

BUTTERFLIES OF YAKIMA COUNTY, WASHINGTON

by E. J. NEWCOMER

1509 Summitview, Yakima, Washington

Yakima County, Washington, is rather unique as an area for the study of butterflies. It is quite large, 4,273 square miles, and it encompasses every life zone from Arctic-alpine to Upper Sonoran. The elevation ranges from over 12,000 feet on Mt. Adams to 500 feet at the Columbia River. Annual precipitation ranges from 60 inches or more in the mountains to about 6 inches at the Columbia River.¹

The physiographic diversity results in a wide variety of vegetation, from stunted conifers, low shrubs and fields of wild flowers at timber line down through the heavy growths of white pine and fir, open yellow-pine forests, a belt of oaks (*Quercus garryana*), and on down to open fields and dry desert characterized by sage-brush, greasewood, hop sage and a few early annuals. The floral range enables a large number of species of butterflies. It brings together in one county such northern species as *Erebia discoidalis*, *Agriades glandon* and *Carterocephalus palaemon* with southern species such as *Apodemia mormo* and *Heliopetes ericetorum*. Of about 130 species that have been recorded in Washington, at least 103 occur in Yakima County. These facts have made it worth while to study the butterflies of this county intensively, which I have done for seven years. I also had taken a few notes on species seen in the 1920's; and the Rev. A. I. Good collected in the county in 1955-56, and he has very kindly given me copies of his records.

As shown on the accompanying map, Yakima County is bounded on the west by the Cascade Mountains. From them flow the American and Tieton Rivers which run into the Naches River and thence into the Yakima River. Umtanum, Wenas, Cowiche, Ahtanum, Toppenish and Satus Creeks also flow into the Yakima River, which has an elevation ranging from 1400 feet at the north boundary of the county to 650 feet at the south. Thus we have a series of rather shallow canyons opening into the wide valley. A small portion of the northeast boundary of the county borders on the Columbia River.

A firing range, operated by the U. S. Army, occupies 250 square miles of desert land, and is "off limits" as is the portion of the Yakima Indian Reservation west and south of Toppenish Creek, an area of 1500 square miles. An exception to this is a strip along Satus Creek where U. S. Highway 97 runs through the reservation. The area between Fort Simcoe

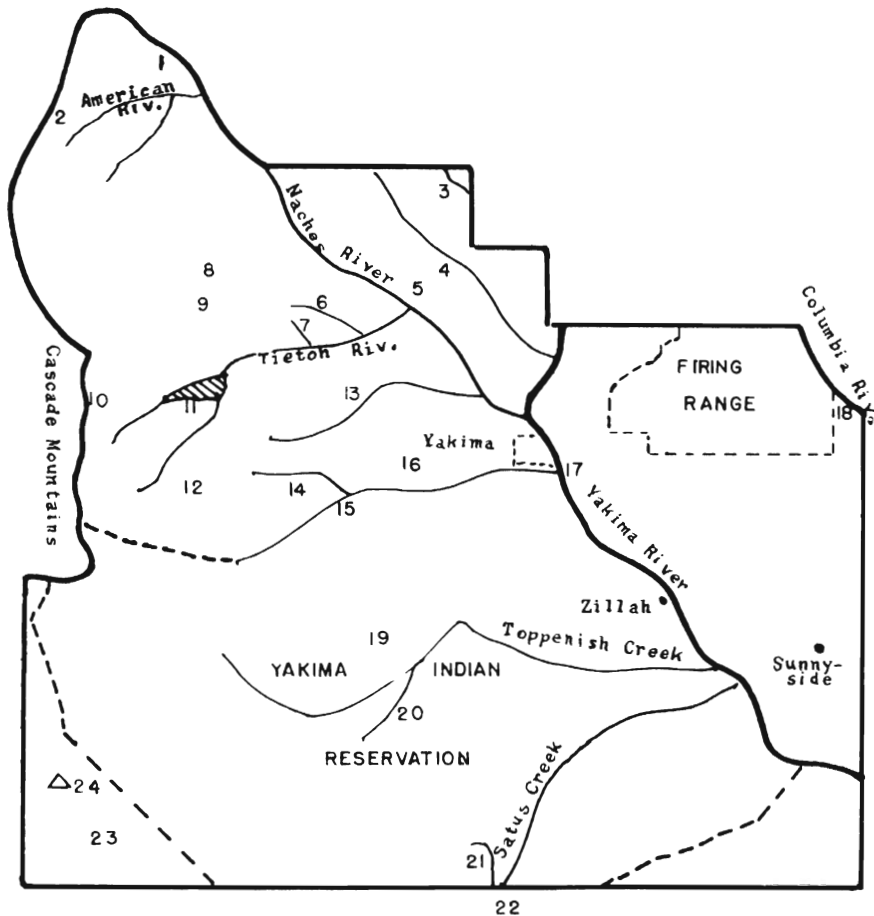
¹There are several counties in western Washington with even greater ranges of elevation, but they do not have the range of life zones nor of precipitation that occur in Yakima County.

