

Colorado's Strategic Plan to Stop the Spread of Noxious Weeds:

**A Framework for Statewide Coordinated and Cost-Effective
Action to Protect Agriculture and the Environment**



December 2001

PARTNERS

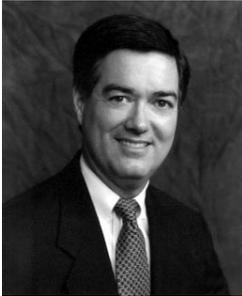
The following organizations, listed in alphabetical order, support the vision, mission and goals outlined in Colorado's strategic plan to stop the spread of noxious weeds. Furthermore, these partners will participate in collaborative efforts designed to carry out specific actions to implement the plan and achieve its objectives.

Action 22	Colorado State University
Audubon Colorado	Agricultural Experiment Station
Broadmoor Garden Club	Colorado State Forest Service
Club 20	Cooperative Extension
Colorado Association of Code Enforcement Officials	Colorado Weed Management Association
Colorado Association of Soil Conservation Districts	Colorado Wildlife Federation
Colorado Association of Wheat Growers	Colorado Wheat Administrative Committee
Colorado Cattlemen's Association	Colorado Wool Growers Association
Colorado Counties Inc.	Denver Board of Water Commissioners
Colorado Department of Agriculture	Garden Club of Denver
Colorado Dept of Natural Resources	Green Industries of Colorado
Division of Minerals and Geology	Rocky Mountain Farmers Union
Division of Parks and Outdoor Recreation	The Nature Conservancy – Colorado
Division of Wildlife	US Department of Agriculture
State Board of Land Commissioners	Animal and Plant Health Inspection Service
Colorado Department of Transportation	Forest Service
Colorado Environmental Coalition	Natural Resources Conservation Service
Colorado Farm Bureau	US Department of Interior
Colorado Livestock Association	Bureau of Land Management
Colorado Municipal League	Bureau of Reclamation
Colorado Native Plant Society	Fish and Wildlife Service
Colorado Natural Heritage Program	National Park Service
Colorado Seed Growers Association	US Environmental Protection Agency

STATE OF COLORADO

EXECUTIVE CHAMBERS

136 State Capitol
Denver, Colorado 80203-1792
Phone: (303) 866-2471



Bill Owens
Governor

December 12, 2001

Dear Fellow Coloradan,

Our citizens, businesses, and branches of government (local, state, and federal) are engaged in a wide array of activities to control noxious weeds, aggressive non-native plants that negatively impact agriculture, the environment, public health, and our economy. To enhance opportunities for more cost-effective and coordinated efforts and provide a common focus to many existing activities, the Colorado Department of Agriculture has prepared this strategic plan to stop the spread of noxious weeds at the request of the Colorado General Assembly. It is a blueprint for cost-effective and coordinated action among both public and private landowners and managers throughout Colorado. Its primary purposes are to:

- a) Create new opportunities for enhanced communication, coordination, and action among the many publicly-funded efforts to stop the spread of noxious weeds;
- b) Ensure that our efforts to manage noxious weeds result in tangible benefits to Colorado's agricultural industries and protect the health and integrity of Colorado's environment from which we derive great recreational, spiritual, and aesthetic benefits; and
- c) Assure public dollars are directed to our most pressing problems and productive areas of activity.

We will need assistance to accomplish the mission, goals, and objectives outlined in this document. On the facing page you will note a diverse array of agricultural and environmental non-governmental organizations as well as branches of state and federal government. These agencies and organizations recognize the importance of managing noxious weeds, have endorsed this strategic plan, and are committed to helping Colorado and its citizens implement this plan in the years to come. I hope you will join me in applauding our partners' commitment to our purpose and future collaborative efforts. I would also like to invite and encourage each citizen and Colorado organization to consider how you can help achieve the goals outlined in this plan. With your help, we can stop the spread of noxious weeds and ensure that Coloradans continue to enjoy an exceptional quality of life.

Sincerely,

A handwritten signature in blue ink that reads "Bill Owens". The signature is written in a cursive, flowing style.

Bill Owens
Governor

Table of Contents

List of Endorsing Organizations	Inside Front Cover
Letter from Governor Bill Owens	i
Table of Contents	ii
Acknowledgements	iii
Executive Summary	1
Setting the Stage – A Case for Coordinated, Statewide Action	2
What are noxious weeds and why manage them?.....	2
Why invest in noxious weed management <i>now</i> ?.....	3
Why is a statewide strategic plan necessary?.....	4
Developing an Appropriate Vision and Mission for Colorado’s Weed Management Efforts	8
Vision.....	8
Mission.....	8
Box 1. Why stopping the spread of noxious weeds is the <i>only</i> appropriate mission.....	10
Developing a Strategy to Accomplish Our Mission – Setting Goals	11
Box 2. Important political, fiscal and management advantages of the strategic plan.....	14
Accomplishing Our Goals – Setting Specific Objectives and Action Items	16
Twelve Working Groups.....	16
Summary	23

Colorado Department of Agriculture
Don Ament, Commissioner

Prepared by:
Eric Lane

Designed by:
Katy Wagers

Colorado Department of Agriculture
700 Kipling Street
Suite 4000
Lakewood, CO 80215-8000
(303) 239-4100
www.ag.state.co.us

Acknowledgements

This strategic plan is the product of many individuals and organizations that contributed their time and thoughts to develop a framework for cooperative and coordinated weed management efforts across Colorado's landscape of public and private lands. Although I prepared this plan, my role was chiefly as an editor and architect: synthesizing into one cohesive framework the many contributions, ideas, suggestions and knowledge put forward by a wide array of private landowners, public land managers, weed management and natural resource professionals, scientists, elected officials, leaders of non-profit organizations and others who described what they wanted in an effective, statewide effort to manage noxious weeds.

No comment was too small or too large for consideration. Indeed, contributors made everything from editorial remarks to substantive suggestions that challenged the structure and concepts that constitute this strategic plan. But in attempting to craft a simple, yet complete, plan, I have necessarily had to make many decisions to omit, retain or reshape the thoughts and concepts provided by the many contributors to this effort. I hope I have remained true to the intent and substance of our many contributor's comments while refraining from throwing in the kitchen sink! I believe that the result is a framework for action and a means with which to focus Colorado's many existing and future weed management efforts toward a shared vision and a collective desire to protect Colorado's resources from the ravages of noxious weeds. It is a plan that rests upon sound weed science and management principles and seeks to engage a diverse array of organizations and interests in our common "war on weeds."

I look forward to working with you and our many diverse partners to implement this strategic plan and achieve the vision of productive agriculture and a healthy environment, unimpaired by noxious weeds, that it articulates. As always, please let me know how I can help you achieve your weed management goals and advance our shared objectives.

