	166	23	24.8	26	O	L.Eye	P1
F2	178	22.8	24.8	26.1	O	L.Eye	P1
F2	160	23.3	25.2	26.4	O	L.Eye	P1
F2	166	23.8	25.5	26.6	O	L.Eye	P1
F2	200	23.5	25.5	26.7	O	L.Eye	P1
F2	200	23.5	25.5	26.8	O	L.Eye	P1
F2	173	23.9	25.7	27.2	O	L.Eye	P1
F2	196	24	26.1	27.2	O	L.Eye	P1
F2	183	24.2	26	27.4	O	L.Eye	P1
F2	176	24.3	26	27.6	O	L.Eye	P1
F2	214	24.8	26.8	28	O	L.Eye	P1
F2	195	25.5	27.4	29	O	L.Eye	P1
F2	228	26	27.9	29.1	O	L.Eye	P1
F2	252	26.5	28.2	29.6	O	L.Eye	P1
F2	239	26.4	28.6	30	O	L.Eye	P1
GR	200	23.4	25.4	26.6	R	L.Eye	P1
GR	214	23.9	25.8	27	R	L.Eye	P1
GR	219	24.2	26	27.2	R	L.Eye	P1
GR	252	24	26.1	27.2	R	L.Eye	P1
GR	240	24.2	26	27.3	R	L.Eye	P1
GR	229	24.5	26.3	27.4	R	L.Eye	P1
GR	217	24.5	26.7	27.5	R	L.Eye	P1
GR	212	24.5	26.6	27.6	R	L.Eye	P1
GR	238	24.2	26.5	27.9	R	L.Eye	P1
GR	244	24.8	27	28	R	L.Eye	P1
GR	248	25	27.1	28	R	L.Eye	P1
GR	225	24.5	26.8	28.1	R	L.Eye	P1
GR	245	24.4	26.8	28.1	R	L.Eye	P1
GR	252	25.2	27	28.1	R	L.Eye	P1
GR	252	25.2	27.3	28.3	R	L.Eye	P1
GR	278	25.2	27.4	28.3	R	L.Eye	P1
GR	279	25.5	27.5	28.5	R	L.Eye	P1
GR	249	25.5	27.5	28.6	R	L.Eye	P1

Table A1.13. Weights and lengths of fish from all five strains released into Pond Two of the predator pond experiment at the Foothills Fisheries Lab in 2008.

Strain	Weight	Std. L.	Fork L.	Total L.	Color	Where	Pond #
B2	129	21.2	22.8	24	G,O	L.Eye G,R.Eye O	P2
B2	131	20.3	21.6	22.9	G,O	L.Eye G,R.Eye O	P2
B2	136	20.9	22.6	23.6	G,O	L.Eye G,R.Eye O	P2
B2	141	21.1	22.5	23.7	G,O	L.Eye G,R.Eye O	P2
B2	96	19.6	21.1	22	G,O	L.Eye G,R.Eye O	P2
B2	93	18.4	19.7	20.8	G,O	L.Eye G,R.Eye O	P2
B2	135	20.9	22.5	23.4	G,O	L.Eye G,R.Eye O	P2
B2	106	18.1	19.5	20.5	G,O	L.Eye G,R.Eye O	P2
B2	120	20	21.5	22.4	G,O	L.Eye G,R.Eye O	P2
B2	75	15.9	17.8	18.2	G,O	L.Eye G,R.Eye O	P2
B2	140	19.8	21.5	22.5	G,O	L.Eye G,R.Eye O	P2
B2	46	14	15	16	G,O	L.Eye G,R.Eye O	P2
B2	100	19.3	20.6	21.9	G,O	L.Eye G,R.Eye O	P2
B2	51	15	16.3	17.1	G,O	L.Eye G,R.Eye O	P2
B2	41	15	16.1	17	G,O	L.Eye G,R.Eye O	P2
B2	78	17.1	18.5	19.6	G,O	L.Eye G,R.Eye O	P2
B2	84	18.8	20.1	21.2	G,O	L.Eye G,R.Eye O	P2
B2	111	20.3	21.7	22.8	G,O	L.Eye G,R.Eye O	P2
CRR	53	15.3	16.5	17.5	P	R. Eye	P2
CRR	30	13.2	14.1	15.1	P	R. Eye	P2
CRR	53	15.2	16.4	17.3	P	R. Eye	P2
CRR	41	14.4	15.3	16.4	P	R. Eye	P2
CRR	23	12.2	13	14	P	R. Eye	P2
CRR	20	11.3	12.3	13	P	R. Eye	P2
CRR	53	15.4	16.7	17.6	P	R. Eye	P2
CRR	48	15.9	16.9	17.7	P	R. Eye	P2
CRR	42	14.1	15.3	16	P	R. Eye	P2
CRR	41	14.7	15.7	16.7	P	R. Eye	P2
CRR	14	10	10.8	11.5	P	R. Eye	P2
CRR	30	12.8	13.7	14.5	P	R. Eye	P2
CRR	45	14.8	15.9	16.7	P	R. Eye	P2
CRR	16	10.1	11.1	11.8	P	R. Eye	P2
CRR	26	12.1	13.2	14	P	R. Eye	P2
CRR	38	13.8	14.7	15.7	P	R. Eye	P2
CRR	30	13	14	15	P	R. Eye	P2
CRR	27	12.3	13.3	14.1	P	R. Eye	P2
F1	158	21.5	23.2	23.9	G	R.Eye	P2
F1	102	19	20.2	21.1	G	R.Eye	P2
F1	142	21.2	22.7	23.8	G	R.Eye	P2
F1	137	21.3	23	24.1	G	R.Eye	P2
F1	142	21.3	23	23.9	G	R.Eye	P2
F1	157	22.3	24.1	24.9	G	R.Eye	P2
F1	144	21.7	23.3	24.3	G	R.Eye	P2
F1	172	21.2	23.1	23.8	G	R.Eye	P2
F1	122	20	21.6	22.4	G	R.Eye	P2

Table A1.13 (continued). Weights and lengths of fish from all five strains released into Pond Two of the predator pond experiment at the Foothills Fisheries Lab in 2008.

Strain	Weight	Std. L.	Fork L.	Total L.	Color	Where	Pond #
F1	154	21.9	23.4	24.4	G	R.Eye	P2
F1	131	19.5	21.2	22	G	R.Eye	P2
F1	85	17.7	19.2	20.3	G	R.Eye	P2
F1	81	17.2	18.5	19.6	G	R.Eye	P2
F1	82	17.3	18.7	19.8	G	R.Eye	P2
F1	111	19	20.4	21.5	G	R.Eye	P2
F1	135	21.1	22.8	23.7	G	R.Eye	P2
F1	120	20.3	21.7	22.7	G	R.Eye	P2
F1	137	21.7	22.8	23.8	G	R.Eye	P2
F2	140	21.2	22.9	24.1	O	L.Eye	P2
F2	125	19.5	20.9	21.9	O	L.Eye	P2
F2	142	21.2	23	23.7	O	L.Eye	P2
F2	137	21	22.5	23.5	O	L.Eye	P2
F2	139	21.8	22.6	23.5	O	L.Eye	P2
F2	142	21.5	22.5	23.6	O	L.Eye	P2
F2	151	21.9	23.7	24.6	O	L.Eye	P2
F2	155	21.6	23.3	24.5	O	L.Eye	P2
F2	139	21.3	22.9	24.1	O	L.Eye	P2
F2	96	18	19.4	20.6	O	L.Eye	P2
F2	87	17.4	18.9	19.8	O	L.Eye	P2
F2	109	17.7	19.2	20	O	L.Eye	P2
F2	45	15	16.2	17.1	O	L.Eye	P2
F2	71	17	18.5	19.5	O	L.Eye	P2
F2	67	17.1	18.3	19.3	O	L.Eye	P2
F2	50	15.1	16.1	17	O	L.Eye	P2
F2	65	16.4	17.9	18.7	O	L.Eye	P2
F2	152	22	23.4	24.7	O	L.Eye	P2
GR	200	23.1	25	26.1	R	L.Eye	P2
GR	134	20.3	23.2	24.2	R	L.Eye	P2
GR	157	22.9	24.5	25.6	R	L.Eye	P2
GR	188	22.7	24.5	25.6	R	L.Eye	P2
GR	151	20.6	22.2	23.3	R	L.Eye	P2
GR	188	23.5	25.3	26.3	R	L.Eye	P2
GR	152	21.6	23.3	23.9	R	L.Eye	P2
GR	161	22.3	24	24.9	R	L.Eye	P2
GR	171	22.3	23.9	25	R	L.Eye	P2
GR	158	22.2	24	25.2	R	L.Eye	P2
GR	121	21	22.9	24.1	R	L.Eye	P2
GR	133	21.2	22.9	23.7	R	L.Eye	P2
GR	149	22.2	23.8	24.9	R	L.Eye	P2
GR	187	22.7	24.6	25.6	R	L.Eye	P2
GR	153	21.8	23.6	24.2	R	L.Eye	P2
GR	163	22.9	24.7	25.6	R	L.Eye	P2
GR	199	23.6	25.6	26.4	R	L.Eye	P2
GR	172	23	24.8	25.7	R	L.Eye	P2

Table A1.14. Weights and lengths of fish from all five strains released into Pond Three of the predator pond experiment at the Foothills Fisheries Lab in 2008.

Strain	Weight	Std. L.	Fork L.	Total L.	Color	Where	Pond #
B2	149	21.7	23.3	24.4	G,O	L.Eye G,R.Eye O	P3
B2	194	23.3	25	26.2	G,O	L.Eye G,R.Eye O	P3
B2	167	22.1	23.6	24.8	G,O	L.Eye G,R.Eye O	P3
B2	169	21.7	23.4	24.4	G,O	L.Eye G,R.Eye O	P3
B2	144	21.9	23.5	24.5	G,O	L.Eye G,R.Eye O	P3
B2	168	22.3	23.9	25.1	G,O	L.Eye G,R.Eye O	P3
B2	141	21.3	22.9	24.1	G,O	L.Eye G,R.Eye O	P3
B2	173	22.6	24.1	25	G,O	L.Eye G,R.Eye O	P3
B2	148	21.9	23.6	24.6	G,O	L.Eye G,R.Eye O	P3
B2	220	24.2	25.8	26.7	G,O	L.Eye G,R.Eye O	P3
B2	199	23.5	25.2	26	G,O	L.Eye G,R.Eye O	P3
B2	167	22.5	24.3	25.2	G,O	L.Eye G,R.Eye O	P3
B2	191	23.5	25.2	25.9	G,O	L.Eye G,R.Eye O	P3
B2	170	22.8	24	25.3	G,O	L.Eye G,R.Eye O	P3
B2	225	24.9	26.6	28.2	G,O	L.Eye G,R.Eye O	P3
B2	210	24.4	26.3	27.7	G,O	L.Eye G,R.Eye O	P3
B2	195	24.4	26.2	27.5	G,O	L.Eye G,R.Eye O	P3
B2	202	23.8	25.6	26.9	G,O	L.Eye G,R.Eye O	P3
CRR	96	18.8	20.1	21.3	P	R. Eye	P3
CRR	72	17.7	19	19.9	P	R. Eye	P3
CRR	59	16.4	17.5	18.5	P	R. Eye	P3
CRR	60	16.5	17.7	18.8	P	R. Eye	P3
CRR	107	19	20.5	21.7	P	R. Eye	P3
CRR	84	18.6	19.9	21	P	R. Eye	P3
CRR	98	19.5	20.9	22	P	R. Eye	P3
CRR	68	17.1	18.3	19.4	P	R. Eye	P3
CRR	59	16.5	17.7	18.5	P	R. Eye	P3
CRR	68	17	18.2	19.5	P	R. Eye	P3
CRR	75	17.4	18.7	20	P	R. Eye	P3
CRR	91	17.7	19.4	20.4	P	R. Eye	P3
CRR	83	17.5	19	20.3	P	R. Eye	P3
CRR	80	17	18.5	19.6	P	R. Eye	P3
CRR	90	18.7	20.1	21.1	P	R. Eye	P3
CRR	82	18.1	19.8	20.4	P	R. Eye	P3
CRR	89	17.8	19	20	P	R. Eye	P3
CRR	66	16.7	17.5	18.4	P	R. Eye	P3
F1	192	22.8	24.5	25.4	G	R.Eye	P3
F1	144	22	23.5	24.6	G	R.Eye	P3
F1	160	22.1	23.9	24.8	G	R.Eye	P3
F1	163	22.5	24.2	25.3	G	R.Eye	P3
F1	166	22.4	24.2	25.1	G	R.Eye	P3
F1	170	22.5	24.3	25.1	G	R.Eye	P3
F1	254	25	27	28.4	G	R.Eye	P3
F1	169	22.3	24.2	25.2	G	R.Eye	P3
F1	188	23.9	25.6	26.6	G	R.Eye	P3

Table A1.14 (continued). Weights and lengths of fish from all five strains released into Pond Three of the predator pond experiment at the Foothills Fisheries Lab in 2008.

Strain	Weight	Std. L.	Fork L.	Total L.	Color	Where	Pond #
F1	205	23.9	25.6	26.5	G	R.Eye	P3
F1	199	23.7	25.7	26.8	G	R.Eye	P3
F1	205	23.5	25.6	26.6	G	R.Eye	P3
F1	207	24.8	26.8	27.7	G	R.Eye	P3
F1	214	24.6	26.6	27.6	G	R.Eye	P3
F1	209	24	26.1	27.1	G	R.Eye	P3
F1	192	23.6	25.6	26.7	G	R.Eye	P3
F1	223	23.8	25.7	26.8	G	R.Eye	P3
F1	237	24.5	26.4	27.5	G	R.Eye	P3
F2	191	23.6	25.5	26.6	O	L.Eye	P3
F2	184	23.5	25.3	26.1	O	L.Eye	P3
F2	183	22.5	24.2	25.2	O	L.Eye	P3
F2	187	23.2	24.9	26.2	O	L.Eye	P3
F2	181	23.1	24.9	25.9	O	L.Eye	P3
F2	158	22.3	24	25.2	O	L.Eye	P3
F2	162	22.7	24.4	25.3	O	L.Eye	P3
F2	181	23.3	25	26.1	O	L.Eye	P3
F2	193	24.3	26.1	27.1	O	L.Eye	P3
F2	192	24.3	26.1	27.2	O	L.Eye	P3
F2	204	24.5	26.5	27.5	O	L.Eye	P3
F2	211	25.4	27.3	28.6	O	L.Eye	P3
F2	211	24.2	26.1	27.1	O	L.Eye	P3
F2	289	27	28.8	29.8	O	L.Eye	P3
F2	182	24.3	26	27.5	O	L.Eye	P3
F2	179	24.1	25.9	27.1	O	L.Eye	P3
F2	216	25	26.8	27.7	O	L.Eye	P3
F2	202	24.4	26.3	27.4	O	L.Eye	P3
GR	219	24.5	26.4	27.2	R	L.Eye	P3
GR	237	24.4	26.3	27.5	R	L.Eye	P3
GR	223	24	25.9	26.9	R	L.Eye	P3
GR	264	24	26.4	27.4	R	L.Eye	P3
GR	247	24.3	26.2	27.3	R	L.Eye	P3
GR	221	24.5	26.3	27.2	R	L.Eye	P3
GR	219	23.9	25.8	26.8	R	L.Eye	P3
GR	215	25	26.8	27.8	R	L.Eye	P3
GR	219	23.7	25.8	26.7	R	L.Eye	P3
GR	183	24.1	26	27.1	R	L.Eye	P3
GR	214	24.2	26.3	27.4	R	L.Eye	P3
GR	210	23.9	25.7	27.1	R	L.Eye	P3
GR	224	25	27.1	28.3	R	L.Eye	P3
GR	234	24.2	26.1	27	R	L.Eye	P3
GR	216	24.5	26.2	27.3	R	L.Eye	P3
GR	254	25.7	27.7	28.6	R	L.Eye	P3
GR	202	24	26	27.1	R	L.Eye	P3
GR	226	24.5	26.6	27.7	R	L.Eye	P3

Table A1.15. Weights and lengths of fish from all five strains released into Pond Four of the predator pond experiment at the Foothills Fisheries Lab in 2008.

Strain	Weight	Std. L.	Fork L.	Total L.	Color	Where	Pond #
B2	40	13.9	15.3	16	G,O	L.Eye G,R.Eye O	P4
B2	41	14.7	15.8	16.8	G,O	L.Eye G,R.Eye O	P4
B2	64	16.2	17.5	18.4	G,O	L.Eye G,R.Eye O	P4
B2	62	16.8	18.1	19.1	G,O	L.Eye G,R.Eye O	P4
B2	86	17.2	18.8	19.6	G,O	L.Eye G,R.Eye O	P4
B2	84	18	19.4	20.4	G,O	L.Eye G,R.Eye O	P4
B2	95	18.3	19.7	20.9	G,O	L.Eye G,R.Eye O	P4
B2	100	18.4	20	20.9	G,O	L.Eye G,R.Eye O	P4
B2	103	19	20.5	21.5	G,O	L.Eye G,R.Eye O	P4
B2	92	19	20.4	21.7	G,O	L.Eye G,R.Eye O	P4
B2	113	19.5	21.1	22.1	G,O	L.Eye G,R.Eye O	P4
B2	106	19.5	20.9	22.3	G,O	L.Eye G,R.Eye O	P4
B2	121	20	21.4	22.4	G,O	L.Eye G,R.Eye O	P4
B2	135	20.6	22.3	23.4	G,O	L.Eye G,R.Eye O	P4
B2	121	20.8	22.4	23.6	G,O	L.Eye G,R.Eye O	P4
B2	135	20.9	22.5	23.7	G,O	L.Eye G,R.Eye O	P4
B2	146	21	22.6	23.7	G,O	L.Eye G,R.Eye O	P4
B2	145	21.3	23	23.9	G,O	L.Eye G,R.Eye O	P4
CRR	13	9.1	10	10.7	P	R.Eye	P4
CRR	18	10.7	11.6	12.4	P	R.Eye	P4
CRR	20	11	12	12.9	P	R.Eye	P4
CRR	26	11.7	12.8	13.3	P	R.Eye	P4
CRR	26	11.6	12.6	13.4	P	R.Eye	P4
CRR	25	11.9	12.9	13.6	P	R.Eye	P4
CRR	29	12.4	13.5	14.3	P	R.Eye	P4
CRR	28	12.7	13.8	14.7	P	R.Eye	P4
CRR	33	13.5	14.4	15.4	P	R.Eye	P4
CRR	37	13.7	14.8	15.7	P	R.Eye	P4
CRR	41	13.7	15	15.9	P	R.Eye	P4
CRR	45	14	15.4	16.2	P	R.Eye	P4
CRR	39	14.2	15.3	16.4	P	R.Eye	P4
CRR	43	14.7	15.7	16.7	P	R.Eye	P4
CRR	48	14.9	16	17.1	P	R.Eye	P4
CRR	46	15.1	16.3	17.5	P	R.Eye	P4
CRR	54	15.6	16.8	17.7	P	R.Eye	P4
CRR	53	15.7	16.8	18	P	R.Eye	P4
F1	85	17.2	18.5	19.3	G	R.Eye	P4
F1	101	18	19.4	20.1	G	R.Eye	P4
F1	99	19.6	20.9	21.7	G	R.Eye	P4
F1	108	19.7	21.1	21.9	G	R.Eye	P4
F1	124	19.7	21.1	22.1	G	R.Eye	P4
F1	129	19.4	21.1	22.1	G	R.Eye	P4
F1	126	19.7	21.2	22.3	G	R.Eye	P4
F1	140	20.4	21.6	22.7	G	R.Eye	P4
F1	152	20.5	22	23	G	R.Eye	P4

Table A1.15 (continued). Weights and lengths of fish from all five strains released into Pond Four of the predator pond experiment at the Foothills Fisheries Lab in 2008.

Strain	Weight	Std. L.	Fork L.	Total L.	Color	Where	Pond #
F1	114	20.5	22.1	23.2	G	R.Eye	P4
F1	142	21.3	22.9	23.8	G	R.Eye	P4
F1	145	20.9	22.5	23.9	G	R.Eye	P4
F1	133	21.5	23.2	24.1	G	R.Eye	P4
F1	141	21.7	23.2	24.2	G	R.Eye	P4
F1	147	21.6	23.4	24.3	G	R.Eye	P4
F1	149	21.5	23.1	24.3	G	R.Eye	P4
F1	181	21.8	23.5	24.4	G	R.Eye	P4
F1	135	21.8	23.5	24.6	G	R.Eye	P4
F2	20	11	12	12.7	O	L.Eye	P4
F2	57	15.7	16.9	17.9	O	L.Eye	P4
F2	88	18.8	19.2	20.3	O	L.Eye	P4
F2	96	18.3	19.7	20.7	O	L.Eye	P4
F2	101	18.2	19.7	20.8	O	L.Eye	P4
F2	104	19	20.4	21.3	O	L.Eye	P4
F2	84	18.8	20.2	21.4	O	L.Eye	P4
F2	133	19.2	20.6	21.6	O	L.Eye	P4
F2	132	19.6	21.4	22.3	O	L.Eye	P4
F2	114	20	21.5	22.5	O	L.Eye	P4
F2	137	20.2	21.9	22.8	O	L.Eye	P4
F2	127	20.4	21.9	23.2	O	L.Eye	P4
F2	107	20.7	22.1	23.6	O	L.Eye	P4
F2	147	20.9	22.3	23.6	O	L.Eye	P4
F2	138	21.3	22.9	24.2	O	L.Eye	P4
F2	135	21.9	23.7	25	O	L.Eye	P4
F2	146	22	23.9	25	O	L.Eye	P4
F2	172	22.2	24	25.1	O	L.Eye	P4
GR	167	21.8	23.2	23.4	R	L.Eye	P4
GR	144	21	22.7	23.7	R	L.Eye	P4
GR	143	21.2	23	24	R	L.Eye	P4
GR	170	21	22.9	24.2	R	L.Eye	P4
GR	167	22	23.6	24.7	R	L.Eye	P4
GR	154	22	24.1	25	R	L.Eye	P4
GR	160	22	23.9	25	R	L.Eye	P4
GR	196	22.4	24.2	25	R	L.Eye	P4
GR	174	22.7	24.4	25.2	R	L.Eye	P4
GR	204	23	24.8	25.3	R	L.Eye	P4
GR	168	22.5	24.3	25.5	R	L.Eye	P4
GR	210	23.7	24.7	25.6	R	L.Eye	P4
GR	172	22.9	24.7	25.7	R	L.Eye	P4
GR	205	22.6	24.6	25.7	R	L.Eye	P4
GR	188	23.2	25	25.8	R	L.Eye	P4
GR	213	22.9	24.8	25.9	R	L.Eye	P4
GR	189	23.5	25.3	26.4	R	L.Eye	P4
GR	231	24	26	26.5	R	L.Eye	P4

Table A1.16. Initial weight of unground sample, grinding time for a sample, and final ground weight of the samples for the individuals used in the protein and lipid analysis conducted in 2007-2008.

GR											
Tank	**Individual**	**Weight (g)**	**Std. Length (cm)**	**Container Weight**	**Date Ground**	**Initial C + GF**	**1**	**Final C + GF**	**Date Removed**	**Sample Weight**	**New Bag Code**
19	T19-B5	67.1	14.1	40.4	2/1/2008	290.5	57.8	57.5	2/12/2008	17.1	T19-B5-LP
19	T19-B7	80.8	13.8	40.8	2/1/2008	302.6	63	63	2/12/2008	22.2	T19-B7-LP
45	T45-B1	11	6.3	40.3	2/6/2008	200.7	42.5	42.5	2/12/2008	2.2	T45-B1-LP
45	T45-B10	92.6	14.7	40.6	2/6/2008	305.4	65.6	65.4	2/13/2008	24.8	T45-B10-LP
45	T45 - B2	48.3	12	40.9	4/10/2008	226.9	54.3	53.6	4/21/2008	12.7	T-45-B2-LP
50	T50-B3	57.4	13.1	41	2/6/2008	292.7	55.8	55.6	2/14/2008	14.6	T50-B3-LP
50	T50-B10	73.3	14	40.6	2/6/2008	298.4	59.8	59.5	2/14/2008	18.9	T50-B10-LP
70	T70-B7	65.6	14	40.8	2/6/2008	286.1	58.5	58.3	2/13/2008	17.5	T70-B7-LP
70	T70-B9	47.8	12	40.9	2/6/2008	269.9	54.6	54.5	2/12/2008	13.6	T70-B9-LP
75	T75-B8	48.7	11.3	40.3	2/15/2008	251.9	52.9	52.9	3/14/2008	12.6	T75-B8-LP
75	T75-B12	57.3	12.6	40.7	2/15/2008	285.2	55	55	3/14/2008	14.3	T75-B12-LP
GR Control											
Tank	**Individual**	**Weight (g)**	**Std. Length (cm)**	**Container Weight**	**Date Ground**	**Initial C + GF**	**1**	**Final C + GF**	**Date Removed**	**Sample Weight**	**New Bag Code**
C4	TC4-B1	22.2	8.8	41.1	2/15/2008	216.3	47.3	47.1	3/17/2008	6	TC4-B1-LP
C4	TC4-B3	48.9	12	39.9	2/15/2008	249.1	52.6	52.6	3/14/2008	12.7	TC4-B3-LP
C4	TC4-B4	98.5	15.6	40.6	2/15/2008	297.8	66.9	66.9	3/14/2008	26.3	TC4-B4-LP
C4	TC4-B6	81.5	14	41.2	2/15/2008	299.9	63.5	63.5	3/14/2008	22.3	TC4-B6-LP
C4	TC4-B8	83.8	14.2	40.3	2/15/2008	312.6	63.3	63.3	3/14/2008	23	TC4-B8-LP
C11	TC11-B1	68.7	14.1	40.5	2/15/2008	295.9	58.5	58.4	3/17/2008	17.9	TC11-B1-LP
C11	TC11-B4	47.3	11.6	39.6	2/15/2008	274	51.8	51.6	3/17/2008	12	TC11-B4-LP
C11	TC11-B6	86.9	15.3	40.4	2/15/2008	294.6	64	64	3/14/2008	23.6	TC11-B6-LP
C11	TC11-B7	22.6	9.8	40.3	2/15/2008	198.8	46.1	46.1	3/14/2008	5.8	TC11-B7-LP
C11	TC11-B13	87.6	15.5	40.3	2/15/2008	325	63.5	63.5	3/14/2008	23.2	TC11-B13-LP

Table A1.16 (continued). Initial weight of unground sample, grinding time for a sample, and final ground weight of the samples for the individuals used in the protein and lipid analysis conducted in 2007-2008.

CRR												
Tank	**Individual**	**Weight (g)**	**Std. Length (cm)**	**Container Weight**	**Date Ground**	**Initial C + GF**	**1**	**Final C + GF**	**Date Removed**	**Sample Weight**	**New Bag Code**	
5	T5-B2	----	5.3	40.8	1/22/2008	96.4	41.6	41.6	1/28/2008	0.8	T5-B2-LP	Removed
5	T5-B6	25.7	9.8	40.8	1/22/2008	162.3	48	47.9	1/28/2008	7.1	T5-B6-LP	
15	T15-B8	31.4	11	40.1	1/22/2008	246.7	49.4	49.2	1/28/2008	9.1	T15-B8-LP	
27	T27-B1	19.5	9.5	40	1/23/2008	273.6	45.4	45.3	1/28/2008	5.3	T27-B1-LP	
28	T28-B12	14.9	8.4	40.5	1/23/2008	244.8	44.9	44.9	1/30/2008	4.4	T28-B12-LP	
56	T56-B7	36.1	11	40.1	1/24/2008	312.2	51.3	51.1	1/29/2008	11	T56-B7-LP	
78	T78-B13	9.6	7.5	40.4	1/25/2007	203.8	43.3	43.3	1/28/2008	2.9	T78-B13-LP	
79	T79-B11	19.6	9.2	40.6	1/25/2007	249.4	46.1	46.1	1/29/2008	5.5	T79-B11-LP	
80	T80-B8	10.9	7.9	41	1/25/2008	233.7	43.9	43.8	1/30/2008	2.8	T80-B8-LP	
47	T47-B5	10.7	7.8	40.8	3/24/2008	173.8	43.8	43.8	3/31/2008	3	T47-B5-LP	
56	T56-B6	11.3	7.4	40.9	3/24/2008	201.5	44.3	44.3	3/31/2008	3.4	T56-B6-LP	
CRR Control												
Tank	**Individual**	**Weight (g)**	**Std. Length (cm)**	**Container Weight**	**Date Ground**	**Initial C + GF**	**1**	**Final C + GF**	**Date Removed**	**Sample Weight**	**New Bag Code**	
C7	TC7-B6	17.1	8.5	40.9	1/30/2008	224.3	46.1	46	2/12/2008	5.1	TC7-B6-LP	
C7	TC7-B13	14	8.5	41.1	1/30/2008	213.3	45.3	45.3	2/12/2008	4.2	TC7-B13-LP	
C10	TC10-B1	24.3	9.8	40	1/30/2008	221.9	46.8	46.6	2/12/2008	6.6	TC10-B1-LP	
C10	TC10-B11	16.5	9.2	40	1/30/2008	206.7	44.6	44.6	2/12/2008	4.6	TC10-B11-LP	
C10	TC10-B8	12.2	7.7	40.2	1/30/2008	237.9	43.1	43.1	2/12/2008	2.9	TC10-B8-LP	
C15	TC15-B10	16.8	8.6	41.1	1/30/2008	247.1	45.8	45.7	2/12/2008	4.6	TC15-B10-LP	
C15	TC15-B9	21.6	9.6	40.6	1/30/2008	233.9	46.8	46.6	2/12/2008	6	TC15-B9-LP	
C16	TC16-B9	19.4	9	39.7	1/30/2008	242.5	45.4	45.3	2/12/2008	5.6	TC16-B9-LP	
C16	TC16-B8	19.9	8.8	40.8	1/30/2008	210.8	46.5	46.4	2/12/2008	5.6	TC16-B8-LP	
C15	TC15-B15	11.3	7.5	40.6	2/15/2008	174.9	43.8	43.7	3/17/2008	3.1	TC15-B15-LP	

Table A1.16 (continued). Initial weight of unground sample, grinding time for a sample, and final ground weight of the samples for the individuals used in the protein and lipid analysis conducted in 2007-2008.

F1											
Tank	**Individual**	**Weight (g)**	**Std. Length (cm)**	**Container Weight**	**Date Ground**	**Initial C + GF**	**1**	**Final C + GF**	**Date Removed**	**Sample Weight**	**New Bag Code**
9	T9-B5	36.3	10.3	40.8	1/22/2008	254.9	50.9	50.8	1/28/2008	10	T9-B5-LP
17	T17-B4	72.8	14.5	40.6	1/22/2008	420.3	62.1	61.6	1/29/2008	21	T17-B4-LP
20	T20-B14	14.4	8.2	40.3	1/23/2008	216.6	44.3	44.3	1/28/2008	4	T20-B14-LP
34	T34-B10	20	9	40.6	1/23/2008	254.8	46.6	46.4	1/29/2008	5.8	T34-B10-LP
38	T38-B6	27.1	9.5	40.9	1/23/2008	252	48.9	48.9	1/29/2008	8	T38-B6-LP
44	T44-B11	40.6	11.5	40.7	1/23/2008	278	52.9	52.6	1/29/2008	11.9	T44-B11-LP
11	T11-B1	12.5	8	40.5	2/1/2008	183.1	43.8	43.8	2/12/2008	3.3	T11-B1-LP
48	T48-B3	69.3	13.1	40.7	2/6/2008	277	60.6	60.3	2/13/2008	19.6	T48-B3-LP
62	T62-B12	17	9	41	2/6/2008	208.9	45.8	45.8	2/13/2008	4.8	T62-B12-LP
73	T73-B2	52.1	13.2	40.6	2/6/2008	255.5	55.6	55.4	2/14/2008	14.8	T73-B2-LP
F1 Control											
Tank	**Individual**	**Weight (g)**	**Std. Length (cm)**	**Container Weight**	**Date Ground**	**Initial C + GF**	**1**	**Final C + GF**	**Date Removed**	**Sample Weight**	**New Bag Code**
C2	TC2-B10	44.8	12	40.5	1/25/2008	285.6	52.7	52.5	1/30/2008	12	TC2-B10-LP
C2	TC2-B2	48.6	11.6	40.3	1/25/2008	279.3	54.3	54.1	1/29/2008	13.8	TC2-B2-LP
C2	TC2-B3	42.8	10.6	40.1	1/25/2008	266.3	52.5	52.5	1/29/2008	12.4	TC2-B3-LP
C2	TC2-B5	17.5	8.2	39.9	1/25/2008	218.8	44.9	44.9	1/29/2008	5	TC2-B5-LP
C2	TC2-B15	35.8	10.5	40.7	1/25/2008	256.5	50.9	50.9	1/29/2008	10.2	TC2-B15-LP
C17	TC17-B7	12.4	8.2	40.6	2/15/2008	177.1	44.1	44.1	3/14/2008	3.5	TC17-B7-LP
C17	TC17-B8	58.2	13.2	40.6	2/15/2008	252.7	57.6	57.4	3/17/2008	16.8	TC17-B8-LP
C19	TC19-B5	87.9	14.4	40	2/15/2008	311.9	65.6	65.6	3/14/2008	25.6	TC19-B5-LP
C19	TC19-B6	25.8	10.1	41.1	2/15/2008	237	48.5	48.3	3/17/2008	7.2	TC19-B6-LP
C19	TC19-B10	50.3	12.3	41	2/15/2008	237.3	55.8	55.6	3/17/2008	14.6	TC19-B10-LP

Table A1.16 (continued). Initial weight of unground sample, grinding time for a sample, and final ground weight of the samples for the individuals used in the protein and lipid analysis conducted in 2007-2008.

F2											
Tank	**Individual**	**Weight (g)**	**Std. Length (cm)**	**Container Weight**	**Date Ground**	**Initial C + GF**	**1**	**Final C + GF**	**Date Removed**	**Sample Weight**	**New Bag Code**
24	T24-B8	25.1	10.2	39.8	1/23/2008	215.4	46.9	46.8	1/28/2008	7	T24-B8-LP
43	T43-B1	13.1	7.7	41	1/23/2008	248.6	44.5	44.2	1/30/2008	3.2	T43-B1-LP
6	T6-B2	12.3	8.7	40.7	2/1/2008	219.1	44.3	44.2	2/12/2008	3.5	T6-B2-LP
12	T12-B1	70.8	13.9	40.8	2/1/2008	268.9	63.4	63	2/12/2008	22.2	T12-B1-LP
18	T18-B6	61.4	13.2	41.1	2/1/2008	270	59.3	59.1	2/14/2008	18	T18-B6-LP
21	T21-B2	42	12.1	40.9	2/1/2008	234.5	53.6	53.4	2/12/2008	12.5	T21-B2-LP
26	T26-B5	26.9	10	40.3	2/1/2008	211.8	47.5	47.5	2/12/2008	7.2	T26-B5-LP
53	T53-B15	16.6	9	40.8	2/6/2008	237.4	45.7	45.7	2/12/2008	4.9	T53-B15-LP
72	T72-B2	55.4	13.8	41	2/6/2008	250.3	56.1	56.1	2/12/2008	15.1	T72-B2-LP
77	T77-B6	17.8	9.4	40.8	2/15/2008	202.3	46.1	46.1	3/14/2008	5.3	T77-B6-LP
F2 Control											
Tank	**Individual**	**Weight (g)**	**Std. Length (cm)**	**Container Weight**	**Date Ground**	**Initial C + GF**	**1**	**Final C + GF**	**Date Removed**	**Sample Weight**	**New Bag Code**
C3	TC3-B3	33.3	11	40.8	2/15/2008	228.6	49.8	49.8	3/14/2008	9	TC3-B3-LP
C3	TC3-B5	8	7	40.8	2/15/2008	190.4	43	43	3/14/2008	2.2	TC3-B5-LP
C3	TC3-B7	84.3	15.2	41.1	2/15/2008	292.6	65.1	65.1	3/14/2008	24	TC3-B7-LP
C3	TC3-B10	74.8	14.8	40.1	2/15/2008	281.3	61.6	61.6	3/14/2008	21.5	TC3-B10-LP
C3	TC3-B12	11.3	8	40.9	2/15/2008	206.6	43.7	43.7	3/14/2008	2.8	TC3-B12-LP
C6	TC6-B10	42.3	11.9	40.8	2/25/2008	257.9	51.5	51.5	3/31/2008	10.7	TC6-B10-LP
C6	TC6-B14	30.2	10.6	40.9	3/24/2008	235	49.6	49.5	3/31/2008	8.6	TC6-B14-LP
C6	TC6-B9	51.8	13	40.9	3/24/2008	237.9	54.5	54.4	3/31/2008	13.5	TC6-B9-LP
C9	TC9-B4	21.4	8.6	41.1	3/24/2008	222.2	47.4	47.3	3/31/2008	6.2	TC9-B4-LP
C13	TC13-B4	24.3	8.7	40.9	3/24/2008	205.3	47.9	47.8	3/31/2008	6.9	TC13-B4-LP
C13	TC13-B6	80	14.4	40.8	3/24/2008	313.6	62.9	62.8	3/31/2008	22	TC13-B6-LP

Table A1.16 (continued). Initial weight of unground sample, grinding time for a sample, and final ground weight of the samples for the individuals used in the protein and lipid analysis conducted in 2007-2008.

B2												
Tank	**Individual**	**Weight (g)**	**Std. Length (cm)**	**Container Weight**	**Date Ground**	**Initial C + GF**	**1**	**Final C + GF**	**Date Removed**	**Sample Weight**	**New Bag Code**	
8	T8-B3	2	5.2	40.6	1/22/2008	93.4	40.9	40.9	1/28/2008	0.3	T8-B3-LP	Removed
31	T31-B11	31.8	11.2	40.6	1/23/2008	256.9	50.1	49.8	1/29/2008	9.2	T31-B11-LP	
35	T35-B11	14.3	8.2	40.8	1/23/2008	240.1	44.9	44.8	1/30/2008	4	T35-B11-LP	
36	T36-B2	13.1	8.5	40.3	1/23/2008	245.8	43.5	43.4	1/30/2008	3.1	T36-B2-LP	
30	T30-B1	63.8	13.2	40.5	2/1/2008	314.9	59.1	58.8	2/12/2008	18.3	T30-B1-LP	
57	T57-B9	22.9	9.9	41	1/24/2008	244.1	47	46.9	1/30/2008	5.9	T57-B9-LP	
59	T59-B4	46.6	11.7	40.8	1/24/2008	232.8	54.6	54.4	1/29/2008	13.6	T59-B4-LP	
69	T69-B11	22.4	9.2	40.9	1/24/2008	257	47.4	47.3	1/30/2008	6.4	T69-B11-LP	
71	T71-B9	14	8	40.9	1/24/2008	240.5	44.8	44.7	1/30/2008	3.8	T71-B9-LP	
74	T74-B7	12.5	7.5	40.9	1/24/2008	264.5	44.8	44.7	1/30/2008	3.8	T74-B7-LP	
76	T76-B2	28.9	9.5	40.9	1/24/2008	261.8	48.9	48.9	1/29/2008	8	T76-B2-LP	
B2 Control												
Tank	**Individual**	**Weight (g)**	**Std. Length (cm)**	**Container Weight**	**Date Ground**	**Initial C + GF**	**1**	**Final C + GF**	**Date Removed**	**Sample Weight**	**New Bag Code**	
C5	TC5-B5	13.1	7.5	40.3	1/25/2008	231	43.9	43.9	1/30/2008	3.6	TC5-B5-LP	
C5	TC5-B8	35.8	11	40.8	1/25/2008	281.8	51	51	1/29/2008	10.2	TC5-B8-LP	
C5	TC5-B9	21.2	9.2	40.9	1/25/2008	281.4	46.6	46.6	1/29/2008	5.7	TC5-B9-LP	
C5	TC5-B13	19.7	9.1	40.8	1/30/2008	230.5	46.3	46.3	2/12/2008	5.5	TC5-B13-LP	
C8	TC8-B5	24.3	9.2	40.1	1/30/2008	263.7	46.6	46.5	2/12/2008	6.4	TC8-B5-LP	
C8	TC8-B6	45.1	12	40.9	1/30/2008	276.3	53.5	53.3	2/12/2008	12.4	TCB-B6-LP	
C8	TC8-B11	30	10.4	40	1/30/2008	223.8	48.5	48.4	2/12/2008	8.4	TC8-B11-LP	
C8	TC8-B13	24.8	10.1	40.1	1/30/2008	266.8	46.8	46.6	2/12/2008	6.5	TC8-B13-LP	
C12	TC12-B3	59.9	13.2	40	2/15/2008	288.4	58.3	58.3	3/14/2008	18.3	TC12-B3-LP	
C12	TC12-B10	48.8	12.4	41	2/15/2008	241	54.7	54.7	3/14/2008	13.7	TC12-B10-LP	
C8	TC8-B14	15	8.6	40.9	3/24/2008	204.2	44.8	44.8	3/31/2008	3.9	TC8-B14-LP	

Table A1.17. Sample weights, bag weights, total weights and final weights of samples used in lipid analysis and percent lipids of replicates run in lipid analysis conducted in 2008.

GR Tank	Sample	Date	Bag Weight	Sample Weight	Total Weight	Final Weight	Lipid %
19	T19-B5-LP-A	3/18/2008	0.4475	1.0638	1.5113	1.1714	31.95
19	T19-B5-LP-B	3/18/2008	0.4248	1.0684	1.4932	1.1542	31.73
19	T19-B7-LP-A	3/18/2008	0.4415	1.0841	1.5256	1.161	33.63
19	T19-B7-LP-B	3/18/2008	0.4339	1.082	1.5159	1.1525	33.59
45	T45-B1-LP-A	3/18/2008	0.4488	1.0757	1.5245	1.3771	13.70
45	T45-B1-LP-B	3/18/2008	0.4463	1.0781	1.5244	1.3719	14.15
45	T45-B10-LP-A	3/18/2008	0.4627	1.0336	1.4963	1.166	31.96
45	T45-B10-LP-B	3/18/2008	0.4555	1.0366	1.4921	1.1655	31.51
50	T50-B3-LP-A	3/18/2008	0.3992	1.087	1.4862	1.1728	28.83
50	T50-B3-LP-B	3/18/2008	0.3893	1.0819	1.4712	1.1618	28.60
50	T50-B10-LP-A	3/18/2008	0.4469	1.0289	1.4758	1.156	31.08
50	T50-B10-LP-B	3/18/2008	0.4329	1.0266	1.4595	1.1408	31.04
70	T70-B7-LP-A	3/18/2008	0.4375	1.0417	1.4792	1.1268	33.83
70	T70-B7-LP-B	3/18/2008	0.4414	1.0431	1.4845	1.1632	30.80
70	T70-B9-LP-A	3/18/2008	0.4539	1.0851	1.539	1.1196	38.65
70	T70-B9-LP-B	3/18/2008	0.4662	1.088	1.5542	1.128	39.17
75	T75-B8-LP-A	3/18/2008	0.4484	1.0798	1.5282	1.2129	29.20
75	T75-B8-LP-B	3/18/2008	0.4434	1.072	1.5154	1.2045	29.00
75	T75-B12-LP-A	3/18/2008	0.4464	1.062	1.5084	1.2302	26.20
75	T75-B12-LP-B	3/18/2008	0.4309	1.0655	1.4964	1.2175	26.18
	GR Control						
Tank	**Sample**	**Date**	**Bag Weight**	**Sample Weight**	**Total Weight**	**Final Weight**	**Lipid %**
C4	TC4-B1-LP-A	3/24/2008	0.4538	1.0154	1.4692	1.1428	32.14
C4	TC4-B1-LP-B	3/24/2008	0.4345	1.0151	1.4496	1.1244	32.04
C4	TC4-B3-LP-A	3/24/2008	0.4613	1.0646	1.5259	Bad Bag	
C4	TC4-B3-LP-B	3/24/2008	0.4621	1.061	1.5231	Bad Bag	
C4	TC4-B4-LP-A	3/24/2008	0.4318	1.0553	1.4871	1.1471	32.22
C4	TC4-B4-LP-B	3/24/2008	0.4423	1.0554	1.4977	1.1601	31.99
C4	TC4-B6-LP-A	3/24/2008	0.4261	1.0678	1.4939	1.1286	34.21
C4	TC4-B6-LP-B	3/24/2008	0.4238	1.0697	1.4935	1.1323	33.77
C4	TC4-B8-LP-A	3/24/2008	0.4412	1.0867	1.5279	1.1625	33.62
C4	TC4-B8-LP-B	3/24/2008	0.4502	1.0845	1.5347	1.1778	32.91
C4	TC4-B3-LP-AR	3/24/2008	0.436	1.0968	1.5328	1.2447	26.27
C4	TC4-B3-LP-BR	3/24/2008	0.4357	1.0934	1.5291	1.2425	26.21
C11	TC11-B1-LP-A	3/21/2008	0.43	1.0722	1.5022	1.2046	27.76
C11	TC11-B1-LP-B	3/21/2008	0.4385	1.0716	1.5101	1.2161	27.44
C11	TC11-B4-LP-A	3/21/2008	0.4637	1.0794	1.5431	1.2597	26.26
C11	TC11-B4-LP-B	3/21/2008	0.4436	1.079	1.5226	1.2376	26.41
C11	TC11-B6-LP-A	3/21/2008	0.4505	1.0969	1.5474	1.2119	30.59
C11	TC11-B6-LP-B	3/21/2008	0.4401	1.0973	1.5374	1.2031	30.47
C11	TC11-B7-LP-A	3/21/2008	0.4657	1.0317	1.4974	1.1807	30.70
C11	TC11-B7-LP-B	3/21/2008	0.4472	1.0356	1.4828	1.1648	30.71
C11	TC11-B13-LP-A	3/21/2008	0.4761	1.0763	1.5524	1.2395	29.07
C11	TC11-B13-LP-B	3/21/2008	0.4756	1.077	1.5526	1.2349	29.50

Table A1.17 (continued). Sample weights, bag weights, total weights and final weights of samples used in lipid analysis and percent lipids of replicates run in lipid analysis conducted in 2008.

CRR Tank	Sample	Date	Bag Weight	Sample Weight	Total Weight	Final Weight	Lipid %
5	T5-B6-LP-A	3/17/2008	0.4583	1.0123	1.4706	1.1069	35.93
5	T5-B6-LP-B	3/17/2008	0.4359	1.0107	1.4466	1.088	35.48
15	T15-B8-LP-A	3/17/2008	0.4567	1.0945	1.5512	1.1576	35.96
15	T15-B8-LP-B	3/17/2008	0.4477	1.0976	1.5453	1.1493	36.08
27	T27-B1-LP-A	3/18/2008	0.4415	1.0255	1.467	1.1382	32.06
27	T27-B1-LP-B	3/18/2008	0.4486	1.0261	1.4747	1.1422	32.40
28	T28-B12-LP-A	3/18/2008	0.4355	1.0239	1.4594	1.0978	35.32
28	T28-B12-LP-B	3/18/2008	0.4347	1.0252	1.4599	1.0964	35.46
56	T56-B7-LP-A	3/18/2008	0.4593	1.0712	1.5305	1.0728	42.73
56	T56-B7-LP-B	3/18/2008	0.438	1.0723	1.5103	1.0524	42.70
78	T78-B13-LP-A	3/19/2008	0.4552	1.0317	1.4869	1.1168	35.87
78	T78-B13-LP-B	3/19/2008	0.4435	1.0347	1.4782	1.1088	35.70
79	T79-B11-LP-A	3/19/2008	0.4495	1.0495	1.499	1.141	34.11
79	T79-B11-LP-B	3/19/2008	0.4368	1.046	1.4828	1.1182	34.86
80	T80-B8-LP-A	3/19/2008	0.4552	1.0441	1.4993	1.2303	25.76
80	T80-B8-LP-B	3/19/2008	0.4467	1.0465	1.4932	1.2471	23.52
47	T47-B5-LP-A	3/31/2008	0.4341	1.0109	1.445	1.0841	35.70
47	T47-B5-LP-B	3/31/2008	0.4582	1.0174	1.4756	1.1161	35.34
56	T56-B6-LP-A	3/31/2008	0.4384	1.0164	1.4548	1.0509	39.74
56	T56-B6-LP-B	3/31/2008	0.4146	1.0169	1.4315	1.0337	39.12
CRR Control							
Tank	Sample	Date	Bag Weight	Sample Weight	Total Weight	Final Weight	Lipid %
C7	TC7-B6-LP-A	3/24/2008	0.4605	1.047	1.5075	1.1062	38.33
C7	TC7-B6-LP-B	3/24/2008	0.4281	1.0416	1.4697	1.0629	39.06
C7	TC7-B13-LP-A	3/24/2008	0.4333	1.0441	1.4774	1.1164	34.58
C7	TC7-B13-LP-B	3/24/2008	0.4425	1.0455	1.488	1.1272	34.51
C10	TC10-B1-LP-A	3/21/2008	0.4437	1.072	1.5157	1.1655	32.67
C10	TC10-B1-LP-B	3/21/2008	0.4543	1.0732	1.5275	1.1863	31.79
C10	TC10-B11-LP-A	3/21/2008	0.443	1.0774	1.5204	1.1616	33.30
C10	TC10-B11-LP-B	3/21/2008	0.4304	1.0789	1.5093	1.1414	34.10
C10	TC10-B8-LP-A	3/21/2008	0.4309	1.0197	1.4506	1.1712	27.40
C10	TC10-B8-LP-B	3/21/2008	0.4547	1.0184	1.4731	1.192	27.60
C15	TC15-B10-LP-A	3/21/2008	0.4508	1.0996	1.5504	1.2247	29.62
C15	TC15-B10-LP-B	3/21/2008	0.4678	1.0926	1.5604	1.2382	29.49
C15	TC15-B9-LP-A	3/21/2008	0.4508	1.0264	1.4772	1.1141	35.38
C15	TC15-B9-LP-B	3/21/2008	0.4479	1.0271	1.475	1.1139	35.16
C16	TC16-B9-LP-A	3/20/2008	0.4577	1.0882	1.5459	1.2169	30.23
C16	TC16-B9-LP-B	3/20/2008	0.463	1.0871	1.5501	1.1931	32.84
C16	TC16-B8-LP-A	3/20/2008	0.4479	1.0754	1.5233	1.1742	32.46
C16	TC16-B8-LP-B	3/20/2008	0.4404	1.0783	1.5187	1.1674	32.58
C15	TC15-B15-LP-A	3/20/2008	0.4604	1.0024	1.4628	1.1546	30.75
C15	TC15-B15-LP-B	3/20/2008	0.4699	1.0032	1.4731	1.1676	30.45

Table A1.17 (continued). Sample weights, bag weights, total weights and final weights of samples used in lipid analysis and percent lipids of replicates run in lipid analysis conducted in 2008.

F1							
Tank	**Sample**	**Date**	**Bag Weight**	**Sample Weight**	**Total Weight**	**Final Weight**	**Lipid %**
9	T9-B5-LP-A	3/17/2008	0.4528	1.0611	1.5139	1.1605	33.31
9	T9-B5-LP-B	3/17/2008	0.4535	1.0656	1.5191	1.1646	33.27
17	T17-B4-LP-A	3/18/2007	0.3919	1.0937	1.4856	1.1012	35.15
17	T17-B4-LP-B	3/18/2007	0.4025	1.0975	1.5	1.1182	34.79
20	T20-B14-LP-A	3/18/2008	0.448	1.0457	1.4937	1.1743	30.54
20	T20-B14-LP-B	3/18/2008	0.4549	1.0444	1.4993	1.1776	30.80
34	T34-B10-LP-A	3/18/2008	0.4416	1.0352	1.4768	1.1306	33.44
34	T34-B10-LP-B	3/18/2008	0.4392	1.0351	1.4743	1.1287	33.39
38	T38-B6-LP-A	3/18/2008	0.4458	1.0817	1.5275	1.1435	35.50
38	T38-B6-LP-B	3/18/2008	0.4312	1.0824	1.5136	1.1408	34.44
44	T44-B11-LP-A	3/18/2008	0.4532	1.0554	1.5086	1.1255	36.30
44	T44-B11-LP-B	3/18/2008	0.4329	1.0587	1.4916	1.1124	35.82
11	T11-B1-LP-A	3/17/2008	0.4638	1.0383	1.5021	1.2127	27.87
11	T11-B1-LP-B	3/17/2008	0.4403	1.0374	1.4777	1.1855	28.17
48	T48-B3-LP-A	3/18/2008	0.4486	1.0825	1.5311	1.1239	37.62
48	T48-B3-LP-B	3/18/2008	0.4191	1.0855	1.5046	1.1183	35.59
62	T62-B12-LP-A	3/18/2008	0.4456	1.0491	1.4947	1.123	35.43
62	T62-B12-LP-B	3/18/2008	0.4483	1.0469	1.4952	1.1281	35.07
73	T73-B2-LP-A	3/18/2008	0.4342	1.0627	1.4969	1.1038	36.99
73	T73-B2-LP-B	3/18/2008	0.4282	1.0648	1.493	1.1063	36.32
	F1 Control						
Tank	**Sample**	**Date**	**Bag Weight**	**Sample Weight**	**Total Weight**	**Final Weight**	**Lipid %**
C2	TC2-B10-LP-A	3/24/2008	0.4185	1.0872	1.5057	1.1658	31.26
C2	TC2-B10-LP-B	3/24/2008	0.4167	1.0877	1.5044	1.159	31.76
C2	TC2-B2-LP-A	3/24/2008	0.4304	1.0706	1.501	1.1495	32.83
C2	TC2-B2-LP-B	3/24/2008	0.4253	1.0719	1.4972	1.1467	32.70
C2	TC2-B3-LP-A	3/24/2008	0.4298	1.0371	1.4669	1.0949	35.87
C2	TC2-B3-LP-B	3/24/2008	0.4372	1.0381	1.4753	1.1042	35.75
C2	TC2-B5-LP-A	3/24/2008	0.4121	1.0533	1.4654	1.1358	31.29
C2	TC2-B5-LP-B	3/24/2008	0.4099	1.0567	1.4666	1.1402	30.89
C2	TC2-B15-LP-A	3/24/2008	0.476	1.0776	1.5536	1.1915	33.60
C2	TC2-B15-LP-B	3/24/2008	0.4771	1.075	1.5521	1.1867	33.99
C17	TC17-B7-LP-A	3/20/2008	0.4844	1.0007	1.4851	1.1768	30.81
C17	TC17-B7-LP-B	3/20/2008	0.4784	1.002	1.4804	1.1758	30.40
C17	TC17-B8-LP-A	3/20/2008	0.4481	1.0849	1.533	1.2218	28.68
C17	TC17-B8-LP-B	3/20/2008	0.4348	1.0856	1.5204	1.2056	29.00
C19	TC19-B5-LP-A	3/20/2008	0.4505	1.0203	1.4708	1.1269	33.71
C19	TC19-B5-LP-B	3/20/2008	0.4584	1.0247	1.4831	1.1343	34.04
C19	TC19-B6-LP-A	3/20/2008	0.4277	1.0525	1.4802	1.159	30.52
C19	TC19-B6-LP-B	3/20/2008	0.4408	1.0584	1.4992	1.1722	30.90
C19	TC19-B10-LP-A	3/20/2008	0.446	1.0895	1.5355	1.164	34.10
C19	TC19-B10-LP-B	3/20/2008	0.4591	1.0852	1.5443	1.1705	34.45

Table A1.17 (continued). Sample weights, bag weights, total weights and final weights of samples used in lipid analysis and percent lipids of replicates run in lipid analysis conducted in 2008.