and the Yakima River, most of the area east of the river, and some land north and west of Yakima is either irrigated farm and orchard land or very dry desert. Collecting in either is not good, the irrigated land because of cultivation and the repeated use of insecticides, and the desert land because of lack of moisture and vegetation. So there remains somewhat less than half the total area where collecting is potentially good.

Sites where most collecting has been done are marked on the map as follows:

No.	Designation	Elevation
1	Little Naches	3,000
2	Cascade Crest Trail	5,000-5,200
2	Sheep Lake	5,500
3	Umtanum Creek	2,800
4	Wenas Creek	2,000
5	Mt. Cleman	5,000
6	Oak Creek	2,500-3,500
7	Bear Canyon	2,500-3,500
8	Timberwolf Mountain	6,000
9	Bethel Ridge	6,000
10	Hogback Mountain	6,500
11	Rimrock Lake	3,000
12	Blue Slide Lookout	7,000
12	Short & Dirty Ridge	7,000
12	Cultus Hole	6,000
12	Nasty Creek Flat	5,500
13	Cowiche Creek	2,500
14	Antanum Creek	2,000-3,000
15	Tampico	2,000
16	Cottonwood Creek	2,000
17	Moxee Valley	950
18	Priest Rapids	500
19	Fort Simcoe	1,200
20	Mill Creek	1,800
21	Kusshi Creek	2,000-2,500
22	Satus Pass	3,200-4,000
23	Bird Creek	3,000
24	Mt. Adams	12,300

Satus Pass is actually about 5 miles south of the county line, but it is the same type of terrain as in the Indian Reservation to the northwest; and it affords the only access to this area at an elevation above 2,500 feet. No collecting has been done on Mt. Adams above tree line at about 7,000 feet, and collecting there is very poor. The best sites are in Bear Canyon (Newcomer, 1962), along Oak and Kusshi Creeks, in the vicinity of Satus Pass and along the Cascade Crest Trail. Many of the sites in the mountains are accessible over Forest Service and logging roads. One of them, Hogback Mountain, is accessible by chair lift. U. S. Highway 97 goes over Satus Pass, and then north along the Yakima River. U. S. 410 follows the Naches and American Rivers



EXPLANATION OF MAP

Yakima County, Washington; collecting sites indicated by numbers 1-22, as enumerated in text.

to the summit of the Cascades at Chinook Pass. State Highway 14 follows the Tieton River past Rimrock Lake to the summit at White Pass.

The nomenclature used in the following list is that of Ehrlich and Ehrlich (1961), modified according to dos Passos (1964). Many of the species have been determined by specialists: *Colias* by Klots, *Cercyonis* by F. M. Brown, *Speyeria* by Grey, *Euphydryas* by Jewett, the green *Callophrys* by Clench, and some of the skippers by Burns and MacNeill. I am grateful to these men for help with these genera. Subspecies are mentioned if the distribution patterns involved are of interest in discussion of the Yakima County area. Elevations are given in feet. Larval food plants are given where known, using the nomencla-

ture of Abrams (1944, 1951) and Abrams and Ferris (1960).