*Eric M. Lane
State Weed Coordinator
December 2001*

Executive Summary

This strategic plan provides Colorado's citizens, private landowners, public agencies, businesses, non-governmental organizations and elected officials with a framework for the implementation of successful and cost-effective weed management efforts across the state that will protect the natural resources upon which Coloradans depend for their livelihoods, culture and recreation. Without a vigorous and well-coordinated effort, Colorado may lose the opportunity to stop the spread of noxious weeds and prevent the ecological and economic losses so clearly apparent in other western states. This plan will help to guide a statewide, coordinated effort to manage weeds successfully now and into the future so that such negative impacts can be avoided or mitigated. As endorsed by our many diverse partners, the vision articulated by the strategic plan is:

Productive agriculture and a healthy environment, unimpaired by noxious weeds, that continue to provide Coloradans with an exceptional quality of life.

To make this vision a reality, we have developed a mission statement that will guide our efforts to control noxious weeds, allocate resources efficiently and set specific and appropriate goals/objectives for Colorado's public and private landowners, businesses and non-governmental organizations. Our partners have agreed that the most appropriate mission toward which our collective noxious weed control efforts will be directed is:

To stop the spread of noxious weed species in Colorado and restore degraded lands of exceptional agricultural and environmental value during the 21st century.

In order to carry out this mission successfully, Colorado's strategic noxious weed management plan identifies four goals, or conditions, that must be met. We must:

- 1. Curb the introduction of new noxious weed species into Colorado;**
- 2. Prevent the establishment of newly introduced noxious weed species in Colorado;**
- 3. Stop the spread of noxious weed species that are already so well-established within Colorado that statewide eradication is no longer possible; and**
- 4. Restore lands of exceptional agricultural and environmental value.**

This strategic plan describes a vision for Colorado's future and provides a clear process for prioritizing and allocating resources for education, management, research and other efforts that will be necessary to meet our goals in a cost-effective and timely manner. However, this plan is not the end of our weed management efforts; it is only the beginning of a more coordinated and effective statewide effort to stop the spread of weeds. With a well-orchestrated effort to engage the public, coordinate management efforts across Colorado's mosaic of public and private lands and develop new tools and technologies to control noxious weeds, species such as yellow starthistle, leafy spurge, yellow toadflax and Canada thistle can be stopped before they irreparably damage what we value as Coloradans (including productive agriculture, a healthy environment, numerous recreational opportunities, a sound economy and secure public health).

Setting the Stage – A Case for Coordinated, Statewide Action

What are noxious weeds and why manage them?

“Noxious weed” is a legally defined term that refers to a specific plant species which has been designated for mandatory control by branches of local, state or federal government due to the harm, actual or potential, that the species is capable of inflicting upon the resources and values of society. To be designated as a noxious weed by state or local governments in Colorado, the species must be non-native to the state and meet one or more of these criteria:

- (a) Aggressively invades or is detrimental to economic crops or native plant communities;
- (b) Is poisonous to livestock;
- (c) Is a carrier of detrimental insects, diseases or parasites; or
- (d) The direct or indirect effect of the presence of this plant is detrimental to the environmentally sound management of natural or agricultural ecosystems.

Some of Colorado’s 85 state-designated noxious weed species include jointed goatgrass, leafy spurge, purple loosestrife, Dalmatian toadflax and tamarisk. These, and other noxious weed species, are commonly recognized to harm Colorado’s agriculture, environment and/or public health. Well-known impacts include:

Agriculture

- In 1989, just three species of noxious weeds (jointed goatgrass, volunteer rye and cheatgrass) were responsible for the loss of \$24 million to Colorado’s wheat producers and an additional \$36 million to rural, wheat producing communities.
- Each year, Colorado horse owners lose an undetermined number of horses to the debilitating and irreversible brain damage caused by Russian knapweed, the third most common species of noxious weed in Colorado.

Environment

- Noxious weeds have displaced at least 10% of Colorado’s native plant species and severely degraded important native plant communities that provide essential habitat to more than 85% of Colorado’s wildlife species.
- A national study conducted by Environmental Defense concluded that 49% of the nation’s threatened and endangered species are adversely affected by non-native species that place increasing pressures upon these sensitive, native species. In Colorado, rare native plants such as the orange mountain dandelion and Ute ladies’-tresses are under constant threat of extirpation by more aggressive, generalist species such as musk and Canada thistles.

Economy

- According to a recent study by Cornell University, noxious weeds have a \$40 billion impact upon the U.S. economy.
- Economic analyses from North Dakota indicate that leafy spurge accounts for a direct annual loss of \$40.5 million and secondary impacts of \$89 million per year (representing a loss of 1,433 jobs) in the Upper Great Plains States of Montana, North Dakota, South Dakota, and Wyoming.

Public Health

- Each year, several Colorado children are hospitalized due to severe allergic reactions to the sap of myrtle spurge, an ornamental species long touted for its groundcover characteristics.

Recreation

- Along numerous stretches of the Colorado River and other western waterways, the encroachment of tamarisk, also known as salt-cedar, along the banks has eliminated numerous sandy beaches used by river-rafting enthusiasts as temporary stopping-places for lunch, fishing, camping and swimming.
- Biennial thistles, with their thorns and dense growth characteristics, now impede access to fishing holes along many Colorado rivers including the upper South Platte and Roaring Fork.
- Puncturevine, an anathema to cyclists, has caused countless flat tires throughout the state.

As each example illustrates, noxious weeds can have substantial and dramatic short and long-term effects upon Colorado's citizens and our exceptional quality of life. To protect our abundant natural resources from irreparable harm and prevent weeds from causing unacceptable damage to Colorado's economy, agricultural industries, unique natural heritage, diverse recreational opportunities, public health and scenic beauty, many local governments now require public and private landowners to manage noxious weeds.

Why invest in noxious weed management *now*?

Compared to other western states, Colorado is still relatively weed free. Consequently, many Coloradans have not yet experienced firsthand the destructive power of noxious weeds. In fact, when a new weed species is first noticed on a typical Colorado property, the landowner's reaction is often one of benign neglect. S/he reasons that small patches of weeds are not a concern because they are clearly not causing noticeable damage. Rather than address the problem while it is still small, manageable and inexpensive, the typical landowner waits until the patch has grown considerably in size before commencing any effort to control the offending weed. As a result, control efforts often come too late to be cost-effective or even successful.

In contrast, states like Montana and California are so badly overrun with weeds that millions of acres of productive land have been lost to individual weed species alone. One fifth, or 20%, of California's landmass (about 20 million acres) is moderately to heavily infested with yellow starthistle, an annual species that degrades the agricultural and environmental values of land and is fatal to horses if consumed in sufficient quantities. In Montana, spotted knapweed infests over 4.5 million acres and is widely recognized as "public enemy number one." Due to the widespread and abundant nature of such species, the typical landowner in these states has had firsthand experience with noxious weeds and has been personally affected by them. The abundance and negative impacts of noxious weeds are so great in many western states that many citizens have experienced declines in their property values, family ranches have been lost due to reduced productivity, and recreational opportunities for all citizens have been impaired as wildlife moves from public to private lands, thereby limited opportunities for hunting, fishing or passive viewing. In some cases, the social fabric of communities has been damaged when private landowners curtail access to their lands due to legitimate concerns that visitors will unintentionally track weed seeds onto private lands.

