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FIELD KEY FOR IDENTIFICATION OF CATERPILLARS

Found on Field and Vegetable Crops in Colorado

Bulletin 535A



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Field Key for Identification of Caterpillars Found on Field and Vegetable Crops in Colorado

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Introduction

Identification of immature moths and butterflies is frequently difficult, but important for effective management of pests. This field key will assist in the identification of all caterpillar pests commonly found on Colorado field and vegetable crops. Identification requires little (a 10× hand lens) or no magnification since the key generally is based on obvious characters such as color and proleg number. However, there are some characters (e.g., microspines) that initially are very difficult to recognize without some magnification. Also, the characters are based on mature or nearly-mature

larvae. Preserved specimens may lose their color patterns, and such specimens may be misdiagnosed.

The characters used in the key are illustrated in Figures 1 and 2. Variations in the characters are illustrated in Figures 3 to 45. Additional diagnostic characteristics, illustrations and life history information are available from sources cited in the reference section, or from Colorado State University Cooperative Extension Service in Action sheets no. 5.508, 5.564, and 5.565.

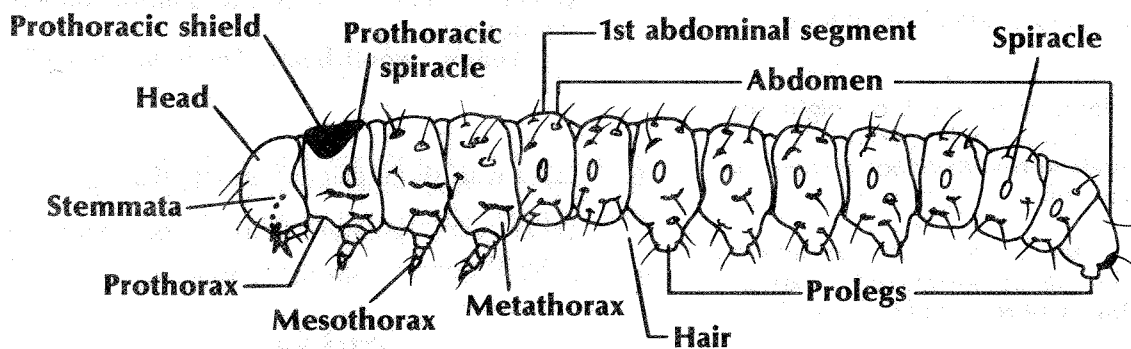


Figure 1 Lateral view of typical caterpillar

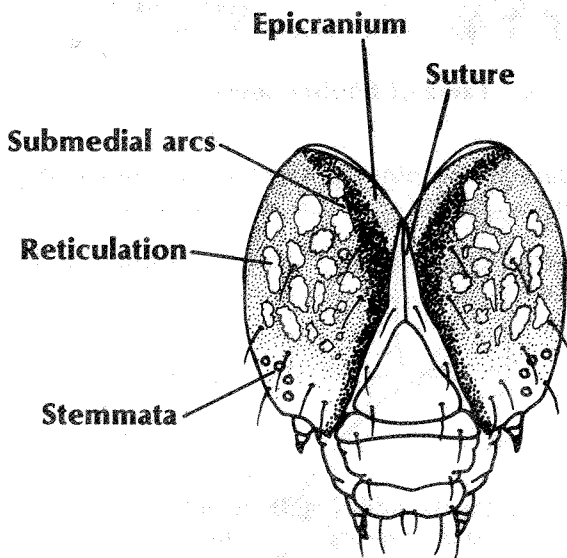


Figure 2 Front view of typical caterpillar head



Figure 3 Branched spine of painted lady caterpillar

1. Larva with numerous, pronounced, branching spines (Fig. 3) 2
- Larva without branching spines 3

2. Prothoracic spiracle black; body black or brown with pale yellow stripes; normally feeds on thistle but sometimes attacks sunflower and soybean.
Painted lady, *Vanessa cardui* (L).