F2							
Tank	**Sample**	**Date**	**Bag Weight**	**Sample Weight**	**Total Weight**	**Final Weight**	**Lipid %**
24	T24-B8-LP-A	3/18/2008	0.4418	1.0522	1.494	1.1244	35.13
24	T24-B8-LP-B	3/18/2008	0.4719	1.0569	1.5288	1.1621	34.70
43	T43-B1-LP-A	3/18/2008	0.432	1.079	1.511	1.2353	25.55
43	T43-B1-LP-B	3/18/2008	0.4496	1.0778	1.5274	1.2514	25.61
6	T6-B2-LP-A	3/17/2008	0.4405	1.0536	1.4941	1.0861	38.72
6	T6-B2-LP-B	3/17/2008	0.4545	1.0568	1.5113	1.099	39.01
12	T12-B1-LP-A	3/17/2008	0.4186	1.0963	1.5149	1.111	36.84
12	T12-B1-LP-B	3/17/2008	0.442	1.096	1.538	1.1296	37.26
18	T18-B6-LP-A	3/18/2007	0.4526	1.0187	1.4713	1.0842	38.00
18	T18-B6-LP-B	3/18/2007	0.4527	1.0164	1.4691	0.7793	67.87
18	T18-B6-LP-AR	3/19/2008	0.4614	1.0835	1.5449	1.1349	37.84
18	T18-B6-LP-BR	3/19/2008	0.441	1.0858	1.5268	1.1119	38.21
21	T21-B2-LP-A	3/18/2008	0.4368	1.0797	1.5165	1.0854	39.93
21	T21-B2-LP-B	3/18/2008	0.4279	1.0789	1.5068	1.0761	39.92
26	T26-B5-LP-A	3/18/2008	0.4287	1.0598	1.4885	1.1144	35.30
26	T26-B5-LP-B	3/18/2008	0.4328	1.058	1.4908	1.1186	35.18
53	T53-B15-LP-A	3/18/2008	0.4466	1.062	1.5086	1.1307	35.58
53	T53-B15-LP-B	3/18/2008	0.467	1.0691	1.5361	1.1546	35.68
72	T72-B2-LP-A	3/18/2008	0.4365	1.0744	1.5109	1.1296	35.49
72	T72-B2-LP-B	3/18/2008	0.4355	1.0764	1.5119	1.1259	35.86
77	T77-B6-LP-A	3/19/2008	0.451	1.0714	1.5224	1.1497	34.79
77	T77-B6-LP-B	3/18/2008	0.442	1.0783	1.5203	1.1478	34.55
	F2 Control						
Tank	**Sample**	**Date**	**Bag Weight**	**Sample Weight**	**Total Weight**	**Final Weight**	**Lipid %**
C3	TC3-B3-LP-A	3/24/2008	0.4379	1.0714	1.5093	1.1775	30.97
C3	TC3-B3-LP-B	3/24/2008	0.4568	1.0724	1.5292	1.1986	30.83
C3	TC3-B5-LP-A	3/24/2008	0.4125	1.0637	1.4762	1.1935	26.58
C3	TC3-B5-LP-B	3/24/2008	0.4195	1.0687	1.4882	1.2029	26.70
C3	TC3-B7-LP-A	3/24/2008	0.4273	1.0122	1.4395	1.0957	33.97
C3	TC3-B7-LP-B	3/24/2008	0.423	1.0116	1.4346	1.0841	34.65
C3	TC3-B10-LP-A	3/24/2008	0.4143	1.0825	1.4968	1.1195	34.85
C3	TC3-B10-LP-B	3/24/2008	0.4296	1.0834	1.513	1.1347	34.92
C3	TC3-B12-LP-A	3/24/2008	0.4686	1.091	1.5596	Bad Bag	
C3	TC3-B12-LP-B	3/24/2008	0.4725	1.0928	1.5653	Bad Bag	
C6	TC6-B9-LP-A	3/31/2008	0.4456	1.0283	1.4739	1.1647	30.07
C6	TC6-B9-LP-B	3/31/2008	0.4611	1.0291	1.4902	1.1796	30.18
C6	TC6-B10-LP-A	3/31/2008	0.4222	1.0161	1.4383	1.1551	27.87
C6	TC6-B10-LP-B	3/31/2008	0.4378	1.0161	1.4539	1.1665	28.28
C6	TC6-B14-LP-A	3/31/2008	0.4342	1.0178	1.452	1.0943	35.14
C6	TC6-B14-LP-B	3/31/2008	0.4202	1.0155	1.4357	1.0771	35.31
C9	TC9-B4-LP-A	3/31/2008	0.4457	1.0215	1.4672	1.1348	32.54
C9	TC9-B4-LP-B	3/31/2008	0.4804	1.022	1.5024	1.1676	32.76
C13	TC13-B4-LP-A	3/31/2008	0.4551	1.0151	1.4702	1.122	34.30
C13	TC13-B4-LP-B	3/31/2008	0.4318	1.016	1.4478	1.1008	34.15
C13	TC13-B6-LP-A	3/31/2008	0.4058	1.0227	1.4285	1.0982	32.30
C13	TC13-B6-LP-B	3/31/2008	0.4197	1.0234	1.4431	1.1098	32.57

Table A1.17 (continued). Sample weights, bag weights, total weights and final weights of samples used in lipid analysis and percent lipids of replicates run in lipid analysis conducted in 2008.

B2							
Tank	**Sample**	**Date**	**Bag Weight**	**Sample Weight**	**Total Weight**	**Final Weight**	**Lipid %**
31	T31-B11-LP-A	3/18/2008	0.4149	1.0857	1.5006	1.1313	34.01
31	T31-B11-LP-B	3/18/2008	0.44	1.0894	1.5294	1.107	38.77
35	T35-B11-LP-A	3/18/2008	0.4234	1.0401	1.4635	1.1084	34.14
35	T35-B11-LP-B	3/18/2008	0.419	1.0456	1.4646	1.1074	34.16
36	T36-B2-LP-A	3/18/2008	0.4353	1.0566	1.4919	1.256	22.33
36	T36-B2-LP-B	3/18/2008	0.4371	1.0576	1.4947	1.2617	22.03
30	T30-B1-LP-A	3/18/2008	0.4184	1.0927	1.5111	1.1088	36.82
30	T30-B1-LP-B	3/18/2008	0.4457	1.0922	1.5379	1.1383	36.59
57	T57-B9-LP-A	3/18/2008	0.4545	1.0317	1.4862	1.1697	30.68
57	T57-B9-LP-B	3/18/2008	0.4394	1.0319	1.4713	1.1569	30.47
59	T59-B4-LP-A	3/18/2008	0.4256	1.0799	1.5055	1.1137	36.28
59	T59-B4-LP-B	3/18/2008	0.4406	1.0792	1.5198	1.1297	36.15
69	T69-B11-LP-A	3/18/2008	0.429	1.084	1.513	1.1008	38.03
69	T69-B11-LP-B	3/18/2008	0.4272	1.0875	1.5147	1.0994	38.19
71	T71-B9-LP-A	3/18/2008	0.455	1.0294	1.4844	1.1632	31.20
71	T71-B9-LP-B	3/18/2008	0.4736	1.0254	1.499	1.176	31.50
74	T74-B7-LP-A	3/18/2008	0.454	1.0743	1.5283	1.1177	38.22
74	T74-B7-LP-B	3/18/2008	0.4383	1.0715	1.5098	1.1034	37.93
76	T76-B2-LP-A	3/18/2008	0.4419	1.0828	1.5247	1.1471	34.87
76	T76-B2-LP-B	3/18/2008	0.4491	1.0897	1.5388	1.1582	34.93
	B2 Control						
Tank	**Sample**	**Date**	**Bag Weight**	**Sample Weight**	**Total Weight**	**Final Weight**	**Lipid %**
C5	TC5-B5-LP-A	3/24/2008	0.454	1.0307	1.4847	Bad Bag	
C5	TC5-B5-LP-B	3/24/2008	0.4312	1.0352	1.4664	Bad Bag	
C5	TC5-B8-LP-A	3/24/2008	0.4566	1.0621	1.5187	1.1341	36.21
C5	TC5-B8-LP-B	3/24/2008	0.4393	1.0681	1.5074	1.1227	36.02
C5	TC5-B9-LP-A	3/24/2008	0.4726	1.0771	1.5497	1.2359	29.13
C5	TC5-B9-LP-B	3/24/2008	0.4405	1.0779	1.5184	1.1919	30.29
C5	TC5-B13-LP-A	3/24/2008	0.4455	1.0806	1.5261	1.1709	32.87
C5	TC5-B13-LP-B	3/24/2008	0.4356	1.0879	1.5235	1.1867	30.96
C8	TC8-B5-LP-A	3/24/2008	0.4688	1.0268	1.4956	1.1918	29.59
C8	TC8-B5-LP-B	3/24/2008	0.4586	1.0271	1.4857	1.1749	30.26
C8	TC8-B6-LP-A	3/24/2008	0.4757	1.0824	1.5581	1.1735	35.53
C8	TC8-B6-LP-B	3/24/2008	0.4522	1.0872	1.5394	1.1522	35.61
C8	TC8-B11-LP-A	3/21/2008	0.4436	1.0874	1.531	1.157	34.39
C8	TC8-B11-LP-B	3/21/2008	0.4429	1.087	1.5299	1.1548	34.51
C8	TC8-B13-LP-A	3/21/2008	0.4362	1.0428	1.479	1.1415	32.36
C8	TC8-B13-LP-B	3/21/2008	0.4412	1.0477	1.4889	1.1505	32.30
C12	TC12-B3-LP-A	3/21/2008	0.4508	1.0665	1.5173	1.1268	36.62
C12	TC12-B3-LP-B	3/21/2008	0.4571	1.0657	1.5228	1.1357	36.32
C12	TC12-B10-LP-A	3/21/2008	0.4563	1.0804	1.5367	1.1698	33.96
C12	TC12-B10-LP-B	3/21/2008	0.4292	1.0857	1.5149	1.1398	34.55
C8	TC8-B14-LP-A	3/31/2008	0.4283	1.0208	1.4491	1.1426	30.03
C8	TC8-B14-LP-B	3/31/2008	0.4559	1.0244	1.4803	1.1726	30.04

Table A1.18. Sample weight, processes of the Leco protein machine, and percent protein, nitrogen and carbon in the sample for the protein analysis conducted in 2008.

GR Tank	Sample	Sample Weight	Method	Location on Leco	Protein Factor	% Protein	%Nitrogen	% Carbon	Sample Date and Time
19	T19-B5-LP-A	0.1086	RNL	29	6.25	83.587	13.374	81.564	3/25/2008 14:45
19	T19-B5-LP-B	0.1086	RNL	30	6.25	82.53	13.205	81.613	3/25/2008 14:48
19	T19-B7-LP-A	0.1057	RNL	1	6.25	79.304	12.689	80.887	3/25/2008 14:52
19	T19-B7-LP-B	0.1051	RNL	2	6.25	80.006	12.801	81.715	3/25/2008 14:56
45	T45-B2-LP-A	0.10623	RNL	3	6.25	83.90651	13.42513	81.45528	4/24/2008 14:18
45	T45-B2-LP-B	0.10571	RNL	4	6.25	83.0081	13.2813	82.4748	4/24/2008 14:22
45	T45-B10-LP-A	0.1051	RNL	11	6.25	81.273	13.004	81.991	3/26/2008 16:02
45	T45-B10-LP-B	0.1062	RNL	12	6.25	81.412	13.026	83.06	3/26/2008 16:06
50	T50-B3-LP-A	0.1078	RNL	15	6.25	91.075	14.572	80.371	3/26/2008 16:17
50	T50-B3-LP-B	0.108	RNL	16	6.25	90.645	14.503	79.822	3/26/2008 16:21
50	T50-B10-LP-A	0.1049	RNL	17	6.25	86.225	13.796	81.055	3/26/2008 16:25
50	T50-B10-LP-B	0.1023	RNL	18	6.25	87.324	13.972	82.585	3/26/2008 16:29
70	T70-B7-LP-A	0.1026	RNL	5	6.25	80.928	12.948	82.735	3/26/2008 17:35
70	T70-B7-LP-B	0.1055	RNL	6	6.25	81.963	13.114	83.573	3/26/2008 17:38
70	T70-B9-LP-A	0.106	RNL	7	6.25	72.677	11.628	84.609	3/26/2008 17:42
70	T70-B9-LP-B	0.1086	RNL	8	6.25	72.816	11.651	84.502	3/26/2008 17:46
75	T75-B8-LP-A	0.109	RNL	27	6.25	84.13	13.461	81.604	3/27/2008 11:47
75	T75-B8-LP-B	0.1082	RNL	28	6.25	84.354	13.497	81.716	3/27/2008 11:50
75	T75-B12-LP-A	0.1048	RNL	29	6.25	89.943	14.391	80.699	3/27/2008 11:54
75	T75-B12-LP-B	0.1052	RNL	30	6.25	89.721	14.355	81.67	3/27/2008 11:58

Table A1.18 (continued). Sample weight, processes of the Leco protein machine, and percent protein, nitrogen and carbon in the sample for the protein analysis conducted in 2008.

GR Control									
Tank	**Sample**	**Sample Weight**	**Method**	**Location on Leco**	**Protein Factor**	**% Protein**	**%Nitrogen**	**% Carbon**	**Sample Date and Time**
C4	TC4-B1-LP-A	0.1064	RNL	29	6.25	80.775	12.924	84.372	3/27/2008 13:50
C4	TC4-B1-LP-B	0.1064	RNL	30	6.25	77.813	12.45	83.931	3/27/2008 13:54
C4	TC4-B3-LP-A	0.1036	RNL	5	6.25	90.536	14.486	81.622	3/27/2008 14:13
C4	TC4-B3-LP-B	0.1046	RNL	6	6.25	91.319	14.611	80.914	3/27/2008 14:17
C4	TC4-B4-LP-A	0.1056	RNL	7	6.25	85.334	13.653	84.909	3/27/2008 14:21
C4	TC4-B4-LP-B	0.1063	RNL	8	6.25	83.923	13.428	84.082	3/27/2008 14:24
C4	TC4-B6-LP-A	0.1038	RNL	11	6.25	80.468	12.875	85.117	3/27/2008 14:36
C4	TC4-B6-LP-B	0.1081	RNL	12	6.25	81.959	13.113	85.751	3/27/2008 14:40
C4	TC4-B8-LP-A	0.1044	RNL	13	6.25	82.679	13.229	84.563	3/27/2008 14:44
C4	TC4-B8-LP-B	0.1064	RNL	14	6.25	84.133	13.461	84.619	3/27/2008 14:48
C4	TC4-B3-LP-AR								
C4	TC4-B3-LP-BR								
C11	TC11-B1-LP-A	0.1074	RNL	11	6.25	84.667	13.547	81.274	3/27/2008 16:31
C11	TC11-B1-LP-B	0.1066	RNL	12	6.25	87.065	13.93	81.661	3/27/2008 16:35
C11	TC11-B4-LP-A	0.1046	RNL	13	6.25	89.803	14.368	80.89	3/27/2008 16:39
C11	TC11-B4-LP-B	0.1074	RNL	14	6.25	89.452	14.312	80.589	3/27/2008 16:43
C11	TC11-B6-LP-A	0.1069	RNL	17	6.25	82.632	13.221	80.723	3/27/2008 16:54
C11	TC11-B6-LP-B	0.1078	RNL	18	6.25	83.059	13.289	82.718	3/27/2008 16:58
C11	TC11-B7-LP-A	0.1042	RNL	19	6.25	80.97	12.955	84.658	3/27/2008 17:02
C11	TC11-B7-LP-B	0.1057	RNL	20	6.25	80.296	12.847	85.088	3/27/2008 17:06
C11	TC11-B13-LP-A	0.1039	RNL	21	6.25	89.445	14.311	83.79	3/27/2008 17:10
C11	TC11-B13-LP-B	0.1054	RNL	22	6.25	90.323	14.452	84.794	3/27/2008 17:14

Table A1.18 (continued). Sample weight, processes of the Leco protein machine, and percent protein, nitrogen and carbon in the sample for the protein analysis conducted in 2008.

CRR Tank	Sample	Sample Weight	Method	Location on Leco	Protein Factor	% Protein	%Nitrogen	% Carbon	Sample Date and Time
5	T5-B6-LP-A	0.1046	RNL	13	6.25	76.14	12.182	84.267	3/25/2008 13:43
5	T5-B6-LP-B	0.1042	RNL	14	6.25	75.57	12.091	84.045	3/25/2008 13:47
15	T15-B8-LP-A	0.1062	RNL	23	6.25	77.25	12.36	83.89	3/25/2008 14:22
15	T15-B8-LP-B	0.1071	RNL	24	6.25	75.227	12.036	84.646	3/25/2008 14:25
27	T27-B1-LP-A	0.1026	RNL	11	6.25	78.992	12.639	83.654	3/25/2008 15:31
27	T27-B1-LP-B	0.1074	RNL	12	6.25	77.367	12.379	82.492	3/25/2008 15:35
28	T28-B12-LP-A	0.107	RNL	13	6.25	69.886	11.182	85.549	3/25/2008 15:38
28	T28-B12-LP-B	0.109	RNL	14	6.25	71.086	11.374	85.944	3/25/2008 15:42
56	T56-B7-LP-A	0.1092	RNL	23	6.25	67.502	10.8	87.815	3/26/2008 16:48
56	T56-B7-LP-B	0.1086	RNL	24	6.25	67.606	10.817	87.741	3/26/2008 16:52
78	T78-B13-LP-A	0.1084	RNL	7	6.25	75.143	12.023	84.538	3/27/2008 12:25
78	T78-B13-LP-B	0.1075	RNL	8	6.25	73.724	11.796	85.106	3/27/2008 12:29
79	T79-B11-LP-A	0.1056	RNL	9	6.25	75.211	12.034	85.483	3/27/2008 12:33
79	T79-B11-LP-B	0.105	RNL	10	6.25	73.476	11.756	84.533	3/27/2008 12:37
80	T80-B8-LP-A	0.1076	RNL	11	6.25	85.799	13.728	81.257	3/27/2008 12:40
80	T80-B8-LP-B	0.1062	RNL	12	6.25	82.7	13.232	79.866	3/27/2008 12:44
47	T47-B5-LP-A	0.1084	RNL	3	6.25	75.945	12.151	86.563	3/31/2008 14:59
47	T47-B5-LP-B	0.105	RNL	4	6.25	75.277	12.044	86.145	3/31/2008 15:03
56	T56-B6-LP-A	0.1039	RNL	1	6.25	70.255	11.241	89.03	3/31/2008 14:52
56	T56-B6-LP-B	0.1025	RNL	2	6.25	70.31	11.25	89.632	3/31/2008 14:55

Table A1.18 (continued). Sample weight, processes of the Leco protein machine, and percent protein, nitrogen and carbon in the sample for the protein analysis conducted in 2008.

CRR Control									
Tank	**Sample**	**Sample Weight**	**Method**	**Location on Leco**	**Protein Factor**	**% Protein**	**%Nitrogen**	**% Carbon**	**Sample Date and Time**
C7	TC7-B6-LP-A	0.1042	RNL	23	6.25	68.778	11.005	88.271	3/27/2008 15:22
C7	TC7-B6-LP-B	0.1067	RNL	24	6.25	81.837	13.094	80.494	3/27/2008 15:26
C7	TC7-B13-LP-A	0.105	RNL	25	6.25	84.929	13.589	83.594	3/27/2008 15:30
C7	TC7-B13-LP-B	0.1044	RNL	26	6.25	77.348	12.376	85.274	3/27/2008 15:34
C10	TC10-B1-LP-A	0.1042	RNL	7	6.25	79.584	12.733	83.347	3/27/2008 16:16
C10	TC10-B1-LP-B	0.1086	RNL	8	6.25	80.897	12.943	83.083	3/27/2008 16:20
C10	TC10-B11-LP-A	0.1041	RNL	7	6.25	78.158	12.505	84.464	3/28/2008 13:47
C10	TC10-B11-LP-B	0.1071	RNL	8	6.25	78.604	12.577	84.526	3/28/2008 13:51
C10	TC10-B8-LP-A	0.1065	RNL	9	6.25	83.842	13.415	82.129	3/27/2008 16:24
C10	TC10-B8-LP-B	0.1073	RNL	10	6.25	83.879	13.421	81.481	3/27/2008 16:28
C15	TC15-B10-LP-A	0.1053	RNL	21	6.25	80.108	12.817	82.641	3/31/2008 12:18
C15	TC15-B10-LP-B	0.1055	RNL	22	6.25	79.315	12.69	83.161	3/31/2008 12:22
C15	TC15-B9-LP-A	0.1041	RNL	9	6.25	76.796	12.287	84.783	3/28/2008 13:55
C15	TC15-B9-LP-B	0.1032	RNL	10	6.25	75.064	12.01	84.621	3/28/2008 13:58
C16	TC16-B9-LP-A	0.105	RNL	27	6.25	74.626	11.94	86.809	3/31/2008 12:41
C16	TC16-B9-LP-B	0.1074	RNL	28	6.25	72.898	11.664	84.886	3/31/2008 12:45
C16	TC16-B8-LP-A	0.1034	RNL	25	6.25	78.08	12.493	83.48	3/31/2008 12:33
C16	TC16-B8-LP-B	0.106	RNL	26	6.25	76.985	12.318	83.733	3/31/2008 12:37
C15	TC15-B15-LP-A	0.1033	RNL	23	6.25	75.117	12.019	83.96	3/31/2008 12:25
C15	TC15-B15-LP-B	0.1058	RNL	24	6.25	76.137	12.182	83.386	3/31/2008 12:29

Table A1.18 (continued). Sample weight, processes of the Leco protein machine, and percent protein, nitrogen and carbon in the sample for the protein analysis conducted in 2008.

F1									
Tank	**Sample**	**Sample Weight**	**Method**	**Location on Leco**	**Protein Factor**	**% Protein**	**%Nitrogen**	**% Carbon**	**Sample Date and Time**
9	T9-B5-LP-A	0.1009	RNL	17	6.25	79.497	12.719	83.063	3/25/2008 13:59
9	T9-B5-LP-B	0.1043	RNL	18	6.25	77.637	12.422	82.313	3/25/2008 14:02
17	T17-B4-LP-A	0.1035	RNL	25	6.25	79.145	12.663	83.246	3/25/2008 14:29
17	T17-B4-LP-B	0.1035	RNL	26	6.25	79.625	12.74	84.363	3/25/2008 14:33
20	T20-B14-LP-A	0.1042	RNL	3	6.25	83.119	13.299	80.421	3/25/2008 15:00
20	T20-B14-LP-B	0.1052	RNL	4	6.25	82.416	13.187	81.934	3/25/2008 15:04
34	T34-B10-LP-A	0.1038	RNL	19	6.25	74.783	11.965	84.167	3/25/2008 16:01
34	T34-B10-LP-B	0.1046	RNL	20	6.25	75.221	12.035	83.392	3/25/2008 16:05
38	T38-B6-LP-A	0.1019	RNL	25	6.25	73.845	11.815	85.398	3/25/2008 16:25
38	T38-B6-LP-B	0.1021	RNL	26	6.25	73.544	11.767	84.238	3/25/2008 16:28
44	T44-B11-LP-A	0.1033	RNL	9	6.25	73.714	11.794	83.479	3/26/2008 15:54
44	T44-B11-LP-B	0.1038	RNL	10	6.25	74.368	11.899	86.113	3/26/2008 15:58
11	T11-B1-LP-A	0.1046	RNL	19	6.25	84.006	13.441	79.237	3/25/2008 14:06
11	T11-B1-LP-B	0.1062	RNL	20	6.25	86.013	13.762	79.048	3/25/2008 14:10
48	T48-B3-LP-A	0.1065	RNL	13	6.25	74.306	11.889	85.508	3/26/2008 16:10
48	T48-B3-LP-B	0.1081	RNL	14	6.25	75.386	12.062	85.168	3/26/2008 16:14
62	T62-B12-LP-A	0.1044	RNL	29	6.25	75.058	12.009	84.305	3/26/2008 17:11
62	T62-B12-LP-B	0.1069	RNL	30	6.25	74.779	11.965	84.716	3/26/2008 17:15
73	T73-B2-LP-A	0.1048	RNL	23	6.25	75.281	12.045	85.03	3/27/2008 11:31
73	T73-B2-LP-B	0.1043	RNL	24	6.25	74.431	11.909	84.54	3/27/2008 11:35

Table A1.18 (continued). Sample weight, processes of the Leco protein machine, and percent protein, nitrogen and carbon in the sample for the protein analysis conducted in 2008.

F1 Control									
Tank	**Sample**	**Sample Weight**	**Method**	**Location on Leco**	**Protein Factor**	**% Protein**	**%Nitrogen**	**% Carbon**	**Sample Date and Time**
C2	TC2-B10-LP-A	0.106	RNL	21	6.25	82.951	13.272	82.274	3/27/2008 13:19
C2	TC2-B10-LP-B	0.1062	RNL	22	6.25	82.741	13.239	81.769	3/27/2008 13:23
C2	TC2-B2-LP-A	0.109	RNL	13	6.25	77.536	12.406	82.68	3/27/2008 12:48
C2	TC2-B2-LP-B	0.1093	RNL	14	6.25	79.514	12.722	84.4	3/27/2008 12:52
C2	TC2-B3-LP-A	0.1056	RNL	17	6.25	73.424	11.748	84.432	3/27/2008 13:04
C2	TC2-B3-LP-B	0.1066	RNL	18	6.25	75.011	12.002	84.035	3/27/2008 13:07
C2	TC2-B5-LP-A	0.1073	RNL	19	6.25	77.682	12.429	84.154	3/27/2008 13:11
C2	TC2-B5-LP-B	0.1061	RNL	20	6.25	77.698	12.432	83.871	3/27/2008 13:15
C2	TC2-B15-LP-A	0.1044	RNL	23	6.25	75.93	12.149	83.074	3/27/2008 13:27
C2	TC2-B15-LP-B	0.1046	RNL	24	6.25	75.967	12.155	83.298	3/27/2008 13:31
C17	TC17-B7-LP-A	0.1074	RNL	29	6.25	80.226	12.836	83.453	3/31/2008 12:49
C17	TC17-B7-LP-B	0.1079	RNL	30	6.25	81.761	13.082	82.215	3/31/2008 12:52
C17	TC17-B8-LP-A	0.1077	RNL	3	6.25	76.186	12.19	83.764	3/31/2008 13:04
C17	TC17-B8-LP-B	0.107	RNL	4	6.25	76.772	12.284	84.256	3/31/2008 13:08
C19	TC19-B5-LP-A	0.1021	RNL	5	6.25	80.653	12.905	85.955	3/31/2008 13:12
C19	TC19-B5-LP-B	0.1056	RNL	6	6.25	80.578	12.893	85.353	3/31/2008 13:15
C19	TC19-B6-LP-A	0.1049	RNL	7	6.25	81.234	12.998	82.664	3/31/2008 13:19
C19	TC19-B6-LP-B	0.1051	RNL	8	6.25	78.728	12.597	84.247	3/31/2008 13:23
C19	TC19-B10-LP-A	0.1068	RNL	9	6.25	75.851	12.136	85.168	3/31/2008 13:27
C19	TC19-B10-LP-B	0.1058	RNL	10	6.25	75.274	12.044	84.977	3/31/2008 13:31

Table A1.18 (continued). Sample weight, processes of the Leco protein machine, and percent protein, nitrogen and carbon in the sample for the protein analysis conducted in 2008.

F2									
Tank	**Sample**	**Sample Weight**	**Method**	**Location on Leco**	**Protein Factor**	**% Protein**	**%Nitrogen**	**% Carbon**	**Sample Date and Time**
24	T24-B8-LP-A	0.1066	RNL	7	6.25	75.769	12.123	81.972	3/25/2008 15:15
24	T24-B8-LP-B	0.1066	RNL	8	6.25	76.038	12.166	83.905	3/25/2008 15:19
43	T43-B1-LP-A	0.1078	RNL	27	6.25	84.052	13.448	80.589	3/25/2008 16:32
43	T43-B1-LP-B	0.1086	RNL	28	6.25	84.88	13.581	80.428	3/25/2008 16:36
6	T6-B2-LP-A	0.1026	RNL	15	6.25	70.826	11.332	86.167	3/25/2008 13:51
6	T6-B2-LP-B	0.1016	RNL	16	6.25	72.413	11.586	85.62	3/25/2008 13:55
12	T12-B1-LP-A	0.1073	RNL	21	6.25	71.842	11.495	85.066	3/25/2008 14:14
12	T12-B1-LP-B	0.1089	RNL	22	6.25	71.972	11.516	85.089	3/25/2008 14:18
18	T18-B6-LP-A	0.1047	RNL	27	6.25	73.002	11.68	85.401	3/25/2008 14:37
18	T18-B6-LP-B	0.1053	RNL	28	6.25	72.786	11.646	85.128	3/25/2008 14:41
18	T18-B6-LP-AR								
18	T18-B6-LP-BR								
21	T21-B2-LP-A	0.1079	RNL	5	6.25	72.273	11.564	86.34	3/25/2008 15:08
21	T21-B2-LP-B	0.1081	RNL	6	6.25	71.455	11.433	85.973	3/25/2008 15:12
26	T26-B5-LP-A	0.1045	RNL	9	6.25	79.402	12.704	83.775	3/25/2008 15:23
26	T26-B5-LP-B	0.1045	RNL	10	6.25	78.67	12.587	83.487	3/25/2008 15:27
53	T53-B15-LP-A	0.1045	RNL	21	6.25	74.844	11.975	85.906	3/26/2008 16:41
53	T53-B15-LP-B	0.1053	RNL	22	6.25	74.106	11.857	85.795	3/26/2008 16:44
72	T72-B2-LP-A	0.1065	RNL	11	6.25	78.298	12.528	85.089	3/26/2008 17:58
72	T72-B2-LP-B	0.1058	RNL	12	6.25	79.494	12.719	84.644	3/26/2008 18:02
77	T77-B6-LP-A	0.1087	RNL	5	6.25	76.594	12.255	84.022	3/27/2008 12:17
77	T77-B6-LP-B	0.1042	RNL	6	6.25	75.452	12.072	85.782	3/27/2008 12:21

Table A1.18 (continued). Sample weight, processes of the Leco protein machine, and percent protein, nitrogen and carbon in the sample for the protein analysis conducted in 2008.

F2 Control									
Tank	**Sample**	**Sample Weight**	**Method**	**Location on Leco**	**Protein Factor**	**% Protein**	**%Nitrogen**	**% Carbon**	**Sample Date and Time**
C3	TC3-B3-LP-A	0.1066	RNL	25	6.25	85.401	13.664	83.529	3/27/2008 13:34
C3	TC3-B3-LP-B	0.1067	RNL	26	6.25	84.01	13.442	83.344	3/27/2008 13:38
C3	TC3-B5-LP-A								
C3	TC3-B5-LP-B								
C3	TC3-B7-LP-A	0.1034	RNL	1	6.25	82.082	13.133	85.283	3/27/2008 13:57
C3	TC3-B7-LP-B	0.1053	RNL	2	6.25	79.75	12.76	84.678	3/27/2008 14:01
C3	TC3-B10-LP-A	0.1061	RNL	3	6.25	81.847	13.095	85.534	3/27/2008 14:05
C3	TC3-B10-LP-B	0.1063	RNL	4	6.25	79.775	12.764	85.351	3/27/2008 14:09
C3	TC3-B12-LP-A	0.1026	RNL	11	6.25	88.629	14.181	80.732	3/31/2008 13:35
C3	TC3-B12-LP-B	0.1052	RNL	12	6.25	87.354	13.977	80.7	3/31/2008 13:39
C6	TC6-B9-LP-A	0.1049	RNL	29	6.25	86.242	13.799	83.357	3/31/2008 14:44
C6	TC6-B9-LP-B	0.1067	RNL	30	6.25	86.355	13.817	83.388	3/31/2008 14:48
C6	TC6-B10-LP-A	0.1045	RNL	27	6.25	88.987	14.238	82.745	3/31/2008 14:36
C6	TC6-B10-LP-B	0.1048	RNL	28	6.25	88.365	14.138	82.562	3/31/2008 14:40
C6	TC6-B14-LP-A	0.1027	RNL	23	6.25	78.787	12.606	86.073	3/31/2008 14:21
C6	TC6-B14-LP-B	0.107	RNL	24	6.25	77.333	12.373	86.428	3/31/2008 14:25
C9	TC9-B4-LP-A	0.1073	RNL	19	6.25	76.907	12.305	85.546	3/31/2008 14:05
C9	TC9-B4-LP-B	0.1087	RNL	20	6.25	77.811	12.45	84.94	3/31/2008 14:09
C13	TC13-B4-LP-A	0.1079	RNL	17	6.25	76.985	12.318	86.07	3/31/2008 13:58
C13	TC13-B4-LP-B	0.108	RNL	18	6.25	76.024	12.164	86.51	3/31/2008 14:02
C13	TC13-B6-LP-A	0.1074	RNL	15	6.25	83.196	13.311	84.818	3/31/2008 13:50
C13	TC13-B6-LP-B	0.1076	RNL	16	6.25	81.547	13.047	85.437	3/31/2008 13:54

Table A1.18 (continued). Sample weight, processes of the Leco protein machine, and percent protein, nitrogen and carbon in the sample for the protein analysis conducted in 2008.

B2									
Tank	**Sample**	**Sample Weight**	**Method**	**Location on Leco**	**Protein Factor**	**% Protein**	**%Nitrogen**	**% Carbon**	**Sample Date and Time**
31	T31-B11-LP-A	0.1092	RNL	17	6.25	73.842	11.815	85.025	3/25/2008 15:54
31	T31-B11-LP-B	0.1094	RNL	18	6.25	70.353	11.256	81.848	3/25/2008 15:58
35	T35-B11-LP-A	0.1082	RNL	21	6.25	75.733	12.117	84.104	3/25/2008 16:09
35	T35-B11-LP-B	0.1083	RNL	22	6.25	76.729	12.277	84.205	3/25/2008 16:13
36	T36-B2-LP-A	0.1035	RNL	23	6.25	87.916	14.067	79.637	3/25/2008 16:17
36	T36-B2-LP-B	0.1042	RNL	24	6.25	86.319	13.811	79.264	3/25/2008 16:21
30	T30-B1-LP-A	0.1088	RNL	15	6.25	78.017	12.483	84.482	3/25/2008 15:46
30	T30-B1-LP-B	0.1096	RNL	16	6.25	77.739	12.438	84.804	3/25/2008 15:50
57	T57-B9-LP-A	0.1029	RNL	25	6.25	83.56	13.37	80.793	3/26/2008 16:56
57	T57-B9-LP-B	0.1049	RNL	26	6.25	85.172	13.627	81.347	3/26/2008 17:00
59	T59-B4-LP-A	0.1021	RNL	27	6.25	71.982	11.517	83.891	3/26/2008 17:04
59	T59-B4-LP-B	0.1056	RNL	28	6.25	73.103	11.696	84.875	3/26/2008 17:08
69	T69-B11-LP-A	0.1039	RNL	3	6.25	71.382	11.421	84.297	3/26/2008 17:27
69	T69-B11-LP-B	0.1077	RNL	4	6.25	72.085	11.534	84.747	3/26/2008 17:31
71	T71-B9-LP-A	0.1062	RNL	9	6.25	78.262	12.522	84.526	3/26/2008 17:50
71	T71-B9-LP-B	0.1087	RNL	10	6.25	78.151	12.504	84.278	3/26/2008 17:54
74	T74-B7-LP-A	0.1068	RNL	25	6.25	66.708	10.673	87.615	3/27/2008 11:39
74	T74-B7-LP-B	0.1066	RNL	26	6.25	67.752	10.84	87.683	3/27/2008 11:43
76	T76-B2-LP-A	0.1048	RNL	1	6.25	75.804	12.129	84.482	3/27/2008 12:02
76	T76-B2-LP-B	0.106	RNL	2	6.25	75.026	12.004	85.29	3/27/2008 12:06

Table A1.18 (continued). Sample weight, processes of the Leco protein machine, and percent protein, nitrogen and carbon in the sample for the protein analysis conducted in 2008.

B2 Control									
Tank	**Sample**	**Sample Weight**	**Method**	**Location on Leco**	**Protein Factor**	**% Protein**	**%Nitrogen**	**% Carbon**	**Sample Date and Time**
C5	TC5-B5-LP-A								
C5	TC5-B5-LP-B								
C5	TC5-B8-LP-A	0.1032	RNL	15	6.25	75.116	12.018	85.652	3/27/2008 14:51
C5	TC5-B8-LP-B	0.1064	RNL	16	6.25	73.107	11.697	85.026	3/27/2008 14:55
C5	TC5-B9-LP-A	0.1072	RNL	17	6.25	78.011	12.482	83.653	3/27/2008 14:59
C5	TC5-B9-LP-B	0.1081	RNL	18	6.25	76.923	12.308	83.706	3/27/2008 15:03
C5	TC5-B13-LP-A	0.1024	RNL	19	6.25	76.472	12.236	84.521	3/27/2008 15:07
C5	TC5-B13-LP-B	0.1048	RNL	20	6.25	75.754	12.121	84.951	3/27/2008 15:11
C8	TC8-B5-LP-A	0.1065	RNL	27	6.25	75.812	12.13	84.121	3/27/2008 15:38
C8	TC8-B5-LP-B	0.105	RNL	28	6.25	70.411	11.266	89.739	3/27/2008 15:41
C8	TC8-B6-LP-A	0.105	RNL	29	6.25	74.924	11.988	85.609	3/27/2008 15:45
C8	TC8-B6-LP-B	0.1073	RNL	30	6.25	76.586	12.254	86.264	3/27/2008 15:49
C8	TC8-B11-LP-A	0.1053	RNL	5	6.25	78.293	12.527	83.902	3/27/2008 16:08
C8	TC8-B11-LP-B	0.1049	RNL	6	6.25	78.83	12.613	84.972	3/27/2008 16:12
C8	TC8-B13-LP-A	0.1077	RNL	1	6.25	81.424	13.028	83.902	3/27/2008 15:53
C8	TC8-B13-LP-B	0.1048	RNL	2	6.25	80.051	12.808	83.028	3/27/2008 15:57
C12	TC12-B3-LP-A	0.1062	RNL	23	6.25	80.036	12.806	86.722	3/27/2008 17:18
C12	TC12-B3-LP-B	0.1083	RNL	24	6.25	78.799	12.608	86.58	3/27/2008 17:21
C12	TC12-B10-LP-A	0.1087	RNL	25	6.25	79.527	12.724	84.117	3/27/2008 17:25
C12	TC12-B10-LP-B	0.1091	RNL	26	6.25	80.511	12.882	86.826	3/27/2008 17:29
C8	TC8-B14-LP-A	0.1052	RNL	21	6.25	81.443	13.031	85.297	3/31/2008 14:13
C8	TC8-B14-LP-B	0.1062	RNL	22	6.25	82.014	13.122	85.431	3/31/2008 14:17

Table A1.19. Calibration temperature (reflecting air temperature), conversion, and calibration for dissolved oxygen meter by date for the predator pond experiment conducted in 2008.

Date	Calibration Temp	Chart ppm	Conversion Factor	Calibration ppm
3/13/2008	7.9	11.9	0.84	9.996
3/14/2008	8.2	11.9	0.84	9.996
3/15/2008	8	11.9	0.84	9.996
3/16/2008	4.8	12.8	0.84	10.752
3/17/2008	7.6	11.9	0.84	9.996
3/18/2008	7.8	11.9	0.84	9.996
3/19/2008	9.2	11.6	0.84	9.744
3/19/2008	7.6	11.9	0.84	9.996
3/20/2008	5.4	12.8	0.84	10.752
3/21/2008	10.4	11.3	0.84	9.492
3/22/2008	3.4	13.5	0.84	11.34
3/23/2008	-0.4	14.6	0.84	12.264
3/24/2008	11	11.3	0.84	9.492
3/25/2008	11.3	11.3	0.84	9.492
3/26/2008	13.3	10.6	0.84	8.904
3/26/2008	9.5	11.3	0.84	9.492
3/27/2008	8.9	11.6	0.84	9.744
3/28/2008	9.6	11.3	0.84	9.492
3/29/2008	9.1	11.6	0.84	9.744
3/30/2008	7.8	11.9	0.84	9.996
3/31/2008	8.6	11.6	0.84	9.744
4/1/2008	7.2	12.2	0.84	10.248
4/2/2008	7.6	11.9	0.84	9.996
4/3/2008	7.8	11.9	0.84	9.996
4/4/2008	10.2	11.3	0.84	9.492
4/5/2008	10.3	11.3	0.84	9.492
4/6/2008	10.4	11.3	0.84	9.492
4/7/2008	5.1	12.8	0.84	10.752
4/8/2008	10.4	11.3	0.84	9.492
4/9/2008	8.7	11.6	0.84	9.744
4/9/2008	11.3	11	0.84	9.24
4/10/2008	4.3	13.1	0.84	11.004
4/11/2008	3.1	13.5	0.84	11.34
4/12/2008	5.1	12.8	0.84	10.752
4/13/2008	14.4	10.4	0.84	8.736
4/14/2008	14.4	10.4	0.84	8.736
4/15/2008	19.4	9.4	0.84	7.896
4/16/2008	6.8	12.2	0.84	10.248
4/17/2008	5.7	12.5	0.84	10.5
4/18/2008	8.9	11.6	0.84	9.744
4/19/2008	13.4	10.6	0.84	8.904
4/20/2008	12.9	10.6	0.84	8.904
4/21/2008	6.8	12.2	0.84	10.248
4/22/2008	10.4	11.3	0.84	9.492
4/23/2008	17.7	9.7	0.84	8.148
4/23/2008	15.6	9.9	0.84	8.316
4/24/2008	14	10.4	0.84	8.736
4/25/2008	8.4	11.9	0.84	9.996
4/26/2008	7.7	11.9	0.84	9.996
4/27/2008	8.3	11.9	0.84	9.996
4/28/2008	14.4	10.4	0.84	8.736

Table A1.20. Weather and comments, for the predator pond experiment conducted at the Foothills Fisheries Laboratory in 2008.

Date	Weather and Comments
3/13/2008	Cool, cloudy, rare sun breaking through clouds, breezy; day after the official release of pike on 3/12/08
3/14/2008	Cool, cloudy, no sun, breezy
3/15/2008	Cool, cloudy, partly sunny, slight breezez; water turned on after measurements taken, and run overnight; pond 1 down 1.25 feet, pond 2 down 3 inches, pond 3 down 6 inches, pond 4 down 1 feet
3/16/2008	Very cool, no sun, dark clouds; water ran for 22 hours straight; ponds 1 and 2 full, pond 3 down 3 inches, pond 4 down 1 feet; began to sleet/snow; fish rising at snow
3/17/2008	Cold, overcast, no sun, approximately 2" of snow on ground, no new snow since ~8 am
3/18/2008	Sunny, cool, breezy; still some snow on ground
3/19/2008	Sunny, windy, a few clouds; pre-seining measurement to gage effects of seining; still a little snow on the ground; pond 1 - 69 rainbows, 2 pike; pond 2 - 67 rainbows, 0 pike; pond 3 - 75 live rainbows,
	1 pike, 1 dead rainbow; pond 4 - 61 rainbows, 2 pike; pond 3 (run 2) - 73 rainbows, 2 pike
3/19/2008	Sunny, breezy, quite a bit warmer; approximately 2 1/2 hours after seining ponds 1 and 2, 1 hour after seining ponds 3 and 4; started running water to ponds 1 and 4 at 3:30 PM
3/20/2008	Partly cloudy, some sun, very windy; water ran in ponds 1 and 4 for 25.5 hours, both full, with some water turnover in pond 1, little turnover in pond 4; water begun to ponds 2 and 3 @ 5:45 pm and run overnight
3/21/2008	Sunny, a few clouds, windy, warm when not blowing; water turned off before measurements; ponds 2 and 3 run for 21 hours, both full, turnover in both
3/22/2008	Mostly cloudy, fairly cool, rare sun, breezy to windy; great blue heron seen at carp pond
3/23/2008	Cool, sunny, approximately 1/2 inch of snow on the ground, no wind
3/24/2008	Sunny, partly cloudy (thin and see through), windy, warm; geese in ponds 3 and 4
3/25/2008	Partly cloudy, some sun, no wind; cool when sun behind a cloud, warm when sun not behind a cloud; ducks in pond 4; lots of rising activity in pond 2
3/26/2008	Sunny, warm, no wind, no clouds; pre-seining conditions
3/26/2007	Sunny, warm, breezy, a few clouds; post-seining conditions
3/27/2008	Mostly cloudy, cool, rare sun, no wind; some flurries overnight, no snow on the ground at the time of the measurements; all ponds run for 25 hours; ponds 1 and 2 full and turnover; ponds 3 and 4 not full; water
	stopped before measurements were taken; were going to run ponds 3 and 4 overnight, but too cold; will finish filling ponds 3 and 4 this weekend
3/28/2008	Sunny, lots of clouds, but most of them thin, breezy, cool
3/29/2008	Warm, partly cloudy, some sun, very windy
3/30/2008	Cloudy, some sun coming through the thinner clouds, slight breeze, cool; snow overnight, ~2 inches on ground
3/31/2008	Sunny, somewhat warm, no snow on ground although it snowed overnight and at around 1:00 PM; windy and partly cloudy
4/1/2008	Mostly cloudy, some sun, fairly cool, breezy
4/2/2008	Sunny, warm, breezy, some clouds
4/3/2008	Windy, cloudy, cool, some sun; snowing for a few minutes off and on throughout the day; shorebirds (snipes or spotted sandpipers) in pond 4
4/4/2008	Sunny, warm, breezy, no clouds; lots of activity in the ponds (rainbows swimming near surface and schooling), first day since experiment began that several rainbows are seen at the surface; water running
	to ponds 1 and 4 staring around 3:45 PM
4/5/2008	Sunny, warm, few clouds, no breeze; water running in ponds 1 and 4 for 19 hours; pond 4 full, pond 1 still down; water resumed to ponds 1, 2 and 3 at 11:00 AM

Table A1.20 (continued). Weather and comments, by date, for the predator pond experiment conducted at the Foothills Fisheries Laboratory in 2008.

Date	Weather and Comments
4/6/2008	Partly cloudy, lots of sun, both direct and through thin clouds, breezy, cool; water run to ponds 1, 2 and 3 for 25 hours; all three full and experiencing some turnover
4/7/2008	Cloudy, no sun, cool, breezy; been snowing off and on all morning, but no snow on ground
4/8/2008	Sunny with lots of thin clouds, warm, breezy; kingfisher observed flying around ponds
4/9/2008	Mostly cloudy, though clouds thin, sunny through thin clouds, breezy, fairly cool; pre-seining conditions
4/9/2008	Cloudy, a little sun, slight breeze, raining and cool; post-seining conditions
4/10/2008	Windy, cold, snowing all night and most of the day, though very little snow on the ground, no sun, cloudy
4/11/2008	Sunny, cold, very windy, a few clouds
4/12/2008	Mostly cloudy, partial sun, high winds, cold
4/13/2008	Sunny, slight wind, warm
4/14/2008	Sunny, warm, breezy, no clouds; water turned on to ponds 1 and 4 at 3:00 PM
4/15/2008	Sunny, warm, a few thin clouds, breezy to windy; water running to ponds 1 and 4 for 23.5 hours; water resumed to all 4 ponds at 3:00 PM
4/16/2008	Cloudy, no sun, cold, breezy; snow fluries off and on; water running to all ponds for 25 hours, all full; ducks (ponds 3 and 4), geese (ponds 2, 3, and 4), and snipe (pond 1)
4/17/2008	Partly sunny, some clouds, breezy, cool; great blue heron in pond 1, snipe (2) in ponds 1, 2, 3, and 4
4/18/2008	Sunny, warm, no clouds, slight breeze; great blue heron in pond 1
4/19/2008	Sunny, warm, windy, a few very thin clouds; 2 geese in pond 3
4/20/2008	Sunny, warm, windy, no clouds; 6 geese in ponds 2 and 3
4/21/2008	Cloudy, breezy, no sun, cool; clouds dark - may rain; great blue heron in pond 1; a few sprinkles @ 5:45 PM, no rain after
4/22/2008	Sunny through thin clouds, mostly cloudy though thin, breezy, cool
4/23/2008	Sunny, a little cool, slight breeze, no clouds; pre-seining conditions
4/23/2008	Sunny, warm, slight breeze, some thin clouds; post-seining conditions
4/24/2008	Cloudy, no sun, breezy, cool, dark clouds, may rain; water running for 26 1/4 hours and not turned off for measurements
4/25/2008	Sunny, cool, windy, a few clouds; water running for 49 1/4 hours and not turned off for measurements
4/26/2008	Some sun, mostly cloudy, breezy, cool; water running for 72 hours and not turned off for measurements
4/27/2008	Sunny, slightly cool, windy, very few clouds; water running to ponds for 93 hours; turned off for measurements, resumed only to ponds 1 and 4
4/28/2008	Sunny, some clouds, warm, breezy; water running to ponds 1 and 4 for 29 hours

Table A1.21. Standard, fork, and total lengths, as well as weights, for each individual in each of the four ponds, for the seining event conducted on April 26, 2008.

Pond	Seine Haul	Fish	Strain	SL	FL	TL	Weight
1	1	Pike				80.01	3129.787
1	1	Pike				81.28	3628.738
1	1	RBT	B2	27	28.8	30	243
1	1	RBT	B2	23.8	25.5	26.5	161
1	1	RBT	B2	23	24.5	25.5	134
1	1	RBT	B2	21.5	23.4	24.5	124
1	1	RBT	B2	25.5	27.2	28.4	188
1	1	RBT	B2	26	27.6	29	225
1	1	RBT	B2	23	24.6	25.9	171
1	2	RBT	B2	24	25.8	26.7	168
1	2	RBT	B2	25.5	27	28.4	168
1	1	RBT	CRR	18.6	20.2	21	87
1	1	RBT	F1	24	25.5	26.2	174
1	1	RBT	F1	27.3	29	30	236
1	1	RBT	F1	24.3	26	27.2	179
1	1	RBT	F1	23	25.2	26	180
1	1	RBT	F1	24	25.2	26.5	184
1	1	RBT	F1	24	25.5	26.4	167
1	1	RBT	F1	23	25	26.3	187
1	1	RBT	F1	25	27	28	197
1	2	RBT	F1	24.8	26.5	27.8	204
1	2	RBT	F1	23.7	25.5	26.6	169
1	1	RBT	F2	23	24.9	26	169
1	1	RBT	F2	25	26.8	28.1	174
1	1	RBT	F2	24.8	26.5	28	174
1	1	RBT	F2	24.5	26.5	27.8	188
1	1	RBT	F2	27	29	30.2	232
1	1	RBT	F2	24	25.6	27.1	205
1	1	RBT	F2	24	25.8	27	177
1	1	RBT	F2	23.8	25.5	26.5	176
1	1	RBT	F2	27	29	30.2	254
1	1	RBT	F2	26	27.7	29.5	203
1	2	RBT	F2	25.5	27.2	28.5	222
1	2	RBT	F2	24	26	27.3	182
1	1	RBT	GR	26.5	28.5	29.5	270
1	1	RBT	GR	25	27	28	186
1	1	RBT	GR	25.3	27.8	29	234
1	1	RBT	GR	26.3	28.5	29.4	247
1	1	RBT	GR	26	27.8	28.7	210
1	1	RBT	GR	24	26.8	27.5	244
1	1	RBT	GR	26.7	28.7	29.5	239
1	1	RBT	GR	26.7	28.5	29.5	235
1	1	RBT	GR	26.5	28.5	29.8	267
1	1	RBT	GR	24	25.8	26.8	228
1	1	RBT	GR	24.7	26.5	27.9	234
1	1	RBT	GR	24.8	26.5	27.5	210

Table A1.21 (continued). Standard, fork, and total lengths, as well as weights, for each individual in each of the four ponds, for the seining event conducted on April 26, 2008.

Pond	Seine Haul	Fish	Strain	SL	FL	TL	Weight
2	1	Pike				73.66	2948.35
2	1	Pike				73.66	2721.554
2	1	RBT	B2	21	22.5	23	109
2	1	RBT	B2	18.5	20	20.9	95
2	1	RBT	B2	19	20.3	21.2	86
2	1	RBT	B2	16	17	18	49
2	1	RBT	B2	20.5	22	23	99
2	1	RBT	B2	22	23.5	24.5	130
2	1	RBT	B2	22.7	24.1	25	135
2	1	RBT	B2	22	23.7	24.8	117
2	1	RBT	CRR	15.8	17	18	50
2	1	RBT	CRR	16	17.1	18	60
2	1	RBT	F1	22.5	24	25.2	138
2	1	RBT	F1	22.7	24	25	139
2	1	RBT	F1	23	24.8	25.5	140
2	1	RBT	F1	20	21.5	22.7	107
2	1	RBT	F1	21	22.7	23.3	122
2	1	RBT	F1	22	23.7	24.5	136
2	1	RBT	F1	24	26	26.8	158
2	1	RBT	F1	21.7	23.2	24.3	125
2	1	RBT	F1	22.5	24	25	132
2	1	RBT	F1	18.5	20	21	78
2	1	RBT	F1	23	24.5	25.8	151
2	1	RBT	F1	21.5	22.9	24	120
2	1	RBT	F1	19	20.5	21.5	93
2	1	RBT	F2	23	24.5	25.2	152
2	1	RBT	F2	22.5	24	25	142
2	1	RBT	F2	19	20.5	21.3	89
2	1	RBT	F2	22	23.45	24.5	139
2	1	RBT	F2	22.6	24	25	141
2	1	RBT	F2	23	25	26	155
2	1	RBT	GR	22.5	24.1	25.1	157
2	1	RBT	GR	22.8	24.5	25.3	148
2	1	RBT	GR	23.8	25	26	163
2	1	RBT	GR	23.5	25	26	153
2	1	RBT	GR	23	24.8	25.8	137
2	1	RBT	GR	25.5	27.3	28.5	202
2	1	RBT	GR	25	27	28	195
2	1	RBT	GR	24	26	26.5	170
2	1	RBT	GR	24	25.5	26.5	161
2	1	RBT	GR	25	26.5	27.8	208
2	1	RBT	GR	23.8	25.5	26.2	150

Table A1.21 (continued). Standard, fork, and total lengths, as well as weights, for each individual in each of the four ponds, for the seining event conducted on April 26, 2008.

