

The Psocoptera of Indiana

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The published records of psocids from Indiana testify to the fact that the order has been much neglected in the state. I know of no published records before those of Chapman (2) which include only two species—*Lachesilla major* Chapman and *Amphigerontia petiolata* (Banks). Since then Sommerman (4) listed records of four additional species of *Lachesilla*.

From June, 1944, to October, 1950, I have found 57 species of psocids in Indiana. Doubtless additional collecting, especially in the extreme southern part of the state, would add a few species to this number, but in view of the dearth of information it seems advisable to publish my records together with some general notes at this time.

The classification used in this paper is that of Pearman (3), but group names (group is above family) are omitted to save space and the family name Lachesillidae is used instead of Pterodelidae as *Pterodela* is a synonym of *Lachesilla*. I also follow Pearman in the use of the ordinal name, Psocoptera, although most American authors use the name Corrodentia. I am using several of the genera into which the old genus *Psocus* has been split, on the basis of wing venational peculiarities correlating with definite types of genitalia in both sexes. These genera include *Cerastipsocus* Kolbe, *Amphigerontia* Kolbe, *Trichadenotecnum* Enderlein, and *Loensia* Enderlein. The species left in *Psocus* still form groups, however, and some of these may warrant generic distinction. The species in large genera are here listed alphabetically despite their grouping tendencies.

The order Psocoptera is an ancient one, already well differentiated and represented in the Permian. Psocids have apparently experienced difficulty in competition with other tiny herbivores. They must be sought for in such peripheral habitats as rocks, caves, tree trunks, bare branches, dry leaves, and dry grass. A few species have taken to dwelling in man's buildings, and these seem to thrive.

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Collector's names are not given in the records to save space. Other than the author, those who have collected psocids in Indiana are H. S. Dybas, D. W. Rice, K. M. Sommerman, L. Stannard, R. Traub, and W. F. Turner.

Undescribed Species Listed

An undescribed species of *Psocus* is listed. I do not name and describe this as Dr. Sommerman is now preparing a revision of the genus *Psocus* (sens. lat.) in North America.

I do not name three species of *Liposcelis*. It would be necessary to study the types of the species described from North America before doing this.

FAMILY LEPIDOPSOCIDAE

1. *Echmepteryx hageni* (Packard)

Amphientomum hageni Packard. Proc. Bost. Soc. Nat. Hist. 13:405, 1870 (Maine and Mass.).

Common on tree trunks and stone bluffs throughout summer and autumn. Runs rapidly and even takes flight to escape capture. Males extremely scarce. An adequate description with figures of wing venation is given by Aaron (1) under the synonym *Echmepteryx agilis*.

Records—Dunes St. Pk. VIII/15/50 (dry leaves) ♀, (oak trunk) ♀. Goshen VII/28/50 (red cedar) ♀. Jasper-Pulaski St. Game Preserve VII/3/50 (oak branches) N. Indpls. VI/30 & VII/1/44 (elm, wild cherry, & pine trunks) 5 ♀; '45: VI/30—VII/26 (deciduous & pine trunks) 5 ♀ 2 N, VII/31 (conifers) ♀; VII/29 & 30/47 (deciduous trunks) 5 ♀. Kosciusko Co.: E. Rd. 30 at Tippecanoe Riv. VII/2/50 (sugar maple trunk) N; Winona Lake VIII/11/47 (elm trunk) 3 ♀; VII/28—VIII/2/48 (deciduous trunks) 8 ♀ 10 N. Oaklandon IX/12/49 (hickory trunk) N. Shades St. Pk. IX/11/50 (stone bluffs) ♀. Turkey Run St. Pk. IX/11 & 12/50 (stone bluffs) ♂ 18 ♀. Yellowwood Lake VII/8 & 10/46 (elm trunks) 2 ♀.

FAMILY TROGIDAE

2. *Trogium pulsatorium* (Linnaeus)

Termes pulsatorium Linnaeus, Syst. Nat., ed. 10, p. 610, 1758.

