

nymphs and adults, the latter among the largest I have seen being 2.7 m.m. long. Eggs were also present showing that breeding was actively progressing. The lice came from a strip of skin cut from the saddle. I have a later record from Vavenby, of a small piece of hide some 2 inches long, left on the spines of a barbed wire fence that deer had jumped. The hide was covered with fine white hairs showing that it had come from the belly or inside of a thigh and lice were common on it. Several later collections are to hand but have not been analyzed.

The species *Tricholipeurus virginianus* was named by Mr. Peters from the eastern White Tailed deer. In a letter to me he says "It is extremely interesting to me to find my deer louse so widely distributed and so common, especially on deer in eastern United States." In the same letter he sinks the name *T. odocoilei* McGregor as a synonym of *T. parallelus* Osborn.

In conclusion, deer in this Province commonly harbour two species of Louse flies, two species of Biting lice and very rarely, one species of sucking louse, besides ticks and mites which are not considered here.

References

- Bequaert, J., Correspondence.
Bequaert, J., 1937 Notes on Hippoboscidae, Bull. Brooklyn Ent. Soc. Vol. XXXII, No. 3, pp. 91-101, June 1937.
Ferris, G. F. Contributions. Monograph of Sucking Lice, Stanford Press.
Peters, Harold. Correspondence.

A PRELIMINARY LIST OF STONEFLIES (PLECOPTERA) FROM THE VICINITY OF CULTUS LAKE, BRITISH COLUMBIA

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Cultus Lake is situated on the southwestern mainland of British Columbia, about 35 miles from salt water, and 4 miles north of the International boundary, in latitude 49° 4' N., longitude 122° 0' W. The level of the lake is only 50 meters above sea-level, but it lies between the two western-most outliers of mountain ranges which in the near vicinity rise to elevations in excess of 2,000 meters. To the north lies a broad valley traversed by the Fraser river, and its tributary the Sumas-Chilliwack system. Specimens of stoneflies recorded in this paper were taken within an area bounded by the Fraser river on the north; the Sumas and Chilliwack rivers, Sweltzer creek, Cultus lake and their tributaries on the west; Tamih creek on the east; and the North Fork of the Nooksack river on the south. The more southerly part of the region outlined lies in the state of Washington.

Within this region collections were made at a variety of locations. The habitats sampled may be grouped as follows:

- (1) Large rivers at base-level, near the border of the region of tidal influence: the Fraser and the Sumas.
- (2) Large cold rivers at low elevation, with beds mostly of loose boulders rolled along in every major flood: the Chilliwack (or Vedder) at Vedder Crossing, the Nooksack above the falls.
- (3) Medium-sized cold rivers at low elevation, having more stable bottoms than the above: Lower Liumchin creek, Frost creek.
- (4) Medium-sized warm rivers at low elevation: Sweltzer creek, the outlet stream of Cultus lake. Its summer temperature commonly passes 21° C., when other medium-to-large streams of the region probably rarely exceed 16°.
- (5) Small cold creeks at low elevation: Hatchery, Reservoir, Ascaphus, Dumvill, Smith Falls, and Watt creeks, all tributary to Cultus lake; Spring Brook on Liumchin trail near the lake.
- (6) Medium-sized cold rivers at moderate elevation (about 1,000 meters): Little Liumchin creek (about 350 meters below Liumchin lake); Canyon creek north of Glacier, Wn., where the Forest Service trail meets it; Tamihi creek, about 5 miles from its confluence with the Chilliwack river.
- (7) Small cold creeks at moderate elevation: Calypso and Cornuta creeks near Canyon creek, on the trail.
- (8) Small cold creeks at high elevations (over 1,500 meters): Saxifrage creek, main tributary of Liumchin lake; Boundary creek, on International boundary just west of monument 48.

Most collecting was done on the Chilliwack river, Sweltzer creek, and the small creeks close to Cultus lake. No type of habitat has been exhaustively studied, but the streams at moderate to high elevations, plus the great Fraser river, will probably yield the greatest amount of new information to future collecting.