As a result of the dramatic and far-reaching impacts of the widespread infestations described above, the citizens of these states demand that local and state governments spend tens, if not hundreds, of millions of dollars managing noxious weeds. Unfortunately, given the current extent of yellow starthistle and spotted knapweed populations, California and Montana's weed management programs can only now hope to reduce the density and limit the spread of existing populations so that impacts will be lessened. And although the citizens of California and Montana may obtain some relief in the future at great expense, it is a foregone conclusion that yellow starthistle and spotted knapweed will forever be a part of life in these states.

In sharp contrast to these states, Colorado's yellow starthistle populations are found in eight distinct locations and infest only 125 acres. Although spotted knapweed can be found in many more places, it is estimated to occupy only 6,000 acres in our state. If Colorado fails to act aggressively now to control these noxious weeds while infestations are still limited, we will ensure that they, and other similar species, will spread to infest millions of Colorado's agricultural and natural lands. As such infestations grow in size and extent, so too will the impacts grow to our economy and quality of life. If the experience of other western states is any indication of our potential future, such impacts will eventually force Colorado and its citizens to spend vastly greater sums of money to mitigate problems that can be avoided now with additional action.

So Colorado's decision-makers and citizens are faced with a simple choice. We can:

- (a) Invest now in a coordinated, statewide weed management effort, at a relatively low cost, to ensure a healthy and productive future that maintains our economy, helps to assure that agriculture remains productive, protects our unique natural heritage and environment, and sustains our high quality of life; or
- (b) Allow Colorado's noxious weed populations to spread beyond their current distribution until they affect the majority of Colorado's citizens and industries (perhaps as early as 2020) and require the expenditure of substantially greater resources simply to mitigate impacts to our economy and environment that are now foreseeable and avoidable.

This strategic plan clearly represents an investment in our future rather than a delayed response to a developing problem. Like all good investments, the sooner it is made, the less expensive it will be to make and the more quickly its benefits will accrue. This plan provides a framework for a coordinated, statewide effort to stop the spread of noxious weeds so that Coloradans may continue to enjoy all of the benefits we derive from healthy and productive agricultural and natural ecosystems. But without such concerted action now, the experience of other western states will inevitably become our own.

Why is a statewide strategic plan necessary?

In Colorado, numerous weed management efforts are already being conducted at a variety of scales. A growing number of private landowners actively manage noxious weeds on their lands and a few are involved in cooperative weed management areas that coordinate activities across a local landscape or watershed. Most counties and some municipalities have

developed weed management ordinances and/or programs that inform all landowners, public and private, within their jurisdictional boundaries of the weed species they are required to manage. In a few instances, counties and municipalities in a given watershed have banded together to facilitate weed management efforts throughout a portion of their shared watershed. Often, the primary motivating factor that brings together landowners, local governments and public land management agencies is the recognized need for more coordinated, and hence cost-effective, efforts. In fact, it was the recognition of the power and effectiveness of cooperative weed management efforts that persuaded the Colorado General Assembly to amend the Colorado Noxious Weed Act in 1996 and create a state weed coordinator to facilitate coordination among private, local, state and federal land managers.

Five years later, the need to coordinate management efforts across Colorado's mosaic of public and private lands as well as across jurisdictional boundaries from county to county remains great. Cooperative efforts at any scale are more the exception than the rule in Colorado. There are countless examples of neighboring landowners, municipalities, counties and public land management agencies who have implemented weed control efforts that conflict with one another in both management actions and emphasis. In many instances, weed species that are managed by one landowner or jurisdiction are not managed at all by adjacent landowners or jurisdictions. As a result, weed control efforts in such areas are inefficient and excessively costly endeavors.

Although it is heartening that there are so many diverse weed control efforts that span the state, their differences, particularly in their goals and scope as well as geographic location, have not contributed to a particularly well-coordinated weed management effort across Colorado. This situation leads to inefficient use of financial and technical resources, an inconsistent effort across the broader landscapes of the state, and often inadequate efforts that cannot effectively achieve local or regional objectives. Consequently, there is a need to craft a plan of action that will provide these disparate weed control efforts with a more unified direction and a means to focus local resources on goals that will enhance cooperation and coordination at all levels.

The fundamental purpose of this strategic plan is to provide a framework for a coordinated, statewide effort to manage noxious weeds successfully now and into the future. It describes a shared vision for Colorado's future and identifies the goals that must be met to make this vision a reality. It also provides a framework for prioritizing and allocating resources for education, management, research and other efforts that will be necessary to meet these goals in a cost-effective and timely manner. Although some difference of opinion exists regarding how to control specific species or even which species should be controlled first, this plan will help agencies, communities, organizations and individuals across the state focus their efforts, individually and collectively, upon species like leafy spurge and yellow starthistle for which there is no doubt regarding the need for management. Consequently, the variety of efforts around Colorado will become more complementary as well as cost-effective.

Aside from the obvious benefits that will accrue to individual private landowners, local governments and state and federal land management agencies that contribute to a cooperative and coordinated effort, there are a variety of reasons for developing and adopting a statewide strategic plan:

Fiscal: Weed management can be an expensive task for any landowner. This strategic plan will help local governments and public land management agencies to identify appropriate weed management objectives for every part of the state based upon objective criteria and sound weed science and management principles. In the short and long-term, this will help ensure that resources for weed management are appropriately focussed on the species and resources that matter most to a landowner, a community or branches of government. For decision-makers responsible for the appropriate use of public funds, this plan will provide specific opportunities and guidance to ensure that allocated resources are expended efficiently and effectively. Furthermore, in a world of limited financial and technical resources (at all levels, both public and private), the State of Colorado and its subdivisions must help provide the means by which all landowners can achieve weed management objectives in more cost-effective ways. By facilitating additional opportunities for collaboration among public and private landowners, this plan will help to enhance resource-sharing and cost-effectiveness.

Political: As outlined above, noxious weeds negatively affect the natural resources and values (e.g., productive agriculture, a healthy environment, secure public health) of our society. To prevent unacceptable and irreparable impacts to these values, this plan helps to ensure that weed management resources are dedicated to protecting or enhancing such values while minimizing opportunities to squander resources on unproductive efforts that will yield little benefit to Colorado's citizens and communities. The plan also provides a framework for prioritizing our control efforts across the state so that decision-makers (elected or otherwise) will better understand how and when they can contribute resources to ensure such efforts are successful. For policy-makers, it selects fiscally responsible goals that balance the needs of the many with the needs of the few (see boxes 1 and 2).

Social: Successful implementation of this strategic plan will help assure that landowners across the state support the goals of local, state and federal weed management programs. It will also guarantee that they have a voice in shaping the decisions that affect their lands and protect the values they and their communities hold. For public and private land managers, the plan provides a roadmap that clarifies what actions are necessary for specific parcels and areas of the state to ensure all landowners are treated equally. For adjacent neighbors (landowners or counties), it will promote efforts that are consistent and complementary across the local landscape, thus lowering the cost of weed control for everyone.