Prothoracic spiracle white with black rim; body yellowish or yellow-brown, lacking stripes; feeds on grasses.
Range caterpillar, *Hemileuca oliviae* (Cockerell)

3. Larva with pronounced "horn" on posterior end (Fig. 4, 5) 4
- Larva lacking "horn" posteriorly 6

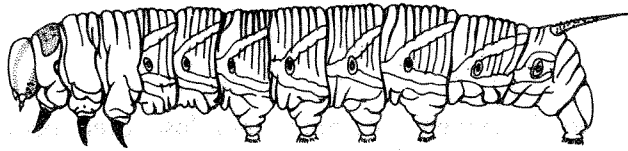


Figure 4 Tomato hornworm larva

4. Larva generally with black or yellow stripes or dorsal or lateral bands, running entire length of body; larva is highly variable in color, ranging from almost entirely black with a yellow pattern, to almost entirely yellow or green with a black pattern.

White-lined sphinx, *Hyles lineata* (F).

Larva lacking black or yellow dorsolateral stripes, but with short, lateral white lines ... 5

5. Lateral white lines form angle on eight segments (Fig. 4); horn is black in color.

Tomato hornworm, *Manduca quinquemaculata* (Haworth)

Lateral white mark is single oblique line on seven segments (Fig. 5); horn is red in color.

Tomato hornworm, *Manduca sexta* (L.)

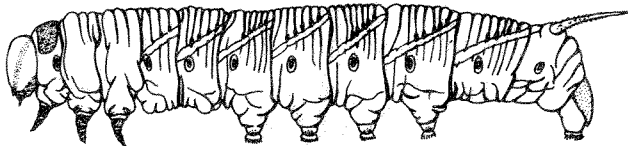


Figure 5 Tobacco hornworm larva

6. Larva covered with extremely long, dense hairs (Fig. 6) 7

Larva with few extremely long hairs, or dense, very short hairs (Fig. 7) 8

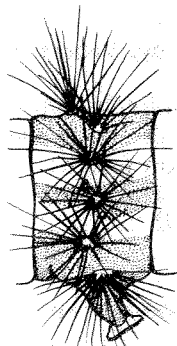


Figure 6 Long hairs on saltmarsh caterpillar

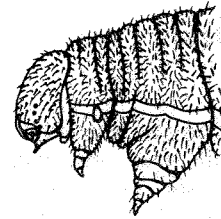


Figure 7 Short, dense hairs on alfalfa caterpillar

7. Head capsule predominantly black; larva variable in color, often with dorsal dark band.

Saltmarsh caterpillar, *Estigmene acrea* (Drury)

Head capsule predominantly yellow; larva variable in color but usually uniform brown, tan or white.

Yellow woollybear, *Spilosoma virginica* (F.)

8. Larva with three pairs of prolegs (Fig. 8) 9

Larva with greater than three pairs of prolegs 13

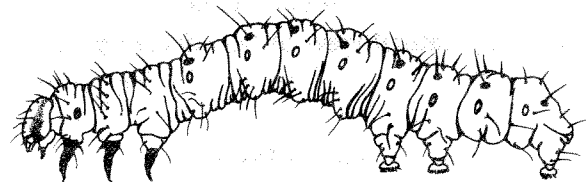


Figure 8 Larva of bilobed looper

9. Dark microspines present on abdomen (Fig. 9) 10

Dark microspines absent from abdomen 11

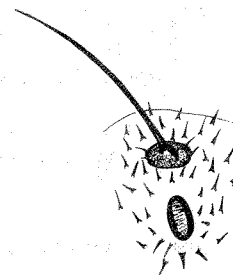


Figure 9 Microspines

10. Thoracic legs generally black; lateral white line through abdominal spiracles weak; strong dark bar usually present on side of head, extending through stemmata (Fig. 8); tubercles

above abdominal spiracles often black.