Plecoptera being a little-studied order of insects, the fauna of British Columbia and Washington is at present poorly known. Prior to 1925 only scattered records had been published, principally by Professor Nathan Banks. These were summarized in Needham and Claassen's Monograph of that year, and many new records added. Even so, their total list was only 27 species from B. C. and 30 from Washington, a total of 45. Since the time of the Monograph, there have been a number of contributions to the study of the region. Prof. Ferris Neave of Winnipeg has added a number of new records, some of new species, and has also made extensive collections in the Jasper region just outside of B.C. Dr. T. H. Frison of Urbana has likewise recorded a few species from B.C., and a new one from Washington. He has also published several valuable papers on Oregon material, including many new species now found at Cultus lake. The British Columbia list now stands at 42 species, and the combined B.C. and Washington list at 60—but it is probable that a few duplications are present in this total.

Neither British Columbia nor Washington, however, has had a resident collector who gave special attention to Plecoptera—or at least, the results of such collecting have not been published. Consequently no single locality or geographical region has been collected with any approach to thoroughness. The writer's effort to remedy this situa-

tion, as regards a site in the southern coastal rain-forest region, have had very encouraging results. The number of described species taken, and recognized, in the limited region outlined above, is 52; and of these 25 are recorded from British Columbia for the first time. In addition, 8 undescribed species have been taken, and about 20 which cannot as yet be definitely placed, either because of inadequate material, or lack of facilities for comparing them with types of similar or possibly identical forms. Determinations have been checked in some cases by the late Dr. P. W. Claassen of Cornell University, and in most cases by Dr. T. H. Frison of the Natural History Survey of Illinois, to whom our appreciation is here extended.

In the list to follow, the types of habitats in which each species has been taken to date are indicated, together with some idea of its abundance, or at least of its availability to the collector. Unless otherwise mentioned, records have been obtained from both British Columbia and Washington. Specimens of species marked with a star (*) have been compared with their type by their describer.

Abbreviations used are as follows: A—abundant; C—common; FC—fairly common; R—rare; Chwk.—Chilliwack; r.—river; ck.—creek.

PTERONARCIDAE

- (1) *Pteronarcys carifornica* Walker. Chwk. r. and Sweltzer ck. (C). (B. C. only).
- (2) *Pteronarcys princeps* Banks. Small to medium-sized cold cks. (A).

PELTOPERLIDAE

- (3) *Peltoperla brevis* Banks. Small cks. at low elevation. (A). (B.C. only).

TAENIOPTERYGIDAE

- (4) *Taenionema nigripennis* Banks. Large streams. (FC).
- (5) *Taenionema pacifica* Banks. Fraser r. (A). (B.C. only).
- (6) *Doddsia occidentalis* Banks. Large to medium cold streams, up to moderate elevations. (A).

NEMOURIDAE

- (7) *Nemoura cataractae* Neave. Saxifrage ck. (FC). (B. C. only).
- (8) *N. cinctipes* Banks. Sweltzer ck. (A); small cold cks. (FC); large rs. (R).
- (9) *N. columbiana* Claassen. Moderate to high elevations. (C). (B.C. only).
- (10) *N. completa* Walker (syn. *N. glabra* Claassen). Medium to large cold streams at low elevation. (A).
- (11) *N. cornuta* Claassen. Small cold cks. up to moderate elevations. (C).
- (12) **N. dimicki* Frison. One small ck. (FC). (B.C. only).
- (13) *N. interrupta* Claassen. Small cks. at low to moderate elevation. (C).
- (14) **N. lobata* Frison. Small cold cks. (A); larger streams. (FC). (B. C. only).
- (15) **N. oregonensis* Claassen. Generally distributed at all elevations; small cks. (A).

- (16) ***N. producta** Claassen (syn. **N. tuberculifera** Frison). Small to medium cold cks. at low to moderate elevation. (C).

LEUCTRIDAE

- (17) **Leuctra bradleyi** Claassen. Small cks. at all elevations. (A); large streams. (FC).
 (18) ***L. glabra** Claassen. Small cks. at all elevations. (A).
 (19) ***L. infuscata** Claassen. With the last. (A).
 (20) **L. occidentalis** Banks. Small cks. (A); larger streams (C); at low elevations.
 (21) **Perlomyia utahensis** Needham and Claassen. Chwk. r. (FC). (B. C. only).
 (22) ***P. solitaria** Frison. Chwk. r. (C). (B. C. only).

CAPNIIDAE

- (23) **Capnia columbiana** Claassen. Fraser r. (FC). (B. C. only).
 (24) **C. elongata** Claassen. Large rs. (A).
 (25) **C. excavata** Claassen. Large rs. (C). (B. C. only).
 (26) ***C. gracilaria** Claassen. Sweltzer ck. (A); large cold rs. (R). (B. C. only).
 (27) **C. oenone** Neave. Frost ck. (A). (B. C. only).
 (28) **Isocapnia fumigata** Claassen. Fraser, Chwk. & Nooksack rs. (C).
 (29) **Eucapnopsis brevicauda** Claassen. Medium to large streams at low elevation. (A). (B. C. only).