A domestic species becoming a nuisance at times.

Records—Kosciusko Co.: abandoned house 3 mi. N. Warsaw VII/21/50 3 ♀ 17 N; Winona Lake: common throughout summer in buildings of Indiana University Biological Station.

3. *Lepinotus* sp.

Records—Indpls. VI/20/45 (stored insects) ♀.

FAMILY LIPOSCELIDAE

4. *Liposcelis divinatorius* (Müller)

Termes divinatorius Müller. Zool. Dan. Prodr. p. 184, 1776.

Records—Indpls. '49: IX/10 (rock dove nest) ♀, IX/11 (stored insects) 20 ♀.

5. *Liposcelis niger* (Banks)

Troctes niger Banks. Ent. News. 11:559, 1900 (Falls Church, Va.)
A dark brown species occurring under bark of trees.

Records—Bloomington '49: X/11 (under bark dead elm) 5 ♀, X/20 (under summac bark) ♀; II/12/50 (under *Malus* bark) ♀. Indpls. VII/31/45 (under bark of log) 2 ♀; IX/3/50 (maple bark) ♀. Oaklandon III/5/50 (dead cattail stalk) ♀.

6. *Liposcelis* sp. No. 1.

A tan species. Meso-metasternal row of 8 to 10 rather long setae; laterals longest. Anterior third of meso-metasternum pale in sharp contrast to posterior portion. Sclerite of subgenital plate (T-shaped structure) with arms each longer than stem. Taken in stored grain.

Records—Indpls. VI/28/45 75 ♀.

7. *Liposcelis* sp. No. 2.

Color tan. Meso-metasternal row of 7 or 8 setae, shorter than in foregoing species but longer than in *L. divinatorius* or *L. niger*. Apparently a slight transverse ridge just anterior to row. Sclerite of subgenital plate with arms each about same length as trunk. Taken under bark of trees.

Records—Bloomington X/11/49 (under bark dead elm) ♀; V/3/50 (under wild cherry bark) 7 N. Indpls. '45: VII/19 (pine bark) ♀, VII/31 (under bark of log) ♂ 3 ♀. Winona Lake VII/14/50 (under wild cherry bark) ♀.

8. *Liposcelis* sp. No. 3

Head and thorax reddish, abdomen light tan. Taken on large dead grass stem.

Records—Kosciusko Co.: Tippecanoe Riv. at Rd. 15 VII/16/50 N.

9. *Embidopsocus needhami* (Enderlein).

Troctes needhami Enderlein. Zool. Jahr. Syst. 18:360, 1903 (nr. Virginia, Ill.).

Only females have been taken by the author. Occurs under bark of trees.

Records—Dunes St. Pk. VIII/15/50 (cottonwood trunk ♀ (apterous). Indpls. VI/13, 19 & 24/45 (under apple and hickory bark) 4 ♀ (apterous) 3 N. Lagrange Co.: nr. Howe VII/5/50 (under tamarack bark) 17 ♀ (9 winged, 8 apterous) N.

FAMILY PSOCATROPIDAE

10. *Psyllipsocus ramburii* selys-Longchamps

Psyllipsocus ramburii Selys-Longchamps. Ent. Mo. Mag. 9:145, 1872 (Paris, France).

A domestic species. I have taken no fully-winged specimens in the state.

Records—Indpls. '45: VII/20 (in cellar) ♀ N, VII/31 (in cellar) ♀; '50: VII/29 (in cellar) ♀, IX/6 (in cellar) ♀. Winona Lake: common throughout summer in buildings of Indiana University Biological Station.

FAMILY EPIPSOCIDAE

11. *Epipsocus crosbyanus* (Chapman)

Bertkauia crosbyana Chapman. Jour. N.Y. Ent. Soc. 38:364, 1930 (Ithaca, New York).

Occurs exclusively in forest ground litter. Males unknown.