1. *Parnassius clodius* Men. Occurs commonly in open meadows and mountain slopes, 4000-7000; July to September.

2. *Parnassius phoebus smintheus* Dbldy. Flying with *clodius*, but also taken in Bear Canyon (2500'), late May and early July, and on north fork of Ahtanum Creek. Earlier occurrence in Bear Canyon apparently due to lower elevation. Its food plant, *Sedum*, is abundant there.

3. *Papilio multicaudata* Kirby. Not common but occurs in the canyons at 2000-3000', and also at Priest Rapids at 500'; May to August. Larvae on chokecherry (*Prunus demissa*).

4. *Papilio eurymedon* Lucas. Habitat same as last, except not seen at Priest Rapids; May to July. Food plant, *Prunus demissa*.

5. *Papilio rutulus* Lucas. The commonest *Papilio*, occurring in the open valleys and up to at least 6000', but often absent at higher elevations; May to September. At times very numerous in the city of Yakima. Larvae on willow and cottonwood.

6. *Papilio zelicaon* Lucas. At all elevations from 500' at the Columbia River to over 6000' in the mountains; late March to end of May below 2000'. June at 3000', and July at 4000-6000'. Larvae on wild parsley (*Lomatium grayi* and *L. triternatum*) and on *Pteryxia terebinthina*.

7. *Papilio indra* Reak. This sometimes scarce species flies in April and May in the canyons at 1500-3000', and has been taken along the Columbia River at 500'. Seen at higher elevations as late as July. Males at times numerous at damp, sandy spots along creeks; females scarce, taken occasionally on flowers. Larvae on *Lomatium grayi*.

8. *Papilio bairdii oregonius* Edw. Occurs commonly along Columbia River below Priest Rapids where its food plant, tarragon (*Artemisia dracunculoides*)¹ grows; also in Yakima River Canyon above Yakima. Adults feed on thistle blossoms². Apparently *oregonius* thrives only where thistles and tarragon are growing near each other. Evidently two brooded, as it has been taken in June and again in August and September. Larvae parasitized by the braconid, *Apanteles lunatus* (Pack.).

9. *Colias alexandra* Edw. This northern or high-elevation species occurs sparingly in Yakima County. Noted at Kusshi Creek (2000'), May; Satus Pass (3700'), June and July; Short and Dirty Ridge (7000'), August. Oviposition on a rattle-weed (*Astragalus serotinus*).

10. *Colias occidentalis* Scud. Common along the creeks at lower elevations, May to August; occasional at 6000'. Oviposition on white sweet clover (*Melilotus alba*), vetch (*Vicia angustifolia*) and a lupine.

¹Abrams and Ferris (1960) consider *dracunculoides* Pursh. to be the same as the Eurasian *dracunculus* Linnaeus.

²Three species of thistles, *Cirsium vulgare*, *C. undulatum* and *C. edule* which might attract this butterfly, occur in this region.

11. *Colias eurytheme* Bdv. Common in clover and vetch fields in the valley, along creeks and sometimes at elevations of 6000'; April to October.

12. *Anthocaris sara* Bdv. Flies from early April to early June in open fields and lower creek bottoms from 500 to 3000'; also taken along Cascade Crest Trail (5000') in July and August. Females usually yellow, but white ones have been taken on Satus Creek.

13. *Euchloe ausonides* Lucas. Found at same times and places as the preceding but only below 3000'.

14. *Euchloe creusa* Dbldy. Same times and places as *ausonides*, and not always easily distinguishable from it.

15. *Pieris rapae* (L.) At times very numerous in the valley, also occurs at higher elevations, Bird Creek Meadows (6000') and Short and Dirty Ridge (7000'); March to October.