PERLIDAE

- (30) **Acroneuria californica** Banks. Small to medium cold streams at low elevation. (A). (B. C. only).
 (31) **A. pacifica** Banks. Small to large streams, cold or warm. (C).
 (32) **Perla nona** Needham and Claassen. Medium-sized cold streams at low to moderate elevation. (FC). (B. C. only).

PERLODIDAE

- (33) **Perlodes signata** Hagen. Vedder r. (R). (B. C. only).
 (34) **Perlodes irregularis** Banks. Small to medium cold streams, at all elevations. (FC).
 (35) **Isogenus** sp., cf. **frontalis** Newman. Fraser r. (A). (B. C. only).
 (36) ***Hydroperla parallela** Frison. Chwk. and Nooksack r. (A); Fraser r. and Sweltzer ck. (R).

CHLOROPERLIDAE

- (37) **Isoperla fulva** Claassen. Chwk. and Sumas r. (A). (B. C. only).
 (38) ***Isoperla pinta** Frison. Sweltzer ck. (A); small cold cks. at low elevation. (FC to R); large rs. (R). (B. C. only).
 (39) **Paraperla frontalis** Banks. Cold or warm rs. of large to moderate size, up to moderate elevations. (B. C. only).
 (40) **Kathroperla perdita** Banks. Taken wherever collecting was done. (FC).
 (41) **Alloperla borealis** Banks. Small cks. at low elevation. (FC).
 (42) ***A. diversa** Frison. Chwk. r. (C). (B. C. only).
 (43) ***A. dubia** Frison. Large to medium cold rs. at low elevation. (A).
 (44) ***A. elevata** Frison. Sweltzer ck. (A); Chwk. r. (FC). (B. C. only).
 (45) ***A. exquisita** Frison. Small to medium cold cks., up to fairly high elevations. (A).

- (46) *A. fidelis* Banks. Small cks. at high elevation. (A). The majority of specimens collected, of both sexes, were brachypterous.
- (47) *A. forcipata* Neave. Chwk. r. and Frost ck. (A). (B. C. only).
- (48) **A. fraterna* Frison. Small cks. at low elevation. (A). (B.C. only)
- (49) **A. occidentis* Frison. Cks. at high elevation. (A).
- (50) **A. oregonensis* Frison. Chwk. r. (A). (B. C. only).
- (51) *A. pacifica* Banks. Small to large streams at low elevation. Very abundant in Sweltzer ck.
- (52) *A. serrata* Needham and Claassen. Chwk. r. (FC). (B. C. only).

THE SCALE INSECTS OF BRITISH COLUMBIA

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The following list of scale insects is presented at this time in the hope that it may form a nucleus for a future list of a more comprehensive nature. The scale insects have received little attention in the past in British Columbia, the main object having been to exterminate or control certain species of economic importance as they appeared. Records of distribution and host plants are scarce, even with such a common species as the oyster shell scale, and although I have brought together a list of over a dozen species, there is little information regarding their occurrence outside of the Okanagan Valley.

The determination of the species in this group, excepting in the case of one or two of the commoner forms, is the particular field of the specialist who has plenty of material in various stages for comparison. The writer makes no claims in this direction, but is mainly interested in making a start in a somewhat neglected field. In the present list, notes on the distribution and habits are included, as these offer points of interest in some cases.

COCCINAE (Subfamily)

Lecanium corni Bauche

The brown apricot scale. The only specimens on hand are from broom at Vancouver.

Eulecanium coryli (L.)

The Lecanium scale. Recorded from Vancouver as a serious pest of shade trees, and recorded from alder, maple, horse chestnut, laurel, hawthorn, apple, pear, plum, cherry, beech, lime, and roses.

Pulvinaria vitis (L.)

Cottony maple scale. Vernon and Osoyoos, B. C., on cultivated maple and plum.

Saissetia oleae (Bern.)

Black scale. In Vernon infesting Abutilion shrubs.

ASTEROLECANIINAE (Subfamily)

Asterolecanium variolosum (Ratezberg)

Pit-making oak scales. Trail, B. C., on oak.