Bilobed looper, *Autographa biloba* (Stephens)

Thoracic legs pale; distinct lateral white or yellow line through spiracles; dark bar on side of head, when present, weak and not extending through stemmata; abdominal tubercles not black.

Celery looper, *Anagrapha falcifera* (Kirby)

11. Body color gray-brown to black, with broad pale brown or pink stripes.

Forage looper, *Caenurgina erechtea* (Cramer)

Clover looper, *C. crassiuscula* (Haworth)

Body color green, usually with narrow white stripes 12

12. Very small, nipple-like structures present on abdominal segments three and four (Fig. 10); thoracic legs and head usually uniform pale brown or green.

Cabbage looper, *Trichoplusia ni* (Hubner)

Small nipple-like structures absent from abdominal segments three and four; thoracic legs usually black; dark bar usually present on side of head.

Alfalfa looper, *Autographa californica* (Speyer)

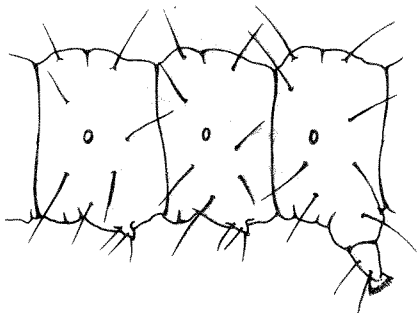


Figure 10 Small nipple-like structures on abdominal segments three and four of cabbage looper

13. Larva with four pairs of prolegs; larva is green with white stripes which fade or disappear in the last instar.

Green cloverworm, *Plathypena scabra* (F.)

Larva with five pairs of prolegs (Fig. 11) 14

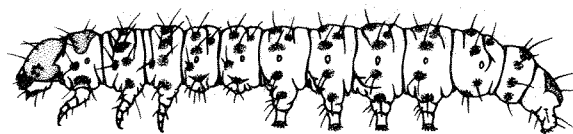


Figure 11 Larva of European corn borer

14. Larva found on head of sunflower, usually tunneling into seeds 15

Larva not tunneling seeds of sunflower 16

15. Abdomen with five longitudinal dark stripes; color is variable but green or brown is common.

Sunflower moth, *Homoeosoma electellum* (Hulst)

Abdomen uniform in color, lacking longitudinal stripes; color is variable but pink in common.

Banded sunflower moth, *Cochylis hospes* (Walsingham)

16. Larva with pale cream or pink-colored abdomen, lacking stripes or bands (Fig. 12) 17

Larva with dark abdomen, or with stripes or bands 24

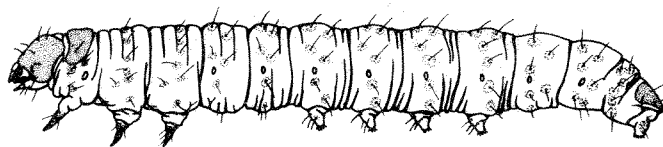


Figure 12 Larva of pale western cutworm

17. Sutures on top of head bordered by distinct, dark brown bars forming submedial arcs (Fig. 13).

Pale western cutworm, *Agrotis orthogonia* (Morrison)

Top of head without submedial arcs 18

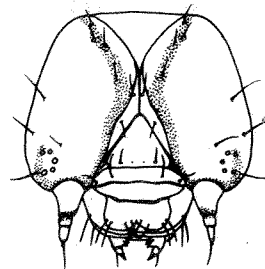


Figure 13 Front view of pale western cutworm head

18. Abdomen with large light brown or dark brown spots (Fig. 14,15) 19
 Abdomen without large spots 20

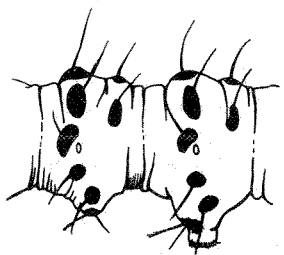


Figure 14 Abdominal segments of southwestern corn borer

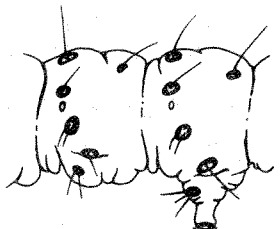


Figure 15 Abdominal segments of European corn borer

19. Crochets on abdominal prolegs in complete circle (Fig. 16); abdominal spots dark brown.
Southwestern corn borer, *Diatraea grandiosella* (Dyar)