16. *Pieris napi marginalis* Scud. Bird Creek (3000') June 26.

17. *Pieris beckeri* Edw. Fairly common at 500-3000'; April to early July, and occasionally August.

18. *Pieris sisymbrii* Bdv. Late March through May at 500 to 3000'; also found on Nasty Creek Flat (5500') and Short and Dirty Ridge (7000') in July.

19. *Pieris occidentalis* Reak. Occurs sparingly along Cottonwood Creek (2000') and in Bear Canyon (2500') but more commonly in the high meadows at 4000-6000'; July and August.

20. *Neophasia menapia* (Feld. & Feld.) This species has been quite scarce in the mountains northwest of Yakima, and the few specimens seen may have been strays from west of the summit. However, I am told by Indian Service foresters that at times it is numerous enough in the western part of the Yakima Indian Reservation to damage the yellow pines.

21. *Danaus plexippus* (L.) Very scarce in Yakima County although milkweed is common. Apparently breeds here, the few seen being fresh specimens. Cottonwood Creek (2000') in July and August, and one in Yakima, July.

22. *Coenonympha tullia ampelos* Edw. Taking the season as a whole, this is the commonest butterfly found at all elevations; April to September. Quite variable.

23. *Cercyonis pegala ariane* (Bdv.) Found along Cowiche, Cottonwood, Oak and Mill Creeks and in Tieton and Bear Canyons; late May to September.

24. *Cercyonis silvestris* (Edw.) Found at the same places, July and August, and not especially common.

25. *Cercyonis oetus* (Bdv.) The commonest *Cercyonis*; at the same

places and elsewhere; June to August.

26. *Erebia epispodea* Butler. The moist, grassy meadows which this species frequents are scarce in Yakima County, and it has been taken only along Oak Creek (2500'), near Rimrock Lake (3000'), American River (3000') and on Bethel Ridge (6000'); late May through June.

27. *Oeneis nevadensis* (Feld. & Feld.). Quite common in even numbered years, 2500 to 7000'; late May to August. Males along open stream beds and both sexes in fairly dry meadows and on mountain slopes. A single specimen, Little Naches River, July 13, 1959, and one at Sheep Lake, August 28, 1963.

28. *Speyeria cybele leto* (Behr). Not common but occurs along Cowiche and Oak Creeks and in Bear Canyon at 2500-3500'; late July to early September. Adults feed only on thistles.

29. *Speyeria mormonia washingtonia* (B. & McD.). A high elevation species, taken in mountain meadows at most localities above 4000; July to September.

30. *Speyeria atlantis dodgei* (Gunder). Taken only at Satus Pass (3700') and Cultus Hole (6000'); July and August.

31. *Speyeria egleis* Behr (ssp.). Three specimens, Cultus Hole (6000'), August 11.

32. *Speyeria callippe semivirida* (McD.). Along streams and in high meadows, 1800-7000'; May to August; but only worn specimens after June.

33. *Speyeria zerene garrettii* (Gund.). Mostly at 4000-6000'; July and August.

34. *Speyeria coronis simaetha* dos Passos & Grey. The commonest species. Found from mid-May to September at 1800-7000'. Seen occasionally in Yakima (1000') and at Priest Rapids (500'), these probably strays. Evidently more than one brood.

35. *Speyeria hydaspae sakuntala* (Skinner). Common at 4000-7000' and occasionally lower; mid-July to September.

36. *Boloria selene* (Schiff.). Discovered in 1963 by David McCorkle in a sphagnum bog in the Moxee Valley (950') near Yakima River. Not otherwise known in Washington except west of Oroville (Carney, 1961), which is more than 150 miles north of Yakima; but probably occurs elsewhere in the state very locally. Three broods, one in May, one in late July and one in late August and early September. Larvae on *Viola nephrophylla*.