Legal: The Colorado Noxious Weed Act imposes stewardship obligations upon local governing bodies (counties and municipalities) as well as public and private landowners throughout the state. Implementation of this plan will help each landowner to identify and meet his/her legal obligations. It will also facilitate the equitable assignment of responsibility for every landowner, public or private, based upon objective criteria that span local, state and federal jurisdictions.

Without the focus and direction that a statewide, strategic plan can provide, it is unlikely that local, regional or statewide weed management efforts will succeed. Certainly, regional and statewide efforts cannot succeed without the coordinated efforts of the communities that comprise much larger landscapes. And although local efforts may temporarily succeed at achieving their objectives, the failure of neighboring communities to make equally successful

strides forward will doom even the most successful local effort to long-term failure as it is deluged with weeds invading from surrounding communities. Consequently, it is essential for all Colorado communities and landowners to work toward common weed control objectives if we are to succeed at our individual and collective goals.

The strategic plan described in the following pages is the product of the contributions of many individuals and organizations throughout our state. It provides a collective vision for our future and identifies the goals that must be met to protect and restore Colorado's productive agricultural lands and natural ecosystems. It also provides a framework for prioritizing action and directing resources efficiently. In short, it endeavors to provide Coloradans with the quickest means to achieve our shared weed control objectives, protect our society's values and promote the most cost-effective solutions to our weed management challenges. That is not to say that weed management will be inexpensive and simple. However, implementation of this plan will help to insure that all of our efforts throughout Colorado are focussed upon our shared goals and objectives.

Developing an Appropriate Vision and Mission for Colorado's Weed Management Efforts

Any publicly funded effort to manage noxious weeds must meet the needs of Colorado's citizens, protect society's values and ensure that it is cost-effective, accountable and successful. Consequently, Colorado's municipal, county, state and federal weed management efforts should share a common vision of how their weed management efforts, singularly and collectively, will contribute to the advancement and preservation of the values (e.g., productive and sustainable agriculture, conservation of the state's unique natural heritage, numerous and diverse recreational opportunities, secure public health) held by Colorado's citizens. Furthermore, if Colorado's numerous local governing bodies, private landowners and public agencies are to manage noxious weeds successfully, management efforts must be coordinated across jurisdictional boundaries to promote cost-effective solutions to shared concerns and problems. A common vision of the purpose of our endeavors and their desired results will facilitate such cooperation and enhance opportunities to collaborate and share resources to meet the needs of the public and protect the values of our society.

With respect to noxious weed management, our vision for Colorado's future is:

Productive agriculture and a healthy environment, unimpaired by noxious weeds, that continue to provide Coloradans with an exceptional quality of life.

The purpose of this strategic plan is to help our partners in the public and private sectors make this vision a reality. If we are successful in this endeavor, both public and private landowners in Colorado will have the necessary resources (financial, technical, etc.) to ensure that noxious weeds no longer:

1. Degrade the value and productivity of the agricultural lands that supply abundant food and fiber products to the citizens of our state and the world;
2. Damage Colorado's unique natural heritage that sustains diverse flora and fauna, numerous recreational opportunities and extraordinary aesthetic beauty; or
3. Impair the ability of Colorado's landowners and stewards to utilize their lands in a productive and useful manner.

This is the future that we desire for ourselves, our children and our citizens. But if we are to make this vision a reality, we must develop an appropriate mission that will guide our efforts to control noxious weeds, allocate resources efficiently and set specific and appropriate goals/objectives for Colorado's public and private landowners, industries and non-governmental organizations. Our partners have agreed that the most appropriate mission toward which our collective noxious weed control efforts will be directed is:

To stop the spread of noxious weed species in Colorado and restore degraded lands of exceptional agricultural and environmental value during the 21st century.

This mission will be the primary focus and purpose toward which public and private weed management efforts and resources are directed throughout Colorado for the next 100 years.

Consequently, this plan must provide the most cost-effective means to achieve the mission (see Box 1) and help shape a future that protects agricultural productivity and environmental health. There are undoubtedly numerous paths to the same outcome. Our challenge is to adopt and implement strategies that will help us to make our vision a reality and effectively address the most significant obstacles to effective weed management efforts. As outlined further below, this strategic plan will help our partners and all landowners, public and private, to:

1. Overcome obstacles that prevent effective and well-coordinated weed management efforts;

Weed management efforts are often confounded by the presence of numerous noxious weed species that differ in a variety of ways. These species differ in their distributions across the state, the effects they have upon agriculture and the environment as well as public health, and the techniques that are available and effective to manage them. Furthermore, individuals and organizations may disagree about the control technologies that should be used to address noxious weed problems or the extent to which a species should be controlled. In addition, a lack of communication and shared weed management priorities often results in uncoordinated and inconsistent actions, even within the same organization or community. Also, we often fail to take advantage of short-lived opportunities to prevent or eradicate species, resulting in the establishment of permanent populations that are costly to control. In fact, many public and private landowners too frequently devote resources to areas with the greatest infestations instead of protecting agricultural and natural lands that are still uninfested.

2. Utilize the most cost-effective means to stop the spread of weeds; and

Resources for weed management will always be limited to some extent and are often provided through taxes paid by Colorado citizens. Consequently, allocated resources must always be used to the greatest effect possible in a variety of ways including prevention, on-the-ground management, education and research. Furthermore, all possible weed management activities should be prioritized so that as new resources become available, they can quickly be directed to the most effective use in Colorado.

3. Ensure that resources allocated to weed management efforts are used specifically to protect agricultural productivity, environmental health and other values (e.g., abundant recreational opportunities and secure public health) held by Colorado's citizens.

Weed management protects our society's values and the productive uses to which we put both public and private lands. It is imperative that weed management efforts continue to protect:

- a) Agricultural areas of high productivity, for both crops and livestock;
- b) Natural areas of high environmental value (e.g., lands that support Colorado's unique natural heritage including endemic plant/animal species and critical wildlife habitat); and
- c) Public health, opportunities for recreation (passive and active) and other factors that contribute to Colorado's exceptional quality of life.

Most importantly, Colorado’s weed management strategy must provide opportunities for every landowner, local government, organization and public agency to target their individual efforts and resources in ways that are complementary to those of others – so that neighbors work with one another and public interest groups and other non-governmental organizations work together to carry similar messages to a variety of different audiences. Weed management must be simplified so that every community can set specific expectations and management objectives for its landowners, both public and private, regarding noxious weeds; then help each landowner to meet such expectations whether management requires eradication, containment or simple suppression. Such efforts will help to ensure that Colorado anticipates, creates and takes advantage of opportunities to eradicate newly introduced species quickly and efficiently at the appropriate levels (local, regional or statewide) while meeting the needs of its citizens to address well-established and persistent problem weed species that do not merit such intensive management efforts.

Box 1. Why STOPPING THE SPREAD of noxious weeds is the *only* appropriate mission.