Records—Evansville VI/19/43 ♀. Indpls. IX/13/47 2 ♀ N. Turkey Run St. Pk. IX/11/50 2 ♀. Winona Lake VII/19 & 20/47 5 ♀ 2 N.

12. *Epipsocus lepicidinarius* (Chapman)

Bertkauia lepicidinaria Chapman. Jour. N. Y. Ent. Soc. 38:363, 1930 (Ithaca, N. Y.).

Occurs exclusively on stone. It has been taken on cement bridges, but only at Turkey Run Park where it is common on the stone bluffs. At that location a male was taken.

Records—Bloomington IX/23/49 3 ♀. Indpls. VII/29/47 ♀. Turkey Run St. Pk. IX/11 & 12/50 (stone bluffs & bridges) ♂ 5 ♀ 5 N.

FAMILY CAECILIIDAE

13. *Caecilius aurantiacus* (Hagen)

Psocus aurantiacus Hagen. Syn. Neur. N. A. p. 10, 1861.

The most common *Caecilius* in the state. It occurs on both coniferous and deciduous foliage.

Records—Bloomington '49: V/13 (pines & deciduous trees) 4 ♀, V/28 (maple foliage) 2 ♀, X/29 (pine foliage) 2 ♀; V/15 & 23/50 (deciduous foliage) ♂ 2 ♀. Indpls. VI/28/44 (light) ♀; '45: VI/29 (oak foliage) ♀, VII/31 (oak foliage) ♀, VII/3 (conifers & sugar maple) 8 ♀; X/5/46 (spruce foliage) ♀; '47: VII/30 (deciduous foliage) 2 ♀, IX/13 (deciduous foliage) 7 ♀; VI/8/50 (on window) ♀. Michigan City VI/25/47 (deciduous foliage) 4 ♀. Plymouth VIII/27/48 (deciduous foliage) 3 ♀. Pokagon St. Pk. VIII/19/48 (deciduous foliage) ♀. Shades St. Pk. IX/11/50 (dry leaves, deciduous branches, hemlock foliage) 3 ♂ 9 ♀ N. Turkey Run St. Pk. (hemlocks) 6 ♀. Winona Lake '47: VI/19 (forest ground litter) ♀ 13 N, VI/23 & 30 (deciduous foliage) 6 ♀ N; VII/14/50 (wild cherry foliage) ♀. Yellowwood Lake VI/30/46. ♂.

14. *Caecilius confluens* (Walsh)

Psocus confluens Walsh. Proc. Ent. Soc. Phila. 2:185, 1863 (Rock Island, Illinois).

Records—Goshen VII/28/50 (red cedar) ♂ ♀. Indpls. IX/3/50 (spruces) 9 ♂ 20 ♀ 7 N.

15. *Caecilius pinicola* Banks

Caecilius pinicola Banks. Jour. N. Y. Ent. Soc. 11:238, 1903 (Falls Church, Va.).

Occurs only on conifers; adults appear mostly in autumn.

Records—Bloomington IX/23/49 (pines) 10 ♂ 4 ♀; VI/1/50 (pines) ♂ ♀. Indpls. VII/17/45 (cedars) ♂; IX/3/50 (spruces) ♂ 3 ♀. Oaklandon IX/12/49 (pines) 10 ♂ 5 ♀ 7 N. Owen Co.: Green's Bluff

XI/5/49 (hemlocks & red cedars) ♂ 6 ♀ N. Shades St. Pk. IX/11/50 (hemlocks) ♂ 3 ♀ 2 N.

FAMILY POLYPSOCIDAE

16. *Polypsocus corruptus* (Hagen)

Psocus corruptus Hagen. Syn. Neur N. A. p. 10, 1861 (Dalton, Ga.).

Records—Bloomington X/29/49 (pines) ♀. Indpls. XI/2/46 (bark of log) ♀; '47: VII/30 (deciduous foliage) ♂, IX/13 (deciduous foliage) 2 ♂ 10 ♀. Lake Co.: Shelby VIII/13/47 (deciduous foliage) ♀. Winona Lake VI/23/47 (deciduous foliage) 38 ♂ 40 ♀.