Figure 16 Crochet pattern on abdominal proleg of southwestern corn borer

Crochets on abdominal prolegs not quite forming circle (Fig. 17); abdominal spots light brown.
European corn borer, *Ostrinia nubilalis* (Hubner)



Figure 17 Crochet pattern on abdominal proleg of European corn borer

20. Abdominal hairs relatively long, length more than three times diameter of spot from which they originate (Fig. 18).
 (immature webworms; see couplet 41)

Abdominal hairs relatively short, length less than three times diameter of spot from which they originate 21

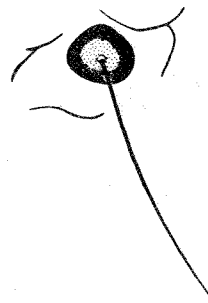


Figure 18 Abdominal hair on alfalfa webworm

21. Prothoracic shield with irregular central dark bands (Fig. 19); feeds above ground on bean pods or in corn ears.
Western bean cutworm, *Loxagrotis albicosta* (Smith)

Prothoracic shield without central bands, although coloration may be present on anterior margin (Fig. 20) or as posterior spots (Fig. 21) 22

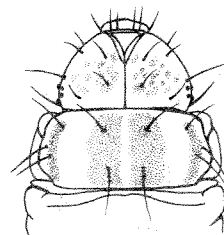


Figure 19 Prothoracic shield of western bean cutworm

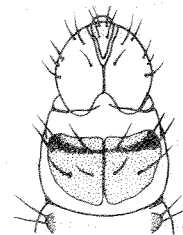


Figure 20 Prothoracic shield of southwestern corn borer

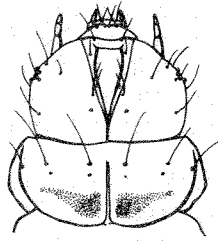


Figure 21 Prothoracic shield of banded sunflower moth

22. Coloration on prothoracic shield present as posterior elongated spots (Fig.21); larva small (about 1 cm); feeds on seeds of sunflower.
Banded sunflower moth, *Cochylis hospes*
(Walsingham)

Coloration on prothoracic shield present as dark anterior margin (Fig. 20); larva large (about 2 cm); usually found feeding below ground 23

23. Crochets on abdominal prolegs numerous (greater than 30) and in complete circle (Fig. 16); larva found in taproot of corn.
Southwestern corn borer, *Diatraea grandiosella*
(Dyar)

Crochets on abdominal prolegs few in number (12 to 14) and forming semicircle; larva found in soil, usually attacking grasses.
Glassy cutworm, *Crymodes devastator*
(Brace)

24. Larva green with short, dense velvet-like hair covering head and body (Fig. 7); base of hair with small black spot 25

Larva color variable without short, dense hair 26

25. Body with pronounced white stripe laterally containing narrow red or orange line; white stripes often occur dorsolaterally, but not middorsally; feeds on legumes.
Alfalfa caterpillar, *Colias eurytheme*
(Boisduval)

Body with weak yellow stripes laterally and middorsally; lateral stripe usually a discontinuous series of yellow spots; feeds on crucifers.

Imported cabbageworm, *Artogeia rapae*
(L.)