As part of the mission statement, this strategic plan makes an important distinction: to stop the spread of noxious weeds. To explain why this is an appropriate mission and a worthy focus of weed control efforts throughout Colorado, two other possible missions are examined briefly:

1. Eradicating all noxious weeds from Colorado. Unfortunately, while this may have been a cost-effective and desirable option a century ago, Colorado now contains about 65 recognized noxious weed species that infest at least 1½–2 million acres. Consequently, it is no longer within our means (physically or financially) to eradicate all noxious weeds in Colorado and it would be unrealistic to expect to accomplish such a lofty goal. Furthermore, it would also be fiscally irresponsible to attempt such an effort. We recognize that our society has many competing needs. While protecting agriculture and the environment are worthy and accepted goals for many Coloradans, these are not our society’s only goals. It would be irresponsible to suggest otherwise by attempting to fund an exorbitantly costly endeavor to eradicate 65 species of noxious weeds on 1½–2 million acres scattered across Colorado. In addition, given the extent to which weeds have already spread in the West, it is probably not possible to create a statewide defensible space against all noxious weed species. We must be willing to accept that some weed species will always be present in Colorado to some degree.
2. Slowing the spread of noxious weeds in Colorado. By slowing, but not stopping, the spread of weeds, we would implicitly accept a future in which weed species disperse to their fullest potential to infest lands throughout the state and cause significant impacts to our economy and environment; impacts that we would be otherwise unwilling to accept at any time, present or future. Consequently, if all we attempt to do is slow weeds, then it is only a matter of time before such impacts would occur. Which generation should we choose to allow these impacts to befall? If we have the capacity to stop the spread of noxious weeds, then this option is not morally or fiscally responsible. Why spend significant sums of money to simply forestall a future filled with negative impacts when, with a renewed investment in weed management, we can actually determine and shape our future; a future in which agriculture and the environment remain viable. It will actually be less expensive in the long run to invest a bit more now in weed management efforts to stop the spread of weeds than to continue many current efforts that are simply slowing, but not stopping, the spread of weeds.

With a more coordinated and focussed effort advanced by this strategic plan, we believe it is possible, cost-effective and desirable to stop the spread of noxious weeds as described by the first three goals set forth below in the next section.

Developing a Strategy to Accomplish Our Mission – Setting Goals

In recent years, Dr. Steven Dewey, a professor of weed science at Utah State University, has developed and refined a weed management model based upon the successful and efficient fire-fighting practices conducted annually in the western United States. In general, fire-fighting practices in the West emphasize the containment of the “core” area of a blaze combined with crucial efforts to detect and extinguish spot-fires that spring up outside the containment perimeter. Similarly, Dr. Dewey proposes that weed management efforts should focus on containing significant noxious weed infestations while vigorously eradicating newer “satellite” populations that spring up beyond the boundaries of the original infestations (for additional information, visit <http://extension.usu.edu/publica/agpubs/wildfire.pdf>).

Dr. Dewey’s weed management model is now well accepted by most professional weed managers and public land management agencies as well as increasing numbers of private landowners with substantial landholdings. By incorporating the fundamental concepts of Dr. Dewey’s model into a comprehensive weed management strategy for Colorado, we can achieve our mission in a cost-effective manner. Therefore, to stop the spread of noxious weeds in Colorado and restore valuable agricultural and environmental lands, Colorado’s strategic noxious weed management plan outlines four goals, or conditions, that must be met. We must:

1. Curb the introduction of new noxious weed species into Colorado (e.g., African rue, medusahead rye and purple starthistle).

Prevention practices are accepted as the most cost-effective weed management strategy available. For example, research suggests that leafy spurge costs the United States approximately \$250 million each year in direct and indirect economic costs. If we could turn back the hands of time until just before leafy spurge was introduced to our nation, what would we be willing to pay each year to prevent the introduction and establishment of this species? Surely it would be worth a considerable sum of money to prevent the tremendous economic and ecological impacts we now face; and clearly it would have been much less costly to prevent these losses than to manage them once they are manifested. Numerous species, equally as damaging as leafy spurge, have yet to invade Colorado. Although Colorado will continue to be invaded by new noxious weed species in the future, an active effort to curb such invasions and prevent accidental introductions will greatly help to slow these invasions in future years.

2. Prevent the establishment of newly introduced noxious weed species in Colorado (e.g., yellow starthistle, Mediterranean sage and dyer’s woad).

Efforts to prevent the introduction of new species will not always be successful. In fact, the U.S. Department of Agriculture – Animal Plant Health Inspection Service estimates that a very large number of introduced species annually slip through active interdiction efforts at U.S. ports of entry. It simply isn’t possible to develop and implement a prevention program that will be 100% effective in barring new noxious weed species from entering Colorado. Consequently, a number of new species will enter the state in future years and we must be prepared to:

- a) Detect and delineate populations of newly introduced species as quickly as possible;

- b) Establish effective containment barriers that prevent the spread of seeds and other propagules beyond the boundaries of existing populations; and
- c) Eradicate populations of newly introduced species before they have an opportunity to establish permanent populations capable of spreading to nearby lands and communities.

A successful effort to detect, contain and eradicate newly introduced species will permit most Colorado landowners to limit their weed management efforts only to those species that are currently well-established in our state.

3. Stop the spread of noxious weed species that are already so well-established within Colorado that statewide eradication is no longer possible (e.g., leafy spurge, diffuse knapweed and perennial pepperweed).

While Colorado now harbors significant infestations of a wide variety of noxious weed species, many of the most common problem species can be stopped from spreading to substantial portions of the state that presently remain uninfested. For example, although Russian knapweed is Colorado's third most common noxious weed (approximately 170,000 acres infested), its populations are located primarily on the West Slope where it causes tremendous damage to private and public lands. However, on the eastern plains, it is found in relatively isolated patches. It may be possible to eradicate these patches so that Russian knapweed can never inflict the same devastating impacts in eastern Colorado as it already has on the West Slope. Conversely, diffuse knapweed is found in great concentrations along the Front Range from Boulder to El Paso Counties. While widespread eradication is no longer possible in this region of Colorado, it is a feasible option in western Colorado where diffuse knapweed populations have not yet expanded to cover any significant area of land.

Stopping the spread of established noxious weed species will require a combination of eradication, containment and suppression efforts that are carried out in a coordinated manner across the state. Adapting Dr. Dewey's principles of coordinated eradication and containment actions to our weed management strategy, Colorado's established noxious weed species will be managed according to their distribution throughout the state and the threat they pose to our valued resources. For every place in Colorado, we can determine an appropriate and specific management objective for any established noxious weed species. Choosing an appropriate management objective for each targeted weed species at a particular site will be based entirely upon the resources that are threatened by the species and its known distribution relative to the site. For any given noxious weed species, the possible management objectives are:

- a) **Eradication:** The implementation of a short-term but intensive control effort (often 3-10 years depending upon seed longevity and recruitment of the targeted species) to eliminate a targeted infestation permanently from a given area.
- b) **Containment:** The creation and enforcement of appropriate containment perimeters via:
 - i. Eradication of plants on the exterior of the infestation's designated perimeter; and

- ii. Eradication of plants within the boundaries of the perimeter along vector corridors (e.g., roads, streams, trails) that may facilitate spread of the infestation beyond the perimeter.
- c) **Suppression:** The use of a wide variety of weed management techniques that reduce the density and severity of infestations within the boundaries of containment perimeters in order to mitigate the harm to agriculture, the environment and other values caused by widespread and well-established populations of noxious weeds.