37. *Boloria titania rainieri* (B. & McD.). A high elevation species, 4000-7000', in meadows and on open slopes; July to September. Larvae on *Viola* sp.

38. *Boloria epithore* (Edw.). Common and at somewhat lower

elevations than the last; 3000-6000', in moist, grassy places where violets are growing; June to August.

39. *Euphydryas editha* (Bdv.). A high elevation species, in meadows and on mountain ridges, 5000-7000', particularly on Timberwolf Mountain; late May through July.

40. *Euphydryas chalcedona colon* (Edw.). A lower elevation species, May to July at 2000-4000' and occasionally higher. Particularly abundant along Umtanum Creek and near Satus Pass, June and July. Larvae on *Penstemon subserratus* and snowberry (*Symphoricarpos albus*).

41. *Chlosyne palla* (Bdv.). Along creeks at 1800-3000'; April to July. Also near Satus Pass and along Cascade Crest Trail at 3500-5500', July.

42. *Chlosyne hoffmanni manchada* Bauer. This recently named subspecies (Bauer, 1959) seems to occur in Yakima County only in Bear Canyon, along Oak and Umtanum Creeks at 2000-3000', and also at Satus Pass, and at Sheep Lake (5500'). Particularly common some years in Bear Canyon on blossoms of woolly sunflower (*Eriophyllum lanatum*). Eggs have been obtained but food plant not yet known.

43. *Phyciodes mylitta* (Edw.). Common everywhere up to 4000'; April to September.

44. *Phyciodes campestris* (Behr). Less common than *mylitta* and mostly at 3500-7000'; July and August.

45. *Nymphalis antiopa* (L.). Hibernating adults flying as early as late March and others all summer; mostly along creeks at 1000-3000'.

46. *Nymphalis milberti* (Godart). Also hibernates and seen in April and throughout the summer, but mostly at 3000-7000'. Very abundant some years at Sheep Lake (5500') in August and September.

47. *Nymphalis californica* (Bdv.). Very scarce in 1957-59, but abundant since then; March to September, 2000-6000'.

48. *Polygonia faunus* (Edw.). A high elevation species, 3500-6000'; June to September; most common in the fall.

49. *Polygonia satyrus* (Edw.). At low elevations along creeks, April to July, and also on Bird Creek (6000') and Short and Dirty Ridge (7000') in July. Larvae on nettle.

50. *Polygonia zephyrus* (Edw.). Evidently has two broods, taken in April at 2000' and in mid-July to September at 3000-6500'. Larvae on wild currant (*Ribes cereum*).

51. *Vanessa atalanta* (L.). Very scarce; only three taken in seven years; Ahtanus Creek, May 23, 1959, Oak Creek, June 24, 1960, and Priest Rapids, August 23, 1961. May be only a migrant.

52. *Vanessa virginiensis* (Drury). A single fresh specimen, Priest Rapids, August 27, 1961.

53. *Vanessa cardui* (L.). Quite common in 1957-58, but very scarce

since. At all elevations, May to October.

54. *Vanessa carye* Hbn. Taken in Yakima and along Ahtanum Creek in 1958 and in earlier years. Not seen since then.

55. *Limenitis archippus* (Cramer). Seems to occur only in lower Yakima Valley north and east of Zillah; worn specimens in September. Larvae on willows.

56. *Limenitis lorquini* (Bdv.). Common, 1000-6000'; June to September. Native food plants are willow, cottonwood and wild cherry, but larvae sometimes defoliate young apple trees.

57. *Chrysophanus titus* F. Very scarce; taken only on Cottonwood Creek (2000') in July.

58. *Satyrrium fuliginosum* (Edw.). Usually at high elevations, 3500-7000'; July; but also taken on Cottonwood Creek (2000') in June.

59. *Satyrrium behrii* (Edw.). Extremely common along creeks and in nearby desert areas, 2000-3000'; late June to September. Often found flying about antelope brush (*Purshia tridentata*), one of its food plants.