Pond	Seine Haul	Fish	Strain	SL	FL	TL	Weight
3	1	Pike				74.93	3175.146
3	1	Pike				74.93	2721.554
3	1	RBT	B2	24	26	26.8	178
3	1	RBT	B2	24.5	26.2	27.5	185
3	1	RBT	B2	25	26.8	28.6	208
3	1	RBT	B2	23.8	25.4	26.8	162
3	1	RBT	B2	23.7	25.3	25.9	149
3	1	RBT	B2	23	24.8	25.9	170
3	1	RBT	B2	23	24.5	25.5	139
3	1	RBT	B2	24.5	26.3	27	177
3	1	RBT	B2	23	24.8	25.8	143
3	1	RBT	B2	22.5	24	25	154
3	1	RBT	B2	25.7	27.5	28.7	211
3	1	RBT	B2	22.8	24.2	25.1	144
3	1	RBT	B2	23	24.6	25.6	144
3	1	RBT	B2	26	27.5	28.3	207
3	1	RBT	B2	24	25.5	26.5	165
3	1	RBT	B2	25.2	26.9	28	187
3	1	RBT	B2	24.4	26.5	27.8	176
3	1	RBT	CRR	18.5	20	20.9	87
3	1	RBT	CRR	18	19.5	21	84
3	1	RBT	F1	25.5	26.8	27.5	194
3	1	RBT	F1	24	25.8	26.6	173
3	1	RBT	F1	24	26	26.9	166
3	1	RBT	F1	25	27	28	215
3	1	RBT	F1	26	28	29.2	246
3	1	RBT	F1	23.8	25.5	26.8	174
3	1	RBT	F1	25	27.5	28.5	205
3	1	RBT	F1	24	25.5	26.5	155
3	1	RBT	F1	23	24.5	25.2	140
3	1	RBT	F1	23	24.7	25.7	148
3	1	RBT	F1	24.5	26.5	27.5	205
3	1	RBT	F1	25	26.8	27.7	198
3	1	RBT	F1	24	26	26.8	168
3	1	RBT	F1	25.5	27.5	28.3	198
3	1	RBT	F1	25.3	27.2	28	205
3	1	RBT	F1	24.5	26.7	27.5	186
3	1	RBT	F2	23.5	25.2	26	179
3	1	RBT	F2	25.5	27.2	28.2	190
3	1	RBT	F2	26	27.8	29	198
3	1	RBT	F2	24.5	26	27.1	180
3	1	RBT	F2	25	26.8	28	167
3	1	RBT	F2	25.7	27.7	28.7	223
3	1	RBT	F2	25	26.8	27.8	192
3	1	RBT	F2	24.5	26.2	27.3	190
3	1	RBT	F2	23.8	25.5	26.7	157
3	1	RBT	F2	28.5	30	31	277
3	1	RBT	F2	26	27.7	2.94	209
3	1	RBT	F2	26	28	29	214
3	1	RBT	F2	25	26.7	28	180
3	1	RBT	F2	23	24.8	26	149
3	1	RBT	GR	26	27.8	28.8	220
3	1	RBT	GR	26	27.9	29	215
3	1	RBT	GR	27.7	29.1	30.8	255
3	1	RBT	GR	25.5	27.5	28.8	220
3	1	RBT	GR	25	27	27.9	223
3	1	RBT	GR	25.2	27.5	28.5	200
3	1	RBT	GR	26	27.8	28.8	208
3	1	RBT	GR	25.7	27.7	28.7	211
3	1	RBT	GR	25.5	27.5	28.3	222
3	1	RBT	GR	25.5	27.4	28	225
3	1	RBT	GR	25	26.8	28	204
3	1	RBT	GR	25.7	27.5	28.5	235
3	1	RBT	GR	25.5	27.3	28.5	189
3	1	RBT	GR	25.5	27.5	28.5	205
3	1	RBT	GR	26	27.8	28.8	210

Table A1.21 (continued). Standard, fork, and total lengths, as well as weights, for each individual in each of the four ponds, for the seining event conducted on April 26, 2008.

Pond	Seine Haul	Fish	Strain	SL	FL	TL	Weight
4	1	Pike				72.39	2834.952
4	2	Pike				72.39	2948.35
4	1	RBT	B2	21	22.3	23.5	112
4	1	RBT	B2	20.5	22.5	23.6	117
4	1	RBT	B2	21	22.5	23.9	131
4	1	RBT	B2	20	21.5	22.5	91
4	2	RBT	B2	21.5	23.2	24	126
4	2	RBT	B2	18.5	20	21.1	110
4	1	RBT	CRR	12	13	13.7	67
4	1	RBT	F1	21	22.5	23	137
4	1	RBT	F1	21.5	23	25	154
4	1	RBT	F1	23.5	25	26.3	153
4	1	RBT	F1	22	24.5	25.2	139
4	1	RBT	F1	21	22.5	23.5	131
4	1	RBT	F1	20.5	22.8	23.5	119
4	1	RBT	F1	21.5	23.8	24.8	146
4	1	RBT	F1	16.5	18.3	19	82
4	1	RBT	F1	20.8	22	23	100
4	1	RBT	F1	19	21.2	21.8	116
4	1	RBT	F1	20.5	22	23	93
4	1	RBT	F1	21	23	24	148
4	1	RBT	F1	21.7	23.1	24.8	140
4	1	RBT	F2	23.5	25.5	26.5	176
4	1	RBT	F2	22	23.5	24.7	119
4	1	RBT	F2	18.7	19.7	20.8	89
4	1	RBT	F2	23	24.8	26	148
4	1	RBT	F2	20	22.2	23.5	136
4	1	RBT	F2	20.5	22	23	126
4	1	RBT	F2	20	21.6	22.6	125
4	1	RBT	F2	23.8	25.5	27	150
4	1	RBT	F2	22.1	24.5	25.1	169
4	1	RBT	F2	22	23.7	25	154
4	2	RBT	F2	21.5	23	24.3	131
4	1	RBT	GR	23	24.3	25.3	187
4	1	RBT	GR	24	26	26.8	205
4	1	RBT	GR	22	24	24.7	144
4	1	RBT	GR	23.5	25.2	26	200
4	1	RBT	GR	23.5	25	26	154
4	1	RBT	GR	22	23.5	24.5	174
4	1	RBT	GR	22.5	24	25	131
4	1	RBT	GR	22.5	25	26	182
4	1	RBT	GR	24	26	26.8	190
4	1	RBT	GR	23	24.3	25	166

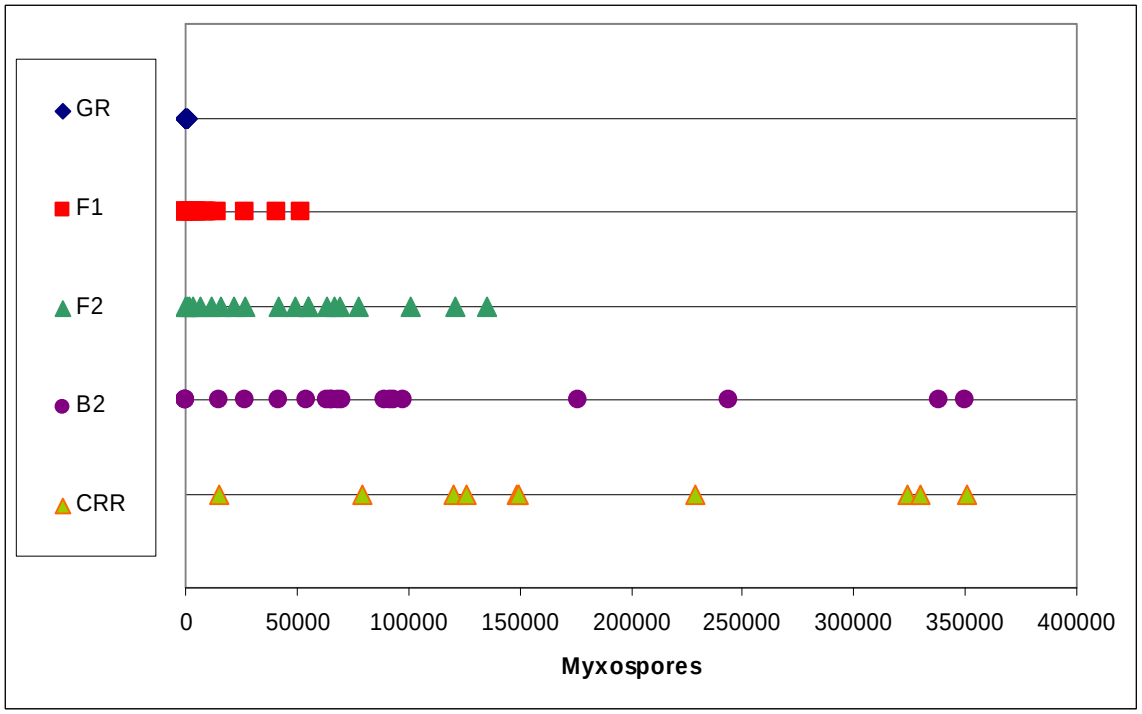


Figure A1.1. Average spore counts for 10 GR, 20 F1, 20 F2, 20 B2, and 10 CRR strains. Each point represents average spore counts for each individual family.

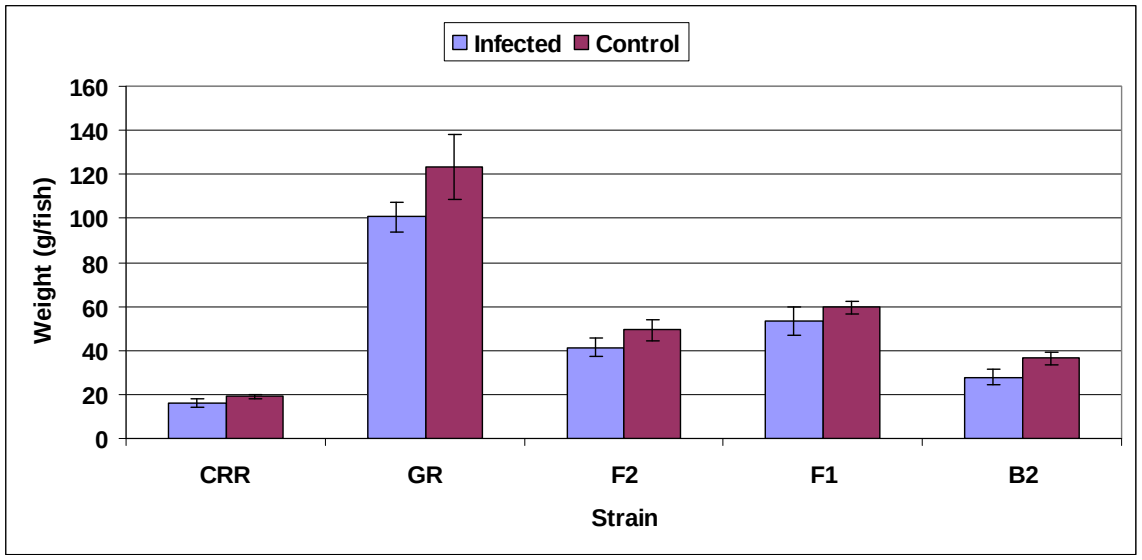


Figure A1.2. Average weight, in terms of grams per fish, for both infected and control individuals in the five strains at the end of the exposure experiment conducted in 2007.

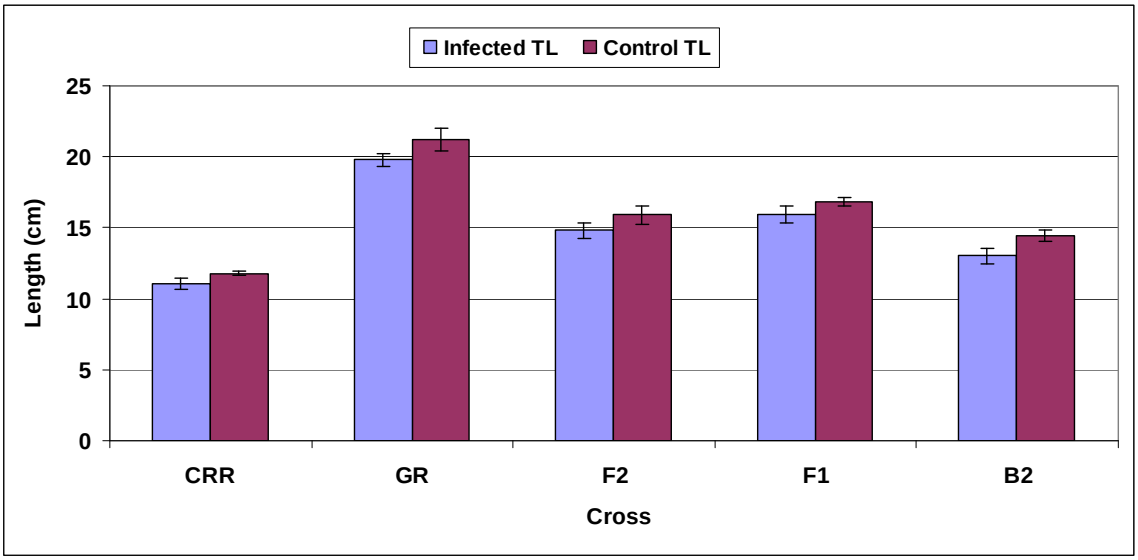


Figure A1.3. Average total length (cm) for both infected and control individuals in the five strains at the conclusion of the exposure experiment conducted in 2007.

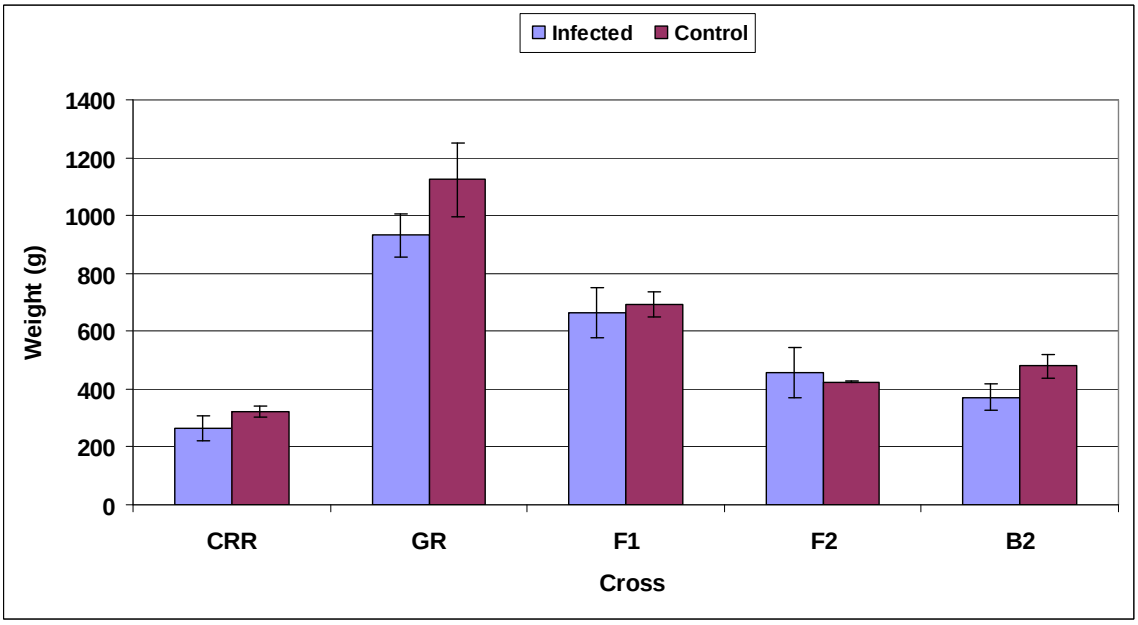


Figure A1.4. Average weight (grams) for both infected and control individuals in the five strains at the conclusion of the growth experiment conducted in 2007.

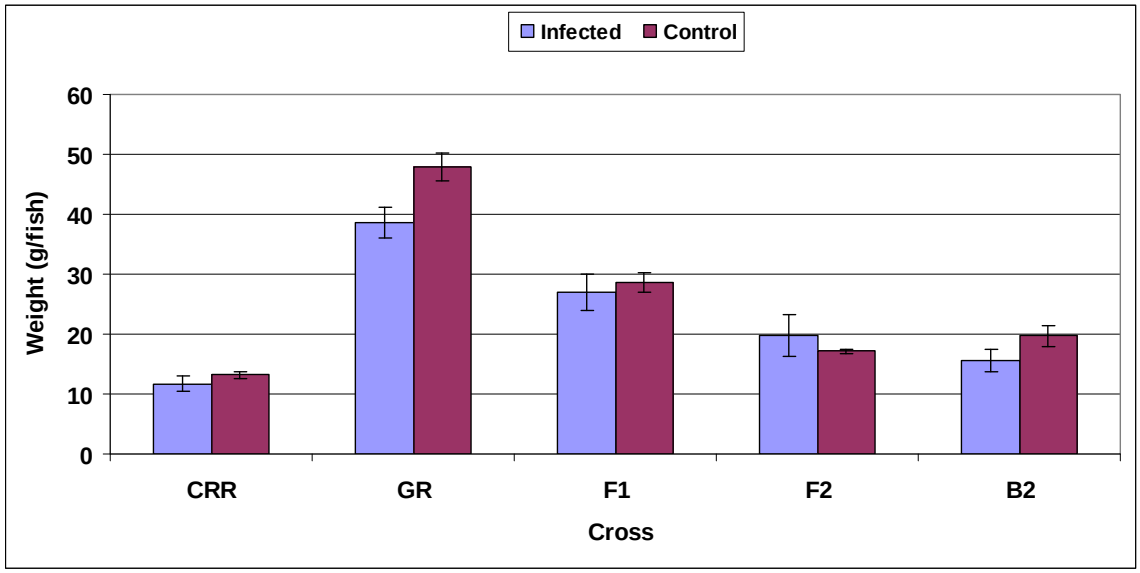


Figure A1.5. Average weight, in terms of grams per fish, for both infected and control individuals in the five strains at the conclusion of the growth experiment conducted in 2007.

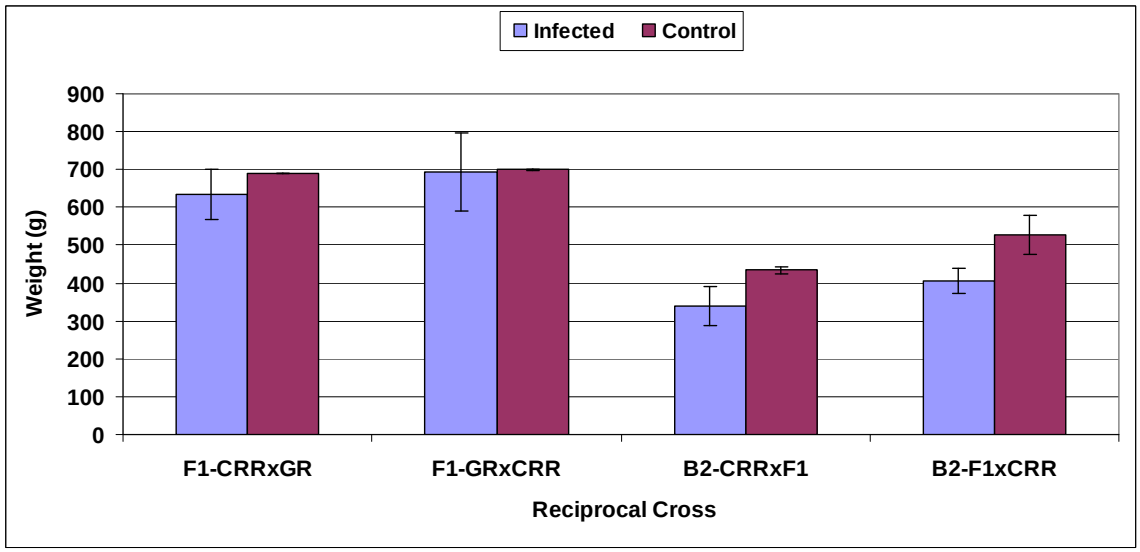


Figure A1.6. Average weight (grams) for both infected and control individuals in the reciprocal families of both the F1 and B2 strains at the conclusion of the growth experiment conducted in 2007.

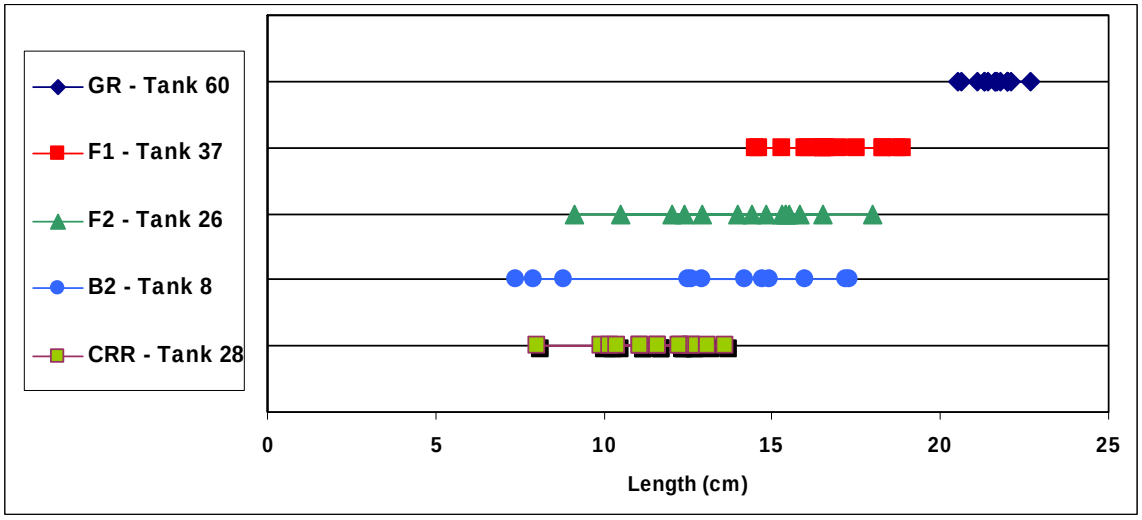


Figure A1.7. Variation in length (cm) seen in representative tanks in each cross at the conclusion of the growth experiment conducted in 2007. Each point on the graph represents an individual within that family.

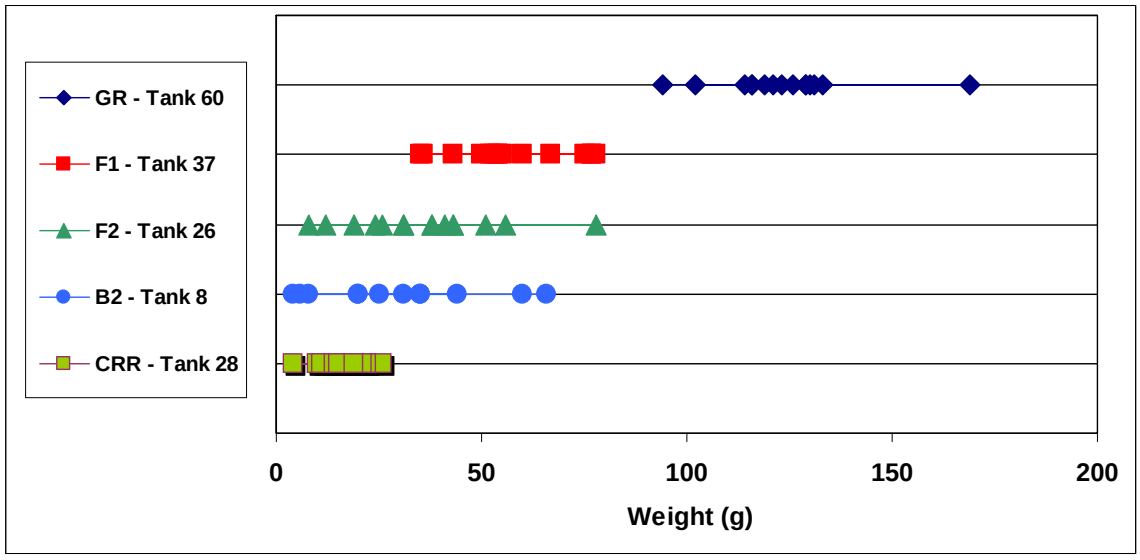


Figure A1.8. Variation in weight (grams) seen in representative tanks in each cross at the conclusion of the growth experiment conducted in 2007. Each point on the graph represents an individual within that family.

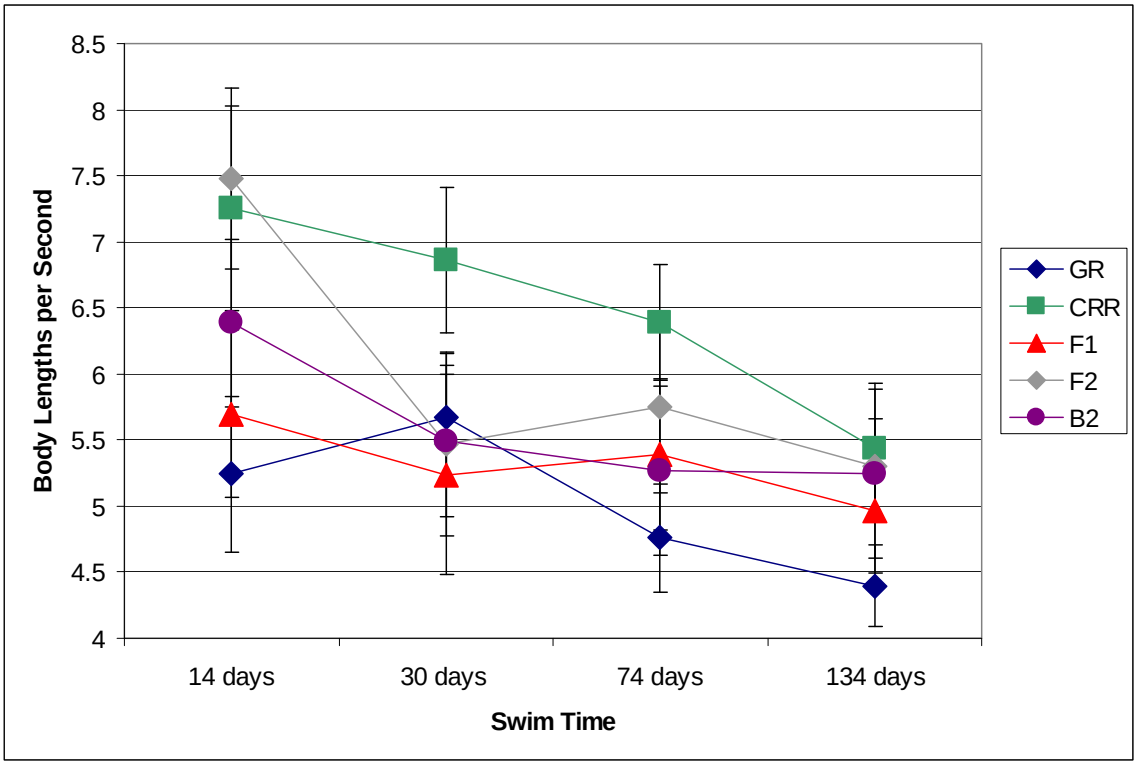


Figure A1.9. Average critical swimming speed, in terms of body lengths per second, of the five strains, at each of the four time periods.

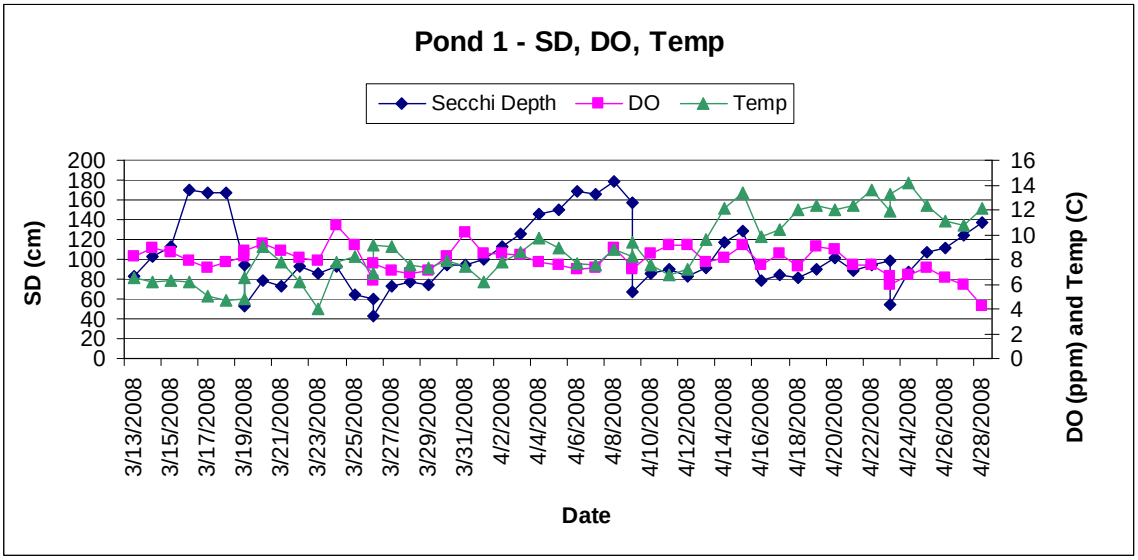


Figure A1.10. Secchi depth readings (cm), dissolved oxygen levels (ppm) and temperature (˚C) of pond one over the 6 weeks of the pond experiment conducted in 2008.

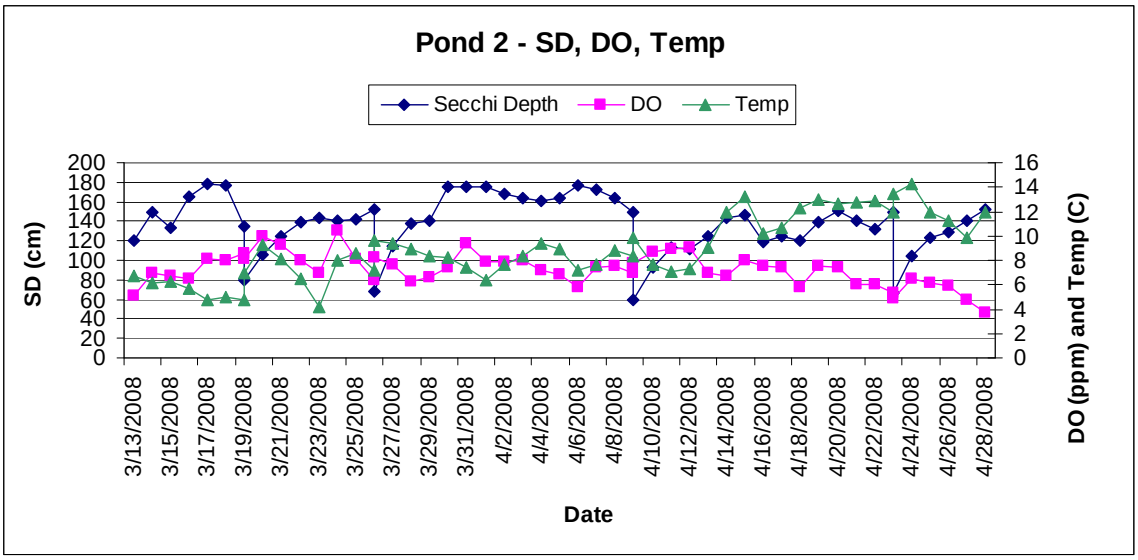


Figure A1.11. Secchi depth readings (cm), dissolved oxygen levels (ppm) and temperature (˚C) of pond two over the 6 weeks of the pond experiment conducted in 2008.

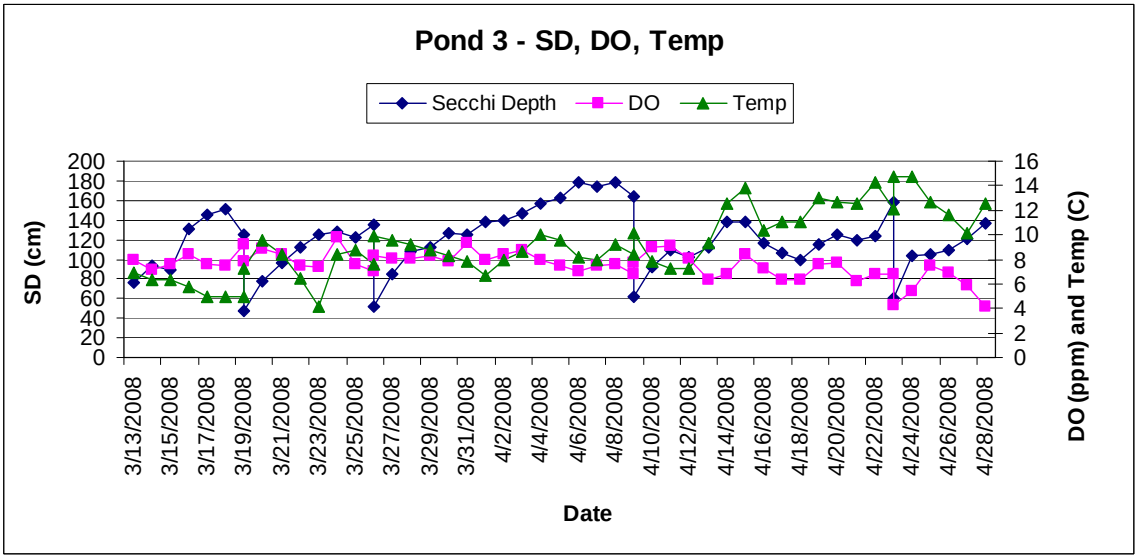


Figure A1.12. Secchi depth readings (cm), dissolved oxygen levels (ppm) and temperature (˚C) of pond three over the 6 weeks of the pond experiment conducted in 2008.

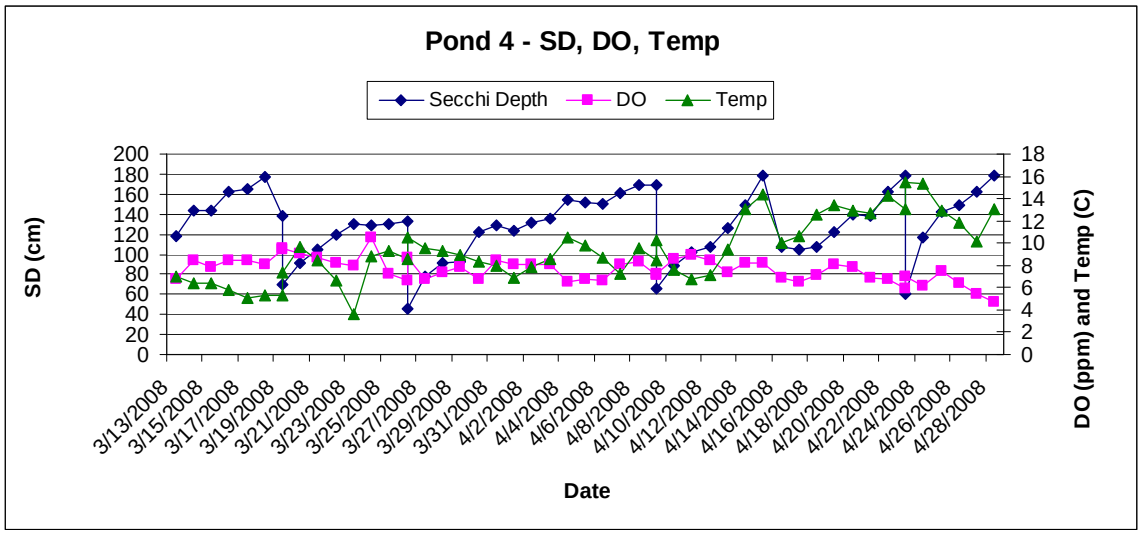


Figure A1.13. Secchi depth readings (cm), dissolved oxygen levels (ppm) and temperature (˚C) of pond four over the 6 weeks of the pond experiment conducted in 2008.

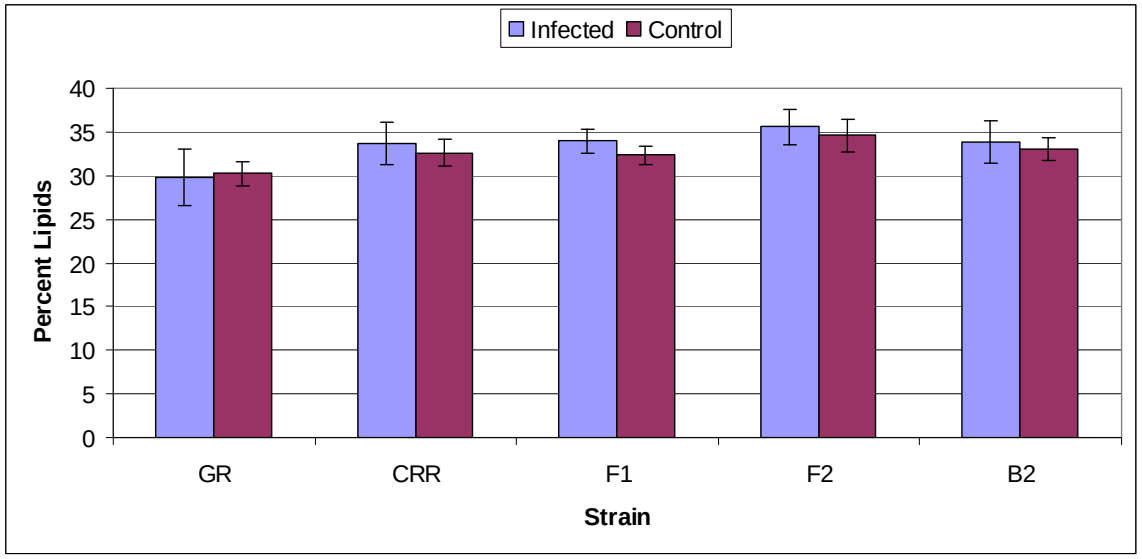


Figure A1.14. Average percent lipids for infected and control individuals for all five strains in the growth experiment conducted in 2007-2008.

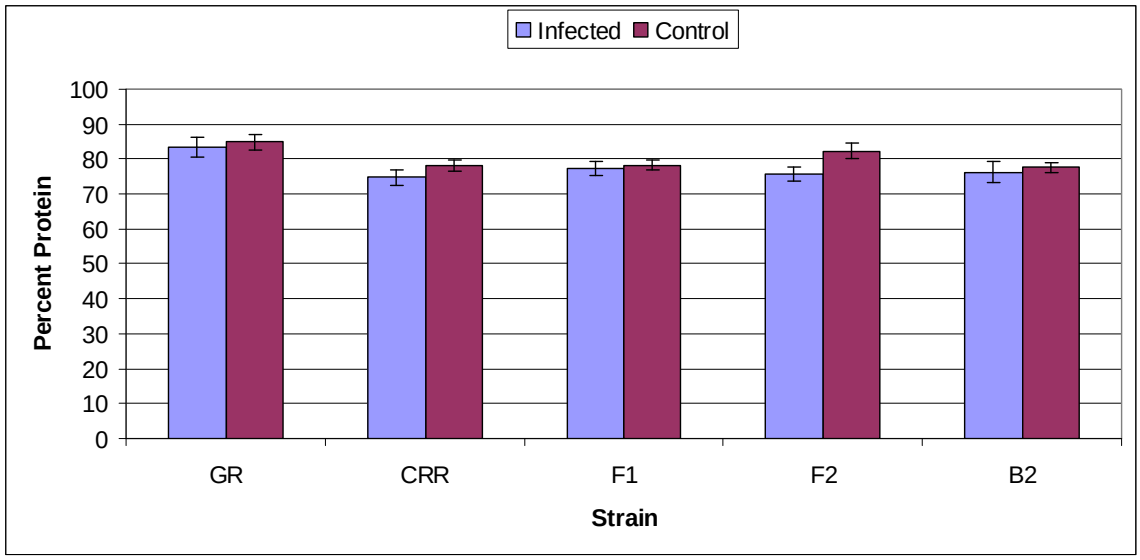


Figure A1.15. Average percent protein for infected and control individuals for all five strains in the growth experiment conducted in 2007-2008.

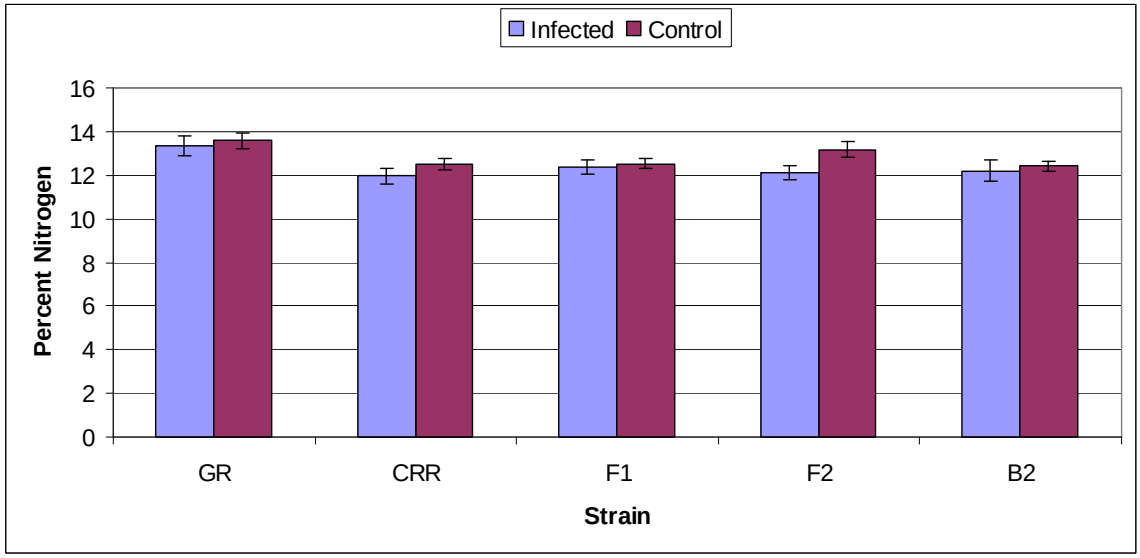


Figure A1.16. Average percent nitrogen for infected and control individuals for all five strains in the growth experiment conducted in 2007-2008.

APPENDIX II

C-SAP Creel Survey Results for Flatiron and Pinewood Reservoirs

FISHERMAN-HOURS

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	413.23	0.00	0.00	413.23	139.22	0.00	0.00	139.22
MARWE	195.20	0.00	0.00	195.20	109.90	0.00	0.00	109.90
APRWD	877.80	5.70	0.00	883.50	354.45	5.70	0.00	353.94
APRWE	780.69	0.00	0.00	780.69	274.23	0.00	0.00	274.23
MAYWD	2027.76	84.26	25.93	2137.75	388.09	42.82	20.67	384.87
MAYWE	2314.90	10.40	0.00	2325.30	345.47	10.40	0.00	343.54
JUNWD	2313.42	13.69	0.00	2327.11	403.95	13.69	0.00	404.56
JUNWE	2539.60	0.00	0.00	2539.60	293.01	0.00	0.00	293.01
JULWD	2408.00	0.00	0.00	2408.00	472.02	0.00	0.00	472.02
JULWE	2240.00	0.00	0.00	2240.00	368.48	0.00	0.00	368.48
AUGWD	1939.16	0.00	0.00	1939.16	292.26	0.00	0.00	292.26
AUGWE	1248.80	0.00	0.00	1248.80	200.88	0.00	0.00	200.88
ALL	19298.56	114.05	25.93	19438.33	1111.60	46.50	20.67	1109.94

FISHERMAN

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	238.78	0.00	0.00	238.78	74.91	0.00	0.00	74.91
MARWE	202.64	0.00	0.00	202.64	79.33	0.00	0.00	79.33
APRWD	471.41	0.00	0.00	474.45	253.22	0.00	0.00	253.22
APRWE	159.33	0.00	0.00	159.33	50.51	0.00	0.00	50.51
MAYWD	1553.83	0.00	0.00	1620.35	466.61	0.00	0.00	466.61
MAYWE	965.48	0.00	0.00	970.10	269.01	0.00	0.00	269.01
JUNWD	1430.64	0.00	0.00	1438.46	265.26	0.00	0.00	265.26
JUNWE	1952.60	0.00	0.00	1952.60	762.84	0.00	0.00	762.84
JULWD	1469.38	0.00	0.00	1469.38	589.08	0.00	0.00	589.08
JULWE	876.78	0.00	0.00	876.78	232.16	0.00	0.00	232.16
AUGWD	1358.84	0.00	0.00	1358.84	486.72	0.00	0.00	486.72
AUGWE	546.26	0.00	0.00	546.26	176.05	0.00	0.00	176.05
ALL	11225.96	0.00	0.00	11307.96	1299.90	0.00	0.00	1299.90

TOTAL CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	49.40	0.00	0.00	49.40	31.23	0.00	0.00	31.23
MARWE	15.47	0.00	0.00	15.47	13.39	0.00	0.00	13.39
APRWD	738.24	0.00	0.00	738.24	371.07	0.00	0.00	371.07
APRWE	343.03	0.00	0.00	343.03	140.34	0.00	0.00	140.34
MAYWD	2544.25	0.00	0.00	2544.25	442.62	0.00	0.00	442.62
MAYWE	1164.68	0.00	0.00	1164.68	309.59	0.00	0.00	309.59
JUNWD	1246.52	0.00	0.00	1246.52	518.86	0.00	0.00	518.86
JUNWE	784.66	0.00	0.00	784.66	233.41	0.00	0.00	233.41
JULWD	460.68	0.00	0.00	460.68	161.99	0.00	0.00	161.99
JULWE	609.01	0.00	0.00	609.01	170.57	0.00	0.00	170.57
AUGWD	800.36	0.00	0.00	800.36	105.51	0.00	0.00	105.51
AUGWE	322.16	0.00	0.00	322.16	71.54	0.00	0.00	71.54
ALL	9078.46	0.00	0.00	9078.46	919.56	0.00	0.00	919.56

KEPT CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	34.23	0.00	0.00	34.23	22.67	0.00	0.00	22.67
MARWE	10.31	0.00	0.00	10.31	8.93	0.00	0.00	8.93
APRWD	413.16	0.00	0.00	413.16	170.97	0.00	0.00	170.97
APRWE	104.92	0.00	0.00	104.92	41.78	0.00	0.00	41.78
MAYWD	2111.55	0.00	0.00	2111.55	401.09	0.00	0.00	401.09
MAYWE	1086.82	0.00	0.00	1086.82	307.37	0.00	0.00	307.37
JUNWD	1168.31	0.00	0.00	1168.31	458.63	0.00	0.00	458.63
JUNWE	733.13	0.00	0.00	733.13	216.98	0.00	0.00	216.98
JULWD	460.68	0.00	0.00	460.68	161.99	0.00	0.00	161.99
JULWE	591.33	0.00	0.00	591.33	166.06	0.00	0.00	166.06
AUGWD	754.48	0.00	0.00	754.48	111.80	0.00	0.00	111.80
AUGWE	312.17	0.00	0.00	312.17	73.36	0.00	0.00	73.36
ALL	7781.09	0.00	0.00	7781.09	784.88	0.00	0.00	784.88

RETURNED CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	15.17	0.00	0.00	15.17	10.76	0.00	0.00	10.76
MARWE	5.16	0.00	0.00	5.16	4.46	0.00	0.00	4.46
APRWD	325.07	0.00	0.00	325.07	232.69	0.00	0.00	232.69
APRWE	238.11	0.00	0.00	238.11	113.77	0.00	0.00	113.77
MAYWD	432.70	0.00	0.00	432.70	114.21	0.00	0.00	114.21
MAYWE	77.86	0.00	0.00	77.86	26.58	0.00	0.00	26.58
JUNWD	78.21	0.00	0.00	78.21	69.67	0.00	0.00	69.67
JUNWE	51.53	0.00	0.00	51.53	23.90	0.00	0.00	23.90
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	17.69	0.00	0.00	17.69	10.83	0.00	0.00	10.83
AUGWD	45.88	0.00	0.00	45.88	24.43	0.00	0.00	24.43
AUGWE	9.99	0.00	0.00	9.99	6.81	0.00	0.00	6.81
ALL	1297.37	0.00	0.00	1297.37	295.23	0.00	0.00	295.23

TOTAL CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.12	0.00	0.00	0.12	0.16	0.00	0.00	0.16
MARWE	0.08	0.00	0.00	0.08	0.10	0.00	0.00	0.10
APRWD	0.84	0.00	0.00	0.84	1.08	0.00	0.00	1.07
APRWE	0.44	0.00	0.00	0.44	0.59	0.00	0.00	0.59
MAYWD	1.25	0.00	0.00	1.19	1.77	0.00	0.00	1.64
MAYWE	0.50	0.00	0.00	0.50	0.70	0.00	0.00	0.69
JUNWD	0.54	0.00	0.00	0.54	0.74	0.00	0.00	0.73
JUNWE	0.31	0.00	0.00	0.31	0.43	0.00	0.00	0.43
JULWD	0.19	0.00	0.00	0.19	0.26	0.00	0.00	0.26
JULWE	0.27	0.00	0.00	0.27	0.40	0.00	0.00	0.40
AUGWD	0.41	0.00	0.00	0.41	0.58	0.00	0.00	0.58
AUGWE	0.26	0.00	0.00	0.26	0.36	0.00	0.00	0.36
ALL	0.43	0.00	0.00	0.43	1.16	0.00	0.00	1.16

KEPT CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.08	0.00	0.00	0.08	0.11	0.00	0.00	0.11
MARWE	0.05	0.00	0.00	0.05	0.06	0.00	0.00	0.06
APRWD	0.47	0.00	0.00	0.47	0.63	0.00	0.00	0.62
APRWE	0.13	0.00	0.00	0.13	0.18	0.00	0.00	0.18
MAYWD	1.04	0.00	0.00	0.99	1.47	0.00	0.00	1.36
MAYWE	0.47	0.00	0.00	0.47	0.65	0.00	0.00	0.65
JUNWD	0.51	0.00	0.00	0.50	0.69	0.00	0.00	0.69
JUNWE	0.29	0.00	0.00	0.29	0.40	0.00	0.00	0.40
JULWD	0.19	0.00	0.00	0.19	0.26	0.00	0.00	0.26
JULWE	0.26	0.00	0.00	0.26	0.39	0.00	0.00	0.39
AUGWD	0.39	0.00	0.00	0.39	0.55	0.00	0.00	0.55
AUGWE	0.25	0.00	0.00	0.25	0.35	0.00	0.00	0.35
ALL	0.34	0.00	0.00	0.34	1.15	0.00	0.00	1.15

RETURN CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.04	0.00	0.00	0.04	0.05	0.00	0.00	0.05
MARWE	0.03	0.00	0.00	0.03	0.03	0.00	0.00	0.03
APRWD	0.37	0.00	0.00	0.37	0.45	0.00	0.00	0.44
APRWE	0.31	0.00	0.00	0.31	0.41	0.00	0.00	0.41
MAYWD	0.21	0.00	0.00	0.20	0.30	0.00	0.00	0.28
MAYWE	0.03	0.00	0.00	0.03	0.05	0.00	0.00	0.05
JUNWD	0.03	0.00	0.00	0.03	0.05	0.00	0.00	0.04
JUNWE	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.03
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01
AUGWD	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.03
AUGWE	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01
ALL	0.09	0.00	0.00	0.09	1.00	0.00	0.00	1.00

AVERAGE COMPLETED TRIP LENGTH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	2.08	0.00	0.00	2.08
MARWE	1.71	0.00	0.00	1.71
APRWD	2.88	0.00	0.00	2.88
APRWE	3.00	0.00	0.00	3.00
MAYWD	3.09	0.00	0.00	3.09
MAYWE	2.51	0.00	0.00	2.51
JUNWD	1.83	0.00	0.00	1.83
JUNWE	2.36	0.00	0.00	2.36
JULWD	2.18	0.00	0.00	2.18
JULWE	2.91	0.00	0.00	2.91
AUGWD	2.22	0.00	0.00	2.22
AUGWE	3.23	0.00	0.00	3.23
ALL	2.60	0.00	0.00	2.60

AVERAGE KEPT CATCH LENGTH (INCH)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	10.78	0.00	0.00	10.78
MARWE	13.00	0.00	0.00	13.00
APRWD	10.78	0.00	0.00	10.78
APRWE	11.60	0.00	0.00	11.60
MAYWD	12.04	0.00	0.00	12.03
MAYWE	12.04	0.00	0.00	12.04
JUNWD	12.18	0.00	0.00	12.18
JUNWE	12.03	0.00	0.00	12.03
JULWD	12.41	0.00	0.00	12.41
JULWE	11.95	0.00	0.00	11.95
AUGWD	11.23	0.00	0.00	11.23
AUGWE	11.14	0.00	0.00	11.14
ALL	11.89	0.00	0.00	11.89

AVERAGE KEPT CATCH LENGTH (CM)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	27.39	0.00	0.00	27.39
MARWE	33.02	0.00	0.00	33.02
APRWD	27.38	0.00	0.00	27.38
APRWE	29.47	0.00	0.00	29.47
MAYWD	30.58	0.00	0.00	30.56
MAYWE	30.58	0.00	0.00	30.58
JUNWD	30.94	0.00	0.00	30.93
JUNWE	30.55	0.00	0.00	30.55
JULWD	31.52	0.00	0.00	31.52
JULWE	30.35	0.00	0.00	30.35
AUGWD	28.52	0.00	0.00	28.52
AUGWE	28.30	0.00	0.00	28.30
ALL	30.21	0.00	0.00	30.21

AVERAGE KEPT CATCH WEIGHT (OZ)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

AVERAGE KEPT CATCH WEIGHT (GR)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SUMMARY