For example, using the simple example of Russian and diffuse knapweeds presented above, the management objectives for most lands within Boulder County may be to eradicate Russian knapweed but simply suppress diffuse knapweed while the northern, western and eastern borders of the county are designated for diffuse knapweed containment efforts. Likewise, landowners in Mesa County may simply suppress Russian knapweed and revegetate affected rangelands but eradicate any diffuse knapweed that arrives before it can establish permanent populations which can then spread to neighboring West Slope communities.

If we are successful in accomplishing this particular goal, then the distribution of Colorado's noxious weed species should not change appreciably in the future. Put another way, the footprint, or specific areas of land infested, of noxious weeds will not significantly increase over any period of time. Consequently, the ability of noxious weeds to threaten agricultural productivity and environmental health will be sharply curtailed. However, if we fail to realize this goal, then noxious weed species will continue to spread within Colorado, resulting in significant detrimental impacts to agriculture, the environment and the quality of life that many Coloradans have come to enjoy.

4. Restore lands of exceptional agricultural and environmental value.

In Colorado, noxious weeds have already endangered the productivity and viability of many farms and ranches. Weeds have also jeopardized the continued existence of many native plant species and the wildlife they support by dramatically altering the composition, structure and function of native plant communities. Simply stopping the spread of weeds alone will not lead to productive agriculture and a healthy environment in Colorado. If we hope to ensure the integrity of public and private lands for agricultural productivity and environmental health during the 21st century, we must also identify lands of exceptional agricultural and environmental value and restore these lands to their former condition.

Numerous public and private organizations (e.g., Soil Conservation Service, American Farmland Trust, Colorado Natural Heritage Program, Audubon Colorado) have invested substantial time and effort to identify Colorado's most important agricultural and environmental lands, the lands that are unique to our state. Criteria used to evaluate and identify exceptional agricultural lands have included quality and quantity of irrigation water, soil characteristics, favorable temperature and growing season, rainfall, location and production of high value commodities. Efforts to identify lands of exceptional environmental value have considered biodiversity, imperiled species and plant communities, critical winter forage ranges, important breeding areas and ecosystem integrity and function. By building

upon such existing efforts we can evaluate the economic and ecological potential for the restoration of such areas and work to reverse some of the significant impacts noxious weeds have already inflicted on Colorado's exceptional agricultural and environmental resources.

To restore these exceptional lands to their former condition, a variety of vegetation management techniques will be required. The ostensible objective for such areas will be:

- a) **Revegetation:** The use and application of a variety of restoration and weed management techniques as well as land management practices to improve the quality, weed resistance and condition of desired plant communities.

In cooperation with local governments, weed and natural resource management professionals and interested non-governmental organizations dedicated to the conservation of Colorado's unique natural and agricultural heritage, it may be possible to restore Colorado's exceptional lands to their former condition for future generations of Coloradans to enjoy and treasure.

Box 2. Important political, fiscal and management advantages of the strategic plan.

By adopting a common weed management strategy throughout the state, there are some important political, fiscal and management advantages that emerge:

- a) Federal, state and local government resource allocations can be based upon objective criteria - the geographic distribution of targeted noxious weed species as well as their proximity to areas of known agricultural and environmental value, rather than political considerations or other subjective factors. This will also improve local, state and federal government's ability to prioritize resource allocations among many competing weed management needs so that efforts are consistently cost-effective.
- b) The plan provides an objective and consistent means by which to determine an appropriate minimum level of control (eradication, containment or suppression) for any targeted species in any area of the state so that inappropriate expenditures can be eliminated. Consequently, it will also provide a means for each political subdivision (local, state or federal) to determine, on a species-by-species basis, a relatively accurate estimate of the resources needed to achieve its overall weed management goals.
- c) Weed management efforts will be complementary across Colorado's mosaic of private and public lands and political jurisdictions because the strategy will provide each public and private landowner with clear expectations based upon a common goal or management objective shared with the community. Consequently, this plan will promote resource-sharing and cooperation among private, local, state and federal landowners to achieve specific and shared weed management objectives.
- d) Because disparate control programs will strive to achieve common weed management objectives (eradication, containment, suppression), this strategy provides a consistent means by which to assess and monitor the success of such programs across the state. For example, eradication and containment efforts in different parts of the state can be evaluated simply and consistently in the same fashion. Have infestations targeted for eradication been eliminated within three to five years? Have the containment perimeters remained in place over time or been forced outward due to lack of resources or effort? Suppression efforts that mitigate impacts by reducing infestation densities can be evaluated similarly in a variety of communities. By what percentage have the targeted populations been reduced in past years? Adopting the common management objectives advanced by this plan allows local governments as well as public and private landowners to use the same yardstick to measure progress.

A statewide weed management strategy based upon these four goals will offer every landowner and public land manager in Colorado a common framework with which to prioritize their weed management efforts so that individual, community and regional efforts are compatible and complementary across jurisdictional and property boundaries rather than inconsistent and excessively costly. Our partners in the public and private sectors agree that these four goals must be met if we hope to stop the spread of noxious weed species in Colorado and restore degraded lands of exceptional agricultural and environmental value during the 21st century. As a means to focus our individual and collective efforts, Colorado's strategic plan will provide a framework with which to identify specific objectives and prioritized actions that can be carried out cost-effectively to achieve each goal. It will also help to ensure that every facet of weed management, including education and research, contributes directly to achieving each of these four goals.

Accomplishing Our Goals – Setting Specific Objectives and Action Items

In any weed management endeavor (local, state or national), there are some facets of weed management that invariably arise for discussion and subsequent action. Common facets of many successful integrated weed management programs include education of targeted audiences, development of partnerships, implementation of preventative practices, use of integrated weed management techniques and enforcement of community weed management standards. Outlined below, in no particular order, are twelve Working Groups initiated by this strategic plan that reflect these common facets:

1. Leadership, Coordination and Partnerships
2. Prevention, Early Detection and Rapid Response
3. Management: Eradication, Containment and Suppression
4. Restoration of Exceptional Lands
5. Integrated Weed Management
6. Education and Awareness
7. Financial and Technical Resources
8. Inventory and Mapping Technology
9. Monitoring and Assessment
10. Research and Technology-Transfer
11. Community Standards and Implementation/Enforcement
12. Community Involvement

These Working Groups will serve as the “work horses” that facilitate the implementation of this strategic plan. Each group will have several fundamental operational responsibilities:

- A. To identify actions that are necessary to achieve its assigned objective and prioritize these actions according to available resources, feasibility and importance to overall success;
- B. To identify and involve appropriate partners to facilitate the completion of each action successfully and in a timely manner; and
- C. To develop means to measure, quantitatively and/or qualitatively, the progress of efforts to carry out actions and achieve the associated objectives.