26. Abdomen with transverse black stripes (Fig. 22, 23); brightly colored larva 27

Abdomen with longitudinal stripes or bands only, or without distinct stripes 28

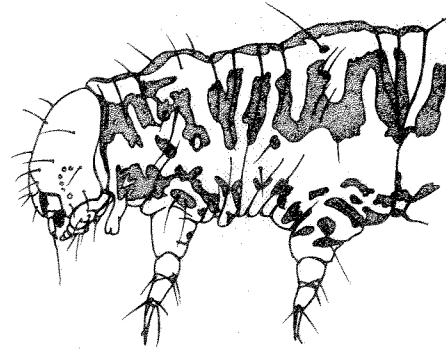


Figure 22 Transverse stripes on zebra caterpillar

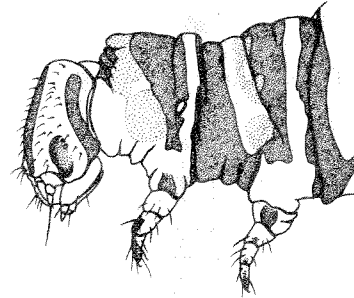


Figure 23 Transverse stripes on parsleyworm/black swallowtail

27. Transverse stripes occurring laterally, but not dorsally (Fig. 22); background color white; yellow lateral and dorsolateral bands; head uniform reddish.
Zebra caterpillar, *Melanchnra picta*
(Harris)

Transverse dorsal and lateral stripes with indentations containing orange spots (Fig. 23); background color green; head with dark bands.

Parsleyworm/black swallowtail, *Papilio polyxenes asterius*
(Stoll)

28. Larva purple-green with four, wide yellow bands running length of body; large dark spots at base of hairs.
Southern cabbage butterfly/checkered white, *Pontia protodice*
(Boisduval & LeConte)

Larva not with alternating purple and yellow bands 29

29. Abdomen dark with row of four or more dis-

tinct whitish or yellowish spots middorsally (Fig. 24).

Variegated cutworm, *Peridroma saucia*
(Hubner)

Abdomen without light-colored spots middorsally (Fig. 25) 30

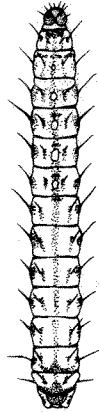


Figure 24 Dorsal view of variegated cutworm

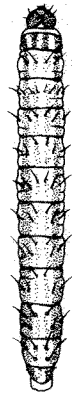


Figure 25 Dorsal view of fall armyworm

30. Abdomen with paired dorsal triangular black spots (Fig. 26, 27) 31

Abdomen without paired, dorsal triangular black spots 32

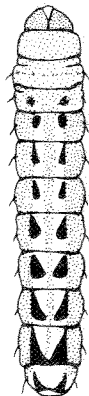


Figure 26 Dorsal view of spotted cutworm

31. Largest triangular black spots located posteriorly on abdomen (Fig. 26); distinct light stripe running longitudinally is below, but not immediately adjacent to, triangular spots.

Spotted cutworm, *Amathes c-nigrum* (L.)

Triangular black spots on abdomen fairly uniform in size (Fig. 27); light stripe running longitudinally is immediately adjacent to triangular spots.

Yellowstriped armyworm, *Spodoptera ornithogalli* (Guenee)



Figure 27 Dorsal view of yellowstriped armyworm

32. Head with white bands at margins of sutures, forming an inverted "V" or "Y" (Fig. 28, 29) 33

Head lacks white bands 34

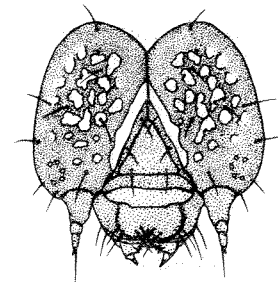


Figure 28 Front view of yellowstriped armyworm head

33. White bands form inverted "V" when viewed from front (Fig. 28); abdominal segment eight without spots.

Yellowstriped armyworm, *Spodoptera ornithogalli* (Guenee)

White bands form inverted "Y" when viewed from front (Fig. 29); top of abdominal segment eight with four dark spots.