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
FISHERMAN-HOURS	19298.56	114.05	25.93	19438.33	1111.60	46.50	20.67	1109.94
FISHERMAN	11225.96	0.00	0.00	11307.96	1299.90	0.00	0.00	1299.90
TOTAL CATCH	9078.46	0.00	0.00	9078.46	919.56	0.00	0.00	919.56
KEPT CATCH	7781.09	0.00	0.00	7781.09	784.88	0.00	0.00	784.88
RETURNED CATCH	1297.37	0.00	0.00	1297.37	295.23	0.00	0.00	295.23
TOTAL CATCH/HR	0.43	0.00	0.00	0.43	1.16	0.00	0.00	1.16
KEPT CATCH/HR	0.34	0.00	0.00	0.34	1.15	0.00	0.00	1.15
RETURN CATCH/HR	0.09	0.00	0.00	0.09	1.00	0.00	0.00	1.00
AVERAGE COMPLETED TRIP LENGTH	2.60	0.00	0.00	2.60	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (INCH)	11.89	0.00	0.00	11.89	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	30.21	0.00	0.00	30.21	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPEC: RBT TOTAL CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	27.91	0.00	0.00	27.91	14.16	0.00	0.00	14.16
MARWE	15.49	0.00	0.00	15.49	13.42	0.00	0.00	13.42
APRWD	738.27	0.00	0.00	738.27	371.06	0.00	0.00	371.06
APRWE	343.03	0.00	0.00	343.03	140.30	0.00	0.00	140.30
MAYWD	2544.03	0.00	0.00	2544.03	442.56	0.00	0.00	442.56
MAYWE	1163.61	0.00	0.00	1163.61	310.22	0.00	0.00	310.22
JUNWD	1246.52	0.00	0.00	1246.52	518.96	0.00	0.00	518.96
JUNWE	784.40	0.00	0.00	784.40	233.71	0.00	0.00	233.71
JULWD	460.66	0.00	0.00	460.66	161.96	0.00	0.00	161.96
JULWE	609.57	0.00	0.00	609.57	170.58	0.00	0.00	170.58
AUGWD	429.18	0.00	0.00	429.18	118.74	0.00	0.00	118.74
AUGWE	226.35	0.00	0.00	226.35	75.05	0.00	0.00	75.05
ALL	8589.01	0.00	0.00	8589.01	921.33	0.00	0.00	921.33

SPEC: RBT KEPT CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	23.46	0.00	0.00	23.46	14.92	0.00	0.00	14.92
MARWE	10.37	0.00	0.00	10.37	8.98	0.00	0.00	8.98
APRWD	413.13	0.00	0.00	413.13	170.96	0.00	0.00	170.96
APRWE	104.88	0.00	0.00	104.88	41.77	0.00	0.00	41.77
MAYWD	2111.67	0.00	0.00	2111.67	401.02	0.00	0.00	401.02
MAYWE	1085.48	0.00	0.00	1085.48	308.03	0.00	0.00	308.03
JUNWD	1168.13	0.00	0.00	1168.13	458.56	0.00	0.00	458.56
JUNWE	733.40	0.00	0.00	733.40	217.15	0.00	0.00	217.15
JULWD	460.66	0.00	0.00	460.66	161.96	0.00	0.00	161.96
JULWE	591.94	0.00	0.00	591.94	166.12	0.00	0.00	166.12
AUGWD	400.97	0.00	0.00	400.97	112.18	0.00	0.00	112.18
AUGWE	217.95	0.00	0.00	217.95	76.25	0.00	0.00	76.25
ALL	7322.04	0.00	0.00	7322.04	785.26	0.00	0.00	785.26

SPEC: RBT RETURNED CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	4.45	0.00	0.00	4.45	4.45	0.00	0.00	4.45
MARWE	5.09	0.00	0.00	5.09	4.41	0.00	0.00	4.41
APRWD	325.14	0.00	0.00	325.14	232.68	0.00	0.00	232.68
APRWE	237.99	0.00	0.00	237.99	113.75	0.00	0.00	113.75
MAYWD	432.76	0.00	0.00	432.76	114.22	0.00	0.00	114.22
MAYWE	77.90	0.00	0.00	77.90	26.63	0.00	0.00	26.63
JUNWD	78.39	0.00	0.00	78.39	69.90	0.00	0.00	69.90
JUNWE	51.76	0.00	0.00	51.76	23.93	0.00	0.00	23.93
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	17.61	0.00	0.00	17.61	10.74	0.00	0.00	10.74
AUGWD	28.21	0.00	0.00	28.21	21.92	0.00	0.00	21.92
AUGWE	8.40	0.00	0.00	8.40	5.55	0.00	0.00	5.55
ALL	1267.70	0.00	0.00	1267.70	294.89	0.00	0.00	294.89

SPEC: RBT TOTAL CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.07	0.00	0.00	0.07	0.09	0.00	0.00	0.09
MARWE	0.08	0.00	0.00	0.08	0.10	0.00	0.00	0.10
APRWD	0.84	0.00	0.00	0.84	1.08	0.00	0.00	1.07
APRWE	0.44	0.00	0.00	0.44	0.59	0.00	0.00	0.59
MAYWD	1.25	0.00	0.00	1.25	1.77	0.00	0.00	1.68
MAYWE	0.50	0.00	0.00	0.50	0.70	0.00	0.00	0.69
JUNWD	0.54	0.00	0.00	0.54	0.74	0.00	0.00	0.73
JUNWE	0.31	0.00	0.00	0.31	0.43	0.00	0.00	0.43
JULWD	0.19	0.00	0.00	0.19	0.26	0.00	0.00	0.26
JULWE	0.27	0.00	0.00	0.27	0.40	0.00	0.00	0.40
AUGWD	0.22	0.00	0.00	0.22	0.31	0.00	0.00	0.31
AUGWE	0.18	0.00	0.00	0.18	0.25	0.00	0.00	0.25
ALL	0.41	0.00	0.00	0.41	2.50	0.00	0.00	2.43

SPEC: RBT KEPT CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.06	0.00	0.00	0.06	0.08	0.00	0.00	0.08
MARWE	0.05	0.00	0.00	0.05	0.06	0.00	0.00	0.06
APRWD	0.47	0.00	0.00	0.47	0.63	0.00	0.00	0.62
APRWE	0.13	0.00	0.00	0.13	0.18	0.00	0.00	0.18
MAYWD	1.04	0.00	0.00	1.04	1.47	0.00	0.00	1.39
MAYWE	0.47	0.00	0.00	0.47	0.65	0.00	0.00	0.65
JUNWD	0.50	0.00	0.00	0.50	0.69	0.00	0.00	0.69
JUNWE	0.29	0.00	0.00	0.29	0.40	0.00	0.00	0.40
JULWD	0.19	0.00	0.00	0.19	0.26	0.00	0.00	0.26
JULWE	0.26	0.00	0.00	0.26	0.39	0.00	0.00	0.39
AUGWD	0.21	0.00	0.00	0.21	0.29	0.00	0.00	0.29
AUGWE	0.17	0.00	0.00	0.17	0.24	0.00	0.00	0.24
ALL	0.32	0.00	0.00	0.32	2.00	0.00	0.00	1.95

SPEC: RBT RETURN CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01
MARWE	0.03	0.00	0.00	0.03	0.03	0.00	0.00	0.03
APRWD	0.37	0.00	0.00	0.37	0.45	0.00	0.00	0.44
APRWE	0.30	0.00	0.00	0.30	0.41	0.00	0.00	0.41
MAYWD	0.21	0.00	0.00	0.21	0.30	0.00	0.00	0.29
MAYWE	0.03	0.00	0.00	0.03	0.05	0.00	0.00	0.05
JUNWD	0.03	0.00	0.00	0.03	0.05	0.00	0.00	0.04
JUNWE	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.03
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01
AUGWD	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
AUGWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
ALL	0.09	0.00	0.00	0.09	0.68	0.00	0.00	0.67

SPEC: RBT AVERAGE KEPT CATCH LENGTH (INCH)
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	11.37	0.00	0.00	11.37
MARWE	13.00	0.00	0.00	13.00
APRWD	10.78	0.00	0.00	10.78
APRWE	11.60	0.00	0.00	11.60
MAYWD	12.04	0.00	0.00	12.03
MAYWE	12.04	0.00	0.00	12.04
JUNWD	12.18	0.00	0.00	12.18
JUNWE	12.03	0.00	0.00	12.03
JULWD	12.41	0.00	0.00	12.41
JULWE	11.95	0.00	0.00	11.95
AUGWD	11.37	0.00	0.00	11.37
AUGWE	11.13	0.00	0.00	11.13
ALL	11.93	0.00	0.00	11.93

SPEC: RBT AVERAGE KEPT CATCH LENGTH (CM)
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	28.88	0.00	0.00	28.88
MARWE	33.02	0.00	0.00	33.02
APRWD	27.38	0.00	0.00	27.38
APRWE	29.47	0.00	0.00	29.47
MAYWD	30.58	0.00	0.00	30.56
MAYWE	30.58	0.00	0.00	30.58
JUNWD	30.94	0.00	0.00	30.93
JUNWE	30.55	0.00	0.00	30.55
JULWD	31.52	0.00	0.00	31.52
JULWE	30.35	0.00	0.00	30.35
AUGWD	28.88	0.00	0.00	28.88
AUGWE	28.27	0.00	0.00	28.27
ALL	30.31	0.00	0.00	30.31

SPEC: RBT AVERAGE KEPT CATCH WEIGHT (OZ)
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SPEC: RBT AVERAGE KEPT CATCH WEIGHT (GR)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

RBT SUMMARY REPORT

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
TOTAL CATCH	8589.01	0.00	0.00	8589.01	921.33	0.00	0.00	921.33
KEPT CATCH	7322.04	0.00	0.00	7322.04	785.26	0.00	0.00	785.26
RETURNED CATCH	1267.70	0.00	0.00	1267.70	294.89	0.00	0.00	294.89
TOTAL CATCH/HR	0.41	0.00	0.00	0.41	2.50	0.00	0.00	2.43
KEPT CATCH/HR	0.32	0.00	0.00	0.32	2.00	0.00	0.00	1.95
RETURN CATCH/HR	0.09	0.00	0.00	0.09	0.68	0.00	0.00	0.67
AVERAGE KEPT CATCH LENGTH (INCH)	11.93	0.00	0.00	11.93	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	30.31	0.00	0.00	30.31	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPEC: RBT MARK: NO TOTAL CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	12.73	0.00	0.00	12.73	12.73	0.00	0.00	12.73
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	266.10	0.00	0.00	266.10	129.44	0.00	0.00	129.44
APRWE	29.59	0.00	0.00	29.59	22.23	0.00	0.00	22.23
MAYWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWD	40.31	0.00	0.00	40.31	40.31	0.00	0.00	40.31
JULWE	121.80	0.00	0.00	121.80	79.06	0.00	0.00	79.06
AUGWD	336.16	0.00	0.00	336.16	115.17	0.00	0.00	115.17
AUGWE	215.33	0.00	0.00	215.33	65.89	0.00	0.00	65.89
ALL	1022.02	0.00	0.00	1022.02	207.10	0.00	0.00	207.10

SPEC: RBT MARK: NO KEPT CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	12.73	0.00	0.00	12.73	12.73	0.00	0.00	12.73
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	196.29	0.00	0.00	196.29	130.55	0.00	0.00	130.55
APRWE	4.43	0.00	0.00	4.43	2.90	0.00	0.00	2.90
MAYWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWD	40.31	0.00	0.00	40.31	40.31	0.00	0.00	40.31
JULWE	119.05	0.00	0.00	119.05	77.69	0.00	0.00	77.69
AUGWD	329.72	0.00	0.00	329.72	115.67	0.00	0.00	115.67
AUGWE	206.93	0.00	0.00	206.93	67.07	0.00	0.00	67.07
ALL	909.47	0.00	0.00	909.47	206.77	0.00	0.00	206.77

SPEC: RBT MARK: NO RETURNED CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	69.78	0.00	0.00	69.78	36.81	0.00	0.00	36.81
APRWE	24.83	0.00	0.00	24.83	22.67	0.00	0.00	22.67
MAYWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	2.75	0.00	0.00	2.75	2.62	0.00	0.00	2.62
AUGWD	6.44	0.00	0.00	6.44	6.44	0.00	0.00	6.44
AUGWE	8.40	0.00	0.00	8.40	5.55	0.00	0.00	5.55
ALL	112.20	0.00	0.00	112.20	44.14	0.00	0.00	44.14

SPEC: RBT MARK: NO TOTAL CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.03	0.00	0.00	0.03	0.04	0.00	0.00	0.04
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.30	0.00	0.00	0.30	0.42	0.00	0.00	0.42
APRWE	0.04	0.00	0.00	0.04	0.05	0.00	0.00	0.05
MAYWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWD	0.02	0.00	0.00	0.02	0.02	0.00	0.00	0.02
JULWE	0.05	0.00	0.00	0.05	0.08	0.00	0.00	0.08
AUGWD	0.17	0.00	0.00	0.17	0.24	0.00	0.00	0.24
AUGWE	0.17	0.00	0.00	0.17	0.24	0.00	0.00	0.24
ALL	0.07	0.00	0.00	0.07	0.55	0.00	0.00	0.55

SPEC: RBT MARK: NO RETURN CATCH/HR
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.08	0.00	0.00	0.08	0.10	0.00	0.00	0.10
APRWE	0.03	0.00	0.00	0.03	0.05	0.00	0.00	0.05
MAYWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
ALL	0.01	0.00	0.00	0.01	0.11	0.00	0.00	0.11

SPEC: RBT MARK: NO RETURN CATCH/HR
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.08	0.00	0.00	0.08	0.10	0.00	0.00	0.10
APRWE	0.03	0.00	0.00	0.03	0.05	0.00	0.00	0.05
MAYWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
ALL	0.01	0.00	0.00	0.01	0.11	0.00	0.00	0.11

SPEC: RBT MARK: NO AVERAGE KEPT CATCH LENGTH (INCH)
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	10.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	10.44	0.00	0.00	0.00
APRWE	11.34	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	12.33	0.00	0.00	0.00
JULWE	10.54	0.00	0.00	0.00
AUGWD	11.52	0.00	0.00	0.00
AUGWE	11.08	0.00	0.00	0.00
ALL	11.01	0.00	0.00	0.00

SPEC: RBT MARK: NO AVERAGE KEPT CATCH LENGTH (CM)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	25.40	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	26.53	0.00	0.00	0.00
APRWE	28.81	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	31.33	0.00	0.00	0.00
JULWE	26.76	0.00	0.00	0.00
AUGWD	29.27	0.00	0.00	0.00
AUGWE	28.15	0.00	0.00	0.00
ALL	27.96	0.00	0.00	0.00

SPEC: RBT MARK: NO AVERAGE KEPT CATCH WEIGHT (OZ)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SPEC: RBT MARK: NO AVERAGE KEPT CATCH WEIGHT (GR)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

RBT Mark: NO SUMMARY REPORT

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
TOTAL CATCH	1022.02	0.00	0.00	1022.02	207.10	0.00	0.00	207.10
KEPT CATCH	909.47	0.00	0.00	909.47	206.77	0.00	0.00	206.77
RETURNED CATCH	112.20	0.00	0.00	112.20	44.14	0.00	0.00	44.14
TOTAL CATCH/HR	0.07	0.00	0.00	0.07	0.55	0.00	0.00	0.55
RETURN CATCH/HR	0.01	0.00	0.00	0.01	0.11	0.00	0.00	0.11
RETURN CATCH/HR	0.01	0.00	0.00	0.01	0.11	0.00	0.00	0.11
AVERAGE KEPT CATCH LENGTH (INCH)	11.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	27.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPEC: RBT MARK: P TOTAL CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	123.36	0.00	0.00	123.36	81.24	0.00	0.00	81.24
APRWE	141.02	0.00	0.00	141.02	75.03	0.00	0.00	75.03
MAYWD	1449.63	0.00	0.00	1449.63	217.85	0.00	0.00	217.85
MAYWE	362.12	0.00	0.00	362.12	112.83	0.00	0.00	112.83
JUNWD	810.04	0.00	0.00	810.04	203.59	0.00	0.00	203.59
JUNWE	510.93	0.00	0.00	510.93	144.51	0.00	0.00	144.51
JULWD	243.29	0.00	0.00	243.29	92.59	0.00	0.00	92.59
JULWE	331.85	0.00	0.00	331.85	106.43	0.00	0.00	106.43
AUGWD	93.02	0.00	0.00	93.02	79.96	0.00	0.00	79.96
AUGWE	11.04	0.00	0.00	11.04	11.04	0.00	0.00	11.04
ALL	4076.29	0.00	0.00	4076.29	401.45	0.00	0.00	401.45

SPEC: RBT MARK: P KEPT CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	40.49	0.00	0.00	40.49	23.78	0.00	0.00	23.78
APRWE	39.03	0.00	0.00	39.03	20.06	0.00	0.00	20.06
MAYWD	1132.19	0.00	0.00	1132.19	204.87	0.00	0.00	204.87
MAYWE	322.80	0.00	0.00	322.80	104.73	0.00	0.00	104.73
JUNWD	748.15	0.00	0.00	748.15	168.09	0.00	0.00	168.09
JUNWE	474.72	0.00	0.00	474.72	130.37	0.00	0.00	130.37
JULWD	243.29	0.00	0.00	243.29	92.59	0.00	0.00	92.59
JULWE	326.13	0.00	0.00	326.13	104.43	0.00	0.00	104.43
AUGWD	71.45	0.00	0.00	71.45	58.74	0.00	0.00	58.74
AUGWE	11.04	0.00	0.00	11.04	11.04	0.00	0.00	11.04
ALL	3409.29	0.00	0.00	3409.29	349.58	0.00	0.00	349.58

SPEC: RBT MARK: P RETURNED CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	82.89	0.00	0.00	82.89	65.01	0.00	0.00	65.01
APRWE	102.24	0.00	0.00	102.24	62.25	0.00	0.00	62.25
MAYWD	316.86	0.00	0.00	316.86	83.79	0.00	0.00	83.79
MAYWE	39.32	0.00	0.00	39.32	24.72	0.00	0.00	24.72
JUNWD	61.92	0.00	0.00	61.92	53.56	0.00	0.00	53.56
JUNWE	36.53	0.00	0.00	36.53	15.88	0.00	0.00	15.88
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	5.73	0.00	0.00	5.73	5.46	0.00	0.00	5.46
AUGWD	21.77	0.00	0.00	21.77	21.77	0.00	0.00	21.77
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	667.25	0.00	0.00	667.25	139.13	0.00	0.00	139.13

SPEC: RBT MARK: P TOTAL CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.14	0.00	0.00	0.14	0.17	0.00	0.00	0.17
APRWE	0.18	0.00	0.00	0.18	0.24	0.00	0.00	0.24
MAYWD	0.71	0.00	0.00	0.71	1.01	0.00	0.00	0.96
MAYWE	0.16	0.00	0.00	0.16	0.22	0.00	0.00	0.22
JUNWD	0.35	0.00	0.00	0.35	0.48	0.00	0.00	0.48
JUNWE	0.20	0.00	0.00	0.20	0.28	0.00	0.00	0.28
JULWD	0.10	0.00	0.00	0.10	0.14	0.00	0.00	0.14
JULWE	0.15	0.00	0.00	0.15	0.22	0.00	0.00	0.22
AUGWD	0.05	0.00	0.00	0.05	0.07	0.00	0.00	0.07
AUGWE	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01
ALL	0.17	0.00	0.00	0.17	1.24	0.00	0.00	1.20

SPEC: RBT MARK: P RETURN CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.09	0.00	0.00	0.09	0.11	0.00	0.00	0.11
APRWE	0.13	0.00	0.00	0.13	0.18	0.00	0.00	0.18
MAYWD	0.16	0.00	0.00	0.16	0.22	0.00	0.00	0.21
MAYWE	0.02	0.00	0.00	0.02	0.02	0.00	0.00	0.02
JUNWD	0.03	0.00	0.00	0.03	0.04	0.00	0.00	0.04
JUNWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.04	0.00	0.00	0.04	0.31	0.00	0.00	0.30

SPEC: RBT MARK: P RETURN CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.09	0.00	0.00	0.09	0.11	0.00	0.00	0.11
APRWE	0.13	0.00	0.00	0.13	0.18	0.00	0.00	0.18
MAYWD	0.16	0.00	0.00	0.16	0.22	0.00	0.00	0.21
MAYWE	0.02	0.00	0.00	0.02	0.02	0.00	0.00	0.02
JUNWD	0.03	0.00	0.00	0.03	0.04	0.00	0.00	0.04
JUNWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.04	0.00	0.00	0.04	0.31	0.00	0.00	0.30

SPEC: RBT MARK: P AVERAGE KEPT CATCH LENGTH (INCH)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	10.06	0.00	0.00	0.00
APRWE	11.06	0.00	0.00	0.00
MAYWD	11.50	0.00	0.00	0.00
MAYWE	11.29	0.00	0.00	0.00
JUNWD	11.53	0.00	0.00	0.00
JUNWE	11.48	0.00	0.00	0.00
JULWD	11.61	0.00	0.00	0.00
JULWE	11.85	0.00	0.00	0.00
AUGWD	10.65	0.00	0.00	0.00
AUGWE	12.00	0.00	0.00	0.00
ALL	11.50	0.00	0.00	0.00

SPEC: RBT MARK: P AVERAGE KEPT CATCH LENGTH (CM)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	25.55	0.00	0.00	0.00
APRWE	28.09	0.00	0.00	0.00
MAYWD	29.21	0.00	0.00	0.00
MAYWE	28.67	0.00	0.00	0.00
JUNWD	29.29	0.00	0.00	0.00
JUNWE	29.15	0.00	0.00	0.00
JULWD	29.50	0.00	0.00	0.00
JULWE	30.10	0.00	0.00	0.00
AUGWD	27.06	0.00	0.00	0.00
AUGWE	30.48	0.00	0.00	0.00
ALL	29.20	0.00	0.00	0.00

SPEC: RBT MARK: P AVERAGE KEPT CATCH WEIGHT (OZ)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SPEC: RBT MARK: P AVERAGE KEPT CATCH WEIGHT (GR)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

RBT Mark: P SUMMARY REPORT

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
TOTAL CATCH	4076.29	0.00	0.00	4076.29	401.45	0.00	0.00	401.45
KEPT CATCH	3409.29	0.00	0.00	3409.29	349.58	0.00	0.00	349.58
RETURNED CATCH	667.25	0.00	0.00	667.25	139.13	0.00	0.00	139.13
TOTAL CATCH/HR	0.17	0.00	0.00	0.17	1.24	0.00	0.00	1.20
RETURN CATCH/HR	0.04	0.00	0.00	0.04	0.31	0.00	0.00	0.30
RETURN CATCH/HR	0.04	0.00	0.00	0.04	0.31	0.00	0.00	0.30
AVERAGE KEPT CATCH LENGTH (INCH)	11.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	29.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPEC: RBT MARK: A TOTAL CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	348.82	0.00	0.00	348.82	249.61	0.00	0.00	249.61
APRWE	172.32	0.00	0.00	172.32	61.84	0.00	0.00	61.84
MAYWD	1094.86	0.00	0.00	1094.86	254.95	0.00	0.00	254.95
MAYWE	800.22	0.00	0.00	800.22	205.18	0.00	0.00	205.18
JUNWD	436.94	0.00	0.00	436.94	296.11	0.00	0.00	296.11
JUNWE	273.48	0.00	0.00	273.48	114.71	0.00	0.00	114.71
JULWD	177.54	0.00	0.00	177.54	100.21	0.00	0.00	100.21
JULWE	155.44	0.00	0.00	155.44	61.09	0.00	0.00	61.09
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	3459.63	0.00	0.00	3459.63	536.51	0.00	0.00	536.51

SPEC: RBT MARK: A KEPT CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	176.56	0.00	0.00	176.56	114.50	0.00	0.00	114.50
APRWE	61.24	0.00	0.00	61.24	23.89	0.00	0.00	23.89
MAYWD	978.92	0.00	0.00	978.92	240.72	0.00	0.00	240.72
MAYWE	762.18	0.00	0.00	762.18	204.41	0.00	0.00	204.41
JUNWD	420.96	0.00	0.00	420.96	280.38	0.00	0.00	280.38
JUNWE	258.26	0.00	0.00	258.26	110.03	0.00	0.00	110.03
JULWD	177.54	0.00	0.00	177.54	100.21	0.00	0.00	100.21
JULWE	145.86	0.00	0.00	145.86	55.46	0.00	0.00	55.46
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	2981.52	0.00	0.00	2981.52	466.10	0.00	0.00	466.10

SPEC: RBT MARK: A RETURNED CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	172.50	0.00	0.00	172.50	135.68	0.00	0.00	135.68
APRWE	111.07	0.00	0.00	111.07	55.35	0.00	0.00	55.35
MAYWD	115.29	0.00	0.00	115.29	41.77	0.00	0.00	41.77
MAYWE	38.28	0.00	0.00	38.28	12.01	0.00	0.00	12.01
JUNWD	15.99	0.00	0.00	15.99	15.99	0.00	0.00	15.99
JUNWE	15.24	0.00	0.00	15.24	11.48	0.00	0.00	11.48
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	9.58	0.00	0.00	9.58	6.27	0.00	0.00	6.27
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	477.95	0.00	0.00	477.95	154.24	0.00	0.00	154.24

SPEC: RBT MARK: A TOTAL CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.40	0.00	0.00	0.40	0.48	0.00	0.00	0.48
APRWE	0.22	0.00	0.00	0.22	0.30	0.00	0.00	0.30
MAYWD	0.54	0.00	0.00	0.54	0.76	0.00	0.00	0.72
MAYWE	0.35	0.00	0.00	0.35	0.48	0.00	0.00	0.48
JUNWD	0.19	0.00	0.00	0.19	0.26	0.00	0.00	0.25
JUNWE	0.11	0.00	0.00	0.11	0.15	0.00	0.00	0.15
JULWD	0.07	0.00	0.00	0.07	0.10	0.00	0.00	0.10
JULWE	0.07	0.00	0.00	0.07	0.10	0.00	0.00	0.10
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.16	0.00	0.00	0.16	1.11	0.00	0.00	1.08

SPEC: RBT MARK: A RETURN CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.20	0.00	0.00	0.20	0.23	0.00	0.00	0.23
APRWE	0.14	0.00	0.00	0.14	0.19	0.00	0.00	0.19
MAYWD	0.06	0.00	0.00	0.06	0.08	0.00	0.00	0.08
MAYWE	0.02	0.00	0.00	0.02	0.02	0.00	0.00	0.02
JUNWD	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
JUNWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.04	0.00	0.00	0.04	0.31	0.00	0.00	0.31

SPEC: RBT MARK: A RETURN CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.20	0.00	0.00	0.20	0.23	0.00	0.00	0.23
APRWE	0.14	0.00	0.00	0.14	0.19	0.00	0.00	0.19
MAYWD	0.06	0.00	0.00	0.06	0.08	0.00	0.00	0.08
MAYWE	0.02	0.00	0.00	0.02	0.02	0.00	0.00	0.02
JUNWD	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
JUNWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.04	0.00	0.00	0.04	0.31	0.00	0.00	0.31

SPEC: RBT MARK: A AVERAGE KEPT CATCH LENGTH (INCH)
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	11.31	0.00	0.00	0.00
APRWE	11.96	0.00	0.00	0.00
MAYWD	12.66	0.00	0.00	0.00
MAYWE	12.36	0.00	0.00	0.00
JUNWD	13.33	0.00	0.00	0.00
JUNWE	13.04	0.00	0.00	0.00
JULWD	13.51	0.00	0.00	0.00
JULWE	13.33	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	12.66	0.00	0.00	0.00

SPEC: RBT MARK: A AVERAGE KEPT CATCH LENGTH (CM)
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	28.74	0.00	0.00	0.00
APRWE	30.39	0.00	0.00	0.00
MAYWD	32.16	0.00	0.00	0.00
MAYWE	31.39	0.00	0.00	0.00
JUNWD	33.86	0.00	0.00	0.00
JUNWE	33.13	0.00	0.00	0.00
JULWD	34.33	0.00	0.00	0.00
JULWE	33.85	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	32.15	0.00	0.00	0.00

SPEC: RBT MARK: A AVERAGE KEPT CATCH WEIGHT (OZ)
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SPEC: RBT MARK: A AVERAGE KEPT CATCH WEIGHT (GR)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

RBT Mark: A SUMMARY REPORT

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
TOTAL CATCH	3459.63	0.00	0.00	3459.63	536.51	0.00	0.00	536.51
KEPT CATCH	2981.52	0.00	0.00	2981.52	466.10	0.00	0.00	466.10
RETURNED CATCH	477.95	0.00	0.00	477.95	154.24	0.00	0.00	154.24
TOTAL CATCH/HR	0.16	0.00	0.00	0.16	1.11	0.00	0.00	1.08
RETURN CATCH/HR	0.04	0.00	0.00	0.04	0.31	0.00	0.00	0.31
RETURN CATCH/HR	0.04	0.00	0.00	0.04	0.31	0.00	0.00	0.31
AVERAGE KEPT CATCH LENGTH (INCH)	12.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	32.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FISHERMAN-HOURS

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	792.73	0.00	0.00	792.73	419.84	0.00	0.00	419.84
MARWE	457.60	0.00	0.00	457.60	239.00	0.00	0.00	239.00
APRWD	654.00	96.00	0.00	750.00	134.83	40.57	0.00	154.73
APRWE	1037.71	129.14	17.14	1184.00	264.87	56.42	11.37	311.50
MAYWD	2392.00	445.78	86.98	2924.76	831.94	191.22	50.59	988.43
MAYWE	3312.40	338.00	83.20	3733.60	310.38	77.70	33.35	333.15
JUNWD	2128.62	650.22	61.60	2840.44	217.09	119.78	39.76	295.68
JUNWE	3052.00	660.80	210.00	3922.80	434.41	78.29	37.37	516.51
JULWD	1360.00	360.00	64.00	1784.00	145.47	169.27	41.31	173.87
JULWE	1982.40	616.70	112.00	2711.10	265.38	90.56	44.78	334.75
AUGWD	1667.24	694.09	128.80	2490.13	393.26	133.96	70.38	390.26
AUGWE	1464.40	644.00	92.40	2200.80	226.86	84.43	43.47	267.19
ALL	20301.11	4634.74	856.12	25791.97	1282.08	360.32	131.66	1470.55

FISHERMAN

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	517.00	0.00	0.00	517.00	356.58	0.00	0.00	356.58
MARWE	237.03	0.00	0.00	237.03	105.00	0.00	0.00	105.00
APRWD	359.09	144.00	0.00	400.98	85.42	144.00	0.00	229.42
APRWE	357.29	0.00	0.00	399.96	98.08	0.00	0.00	98.08
MAYWD	2349.64	330.89	14.95	2340.59	741.89	103.87	14.95	1116.64
MAYWE	935.13	96.60	6.93	902.33	254.82	29.28	6.93	333.43
JUNWD	890.61	476.06	0.00	1030.48	205.23	210.11	0.00	483.44
JUNWE	846.08	175.32	49.65	1074.92	172.13	51.99	15.84	269.82
JULWD	537.97	416.41	0.00	742.13	134.21	200.27	0.00	379.75
JULWE	480.60	330.52	0.00	721.38	67.57	97.42	0.00	211.10
AUGWD	658.49	220.33	92.00	777.21	163.24	57.32	92.00	286.05
AUGWE	570.94	176.03	0.00	668.67	174.96	39.58	0.00	262.36
ALL	8739.87	2366.16	163.54	9812.68	960.21	365.63	94.80	1484.74

TOTAL CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	384.82	0.00	0.00	384.82	236.25	0.00	0.00	236.25
MARWE	75.55	0.00	0.00	75.55	55.45	0.00	0.00	55.45
APRWD	387.73	0.00	0.00	387.73	184.78	0.00	0.00	184.78
APRWE	337.46	0.00	0.00	337.46	114.16	0.00	0.00	114.16
MAYWD	1419.54	120.32	2.49	1542.34	350.15	87.12	1.50	419.04
MAYWE	1236.66	45.93	0.00	1282.59	294.34	26.04	0.00	316.69
JUNWD	877.49	257.99	0.00	1135.49	234.95	130.01	0.00	373.10
JUNWE	584.88	110.25	53.67	748.80	108.51	38.66	26.35	215.90
JULWD	161.65	0.00	0.00	161.65	44.10	0.00	0.00	44.10
JULWE	301.97	19.12	0.00	321.09	63.78	15.83	0.00	76.63
AUGWD	428.52	122.04	18.40	568.96	137.28	70.12	13.71	185.51
AUGWE	290.53	89.54	0.00	380.06	66.12	51.36	0.00	131.90
ALL	6486.80	765.18	74.56	7326.54	641.49	185.66	29.74	792.09

KEPT CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	110.28	0.00	0.00	110.28	46.07	0.00	0.00	46.07
MARWE	30.27	0.00	0.00	30.27	20.31	0.00	0.00	20.31
APRWD	181.29	0.00	0.00	181.29	61.87	0.00	0.00	61.87
APRWE	255.06	0.00	0.00	255.06	112.67	0.00	0.00	112.67
MAYWD	1219.89	120.32	2.49	1342.70	312.37	87.12	1.50	388.03
MAYWE	1196.21	45.93	0.00	1242.14	293.86	26.04	0.00	316.23
JUNWD	877.49	257.99	0.00	1135.49	234.95	130.01	0.00	373.10
JUNWE	551.06	108.08	53.67	712.81	108.50	38.35	26.35	210.33
JULWD	156.66	0.00	0.00	156.66	44.79	0.00	0.00	44.79
JULWE	299.81	19.12	0.00	318.93	64.36	15.83	0.00	77.11
AUGWD	411.50	122.04	18.40	551.94	130.56	70.12	13.71	178.47
AUGWE	272.72	76.13	0.00	348.85	58.54	42.13	0.00	112.43
ALL	5562.25	749.60	74.56	6386.42	544.59	183.25	29.74	710.99

RETURNED CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	274.54	0.00	0.00	274.54	202.06	0.00	0.00	202.06
MARWE	45.29	0.00	0.00	45.29	35.18	0.00	0.00	35.18
APRWD	206.44	0.00	0.00	206.44	143.57	0.00	0.00	143.57
APRWE	82.40	0.00	0.00	82.40	42.11	0.00	0.00	42.11
MAYWD	199.64	0.00	0.00	199.64	99.02	0.00	0.00	99.02
MAYWE	40.45	0.00	0.00	40.45	19.91	0.00	0.00	19.91
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	33.82	2.17	0.00	35.99	33.82	2.17	0.00	36.07
JULWD	4.98	0.00	0.00	4.98	4.98	0.00	0.00	4.98
JULWE	2.16	0.00	0.00	2.16	2.16	0.00	0.00	2.16
AUGWD	17.03	0.00	0.00	17.03	17.03	0.00	0.00	17.03
AUGWE	17.81	13.41	0.00	31.21	11.71	9.42	0.00	21.65
ALL	924.55	15.57	0.00	940.13	276.14	9.66	0.00	277.03

TOTAL CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.49	0.00	0.00	0.49	0.57	0.00	0.00	0.57
MARWE	0.17	0.00	0.00	0.17	0.19	0.00	0.00	0.19
APRWD	0.59	0.00	0.00	0.52	0.81	0.00	0.00	0.66
APRWE	0.33	0.00	0.00	0.29	0.44	0.00	0.00	0.36
MAYWD	0.59	0.27	0.03	0.53	0.82	0.38	0.08	0.64
MAYWE	0.37	0.14	0.00	0.34	0.53	0.18	0.00	0.45
JUNWD	0.41	0.40	0.00	0.40	0.58	0.54	0.00	0.45
JUNWE	0.19	0.17	0.26	0.19	0.27	0.23	0.36	0.21
JULWD	0.12	0.00	0.00	0.09	0.17	0.00	0.00	0.11
JULWE	0.15	0.03	0.00	0.12	0.21	0.04	0.00	0.14
AUGWD	0.26	0.18	0.14	0.23	0.35	0.25	0.20	0.24
AUGWE	0.20	0.14	0.00	0.17	0.28	0.20	0.00	0.18
ALL	0.32	0.11	0.04	0.29	1.08	1.04	1.00	1.04

KEPT CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.14	0.00	0.00	0.14	0.18	0.00	0.00	0.18
MARWE	0.07	0.00	0.00	0.07	0.08	0.00	0.00	0.08
APRWD	0.28	0.00	0.00	0.24	0.38	0.00	0.00	0.31
APRWE	0.25	0.00	0.00	0.22	0.33	0.00	0.00	0.27
MAYWD	0.51	0.27	0.03	0.46	0.70	0.38	0.08	0.55
MAYWE	0.36	0.14	0.00	0.33	0.51	0.18	0.00	0.43
JUNWD	0.41	0.40	0.00	0.40	0.58	0.54	0.00	0.45
JUNWE	0.18	0.16	0.26	0.18	0.25	0.23	0.36	0.20
JULWD	0.12	0.00	0.00	0.09	0.16	0.00	0.00	0.11
JULWE	0.15	0.03	0.00	0.12	0.21	0.04	0.00	0.14
AUGWD	0.25	0.18	0.14	0.22	0.34	0.25	0.20	0.23
AUGWE	0.19	0.12	0.00	0.16	0.26	0.17	0.00	0.17
ALL	0.24	0.11	0.04	0.22	1.07	1.03	1.00	1.04

RETURN CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.35	0.00	0.00	0.35	0.39	0.00	0.00	0.39
MARWE	0.10	0.00	0.00	0.10	0.11	0.00	0.00	0.11
APRWD	0.32	0.00	0.00	0.28	0.42	0.00	0.00	0.34
APRWE	0.08	0.00	0.00	0.07	0.11	0.00	0.00	0.09
MAYWD	0.08	0.00	0.00	0.07	0.12	0.00	0.00	0.09
MAYWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.01
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.01
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00
AUGWE	0.01	0.02	0.00	0.01	0.02	0.03	0.00	0.01
ALL	0.08	0.00	0.00	0.08	1.00	0.03	0.00	1.00

AVERAGE COMPLETED TRIP LENGTH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	2.39	0.00	0.00	2.39
MARWE	2.45	0.00	0.00	2.45
APRWD	2.24	2.00	5.00	2.37
APRWE	2.72	0.00	0.00	2.72
MAYWD	2.48	3.64	4.00	2.90
MAYWE	3.74	5.38	3.00	4.05
JUNWD	2.79	3.38	0.00	2.96
JUNWE	3.29	4.39	4.50	3.51
JULWD	3.02	4.08	0.00	3.22
JULWE	4.22	2.20	0.00	3.90
AUGWD	2.88	4.04	7.00	3.26
AUGWE	3.52	3.83	0.00	3.64
ALL	3.13	3.94	4.31	3.28

AVERAGE KEPT CATCH LENGTH (INCH)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	11.84	0.00	0.00	11.84
MARWE	12.01	0.00	0.00	12.01
APRWD	13.73	0.00	0.00	13.59
APRWE	11.41	0.00	0.00	11.42
MAYWD	12.52	12.55	12.25	12.51
MAYWE	12.07	12.87	0.00	12.14
JUNWD	11.88	13.12	0.00	12.00
JUNWE	12.11	13.21	0.00	12.44
JULWD	12.36	0.00	0.00	12.38
JULWE	13.11	12.31	0.00	13.09
AUGWD	12.22	12.47	16.00	12.33
AUGWE	11.42	13.59	0.00	11.68
ALL	12.18	13.04	173.74	12.28

AVERAGE KEPT CATCH LENGTH (CM)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	30.08	0.00	0.00	30.08
MARWE	30.49	0.00	0.00	30.49
APRWD	34.88	0.00	0.00	34.52
APRWE	28.98	0.00	0.00	29.02
MAYWD	31.81	31.88	31.12	31.79
MAYWE	30.67	32.69	0.00	30.84
JUNWD	30.16	33.34	0.00	30.48
JUNWE	30.76	33.57	0.00	31.60
JULWD	31.39	0.00	0.00	31.43
JULWE	33.30	31.27	0.00	33.25
AUGWD	31.04	31.67	40.64	31.32
AUGWE	29.01	34.53	0.00	29.68
ALL	30.93	33.12	441.29	31.20

AVERAGE KEPT CATCH WEIGHT (OZ)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

AVERAGE KEPT CATCH WEIGHT (GR)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SUMMARY

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
FISHERMAN-HOURS	20301.11	4634.74	856.12	25791.97	1282.08	360.32	131.66	1470.55
FISHERMAN	8739.87	2366.16	163.54	9812.68	960.21	365.63	94.80	1484.74
TOTAL CATCH	6486.80	765.18	74.56	7326.54	641.49	185.66	29.74	792.09
KEPT CATCH	5562.25	749.60	74.56	6386.42	544.59	183.25	29.74	710.99
RETURNED CATCH	924.55	15.57	0.00	940.13	276.14	9.66	0.00	277.03
TOTAL CATCH/HR	0.32	0.11	0.04	0.29	1.08	1.04	1.00	1.04
KEPT CATCH/HR	0.24	0.11	0.04	0.22	1.07	1.03	1.00	1.04
RETURN CATCH/HR	0.08	0.00	0.00	0.08	1.00	0.03	0.00	1.00
AVERAGE COMPLETED TRIP LENGTH	3.13	3.94	4.31	3.28	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (INCH)	12.18	13.04	173.74	12.28	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	30.93	33.12	441.29	31.20	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPEC: RBT TOTAL CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	358.46	0.00	0.00	358.46	217.40	0.00	0.00	217.40
MARWE	68.10	0.00	0.00	68.10	48.12	0.00	0.00	48.12
APRWD	380.85	0.00	0.00	380.85	186.08	0.00	0.00	186.08
APRWE	337.57	0.00	0.00	337.57	114.14	0.00	0.00	114.14
MAYWD	1411.89	120.23	2.47	1534.59	350.58	87.05	1.49	419.33
MAYWE	1216.97	45.92	0.00	1262.89	299.32	26.04	0.00	321.06
JUNWD	877.46	253.46	0.00	1130.92	234.76	131.08	0.00	370.80
JUNWE	585.37	102.12	53.69	741.18	108.70	40.07	26.36	215.03
JULWD	161.43	0.00	0.00	161.43	44.06	0.00	0.00	44.06
JULWE	296.81	19.14	0.00	315.95	62.70	15.85	0.00	74.66
AUGWD	325.37	36.31	0.00	361.69	148.97	21.95	0.00	166.72
AUGWE	205.47	75.95	0.00	281.42	65.35	50.78	0.00	124.62
ALL	6225.74	653.14	56.16	6935.05	639.53	174.22	26.40	781.48

SPEC: RBT KEPT CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	88.86	0.00	0.00	88.86	36.64	0.00	0.00	36.64
MARWE	30.22	0.00	0.00	30.22	20.32	0.00	0.00	20.32
APRWD	174.35	0.00	0.00	174.35	62.43	0.00	0.00	62.43
APRWE	255.20	0.00	0.00	255.20	112.70	0.00	0.00	112.70
MAYWD	1212.46	120.23	0.00	1332.69	313.51	87.05	0.00	388.68
MAYWE	1176.81	45.92	0.00	1222.73	298.71	26.04	0.00	320.49
JUNWD	877.46	253.46	0.00	1130.92	234.76	131.08	0.00	370.80
JUNWE	551.51	99.95	0.00	651.46	108.69	39.84	0.00	181.21
JULWD	156.49	0.00	0.00	156.49	44.76	0.00	0.00	44.76
JULWE	294.66	19.14	0.00	313.80	63.26	15.85	0.00	75.13
AUGWD	308.10	36.31	0.00	344.41	141.16	21.95	0.00	157.33
AUGWE	191.05	62.53	0.00	253.58	58.53	41.52	0.00	106.30
ALL	5317.15	637.55	0.00	5954.70	549.69	171.70	0.00	697.26

SPEC: RBT RETURNED CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	269.18	0.00	0.00	269.18	203.15	0.00	0.00	203.15
MARWE	37.84	0.00	0.00	37.84	27.84	0.00	0.00	27.84
APRWD	206.58	0.00	0.00	206.58	143.65	0.00	0.00	143.65
APRWE	82.40	0.00	0.00	82.40	42.23	0.00	0.00	42.23
MAYWD	199.54	0.00	0.00	199.54	98.95	0.00	0.00	98.95
MAYWE	40.63	0.00	0.00	40.63	19.95	0.00	0.00	19.95
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	33.85	2.17	0.00	36.02	33.85	2.17	0.00	36.11
JULWD	4.97	0.00	0.00	4.97	4.97	0.00	0.00	4.97
JULWE	2.15	0.00	0.00	2.15	2.15	0.00	0.00	2.15
AUGWD	16.79	0.00	0.00	16.79	16.79	0.00	0.00	16.79
AUGWE	14.42	13.42	0.00	27.84	9.53	9.42	0.00	19.76
ALL	908.34	15.59	0.00	923.93	276.05	9.67	0.00	276.87

SPEC: RBT TOTAL CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.45	0.00	0.00	0.45	0.53	0.00	0.00	0.53
MARWE	0.15	0.00	0.00	0.15	0.17	0.00	0.00	0.17
APRWD	0.58	0.00	0.00	0.58	0.79	0.00	0.00	0.69
APRWE	0.33	0.00	0.00	0.33	0.44	0.00	0.00	0.39
MAYWD	0.59	0.27	0.03	0.89	0.81	0.38	0.08	0.82
MAYWE	0.37	0.14	0.00	0.50	0.52	0.18	0.00	0.54
JUNWD	0.41	0.39	0.00	0.80	0.58	0.53	0.00	0.63
JUNWE	0.19	0.15	0.26	0.60	0.27	0.22	0.36	0.38
JULWD	0.12	0.00	0.00	0.12	0.17	0.00	0.00	0.13
JULWE	0.15	0.03	0.00	0.18	0.21	0.04	0.00	0.17
AUGWD	0.20	0.05	0.00	0.25	0.26	0.07	0.00	0.20
AUGWE	0.14	0.12	0.00	0.26	0.19	0.17	0.00	0.19
ALL	0.31	0.10	0.02	0.43	1.63	0.74	0.37	1.60

SPEC: RBT KEPT CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.11	0.00	0.00	0.11	0.15	0.00	0.00	0.15
MARWE	0.07	0.00	0.00	0.07	0.08	0.00	0.00	0.08
APRWD	0.27	0.00	0.00	0.27	0.37	0.00	0.00	0.32
APRWE	0.25	0.00	0.00	0.25	0.33	0.00	0.00	0.29
MAYWD	0.51	0.27	0.00	0.78	0.69	0.38	0.00	0.71
MAYWE	0.36	0.14	0.00	0.49	0.50	0.18	0.00	0.52
JUNWD	0.41	0.39	0.00	0.80	0.58	0.53	0.00	0.63
JUNWE	0.18	0.15	0.00	0.33	0.25	0.21	0.00	0.27
JULWD	0.12	0.00	0.00	0.12	0.16	0.00	0.00	0.12
JULWE	0.15	0.03	0.00	0.18	0.21	0.04	0.00	0.17
AUGWD	0.18	0.05	0.00	0.24	0.25	0.07	0.00	0.20
AUGWE	0.13	0.10	0.00	0.23	0.18	0.14	0.00	0.17
ALL	0.23	0.09	0.00	0.32	1.25	0.73	0.00	1.26

SPEC: RBT RETURN CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.34	0.00	0.00	0.34	0.38	0.00	0.00	0.38
MARWE	0.08	0.00	0.00	0.08	0.09	0.00	0.00	0.09
APRWD	0.32	0.00	0.00	0.32	0.42	0.00	0.00	0.37
APRWE	0.08	0.00	0.00	0.08	0.11	0.00	0.00	0.10
MAYWD	0.08	0.00	0.00	0.08	0.12	0.00	0.00	0.10
MAYWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.01
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00
AUGWE	0.01	0.02	0.00	0.03	0.01	0.03	0.00	0.02
ALL	0.08	0.00	0.00	0.08	0.60	0.03	0.00	0.55

SPEC: RBT AVERAGE KEPT CATCH LENGTH (INCH)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	12.68	0.00	0.00	12.68
MARWE	12.01	0.00	0.00	12.01
APRWD	12.37	0.00	0.00	12.29
APRWE	11.41	0.00	0.00	11.42
MAYWD	12.54	12.55	12.25	12.52
MAYWE	11.93	12.87	0.00	12.02
JUNWD	11.88	13.13	0.00	11.99
JUNWE	12.11	13.23	13.06	12.43
JULWD	12.36	0.00	0.00	12.38
JULWE	12.84	12.31	0.00	12.85
AUGWD	12.32	13.43	0.00	12.42
AUGWE	11.34	11.34	0.00	11.46
ALL	12.10	12.74	13.05	12.21

SPEC: RBT AVERAGE KEPT CATCH LENGTH (CM)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	32.20	0.00	0.00	32.20
MARWE	30.49	0.00	0.00	30.49
APRWD	31.41	0.00	0.00	31.22
APRWE	28.98	0.00	0.00	29.02
MAYWD	31.84	31.88	31.12	31.81
MAYWE	30.30	32.69	0.00	30.54
JUNWD	30.16	33.34	0.00	30.45
JUNWE	30.76	33.61	33.17	31.58
JULWD	31.39	0.00	0.00	31.43
JULWE	32.62	31.27	0.00	32.63
AUGWD	31.29	34.10	0.00	31.54
AUGWE	28.82	28.79	0.00	29.11
ALL	30.73	32.37	33.16	31.02

SPEC: RBT AVERAGE KEPT CATCH WEIGHT (OZ)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SPEC: RBT AVERAGE KEPT CATCH WEIGHT (GR)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

RBT SUMMARY REPORT

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
TOTAL CATCH	6225.74	653.14	56.16	6935.05	639.53	174.22	26.40	781.48
KEPT CATCH	5317.15	637.55	0.00	5954.70	549.69	171.70	0.00	697.26
RETURNED CATCH	908.34	15.59	0.00	923.93	276.05	9.67	0.00	276.87
TOTAL CATCH/HR	0.31	0.10	0.02	0.43	1.63	0.74	0.37	1.60
KEPT CATCH/HR	0.23	0.09	0.00	0.32	1.25	0.73	0.00	1.26
RETURN CATCH/HR	0.08	0.00	0.00	0.08	0.60	0.03	0.00	0.55
AVERAGE KEPT CATCH LENGTH (INCH)	12.10	12.74	13.05	12.21	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	30.73	32.37	33.16	31.02	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPEC: RBT MARK: NO TOTAL CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	358.46	0.00	0.00	358.46	217.40	0.00	0.00	217.40
MARWE	26.70	0.00	0.00	26.70	9.78	0.00	0.00	9.78
APRWD	225.08	0.00	0.00	225.08	119.55	0.00	0.00	119.55
APRWE	137.97	0.00	0.00	137.97	44.42	0.00	0.00	44.42
MAYWD	179.42	0.00	0.00	179.42	74.07	0.00	0.00	74.07
MAYWE	4.63	0.00	0.00	4.63	4.63	0.00	0.00	4.63
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	24.70	2.17	0.00	26.87	19.88	2.17	0.00	22.18
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	325.37	36.31	0.00	361.69	120.01	21.95	0.00	141.43
AUGWE	205.47	75.95	0.00	281.42	62.87	50.78	0.00	122.46
ALL	1487.80	114.43	0.00	1602.23	296.45	55.36	0.00	323.45

SPEC: RBT MARK: NO KEPT CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	88.86	0.00	0.00	88.86	36.64	0.00	0.00	36.64
MARWE	7.70	0.00	0.00	7.70	4.60	0.00	0.00	4.60
APRWD	74.33	0.00	0.00	74.33	32.62	0.00	0.00	32.62
APRWE	59.01	0.00	0.00	59.01	25.40	0.00	0.00	25.40
MAYWD	163.32	0.00	0.00	163.32	72.02	0.00	0.00	72.02
MAYWE	4.63	0.00	0.00	4.63	4.63	0.00	0.00	4.63
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	17.93	0.00	0.00	17.93	13.21	0.00	0.00	13.21
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	308.10	36.31	0.00	344.41	110.15	21.95	0.00	130.23
AUGWE	191.05	62.53	0.00	253.58	56.18	41.52	0.00	104.14
ALL	914.92	98.84	0.00	1013.77	154.10	46.96	0.00	190.42

SPEC: RBT MARK: NO RETURNED CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	269.18	0.00	0.00	269.18	203.15	0.00	0.00	203.15
MARWE	18.96	0.00	0.00	18.96	9.50	0.00	0.00	9.50
APRWD	150.83	0.00	0.00	150.83	96.93	0.00	0.00	96.93
APRWE	79.13	0.00	0.00	79.13	28.80	0.00	0.00	28.80
MAYWD	15.97	0.00	0.00	15.97	15.97	0.00	0.00	15.97
MAYWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	6.77	2.17	0.00	8.94	6.77	2.17	0.00	9.01
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	16.79	0.00	0.00	16.79	16.79	0.00	0.00	16.79
AUGWE	14.42	13.42	0.00	27.84	9.53	9.42	0.00	19.76
ALL	572.04	15.59	0.00	587.63	228.60	9.67	0.00	229.33

SPEC: RBT MARK: NO TOTAL CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.45	0.00	0.00	0.45	0.53	0.00	0.00	0.53
MARWE	0.06	0.00	0.00	0.06	0.08	0.00	0.00	0.08
APRWD	0.34	0.00	0.00	0.34	0.47	0.00	0.00	0.41
APRWE	0.13	0.00	0.00	0.13	0.18	0.00	0.00	0.16
MAYWD	0.08	0.00	0.00	0.08	0.11	0.00	0.00	0.09
MAYWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.20	0.05	0.00	0.25	0.26	0.07	0.00	0.20
AUGWE	0.14	0.12	0.00	0.26	0.19	0.17	0.00	0.19
ALL	0.12	0.01	0.00	0.13	0.81	0.19	0.00	0.75

SPEC: RBT MARK: NO RETURN CATCH/HR
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.34	0.00	0.00	0.34	0.38	0.00	0.00	0.38
MARWE	0.04	0.00	0.00	0.04	0.05	0.00	0.00	0.05
APRWD	0.23	0.00	0.00	0.23	0.31	0.00	0.00	0.27
APRWE	0.08	0.00	0.00	0.08	0.10	0.00	0.00	0.09
MAYWD	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00
AUGWE	0.01	0.02	0.00	0.03	0.01	0.03	0.00	0.02
ALL	0.06	0.00	0.00	0.06	0.50	0.03	0.00	0.48

SPEC: RBT MARK: NO RETURN CATCH/HR
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.34	0.00	0.00	0.34	0.38	0.00	0.00	0.38
MARWE	0.04	0.00	0.00	0.04	0.05	0.00	0.00	0.05
APRWD	0.23	0.00	0.00	0.23	0.31	0.00	0.00	0.27
APRWE	0.08	0.00	0.00	0.08	0.10	0.00	0.00	0.09
MAYWD	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00
AUGWE	0.01	0.02	0.00	0.03	0.01	0.03	0.00	0.02
ALL	0.06	0.00	0.00	0.06	0.50	0.03	0.00	0.48