Every Working Group has an important and well-defined role to play in helping Colorado, its citizens and our partners make the vision of productive agriculture and a healthy environment a reality in the years to come. Working individually and collectively, these groups will drive implementation of the plan. While the strategic plan may evolve slowly, the Working Groups will necessarily alter composition and actions more frequently as initial actions are accomplished and new ones are devised, priorities change to address emerging weed management needs, or weed science and management technologies advance our understanding and capabilities.

An outline of each Working Group is provided below and represents the efforts of small groups of Colorado weed and natural resource management professionals (primarily from county, state and federal programs) to determine the objective, initial priorities and likely composition of each Working Group. As noted above, it is expected that these Working Groups will change and evolve frequently to remain effective as the weed management needs of

Colorado change. Each volunteer-led Group will consist of two co-chairs and an undetermined number of members that will work together to identify, prioritize and achieve actions necessary to effectively carry out its stated objective. While the general composition needs of each group have been identified, the membership of each Working Group is open to participation from any organization or individual that is interested in helping to carry out the Group's objective. Although the Groups are numbered and provided in some logical order, no one Working Group is more important than any other. Rather, each has a specific role to play in the implementation of the plan and is a unique and important part of a complete solution to Colorado's weed management challenges.

1. Leadership, Coordination and Partnerships

Objective: To facilitate the long-term commitment and participation of organizations and stakeholders that can help implement this statewide strategic plan successfully.

Priority Actions:

1. Develop a process for all participating stakeholders to communicate effectively and apportion responsibilities fairly;
2. Identify appropriate roles and tasks for each stakeholder to carry out in the implementation of the strategic plan;
3. Develop a process by which to identify and involve new stakeholders in Working Group #1;
4. Facilitate cooperation and coordination of actions across jurisdictional and ideological boundaries in order to achieve common goals and objectives; and
5. Facilitate the acquisition of additional financial and technical resources when necessary to carry out the strategic plan.

Composition: Leaders, or their designated representatives, of public and private natural resource, environmental, agricultural and political organizations. Participants may be drawn from organizations such as Colorado Counties Inc., Colorado Municipal League, state and federal resource management and research agencies, Colorado Farm Bureau, Rocky Mountain Farmers Union, Colorado Cattlemen's Association, Audubon Colorado, Green Industries of Colorado and The Nature Conservancy.

2. Prevention, Early Detection and Rapid Response

Objective: To prevent the introduction and permanent establishment of new noxious weed species in Colorado.

Prioritized Actions:

- 1) Identify new species that threaten to invade Colorado in the future;
- 2) Identify the vectors that threaten to introduce these species into Colorado;
- 3) Develop and implement a rapid response process which includes exclusion, early detection and minimization of spread to ensure that newly introduced species are promptly detected and eradicated as quickly as possible;

- a) Develop and implement practices that prevent their introduction and invasion, including the creation of “Best Prevention Practices” for diverse land users;
- b) Increase the active detection of noxious weed species by all stakeholder staff, natural resource and agricultural professionals and other individuals in the field;
- 4) Implement effective communication strategies that support each of these tasks; and
- 5) Conduct an analysis of what makes land susceptible to weed invasion and identify lands within Colorado that remain most invulnerable.

Composition: Risk assessment and weed science professionals, weed management/natural resource professionals, trained identification specialists and representatives of organizations whose members may enhance prevention and early detection capacity.

3. Management: Eradication, Containment and Suppression

Objective: To determine appropriate management objectives (eradicate, contain and suppress) across the State of Colorado for a broad array of established noxious weed species. Communicate these objectives to the appropriate local, state and federal branches of government.

Prioritized Actions:

- 1) Identify an array of noxious weed species for initial statewide weed management efforts;
- 2) Develop a detailed process for determining appropriate weed management objectives and evaluate means of communicating these determinations to public and private landowners that will facilitate implementation;
 - a) Obtain sufficient information from Working Group #8, as well as local weed management professionals, to determine the distribution of targeted noxious weeds species and outline possible weed management objectives for all Colorado lands;
- 3) Work with weed scientists and local weed management professionals to refine these objectives for each species and each jurisdiction;
 - a) Determine information and decision-making needs and develop a reliable communication strategy to promote the exchange of information among weed scientists and managers;
- 4) Communicate these findings effectively to local, state and federal branches of government and any other stakeholders that may be affected or interested; and
- 5) Develop management guidelines appropriate to the targeted species and associated management objectives.

Composition: Weed management/natural resource professionals, local, state and federal decision-makers, extension and communication specialists, weed scientists familiar with targeted species and state/regional weed coordinators.

4. Restoration of Exceptional Lands

Objective: To identify and facilitate the restoration of Colorado's lands of exceptional agricultural and environmental value.

Prioritized Actions:

1. Identify and assess all methodologies to evaluate Colorado lands for agricultural and environmental values;
2. Create a process for determining the most exceptional lands and prioritize these lands for additional weed management and restoration assistance;
 - a) Consider values, extent of infestation, feasibility for restoration and/or protection and other factors that contribute to long-term success and achievement of objective; and
3. Develop a communication and marketing plan to engage interested governments, landowners, and non-profit organizations in restoration activities.

Composition: Representatives from organizations interested in restoration for agricultural and environmental values, private landowners, restoration and weed management professionals, communication specialists and resource analysts.

5. Integrated Weed Management

Objective: To promote the active management of noxious weeds across jurisdictional boundaries through the use of established Integrated Weed Management (IWM) processes and principles.

Prioritized Actions:

1. Educate, train and facilitate the use of IWM principles at all levels of stakeholder organizations involved in noxious weed management;
2. Identify and publicize techniques and practices consistent with achieving specific management objectives ranging from eradication to simple suppression; and
3. Ensure that members of Working Group #1 are knowledgeable regarding IWM processes and principles and will work to build capacity and support for IWM within stakeholder organizations.

Composition: Weed management/natural resource professionals that are fully conversant in IWM from the detection and inventory stages, through planning (including legal requirements for National Environmental Policy Act, Endangered Species Act, etc.), implementation, monitoring and incorporating adaptive management principles.

6. Education and Awareness

Objective: To develop and employ a wide array of educational tools that enhance Colorado's capacity to meet each of the four goals outlined in the strategic plan and facilitate the use of education as an effective tool by other Working Groups.

Prioritized Actions:

1. Work with other Working Groups, particularly #2, 3, 4 and 5, to identify critical educational needs related to on-the-ground efforts; and
2. Develop an educational and marketing campaign (similar to the litter education campaign of the 1970s) that engages landowners and specific audiences (such as recreational user groups) to affect positive behavior change.

Composition: Weed management/natural resource professionals, education and communication specialists, marketing specialists, members of the media and representatives from the public and private school systems of Colorado.