Fall armyworm, *Spodoptera frugiperda*
(J.E. Smith)

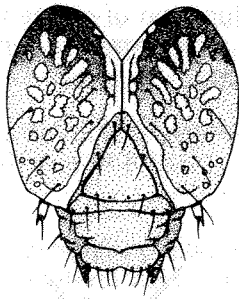


Figure 29 Front view of fall armyworm head

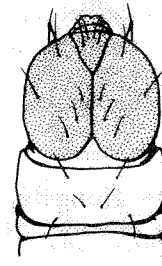


Figure 32 Dorsal view of caterpillar head with epicranium joined broadly

34. Abdominal spiracles surrounded by black areas which do not form a continuous black line connecting spiracles (Fig. 30); yellow or pink stripe below spiracles.

Clover cutworm, *Scotogramma trifolii* (Hufnagel)

Abdominal spiracles not surrounded by discontinuous black areas 35

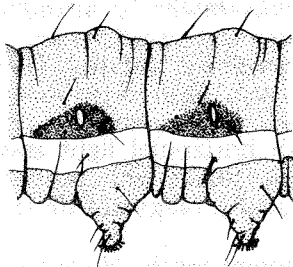


Figure 30 Lateral view of clover cutworm abdominal segments

35. Epicranium (sides of head) joined narrowly when viewed from above (Fig. 31) 36

Epicranium joined broadly when viewed from above (Fig. 32) 47

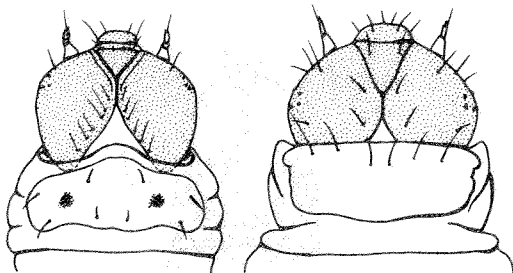


Figure 31 Dorsal view of caterpillar heads with epicranium joined narrowly

36. Dark markings on top of head restricted to submedial arc (Fig. 13); prothoracic spiracle (Fig. 33) round or only slightly oval (Fig. 34); abdomen generally uniform tan or gray color.

Pale western cutworm, *Agrotis orthogonia* (Morrison)

Dark markings on top of head widespread; abdomen usually distinctly marked or dark 37

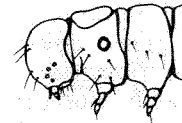


Figure 33 Location of prothoracic spiracle

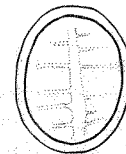


Figure 34 Spiracle slightly oval, about 1 and 1/2 times long as wide, on dingy cutworm

37. Abdomen black (mature larva) or gray (immature), sometimes with dorsal, broad brown band; skin with numerous coarse granules; prothoracic spiracle about twice as long as wide (Fig. 35). (Only dingy cutworm has similar coarse skin granules, but prothoracic spiracle is about 1 and 1/2 times as long as wide and larva is not black.)

Black cutworm, *Agrotis ipsilon* (Hufnagel)

Abdomen indistinctly marked brown, gray and tan, often with broad dorsal light stripe, or distinctly striped; coarse granules on skin not evident, and larval coloration not black 38

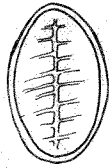


Figure 35 Spiracle elongate, about two times as long as wide, on army cutworm

38. Ventral and lateral abdominal hairs emerging from large spots, usually with concentric light and dark circles (Fig. 18); larva often very active, moves quickly (usually backwards) when disturbed; larva often produces silk 39

Ventral abdominal hairs not emerging from distinct spots; larval generally inactive and usually not producing silk 42

39. Hairs relatively short, length about two to three times diameter of spot 40

Hairs relatively long, length about four times diameter of spot, or longer 41

40. Body uniform green color, tapering strongly at anterior and posterior; head and prothoracic shield with numerous small distinct spots; abdominal spots with dark center; anal prolegs pronounced and divergent; larva feeds on plant surface.