SPEC: RBT MARK: NO AVERAGE KEPT CATCH LENGTH (INCH)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	12.68	0.00	0.00	0.00
MARWE	9.59	0.00	0.00	0.00
APRWD	10.75	0.00	0.00	0.00
APRWE	11.46	0.00	0.00	0.00
MAYWD	12.62	0.00	0.00	0.00
MAYWE	11.50	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	13.16	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	12.32	13.43	0.00	0.00
AUGWE	11.34	11.34	0.00	0.00
ALL	11.84	11.72	0.00	0.00

SPEC: RBT MARK: NO AVERAGE KEPT CATCH LENGTH (CM)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	32.20	0.00	0.00	0.00
MARWE	24.37	0.00	0.00	0.00
APRWD	27.31	0.00	0.00	0.00
APRWE	29.10	0.00	0.00	0.00
MAYWD	32.06	0.00	0.00	0.00
MAYWE	29.21	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	33.42	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	31.29	34.10	0.00	0.00
AUGWE	28.82	28.79	0.00	0.00
ALL	30.07	29.78	0.00	0.00

SPEC: RBT MARK: NO AVERAGE KEPT CATCH WEIGHT (OZ)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SPEC: RBT MARK: NO AVERAGE KEPT CATCH WEIGHT (GR)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

RBT Mark: NO SUMMARY REPORT

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
TOTAL CATCH	1487.80	114.43	0.00	1602.23	296.45	55.36	0.00	323.45
KEPT CATCH	914.92	98.84	0.00	1013.77	154.10	46.96	0.00	190.42
RETURNED CATCH	572.04	15.59	0.00	587.63	228.60	9.67	0.00	229.33
TOTAL CATCH/HR	0.12	0.01	0.00	0.13	0.81	0.19	0.00	0.75
RETURN CATCH/HR	0.06	0.00	0.00	0.06	0.50	0.03	0.00	0.48
RETURN CATCH/HR	0.06	0.00	0.00	0.06	0.50	0.03	0.00	0.48
AVERAGE KEPT CATCH LENGTH (INCH)	11.84	11.72	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	30.07	29.78	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPEC: RBT MARK: A TOTAL CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	155.80	0.00	0.00	155.80	69.62	0.00	0.00	69.62
APRWE	132.49	0.00	0.00	132.49	72.69	0.00	0.00	72.69
MAYWD	892.02	111.26	1.27	1004.55	253.36	86.80	0.76	314.88
MAYWE	681.47	38.55	0.00	720.02	202.83	21.34	0.00	220.02
JUNWD	497.79	185.56	0.00	683.34	144.45	93.68	0.00	252.20
JUNWE	222.39	66.19	31.43	320.01	94.02	34.52	20.58	152.80
JULWD	74.54	0.00	0.00	74.54	17.62	0.00	0.00	17.62
JULWE	220.78	3.93	0.00	224.71	57.23	3.93	0.00	59.54
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	2877.28	405.49	32.70	3315.46	385.68	134.06	20.59	498.49

SPEC: RBT MARK: A KEPT CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	100.20	0.00	0.00	100.20	55.53	0.00	0.00	55.53
APRWE	132.49	0.00	0.00	132.49	72.69	0.00	0.00	72.69
MAYWD	765.15	111.26	1.27	877.67	234.08	86.80	0.76	299.55
MAYWE	662.33	38.55	0.00	700.88	198.57	21.34	0.00	216.10
JUNWD	497.79	185.56	0.00	683.34	144.45	93.68	0.00	252.20
JUNWE	208.85	66.19	31.43	306.47	96.20	34.52	20.58	146.52
JULWD	69.60	0.00	0.00	69.60	15.13	0.00	0.00	15.13
JULWE	218.63	3.93	0.00	222.56	57.57	3.93	0.00	59.86
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	2655.03	405.49	32.70	3093.21	369.13	134.06	20.59	483.40

SPEC: RBT MARK: A RETURNED CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	55.75	0.00	0.00	55.75	34.15	0.00	0.00	34.15
APRWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWD	126.86	0.00	0.00	126.86	60.51	0.00	0.00	60.51
MAYWE	19.43	0.00	0.00	19.43	15.13	0.00	0.00	15.13
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	13.54	0.00	0.00	13.54	13.54	0.00	0.00	13.54
JULWD	4.97	0.00	0.00	4.97	4.97	0.00	0.00	4.97
JULWE	2.15	0.00	0.00	2.15	2.15	0.00	0.00	2.15
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	222.70	0.00	0.00	222.70	72.59	0.00	0.00	72.59

SPEC: RBT MARK: A TOTAL CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.24	0.00	0.00	0.24	0.33	0.00	0.00	0.28
APRWE	0.13	0.00	0.00	0.13	0.17	0.00	0.00	0.15
MAYWD	0.37	0.25	0.01	0.64	0.51	0.34	0.04	0.55
MAYWE	0.21	0.11	0.00	0.32	0.29	0.15	0.00	0.32
JUNWD	0.23	0.29	0.00	0.52	0.33	0.39	0.00	0.39
JUNWE	0.07	0.10	0.15	0.32	0.10	0.14	0.21	0.17
JULWD	0.05	0.00	0.00	0.05	0.08	0.00	0.00	0.06
JULWE	0.11	0.01	0.00	0.12	0.16	0.00	0.00	0.12
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.12	0.06	0.01	0.19	0.79	0.56	0.22	0.84

SPEC: RBT MARK: A RETURN CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.09	0.00	0.00	0.09	0.11	0.00	0.00	0.10
APRWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWD	0.05	0.00	0.00	0.05	0.08	0.00	0.00	0.06
MAYWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.01	0.00	0.00	0.01	0.14	0.00	0.00	0.12

SPEC: RBT MARK: A RETURN CATCH/HR
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.09	0.00	0.00	0.09	0.11	0.00	0.00	0.10
APRWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWD	0.05	0.00	0.00	0.05	0.08	0.00	0.00	0.06
MAYWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.01	0.00	0.00	0.01	0.14	0.00	0.00	0.12

SPEC: RBT MARK: A AVERAGE KEPT CATCH LENGTH (INCH)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	13.56	0.00	0.00	0.00
APRWE	11.82	0.00	0.00	0.00
MAYWD	12.73	12.77	13.50	0.00
MAYWE	12.29	13.20	0.00	0.00
JUNWD	12.38	13.54	0.00	0.00
JUNWE	13.29	13.52	13.36	0.00
JULWD	12.60	0.00	0.00	0.00
JULWE	13.21	13.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	12.62	13.33	13.36	0.00

SPEC: RBT MARK: A AVERAGE KEPT CATCH LENGTH (CM)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	34.45	0.00	0.00	0.00
APRWE	30.02	0.00	0.00	0.00
MAYWD	32.33	32.43	34.29	0.00
MAYWE	31.21	33.52	0.00	0.00
JUNWD	31.44	34.38	0.00	0.00
JUNWE	33.77	34.34	33.94	0.00
JULWD	32.01	0.00	0.00	0.00
JULWE	33.56	33.02	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	32.06	33.86	33.94	0.00

SPEC: RBT MARK: A AVERAGE KEPT CATCH WEIGHT (OZ)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SPEC: RBT MARK: A AVERAGE KEPT CATCH WEIGHT (GR)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

RBT Mark: A SUMMARY REPORT

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
TOTAL CATCH	2877.28	405.49	32.70	3315.46	385.68	134.06	20.59	498.49
KEPT CATCH	2655.03	405.49	32.70	3093.21	369.13	134.06	20.59	483.40
RETURNED CATCH	222.70	0.00	0.00	222.70	72.59	0.00	0.00	72.59
TOTAL CATCH/HR	0.12	0.06	0.01	0.19	0.79	0.56	0.22	0.84
RETURN CATCH/HR	0.01	0.00	0.00	0.01	0.14	0.00	0.00	0.12
RETURN CATCH/HR	0.01	0.00	0.00	0.01	0.14	0.00	0.00	0.12
AVERAGE KEPT CATCH LENGTH (INCH)	12.62	13.33	13.36	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	32.06	33.86	33.94	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPEC: RBT MARK: P TOTAL CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWE	66.97	0.00	0.00	66.97	55.19	0.00	0.00	55.19
MAYWD	339.84	8.97	1.27	350.07	142.64	7.65	0.76	142.85
MAYWE	530.86	7.41	0.00	538.27	126.93	5.20	0.00	130.35
JUNWD	379.67	67.91	0.00	447.58	149.40	43.07	0.00	168.82
JUNWE	337.66	33.84	22.26	393.76	75.70	17.68	12.55	107.97
JULWD	87.00	0.00	0.00	87.00	44.33	0.00	0.00	44.33
JULWE	76.57	15.20	0.00	91.77	16.12	12.02	0.00	26.08
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	1818.57	133.33	23.53	1975.42	264.15	48.97	12.58	288.52

SPEC: RBT MARK: P KEPT CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWE	63.69	0.00	0.00	63.69	51.93	0.00	0.00	51.93
MAYWD	282.96	8.97	1.27	293.20	118.06	7.65	0.76	118.31
MAYWE	510.13	7.41	0.00	517.54	131.98	5.20	0.00	135.27
JUNWD	379.67	67.91	0.00	447.58	149.40	43.07	0.00	168.82
JUNWE	324.12	33.84	22.26	380.22	75.85	17.68	12.55	106.91
JULWD	87.00	0.00	0.00	87.00	44.33	0.00	0.00	44.33
JULWE	76.57	15.20	0.00	91.77	16.12	12.02	0.00	26.08
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	1724.14	133.33	23.53	1880.99	253.68	48.97	12.58	278.51

SPEC: RBT MARK: P RETURNED CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWE	3.01	0.00	0.00	3.01	3.01	0.00	0.00	3.01
MAYWD	56.71	0.00	0.00	56.71	38.05	0.00	0.00	38.05
MAYWE	20.90	0.00	0.00	20.90	8.48	0.00	0.00	8.48
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	13.54	0.00	0.00	13.54	13.54	0.00	0.00	13.54
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	94.16	0.00	0.00	94.16	41.38	0.00	0.00	41.38

SPEC: RBT MARK: P TOTAL CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWE	0.06	0.00	0.00	0.06	0.09	0.00	0.00	0.08
MAYWD	0.14	0.02	0.01	0.18	0.19	0.03	0.04	0.18
MAYWE	0.16	0.02	0.00	0.18	0.23	0.03	0.00	0.21
JUNWD	0.18	0.10	0.00	0.28	0.25	0.14	0.00	0.24
JUNWE	0.11	0.05	0.11	0.27	0.16	0.07	0.15	0.19
JULWD	0.06	0.00	0.00	0.06	0.09	0.00	0.00	0.07
JULWE	0.04	0.02	0.00	0.06	0.05	0.03	0.00	0.05
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.06	0.02	0.01	0.09	0.44	0.17	0.15	0.43

SPEC: RBT MARK: P RETURN CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWD	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.03
MAYWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.03

SPEC: RBT MARK: P RETURN CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWD	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.03
MAYWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.03

SPEC: RBT MARK: P AVERAGE KEPT CATCH LENGTH (INCH)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	10.52	0.00	0.00	0.00
MAYWD	11.96	9.83	11.00	0.00
MAYWE	11.47	11.17	0.00	0.00
JUNWD	11.21	12.01	0.00	0.00
JUNWE	11.29	12.67	12.63	0.00
JULWD	12.16	0.00	0.00	0.00
JULWE	11.80	12.13	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	11.45	12.14	12.62	0.00

SPEC: RBT MARK: P AVERAGE KEPT CATCH LENGTH (CM)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	26.71	0.00	0.00	0.00
MAYWD	30.38	24.98	27.94	0.00
MAYWE	29.14	28.37	0.00	0.00
JUNWD	28.48	30.51	0.00	0.00
JUNWE	28.68	32.17	32.08	0.00
JULWD	30.90	0.00	0.00	0.00
JULWE	29.96	30.81	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	29.08	30.83	32.04	0.00

SPEC: RBT MARK: P AVERAGE KEPT CATCH WEIGHT (OZ)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SPEC: RBT MARK: P AVERAGE KEPT CATCH WEIGHT (GR)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
MARWD	0.00	0.00	0.00	0.00
MARWE	0.00	0.00	0.00	0.00
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

RBT Mark: P SUMMARY REPORT

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2006 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
TOTAL CATCH	1818.57	133.33	23.52	1975.42	264.15	48.97	12.58	288.52
KEPT CATCH	1724.14	133.33	23.52	1880.99	253.68	48.97	12.58	278.51
RETURNED CATCH	94.16	0.00	0.00	94.16	41.38	0.00	0.00	41.38
TOTAL CATCH/HR	0.06	0.02	0.01	0.09	0.44	0.17	0.15	0.43
RETURN CATCH/HR	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.03
RETURN CATCH/HR	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.03
AVERAGE KEPT CATCH LENGTH (INCH)	11.45	12.14	12.62	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	29.08	30.83	32.04	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FISHERMAN-HOURS

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	770.00	0.00	0.00	770.00	175.00	0.00	0.00	175.00
APRWE	1164.38	0.00	6.75	1171.13	282.37	0.00	6.75	285.65
MAYWD	2373.31	0.00	0.00	2373.31	353.52	0.00	0.00	353.52
MAYWE	2125.50	130.00	0.00	2255.50	225.74	122.74	0.00	193.40
JUNWD	3941.44	0.00	0.00	3941.44	810.04	0.00	0.00	810.04
JUNWE	2762.89	0.00	0.00	2762.89	175.71	0.00	0.00	175.71
JULWD	3984.75	0.00	0.00	3984.75	234.98	0.00	0.00	234.98
JULWE	2149.00	0.00	0.00	2149.00	171.23	0.00	0.00	171.23
AUGWD	2734.47	0.00	0.00	2734.47	337.50	0.00	0.00	337.50
AUGWE	1486.20	0.00	0.00	1486.20	163.87	0.00	0.00	163.87
SEPWD	1294.50	0.00	0.00	1294.50	196.62	0.00	0.00	196.62
SEPWE	1522.11	0.00	0.00	1522.11	200.95	0.00	0.00	200.95
ALL	26308.54	130.00	6.75	26445.29	1130.34	122.74	6.75	1125.16

FISHERMAN

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	645.15	0.00	0.00	645.15	206.04	0.00	0.00	206.04
APRWE	783.02	0.00	0.00	783.02	193.55	0.00	0.00	193.55
MAYWD	1482.36	0.00	0.00	1482.36	402.58	0.00	0.00	402.58
MAYWE	758.55	0.00	0.00	840.81	195.02	0.00	0.00	195.02
JUNWD	3871.67	0.00	0.00	3871.67	1064.63	0.00	0.00	1064.63
JUNWE	2144.21	0.00	0.00	2144.21	710.49	0.00	0.00	710.49
JULWD	5454.17	0.00	0.00	5454.17	2499.50	0.00	0.00	2499.50
JULWE	1378.58	0.00	0.00	1378.58	316.06	0.00	0.00	316.06
AUGWD	4700.31	0.00	0.00	4700.31	1983.82	0.00	0.00	1983.82
AUGWE	453.52	0.00	0.00	453.52	106.92	0.00	0.00	106.92
SEPWD	535.83	0.00	0.00	535.83	189.08	0.00	0.00	189.08
SEPWE	534.56	0.00	0.00	534.56	153.54	0.00	0.00	153.54
ALL	22741.91	0.00	0.00	22824.18	3503.13	0.00	0.00	3503.13

TOTAL CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	709.75	0.00	0.00	709.75	246.16	0.00	0.00	246.16
APRWE	357.08	0.00	0.00	357.08	96.99	0.00	0.00	96.99
MAYWD	1512.42	0.00	0.00	1512.42	350.41	0.00	0.00	350.41
MAYWE	496.98	0.00	0.00	496.98	54.29	0.00	0.00	54.29
JUNWD	1954.36	0.00	0.00	1954.36	535.21	0.00	0.00	535.21
JUNWE	710.50	0.00	0.00	710.50	205.07	0.00	0.00	205.07
JULWD	1996.04	0.00	0.00	1996.04	459.90	0.00	0.00	459.90
JULWE	518.22	0.00	0.00	518.22	91.15	0.00	0.00	91.15
AUGWD	741.11	0.00	0.00	741.11	128.87	0.00	0.00	128.87
AUGWE	370.22	0.00	0.00	370.22	69.13	0.00	0.00	69.13
SEPWD	773.43	0.00	0.00	773.43	151.97	0.00	0.00	151.97
SEPWE	459.85	0.00	0.00	459.85	62.27	0.00	0.00	62.27
ALL	10599.97	0.00	0.00	10599.97	890.18	0.00	0.00	890.18

KEPT CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	557.93	0.00	0.00	557.93	200.11	0.00	0.00	200.11
APRWE	319.78	0.00	0.00	319.78	95.66	0.00	0.00	95.66
MAYWD	1379.15	0.00	0.00	1379.15	331.46	0.00	0.00	331.46
MAYWE	458.95	0.00	0.00	458.95	46.20	0.00	0.00	46.20
JUNWD	1763.13	0.00	0.00	1763.13	462.98	0.00	0.00	462.98
JUNWE	671.37	0.00	0.00	671.37	190.39	0.00	0.00	190.39
JULWD	1778.07	0.00	0.00	1778.07	393.79	0.00	0.00	393.79
JULWE	481.78	0.00	0.00	481.78	85.89	0.00	0.00	85.89
AUGWD	703.12	0.00	0.00	703.12	133.50	0.00	0.00	133.50
AUGWE	368.49	0.00	0.00	368.49	69.58	0.00	0.00	69.58
SEPWD	694.78	0.00	0.00	694.78	134.50	0.00	0.00	134.50
SEPWE	397.14	0.00	0.00	397.14	57.33	0.00	0.00	57.33
ALL	9573.70	0.00	0.00	9573.70	786.30	0.00	0.00	786.30

RETURNED CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	151.82	0.00	0.00	151.82	83.96	0.00	0.00	83.96
APRWE	37.30	0.00	0.00	37.30	14.93	0.00	0.00	14.93
MAYWD	133.27	0.00	0.00	133.27	57.70	0.00	0.00	57.70
MAYWE	38.02	0.00	0.00	38.02	14.02	0.00	0.00	14.02
JUNWD	191.23	0.00	0.00	191.23	95.24	0.00	0.00	95.24
JUNWE	39.13	0.00	0.00	39.13	16.30	0.00	0.00	16.30
JULWD	217.97	0.00	0.00	217.97	117.47	0.00	0.00	117.47
JULWE	36.43	0.00	0.00	36.43	10.61	0.00	0.00	10.61
AUGWD	37.99	0.00	0.00	37.99	17.27	0.00	0.00	17.27
AUGWE	1.73	0.00	0.00	1.73	1.73	0.00	0.00	1.73
SEPWD	78.66	0.00	0.00	78.66	50.28	0.00	0.00	50.28
SEPWE	62.70	0.00	0.00	62.70	26.47	0.00	0.00	26.47
ALL	1026.27	0.00	0.00	1026.27	193.85	0.00	0.00	193.85

TOTAL CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.92	0.00	0.00	0.92	1.27	0.00	0.00	1.27
APRWE	0.31	0.00	0.00	0.30	0.42	0.00	0.00	0.42
MAYWD	0.64	0.00	0.00	0.64	0.89	0.00	0.00	0.89
MAYWE	0.23	0.00	0.00	0.22	0.33	0.00	0.00	0.30
JUNWD	0.50	0.00	0.00	0.50	0.69	0.00	0.00	0.69
JUNWE	0.26	0.00	0.00	0.26	0.36	0.00	0.00	0.36
JULWD	0.50	0.00	0.00	0.50	0.71	0.00	0.00	0.71
JULWE	0.24	0.00	0.00	0.24	0.34	0.00	0.00	0.34
AUGWD	0.27	0.00	0.00	0.27	0.38	0.00	0.00	0.38
AUGWE	0.25	0.00	0.00	0.25	0.35	0.00	0.00	0.35
SEPWD	0.60	0.00	0.00	0.60	0.84	0.00	0.00	0.84
SEPWE	0.30	0.00	0.00	0.30	0.43	0.00	0.00	0.43
ALL	0.42	0.00	0.00	0.42	1.24	0.00	0.00	1.24

KEPT CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.72	0.00	0.00	0.72	1.00	0.00	0.00	1.00
APRWE	0.27	0.00	0.00	0.27	0.38	0.00	0.00	0.37
MAYWD	0.58	0.00	0.00	0.58	0.81	0.00	0.00	0.81
MAYWE	0.22	0.00	0.00	0.20	0.31	0.00	0.00	0.28
JUNWD	0.45	0.00	0.00	0.45	0.62	0.00	0.00	0.62
JUNWE	0.24	0.00	0.00	0.24	0.34	0.00	0.00	0.34
JULWD	0.45	0.00	0.00	0.45	0.63	0.00	0.00	0.63
JULWE	0.22	0.00	0.00	0.22	0.32	0.00	0.00	0.32
AUGWD	0.26	0.00	0.00	0.26	0.36	0.00	0.00	0.36
AUGWE	0.25	0.00	0.00	0.25	0.35	0.00	0.00	0.35
SEPWD	0.54	0.00	0.00	0.54	0.75	0.00	0.00	0.75
SEPWE	0.26	0.00	0.00	0.26	0.37	0.00	0.00	0.37
ALL	0.37	0.00	0.00	0.37	1.20	0.00	0.00	1.20

RETURN CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.20	0.00	0.00	0.20	0.28	0.00	0.00	0.28
APRWE	0.03	0.00	0.00	0.03	0.05	0.00	0.00	0.04
MAYWD	0.06	0.00	0.00	0.06	0.08	0.00	0.00	0.08
MAYWE	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.02
JUNWD	0.05	0.00	0.00	0.05	0.07	0.00	0.00	0.07
JUNWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
JULWD	0.05	0.00	0.00	0.05	0.08	0.00	0.00	0.08
JULWE	0.02	0.00	0.00	0.02	0.02	0.00	0.00	0.02
AUGWD	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWD	0.06	0.00	0.00	0.06	0.09	0.00	0.00	0.09
SEPWE	0.04	0.00	0.00	0.04	0.06	0.00	0.00	0.06
ALL	0.05	0.00	0.00	0.05	1.00	0.00	0.00	1.00

AVERAGE COMPLETED TRIP LENGTH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	1.50	0.00	0.00	1.50
APRWE	1.72	0.00	0.00	1.72
MAYWD	2.62	0.00	0.00	2.62
MAYWE	3.63	0.00	0.00	3.63
JUNWD	1.11	0.00	0.00	1.11
JUNWE	1.79	0.00	0.00	1.79
JULWD	1.60	0.00	0.00	1.60
JULWE	1.85	0.00	0.00	1.85
AUGWD	1.63	0.00	0.00	1.63
AUGWE	3.80	0.00	0.00	3.80
SEPWD	3.00	0.00	0.00	3.00
SEPWE	3.83	0.00	0.00	3.83
ALL	2.32	0.00	0.00	2.32

AVERAGE KEPT CATCH LENGTH (INCH)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	12.19	0.00	0.00	12.19
APRWE	12.24	0.00	0.00	12.24
MAYWD	11.96	0.00	0.00	11.96
MAYWE	12.12	0.00	0.00	12.10
JUNWD	12.34	0.00	0.00	12.34
JUNWE	12.40	0.00	0.00	12.40
JULWD	11.76	0.00	0.00	11.76
JULWE	11.28	0.00	0.00	11.28
AUGWD	11.02	0.00	0.00	11.02
AUGWE	11.24	0.00	0.00	11.24
SEPWD	11.66	0.00	0.00	11.66
SEPWE	11.32	0.00	0.00	11.32
ALL	11.85	0.00	0.00	11.85

AVERAGE KEPT CATCH LENGTH (CM)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	30.97	0.00	0.00	30.97
APRWE	31.10	0.00	0.00	31.09
MAYWD	30.39	0.00	0.00	30.39
MAYWE	30.78	0.00	0.00	30.73
JUNWD	31.35	0.00	0.00	31.35
JUNWE	31.51	0.00	0.00	31.51
JULWD	29.88	0.00	0.00	29.88
JULWE	28.66	0.00	0.00	28.66
AUGWD	27.99	0.00	0.00	27.99
AUGWE	28.55	0.00	0.00	28.55
SEPWD	29.61	0.00	0.00	29.61
SEPWE	28.75	0.00	0.00	28.75
ALL	30.09	0.00	0.00	30.09

AVERAGE KEPT CATCH WEIGHT (OZ)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

AVERAGE KEPT CATCH WEIGHT (GR)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SUMMARY

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
FISHERMAN-HOURS	26308.54	130.00	6.75	26445.29	1130.34	122.74	6.75	1125.16
FISHERMAN	22741.91	0.00	0.00	22824.18	3503.13	0.00	0.00	3503.13
TOTAL CATCH	10599.97	0.00	0.00	10599.97	890.18	0.00	0.00	890.18
KEPT CATCH	9573.70	0.00	0.00	9573.70	786.30	0.00	0.00	786.30
RETURNED CATCH	1026.27	0.00	0.00	1026.27	193.85	0.00	0.00	193.85
TOTAL CATCH/HR	0.42	0.00	0.00	0.42	1.24	0.00	0.00	1.24
KEPT CATCH/HR	0.37	0.00	0.00	0.37	1.20	0.00	0.00	1.20
RETURN CATCH/HR	0.05	0.00	0.00	0.05	1.00	0.00	0.00	1.00
AVERAGE COMPLETED TRIP LENGTH	2.32	0.00	0.00	2.32	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (INCH)	11.85	0.00	0.00	11.85	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	30.09	0.00	0.00	30.09	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPEC: RBT TOTAL CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	704.04	0.00	0.00	704.04	243.32	0.00	0.00	243.32
APRWE	351.70	0.00	0.00	351.70	94.34	0.00	0.00	94.34
MAYWD	1486.92	0.00	0.00	1486.92	341.44	0.00	0.00	341.44
MAYWE	485.24	0.00	0.00	485.24	55.97	0.00	0.00	55.97
JUNWD	1907.35	0.00	0.00	1907.35	509.29	0.00	0.00	509.29
JUNWE	689.47	0.00	0.00	689.47	207.76	0.00	0.00	207.76
JULWD	1269.02	0.00	0.00	1269.02	317.16	0.00	0.00	317.16
JULWE	340.30	0.00	0.00	340.30	104.60	0.00	0.00	104.60
AUGWD	51.52	0.00	0.00	51.52	19.72	0.00	0.00	19.72
AUGWE	88.27	0.00	0.00	88.27	51.86	0.00	0.00	51.86
SEPWD	362.83	0.00	0.00	362.83	97.73	0.00	0.00	97.73
SEPWE	159.74	0.00	0.00	159.74	35.09	0.00	0.00	35.09
ALL	7896.39	0.00	0.00	7896.39	784.69	0.00	0.00	784.69

SPEC: RBT KEPT CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	552.28	0.00	0.00	552.28	196.02	0.00	0.00	196.02
APRWE	314.15	0.00	0.00	314.15	92.64	0.00	0.00	92.64
MAYWD	1354.04	0.00	0.00	1354.04	323.75	0.00	0.00	323.75
MAYWE	447.44	0.00	0.00	447.44	47.56	0.00	0.00	47.56
JUNWD	1715.75	0.00	0.00	1715.75	439.93	0.00	0.00	439.93
JUNWE	658.24	0.00	0.00	658.24	191.33	0.00	0.00	191.33
JULWD	1195.32	0.00	0.00	1195.32	311.94	0.00	0.00	311.94
JULWE	315.36	0.00	0.00	315.36	95.10	0.00	0.00	95.10
AUGWD	51.52	0.00	0.00	51.52	19.72	0.00	0.00	19.72
AUGWE	86.50	0.00	0.00	86.50	52.18	0.00	0.00	52.18
SEPWD	333.33	0.00	0.00	333.33	85.83	0.00	0.00	85.83
SEPWE	139.86	0.00	0.00	139.86	34.34	0.00	0.00	34.34
ALL	7163.77	0.00	0.00	7163.77	708.68	0.00	0.00	708.68

SPEC: RBT RETURNED CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	151.81	0.00	0.00	151.81	83.92	0.00	0.00	83.92
APRWE	37.41	0.00	0.00	37.41	14.95	0.00	0.00	14.95
MAYWD	132.85	0.00	0.00	132.85	57.67	0.00	0.00	57.67
MAYWE	38.38	0.00	0.00	38.38	13.98	0.00	0.00	13.98
JUNWD	191.21	0.00	0.00	191.21	95.37	0.00	0.00	95.37
JUNWE	30.94	0.00	0.00	30.94	17.60	0.00	0.00	17.60
JULWD	74.09	0.00	0.00	74.09	50.65	0.00	0.00	50.65
JULWE	24.68	0.00	0.00	24.68	12.30	0.00	0.00	12.30
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	1.76	0.00	0.00	1.76	1.76	0.00	0.00	1.76
SEPWD	29.53	0.00	0.00	29.53	25.00	0.00	0.00	25.00
SEPWE	19.89	0.00	0.00	19.89	10.06	0.00	0.00	10.06
ALL	732.53	0.00	0.00	732.53	153.75	0.00	0.00	153.75

SPEC: RBT TOTAL CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.91	0.00	0.00	0.91	1.26	0.00	0.00	1.26
APRWE	0.30	0.00	0.00	0.30	0.41	0.00	0.00	0.41
MAYWD	0.63	0.00	0.00	0.63	0.87	0.00	0.00	0.87
MAYWE	0.23	0.00	0.00	0.23	0.32	0.00	0.00	0.30
JUNWD	0.48	0.00	0.00	0.48	0.67	0.00	0.00	0.67
JUNWE	0.25	0.00	0.00	0.25	0.35	0.00	0.00	0.35
JULWD	0.32	0.00	0.00	0.32	0.45	0.00	0.00	0.45
JULWE	0.16	0.00	0.00	0.16	0.22	0.00	0.00	0.22
AUGWD	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.03
AUGWE	0.06	0.00	0.00	0.06	0.08	0.00	0.00	0.08
SEPWD	0.28	0.00	0.00	0.28	0.39	0.00	0.00	0.39
SEPWE	0.10	0.00	0.00	0.10	0.15	0.00	0.00	0.15
ALL	0.31	0.00	0.00	0.31	1.91	0.00	0.00	1.91

SPEC: RBT KEPT CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.72	0.00	0.00	0.72	0.99	0.00	0.00	0.99
APRWE	0.27	0.00	0.00	0.27	0.37	0.00	0.00	0.37
MAYWD	0.57	0.00	0.00	0.57	0.80	0.00	0.00	0.80
MAYWE	0.21	0.00	0.00	0.21	0.30	0.00	0.00	0.28
JUNWD	0.44	0.00	0.00	0.44	0.61	0.00	0.00	0.61
JUNWE	0.24	0.00	0.00	0.24	0.34	0.00	0.00	0.34
JULWD	0.30	0.00	0.00	0.30	0.42	0.00	0.00	0.42
JULWE	0.15	0.00	0.00	0.15	0.21	0.00	0.00	0.21
AUGWD	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.03
AUGWE	0.06	0.00	0.00	0.06	0.08	0.00	0.00	0.08
SEPWD	0.26	0.00	0.00	0.26	0.36	0.00	0.00	0.36
SEPWE	0.09	0.00	0.00	0.09	0.13	0.00	0.00	0.13
ALL	0.28	0.00	0.00	0.28	1.64	0.00	0.00	1.64

SPEC: RBT RETURN CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.20	0.00	0.00	0.20	0.28	0.00	0.00	0.28
APRWE	0.03	0.00	0.00	0.03	0.05	0.00	0.00	0.04
MAYWD	0.06	0.00	0.00	0.06	0.08	0.00	0.00	0.08
MAYWE	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.02
JUNWD	0.05	0.00	0.00	0.05	0.07	0.00	0.00	0.07
JUNWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
JULWD	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.03
JULWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWD	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.03
SEPWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
ALL	0.04	0.00	0.00	0.04	0.30	0.00	0.00	0.30

SPEC: RBT AVERAGE KEPT CATCH LENGTH (INCH)
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	12.21	0.00	0.00	12.21
APRWE	12.25	0.00	0.00	12.24
MAYWD	11.96	0.00	0.00	11.96
MAYWE	12.11	0.00	0.00	12.09
JUNWD	12.31	0.00	0.00	12.31
JUNWE	12.42	0.00	0.00	12.42
JULWD	12.05	0.00	0.00	12.05
JULWE	11.76	0.00	0.00	11.76
AUGWD	14.96	0.00	0.00	14.96
AUGWE	13.15	0.00	0.00	13.15
SEPWD	12.01	0.00	0.00	12.01
SEPWE	12.09	0.00	0.00	12.09
ALL	12.19	0.00	0.00	12.19

SPEC: RBT AVERAGE KEPT CATCH LENGTH (CM)
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	31.01	0.00	0.00	31.01
APRWE	31.10	0.00	0.00	31.09
MAYWD	30.37	0.00	0.00	30.37
MAYWE	30.76	0.00	0.00	30.72
JUNWD	31.27	0.00	0.00	31.27
JUNWE	31.55	0.00	0.00	31.55
JULWD	30.61	0.00	0.00	30.61
JULWE	29.88	0.00	0.00	29.88
AUGWD	37.99	0.00	0.00	37.99
AUGWE	33.41	0.00	0.00	33.41
SEPWD	30.50	0.00	0.00	30.50
SEPWE	30.72	0.00	0.00	30.72
ALL	30.96	0.00	0.00	30.96

SPEC: RBT AVERAGE KEPT CATCH WEIGHT (OZ)
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SPEC: RBT AVERAGE KEPT CATCH WEIGHT (GR)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

RBT SUMMARY REPORT

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
TOTAL CATCH	7896.39	0.00	0.00	7896.39	784.69	0.00	0.00	784.69
KEPT CATCH	7163.77	0.00	0.00	7163.77	708.68	0.00	0.00	708.68
RETURNED CATCH	732.53	0.00	0.00	732.53	153.75	0.00	0.00	153.75
TOTAL CATCH/HR	0.31	0.00	0.00	0.31	1.91	0.00	0.00	1.91
KEPT CATCH/HR	0.28	0.00	0.00	0.28	1.64	0.00	0.00	1.64
RETURN CATCH/HR	0.04	0.00	0.00	0.04	0.30	0.00	0.00	0.30
AVERAGE KEPT CATCH LENGTH (INCH)	12.19	0.00	0.00	12.19	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	30.96	0.00	0.00	30.96	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPEC: RBT MARK: AD TOTAL CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	573.60	0.00	0.00	573.60	184.66	0.00	0.00	184.66
APRWE	273.44	0.00	0.00	273.44	73.22	0.00	0.00	73.22
MAYWD	1037.10	0.00	0.00	1037.10	247.70	0.00	0.00	247.70
MAYWE	321.42	0.00	0.00	321.42	7.14	0.00	0.00	7.14
JUNWD	1360.98	0.00	0.00	1360.98	402.64	0.00	0.00	402.64
JUNWE	410.67	0.00	0.00	410.67	158.43	0.00	0.00	158.43
JULWD	650.18	0.00	0.00	650.18	137.83	0.00	0.00	137.83
JULWE	140.97	0.00	0.00	140.97	68.32	0.00	0.00	68.32
AUGWD	21.62	0.00	0.00	21.62	15.63	0.00	0.00	15.63
AUGWE	5.00	0.00	0.00	5.00	3.27	0.00	0.00	3.27
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	16.61	0.00	0.00	16.61	9.10	0.00	0.00	9.10
ALL	4811.60	0.00	0.00	4811.60	558.65	0.00	0.00	558.65

SPEC: RBT MARK: AD KEPT CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	482.72	0.00	0.00	482.72	164.76	0.00	0.00	164.76
APRWE	245.06	0.00	0.00	245.06	72.60	0.00	0.00	72.60
MAYWD	1020.60	0.00	0.00	1020.60	251.32	0.00	0.00	251.32
MAYWE	299.54	0.00	0.00	299.54	8.01	0.00	0.00	8.01
JUNWD	1217.58	0.00	0.00	1217.58	357.00	0.00	0.00	357.00
JUNWE	393.66	0.00	0.00	393.66	148.26	0.00	0.00	148.26
JULWD	583.61	0.00	0.00	583.61	142.36	0.00	0.00	142.36
JULWE	130.70	0.00	0.00	130.70	66.22	0.00	0.00	66.22
AUGWD	21.62	0.00	0.00	21.62	15.63	0.00	0.00	15.63
AUGWE	5.00	0.00	0.00	5.00	3.27	0.00	0.00	3.27
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	16.61	0.00	0.00	16.61	9.10	0.00	0.00	9.10
ALL	4416.69	0.00	0.00	4416.69	519.68	0.00	0.00	519.68

SPEC: RBT MARK: AD RETURNED CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	90.88	0.00	0.00	90.88	45.79	0.00	0.00	45.79
APRWE	28.52	0.00	0.00	28.52	11.18	0.00	0.00	11.18
MAYWD	15.99	0.00	0.00	15.99	15.99	0.00	0.00	15.99
MAYWE	21.88	0.00	0.00	21.88	11.50	0.00	0.00	11.50
JUNWD	143.43	0.00	0.00	143.43	72.27	0.00	0.00	72.27
JUNWE	17.00	0.00	0.00	17.00	11.08	0.00	0.00	11.08
JULWD	66.58	0.00	0.00	66.58	51.49	0.00	0.00	51.49
JULWE	10.00	0.00	0.00	10.00	8.12	0.00	0.00	8.12
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	394.27	0.00	0.00	394.27	103.31	0.00	0.00	103.31

SPEC: RBT MARK: AD TOTAL CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.74	0.00	0.00	0.74	1.03	0.00	0.00	1.03
APRWE	0.23	0.00	0.00	0.23	0.32	0.00	0.00	0.32
MAYWD	0.44	0.00	0.00	0.44	0.61	0.00	0.00	0.61
MAYWE	0.15	0.00	0.00	0.15	0.21	0.00	0.00	0.20
JUNWD	0.35	0.00	0.00	0.35	0.48	0.00	0.00	0.48
JUNWE	0.15	0.00	0.00	0.15	0.21	0.00	0.00	0.21
JULWD	0.16	0.00	0.00	0.16	0.23	0.00	0.00	0.23
JULWE	0.07	0.00	0.00	0.07	0.09	0.00	0.00	0.09
AUGWD	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
ALL	0.19	0.00	0.00	0.19	1.38	0.00	0.00	1.38

SPEC: RBT MARK: AD RETURN CATCH/HR
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.12	0.00	0.00	0.12	0.16	0.00	0.00	0.16
APRWE	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.03
MAYWD	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
MAYWE	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01
JUNWD	0.04	0.00	0.00	0.04	0.05	0.00	0.00	0.05
JUNWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
JULWD	0.02	0.00	0.00	0.02	0.02	0.00	0.00	0.02
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.02	0.00	0.00	0.02	0.18	0.00	0.00	0.18

SPEC: RBT MARK: AD RETURN CATCH/HR
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.12	0.00	0.00	0.12	0.16	0.00	0.00	0.16
APRWE	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.03
MAYWD	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
MAYWE	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01
JUNWD	0.04	0.00	0.00	0.04	0.05	0.00	0.00	0.05
JUNWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
JULWD	0.02	0.00	0.00	0.02	0.02	0.00	0.00	0.02
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.02	0.00	0.00	0.02	0.18	0.00	0.00	0.18

SPEC: RBT MARK: AD AVERAGE KEPT CATCH LENGTH (INCH)
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	12.32	0.00	0.00	0.00
APRWE	12.58	0.00	0.00	0.00
MAYWD	12.29	0.00	0.00	0.00
MAYWE	12.43	0.00	0.00	0.00
JUNWD	12.82	0.00	0.00	0.00
JUNWE	13.08	0.00	0.00	0.00
JULWD	13.19	0.00	0.00	0.00
JULWE	12.41	0.00	0.00	0.00
AUGWD	15.09	0.00	0.00	0.00
AUGWE	11.75	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	14.47	0.00	0.00	0.00
ALL	12.69	0.00	0.00	0.00

SPEC: RBT MARK: AD AVERAGE KEPT CATCH LENGTH (CM)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	31.29	0.00	0.00	0.00
APRWE	31.96	0.00	0.00	0.00
MAYWD	31.22	0.00	0.00	0.00
MAYWE	31.56	0.00	0.00	0.00
JUNWD	32.57	0.00	0.00	0.00
JUNWE	33.23	0.00	0.00	0.00
JULWD	33.51	0.00	0.00	0.00
JULWE	31.51	0.00	0.00	0.00
AUGWD	38.34	0.00	0.00	0.00
AUGWE	29.84	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	36.74	0.00	0.00	0.00
ALL	32.22	0.00	0.00	0.00

SPEC: RBT MARK: AD AVERAGE KEPT CATCH WEIGHT (OZ)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SPEC: RBT MARK: AD AVERAGE KEPT CATCH WEIGHT (GR)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

RBT Mark: AD SUMMARY REPORT

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
TOTAL CATCH	4811.60	0.00	0.00	4811.60	558.65	0.00	0.00	558.65
KEPT CATCH	4416.69	0.00	0.00	4416.69	519.68	0.00	0.00	519.68
RETURNED CATCH	394.27	0.00	0.00	394.27	103.31	0.00	0.00	103.31
TOTAL CATCH/HR	0.19	0.00	0.00	0.19	1.38	0.00	0.00	1.38
RETURN CATCH/HR	0.02	0.00	0.00	0.02	0.18	0.00	0.00	0.18
RETURN CATCH/HR	0.02	0.00	0.00	0.02	0.18	0.00	0.00	0.18
AVERAGE KEPT CATCH LENGTH (INCH)	12.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	32.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPEC: RBT MARK: P TOTAL CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	99.12	0.00	0.00	99.12	47.24	0.00	0.00	47.24
APRWE	74.67	0.00	0.00	74.67	25.95	0.00	0.00	25.95
MAYWD	420.96	0.00	0.00	420.96	129.39	0.00	0.00	129.39
MAYWE	164.30	0.00	0.00	164.30	29.56	0.00	0.00	29.56
JUNWD	525.55	0.00	0.00	525.55	158.50	0.00	0.00	158.50
JUNWE	279.14	0.00	0.00	279.14	74.87	0.00	0.00	74.87
JULWD	618.83	0.00	0.00	618.83	234.43	0.00	0.00	234.43
JULWE	194.58	0.00	0.00	194.58	83.73	0.00	0.00	83.73
AUGWD	29.90	0.00	0.00	29.90	16.98	0.00	0.00	16.98
AUGWE	76.95	0.00	0.00	76.95	52.78	0.00	0.00	52.78
SEPWD	83.05	0.00	0.00	83.05	50.38	0.00	0.00	50.38
SEPWE	5.57	0.00	0.00	5.57	3.91	0.00	0.00	3.91
ALL	2572.61	0.00	0.00	2572.61	344.74	0.00	0.00	344.74

SPEC: RBT MARK: P KEPT CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	53.97	0.00	0.00	53.97	30.22	0.00	0.00	30.22
APRWE	69.36	0.00	0.00	69.36	24.20	0.00	0.00	24.20
MAYWD	325.16	0.00	0.00	325.16	88.05	0.00	0.00	88.05
MAYWE	147.81	0.00	0.00	147.81	26.57	0.00	0.00	26.57
JUNWD	478.49	0.00	0.00	478.49	134.91	0.00	0.00	134.91
JUNWE	264.87	0.00	0.00	264.87	70.17	0.00	0.00	70.17
JULWD	611.33	0.00	0.00	611.33	236.00	0.00	0.00	236.00
JULWE	179.91	0.00	0.00	179.91	75.72	0.00	0.00	75.72
AUGWD	29.90	0.00	0.00	29.90	16.98	0.00	0.00	16.98
AUGWE	75.18	0.00	0.00	75.18	53.05	0.00	0.00	53.05
SEPWD	83.05	0.00	0.00	83.05	50.38	0.00	0.00	50.38
SEPWE	5.57	0.00	0.00	5.57	3.91	0.00	0.00	3.91
ALL	2324.59	0.00	0.00	2324.59	316.49	0.00	0.00	316.49

SPEC: RBT MARK: P RETURNED CATCH

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	45.15	0.00	0.00	45.15	25.55	0.00	0.00	25.55
APRWE	5.31	0.00	0.00	5.31	3.96	0.00	0.00	3.96
MAYWD	95.80	0.00	0.00	95.80	60.70	0.00	0.00	60.70
MAYWE	16.24	0.00	0.00	16.24	5.62	0.00	0.00	5.62
JUNWD	47.09	0.00	0.00	47.09	35.99	0.00	0.00	35.99
JUNWE	14.25	0.00	0.00	14.25	7.32	0.00	0.00	7.32
JULWD	7.51	0.00	0.00	7.51	7.51	0.00	0.00	7.51
JULWE	14.68	0.00	0.00	14.68	11.05	0.00	0.00	11.05
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	1.76	0.00	0.00	1.76	1.76	0.00	0.00	1.76
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	247.79	0.00	0.00	247.79	76.91	0.00	0.00	76.91

SPEC: RBT MARK: P TOTAL CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.13	0.00	0.00	0.13	0.18	0.00	0.00	0.18
APRWE	0.06	0.00	0.00	0.06	0.09	0.00	0.00	0.09
MAYWD	0.18	0.00	0.00	0.18	0.25	0.00	0.00	0.25
MAYWE	0.08	0.00	0.00	0.08	0.11	0.00	0.00	0.10
JUNWD	0.13	0.00	0.00	0.13	0.19	0.00	0.00	0.19
JUNWE	0.10	0.00	0.00	0.10	0.14	0.00	0.00	0.14
JULWD	0.16	0.00	0.00	0.16	0.22	0.00	0.00	0.22
JULWE	0.09	0.00	0.00	0.09	0.13	0.00	0.00	0.13
AUGWD	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
AUGWE	0.05	0.00	0.00	0.05	0.07	0.00	0.00	0.07
SEPWD	0.06	0.00	0.00	0.06	0.09	0.00	0.00	0.09
SEPWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.09	0.00	0.00	0.09	0.50	0.00	0.00	0.50

SPEC: RBT MARK: P RETURN CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.06	0.00	0.00	0.06	0.08	0.00	0.00	0.08
APRWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWD	0.04	0.00	0.00	0.04	0.06	0.00	0.00	0.06
MAYWE	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01
JUNWD	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
JUNWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.01	0.00	0.00	0.01	0.10	0.00	0.00	0.10

SPEC: RBT MARK: P RETURN CATCH/HR

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.06	0.00	0.00	0.06	0.08	0.00	0.00	0.08
APRWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWD	0.04	0.00	0.00	0.04	0.06	0.00	0.00	0.06
MAYWE	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01
JUNWD	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
JUNWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.01	0.00	0.00	0.01	0.10	0.00	0.00	0.10

SPEC: RBT MARK: P AVERAGE KEPT CATCH LENGTH (INCH)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	10.90	0.00	0.00	0.00
APRWE	11.06	0.00	0.00	0.00
MAYWD	10.91	0.00	0.00	0.00
MAYWE	11.47	0.00	0.00	0.00
JUNWD	11.02	0.00	0.00	0.00
JUNWE	11.44	0.00	0.00	0.00
JULWD	10.96	0.00	0.00	0.00
JULWE	11.29	0.00	0.00	0.00
AUGWD	14.86	0.00	0.00	0.00
AUGWE	13.41	0.00	0.00	0.00
SEPWD	12.04	0.00	0.00	0.00
SEPWE	12.68	0.00	0.00	0.00
ALL	11.38	0.00	0.00	0.00

SPEC: RBT MARK: P AVERAGE KEPT CATCH LENGTH (CM)

Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	27.69	0.00	0.00	0.00
APRWE	28.10	0.00	0.00	0.00
MAYWD	27.72	0.00	0.00	0.00
MAYWE	29.14	0.00	0.00	0.00
JUNWD	27.98	0.00	0.00	0.00
JUNWE	29.05	0.00	0.00	0.00
JULWD	27.84	0.00	0.00	0.00
JULWE	28.68	0.00	0.00	0.00
AUGWD	37.74	0.00	0.00	0.00
AUGWE	34.05	0.00	0.00	0.00
SEPWD	30.59	0.00	0.00	0.00
SEPWE	32.20	0.00	0.00	0.00
ALL	28.89	0.00	0.00	0.00

SPEC: RBT MARK: P AVERAGE KEPT CATCH WEIGHT (OZ)
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SPEC: RBT MARK: P AVERAGE KEPT CATCH WEIGHT (GR)
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

RBT Mark: P SUMMARY REPORT
Water: 54851 Water Name: FLATIRON RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
TOTAL CATCH	2572.61	0.00	0.00	2572.61	344.74	0.00	0.00	344.74
KEPT CATCH	2324.59	0.00	0.00	2324.59	316.49	0.00	0.00	316.49
RETURNED CATCH	247.79	0.00	0.00	247.79	76.91	0.00	0.00	76.91
TOTAL CATCH/HR	0.09	0.00	0.00	0.09	0.50	0.00	0.00	0.50
RETURN CATCH/HR	0.01	0.00	0.00	0.01	0.10	0.00	0.00	0.10
RETURN CATCH/HR	0.01	0.00	0.00	0.01	0.10	0.00	0.00	0.10
AVERAGE KEPT CATCH LENGTH (INCH)	11.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	28.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FISHERMAN-HOURS

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	476.00	217.00	77.00	770.00	159.62	65.67	44.27	216.41
APRWE	1356.75	488.25	121.50	1966.50	395.46	163.88	38.52	566.08
MAYWD	1242.58	654.06	18.69	1915.04	222.50	288.04	18.69	300.65
MAYWE	2193.70	879.20	92.00	3165.00	372.09	246.97	32.06	562.85
JUNWD	2048.81	413.44	119.44	2581.69	435.82	164.90	80.92	535.35
JUNWE	2647.24	753.30	181.13	3581.66	202.89	90.79	36.09	218.21
JULWD	2849.00	731.50	67.38	3647.88	385.27	185.21	36.92	501.12
JULWE	2123.40	627.60	131.90	2882.90	135.06	98.93	27.38	142.29
AUGWD	2167.98	450.80	16.10	2634.88	545.74	160.64	16.10	691.97
AUGWE	2037.00	752.50	77.00	2866.50	112.47	117.66	22.91	155.08
SEPWD	983.50	357.50	73.00	1413.75	179.85	107.92	33.50	233.08
SEPWE	1302.44	686.11	30.00	2018.44	227.37	71.62	14.86	274.26
ALL	21428.40	7011.26	1005.13	29444.24	1078.02	557.74	130.05	1418.61

FISHERMAN

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	291.68	392.00	108.00	379.95	113.09	191.49	108.00	247.97
APRWE	571.30	174.52	81.00	651.40	148.92	54.68	81.00	261.31
MAYWD	673.84	780.72	0.00	1105.39	216.33	363.13	0.00	697.74
MAYWE	1051.41	608.40	0.00	1337.43	252.49	323.19	0.00	583.91
JUNWD	963.58	176.40	110.25	1099.36	264.81	58.80	110.25	292.81
JUNWE	1793.04	459.38	6.30	1572.92	874.75	221.86	6.30	1291.32
JULWD	1094.01	263.08	0.00	1367.56	357.85	88.40	0.00	402.14
JULWE	6060.52	244.13	0.00	1451.73	4135.49	96.02	0.00	4183.32
AUGWD	829.40	175.87	0.00	913.61	246.53	70.30	0.00	348.72
AUGWE	624.06	321.03	0.00	961.49	185.91	102.52	0.00	255.30
SEPWD	178.72	94.68	0.00	368.63	62.12	32.96	0.00	163.62
SEPWE	369.64	193.56	0.00	527.38	97.05	62.27	0.00	215.33
ALL	14501.18	3883.77	305.55	11736.84	4280.16	605.06	174.41	4542.31

TOTAL CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	238.15	0.00	72.00	310.15	207.84	0.00	41.57	211.96
APRWE	395.09	119.13	13.50	527.72	127.99	51.85	10.67	203.70
MAYWD	547.41	430.47	0.00	977.87	162.31	271.73	0.00	496.71
MAYWE	653.75	322.28	0.00	976.03	102.60	117.68	0.00	291.50
JUNWD	997.96	147.00	147.00	1291.96	285.98	127.31	90.02	500.99
JUNWE	429.07	27.56	1.58	458.21	131.32	20.59	1.58	138.22
JULWD	1383.63	265.22	0.00	1648.85	285.38	165.59	0.00	408.31
JULWE	590.90	52.50	0.00	643.40	109.75	35.12	0.00	147.07
AUGWD	525.09	118.74	0.00	643.83	136.03	50.50	0.00	183.95
AUGWE	438.03	87.68	0.00	525.71	80.40	35.76	0.00	129.10
SEPWD	601.62	65.83	0.00	667.45	235.70	44.99	0.00	265.57
SEPWE	545.18	115.68	0.00	660.86	98.52	82.63	0.00	181.53
ALL	7345.88	1752.09	234.08	9332.04	615.78	385.15	99.74	1015.16

KEPT CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	150.12	0.00	72.00	222.12	123.49	0.00	41.57	130.30
APRWE	342.37	114.80	0.00	457.17	110.10	48.81	0.00	175.26
MAYWD	530.07	417.18	0.00	947.25	159.93	273.34	0.00	496.25
MAYWE	561.92	322.28	0.00	884.20	91.57	117.68	0.00	283.44
JUNWD	945.63	147.00	0.00	1092.63	282.70	127.31	0.00	436.88
JUNWE	370.60	27.56	1.58	399.74	108.57	20.59	1.58	115.45
JULWD	1250.88	265.22	0.00	1516.10	288.87	165.59	0.00	392.24
JULWE	452.09	22.75	0.00	474.84	88.97	22.75	0.00	108.67
AUGWD	408.12	81.84	0.00	489.97	112.66	49.78	0.00	162.44
AUGWE	408.03	64.40	0.00	472.43	84.23	33.93	0.00	116.10
SEPWD	356.78	39.92	0.00	396.70	116.39	26.97	0.00	145.29
SEPWE	324.42	97.16	0.00	421.58	80.32	78.51	0.00	161.87
ALL	6101.02	1600.12	73.58	7774.72	533.09	382.14	41.60	911.77