7. Financial and Technical Resources

Objective: To ensure the timely acquisition and dissemination of sufficient financial and technical resources to implement Colorado's strategic plan in a coordinated and effective manner and provide assistance to all Working Groups.

Prioritized Actions:

1. Identify Working Group funding needs and facilitate acquisition of adequate resources;
2. Compile a list of available resources (financial, technical and others);
3. Identify cooperative opportunities to use existing funds;
4. Coordinate with the Working Group #1 to acquire additional financial resources from outside sources including legislative bodies and foundations;
5. Seek ways to develop and secure long-term funding for local and regional efforts; and
6. Develop a shared understanding of the realistic management obligations that private and public landowners as well as government (local, state and federal branches) should bear.

Composition: Staff from a diverse array of stakeholder organizations as well as foundations and organizations that successfully attract and utilize outside financial resources.

8. Inventory and Mapping Technology

Objective: To utilize detection, inventory and mapping technology for the development of sufficiently accurate information regarding the distribution of targeted noxious weeds species that enhances the capacity of public and private landowners to manage noxious weeds effectively.

Prioritized Actions:

1. Disseminate a statewide weed inventory and mapping protocol;
2. Identify trends in noxious weed invasions and recommend appropriate management action;

3. Facilitate the regular exchange of data across jurisdictional boundaries; and
4. Provide necessary data to other Working Groups, particularly #3 and 9.

Composition: Weed management/natural resource professionals complemented by individuals from the public and private sectors related to mapping and remote sensing technologies (e.g., Colorado Department of Agriculture, Colorado Natural Heritage Program, EROS and U.S. Geological Survey).

9. Monitoring and Assessment

Objective: To evaluate the effect of coordinated weed management efforts and determine the degree to which the goals and objectives of the strategic plan are being met.

Prioritized Actions:

1. Define success and develop measures to evaluate success for a variety of weed management objectives including eradication, containment and suppression;
2. Provide ongoing analysis regarding the cost-effectiveness of weed management efforts; and
3. Communicate findings to local, state and federal leaders and the interested public regularly.

Composition: Weed management/natural resource professionals.

10. Research and Technology-Transfer

Objective: To apply technology and the natural and social sciences to address short and long-term weed management and restoration needs throughout Colorado.

Prioritized Actions:

1. Conduct research in both the natural and social science fields that provides weed management and natural resource specialists with information required to make informed management decisions;
2. Refine our understanding of invasiveness so that informed decisions may be made and accepted by stakeholders in affected industries and weed management services; and
3. Assist with the development and transfer of technology that enhances weed management efforts in Colorado.

Composition: Weed management/natural resource professionals as well as natural and social science professionals.

11. Community Standards and Implementation/Enforcement

Objective: To facilitate local input and decision-making that promote participation in Colorado's strategic plan and ensure effective weed management action by all landowners.

Prioritized Actions:

1. Assist community leaders and decision-makers in adopting and implementing fair, yet rigorous, weed management plans and ordinances that protect the interests of their communities and reflect the standards set forth by the state strategic plan;
2. Facilitate the enforcement of such standards, when necessary; and
3. Review local, state and federal legislation that may impede effective weed management practices on public and private lands.

Composition: Decision-makers at the local, state and federal levels, community leaders and public interest groups that can help represent the interests of Coloradans.

12. Community Involvement

Objective: To promote community-based weed management efforts and facilitate communication and the resolution of conflict that threatens to impede community-led efforts.

Prioritized Actions:

1. Support the development, implementation and long-term success of local weed management efforts across Colorado (including cooperative watershed efforts); and
2. Provide timely information and support to communities that face difficulties in implementing or pursuing sound weed management actions.

Composition: Communication specialists, social scientists, community leaders, weed management/natural resource professionals and public-interest group leaders.

By identifying, prioritizing and carrying out specific actions that help to meet their stated objectives, these twelve Working Groups will help implement the strategic plan and ensure that Colorado meets each of its four weed management goals to:

- 1. Curb the introduction of new noxious weed species into Colorado;**
- 2. Prevent the establishment of newly introduced noxious weed species in Colorado;**
- 3. Stop the spread of noxious weed species that are already so well-established within Colorado that statewide eradication is no longer possible; and**
- 4. Restore lands of exceptional agricultural and environmental value.**

Summary and Conclusions

This strategic plan provides Colorado's citizens, private landowners, public agencies, businesses, non-governmental organizations and elected officials with a framework for the implementation of successful and cost-effective weed management efforts across the state; efforts that will protect the natural resources upon which Coloradans depend for their livelihoods, culture and recreation. Without a vigorous and well-coordinated effort, Colorado will lose its opportunity to stop the spread of noxious weeds and prevent the ecological and economic losses so clearly apparent in other western states. This plan will help to guide a statewide, coordinated effort to manage weeds successfully now and into the future so that such negative impacts can be avoided or mitigated. However, Colorado's citizens are at a crossroads. Our fight to win the "war on weeds" may well be won or lost by 2020 – within a single generation; so we must act now.

As described in the previous pages, this plan articulates a vision for Colorado's future and provides a clear process for prioritizing and allocating resources for education, management, research and other efforts that will be necessary to meet our weed management goals in a cost-effective and timely manner. However, this plan is not the end of our weed management efforts; it is only the beginning of a more coordinated and efficient statewide effort to stop the spread of noxious weeds. With a well-orchestrated effort to engage the public, coordinate management efforts across Colorado's mosaic of public and private lands, and develop new tools and technologies to control noxious weeds, species such as yellow starthistle, leafy spurge, yellow toadflax and Canada thistle can be stopped before they irreparably damage what we value as Coloradans (e.g., productive agriculture, a healthy environment, numerous recreational opportunities, a sound economy and secure public health).

While this effort will help to ensure that our allocated resources are used efficiently, stretching our dollars alone will not resolve this problem. Additional funding is essential to the successful implementation of the plan on private and public lands. While there is an important role for soft funding sources, stable funding will be necessary to ensure that public and private landowners have what is necessary to achieve our objectives and preserve the values of Coloradans far into the future. Furthermore, there is a critical need to reach the private landowners that own and manage two-thirds of the state. Although our endorsing partners include numerous organizations that represent the interests of diverse groups of landowners, it is imperative that efforts be made to reach out directly to the landowners themselves through a variety of communication and education tools. Involving private landowners more directly in our efforts will help to insure that actions initiated via the strategic plan have been well considered and retain the support and participation of all affected landowners.

Lastly, it is important to review the strategic plan periodically for its achievements and failures so that we can learn from experience and improve this plan for our continued success. Such a process will help to incorporate improved scientific knowledge and more advanced understandings of the impacts and management of noxious weeds in Colorado and the West. As the weed populations in Colorado shift and change, so too should our efforts. In so doing, perhaps we will be nimble enough to finally outmaneuver our adversaries, the noxious weeds.

Colorado Department of Agriculture
700 Kipling Street
Suite 4000
Lakewood, CO 80215-8000
(303) 239-4100
www.ag.state.co.us