60. *Satyrrium saepium* (Bdv.). Not common but found where *Ceanothus* grows at 2500-3500'; June and July.

61. *Satyrrium sylvinus* (Bdv.). Along lower creeks near willows; especially abundant on Cottonwood Creek (2000') in July.

62. *Satyrrium californica* (Edw.). Fairly common in canyons, 2000-3000'; July; and near Satus Pass.

63. *Callophrys fotis* (Strecker). In Bear Canyon on sunny days in April, when there is still a skiff of snow in the shade, this inconspicuous little butterfly will be found sunning itself along the warm, rocky slopes. One adult taken at Kusshi Creek, April 22, and a worn specimen, Cascade Crest Trail, July 21. Larvae on *Sedum*.

64. *Callophrys augustinus iroides* (Bdv.). An early flying species, taken in April and May in lower canyons, in early June at Satus Pass (3500').

65. *Callophrys eryphon* (Bdv.). Also an early flier, April to June, in canyons; common along Kusshi Creek. Adults on an annual composite, spring gold (*Crocidium multicaule*), and on nearby young yellow-pine trees, on which the larvae feed.

66. *Callophrys spinetorum* (Hew.). Not common; Oak Creek, Bear Canyon, Satus Pass (2500-3500'); late June and July. Most often feeding on flowers near pine trees on which mistletoe (*Arceuthobium*) is growing.

67. *Callophrys sheridani newcomeri* Clench. This recently described subspecies (Clench, 1963) emerges on the earliest warm days; Fort Simcoe, Mill Creek, Satus Creek, Bear Canyon; March 31 to early

May; 1200-3000'. One on Mt. Cleman (4000'), May 26. Often on blossoms of *Lomatium grayi* and *Eriogonum*.

68. *Callophrys dumetorum* (Bdv.) ssp. Not definitely recorded in eastern Washington prior to Clench (1963). Leighton (1946) records it, but some of his determinations are erroneous; specimens he lists from Alta Lake are surely *affinis* and others may be subspecies of *sheridani*. *C. dumetorum* flies later than *sheridani* and has been taken mostly along Kusshi Creek. May 11 to June 18 (2000-2500'), on blossoms of narrow-leaved parsley (*Lomatium triternatum*), and near Fort Simcoe, May 28-June 3, on *Eriogonum*; also at Satus Pass, May 14 to June 18 (3000').

69. *Strymon melinus* Hbn. Common in the Yakima Valley, where there is considerable acreage of hops and beans; evidently two or three broods; taken from April 2 to September 24 at most elevations from 500' at Priest Rapids to 2800' at Umtanum Creek.

70. *Lycaena rubidus* (Behr). Not common; along Cottonwood Creek from mid June to mid July; both sexes on blossoms of *Eriogonum elatum* and other flowers. Also taken in a draw along Ahtanum Creek and on lower Ahtanum Creek south of Yakima. Reported from Tieton by Leighton (1946). Oviposition observed on *Rumex salicifolius* which grows in nearby meadows.

71. *Lycaena heteronea* Bdv. The commonest *Lycaena*, flying with *rubidus*, and in many other locations, June to September, at 2000-6000'; in Bear Canyon from June 22 to September 4, 1962, indicating that there is more than one brood. Eggs on *Eriogonum*.

72. *Lycaena mariposa* Reak. A high-elevation species, taken at 4000-7000' on mountain sides, in open forest meadows and along creeks; July to September.

73. *Lycaena nivalis* (Bdv.). This variable species may be found at 2000-7000', usually along creeks; sometimes very common. The females are ordinarily very dark above, often with no trace of the orange or fawn color typical of the species. The description of the Colorado subspecies *browni* fits our material very well. At Satus Pass, oviposition observed on *Polygonum douglasii*, the primary food plant. One brood, although taken from late May to early August at different elevations.

74. *Lycaena helloides* (Bdv.). Fairly common at all elevations; May to September.