RETURNED CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	88.03	0.00	0.00	88.03	84.59	0.00	0.00	84.59
APRWE	52.72	4.33	13.50	70.55	25.82	4.05	10.67	39.51
MAYWD	17.33	13.29	0.00	30.62	17.33	10.51	0.00	20.27
MAYWE	91.83	0.00	0.00	91.83	64.75	0.00	0.00	64.75
JUNWD	52.34	0.00	147.00	199.34	23.76	0.00	90.02	104.63
JUNWE	58.47	0.00	0.00	58.47	26.20	0.00	0.00	26.20
JULWD	132.75	0.00	0.00	132.75	82.73	0.00	0.00	82.73
JULWE	138.80	29.75	0.00	168.55	59.45	29.75	0.00	82.62
AUGWD	116.97	36.90	0.00	153.87	52.05	24.68	0.00	62.44
AUGWE	30.00	23.28	0.00	53.28	12.23	15.24	0.00	26.34
SEPWD	244.84	25.91	0.00	270.75	141.89	25.91	0.00	148.65
SEPWE	220.77	18.52	0.00	239.28	64.63	18.52	0.00	69.93
ALL	1244.86	151.97	160.50	1557.33	226.08	53.55	90.65	264.96

TOTAL CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.50	0.00	0.94	0.40	0.61	0.00	1.89	0.36
APRWE	0.29	0.24	0.11	0.27	0.40	0.34	0.21	0.28
MAYWD	0.44	0.66	0.00	0.51	0.62	1.03	0.00	0.53
MAYWE	0.30	0.37	0.00	0.31	0.42	0.60	0.00	0.33
JUNWD	0.49	0.36	1.23	0.50	0.67	0.59	1.93	0.56
JUNWE	0.16	0.04	0.01	0.13	0.23	0.05	0.01	0.15
JULWD	0.49	0.36	0.00	0.45	0.68	0.53	0.00	0.53
JULWE	0.28	0.08	0.00	0.22	0.39	0.12	0.00	0.26
AUGWD	0.24	0.26	0.00	0.24	0.33	0.41	0.00	0.28
AUGWE	0.22	0.12	0.00	0.18	0.30	0.16	0.00	0.21
SEPWD	0.61	0.18	0.00	0.47	0.84	0.26	0.00	0.53
SEPWE	0.42	0.17	0.00	0.33	0.59	0.24	0.00	0.35
ALL	0.37	0.24	0.19	0.34	1.30	1.06	1.01	1.13

KEPT CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.32	0.00	0.94	0.29	0.39	0.00	1.89	0.25
APRWE	0.25	0.24	0.00	0.23	0.35	0.33	0.00	0.24
MAYWD	0.43	0.64	0.00	0.49	0.60	0.99	0.00	0.51
MAYWE	0.26	0.37	0.00	0.28	0.36	0.60	0.00	0.30
JUNWD	0.46	0.36	0.00	0.42	0.64	0.59	0.00	0.49
JUNWE	0.14	0.04	0.01	0.11	0.20	0.05	0.01	0.13
JULWD	0.44	0.36	0.00	0.42	0.61	0.53	0.00	0.48
JULWE	0.21	0.04	0.00	0.16	0.30	0.05	0.00	0.20
AUGWD	0.19	0.18	0.00	0.19	0.26	0.28	0.00	0.22
AUGWE	0.20	0.09	0.00	0.16	0.28	0.12	0.00	0.19
SEPWD	0.36	0.11	0.00	0.28	0.51	0.16	0.00	0.32
SEPWE	0.25	0.14	0.00	0.21	0.35	0.20	0.00	0.22
ALL	0.29	0.21	0.08	0.27	1.13	1.04	1.00	1.06

RETURN CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.18	0.00	0.00	0.11	0.22	0.00	0.00	0.11
APRWE	0.04	0.01	0.11	0.04	0.05	0.01	0.21	0.04
MAYWD	0.01	0.02	0.00	0.02	0.02	0.04	0.00	0.02
MAYWE	0.04	0.00	0.00	0.03	0.06	0.00	0.00	0.03
JUNWD	0.03	0.00	1.23	0.08	0.04	0.00	1.93	0.05
JUNWE	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.02
JULWD	0.05	0.00	0.00	0.04	0.07	0.00	0.00	0.05
JULWE	0.07	0.05	0.00	0.06	0.09	0.07	0.00	0.07
AUGWD	0.05	0.08	0.00	0.06	0.07	0.13	0.00	0.07
AUGWE	0.01	0.03	0.00	0.02	0.02	0.04	0.00	0.02
SEPWD	0.25	0.07	0.00	0.19	0.34	0.10	0.00	0.21
SEPWE	0.17	0.03	0.00	0.12	0.24	0.04	0.00	0.13
ALL	0.08	0.02	0.11	0.06	1.06	1.00	1.01	1.02

AVERAGE COMPLETED TRIP LENGTH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	2.49	3.07	3.50	2.66
APRWE	2.59	3.77	3.00	3.09
MAYWD	2.80	1.83	0.00	2.44
MAYWE	3.02	4.03	0.00	3.29
JUNWD	2.78	2.75	6.00	2.96
JUNWE	5.05	2.08	10.00	4.23
JULWD	3.72	3.67	0.00	3.70
JULWE	2.30	3.45	0.00	2.58
AUGWD	3.69	3.21	0.00	3.50
AUGWE	4.28	3.53	0.00	4.04
SEPWD	5.57	3.80	0.00	4.83
SEPWE	4.48	4.72	0.00	4.54
ALL	3.32	3.36	5.57	3.36

AVERAGE KEPT CATCH LENGTH (INCH)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	12.73	0.00	0.00	12.75
APRWE	12.03	12.74	0.00	12.18
MAYWD	12.23	11.63	0.00	12.26
MAYWE	12.27	12.82	0.00	12.29
JUNWD	12.46	12.33	0.00	12.45
JUNWE	12.64	12.37	11.05	12.65
JULWD	12.05	11.18	0.00	12.01
JULWE	12.01	13.00	0.00	12.05
AUGWD	11.51	12.13	0.00	11.61
AUGWE	11.63	11.09	0.00	11.65
SEPWD	12.06	11.90	0.00	12.00
SEPWE	11.80	11.90	0.00	11.86
ALL	12.10	12.18	106.01	12.13

AVERAGE KEPT CATCH LENGTH (CM)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	32.33	0.00	0.00	32.40
APRWE	30.55	32.35	0.00	30.94
MAYWD	31.06	29.54	0.00	31.13
MAYWE	31.16	32.57	0.00	31.21
JUNWD	31.66	31.33	0.00	31.63
JUNWE	32.11	31.42	28.07	32.14
JULWD	30.60	28.39	0.00	30.50
JULWE	30.51	33.02	0.00	30.62
AUGWD	29.23	30.81	0.00	29.49
AUGWE	29.53	28.18	0.00	29.59
SEPWD	30.62	30.22	0.00	30.48
SEPWE	29.98	30.22	0.00	30.12
ALL	30.73	30.94	269.26	30.82

AVERAGE KEPT CATCH WEIGHT (OZ)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

AVERAGE KEPT CATCH WEIGHT (GR)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SUMMARY

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
FISHERMAN-HOURS	21428.40	7011.26	1005.12	29444.24	1078.02	557.74	130.05	1418.61
FISHERMAN	14501.18	3883.77	305.55	11736.84	4280.16	605.06	174.41	4542.31
TOTAL CATCH	7345.88	1752.09	234.08	9332.04	615.78	385.15	99.74	1015.16
KEPT CATCH	6101.02	1600.12	73.57	7774.72	533.09	382.14	41.60	911.77
RETURNED CATCH	1244.86	151.97	160.50	1557.33	226.08	53.55	90.65	264.96
TOTAL CATCH/HR	0.37	0.24	0.19	0.34	1.30	1.06	1.01	1.13
KEPT CATCH/HR	0.29	0.21	0.08	0.27	1.13	1.04	1.00	1.06
RETURN CATCH/HR	0.08	0.02	0.11	0.06	1.06	1.00	1.01	1.02
AVERAGE COMPLETED TRIP LENGTH	3.32	3.36	5.57	3.36	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (INCH)	12.10	12.18	106.01	12.13	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	30.73	30.94	269.26	30.82	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPEC: RBT TOTAL CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	235.08	0.00	71.96	307.04	208.05	0.00	41.55	212.15
APRWE	311.99	89.76	13.50	415.24	109.36	37.99	10.67	166.88
MAYWD	444.10	417.36	0.00	861.46	101.12	273.44	0.00	406.22
MAYWE	564.71	248.09	0.00	812.80	104.72	95.78	0.00	251.18
JUNWD	831.94	147.00	147.07	1126.01	246.94	127.31	90.06	452.12
JUNWE	364.95	20.39	0.79	386.12	129.72	20.39	0.79	132.63
JULWD	773.47	133.13	0.00	906.60	145.65	70.32	0.00	209.53
JULWE	318.22	22.75	0.00	340.97	89.97	22.75	0.00	107.55
AUGWD	122.80	20.13	0.00	142.92	41.94	18.00	0.00	59.65
AUGWE	153.05	11.90	0.00	164.95	48.91	11.90	0.00	53.86
SEPWD	324.80	23.68	0.00	348.48	120.09	16.48	0.00	132.84
SEPWE	212.62	25.93	0.00	238.56	45.33	25.93	0.00	57.62
ALL	4657.73	1160.11	233.32	6051.15	451.86	329.97	99.76	778.37

SPEC: RBT KEPT CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	146.93	0.00	0.00	146.93	123.51	0.00	0.00	123.51
APRWE	278.00	89.76	13.50	381.25	98.17	37.99	10.67	155.66
MAYWD	426.88	417.36	0.00	844.24	95.53	273.44	0.00	404.86
MAYWE	483.48	248.09	0.00	731.57	92.28	95.78	0.00	242.98
JUNWD	786.66	147.00	147.07	1080.73	241.67	127.31	90.06	446.75
JUNWE	325.49	20.39	0.00	345.87	105.31	20.39	0.00	108.75
JULWD	766.73	133.13	0.00	899.86	149.46	70.32	0.00	210.72
JULWE	289.08	22.75	0.00	311.83	88.81	22.75	0.00	106.57
AUGWD	104.08	20.13	0.00	124.20	42.21	18.00	0.00	59.83
AUGWE	141.43	11.90	0.00	153.33	50.36	11.90	0.00	53.75
SEPWD	221.08	23.68	0.00	244.75	83.76	16.48	0.00	98.90
SEPWE	119.73	11.12	0.00	130.86	45.77	11.12	0.00	48.76
ALL	4089.55	1145.30	160.57	5395.42	394.56	329.14	90.69	740.43

SPEC: RBT RETURNED CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	87.97	0.00	0.00	87.97	84.51	0.00	0.00	84.51
APRWE	33.57	0.00	13.50	47.07	19.61	0.00	10.67	32.74
MAYWD	17.42	0.00	0.00	17.42	17.42	0.00	0.00	17.42
MAYWE	81.23	0.00	0.00	81.23	65.45	0.00	0.00	65.45
JUNWD	45.28	0.00	147.07	192.35	24.59	0.00	90.06	104.71
JUNWE	39.02	0.00	0.00	39.02	26.73	0.00	0.00	26.73
JULWD	6.74	0.00	0.00	6.74	6.74	0.00	0.00	6.74
JULWE	28.95	0.00	0.00	28.95	11.74	0.00	0.00	11.74
AUGWD	18.49	0.00	0.00	18.49	12.47	0.00	0.00	12.47
AUGWE	11.38	0.00	0.00	11.38	6.41	0.00	0.00	6.41
SEPWD	103.73	0.00	0.00	103.73	68.92	0.00	0.00	68.92
SEPWE	92.88	14.80	0.00	107.68	27.67	14.80	0.00	33.34
ALL	566.65	14.80	160.57	742.02	139.02	14.80	90.69	175.27

SPEC: RBT TOTAL CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.49	0.00	0.93	1.43	0.60	0.00	1.89	0.68
APRWE	0.23	0.18	0.11	0.52	0.32	0.26	0.21	0.35
MAYWD	0.36	0.64	0.00	1.00	0.50	0.99	0.00	0.69
MAYWE	0.26	0.28	0.00	0.54	0.36	0.46	0.00	0.40
JUNWD	0.41	0.36	1.23	1.99	0.56	0.59	1.94	1.02
JUNWE	0.14	0.03	0.00	0.17	0.19	0.04	0.00	0.16
JULWD	0.27	0.18	0.00	0.45	0.38	0.26	0.00	0.39
JULWE	0.15	0.04	0.00	0.19	0.21	0.05	0.00	0.18
AUGWD	0.06	0.04	0.00	0.10	0.08	0.07	0.00	0.09
AUGWE	0.08	0.02	0.00	0.09	0.11	0.02	0.00	0.08
SEPWD	0.33	0.07	0.00	0.40	0.46	0.09	0.00	0.36
SEPWE	0.16	0.04	0.00	0.20	0.23	0.05	0.00	0.17
ALL	0.24	0.16	0.19	0.59	1.29	1.31	2.72	1.62

SPEC: RBT KEPT CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.31	0.00	0.00	0.31	0.38	0.00	0.00	0.24
APRWE	0.20	0.18	0.11	0.50	0.28	0.26	0.21	0.32
MAYWD	0.34	0.64	0.00	0.98	0.48	0.99	0.00	0.67
MAYWE	0.22	0.28	0.00	0.50	0.31	0.46	0.00	0.37
JUNWD	0.38	0.36	1.23	1.97	0.53	0.59	1.94	0.99
JUNWE	0.12	0.03	0.00	0.15	0.17	0.04	0.00	0.14
JULWD	0.27	0.18	0.00	0.45	0.38	0.26	0.00	0.39
JULWE	0.14	0.04	0.00	0.17	0.19	0.05	0.00	0.16
AUGWD	0.05	0.04	0.00	0.09	0.07	0.07	0.00	0.08
AUGWE	0.07	0.02	0.00	0.09	0.10	0.02	0.00	0.08
SEPWD	0.22	0.07	0.00	0.29	0.32	0.09	0.00	0.26
SEPWE	0.09	0.02	0.00	0.11	0.13	0.02	0.00	0.09
ALL	0.20	0.15	0.11	0.47	1.08	1.31	1.95	1.42

SPEC: RBT RETURN CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.18	0.00	0.00	0.18	0.22	0.00	0.00	0.14
APRWE	0.02	0.00	0.11	0.14	0.04	0.00	0.21	0.06
MAYWD	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.01
MAYWE	0.04	0.00	0.00	0.04	0.05	0.00	0.00	0.03
JUNWD	0.02	0.00	1.23	1.25	0.03	0.00	1.94	0.20
JUNWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.01
AUGWD	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00
AUGWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
SEPWD	0.11	0.00	0.00	0.11	0.14	0.00	0.00	0.10
SEPWE	0.07	0.02	0.00	0.09	0.10	0.03	0.00	0.08
ALL	0.04	0.00	0.11	0.16	0.29	0.03	1.95	0.29

SPEC: RBT AVERAGE KEPT CATCH LENGTH (INCH)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	12.73	0.00	12.93	12.76
APRWE	12.05	12.64	0.00	12.16
MAYWD	11.98	11.63	0.00	12.00
MAYWE	11.99	12.73	0.00	12.02
JUNWD	12.65	12.33	0.00	12.63
JUNWE	12.43	12.50	11.85	12.44
JULWD	12.72	11.85	0.00	12.69
JULWE	12.63	13.00	0.00	12.64
AUGWD	13.03	14.83	0.00	13.14
AUGWE	12.98	13.00	0.00	13.02
SEPWD	12.20	12.00	0.00	12.12
SEPWE	12.49	15.50	0.00	12.63
ALL	12.41	12.50	12.86	12.42

SPEC: RBT AVERAGE KEPT CATCH LENGTH (CM)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	32.34	0.00	32.83	32.41
APRWE	30.60	32.11	0.00	30.89
MAYWD	30.44	29.54	0.00	30.48
MAYWE	30.45	32.34	0.00	30.54
JUNWD	32.12	31.33	0.00	32.07
JUNWE	31.57	31.75	30.10	31.60
JULWD	32.32	30.10	0.00	32.23
JULWE	32.09	33.02	0.00	32.11
AUGWD	33.10	37.68	0.00	33.38
AUGWE	32.97	33.02	0.00	33.08
SEPWD	31.00	30.48	0.00	30.79
SEPWE	31.72	39.37	0.00	32.07
ALL	31.51	31.74	32.66	31.55

SPEC: RBT AVERAGE KEPT CATCH WEIGHT (OZ)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SPEC: RBT AVERAGE KEPT CATCH WEIGHT (GR)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

RBT SUMMARY REPORT

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
TOTAL CATCH	4657.73	1160.11	233.32	6051.15	451.86	329.97	99.76	778.37
KEPT CATCH	4089.55	1145.30	160.57	5395.42	394.56	329.14	90.69	740.43
RETURNED CATCH	566.65	14.80	160.57	742.02	139.02	14.80	90.69	175.27
TOTAL CATCH/HR	0.24	0.16	0.19	0.59	1.29	1.31	2.72	1.62
KEPT CATCH/HR	0.20	0.15	0.11	0.47	1.08	1.31	1.95	1.42
RETURN CATCH/HR	0.04	0.00	0.11	0.16	0.29	0.03	1.95	0.29
AVERAGE KEPT CATCH LENGTH (INCH)	12.41	12.50	12.86	12.42	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	31.51	31.74	32.66	31.55	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPEC: RBT MARK: P TOTAL CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	69.58	0.00	0.00	69.58	58.30	0.00	0.00	58.30
APRWE	82.25	19.41	0.00	101.66	32.09	8.32	0.00	42.83
MAYWD	89.10	249.37	0.00	338.46	38.37	197.14	0.00	226.10
MAYWE	138.01	72.57	0.00	210.58	41.50	39.23	0.00	76.14
JUNWD	343.51	0.00	147.07	490.58	79.75	0.00	90.06	180.85
JUNWE	106.57	0.00	0.39	106.97	52.93	0.00	0.39	52.96
JULWD	257.26	44.00	0.00	301.26	106.50	41.16	0.00	121.99
JULWE	157.37	22.76	0.00	180.13	63.72	15.05	0.00	75.92
AUGWD	79.99	20.13	0.00	100.12	43.35	18.00	0.00	60.64
AUGWE	80.39	11.90	0.00	92.29	19.43	11.90	0.00	29.78
SEPWD	19.40	0.00	0.00	19.40	12.77	0.00	0.00	12.77
SEPWE	47.26	0.00	0.00	47.26	31.89	0.00	0.00	31.89
ALL	1470.69	440.14	147.46	2058.29	188.74	207.02	90.06	352.22

SPEC: RBT MARK: P KEPT CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	32.62	0.00	0.00	32.62	22.16	0.00	0.00	22.16
APRWE	73.64	19.41	0.00	93.06	31.64	8.32	0.00	41.79
MAYWD	71.67	249.37	0.00	321.04	25.74	197.14	0.00	224.30
MAYWE	138.01	72.57	0.00	210.58	41.50	39.23	0.00	76.14
JUNWD	335.21	0.00	0.00	335.21	75.04	0.00	0.00	75.04
JUNWE	77.43	0.00	0.39	77.83	38.31	0.00	0.39	38.35
JULWD	257.26	44.00	0.00	301.26	106.50	41.16	0.00	121.99
JULWE	148.52	22.76	0.00	171.28	64.89	15.05	0.00	76.91
AUGWD	72.01	20.13	0.00	92.14	44.08	18.00	0.00	61.17
AUGWE	69.02	11.90	0.00	80.92	19.59	11.90	0.00	27.16
SEPWD	19.40	0.00	0.00	19.40	12.77	0.00	0.00	12.77
SEPWE	8.52	0.00	0.00	8.52	3.41	0.00	0.00	3.41
ALL	1303.33	440.14	0.39	1743.86	170.38	207.02	0.39	301.50

SPEC: RBT MARK: P RETURNED CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	36.96	0.00	0.00	36.96	36.96	0.00	0.00	36.96
APRWE	8.78	0.00	0.00	8.78	5.93	0.00	0.00	5.93
MAYWD	17.42	0.00	0.00	17.42	17.42	0.00	0.00	17.42
MAYWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWD	8.72	0.00	147.07	155.79	8.72	0.00	90.06	90.48
JUNWE	28.88	0.00	0.00	28.88	17.52	0.00	0.00	17.52
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	8.85	0.00	0.00	8.85	6.13	0.00	0.00	6.13
AUGWD	7.98	0.00	0.00	7.98	7.98	0.00	0.00	7.98
AUGWE	11.38	0.00	0.00	11.38	6.41	0.00	0.00	6.41
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	38.73	0.00	0.00	38.73	30.67	0.00	0.00	30.67
ALL	167.70	0.00	147.07	314.77	56.31	0.00	90.06	106.22

SPEC: RBT MARK: P TOTAL CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.15	0.00	0.00	0.15	0.18	0.00	0.00	0.11
APRWE	0.06	0.04	0.00	0.10	0.08	0.06	0.00	0.08
MAYWD	0.07	0.38	0.00	0.45	0.10	0.58	0.00	0.27
MAYWE	0.06	0.08	0.00	0.15	0.09	0.14	0.00	0.11
JUNWD	0.17	0.00	1.23	1.40	0.23	0.00	1.94	0.54
JUNWE	0.04	0.00	0.00	0.04	0.06	0.00	0.00	0.04
JULWD	0.09	0.06	0.00	0.15	0.13	0.09	0.00	0.13
JULWE	0.07	0.04	0.00	0.11	0.10	0.05	0.00	0.10
AUGWD	0.04	0.04	0.00	0.08	0.05	0.07	0.00	0.07
AUGWE	0.04	0.02	0.00	0.06	0.06	0.02	0.00	0.05
SEPWD	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.02
SEPWE	0.04	0.00	0.00	0.04	0.05	0.00	0.00	0.03
ALL	0.07	0.06	0.10	0.23	0.39	0.61	1.94	0.66

SPEC: RBT MARK: P RETURN CATCH/HR
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.08	0.00	0.00	0.08	0.09	0.00	0.00	0.06
APRWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
MAYWD	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.01
MAYWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	1.23	1.24	0.00	0.00	1.94	0.12
JUNWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.01
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.03	0.00	0.00	0.03	0.04	0.00	0.00	0.03
ALL	0.01	0.00	0.10	0.12	0.11	0.00	1.94	0.14

SPEC: RBT MARK: P RETURN CATCH/HR
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.08	0.00	0.00	0.08	0.09	0.00	0.00	0.06
APRWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
MAYWD	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.01
MAYWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	1.23	1.24	0.00	0.00	1.94	0.12
JUNWE	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.01
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.03	0.00	0.00	0.03	0.04	0.00	0.00	0.03
ALL	0.01	0.00	0.10	0.12	0.11	0.00	1.94	0.14

SPEC: RBT MARK: P AVERAGE KEPT CATCH LENGTH (INCH)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	12.30	0.00	0.00	0.00
APRWE	11.50	11.65	0.00	0.00
MAYWD	11.64	11.34	0.00	0.00
MAYWE	11.17	12.34	0.00	0.00
JUNWD	12.00	0.00	0.00	0.00
JUNWE	11.34	0.00	11.00	0.00
JULWD	11.59	10.75	0.00	0.00
JULWE	12.46	13.00	0.00	0.00
AUGWD	13.17	14.83	0.00	0.00
AUGWE	12.82	13.00	0.00	0.00
SEPWD	12.39	0.00	0.00	0.00
SEPWE	15.89	0.00	0.00	0.00
ALL	11.95	12.08	11.00	0.00

SPEC: RBT MARK: P AVERAGE KEPT CATCH LENGTH (CM)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	31.25	0.00	0.00	0.00
APRWE	29.21	29.60	0.00	0.00
MAYWD	29.58	28.80	0.00	0.00
MAYWE	28.38	31.34	0.00	0.00
JUNWD	30.49	0.00	0.00	0.00
JUNWE	28.80	0.00	27.94	0.00
JULWD	29.45	27.30	0.00	0.00
JULWE	31.64	33.02	0.00	0.00
AUGWD	33.44	37.68	0.00	0.00
AUGWE	32.55	33.02	0.00	0.00
SEPWD	31.48	0.00	0.00	0.00
SEPWE	40.36	0.00	0.00	0.00
ALL	30.35	30.68	27.94	0.00

SPEC: RBT MARK: P AVERAGE KEPT CATCH WEIGHT (OZ)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SPEC: RBT MARK: P AVERAGE KEPT CATCH WEIGHT (GR)
Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

RBT Mark: P SUMMARY REPORT

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
TOTAL CATCH	1470.69	440.14	147.46	2058.29	188.74	207.02	90.06	352.22
KEPT CATCH	1303.33	440.14	0.39	1743.86	170.38	207.02	0.39	301.50
RETURNED CATCH	167.70	0.00	147.07	314.77	56.31	0.00	90.06	106.22
TOTAL CATCH/HR	0.07	0.06	0.10	0.23	0.39	0.61	1.94	0.66
RETURN CATCH/HR	0.01	0.00	0.10	0.12	0.11	0.00	1.94	0.14
RETURN CATCH/HR	0.01	0.00	0.10	0.12	0.11	0.00	1.94	0.14
AVERAGE KEPT CATCH LENGTH (INCH)	11.95	12.08	11.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	30.35	30.68	27.94	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPEC: RBT MARK: AD TOTAL CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	153.04	0.00	71.96	225.00	151.16	0.00	41.55	156.77
APRWE	195.76	70.41	13.50	279.67	71.89	29.90	10.67	117.46
MAYWD	308.52	167.95	0.00	476.46	57.94	88.89	0.00	180.17
MAYWE	418.99	175.73	0.00	594.72	88.80	68.13	0.00	187.86
JUNWD	479.75	97.97	0.00	577.71	203.75	84.84	0.00	296.19
JUNWE	258.37	20.39	0.39	279.15	82.26	20.39	0.39	84.82
JULWD	490.02	89.13	0.00	579.15	85.73	65.05	0.00	154.82
JULWE	150.04	0.00	0.00	150.04	48.16	0.00	0.00	48.16
AUGWD	42.80	0.00	0.00	42.80	25.32	0.00	0.00	25.32
AUGWE	67.41	0.00	0.00	67.41	35.34	0.00	0.00	35.34
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	2564.70	621.57	85.85	3272.12	314.80	159.00	42.90	478.77

SPEC: RBT MARK: AD KEPT CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	105.00	0.00	71.96	176.96	103.12	0.00	41.55	111.18
APRWE	188.93	70.41	0.00	259.34	67.04	29.90	0.00	103.86
MAYWD	308.52	167.95	0.00	476.46	57.94	88.89	0.00	180.17
MAYWE	343.84	175.73	0.00	519.57	65.58	68.13	0.00	178.06
JUNWD	451.47	97.97	0.00	549.44	196.30	84.84	0.00	291.11
JUNWE	248.22	20.39	0.39	269.00	73.69	20.39	0.39	76.53
JULWD	483.29	89.13	0.00	572.42	90.74	65.05	0.00	157.65
JULWE	129.70	0.00	0.00	129.70	44.81	0.00	0.00	44.81
AUGWD	32.06	0.00	0.00	32.06	18.74	0.00	0.00	18.74
AUGWE	67.41	0.00	0.00	67.41	35.34	0.00	0.00	35.34
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	2358.44	621.57	72.35	3052.36	280.34	159.00	41.55	454.29

SPEC: RBT MARK: AD RETURNED CATCH

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	48.04	0.00	0.00	48.04	48.04	0.00	0.00	48.04
APRWE	6.67	0.00	13.50	20.17	6.67	0.00	10.67	18.66
MAYWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWE	75.15	0.00	0.00	75.15	65.17	0.00	0.00	65.17
JUNWD	28.27	0.00	0.00	28.27	21.28	0.00	0.00	21.28
JUNWE	10.15	0.00	0.00	10.15	10.15	0.00	0.00	10.15
JULWD	6.74	0.00	0.00	6.74	6.74	0.00	0.00	6.74
JULWE	20.11	0.00	0.00	20.11	10.51	0.00	0.00	10.51
AUGWD	10.51	0.00	0.00	10.51	10.51	0.00	0.00	10.51
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	205.64	0.00	13.50	219.14	86.15	0.00	10.67	87.90

SPEC: RBT MARK: AD TOTAL CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.32	0.00	0.93	1.26	0.39	0.00	1.89	0.52
APRWE	0.14	0.14	0.11	0.40	0.20	0.20	0.21	0.24
MAYWD	0.25	0.26	0.00	0.51	0.35	0.42	0.00	0.38
MAYWE	0.19	0.20	0.00	0.39	0.27	0.33	0.00	0.29
JUNWD	0.23	0.24	0.00	0.47	0.32	0.40	0.00	0.37
JUNWE	0.10	0.03	0.00	0.13	0.14	0.04	0.00	0.12
JULWD	0.17	0.12	0.00	0.29	0.24	0.18	0.00	0.25
JULWE	0.07	0.00	0.00	0.07	0.10	0.00	0.00	0.07
AUGWD	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.02
AUGWE	0.03	0.00	0.00	0.03	0.05	0.00	0.00	0.03
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.13	0.08	0.09	0.30	0.76	0.71	1.91	0.89

SPEC: RBT MARK: AD RETURN CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.10	0.00	0.00	0.10	0.12	0.00	0.00	0.08
APRWE	0.00	0.00	0.11	0.12	0.00	0.00	0.21	0.03
MAYWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWE	0.03	0.00	0.00	0.03	0.05	0.00	0.00	0.03
JUNWD	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
JUNWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.01	0.00	0.01	0.02	0.13	0.00	0.21	0.09

SPEC: RBT MARK: AD RETURN CATCH/HR

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
STRATA	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
APRWD	0.10	0.00	0.00	0.10	0.12	0.00	0.00	0.08
APRWE	0.00	0.00	0.11	0.12	0.00	0.00	0.21	0.03
MAYWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAYWE	0.03	0.00	0.00	0.03	0.05	0.00	0.00	0.03
JUNWD	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.02
JUNWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULWE	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALL	0.01	0.00	0.01	0.02	0.13	0.00	0.21	0.09

SPEC: RBT MARK: AD AVERAGE KEPT CATCH LENGTH (INCH)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	12.86	0.00	12.93	0.00
APRWE	12.38	12.91	0.00	0.00
MAYWD	12.21	12.06	0.00	0.00
MAYWE	12.31	12.89	0.00	0.00
JUNWD	13.12	12.50	0.00	0.00
JUNWE	12.77	12.50	12.70	0.00
JULWD	13.43	12.39	0.00	0.00
JULWE	12.99	0.00	0.00	0.00
AUGWD	12.74	0.00	0.00	0.00
AUGWE	13.28	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	12.74	12.68	12.92	0.00

SPEC: RBT MARK: AD AVERAGE KEPT CATCH LENGTH (CM)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	32.66	0.00	32.83	0.00
APRWE	31.45	32.80	0.00	0.00
MAYWD	31.02	30.62	0.00	0.00
MAYWE	31.28	32.75	0.00	0.00
JUNWD	33.34	31.75	0.00	0.00
JUNWE	32.43	31.75	32.26	0.00
JULWD	34.11	31.47	0.00	0.00
JULWE	33.00	0.00	0.00	0.00
AUGWD	32.35	0.00	0.00	0.00
AUGWE	33.73	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	32.37	32.22	32.81	0.00

SPEC: RBT MARK: AD AVERAGE KEPT CATCH WEIGHT (OZ)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

SPEC: RBT MARK: AD AVERAGE KEPT CATCH WEIGHT (GR)

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES			
STRATA	SHORE	BOAT	OTHER	ALL
APRWD	0.00	0.00	0.00	0.00
APRWE	0.00	0.00	0.00	0.00
MAYWD	0.00	0.00	0.00	0.00
MAYWE	0.00	0.00	0.00	0.00
JUNWD	0.00	0.00	0.00	0.00
JUNWE	0.00	0.00	0.00	0.00
JULWD	0.00	0.00	0.00	0.00
JULWE	0.00	0.00	0.00	0.00
AUGWD	0.00	0.00	0.00	0.00
AUGWE	0.00	0.00	0.00	0.00
SEPWD	0.00	0.00	0.00	0.00
SEPWE	0.00	0.00	0.00	0.00
ALL	0.00	0.00	0.00	0.00

RBT Mark: AD SUMMARY REPORT

Water: 55928 Water Name: PINEWOOD RESERVOIR Year: 2007 Stat method: 1

	ESTIMATES				STD. ERROR			
REPORT	SHORE	BOAT	OTHER	ALL	SHORE	BOAT	OTHER	ALL
TOTAL CATCH	2564.70	621.57	85.85	3272.12	314.80	159.00	42.90	478.77
KEPT CATCH	2358.44	621.57	72.35	3052.36	280.34	159.00	41.55	454.29
RETURNED CATCH	205.64	0.00	13.50	219.14	86.15	0.00	10.67	87.90
TOTAL CATCH/HR	0.13	0.08	0.09	0.30	0.76	0.71	1.91	0.89
RETURN CATCH/HR	0.01	0.00	0.01	0.02	0.13	0.00	0.21	0.09
RETURN CATCH/HR	0.01	0.00	0.01	0.02	0.13	0.00	0.21	0.09
AVERAGE KEPT CATCH LENGTH (INCH)	12.74	12.68	12.92	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH LENGTH (CM)	32.37	32.22	32.81	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (OZ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE KEPT CATCH WEIGHT (GR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX III

C-SAP Creel Survey User's Manual

DRAFT

Creel Survey Analysis Program Operations Manual

Colorado Division of Wildlife

Aquatic Research Section

George J. Schisler

Fadi Wedyan

Brian Fairchild

DRAFT

Table of Contents

Preface

The Creel Survey Analysis Program (C-SAP) first saw use in the mid 1980's as an aid in fisheries stocking management. Since development, C-SAP has gone through several revisions allowing greater use by aquatic researchers, biologists and other scientists to analyze data associated with specific locations, fishing habits, catch and harvest rates. Improvements still continue accommodating changes in technology and new developments in fisheries resource management and research. Suggestions for improvement and comments are always welcome as you utilize the Creel Survey Analysis Program.

C-SAP has numerous components pertinent to data collection and analysis. This manual addresses each window and its associated functions and procedures. The instructions in this user's manual assume you are familiar with basic Windows operating system; contact the Information Technology representative at the CDOW Aquatic Research Section if you are not familiar with the language used throughout the text. Users are guided tab-by-tab through the program's features. Specific emphasis is placed on the accuracy of data input, critical to all other program features. Data analysis is not discussed; however specific features relating to acquisition of statistics and reports within the application are covered. *Welcome to the Creel Survey Analysis Program!*

Before you begin…

Data retained (input) in C-SAP is acquired from Creel Census Data Forms (Appendix A) completed in the field by survey clerks since the program's inception in 1980. Completion of forms should be standard, however clarification of data (i.e. do boat counts represent the actual number of boats on the water or the total number of anglers in the boats observed) may be necessary from biologists responsible for the survey's direction. Due to the longevity of data acquisition there is an inherent potential for inconsistencies associated with varied research directives or processes utilized (i.e. similarities or duplication of closely related water names). Current versions of the application take this into account, but contact the CDOW, Aquatic Research Section if you need assistance.

Installing the Software

Unpack the application/data disk from the Aquatic Research Section, create a folder on your computer's hard drive named C-SAP and copy the contents of the disk into the folder you created. Open the C-SAP folder, open the bin folder, scroll down through the list of files and create a shortcut on your desktop for the application (Figure 1). Once you've completed installation you are ready to begin.

Note: C-SAP data is associated with specific folders and sub-folders of the application, ***DO NOT MOVE THINGS AROUND*** or you may corrupt all the hard work you've done.

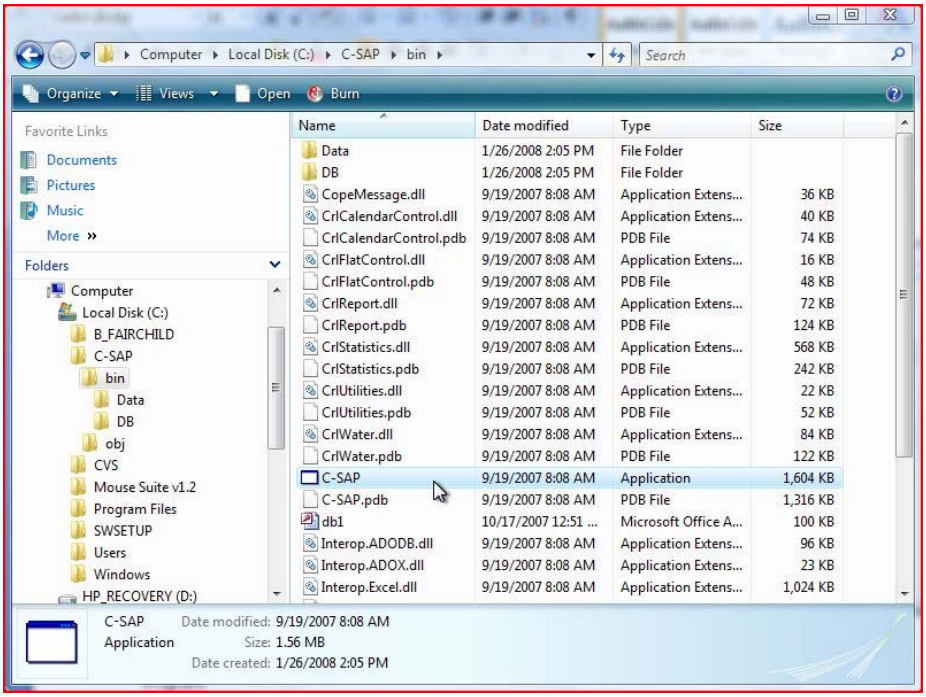


Figure 1. Installation Directory in Windows Explorer

The current C-SAP version operates in Windows XP (C-SAP Update) or Windows Vista (C-SAP Update 2); installation is different for each operating system. Both formats are contained on the compact disk, or may be e-mailed to the user. Be sure to load the appropriate format for your operating system. The application CD or e-mail folder contains a self extracting installation program, approximately 9.03 megabytes in size. Copy and save the appropriate C-SAP Update folder onto your hard drive for your operating system, double click the folder and the extraction utility begins. You must have .NetFramework (.Net), Version 1.1.4332 installed prior to installation. If .Net is not installed, C-SAP's installation program will notice and provide you an option to download it from the internet. Be patient, after clicking on the download option it takes several seconds for the application to begin; .NetFramework requires approximately 108 megabytes of space and takes a while to download. Once .Net is downloaded, restart your computer and restart C-SAP's installation again.

Windows XP. Double click on the zipped C-SAP Update folder; self extraction of the application begins. Once installation is completed, restart your computer and C-SAP is ready for use. You'll find an application icon to launch the C-SAP with the CDOW logo in your start menu; double click the icon to launch the application.

Windows Vista. Double click the zipped C-SAP Update 2 folder; self extraction automatically begins. Once installation is completed, restart your computer and C-SAP is ready for use. Unlike in Windows XP, an application icon is not placed in your start menu, but you can create a shortcut on your desktop. To get to the application icon, open the C-SAP folder, open the bin folder, then scroll down and locate the C-SAP application in the file list; right click on the file name, select Create Shortcut and drag-and-drop the shortcut onto your desktop for convenience.

Getting Started

When you receive completed creel census survey data forms for C-SAP input, organize them chronologically by water; the directing biologist will determine priority of data input. To help maintain organization of records while inputting data, with a pencil annotate a "Record Number" in the top left corner and "Contact Number" in front of each contact entry on Creel Census Data Forms. C-SAP organizes recorded surveys chronologically, the "Record Numbers" you added to the survey forms become obsolete if additional records are added after completion of your records; be sure to erase your penciled in numbers prior to returning survey forms to the Aquatic Research Section.

Note: The survey forms you receive may be a portion of data applicable to an existing database, your biologist should provide you the existing database record with the software package. Regardless if you are generating a new database or adding to an existing record, data input proceeds in the same manner.

New Users: Prior to data entry, familiarize yourself with the different components of the application; keep track of any questions you may have. Each field within C-SAP is addressed in this manual; review each section and address any unanswered questions with your directing biologist. If you received any sample water data files with C-SAP, review each section of the databases to further familiarize yourself with the manner data appears in the active fields.

Current Users: Contact the Aquatic Research Section at the CDOW if you are not sure you have the latest version of C-SAP; the latest version includes many updates allowing easier data input and resolves previous issues. Once installed, perform the Update DB (see instructions); do this once per machine C-SAP is installed on. If you have old data (pre 1998?) you can import the old .CAD and .CAL files for use in the new version (see instructions).

Note: To preclude unnecessary repetition of instruction for editing records, versus inputting new data, procedures and nuances relating to the five main elements of each record are addressed within the same content below. Note: Graphic labels and highlights inserted in figures are for reference only; they are not present within a census data form or in a water record's data input window.

Data Input

It's readily evident the census data form and record input/edit window do not look alike (compare Figure 2 and Figure 3). However, considering the wealth of data as five main, separate elemental groups (Strata, Sample Times, Contacts, Questions, and Catch Data) develops a relational base between the two forms. The instructions below follow a possible editing and proof reading routine/path while working with the records, but it is not required to follow.

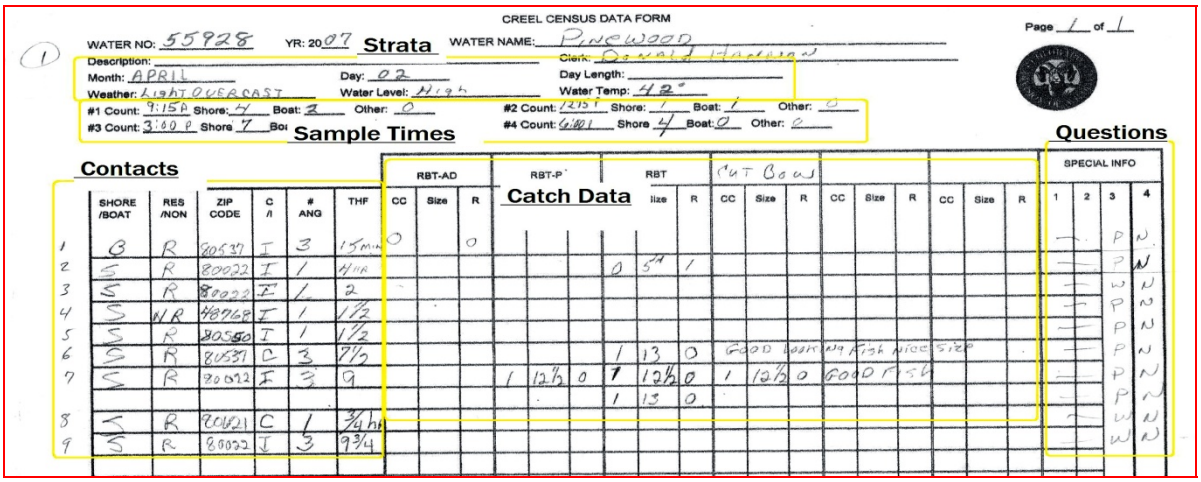


Figure 2. Creel Census Data Form Elements

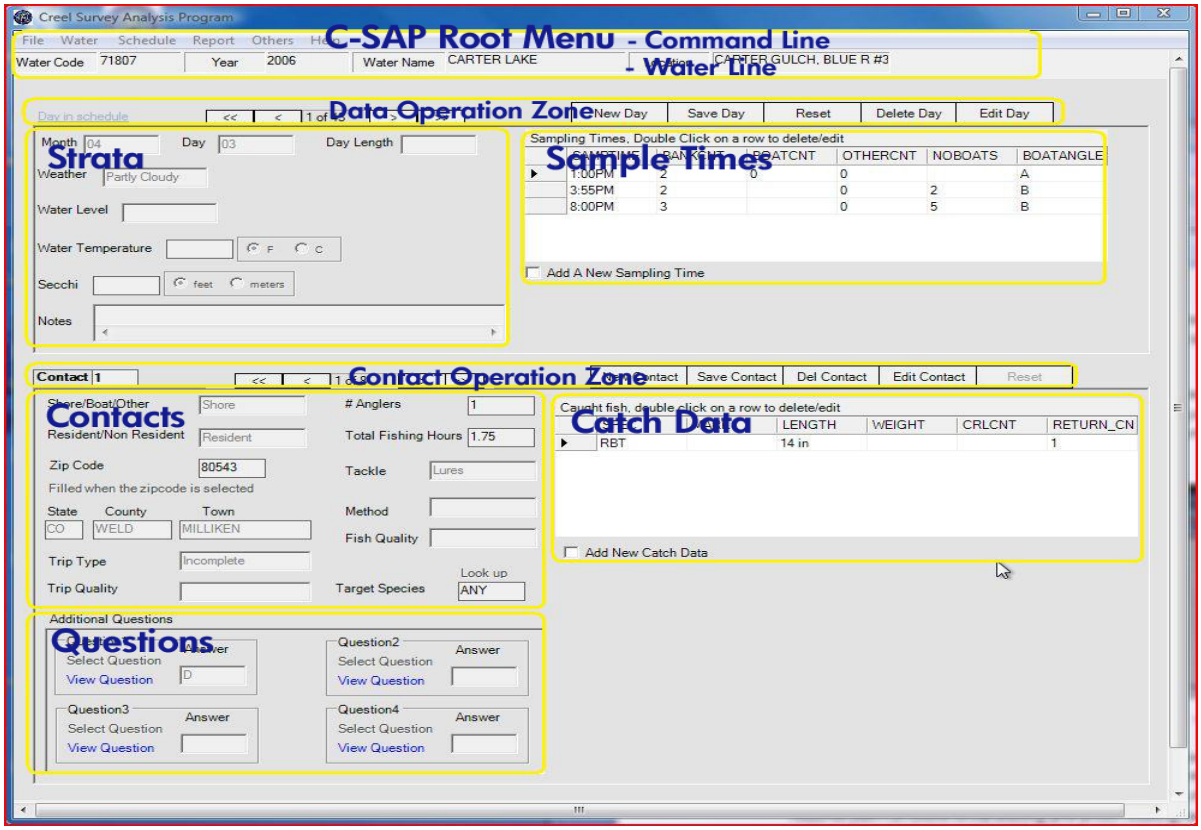


Figure 3. Water Record Screen Elements

Double clicking the shortcut or icon in the startup window initializes the application and a relatively non-distinct root menu window opens (Figure 4). The contents of this user's guide addresses each of the options available within the application; instructions follow the basic structure of C-SAP's root menu from left to right, top to bottom. All operations within the main menu elements pertain to

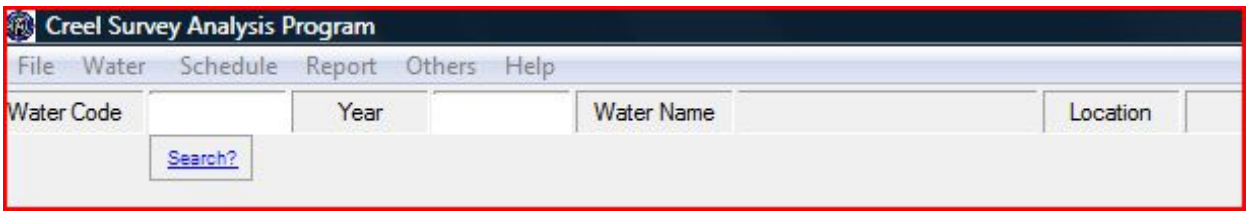


Figure 4. C-SAP Root Menu

specific water codes for specific years of data collected. The information regarding Water Code, Year, Water Name and Location are addressed first, followed by detailed instructions associated with each command element and their sub-menus.

C-SAP's Root Menu – Water Line: Water Code, Year, Water Name, and Location

You must associate a Water Code and Year before Root Menu commands will function (File, Water, Schedule, Report, Others, Help); enter them in the gray colored Water Code line located below the command line (Figure 4).

Water Code. The water codes for existing/new data are cataloged in the master database (creellocal.dbf; see search instructions below to determine assigned codes for water locations).

Enter the water code for the survey site in the field located below the "Schedule" tab. You can also select the code from a list of existing databases; refer to the Water, Summary section.

If the code is missing from the creel survey form, or you can't read a clerks writing, you can search for the appropriate code using the "Search?" function (Figure 5).

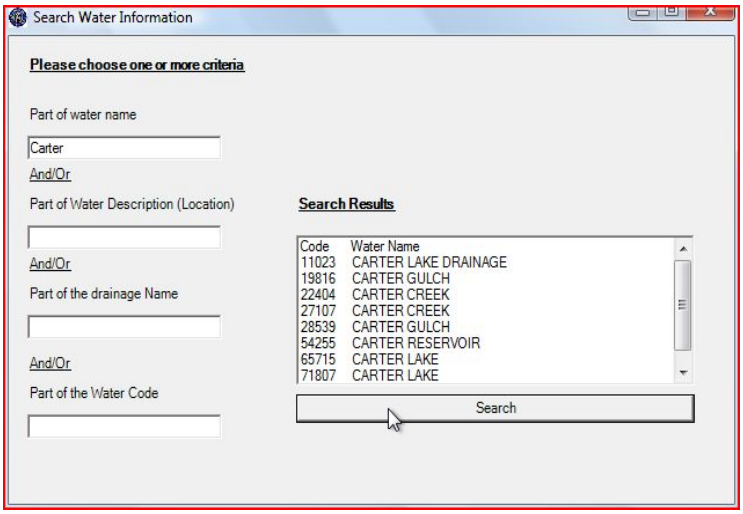


Figure 5. Search Water Information

Search? Select the search function by positioning the pointer over Search? and tapping the left mouse button. When the Search menu opens, you can enter a variety of items to find the water code; less information entered will return greater search results. Figure 5**Error! Reference source not found.** shows the search results achieved when the partial water name "Carter" was entered and the search button bar tapped. The illustration shows how of a variety of studies conducted over time can generate numerous water codes for portions of the same water's location; contact your directing biologist to clarify which code to select. Double clicking on the desired water code or name closes the search window and the selected water code appears in the Water Code field on the main window.

Year. After entering the water code, enter the year the data was acquired. When editing an existing database, if you input the wrong year an error message appears indicating no records exist for the water/year (Figure 6). See Water, Summary for instructions on how to search for years of data associated with a particular water code, similar to the water search function. Caution: If the wrong water code or year is entered and

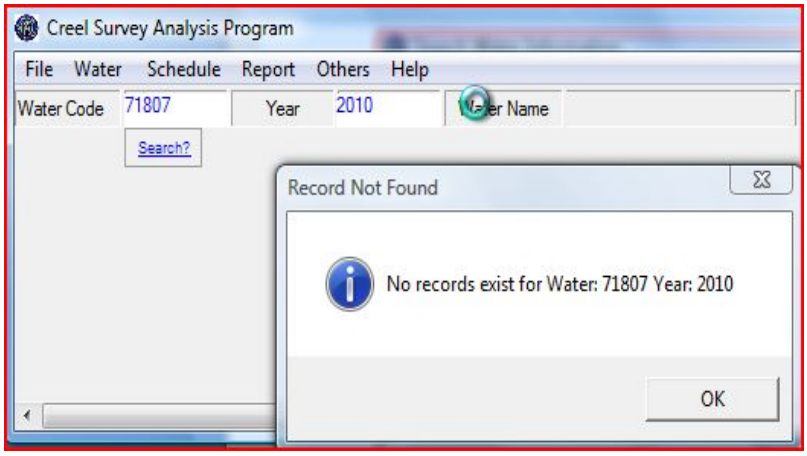


Figure 6. Error message: No records exist

goes unnoticed, you can proceed to edit or enter records in the wrong database. This obviously has inherent problems.

Water Name and Location. Both of these fields fill with un-editable information after the water number is selected with Water, Summary or the Search function; if you enter the water code and year directly the descriptions are entered after the water record is accessed. Compare the name and location displayed to the creel survey census form, the designation in C-SAP can be key to ensuring you've selected the right water code when entering new records.

C-SAP's Root Menu Command Line: File, Water, Schedule, Report, Others, Help

File

The "File" tab (Figure 7) allows the user four functions: Clear Datasheet Window, Clear Report Specification Window, Update DB, and Exit.

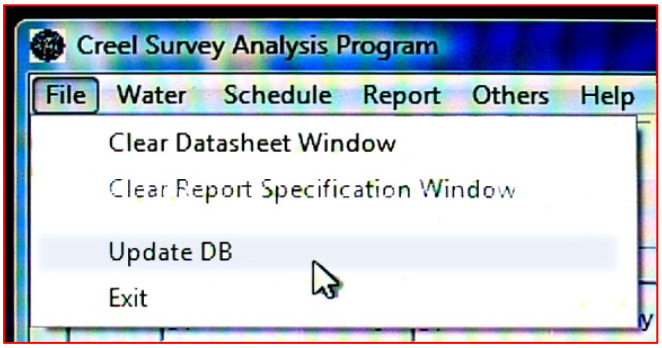


Figure 7 "File" menu and sub-menus

Clear Datasheet Window

Deletes all data from the input screen and resident memory associated with any water record currently in use, information in the Water Code line (fields) is not deleted.

Clear Report Specification Window

Deletes all data from the report screen and resident memory associated with any water record currently reviewed; information in the Water Code line (fields) is not deleted.

Update DB

This is a three step function that automatically reconfigures the format of old C-SAP field specifications and must be completed prior to using old data. This action is necessary ONLY for users of previous versions of C-SAP and old CAD data; it only needs activation ONCE to update imported databases.

1. Prior to activation of the update, make a backup copy of the CreelLocal database (found in the C-AP/bin/data/db folder).
2. Click on Update DB, press OK in the confirmation window that appears if you've made the CreelLocal backup and ***WAIT, the reconfiguration occurs in the background without an indicator that it is processing***. When it is complete, a DBupdates text file detailing the completed actions appears on the screen. Close the text file, it is automatically saved in C-SAP's data folder for later reference.
3. Click anywhere in the C-SAP application window and ***WAIT, C-SAP updates the data files in the background without an indicator that it is processing***. The update db function polls existing database files and makes any necessary adjustments to the data and their respective fields. When it is complete, a text file (DBDATAupdates) detailing the completed updates appears on the screen.

The DBDATAupdates report may be extensive, review it for **ALARMS indicating errors in previously compiled data that needs to be edited** to allow proper statistical analysis. The necessary edits can be performed any time, but should be completed as soon as possible prior to data analysis. Close the text file, it is automatically saved in C-SAP's data folder for later reference.

Exit

Deletes all data from the screen and resident memory associated with any water record in use and closes the application. The application can also be closed by "X-ing" out the window.

Water

This command button features five options: Edit, New, Import, Delete, and Summary. However it is best to approach this window with one of two goals: Edit an existing database, or create a new water year record. Import and Delete options support the edit functions, while Summary allows selection of an existing water record and year (Figure 8).