FAMILY LACHESILLIDAE

17. *Lachesilla andra* Sommerman

Lachesilla andra Sommerman Ann. Ent. Soc. Amer. 39:636, 1946 (Giant City State Park, Ill.).

Restricted to the prairies and Lake Michigan sand dunes where it occurs on grasses, mostly *Andropogon*.

Records—Beaver Lake Prairie V/18/41 23 ♂ 26 ♀ 2 N; V/10/42 5 ♂ 6 N; '50: VII/3 8 ♀ N, VIII/15 3 ♂ 6 ♀ 8 N. Dunes St. Pk. VIII/15/50 3 ♂ 3 ♀ 3 N. Evansville VI/18/43 2 ♂ 2 ♀ N.

18. *Lachesilla anna* Sommerman

Lachesilla anna Sommerman. Ann. Ent. Soc. Amer. 39:636, 1946 (Giant City State Park, Ill.).

Records—Jasper-Pulaski St. Game Preserve VII/3/50 (dry leaves) ♂. Kosciusko Co.: Fish Lake S. Warsaw VI/23/50 (dry leaves) ♂; 3 mi. SW. Warsaw VIII/6/50 (dry leaves) ♀. Shades St. Pk. IX/11/50 (dry leaves) ♂ 3 ♀ 2 N. Turkey Run St. Pk. IX/11 & 12/50 (dry leaves) ♂ N(?), hemlocks ♂.

19. *Lachesilla contraforcepeta* Chapman

Lachesilla contraforcepeta Chapman. Jour. N. Y. Ent. Soc. 38:348, 1930 (Sea Cliff, N. Y.)

The most common conifer-inhabiting *Lachesilla* in Indiana.

Records—Bass Lake VIII/5/49 ♀. Bloomington '49: IX/23 & 24 (pines) 3 ♂ 2 ♀, X/22 & 29 (spruces) ♂ 2 ♀. Bristol VII/3 & 4/47 (red cedar) ♂ 3 ♀. Indpls. VI/18/45 (pines) 13 ♂ 14 ♀ 16 N; XI/5/46 (spruce) ♂. Fish Lake S. Warsaw VI/23/50 (pines) 4 ♂ 4 ♀. Oaklandon IX/12/49 (pines) ♂ ♀. Owen Co.: Green's Bluff XI/5/49 (red cedar) ♂ 3 ♀. Pokagon St. Pk. VIII/18/49 (pines) 7 ♂ 10 ♀. Shades St. Pk. IX/11/50 (hemlocks) 3 ♂ 2 ♀. Stark Co.: Koontz Lake VIII/15/49 (spruces) 3 ♂ 2 ♀ N. Turkey Run St. Pk. IX/11 & 12/50 (hemlocks) ♂ 2 ♀. Whitley Co.: Loon Lake VIII/10/49 (red cedar) ♀.

20. *Lachesilla corona* Chapman

Lachesilla corona Chapman. Jour. N. Y. Ent. Soc. 38:348, 1930 (Sea Cliff, N. Y.).

Records—Bloomington '49: IX/24 (dry leaves) ♀, X/29 (pines) ♀. Clare VII/26/47 (dry leaves) ♀. Indpls. '45: VI/18 & 27 (dry leaves) 4 ♂ 4 ♀, VI/27 (conifers) ♂ ♀, VII/19 (dry leaves) ♀; X/5/46

(conifers) 3 ♂ 4 ♀; VII/24/48 (dry leaves) 2 ♂ 2 ♀ N; '49:VI/1 (dry leaves) ♂ ♀, IX/11 (dry leaves) ♂ ♀. Jasper-Pulaski St. Game Preserve VII/3/50 (dry leaves) 4 ♂ 7 ♀. Knox Co.: VII/20/38 (peach foliage) ♂. Fish Lake S. Warsaw VI/23/50 (dry leaves) ♂. Winona Lake VIII/14/50 (deciduous foliage) ♀. Shelby VIII/13/47 (dry leaves) ♀.