75. *Plebejus acmon* (W. & H.). A common species at all elevations below 6000'; April to September.

76. *Plebejus melissa* (Edw.). Not as common as the last, but at the same elevations throughout the summer.

77. *Plebejus argyrognomon* Bergs. July to September at 5500-7000'. Fits Comstock's description and figures of *anna*.

78. *Plebejus saepiolus* (Bdv.). Taken at 2000-6000', June and July, mostly along creeks, particularly Oak Creek and the Little Naches River. Females invariably dark.

79. *Plebejus icarioides* (Bdv.). One of the commonest blues; at all elevations from 500' at the Columbia River to 7000' on Short and Dirty Ridge; late April to August.

80. *Agriades glandon* (Prunner). This species could only be expected at high elevations. One taken on Hogback Mountain in August at 6500, and one at Blue Slide Lookout in late July at 7000. It is suspected that both had flown or been blown over from the nearby Goat Rocks, where the elevation goes to over 8000.

81. *Glaucopsyche lygdamus* (Dbldy.) A common blue at 1000-7000'; late April to June at lower elevations, and July at 5000-7000'.

82. *Phaedrotus piasus* (Bdv.). Not especially common, but occurs at 1000-2000' along the Ahtanum, Toppenish, Satus and Wenas Creeks; April to June.

83. *Philotes battoides oregonensis* B. & McD. At the lower elevations, 500-2500'; May and June.

84. *Philotes enoptes columbiae* Mattoni. Commoner than the last, and apparently has two broods; the first taken at 1000-3000' from mid-April to late June; and a second in July. These two species are much alike; *battoides* tends to be smaller and with larger black spots beneath, but examination of the genitalia affords the only sure identification.

85. *Everes amyntula* (Bdv.) An early flier in Yakima County, having been noted from late April to mid-June at 1000-5000'.

86. *Celastrina argiolus* (L.). Another early species; late March to mid-June along the creeks at 1000-3000'. Two forms occur, one typical of ssp. *echo* and the other with the dark markings as in ssp. *lucia*, and both may be taken at the same place on the same day.

87. *Apodemia mormo* (F. & F.). This species is common at certain places in Yakima County, and it occurs elsewhere in Washington and also in Oregon. Its food plant, *Eriogonum*, is abundant in this area, and the adults favor the blossoms of *E. elatum* and of the rabbit brush (*Chrysothamnus nauseosus*). One brood, late August and September, mostly at 500-2000'; at Priest Rapids, Tampico, Mill Creek and Satus Creek; but also in Bear Canyon at 3000'.

88. *Epargyreus clarus* (Cramer). One seen in Yakima, July 19, and also reported in the town of Sunnyside.

89. *Thorybes pylades* (Scud.). Fairly common along the creeks at 1000-3500'; May to July. Oviposition observed on *Hosackia decumbens*.

90. *Pyrgus ruralis* (Bdv.). Taken mostly along Cascade Crest Trail and at Sheep Lake (5500'), July; but also on Little Naches and in Tieton Canyon, June.

91. *Pyrgus communis* (Grote). Occasionally seen along the creeks at 1000-3000'; April to September; and in Yakima in October.

92. *Heliopetes ericetorum* (Bdv.). This species has a primarily southern distribution, but it is seen every year in Yakima County and at times is very common at Priest Rapids and along the lower creeks; June to September. Oviposits on globe mallow (*Iliamna rivularis*).

93. *Pholisora catullus* (F.). Commonest at low elevations, such as Priest Rapids and Cottonwood Creek, but also seen along other creeks up to 3500'; April to August. Larvae on common mallow (*Malva rotundifolia*) in Yakima.

94. *Erynnis propertius* (Scud. & Burg.) This large *Erynnis* is quite common along the creeks at 1000-3000'; but also taken at Satus Pass at 3500'; April to July.

95. *Erynnis icelus* (Scud. & Burg.) In the same locations as the last; May to July; also on Short and Dirty Ridge (7000'), July.