Diamondback moth, *Plutella xylostella* (L.)

Body pale, usually with brown stripes, not tapering strongly; head and prothoracic shield uniform dark or with weak spots only; abdominal spots with dark ring; anal prolegs not pronounced; larva burrows within plant stem.

European corn borer, *Ostrinia nubilalis* (Hubner)

41. Middorsal stripe as dark as, or darker than, dorsolateral bands; dorsal spots with white portion distinct, concentric circles forming "bullseye".

Beet webworm, *Loxostege sticticalis* (L.)

Middorsal stripe lighter than dorsolateral bands; dorsal spots usually with irregular, less distinct white circle forming irregular "bullseye".

Alfalfa webworm, *Loxostege cerealis* (Zeller)

42. Abdomen with stout hairs (bristles) (Fig. 36); distinct lateral brown band; dorsal band con-

stricted at junction of segments.

Bristly cutworm, *Lacinipolia renigera* (Stephens)

Abdomen with weak hairs; distinct brown band and constricted dorsal band lacking 43



Figure 36 Stout bristle from bristly cutworm

43. Larva small (less than 1.5 cm at maturity); body tapering strongly at anterior and posterior; prothoracic spiracle round 44

Larva large; body not tapering strongly; prothoracic spiracle not round 45

44. Larva uniform green color; prothoracic shield with dark spots widely distributed (Fig. 37); anal prolegs markedly divergent; feeds on crucifers.

Diamondback moth, *Plutella xylostella* (L.)

Larva with horizontal light and dark stripes; prothoracic shield with posterior edge dark (Fig. 38); anal prolegs not divergent; feeds on sunflower.

Sunflower moth, *Homoeosoma electellum* (Hulst)

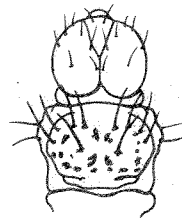


Figure 37 Prothoracic shield of diamondback moth

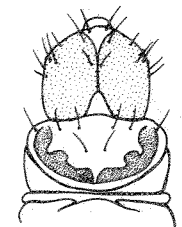


Figure 38 Prothoracic shield of sunflower moth

45. Prothoracic spiracle oval, about 1 and 1/2 times as long as wide (Fig. 34).

Dingy cutworm, *Feltia ducens* (Walker)

Prothoracic spiracle elongate, about twice as long as wide (Fig. 35) 46

46. Abdomen generally yellow-brown dorsally with a broad lateral dark band; larva active in March and April; generally the most abundant spring cutworm in Colorado (if coarse skin granules are present see dingy cutworm, couplet 45, and black cutworm, couplet 37).

Army cutworm, *Euxoa auxiliaris* (Grote)

Abdomen generally gray-brown dorsally with a narrow, lateral wavy dark band; larva active in May and June.

Darksided cutworm, *Euxoa messoria* (Harris)

47. Dark bar present on side of head (Fig. 39), extending back to form dark stripe running length of body; dorsal and lateral white stripe with lateral stripe interrupted (Fig. 39); body stripes disappear at maturity.

Stalk borer, *Papaipema nebris* (Guenee)

Dark bar not present on side of head; lateral white stripes, when present on abdomen, not interrupted 48

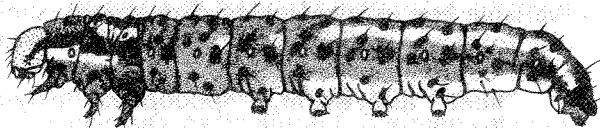


Figure 39 Lateral view of stalk borer

48. Top of head lacking reticulations (net-like pattern) (Fig. 40) 49

Top of head with reticulations (Fig. 41) 50

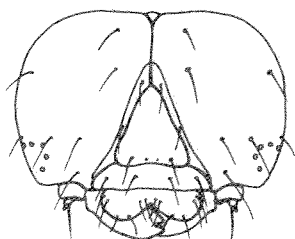


Figure 40 Front view of western bean cutworm head, lacking reticulations

49. Prothoracic shield dark centrally (Fig. 20); abdomen lacking distinct light stripes laterally; larva found on bean pods or in corn ears.