21. *Lachesilla forcepeta* Chapman

Lachesilla forcepeta Chapman. Jour. N. Y. Ent. Soc. 38:348, 1930 (Sea Cliff, N. Y.)

Inhabits conifers; rather scarce in the state.

Records—Bristol VII/3 & 4/47 (cedars) 2 ♂ 6 ♀. Fish Lake S. Warsaw VII/24/50 (spruce) 2 ♂. Goshen VII/28/50 (red cedars) 6 ♂ 2 ♀ N. Indpls. VIII/8/50 (Scotch pine) ♂.

22. *Lachesilla major* Chapman

Lachesilla forcepeta var *major* Chapman. Jour. N. Y. Ent. Soc. 38:349, 1930 (Spottswood, Va.).

Inhabits both conifers and dry leaves. More numerous in Indiana than its close relative *L. forcepeta*.

Records—Bloomington '49: IX/23 & 24 (pines) 3 ♂ 2 ♀, (dry leaves) ♂, X/29 (pines) ♂, XI/6 (dry leaves) ♂ ♀ N. Bristol VII/3 & 4/47 (red cedars) ♂ ♀, (dry leaves) 2 ♂ 6 ♀. Dewart Lake VIII/25/48 (deciduous foliage) ♀. Dunes St. Pk. VIII/15/50 (dry leaves) ♂; VII/24/26 ♂. Indpls. VI/18 & 27/45 (dry leaves) ♂ ♀; X/5/46 (hemlocks) ♂; VI/1/49 (dry leaves) ♂ 3 ♀; VIII/8/50 (dry leaves) 3 ♂ 2 ♀. Jasper-Pulaski St. Game Preserve VII/3/50 (dry leaves) ♂ ♀. Kosciusko Co.: 3 mi. SW. Warsaw VIII/6/50 (dry leaves) ♂ 2 ♀. Oaklandon IX/12/49 (pines) ♂ ♀. Shades St. Pk. IX/11/50 (dry leaves) 2 ♂ ♀.

23. *Lachesilla nubilis* (Aaron)

Caecilius nubilis Aaron. Proc. Ac. Nat. Sci. Phila. 38:13, 1886 (S. Texas).

Inhabits dry deciduous leaves and corn stalks; sometimes occurs in large numbers at lights.

Records—Beaver Lake Prairie V/18/41 (dry grass) 9 ♀; VIII/15/50 (dry leaves) 2 ♂ 4 ♀ 5 N. Bristol VII/4/47 (red cedars) ♀. Evansville VI/21/43 (light) ♂. Jackson Co. VI/27/38 (willow) ♂. Indpls. VI/17 & 27/44 (light) 9 ♂ 6 ♀; '45: VI/25 (freshly painted surface) ♂ ♀, VI/26 (light) ♀, VI/27—VII/12 (dry leaves) 7 ♂ 2 ♀, VII/13 (dry grass) 2 ♂ 2 ♀, VII/25 (window) ♂. Posey Co.: Pirogue Slough VI/4/50 (corn) ♀ N. Winona Lake VIII/8/48 (in building) ♂.

24. *Lachesilla pallida* (Chapman)

Terracaecilius pallidus Chapman. Jour. N. Y. Ent. Soc. 38:343, 1930 (Ithaca, N. Y.).

Nymphs and adult females are found only on forest ground litter. Adult males seem to leave this habitat quickly and occur in dry leaves on branches.

Records—Indpls. VI/18/45 (dry leaves) ♂; VII/24/48 (forest

ground litter) ♀; IX/11/49 (dry leaves) ♂. Kosciusko Co.: Gordy Lake VI/12/50 (dry leaves) ♂; Winona Lake '47: VI/23 (deciduous foliage) ♂, VII/20 (forest ground litter) 3 ♀; VIII/8/48 (deciduous foliage) ♂.