96. *Erynnis persius* (Scud.) Also in the same locations; April to July; and on the Cascade Crest Trail (5500'), July.

97. *Carterocephalus palaemon* (Pallas). A single specimen, Little Naches River (3000'), June 30.

98. *Hesperia juba* (Scud.) Quite common at lower elevations; Priest Rapids, along all creeks, and at Satus Pass; late April to July.

99. *Hesperia harpalus* (Edw.) Taken at lower elevations in September. The subspecies *oregonia* (Edw.) taken above 3000 in July.

100. *Ochloides sylvanoides* (Bdv.) The commonest skipper; 500-6500'; July to September.

101. *Polites sabuleti* (Bdv.) Noted only in Yakima and some of the valley towns, on lawns. Mostly in September, but one taken in June and Dr. Good reports seeing it as early as May. Larvae on lawn grass.

102. *Euphyes vestris* (Bdv.). A single specimen, Bird Creek (3000'), June 26.

103. *Amblyscirtes vialis* (Edw.). This small, inconspicuous species has been noted only along Oak Creek and in Bear Canyon (3000'); June and early July.

The following 26 species have been taken in Washington in addition to those listed above. The starred (*) species could very well occur in Yakima County. **Colias philodice* Godart, **C. interior* Scud (Leighton, 1948, reports this from Yakima on the authority of J. F. Gates Clarke), *C. nastes* Bdv., **Oeneis chryxus* (Dbldy.) (taken at Satus Pass by Dan Carney), *O. melissa beanii* Elwes, *Erebia vidleri* Elwes,

E. disa Thunberg, *Boloria astarte* (Dblidy), *B. toddi ammiralis* (Hemming), *Euphydryas anica* Dblidy), *Phyciodes tharos* (Drury), **P. mylitta mata* (Reak.) (=barnesi Skinner), *Nymphalis j-album* (Bdv. & Lec.), *Polygonia gracilis* (G. & R.), *Limenitis bredowii californica* (Butler) *Callophrys nelsoni* (Bdv.), *C. johnsoni* (Skinner), **C. affinis* (Edw.), *Lycaena editha* (Mead), *Pyrgus centaureae freija* Warren, **Erynnis pacuvius lilius* (Dyar), *Hesperia comma manitoba* (Scud.), *H. comma hulbirti* Lindsey, *Polites mardon* (Edw.), *T. sonora* (Scud.), and *T. themistocles* (Latr.).

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BOOK NOTICE

LARVAE OF THE NORTH AMERICAN TORTRICINAE (Lepidoptera: Tortricidae). By Margaret Rae MacKay. Canadian Entomologist, Supplement 28, 182 pp., including 86 plates. Nov. 6, 1962. Paper and cloth.

This work is a continuation of that published by MacKay on the larvae of the Olethreutidae (now considered to be a subfamily of the Tortricidae) in 1959 (Canad. Ent., Suppl. 10). The present treatment includes descriptions of the late instar larvae of 97 species, or about 60% of the known North American species. As there has been no previous attempt to present keys to a significant portion of this fauna, the work fills a conspicuous void; since the group includes numerous species of economic importance, the identification aspect itself will be of great value. However, the real significance of the work lies in MacKay's interpretation of relationships of and within the Tortricinae, based on larval characters. It is particularly opportune that her work follows a decade of gross revision of the classification of the Tortricoidea, in both the Palearctic and Nearctic regions. MacKay's concepts correlate rather well with those of Obraztsov (1954, 1955 *Tijd. voor Ent.*, etc.) and others, based on characters of the adults, and with Swatschek's (1958, *Larvalsystematik der Insecten*) study of the larvae of Palearctic species. In addition, the American group Sparganothidini is considered to be a Tribe for the first time, a concept confirmed by the work of Powell (1964, *U. Calif. Publ. Ent.*), based on comparative biology, which was in press concurrently. — EDITOR