Western bean cutworm, *Loxagrotis albicosta* (Smith)

Prothoracic shield uniform (Fig. 19); abdomen usually with distinct light stripes laterally; larva found on grasses, especially wheat.

Wheathead armyworm, *Faronta diffusa* (Walker)

50. Abdominal segment eight with four raised dorsal brown or black spots (Fig. 42) 51

Abdominal segment eight without four dorsal dark spots 52

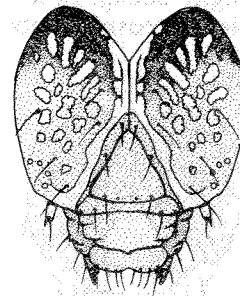


Figure 41 Front view of fall armyworm head, with reticulations

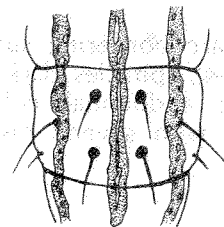


Figure 42 Dorsal view of abdominal segment eight of corn earworm

51. Tiny microspines on dorsal surface of abdomen (Fig. 9); reticulations on head light-colored net-like pattern on dark background (Fig. 43); general head color uniform light brown.

Corn earworm, *Heliothis zea* (Boddie)

No microspines on abdomen; reticulations on head dark-colored net-like pattern on light background (Fig. 41); general head color dark, and darker dorsally.

Fall armyworm, *Spodoptera frugiperda* (J.E. Smith)

52. Bronze body color with five distinct pale stripes (three when viewed from above), each about one-half as wide as the bronze area between them; reticulations on head weak.

Bronzed cutworm, *Nephelodes minians*
(Guenee)

Body color and stripe pattern not as described above; reticulations on head distinct 53

53. Reticulations on head light-colored net-like pattern on dark background (Fig. 43); body color pattern variable but dark lateral stripe usually present; tiny microspines present (Fig. 9).

Corn earworm, *Heliothis zea* (Boddie)

Reticulations on head dark-colored net-like pattern on light background (Fig. 41); lateral stripe variable; microspines absent 54

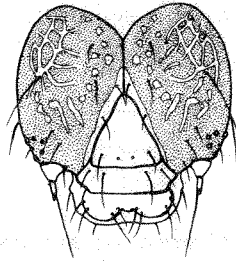


Figure 43 Front view of corn earworm head

54. Submedial arc bordering sutures on top of head (Fig. 44); spiracles dark brown or black throughout; abdominal coloration variable but usually with several distinct alternating

dark and light stripes.

Armyworm, *Pseudaletia unipuncta* (Haworth)

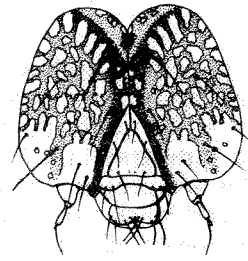


Figure 44 Front view of armyworm head

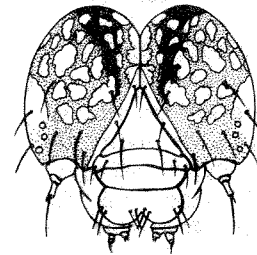


Figure 45 Front view of beet armyworm head

Sutures of head lacking submedial arc (Fig. 45); spiracles white or light brown and bordered by dark ring; abdominal coloration variable but usually lacking dark stripes; similar to clover cutworm but lacking dark areas near abdominal spiracles.

Beet armyworm, *Spodoptera exigua*
(Hubner)

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