25. *Lachesilla pedicularia* (Linnaeus)

Hemerobius pedicularius Linnaeus. Syst. Nat. ed. 10. p. 551. 1758.

The most abundant *Lachesilla* in Indiana; occurs in a variety of habitats, including houses.

Records—Bloomington X/11/49 (dry leaves) ♂. Culver VIII/27/48 (light) ♂ 2 ♀. Dunes St. Pk. VIII/15/50 (Scotch pine) 2 ♀, (dry leaves) ♂ 4 ♀, (grass) 2 ♀. Ft. Harrison VIII/12/42 (windows) 7 ♂ 10 ♀. Hoffman Lake VIII/26/48 (willow foliage) ♂. Indpls. VII/16/44 (window) 4 ♂; '45: VI/23 & 27 (dry leaves) 3 ♂ 4 ♀, VI/23 (in house) ♂, VI/25 (freshly painted surface) ♂ 5 ♀, VI/26 (light) 2 ♂ 2 ♀, VI/26 & 30 (apple & elm trunks) ♂ ♀, VII/18 (dry leaves) ♂, VII/19 (freshly painted surface) 2 ♀, VII/20 (conifers) 2 ♀, VIII/2 (window) ♂ 2 ♀. Jasper-Pulaski St. Game Preserve VII/3/50 (dry leaves) ♂. Michigan City VIII/15/50 (dry leaves) 2 ♀. Pokagon St. Pk. VIII/19/48 (deciduous foliage) ♀. Winona Lake VIII/1 & 5/48 (in building) ♂ ♀.

26. *Lachesilla rufa* (Walsh)

Psocus rufus Walsh. Proc. Ent. Soc. Phila. 2:185, 1863 (Rock Island, Ill.).

An uncommon dry leaf inhabiting species.

Records—Indpls. VI/29/45 (dry leaves) ♂; X/5/46 (spruce) 4 ♂ 3 ♀; VI/1/49 (dry leaves) ♀. Michigan City VI/25/47 (deciduous foliage) 2 ♀. Roselawn V/23/48 ♂. Shades St. Pk. IX/11/50 (dry leaves) ♂ ♀. Winona Lake '47: VII/13 (dry leaves) ♀, VIII/5 (light trap) ♂, VIII/10 (dry leaves) 2 ♀.

FAMILY PERIPSOCIDAE

27. *Peripsocus madescens* (Walsh) (?)

Psocus madescens Walsh. Proc. Ent. Soc. Phila. 2:186, 1863 (Rock Island, Ill.).

The Indiana specimens differ from the *P. madescens* of Chapman's figure in the shape of the subgenital plate, it being roughly elliptical with the side arms barely protruding beyond the main body. My specimens were all taken on pines, some on Scotch pine, which gives the possibility of introduction from Europe. *P. madescens* has a close relative, *P. alboguttatus*, in Europe.

Records—Bloomington '49: IX/23 & 24 (pines) 2 ♀ N, X/29 (pines) 3 ♀. Indpls. VIII/8/50 (Scotch pine) 2 ♀. Oaklandon IX/12/49 (pines) 3 ♀.

28. *Peripsocus madidus* (Hagen)

Psocus madidus Hagen. Syn. Neur. N. A. p. 12, 1861 (N. Y.)

The most abundant *Peripsocus* in Indiana; males and females about equal in number. Occurs on deciduous trees, conifers, and to a lesser extent in dry leaves.