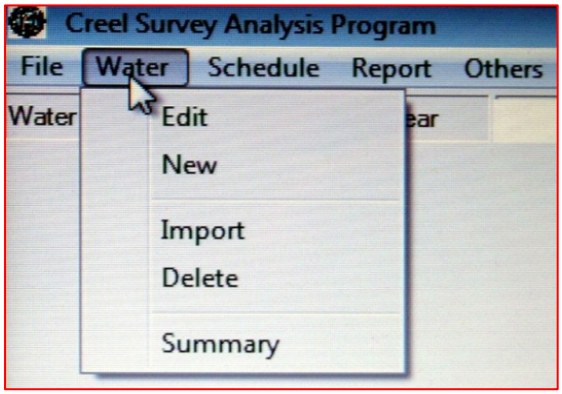


Figure 8. "Water" menu and sub-menus

Water - Edit and New

Edit opens to the first record of an existing database, while New generates an empty database waiting for data input (Figure 8). Once the data input screen opens, the water name and location fields at the top of the C-SAP window fill in. With the record window open, you'll notice this screen includes fields for all the data contained on the Creel Census Data Form, the bulk source of C-SAP's data, and a few additional fields. Each record is controlled by the commands in the data operation zone.

Data Operation Zones – FYI

When the Water, Edit or New window opens, notice three data operation zones above the Strata and Sample data elements (Figure 9). Command buttons in this zone are important to overall input and edit operations: Schedule Indicator, Record Number/Navigation Bars, and Record Disposition Commands (New Day, Save Day, Reset, Delete Day, and Edit Day.

Figure 9. Data Operation Zones

Schedule Indicator: On the left is a pale blue statement indicating if the record is maintained in a creel schedule for the water. If an entry hasn't been made in the creel schedule,

a pale blue statement (Day not in schedule) will indicate the discrepancy. Data analysis requires a corresponding entry in the creel schedule (refer to the schedule section).

Record Number/Navigation Bars: The center section of the operational zone indicates the record number you are currently working on within the overall total number of records for that particular water record. In Figure 9 above, you can see the zone isn't wide enough to display the full number of records; this doesn't prohibit data operations in any way.

Records are chronologically cumulative for individual days surveyed in a calendar year, record numbers don't reflect their survey date. For example, if a water is surveyed daily during the month of May of a given year (producing 31 records), and then later surveyed daily again in August, the records for August will begin with record number 32, 33, 34, and so on. This is important to recognize if querying/analyzing data for specific dates, a given period within a year, or across years where data may not exist for the same periods (I.e. water 54851, 2007, record number 17 represents April 30, record 18 is for May 4).

The button bars to the left and right of the record numbers allow you to skip ahead to the first record (<<), the previous record from the current (<), the next record after the current (>), or the last record (>>) in the database for the water record. To navigate to a specific record, you must continuously press one of the single navigation bars (<, or >) until you reach the desired record (be patient, there is some lag time). Unfortunately, at this time C-SAP doesn't allow you to navigate directly to a specific record by inputting a record number or date.

Record Disposition: This zone contains five command bars regarding the disposition of the current data record on the screen:

New Day: This command opens a blank, new data record for the water, extending the total number of records in the water's database. Once a minimum amount of required data is entered, the record can be saved and will be indexed in chronological order (an error message displays if missing required data).

Save Day: Select this command after entering a new record or after editing the contents of the current record within the water's database. Notwithstanding any data errors, after hitting this command bar the data fields will dim indicating the data is saved. Warning: If a record already exists for the same month and day within the current water database, an error message will appear indicating a duplicate record exists, and the record will not be saved (see Reset below).

Reset: If a record has not been saved yet and you find (for some reason) that you have entered the wrong data in the fields of the current record, select Reset. All data will be removed from each field, allowing you to re-enter the correct data prior to saving it.

Delete Day: This command permanently deletes the currently displayed record and adjusts the total number of records from the water's database.

Edit Day: Opens editable fields within the strata of a saved record only. The month and day remain dimmed and are not editable; the other elements of the record are edited independent of this command.

Strata Element

The strata element contains calendar and physical data the creel survey clerk records upon arrival to conduct the day's census. Strata elements include: Month, Day, Day length, Weather, Water Level, Water Temperature, Secchi, and Notes (Figure 10).

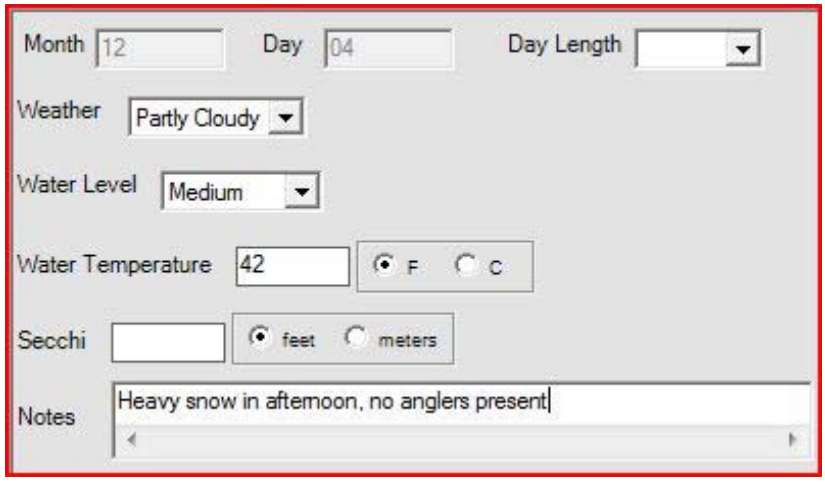


Figure 10. C-SAP Strata Element

Month/Day

All dates are entered default to two digits, i.e. 01, 02, etc. Click the down arrow on the right side of the field for Month and Day, highlight the appropriate date, and then tab to the next field. The fly-out window that appears is limited to eight places so you'll need to use the scroll to the appropriate date beyond the eighth month or day. You may also enter the Month or Day by pressing the first digit of the date, i.e. Day 27, however you can't enter the date directly by pressing 2 then 7, you must press the 2 key continuously until day 27 appears in the window.

Day Length

Biologists track the portion of the day a water location is available for angling; the tracked data is a portion of a calculation (not visible in C-SAP windows) determining total angler-hours in statistics. The day length is not a fixed time because not all waters have the same fishing hours. For instance, if a lake has a restricting gate that opens at 9:00 am and closed at 5:00 p.m., the hours need to be reflected by the actual time available to fish. Similarly, if a river is in a canyon where people only get down there during certain hours of the day, the effective day length is not sunrise to sunset.

Transfer the entry for day length from the census survey form, to the Day Length field in C-SAP. Within this field the twenty four hours of the day are divided into tenths, i.e. eight hours and thirty minutes would reflect 8.5 hours of day length. Press the down arrow (again the fly-out is limited to eight places), scroll down to the appropriate increment of hours and tab to the next field. As with the Month or Day, you may also enter the Day Length by pressing the first digit of the increment, i.e. 20.2

hours, however you must press the number 2 key continuously until 20.2 appears in the window. Once day length data is entered, a separate table (Site Table) is generated in the water's data folder

Weather

You may need to "interpret" weather condition entries, often clerk entries aren't styled after C-SAP entries, and some available entries may be duplicitous. For example, the weather fly-out has optional entries for Mostly Sunny or Partly Cloudy; on older versions of the census form a creel clerk may enter overcast, the closest available option in the weather field is Partly Cloudy. Regardless of the need for interpretation, create the entry as in the previous fields by clicking the down arrow, highlight the desired entry, and tab to the next field. Creel clerks may report variable weather conditions for different contact times, select the primary entry for weather; significant weather changes affecting angler activity may be input as notes.

Water Level

Water level is recorded as low, medium, high or at a specific value obtained by some method. Click the down arrow and highlight the appropriate level indicated by the creel clerk; tab to the next field. If a specific value (depth) is indicated, enter the numerical value of the depth rounded either up or down to the nearest whole number and select the appropriate increment of measurement (feet/meters) by tapping the corresponding radio button. When you select Value (Specific) in the water level field, you are warned by a note, *Rounded, appearing next to the numeric field for the value; although the application doesn't stop you from entering an infinite number of decimal places in the field (as in Figure 11), an error message will display when you attempt to save the record. When water level data is acquired from a gauging station, record the numeric data in the water level field, and location of the gauge in the notes section.

Figure 11. Water Level, Specific Value – Incorrect Entry Format

Water Temperature

Enter the numeric value of the water temperature only, and then select the measurement method (Fahrenheit or Centigrade) by tapping either the F or C radio button (Figure 12).

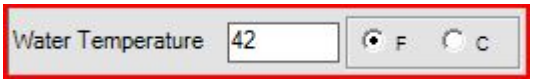


Figure 12. Water Temperature

Secchi

Enter the numeric value of Secchi depth readings, and then select the appropriate increment of measurement (feet/meters) by tapping the corresponding radio button (Figure 13).

Figure 13. Secchi Depth

Notes

Creel clerks occasionally add notes to the census form

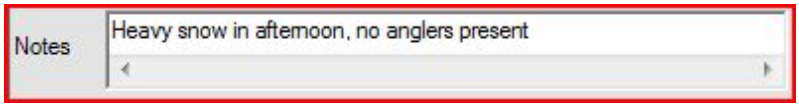


Figure 14. Field Notes

regarding significant changes in weather, gauging station readings, or other factors affecting the water record. Record pertinent qualitative data or information not recorded elsewhere on the water record in the notes field (Figure 14).

Sample Times Element

Comparing the sample time elements of the creel census form (Figure 15) and C-SAP (Figure 16), we see numerous differences in appearance. Regardless, the data entered in each reflect the same information. The primary components of this element are the sample time, shore/bank counts, number of anglers in boats or number of boats (boat count method should be consistent throughout survey), and an "other" designation that refers to "belly boats."

Figure 15. Creel Census Data Form Sample Times

☐ Add A New Sampling Time

Click the mouse over the square next to the "Add A New Sampling Time" statement; a new window opens below the Sampling Times window for data entry (Figure 16).

Sample Time: Tap the appropriate AM or PM designation, tab to or tap the down arrows next to the empty time fields to enter the hour and minute the creel surveys were taken. As in earlier numeric entries, enter the hour and minute by pressing the first digit of the time (i.e. 5), however you can't enter two digit hours (i.e. 12) directly by pressing 1 then 2, you must press the 1 key continuously until 12th hour appears in the window. The same procedure applies to entering the minutes. You may also enter the time by clicking the drop-down arrows and scrolling to the desired hour and minutes.

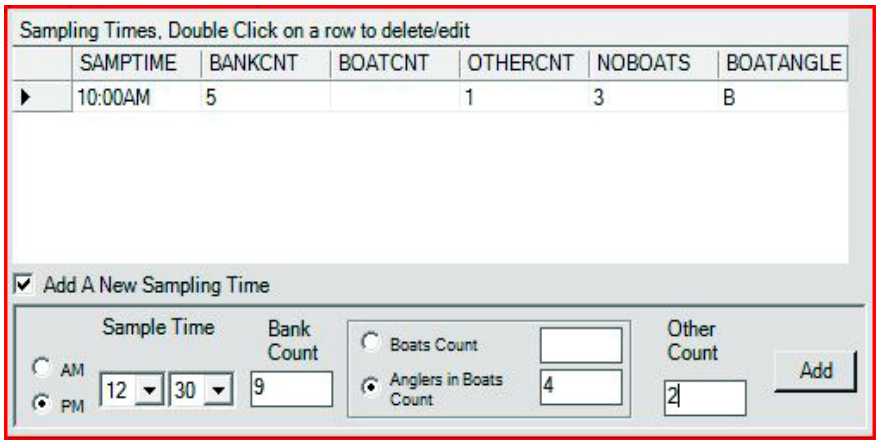


Figure 16. Sample Time/Add Sample Time Windows

Bank Count: The census form terminology for this entry is Shore count, on C-SAP the term used is Bank count for the data. You may press the Tab key to the Bank Count field, or place the mouse over it and click. Transfer entries from the Shore count on the Creel Census Data Form to the Bank Count field. An entry is required in this field; if the creel clerk leaves this field blank on the census form DO NOT ADD THE SAMPLE TIME. However, if shore count indicates ZERO on the Creel Census Data Form, enter a zero in the Bank Count field. The data in this field is required for numerous statistical operations; an entry of an invalid zero will corrupt analysis by skewing the data inappropriately.

Boats/Anglers in Boats Count: Tap the appropriate radio button for number of boats or anglers in boats surveyed (only one choice can be selected). Enter the value in the adjacent field to its right; if no value is indicated on the census form enter a zero. When the sample time is added, the window above displays the Boats Count/Anglers in Boats Count as: Boats Count, labeled NOBOATS with the letter B automatically entered under BOATANGLE and Anglers in Boats Count, labeled BOATCNT with the letter A entered under BOATANGLE.

Note 1: Biologists guiding a creel census survey must direct creel clerks to acquire data in a consistent format throughout the census. Decide whether you want to count the number of boats, or the number of anglers in the boats and don't deviate after the census begins.

Note 2: If a value isn't entered for Boats/Anglers in Boats, an error message displays; press OK, the Add New Sample Time window closes, then click on the check box to re-enter the data, be sure to make complete entries prior to saving.

Other Count: This field refers to the number of "belly boats", or "float tubes" observed/ surveyed on the water; enter the number of belly boats; again if no value is indicated, enter a zero.

"Add" Button Bar: Hit the ADD button to save the sample time; the ADD window closes and the sample data is transposed into the window above the "☐ Add A New Sampling Time" (Figure 16). Once all sample time data is entered, uncheck the small square in "☐ Add A New Sampling Time" to continue. If you do not uncheck the square and attempt to save the record, an error message appears precluding continuing until you uncheck the small square.

Edit/Delete a Sample Time

If you need to edit or delete a sample time, double click the gray box with the 'right' facing arrow adjacent to the sample time you desire to edit/delete. A dialogue box opens (Figure 17) asking for a confirmation of which action to continue with; if editing, press EDIT (an edit window opens with the selected sample time); hit save after making changes. If the desired action is to delete a sample time, press delete and another dialogue box opens to confirm or cancel the

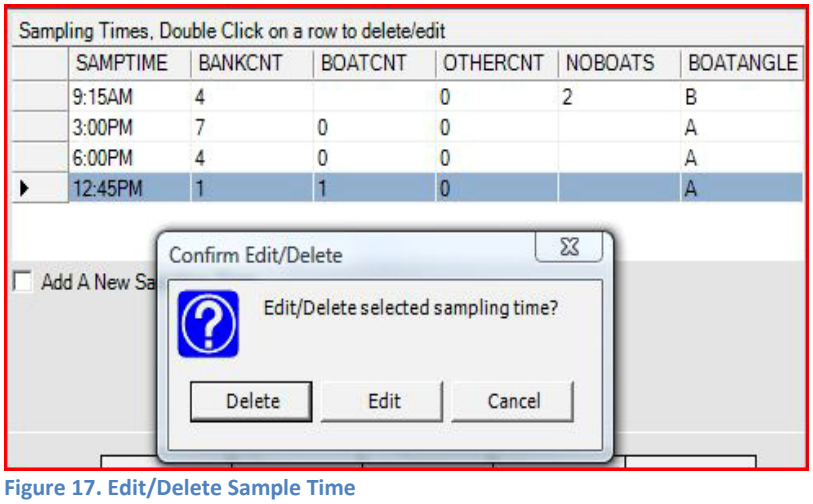


Figure 17. Edit/Delete Sample Time

deletion; selecting YES deletes the sample time highlighted and takes you out of the program, but doesn't close the application; click anywhere in the C-SAP window to continue.

Contacts, Questions, and Catch Data

On the census form, data is recorded in a single, linear line; in C-SAP the lower half of the Water, Edit screen stacks contact and question data fields on the left, with catch data on the right. Operational commands for contacts are positioned above the Contact and Catch Data elements (Figure 18). Use tabs to flow through data entry for the contact data, then responses to questions (if any exist), and finally the additional catch data. Figure 18 shows the action bars associated with the contact records. Because of various requirements for individual research projects, not all of the available data fields in C-SAP require data input, however, each field is addressed in the instructions.

Contact Operation Zones - FYI

These zones, similar to the Data Operational Zones addressed earlier, are important to overall Contact operations within C-SAP. However, the commands only relate to contact information; some commands have unique qualities, see the information regarding each zone below (Figure 18).

Figure 18. Contact Operation Zone

Contact Indicator: Any day in a water record may contain zero, to many contacts. This indicator reminds the user which contact they are currently viewing/working on within the current water record. The indicator requires, nor allows, any command functions, but automatically increases or decreases its total as contacts are added or deleted.

Contact Number/Navigation Bars: The center section of the contact operation zone indicates the record number you are currently working on within the overall total number of contacts for that particular day in the water record. The button bars to the left and right of the record numbers allow you to skip ahead to the first record (**<<**), the previous record from the current (**<**), the next record after the current (>), or the last record (**>>**) in the database for the water record. To navigate to a specific record, you must continuously press one of the single navigation bars (**<**, or **>**) until you reach the desired record (be patient, there may be some lag time). Unfortunately, at this time C-SAP doesn't allow you to navigate directly to a specific contact by inputting a contact number.

Contact Disposition: This zone contains five command bars regarding the disposition of the current contact on the screen:

> ***New Contact:*** This command opens a blank, new contact record for the water, extending the total number of contacts in the day's record; it's selectable at any time. Once a minimum amount of required data is entered, the contact can be saved.

Save Contact: Select this command after entering a new contact or after editing a contact. After hitting this command bar, if there aren't any data errors, the data fields dim, indicating the contact is saved. If an error message appears, correct the infraction and hit save again.

Del Contact: This command permanently deletes the currently displayed contact and adjusts the total number of contacts within this record's contact database.

> ***Note:*** If the contact contains catch data, ***DELETE THE CATCH DATA FIRST***. C-SAP catch data is contained in a sub-database and although it will eventually delete the catch data after several error messages, it's better to preclude the error messages and ***DELETE THE CATCH DATA FIRST***. If you fail to delete the catch data and encounter the error message, go to File, Clear Datasheet Window, and then return to editing the records (Water, Edit).

Edit Contact: Opens editable fields of a saved record only. Scroll through to the appropriate contact to edit using the <<, <, >, or >> buttons, once the desired record appears on the screen, select the Edit Contact button. Selecting this action button highlights all the data fields available for editing; select Save Contact after making the necessary changes.

Reset: If a record is not saved yet and you find (for some reason) that you have entered the wrong data in the fields of the current record, select Reset. The contact is deleted and the window resets to the first contact; hit New Contact to continue.

> Note: Once any catch data is entered, C-SAP auto-saves the contact data and the Reset button no longer functions for that contact; changes to the contact data must be made through edit or delete functions.

Contacts Element

For each angler, or group of anglers creel survey clerks encounter, they conduct a brief interview gathering pertinent data for statistical analysis. The directing researcher prescribes which data to collect during the interview; subsequently all of the contacts fields may not be contain data (Figure 19).

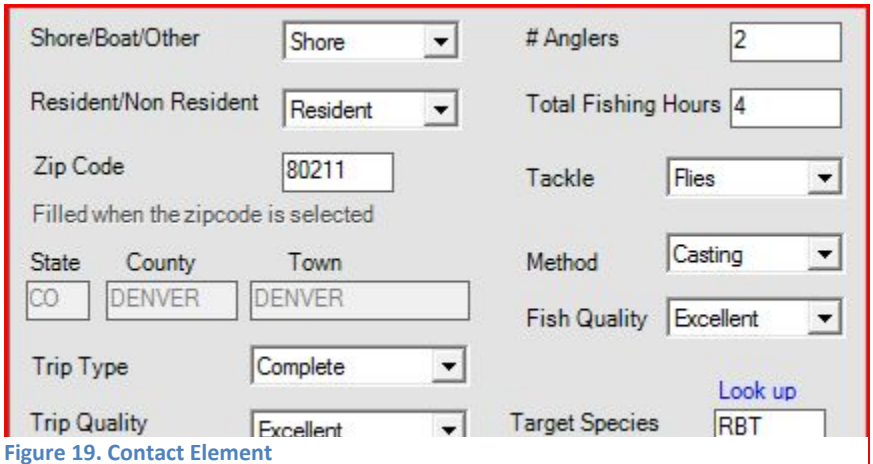


Figure 19. Contact Element

Shore/Boat/Other:

This field has an auto-fill feature defaulting to either a

Shore entry, or whatever was entered in the previous contact. The entry can be changed by clicking on the down arrow and pressing the first letter of the desired entry (S = Shore, B = Boat, or O = Other (Belly Boat)). You may also click the cursor over the field and scroll to the desired entry, and then press the left mouse button. Once the desired entry is made, tab to the next field.

Anglers: Enter the number of anglers associated with the contact and tab to the next field. NEVER enter a ZERO if the census form is blank for number of anglers; if so, ***disregard the contact completely***, regardless of any other data acquired from the contact. However, in some cases it may be appropriate to enter a minimum number of anglers (1) if there are total fishing hours and catch data recorded on the census form, contact your biologist for guidance.

Resident/Non Resident: When you tab to or select this field it turns blue; you can enter the appropriate residency designation by clicking on the down arrow and pressing the first letter of the desired entry (R or N), or clicking the cursor over the field and scrolling to the desired entry, press the left mouse button to enter the data. Once the desired entry is made, tab to the next field. Note: In some cases an angler may live in another state, yet is still considered a resident, i.e. non-resident college students or residents on active duty military service in another state/country, but home on leave. The appropriate entry would be the student's or service member's Colorado zip code, but creel clerks may not acquire this information.

Total Fishing Hours (TFH): Enter the TFH associated with the contact and tab once to the next field. Creel clerks often annotate TFH with hour and minute designations i.e. 6 hours, 45 minutes; C-SAP requires, and limits, a decimal designation in tenths i.e. 6.7 hours, unless the entry is an integer. If the census form doesn't annotate the TFH, DO NOT enter data for this contact, regardless of any other information recorded on the census form; lack of TFH data will corrupt analysis; hit RESET and go on the the next entry.

Zip Code: Enter the five digit zip code annotated on the census form. The place names associated with zip code will fill in automatically upon returning to the contact, after the data is saved. Occasionally, the creel clerk may encounter an angler who chooses not to provide a zip code and the census data is blank, fortunately the zip code for most research isn't critical and the data field can be left empty. However, if a creel clerk only enters a partial zip code, do not enter any of it in the zip code field; the partial entry will cause analysis problems. Lastly, some creel clerks enter place names in the zip code data obtained through cunning conversations with anglers. As in previous fields, tab to the next field.

Tackle: This data field does not have an auto-fill feature; when you tab to this field it turns blue. You can enter the appropriate tackle used by clicking on the down arrow, scrolling to the desired entry, clicking the cursor over the field, and then press the left mouse button to enter the data or by pressing the first letter of the desired entry (F = Flies, L = Lures, B = Bait, C = Combination, O = Other). Once the desired entry is made, tab once to the next field.

Method: This data field does not have an auto-fill feature; when you tab to this field it turns blue. You can enter the appropriate method used by clicking on the down arrow, scrolling to the desired entry, clicking the cursor over the field, and then press the left mouse button to enter the data or by pressing the first letter of the desired entry (A = Archery/Spear, C = Casting, D = Drifting, J = Jigging, S = Snagging, SS = Still-fishing, T = Trolling). Once the desired entry is made, tab once to the next field.

Fish Quality: This data field does not have an auto-fill feature; when you tab to this field it turns blue. You can enter the appropriate fish quality by clicking on the down arrow, scrolling to the desired entry, clicking the cursor over the field, and then press the left mouse button to enter the data or by pressing the first letter of the desired entry (V = Very Poor, P = Poor, A = Average, G = Good, E = Excellent). Once the desired entry is made, tab once to the next field.

Trip Type: When you tab to this field, it auto-fills with the default Incomplete or previously entered Complete entry. The entry can be changed by clicking on the down arrow and pressing the first letter of the desired entry (I = incomplete or C = completed trip), or clicking the cursor over the field and scrolling to the desired entry and pressing the left mouse button. Once the desired entry is made, tab to the next field.

Trip Quality: This data field does not have an auto-fill feature; when you tab to this field it turns blue. Tab through and leave the field blank if not recorded on the census form. You can enter the recorded trip quality by clicking on the down arrow, scrolling to the desired entry, clicking the cursor over the field, and then press the left mouse button to enter the data. You may also record the entry by pressing the first letter of the rating on the census (V = Very Poor, P = Poor, A = Average, G = Good, E = Excellent); once the desired entry is made, tab to the next field.

Target Species: This data field does not have an auto-fill feature; when you tab to this field it is highlighted white and a text cursor appears. Enter the appropriate three letter designation for the targeted fish species (it is not case sensitive), or the word ANY if that's the angler's preference. If you don't know the appropriate acronym for the target species you can search for it. Above the data field are the words "Look up" in blue letters, place the cursor over these words and press the left mouse button to launch a target species query (Figure 20).

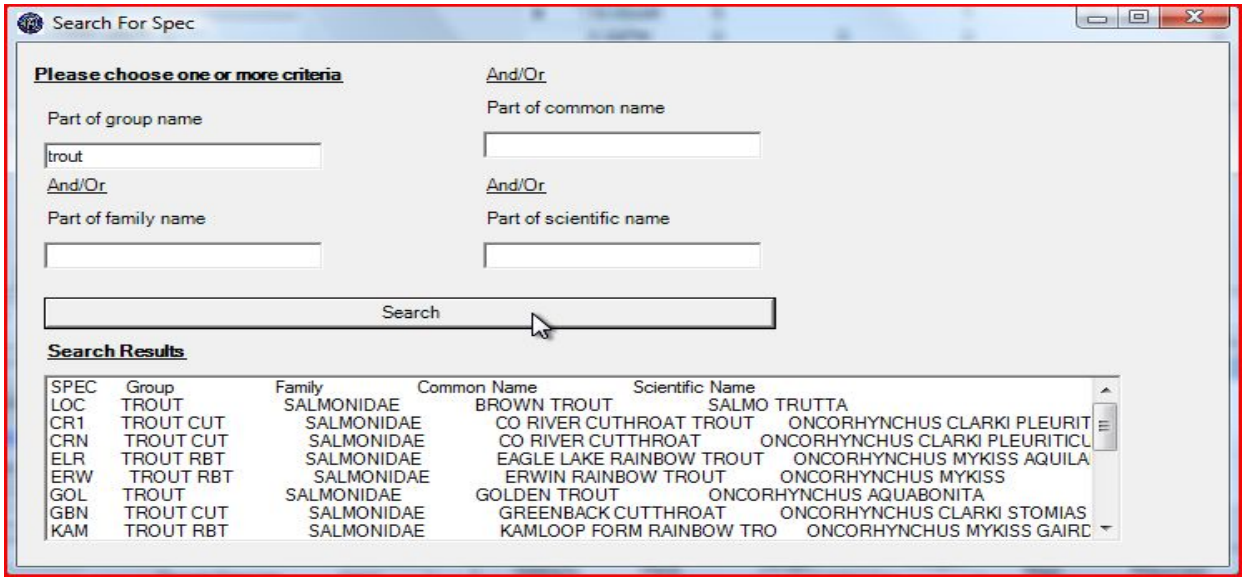


Figure 20. Target Species Search Query

Note: If an acronym for the species isn't listed in the database, you can manually type in an acronym appropriate for the target species i.e. CBW = Cutbow. However, users are not allowed to add additional species to the lookup database, be sure to coordinate use of the acronym you created with your directing biologist.

Look Up. This search query has four options, only one entry is required. Type in the known information (it is not case sensitive), place the cursor over the Search bar and tap the left mouse button. Scroll down through the results window until the desired species appears, place the cursor over the desired species and tap the left mouse button. Due to the longevity of C-SAP's use, more than one acronym may be listed for a particular species (as in Figure 20, notice CR1 and CRN both apply to CO River Cutthroats), contact your directing biologist for which acronym to use; consistent use throughout a survey is best. Once selected, the search window will close and the acronym for the selected species appears in the target species window. If the census form lists multiple target species sought, select the first entry, multiple target species can't be entered in C-SAP.

Additional Questions Element

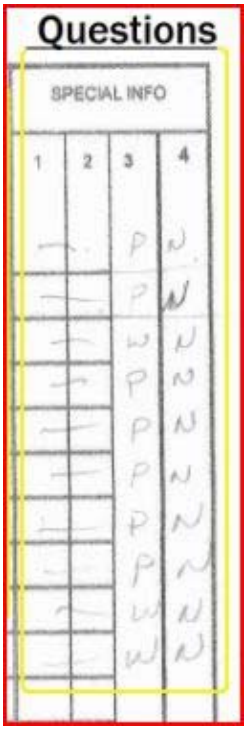


Figure 22. Census Form Answers To Questions

Depending on the research project, creel clerks may or may not be directed to ask additional questions of anglers during their surveys (obtain a list of the questions and possible answers from the directing biologist). If questions are asked (up to four), the responses from anglers are recorded in the Special Information section on the right side of the census form. Each answer recorded in the Special Information is associated numerically with the questions and answers in C-SAP (Figure 21 and Figure 22). Note: You must be in the new/edit contact mode to enter data in this element.

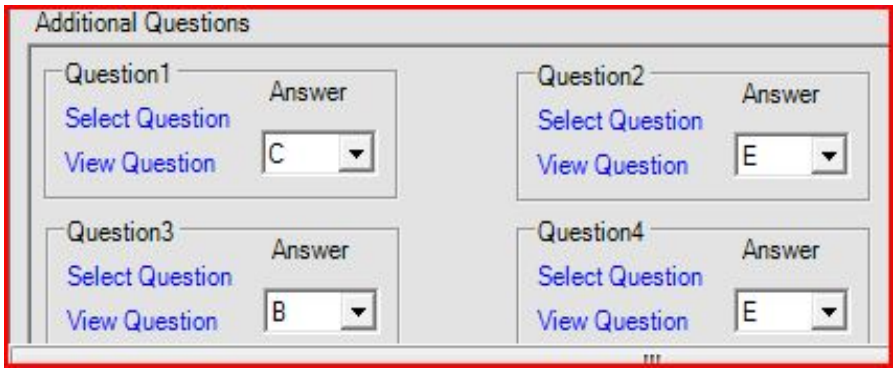


Figure 21. C-SAP Question Elements

Question # To record responses in the Additional Questions element of C-SAP, this section initially requires assignment of a specific question corresponding to each response in special information on the census form. FYI: By default C-SAP retains the previously assigned question in each field, even if no responses are recorded for the question, this can be bad if you make entries with the wrong question assigned. You can determine which question is already assigned in C-SAP by placing the mouse over top of the blue text "View Question" and tapping the left mouse button (Figure 21). If a question is assigned, a window opens displaying the assigned question, possible responses, and code equivelant; be sure to close the window after reviewing questions. If the window displays the desired question, close the View Question window and enter the responses recorded on the census form. If it is not the appropriate question you must assign the correct question (see Select Question below).

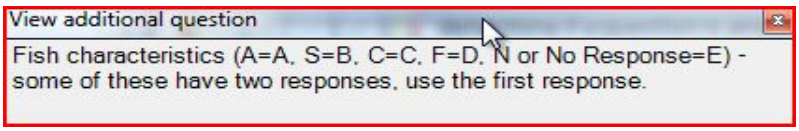


Figure 23. View Additional Question Assigned

Note: C-SAP doesn't retain responses unless specific questions are selected first; simply inputting responses won't retain data.

Select (Assign) Question:

Mouse over top of the blue text "Select Question" and tap the left mouse button to open a window containing a list of available questions. Note: When the window opens it doesn't display the full information, Maximize the window to show the available options for questions. Questions 1 through 4 can have one statement/answer assigned each; follow the same procedure for all four questions:

Highlight the radio button next to the appropriate question, and then hit the Select Question button. The window closes and the desired question is assigned. To verify you have the appropriate question assigned, hit "View Question" and the assigned question is displayed in a separate window; be sure to close the view question window after review.

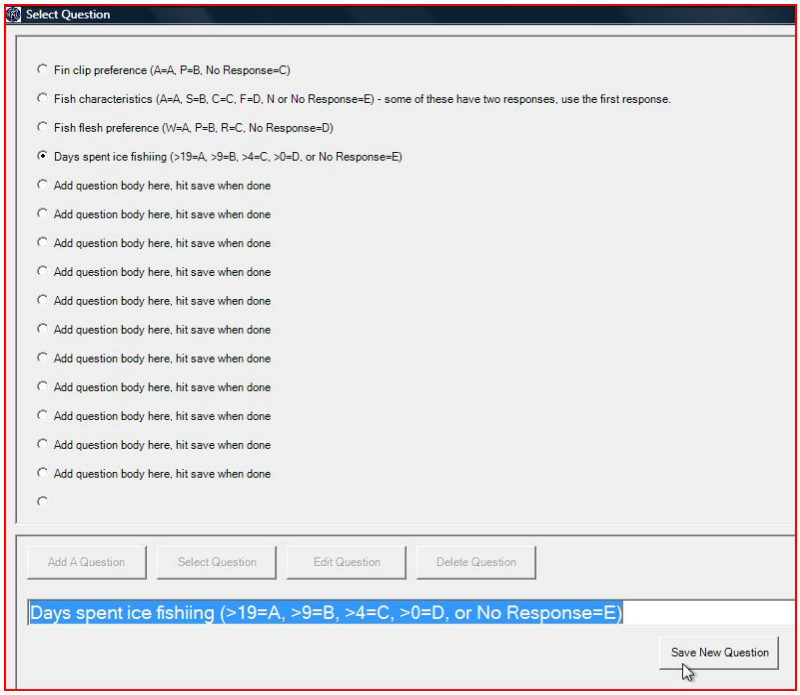


Figure 24. Questions - Select – Add/Edit question

Note: Once a question/answer is selected, it becomes the default selection for that question number in subsequent contact records, or until the next time a different question/answer is selected. Because these fields are auto-filled once a response is recorded in any of the answers to the four possible questions, C-SAP records the auto-filled response as the appropriate response for that cntact, whether or not it is the correct response. With this in mind, be sure each question has the appropriate response (answer)selected for all remaining records in the water. At the bottom of the window are four action options (Figure 24):

Add A Question:

If the desired question does not exist within the list of available questions, you may add another question by clicking the "Add Question" button. Once selected, a text editor opens at the bottom of the window; edit the default text to reflect the question, allowed responses and code equivalent. Be sure to hit Save New Question; the question you entered appears in the list of available questions, to use the input question follow the Select Question instructions.

Edit Question:

In addition to previously asked questions, the list contains several 'mock' questions that can be edited to accommodate the needs of a particular biologist/research question. Tap the radio button next to the desired question to edit, place the cursor over the Edit Question bar and tap the left mouse button. The text of the selected question will appear in the editor below the action bars (Figure 24).

Make the desired edit of the text to reflect the question, allowed responses and code equivalent. Hit Save button and the window will close.

Warning: Editing a question can be detrimental to analyzing other data, be sure to obtain approval from your directing biologist prior to editing an existing question.

Delete Question:

Considering the longevity of use and accumulation of data, deleting a question may cause analysis problems. At this time programmers aren't sure if this is a viable option, therefore no questions can be deleted once entered.

Answers:

Enter the appropriate answers to questions from the census form (Figure 22) by clicking on the down arrow next to the highlighted data field within each question's rectangular area (Figure 21), scroll to the desired entry, click the cursor over the field, and then press the left mouse button to enter the data; you may also press the first letter of the desired entry (A, B, C, D, or E). Once the desired entry is made, tab three times or mouse over to the next field.

Note 1: If the Special Information on the census form does not reflect a response, as in Figure 22 number 1 and 2, enter the code equivalent for "No Response". Since there are responses in numbers 3 and 4 in the Special Information, it is assumed that questions 1 and 2 were asked, but had no response from the angler. You may find it helpful to keep a print out of assigned questions and appropriate responses while inputting answers to additional questions in C-SAP.

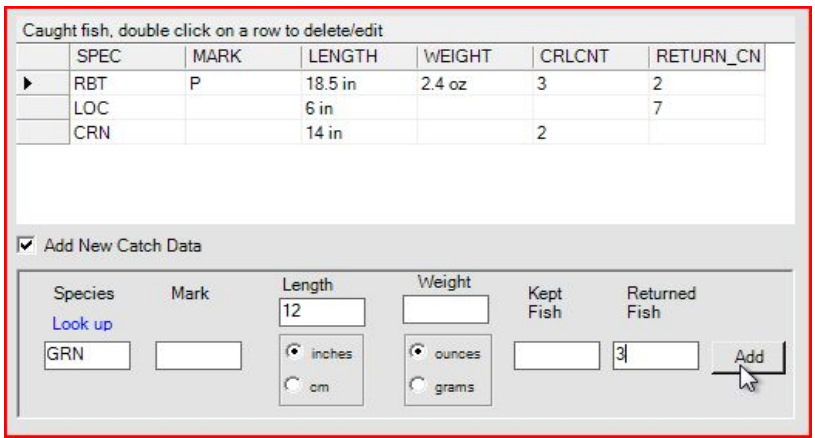
Note 2: Once entered, an answer becomes the default entry for that question in subsequent records, or until the another answer is selected. Because these fields are auto-filled once a response is entered, C-SAP records the auto-filled response, weather or not it is the correct response. With this in mind, be sure each question has the appropriate response (answer) selected for all remaining records in the water.

Catch Data Element

Record catch data annotated on the census survey in this element. The window allows for entries to be added, edited, and deleted (Figure 25).

☐ Add New Catch Data:

Begin adding angler catch data by clicking the small square at the bottom of the catch data window, next to the "Add New Catch Data" text. Note, the entries for these



fields are based on fish of the same length, both kept and returned. When you click the square a data entry window opens (Figure 25); each component is addressed below:

Figure 25. Add New Catch Data

Species:

Similarly to Target Species above, type in the acronym appropriate for the species, or do a "Look Up" to search for the species of fish caught (see Target Species instructions for searching for specific species).

Mark:

Fish stocked in a body of water by the Division of Wildlife are often part of on-going research projects and stocking management. Fish stocked as part of these research projects are often "marked" in a variety of manners including fin clipping, tagging, or a combination of both techniques. During creel counts, clerks inspect each fish to determine if a specific "mark" is present and record it on the census form. Enter the abbreviation for the type of mark found on the fish (A = Adipose, P = Pelvic, W = Wire, etc.) and tab to the next field; if no mark is found, an entry isn't required.

Length:

Creel clerks often record length entries using inch and fractions of inches; convert the fractional portion of a measurement to the nearest tenth and enter the length. Although you may enter more than one decimal place, C-SAP limits the entry to one decimal place. If the limitation is exceeded, an alarm will sound and a invalid entry warning window will open; close the warning, make the correction and continue to enter data. Regardless if measurements are made with inch or centimeter increments, maintain consistency throughout entering all catch data for the water's records.

Note: Select the appropriate radio button for the type of measurement technique used. This radio button remains selected continuously until changed, precluding the need to highlight it at every catch entry. CAUTION: Do not toggle back and forth between inch and metric, the converter rounds up and toggling between formats forces conversions to compute inaccurate entries as it continues to round up.

Weight:

Similarly to recording the length, maintain consistency. Enter the measured weight to the nearest tenth decimal place and ensure the appropriate radio button is selected for the type of measurement technique used, fortunately this radio button remains selected continuously until changed, precluding the need to highlight it at every catch entry.

Kept Fish/Returned Fish:

Enter the number of kept and returned fish of the same length in a single line of catch data in C-SAP (Figure 25, notice the RBT catch data on line one), make separate catch data entries for fish of varying length. If you make a catch entry that duplicates the length of a previous entry, C-SAP will not allow the data to be saved, edit the previous entry for that length of fish (see Edit Catch Data below). Clerks gather data one fish at a time; occasionally they expend effort writing completely new entries on the census sheet, when all that was necessary was a simple addition to a previous entry.

ADD:

Once catch data is entered in the appropriate fields, press ADD to enter the catch in the database. Once you tap ADD, the information just entered is relocated to the upper portion of the window and the fields in the catch data entry window are cleared to record the next size catch. Continue the same procedures until all caught fish recorded on the census form for the contact are entered; after entering the last catch, click the mouse on the small square next to the "Add New Catch Data" to continue. If the add catch data window remains open an error message appears indicating "Fish Species Required"; hit OK on the error and uncheck the add new catch data box, then you can save the contact record (the complete contact record can't be saved until the box is unchecked).

Note: Different terms are used for some fields, see 'add catch data' and 'caught fish data' – "CRLCNT" Vs "Kept Fish", and "RETURN_CN" Vs "Returned Fish." In spite of the different labels within the display, the appropriate data is retained.

Editing/Deleting Catch Data

Position the mouse over the arrow in the gray rectangle on the left side of the line of data to edit/delete and an edit/delete option window opens; click the box for the desired action. If editing data, a window opens allowing you to make changes, click SAVE when finished. Select DELETE if desired and a confirmation window opens, select YES to permanently delete the catch data. If you delete an entry from the catch data, you are exited from the program. C-SAP doesn't close, however, when you return to the application you return to the last point of data entry.

Note: If a creel survey contains data that doesn't make sense, i.e. a survey indicates a 13" fish caught with 0-CC and 0-R, disregard this data and DO NOT enter the catch. C-SAP will alarm to these inaccurate recordings, close the alarm window and continue with the next catch data.

Congratulations! You've completed all the entries associated with one water record! Be sure to hit save before going on to add a New Day. The rest of the instructions continue with water record management, scheduling, reports, and statistics.

Water – Import

This menu opens the option of importing old (CAD) data or Database files; at this time this function only relates to the old C-SAP data in the CAD format. Importing this data may be necessary with updates to C-SAP or consolidating data from multiple data entry clerks. When you select Water, Import the 'import CAD file' window opens; notice the only available file type to import is a CAD file (Figure 26). Navigate to the desired CAD file's location, double click on its name, or scroll to the name and hit the Open button. Save the file in C-SAP's CAD folder, the path is illustrated in the navigation bar of Figure 26.

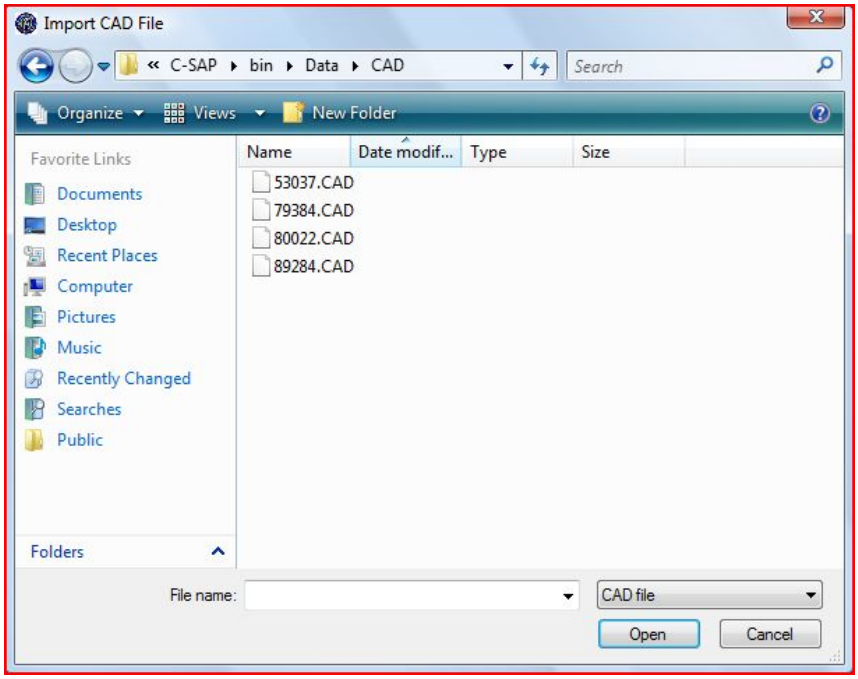


Figure 26. Import CAD Data

However, if you are updating C-SAP from a more recent version and you need to work with contemporary data, you can perform a pseudo-import of the data. Copy the desired water's Daily and Schedule sub-folders from the Data folder, along with the CreelLocal.mdb and CreelLookup.mdb files from the DB folder retained in the previous version, then paste the folders and files into their respective Data and DB folders

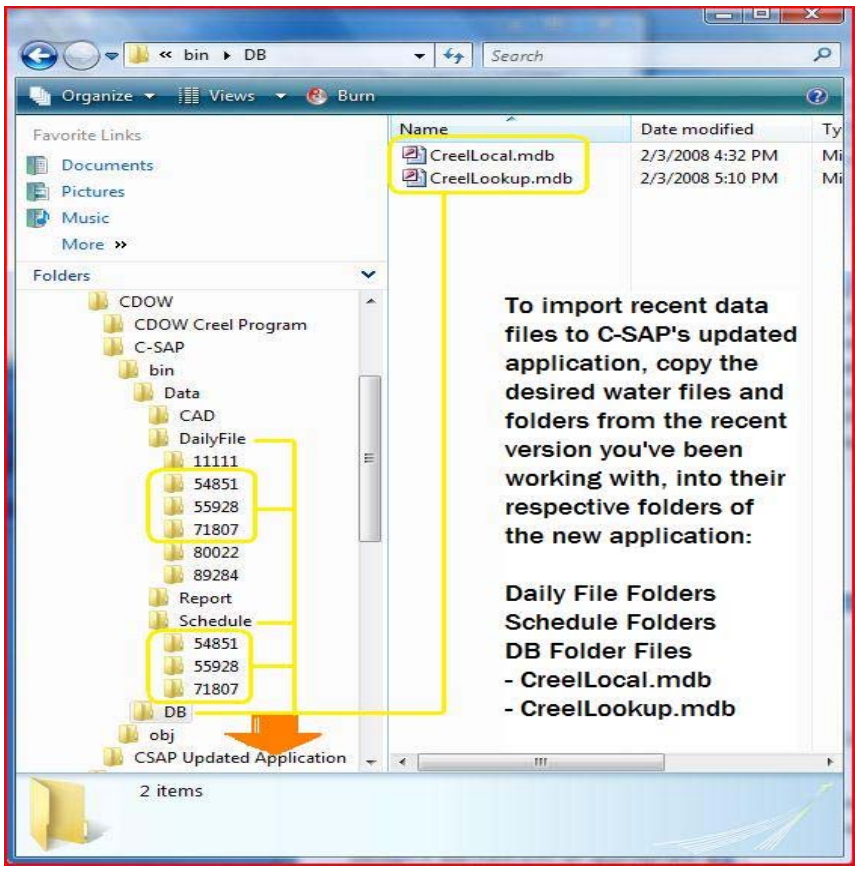


Figure 27. Pseudo-Import of Contemporary Data

in the updated version of C-SAP (Figure 27).

Water – Delete

Delete a water record only if you are positive the record needs to be deleted. Selecting Water, Delete, opens the delete water confirmation window (Figure 28); press yes if you are positive the water record needs to be permanently deleted.

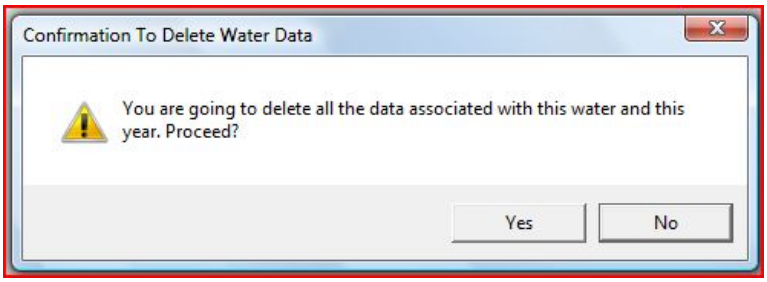


Figure 28. Confirmation to Delete Water Data

Water – Summary

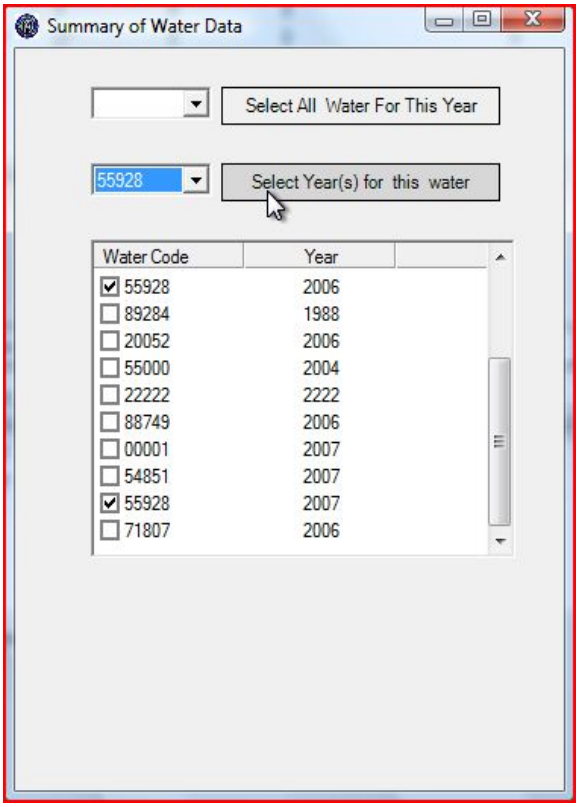


Figure 30. Water Summary Selected

Main menu commands must be associated with specific water and year, this function associates the years of water databases available for use or editing that are contained in your C-SAP folders.

Click on the Water/Summary tab to open the function. The summary table allows you to see all the water codes associated with a particular year or all years available for a single water code.

Either type the year/water into the blank fields or use the down arrow next to the field to select from a list of available years/water codes. Notice, as in Figure 30, more than one water can be 'checked' but only one can be opened at a time; scroll through the window to find the desired database. Select the desired database by Double-click over the desired water code listed in the summary information; the summary window will close and the water code and year fill into respective fields automatically in C-SAP's application window (Figure 29).

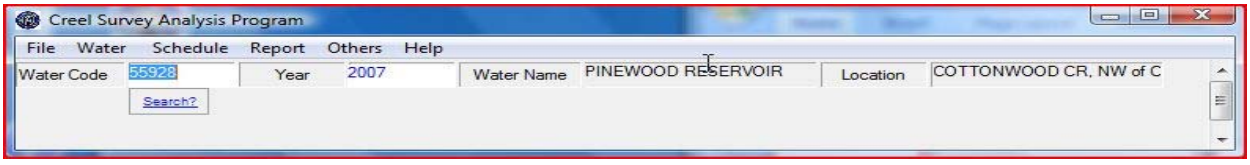


Figure 29. Water and Year Inserted by Water Summary Function

Schedule

Generating schedules for C-SAP usually occurs prior to conducting a survey. Biologists use this function to generate schedules reflecting random or specifically defined sample days and times to direct creel clerk survey acquisition, dependent upon the research objectives. Additionally, this feature associates water records and calendar dates for statistical analysis; therefore a schedule must be created for each water record/survey conducted.

The directing biologist may provide the data entry clerk with the schedule folder and file for the water code(s). Copy the folder(s) into the ***C-SAP/bin/Data/Schedule*** subfolder. The file content for the schedule can be accessed following the command instructions below.

If the directing biologist does not provide the schedule file(s), the Data entry clerks must record each day surveyed by a creel clerk in a schedule; otherwise errors in data analysis occur. The drop down Schedule menu provides three options: Open Schedule Designer, Open Creel Schedule, and View Schedule. Generating the schedule requires actions in two separate windows: In the Schedule Designer, designate the overall sample period, week day and weekend frequency, and any constraints; in the Calendar itself, generate the number of counts and hours of the day they occur between. Note: Biologists need the full extent of the scheduler, while data clerks only require minimal actions; separate instructions for data clerks are included after detailed information for each option.

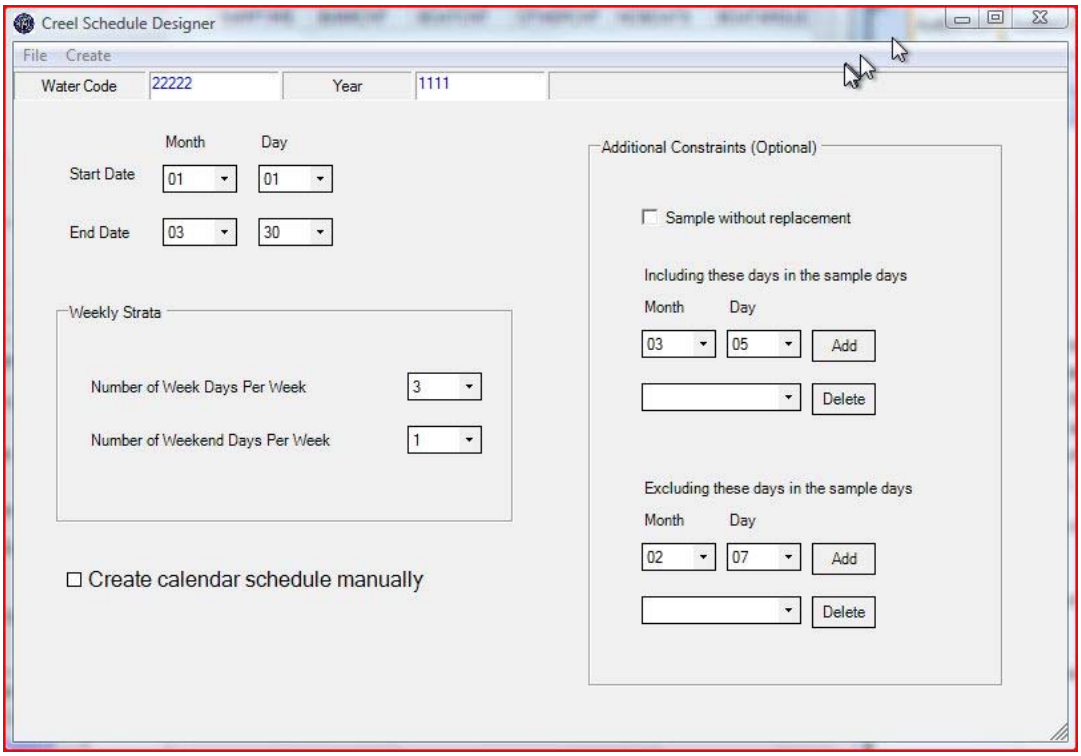


Figure 31. Creel Schedule Designer

Open Schedule Designer

Allows generation of a new schedule, either with random or manually generated survey times (Figure 31). Open the schedule designer, notice the File and Create command buttons at the top of the window; both actions are addressed following the instructions below establishing the parameters of the schedule.

Water Line

Enter the water code number and sample year.

Month/Day

Enter the month and day the survey begins and ends by clicking on the down arrows and scrolling to the appropriate month/day designations, clicking on the desired number; you can tab from one field to the next field. You can also enter the date criteria by entering the first digit of the number; as in many of the other fields in C-SAP, the date fields are fixed at two digits. For example, you can enter the numeric value for March by continuously pressing zero until the number 03 appears, then pressing the tab to the day field.

Weekly Strata

Define the parameters for weekly strata to generate random sample times. Enter the number of week days desired to sample, and then enter the number of weekend days.