Records—Bloomington '49: IX/23 & 24 (pines) ♂, IX/24 (deciduous branches) 2 ♂ 3 ♀, X/11 (deciduous branches) 6 ♀, X/29 (pines) 2 ♂ 5 ♀. Culver VII/2/47 (tamaracks) 2 ♂. Dixon Lake VIII/27/48 (deciduous foliage) ♀. Indpls. '45: VI/15 & 16—VII/9 (deciduous trunks) 17 ♂ 12 ♀ (5 short winged) 38 N, VI/19 (dry brush) 6 ♂ 3 ♀ (short winged) N, VII/17 & 24—VIII/3 (conifers) 7 ♂ 3 ♀, VIII/3 (dry leaves) ♂; X/5/46 (hemlock) ♂; VII/30/47 (cottonwood trunk) ♂ 6 ♀ (3 short winged) 6 N, (tamaracks) ♂ 2 ♀. Manitou Lake VIII/22/48 (deciduous foliage) ♀. Oaklandon IX/12/49 (pines) ♂. Plymouth VIII/27/48 (deciduous foliage) ♂ 3 ♀. Pokagon St. Pk. VIII/19/48 (deciduous foliage) ♂; VII/5/50 (pines) ♀. Shafer Lake VIII/22/48 (deciduous foliage) ♂. Shelby VIII/16/47 (maple foliage) 2 ♂ ♀. Winona Lake '47: VI/23 & 30 (deciduous foliage) ♂ 2 ♀, VI/27—VII/17 (light trap) 5 ♂ ♀; '48: VII/31 (on building) ♂, VIII/4 (light trap) ♂. Yellowwood Lake VII/10/46 (bald cypress) ♀.

29. *Peripsocus quadrifasciatus* (Harris)

Psocus quadrifasciatus Harris. Ent. Corresp. p. 331, 1869 (Cambridge, Mass.).

Occurs in a variety of habitats from May to November. Males are very scarce.

Records—Bloomington '49: IX/23 & 24 (pines) 3 ♀ 2 N, (deciduous branches) 4 ♀, (limestone) ♀, X/29 (pines) 5 ♀, (deciduous branches) ♀. Indpls. VII/30/47 (maple trunk) 13 ♀ 8 N, (tamarack) ♀; IX/8/49 (box elder branches) ♀. Jasper-Pulaski St. Game Preserve VII/3/50 (oak branches) ♀. Oaklandon IX/12/49 (hickory trunk) 2 ♀, (pines) 5 ♀. Owen Co.: Green's Bluff XI/5/49 (hemlocks) ♀. Shades St. Pk. IX/11/50 (hemlocks) ♂ 5 ♀ 2 N. Turkey Run St. Pk. IX/11 & 12/50 (stone bluffs) 2 ♀, (hemlocks) ♂ 5 ♀. Winona Lake '47: VI/23 & 30 (deciduous foliage) 16 ♀, VIII/4 (deciduous foliage) 5 ♀.

30. *Peripsocus stagnivagus* Chapman

Peripsocus stagnivagus Chapman. Jour. N. Y. Ent. Soc. 38:376, 1930 (Lake Waccamaw, N. C.)

A rather scarce species occurring in late summer and autumn mostly on trunks of deciduous trees. Males and females about equal in number.

Records—Indpls. '47: VII/30 (deciduous trunks) 7 ♂ 9 ♀, X/4 (birch trunk) ♂ 2 ♀; IX/8/49 (wild cherry trunk) ♂ ♀ 4 N. Oaklandon IX/12/49 (hickory trunk) ♂. Turkey Run St. Pk. IX/11/50 (stone bluffs) ♀.

31. *Ectopsocus californicus* (Banks)

Peripsocus californicus Banks. Jour. N. Y. Ent. Soc. 11:237, 1903 (Calif.).

Records—Bloomington '49: V/28 (pines) ♀, X/22 (brush pile) ♀.

32. *Ectopsocus pumilis* (Banks)

Peripsocus pumilis Banks. Bull. Mus. Comp. Zool. 64:313, 1920 (Monticello, Fla.).

A common dry leaf and corn inhabiting species. Adults and nymphs hibernate on corn between the groove and leaf sheath.

Records—Bloomington X/19/49 (in building) ♀. Evansville VI/27/43 (dry leaves) 4 ♂ 5 ♀. Indpls. '44: VI/27 (light) ♀, IX/27—X/3 (on lumber) ♂ ♀; '45: VI/18-29 (dry leaves) 7 ♂ 9 ♀, VII/18—VIII/2 (on windows) 4 ♂ 2 ♀, VII/24 (dry leaves) N; X/5/46 (hemlocks) ♂ ♀; X/4/47 (corn) ♂; VI/1/49 (dry leaves) ♀; II/18/50 (corn) 4 ♂ ♀ N. Fish Lake S Warsaw VI/23/50 (dry leaves) ♂ 2 ♀.