Additional Constraints

Additional Constraints are optional for the schedule that either specify a day to include or exclude. For example, if a free fishing day is not included in the schedule and you want to determine how many anglers frequent the sampled water location on that day, include it in the schedule; or if an area is closed to anglers for a period of time, exclude those dates from the schedule.

Sample without replacement

To comply with the number of weekday and weekend constraints established in the weekly strata, by default the scheduler compensates for inclusions or exclusions by removing or adding a randomly generated day(s) for the weekday/weekend strata the inclusion or exclusion falls within. To disregard this default compensation mechanism, check the 'Sample without replacement' box

Inclusions/Exclusions

Include or exclude a specific date from the schedule by selecting the month and day; then hit 'Add'. The inclusion/exclusion date will be entered into the field below the month and day selection fields; add or delete as many specific dates necessary to conduct an effective survey.

The included or excluded dates can also be deleted if determined inappropriate for the sample; click the down arrow next to the desired delete button in the additional constraints rectangle, scroll to the date you want to delete, click the left mouse button, then hit the delete button to remove the date from the schedule constraints.

File:

The File command button offers two options, Open Creel Schedule and Exit.

Open Creel Schedule

Opens a blank calendar for the water code, be sure to enter the water code and year prior to selecting this option. Once the calendar opens, establish the schedule parameters as instructed above.

Exit

Closes the Creel Schedule Designer when selected.

Create.

Once you've established the parameters of the schedule tap the 'Create' button and select ***Create Calendar Schedule***. A new window opens automatically titled "Calendar Water (water code) Year (year)" with the established parameters; the month of January at the top, weekdays are on the left and both weekend days are on the right (Figure 32).

Calendar Water (water code) Year (year)

The command bar for the window includes File, Pick, Strata, and Counts; before using these commands, establish the number of counts first (maximum is 10), then enter the start and end times for survey days. Note: Creel scheduler is limited to A.M. start times and P.M. end times.

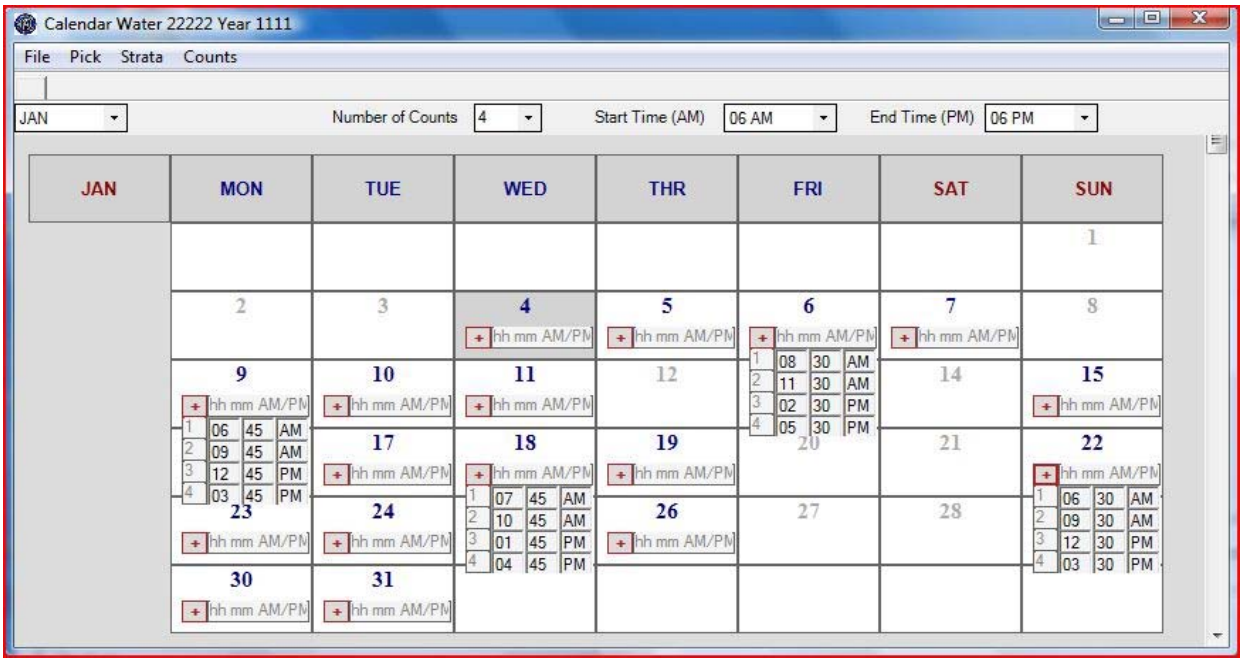


Figure 32. Water (water code) Year (year)

File.

Save Calendar. Select this command after all schedule parameters are fixed; once selected the window does not close; be sure to save after each change to the calendar as well as after creating each months schedule. The schedule is retained in the Schedule sub-folder for the water in C-SAP's Data folder; it can be opened again later for editing or reference.

Print Preview. When selected, a linear print format of the schedule opens on the monitor.

Print. The usual Windows print window opens; select the printer and desired number of copies and hit print.

Exit. Hit this command if you've established and saved the count and time frames for the schedule, otherwise the calendar closes without saving.

Pick

Once the established calendar is created, its review may prompt biologists to add or remove days from the schedule. For these commands to function, you must click the mouse on the number of the day to highlight (box turns gay) it before executing either command (Figure 33); save the calendar after making picks/set-backs in any month:

Figure 33. Strata Change Samples

Pick As Sample Day

If a biologist decides to include a day in the schedule, that wasn't selected in the randomly generated sample days (indicated by the + and time reference), use this function to include the specified day in the schedule. Once the day is highlighted, click on the Pick command, then select the Pick As Sample Day command and an empty sample time table (counts) is inserted into the day. To specify, or randomly generate times for the sample time table see the instructions below under Counts.

Set Back to Regular Day

If a biologist decides to exclude a day that was selected in the randomly generated sample days (indicated by the + and time reference), use this function to remove the sample time table from the specified day in the schedule. Highlight the day, click on the Pick command, then select the Set Back to Regular Day command and the sample time table (counts) is deleted from the day.

Strata

Strata commands allow biologists to change the statistical value of sampled days between weekday and weekend days; they may find it appropriate to change the designation of a weekday to a weekend day, or vice versa (Figure 33). Additionally, it may be statistically significant to shift sample time values from one month to another, Strata commands also allow these shifts.

Note: Strata command functions apply only to days included in the schedule; highlight the desired date prior to performing these commands; be sure to save the calendar after making any changes.

Change WD/WE

Various reasons, i.e. a weekday holiday, may prompt a biologist to change a weekday designation to a weekend day; highlight the day, select the Strata command, and hit the Change WD/WE button. A bold E or D is added the date, designating the type of strata change.

Change Month To

Statistical values associated with specific sample days can be compiled with values in a following or previous month's data. To push the values highlight the day, select the Strata command, and hit the Change Month To button. A bold **<** or **>** symbol is added to the date, designating the type of strata change from a previous (<) or to a following (>) month's data.

Note: Sample date values are restricted to their calendar year; therefore January cannot be pushed to the previous year, as December sample values cannot be pushed to the following year's values.

Counts

Generate unique sample counts (sample times) for the whole month, or a single day; a two step process.

After the number of counts is entered and start and end times designated, tap "**Counts.**" Mouse over one of the two following methods for generating counts and tap the left mouse button over your choice:

Random (Method 1) this method generates counts randomly, but within the weekday and weekend parameters specified for the designated sample period.

Systematic (Method 2) Select this method to generate evenly distributed counts within the weekday and weekend parameters specified for the sample period.

Then choose whether to generate the sample counts for a whole month, or a specific day:

Generating counts for a whole month:

Highlight the first day of the desired month, scroll to select Method 1, or scroll over the full description for Method 1 to generate the counts; be sure to save after each action.

Generating counts for a single day in a month:

Highlight the specific date requiring counts, scroll to select Method 2, or scroll over the full description for Method 2 to generate the counts; be sure to save after each action.

Note: Save the calendar after generating counts, either for a full month or a single day.

Open Creel Schedule

Allows the user to open the existing schedule for the water and edit the schedule. Select the Schedule command, and hit the Open Creel Schedule button. When the schedule opens, the month of January defaults to the top of the window, use the scroll bar to scroll down to the desired month to review/edit. To move the selected month to the top of the window you may also use the month place-marker, a blank field with a down arrow, located under the File command; click the down arrow, scroll to the desired month and click the left mouse button over.

View Schedule

This function opens a non-printable, linear view, of the existing schedule (Figure 34). Select the Schedule command, and hit the View Schedule button. This linear view allows the biologist and data clerk a quick view to proof read schedule entries.

Day Days included in the schedule are listed chronologically; use the scroll bar to view dates.

Sampled YES/NO indicate whether samples were acquired for the scheduled day.

No. Schedule Counts. Indicates the number of sample counts scheduled for the day.

No. Data Counts Indicates the actual number of samples recorded in the water's record.

Note: A warning appears below the list of dates if any days in the water record are not included in the schedule. If any date appears in the section, edit the schedule to include the corresponding day of data in the water record. Notice in Figure 34 the last entry has a NO under "Sampled" indicating the date is in the schedule, but no sample counts are entered. This indicates one of two things: either a water record does not exist for the scheduled date, or the water record is missing sample data; determine if a

record was input for the water and enter the missing sample data (if available), or delete the scheduled day if there is no survey record.

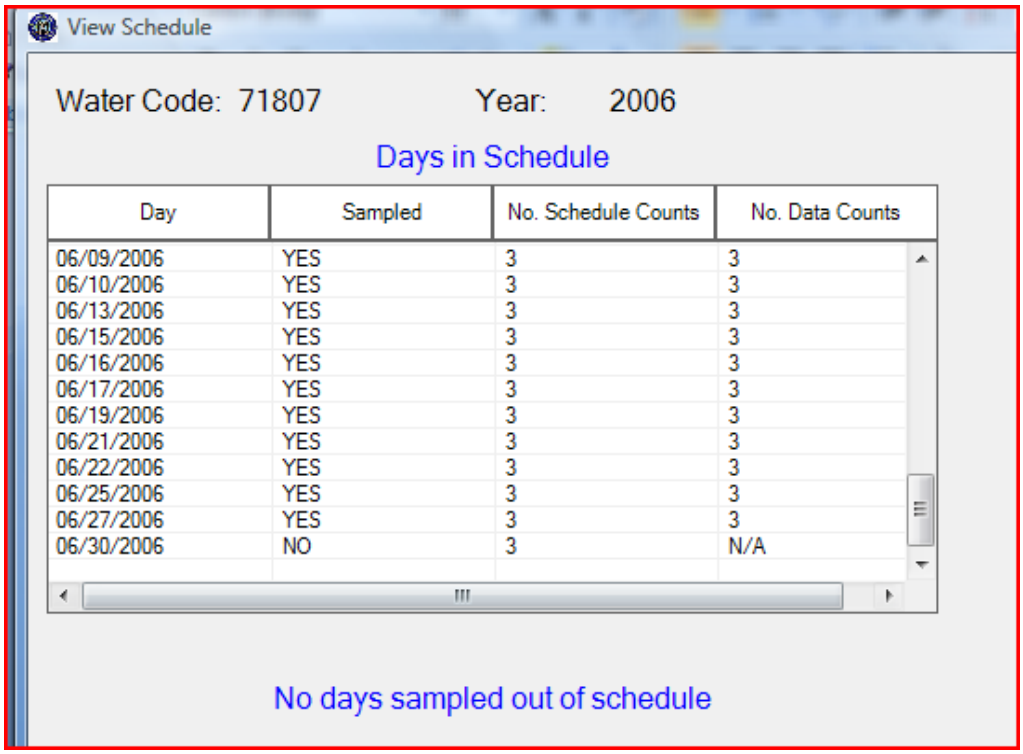


Figure 34. View Schedule

Scheduling for Data Entry Clerks: The previous details regarding schedule creation and edit procedures are more than data clerks need to ensure correlation of survey data input and the water record's calendar; follow the minimum actions below:

- Create a basic calendar for the water including the dates actually surveyed (corresponding to the survey data sheets input in the water record).
    - Schedule, Open Schedule Designer, enter the water number and year, check the box next to Create Calendar Schedule Manually, select Create, mouse over Create Calendar Schedule and tap the left mouse button.
    - Double click the mouse on the dates included in the survey data for each water record you input.
- It is not necessary to establish counts, start or end times.
- Be sure to save each month of the calendar separately after entering all dates for that month.
- The schedule can be created either before, or after the water records are input.

Report

There are two basic report formats: Daily Detail Files and "Reports". "Reports" can be manipulated to a variety of user specifications, depending on desired output. The instructions describe how to create and access the reports, not how to utilize the data.

Daily Detail Files

Daily Detail Files reflect existing data for a water record as consolidated data (Daily Detail 1) or expanded data (Daily Detail 2); these files don't allow the user to manipulate the data for specific needs. There are two main options: Create and Open; once created, there are File and View options for the detailed file.

Create

Select Report, Daily Detail File, and then click the left mouse button over Create. It takes a few moments to process, and then the Daily Detail File for the water record opens in a separate window.

Open

Select Report, Daily Detail File, and then click the left mouse button over Open; if a file exists it will open in a separate window.

Note: The following file management options are apply to creating new, or opening daily detail files:

File.

Save. Once you create a daily detail file, select file, and then save.

Note: If any changes are made to the water record, create a new daily detail file and save it to replace the obsolete file.

Print preview. A screen preview of the form appears on the screen, you'll notice a progress window opens as it prepares the preview. The preview properties are based upon the default printer properties you have selected; the daily detail files are best suited to landscape format.

- Tapping the left mouse button over the printer icon sends the document to your printer.
- The magnification icon provides various scales for the preview.
- You can preview single pages, or multiple pages on the screen by selecting the different page preview icons.
- The window can be closed by 'X-ing' out the window or tapping the Close button.

- To scroll through the pages in print preview, there is a page advance/regress button in the upper right corner of the maximized screen, just below the X for closing the window.

Print. Select this button to open the standard Windows print options. As with the print preview, select the page orientation most appropriate for the data.

Note: To preclude print format problems for specific printers, the preferred print format is to a PDF file.

Exit Closes the Daily Detail File; you may also close the file by X-ing out of the window.

View

Advance to the different sections of the Daily Detail File by selecting View, and then placing the cursor over the desired section's name and tap the left mouse button, the selected section will appear at the top of the View window. You may also scroll through all the sections by using the scroll button bar on the right side of the window.

Note: Each time you exit and return to the report in the view window, Daily Detail 1 of the report returns to the top of the view screen.

New Report

Set Specifications:

This option sets parameters of data included in the report. Two tabs appear: ***General*** and ***Strata***; both are set at default values to include available data *EXCEPT* the Strata fields.

Note: Setting specifications for the report does not generate a report(s); you must select Create Report after setting specifications. Selected specifications are not retained, each time you open the Set Specifications window the available options return to their default settings. However, the General and Strata specification tabs remain open until the File, Clear Report Specification Window is selected, or the Water functions are selected.

General

The window opens with all available reports selected, for both totals and species, compiled by statistical method 1, with the finite population correction factor selected. Leave the defaults selected or click on the squares next to each report type to de-select the data from the report (selection is indicated by the check mark in the square).

Strata

Tap on this tab to select available weekday and weekend strata for the months and the species data available in the water record. The default setting includes all the calendar strata, but no species are selected; check the square next to each of the desired species to include in the report. Refer to the species Lookup table in the Water, Edit window, or the Lookup table in the Add Catch Data screen if you are not sure what species is indicated by the three letter acronym in the Strata window.

Create Report

Once you set the report specifications detailed above, scroll back to the top of C-SAP's command bar and select Report, New Report, and then Create Report. Once selected, the data is compiled and a new window opens containing the specified reports, in the same order they were selected in the Set Specifications window (top to bottom, General to Strata).

The following file management options are available whether creating new, or opening existing reports:

File.

Save. Once you create a daily detail file, select save.

Note: If any changes are made to the water record, create a new report and save that to replace the obsolete file.

Print preview. A screen preview of the printed format will appear on the screen, you'll notice a progress window opens as it prepares the preview. The preview properties are based upon the default printer properties you have selected; the daily detail files are best suited to landscape format.

- Tapping the left mouse button over the printer icon sends the document to your printer.
- The magnification icon provides various scales to enlarge the preview.
- You can preview single pages, or multiple pages on the screen by selecting the different page preview icons.
- The window can be closed by 'X-ing' out the window or tapping the Close button.
- Note: To scroll through the pages in print preview, there is a page advance/regress button in the upper right corner of the maximized screen, just below the X for closing the window.

Print. Select this button to open the standard Windows print options. As with the print preview, select the page orientation most appropriate for the data and print to a PDF format.

Exit Closes the Daily Detail File; you may also close the file by X-ing out of the window.

Export

To Excel

Once create, a report can be exported for use in Microsoft Excel. Selecting Export, To Excel opens the Microsoft Excel application with the report data converted into spreadsheet formats compatible with Excel, each report is compiled in a separate spreadsheet accessible at the bottom of Excel.

Note: This function only works if you have Microsoft Excel installed on your computer, otherwise a series of error messages appears on screen when you try to perform the export.

Open Report

Select this option to create a new report (Specifications), or view an existing report (Open Report).

Specifications

Selecting this option allows you to set the specifications for reports, follow the same procedures as described earlier for new reports.

Report

Select this option to view the last report generated for the water record.

Note: Unless you are sure the existing report data is current, set the desired report specifications and create a new report; otherwise you may be viewing obsolete data.

Others

There are two options under this command button: Statistics and Edit Additional Questions. Again, the instructions describe how to create and access the options, not how to utilize the data.

Statistics Select this option to Create Detailed Reports or Create Statistics; both of these functions are for screen print only. For both of these functions you must Set Criteria, Set Output, and establish Correlation(s); your specific needs may not require selection of all available parameters. Once you set the criteria, output and correlation select either the Create Detailed Report or Create Statistics button, a window displaying the data will open.

Set Criteria Notice there are several blue question marks throughout the Set Criteria tab; placing your cursor over the "?" and tapping the left mouse button opens a window describing the minimum criteria for that portion of data, or instructions are detailed to

specify the criteria. Criteria must be established in at least one of the five available areas, but not all criteria needs selection.

General Criteria. Scroll through the available data sets for water, year, month, and day; click on each item to highlight and select. More than one water code and year can be selected at one time, however month and day settings are limited to all data or individual dates, but you may not select multiples. If you establish criteria for which data doesn't exist, a window opens informing you the query results in no contacts; if the established criteria correlates data, a window opens describing the number of contacts meeting the criteria and

Note: Since you establish criteria within the statistical function, you do no t need to enter a water code and year in the basic C-SAP window.

Contact Criteria. Pressing the down arrow, scrolling over options and clicking the left mouse button will select most options. If details or statistics regarding target species and additional questions are required pay particular attention to the available options: more than one Target Species can be selected, more than one question and answer may be selected.

Day Criteria Day length, weather, and water level are straight-forward selections, only one selection is allowed for each option; however, you may assign a specific value for water level. The values for Water temperature and Secchi must be specified as =, >, or < a specific value rounded to the nearest whole number, remember to select the method of measurement, either standard or metric.

Fish Criteria When establishing fish criteria, only one species is required, or you may select several species for the same report/statistics. Enter the three letter acronym for the desired species, and then click Add; follow the same procedure for adding additional species to the selection criteria if desired. If you do not know the acronym for a species, click on the blue Look Up text to open the species search window. The values for length and weight must be specified as =, >, or < a specific value rounded to the nearest tenth, remember to select the method of measurement, either standard or metric; kept and returned values must be set in the same manner, but using whole numbers.

Sample Times Criteria. Establish the range of time and angler criteria; you must also select at least one field from the contact criteria. To clear the input fields scroll the times back up to the blank option; highlight angler criteria and hit delete.

* Unfortunately this criteria selection process doesn't work right at this time.

Set Output Once the criteria for detailed reports or statistics is established, set the desired outputs for contacts, day, fish, and sample times by placing the mouse over the

Set Output tab and clicking the left mouse button. When the tab opens, check the desired data boxes, you can check or uncheck individual data boxes or select the top box in the row to check/uncheck all the items.

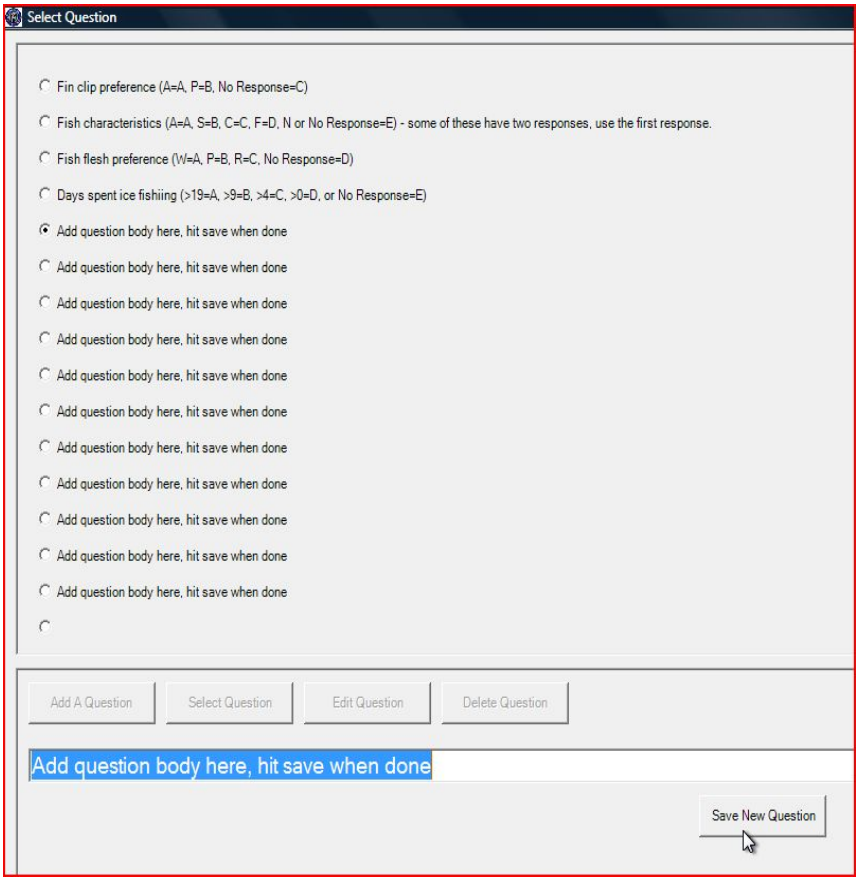
Note: sample times cannot be selected in conjunction with contact or fish data.

Correlation Check any or all of the boxes to test if any of the available data correlates with significant statistics. Selecting these factors may discern an association if significance is shown statistically.

Edit Additional Questions.

Although you can edit questions through the Water, Edit additional questions element, this option provides direct access to add or edit questions utilized during creel surveys.

Caution: Where adding additional questions to the table doesn't particularly present a problem, editing existing questions could cause significant problems for data associated with current questions used in surveys. Check with your directing biologist before editing additional questions.



Notice the window that opens is titled Select Question, the application utilizes the existing features within the Water, Edit additional questions element (Figure 35). You must maximize the window to see available command buttons.

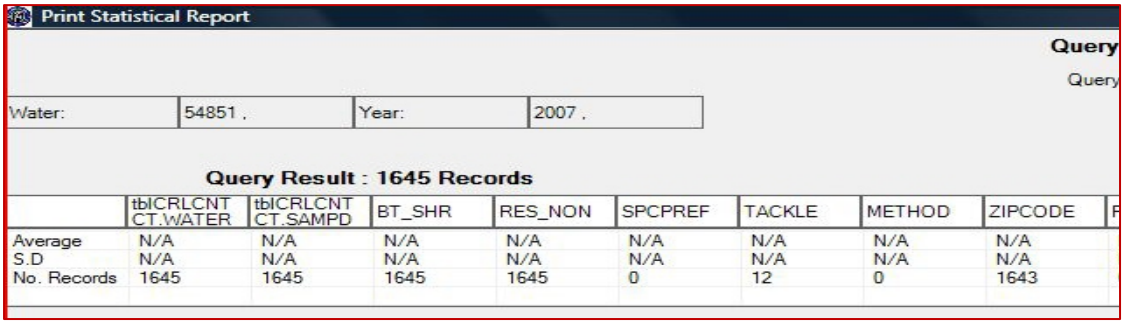
At the bottom of the window are three options: Add A Question, Edit Question, and Delete Question. To preclude unnecessary repetition, see the instructions for these options earlier in the text. Remember to include the question, possible answers and a coded equivalent for the response for new, or when editing questions.

Figure 35. Edit Additional Questions

Proofreading For Data Entry Clerks

Upon completion of data entry, proofread all entries prior to submitting data. You may find following practices useful in proofing:

- Line-by-line, entry-by-entry comparison of creel survey data sheets and input record; correct any errors found and save each record upon completion.
- Create a statistical report generating totals for both species and contacts; be sure to deselect the finite population correction factor (Figure 36). Compare totals across fields in the report. Although obvious differences occur i.e. catch Vs return count etc., most totals will be the same for the water record. For example, water 54851, 2007 has 1,645 contacts; therefore there should be 1645 associated zip code entries, water levels, water temperatures, etc.



	tblCRLCNTCT.WATER	tblCRLCNTCT.SAMPD	BT_SHR	RES_NON	SPCPREF	TACKLE	METHOD	ZIPCODE
Average	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S.D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
No. Records	1645	1645	1645	1645	0	12	0	1643

Figure 36. Error Checking With Statistical Reports

In Figure 36 there are two issues: discrepancy in zip code totals and entry of 12 tackle designations. For this water record **NO tackle data** was acquired and the 12 tackle entries must be deleted; reviewing the census sheets, there were two zip code entries missing from the creel survey sheets confirming accuracy of the zip code entries. To determine which records have tackle entry errors, create and review a detailed report under the statistics tab (Figure 37). Scrolling through the report reveals tackle entries on 9/23/07 and 6/27/07 were inadvertently made. These tackle entries must be deleted from the water's database by editing the record. NOTE: When searching for contact entries to change, be sure to scroll through each contact to find the entry needing editing.

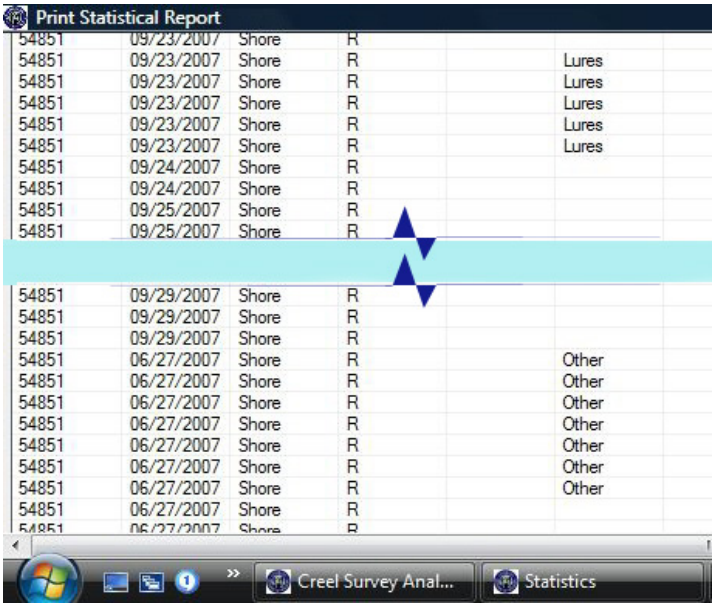
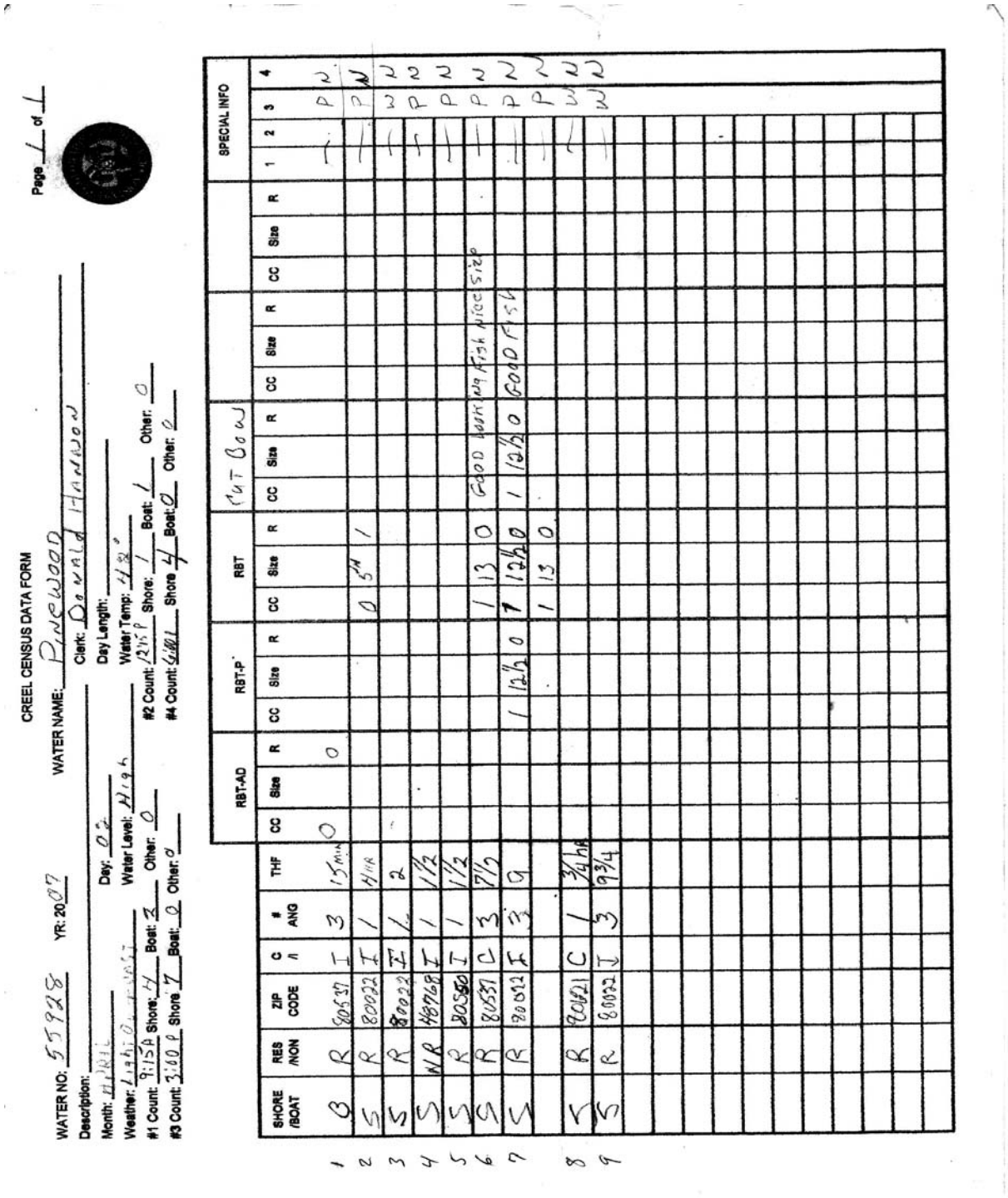


Figure 37. Error Checking Detailed Statistical Report

Appendix A

Creel Census Data Form



CREEL CENSUS DATA FORM

Page 1 of 1

WATER NO: 559258 YR: 2007 WATER NAME: Pinewood

Description: _____ Clerk: Donald Hanwood

Month: [illegible] Day: 02 Day Length: _____

Weather: Light [illegible] Water Level: High Water Temp: 42°

#1 Count: 9:15P Shore: 4 Boat: 3 Other: 0 #2 Count: 2:15P Shore: 1 Boat: 1 Other: 0

#3 Count: 3:00P Shore: 7 Boat: 0 Other: 0 #4 Count: 6:00 Shore 4 Boat: 0 Other: 0

	SHORE /BOAT	RES /NON	ZIP CODE	C / A	# ANG	THF	RBT-AD CC	RBT-AD Size	RBT-AD R	RBT-P CC	RBT-P Size	RBT-P R	RBT CC	RBT Size	RBT R	CUT BOW CC	CUT BOW Size	CUT BOW R	CC	Size	R	SPECIAL INFO 1	2	3	4
1	B	R	80537	I	3	15min	0		0													I	P	N	
2	S	R	80022	I	1	1HR							0	5"	1							I	P	N	
3	S	R	80022	I	1	2																I	P	N	
4	S	NR	48768	I	1	1½																I	P	N	
5	S	R	80550	I	1	1½																I	P	N	
6	S	R	80537	C	3	7½							1	13	0	GOOD WORKING FISH NICE SIZE						I	P	N	
7	S	R	80012	I	3	9				1	12½	0	1	12½	0	GOOD FISH						I	P	N	
													1	13	0							I	P	N	
8	S	R	80021	C	1	3/4 hr																I	P	N	
9	S	R	80022	I	3	9¾																I	P	N	

Appendix B

Submitting Data

Once data is compiled and saved, create a back-up copy and email (or by whatever transfer method prescribed) the following files to the directing biologist:

C:\CSAP\BIN\DB\CreelLocal.mdb
C:\CSAP\BIN\DB\CreelLookup.mdb
C:\CSAP\BIN\Data\Daily File\ (Water Number #####)\D#####YEAR.xml
C:\CSAP\BIN\Data\Report\ (Water Number #####)\RS#####YEAR.xml
C:\CSAP\BIN\Data\Report\ (Water Number #####)\RT#####YEAR.xml
C:\CSAP\BIN\Data\Schedule\ (Water Number #####)\CL#####YEAR.xml

Before emailing, create compressed files utilizing a compression utility like WinZip. It's possible/probable that the CDOW email server may prevent attachments to files, check with you directing biologist for file transfer options.

APPENDIX IV

Molecular Techniques for Identifying Hofer (GR) Strain Rainbow Trout

CRR vs. GR AFLPs progress report

J. Wood, K. Ballare
Pisces Molecular
June 27, 2008

Between July 2007 and June 2008 a number of populations were analyzed and research and development conducted for the Hofer (GR) and Colorado River Rainbow Trout (CRR) AFLP project.

First, optimized analysis parameters for the programs Genemapper 4.0 and STRUCTURE 2.2 were created specifically for GR and CRR hybrid analysis.

With the optimized analysis parameters, a group of 300 blind samples in 5 groups (pure CRR, pure GR, and F1, F2 and B2 crosses) were analyzed. These were assigned into one of the 5 groups based on statistical assignment of their AFLP marker fingerprints with STRUCTURE 2.20. Graphs and individual analyses were created for the group of 300 as a whole as well as each individual strain type (Figure A4.1). Original blind test numbers and classifications are shown in Figure A4.2.

Once these 300 samples were "unblinded", the pure CRR and GR groups were added into the set of reference samples to which future unknown samples would be compared. Increasing the size of the reference populations increases the accuracy of the genetic analysis in STRUCTURE. Ten Gunnison River rainbows (GRRs) were analyzed and also added to the CRR reference group. Thirty Tasmanian strain fish were analyzed to be used as references for an analysis of Tasmanian x GR samples.

Once the analysis parameters were optimized and the reference populations were finalized, individual populations were able to be analyzed and results reported. Table A4.1 summarizes the populations analyzed.

After analyzing these populations in STRUCTURE and determining the levels of CRR and GR, it was suggested that having a measure of intra-population diversity would be useful. We began to investigate the utility of the programs AFLP-SURV and Arlequin to achieve a measure of diversity. At present, we have not found a satisfactory program to generate a meaningful diversity statistic for GR x CRRs and further investigation is needed.

Also during this past year, an experiment was run comparing the AFLP data obtained with DNA extracted from fin clips and versus DNA extracted from fish heads. No discernable difference in AFLP data quality between the two sample types was found in this experiment.

Most recently, we performed AFLP reactions on a group of fish from Cap K ranch (Pisces # 73996-74002) that were previously submitted as samples for *M. cerebralis* testing. The DNA extracted from these samples was not found to be of high enough quality to produce interpretable AFLP data.

Table A4.1. Summary of samples processed.

Source	Date Rc'd	N	3 letter code	Source Info/ Population name	Pisces Numbers	Date report sent
CDOW/GS	6/15/2007	14	UUP	UUP1-14	73401-73414	1/8/08
CDOW/GS	6/15/2007	11	BUP	BUP 1-11	73415-73425	1/04/08
CDOW/GS	6/15/2007	6	UUP	UUP 15-20	73498-73503	1/8/08
CDOW/GS	7/19/2007	7	CBP	CR-KB, HP, LB	74420-74426	1/21/08
CDOW/GS	8/29/2007	12	SF4	SF4	75128-75138, 75210	1/22/08
CDOW/GS	8/29/2007	3	SF3	SF3	75139-75141	1/23/08
CDOW/GS	8/29/2007	8	SF2	SF2	75142, 75178-75184	1/21/08
CDOW/GS	8/29/2007	25	UUU	U 1-25	75143-75167	1/02/08
CDOW/GS	8/29/2007	10	SF1	SF1	75168-75177	1/3/08
CDOW/GS	8/29/2007	8	SHR	Sheriff Ranch	75185, 75187-75192, 76026	1/9/08
CDOW/GS	8/29/2007	5	BBB	B1-5	76027-76031	1/10/08
CDOW/GS	8/29/2007	10	CCC	C1-10	76032-76041	1/10/08
CDOW/GS	8/29/2007	5	UUU	U 26-30	76042-76046	1/9/08
CDOW/GS	10/19/2007	30	BMK	RBT Buttermilk	78170-78199	12/28/07
CDOW/GS	10/23/2007	28	SFF	SF fins	78200-78227	12/21/07
CDOW/GS	11/20/2007	41	CPK	Cap K fins	78228-78268	12/21/07
CDOW/GS	8/29/2007	1	BZB	Braze Bridge	75186	1/03/08

Figure A4.1. Q value results generated from the STRUCTURE 2.2 analysis of 300 blind samples, grouped by actual strain type.

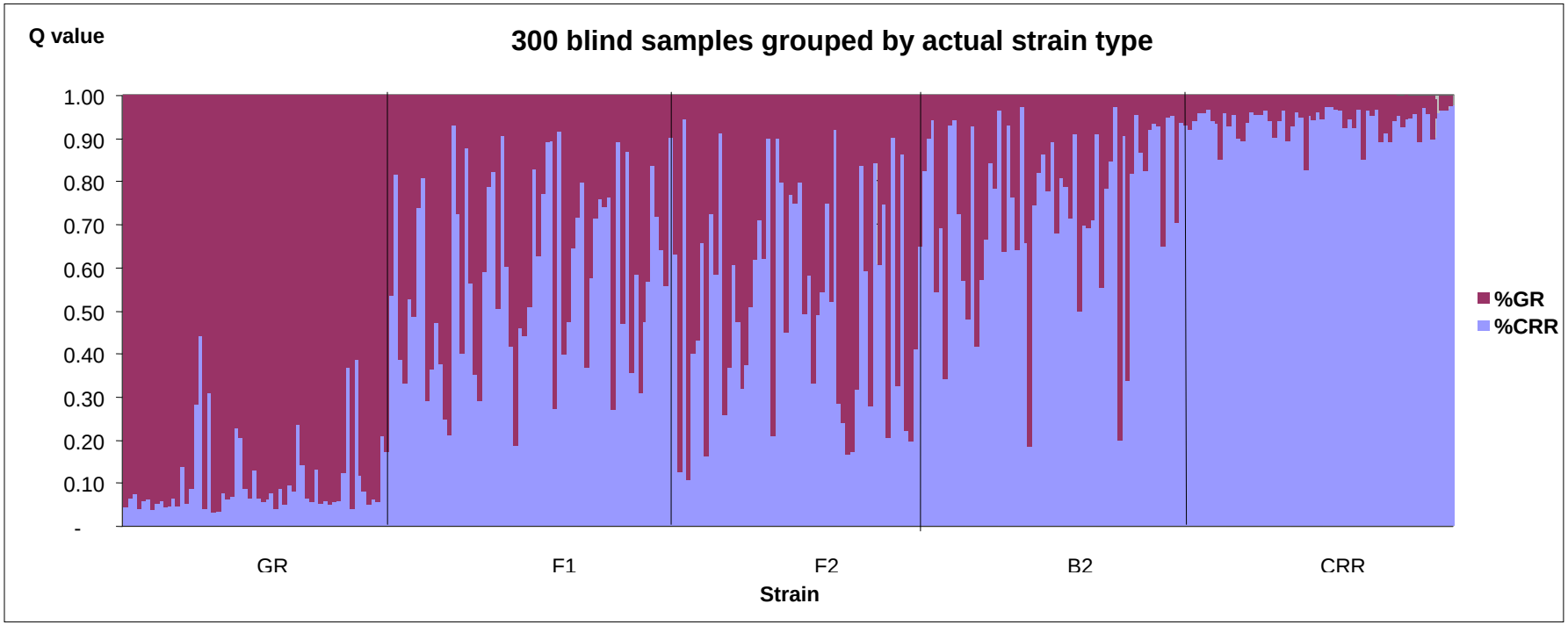


Table A4.2. Raw results for AFLP blind test classification of GR strain versus CRR strain and their crosses. All fish classified as GR-CRR crosses of the F1, F2, or B2 varieties are designated as “F”.

TRUE NUMBER	PISCES NUMBER	TANK	FAMILY	TRUE STRAIN	CLASSIFIED STRAIN
1	158	10	RH9	GR	GR
2	129	10	RH9	GR	GR
3	265	10	RH9	GR	GR
4	231	10	RH9	GR	F
5	10	10	RH9	GR	GR
6	142	10	RH9	GR	GR
7	229	19	RH35	GR	GR
8	195	19	RH35	GR	GR
9	220	19	RH35	GR	GR
10	162	19	RH35	GR	GR
11	179	19	RH35	GR	GR
12	32	19	RH35	GR	GR
13	64	22	RH10	GR	GR
14	56	22	RH10	GR	GR
15	67	22	RH10	GR	GR
16	22	22	RH10	GR	GR
17	221	22	RH10	GR	GR
18	172	22	RH10	GR	GR
19	9	23	RH12	GR	GR
20	194	23	RH12	GR	GR
21	296	23	RH12	GR	GR
22	278	23	RH12	GR	GR
23	35	23	RH12	GR	GR
24	55	23	RH12	GR	GR
25	102	45	RH36	GR	GR
26	98	45	RH36	GR	F
27	217	45	RH36	GR	GR
28	81	45	RH36	GR	GR
29	27	45	RH36	GR	GR
30	167	45	RH36	GR	GR
31	150	50	RH34	GR	GR
32	227	50	RH34	GR	GR
33	24	50	RH34	GR	GR
34	222	50	RH34	GR	GR
35	204	50	RH34	GR	GR
36	78	50	RH34	GR	GR
37	53	58	RH8	GR	GR
38	108	58	RH8	GR	GR
39	199	58	RH8	GR	GR
40	170	58	RH8	GR	GR
41	120	58	RH8	GR	GR
42	235	58	RH8	GR	GR
43	131	60	RH11	GR	GR
44	122	60	RH11	GR	GR
45	90	60	RH11	GR	GR
46	280	60	RH11	GR	GR
47	155	60	RH11	GR	GR
48	54	60	RH11	GR	GR
49	133	70	RH31	GR	GR
50	254	70	RH31	GR	GR

Table A4.2 (continued). Raw results for AFLP blind test classification of GR strain versus CRR strain and their crosses. All fish classified as GR-CRR crosses of the F1, F2, or B2 varieties are designated as "F".

TRUE NUMBER	PISCES NUMBER	TANK	FAMILY	TRUE STRAIN	CLASSIFIED STRAIN
51	180	70	RH31	GR	GR
52	284	70	RH31	GR	GR
53	215	70	RH31	GR	GR
54	107	70	RH31	GR	GR
55	89	75	RH32	GR	F
56	136	75	RH32	GR	GR
57	248	75	RH32	GR	F
58	77	75	RH32	GR	GR
59	85	75	RH32	GR	GR
60	291	75	RH32	GR	GR
61	82	5	QT70	CRR	CRR
62	80	5	QT70	CRR	CRR
63	113	5	QT70	CRR	CRR
64	33	5	QT70	CRR	CRR
65	104	5	QT70	CRR	CRR
66	139	5	QT70	CRR	CRR
67	157	15	QT65	CRR	CRR
68	144	15	QT65	CRR	CRR
69	43	15	QT65	CRR	CRR
70	241	15	QT65	CRR	CRR
71	234	15	QT65	CRR	CRR
72	130	15	QT65	CRR	CRR
73	42	27	QT63	CRR	F
74	163	27	QT63	CRR	CRR
75	226	27	QT63	CRR	CRR
76	91	27	QT63	CRR	CRR
77	23	27	QT63	CRR	CRR
78	232	27	QT63	CRR	CRR
79	21	28	QT61	CRR	CRR
80	206	28	QT61	CRR	F
81	192	28	QT61	CRR	CRR
82	201	28	QT61	CRR	CRR
83	281	28	QT61	CRR	CRR
84	61	28	QT61	CRR	F
85	71	39	QT66	CRR	CRR
86	219	39	QT66	CRR	CRR
87	153	39	QT66	CRR	CRR
88	213	39	QT66	CRR	F
89	256	39	QT66	CRR	F
90	75	39	QT66	CRR	CRR
91	105	47	QT64	CRR	CRR
92	143	47	QT64	CRR	CRR
93	299	47	QT64	CRR	CRR
94	168	47	QT64	CRR	CRR
95	1	47	QT64	CRR	CRR
96	225	47	QT64	CRR	CRR
97	40	56	QT69	CRR	CRR
98	208	56	QT69	CRR	CRR
99	141	56	QT69	CRR	CRR
100	52	56	QT69	CRR	CRR

Table A4. 2 (continued). Raw results for AFLP blind test classification of GR strain versus CRR strain and their crosses. All fish classified as GR-CRR crosses of the F1, F2, or B2 varieties are designated as "F".

TRUE NUMBER	PISCES NUMBER	TANK	FAMILY	TRUE STRAIN	CLASSIFIED STRAIN
101	117	56	QT69	CRR	CRR
102	205	56	QT69	CRR	CRR
103	63	78	QT62	CRR	F
104	51	78	QT62	CRR	CRR
105	28	78	QT62	CRR	CRR
106	169	78	QT62	CRR	F
107	165	78	QT62	CRR	CRR
108	37	78	QT62	CRR	CRR
109	123	79	QT67	CRR	F
110	218	79	QT67	CRR	CRR
111	72	79	QT67	CRR	CRR
112	239	79	QT67	CRR	F
113	112	79	QT67	CRR	CRR
114	261	79	QT67	CRR	CRR
115	294	80	QT68	CRR	CRR
116	126	80	QT68	CRR	CRR
117	109	80	QT68	CRR	F
118	161	80	QT68	CRR	CRR
119	244	80	QT68	CRR	CRR
120	93	80	QT68	CRR	F
121	262	2	RH27	F1	F
122	13	2	RH27	F1	F
123	49	2	RH27	F1	F
124	45	9	RH88	F1	F
125	271	9	RH88	F1	F
126	184	9	RH88	F1	F
127	11	11	RH56	F1	F
128	110	11	RH56	F1	F
129	189	11	RH56	F1	F
130	290	13	RH21	F1	F
131	272	13	RH21	F1	F
132	279	13	RH21	F1	F
133	79	14	RH58	F1	F
134	224	14	RH58	F1	F
135	2	14	RH58	F1	F
136	207	17	RH99	F1	F
137	47	17	RH99	F1	F
138	159	17	RH99	F1	GR
139	164	20	RH91	F1	F
140	236	20	RH91	F1	F
141	73	20	RH91	F1	F
142	175	25	RH60	F1	F
143	20	25	RH60	F1	F
144	74	25	RH60	F1	F
145	106	33	RH24	F1	F
146	202	33	RH24	F1	CRR
147	29	33	RH24	F1	F
148	174	34	RH95	F1	F
149	171	34	RH95	F1	F
150	114	34	RH95	F1	F

Table A4. 2 (continued). Raw results for AFLP blind test classification of GR strain versus CRR strain and their crosses. All fish classified as GR-CRR crosses of the F1, F2, or B2 varieties are designated as "F".

TRUE NUMBER	PISCES NUMBER	TANK	FAMILY	TRUE STRAIN	CLASSIFIED STRAIN
151	68	37	RH30	F1	F
152	48	37	RH30	F1	F
153	115	37	RH30	F1	F
154	203	38	RH94	F1	F
155	300	38	RH94	F1	F
156	97	38	RH94	F1	F
157	247	44	RH97	F1	F
158	237	44	RH97	F1	F
159	14	44	RH97	F1	F
160	62	48	RH28	F1	CRR
161	211	48	RH28	F1	F
162	148	48	RH28	F1	F
163	288	52	RH100	F1	F
164	135	52	RH100	F1	F
165	253	52	RH100	F1	GR
166	250	54	RH26	F1	F
167	267	54	RH26	F1	F
168	183	54	RH26	F1	F
169	50	61	RH25	F1	GR
170	251	61	RH25	F1	F
171	124	61	RH25	F1	CRR
172	259	62	RH92	F1	F
173	15	62	RH92	F1	F
174	249	62	RH92	F1	F
175	57	64	RH98	F1	GR
176	185	64	RH98	F1	F
177	198	64	RH98	F1	GR
178	16	73	RH96	F1	F
179	100	73	RH96	F1	F
180	242	73	RH96	F1	F
181	154	1	RH53	F2	F
182	86	1	RH53	F2	F
183	216	1	RH53	F2	GR
184	59	4	RH5	F2	GR
185	36	4	RH5	F2	GR
186	287	4	RH5	F2	F
187	87	6	RH42	F2	F
188	230	6	RH42	F2	GR
189	17	6	RH42	F2	F
190	18	7	RH3	F2	GR
191	178	7	RH3	F2	F
192	240	7	RH3	F2	F
193	260	12	RH40	F2	F
194	8	12	RH40	F2	F
195	252	12	RH40	F2	GR
196	255	18	RH50	F2	F
197	69	18	RH50	F2	CRR
198	26	18	RH50	F2	CRR
199	132	21	RH45	F2	F
200	245	21	RH45	F2	F

Table A4.2 (continued). Raw results for AFLP blind test classification of GR strain versus CRR strain and their crosses. All fish classified as GR-CRR crosses of the F1, F2, or B2 varieties are designated as "F".

TRUE NUMBER	PISCES NUMBER	TANK	FAMILY	TRUE STRAIN	CLASSIFIED STRAIN
201	46	21	RH45	F2	F
202	266	24	RH83	F2	GR
203	214	24	RH83	F2	F
204	94	24	RH83	F2	F
205	277	26	RH51	F2	GR
206	58	26	RH51	F2	F
207	127	26	RH51	F2	F
208	200	29	RH55	F2	F
209	209	29	RH55	F2	CRR
210	41	29	RH55	F2	F
211	4	42	RH6	F2	F
212	92	42	RH6	F2	F
213	190	42	RH6	F2	F
214	156	43	RH54	F2	F
215	186	43	RH54	F2	F
216	285	43	RH54	F2	GR
217	66	46	RH38	F2	F
218	292	46	RH38	F2	F
219	176	46	RH38	F2	F
220	243	49	RH1	F2	F
221	182	49	RH1	F2	F
222	88	49	RH1	F2	F
223	151	51	RH81	F2	F
224	145	51	RH81	F2	F
225	177	51	RH81	F2	F
226	99	53	RH52	F2	F
227	188	53	RH52	F2	F
228	223	53	RH52	F2	GR
229	84	65	RH13	F2	GR
230	274	65	RH13	F2	F
231	138	65	RH13	F2	GR
232	65	67	RH14	F2	F
233	3	67	RH14	F2	F
234	197	67	RH14	F2	F
235	12	72	RH49	F2	F
236	258	72	RH49	F2	F
237	95	72	RH49	F2	F
238	269	77	RH46	F2	CRR
239	275	77	RH46	F2	F
240	137	77	RH46	F2	F
241	297	3	RH7	B2	CRR
242	166	3	RH7	B2	F
243	293	3	RH7	B2	CRR
244	60	8	QT72	B2	CRR
245	196	8	QT72	B2	F
246	146	8	QT72	B2	F
247	246	16	RH18	B2	GR
248	83	16	RH18	B2	F
249	181	16	RH18	B2	CRR
250	282	30	RH39	B2	CRR

Table A4.2 (continued). Raw results for AFLP blind test classification of GR strain versus CRR strain and their crosses. All fish classified as GR-CRR crosses of the F1, F2, or B2 varieties are designated as "F".

TRUE NUMBER	PISCES NUMBER	TANK	FAMILY	TRUE STRAIN	CLASSIFIED STRAIN
251	268	30	RH39	B2	CRR
252	103	30	RH39	B2	CRR
253	270	31	QT80	B2	F
254	283	31	QT80	B2	CRR
255	96	31	QT80	B2	F
256	5	32	RH41	B2	F
257	286	32	RH41	B2	F
258	257	32	RH41	B2	CRR
259	238	35	QT74	B2	CRR
260	116	35	QT74	B2	CRR
261	298	35	QT74	B2	CRR
262	34	36	QT76	B2	F
263	19	36	QT76	B2	F
264	173	36	QT76	B2	F
265	70	40	RH15	B2	F
266	111	40	RH15	B2	F
267	76	40	RH15	B2	F
268	118	41	RH43	B2	F
269	119	41	RH43	B2	F
270	193	41	RH43	B2	F
271	30	55	RH20	B2	F
272	125	55	RH20	B2	F
273	210	55	RH20	B2	CRR
274	289	57	QT78	B2	CRR
275	233	57	QT78	B2	F
276	44	57	QT78	B2	F
277	152	59	QT77	B2	F
278	128	59	QT77	B2	GR
279	191	59	QT77	B2	F
280	276	63	RH16	B2	CRR
281	134	63	RH16	B2	F
282	6	63	RH16	B2	F
283	39	66	RH37	B2	F
284	160	66	RH37	B2	F
285	38	66	RH37	B2	F
286	121	68	RH48	B2	CRR
287	7	68	RH48	B2	CRR
288	31	68	RH48	B2	CRR
289	147	69	QT79	B2	F
290	228	69	QT79	B2	F
291	264	69	QT79	B2	F
292	101	71	QT71	B2	F
293	149	71	QT71	B2	F
294	25	71	QT71	B2	F
295	263	74	QT75	B2	F
296	187	74	QT75	B2	F
297	212	74	QT75	B2	F
298	273	76	QT73	B2	F
299	140	76	QT73	B2	F
300	295	76	QT73	B2	F