33. *Anomopsocus amabilis* (Walsh)

Psocus amabilis Walsh Proc. Ac. Nat. Sci. Phila. 14:362, 1862 (Rock Island, Ill.).

Rather common in dry leaves, also occurs on conifers.

Records—Bristol VII/4/47 (red cedars) ♂. Caldwell Lake VIII/18/48 (deciduous foliage) ♀. Fish Lake S Warsaw VI/23/50 (dry leaves) ♂ 5 ♀. Indpls. X/5/46 (spruce) ♂; VI/1/49 (dry leaves) ♂. Michigan City VI/25/47 (deciduous foliage) ♂; VIII/15/50 (dry leaves) ♀. Owen Co.: Green's Bluff XI/5/49 (dogwood branches) ♂. Shades St. Pk. IX/11/50 (dry leaves) ♀ 6 N. Winona Lake VIII/15/47 (dry leaves) ♀; VII/20/49 (brush pile) 5 ♀.

FAMILY PHILOTARSIDAE

34. *Philotarsus maculosus* (Aaron)

Elipsocus maculosus Aaron. Trans. Am. Ent. Soc. 11:39, 1883 (Philadelphia, Penn.).

Has been taken at Winona Lake where it is quite abundant each year on trunks of a few trees. Adults and nymphs spin heavy webs over themselves; seldom more than three individuals are found under one web. There is a single brood each year; adults appear in late July and August.

Records—Winona Lake '48: VIII/1 (elm trunk) ♂ 2 N, VIII/15 (elm trunk) 8 ♂ 9 ♀ 3 N; '49: VII/20 (stump) 3 ♂ 2 ♀ 5 N, VII/26 (sycamore & cottonwood trunks) ♂ 2 ♀ 6 N.

FAMILY MESOPSOCIDAE

35. *Mesopsocus? immunis* (Stephens)

Psocus immunis Stephens. Brit. Ent. p. 121, 1836 (Eng.).

Records—Fish Lake S Warsaw VI/26/50 (oak branch) ♀. Winona Lake V/10/48 (on door) ♂.

FAMILY PSOCIDAE

36. *Cerastipsocus venosus* (Burmeister)

Psocus venosus Burmeister. Handbook Ent. 2:778, 1839.

Nymphs and young adults occur in large flocks on trunks and branches of deciduous trees. Later the adults spread out, flying readily.

Records—Indpls. VIII/7/50 (light) ♀. Elkhart Co.: 4 mi. S. Goshen VII/28/50 (silver maple limb) 27 N. Winona Lake VIII/4/47 (silver maple trunk) ♂; VII/26/49 (silver maple trunk) 18 ♂ 15 ♀; VIII/14/50 (shrubs) 4 ♂ 15 ♀.

37. *Amphigerontia petiolate* (Banks)

Psocus petiolatus Banks. Bull. Mus. Comp. Zool. 62:4, 1918 (Falls Church, Va.).

Records—Dunes St. Pk. VII/24/26 ♂. Jasper-Pulaski St. Game Preserve VII/3/50 (oak branches) 10 ♂ 22 ♀ 5 N. Indpls. X /5/46 (spruces) 2 ♂. Yellowwood Lake '46: VI/21 (light) ♀, VIII/5 (light) ♀.

38. *Amphigerontia montivaga* (Chapman)

Psocus montivagus Chapman. Jour. N. Y. Ent. Soc. 38:255, 1930 (Whetstone Gulf, N. Y.).

Records—Bloomington X/13/50 (deciduous branches) ♀.

39. *Trichadenotecnum alexanderae* Sommerman

Trichadenotecnum alexanderae Sommerman. Proc. Ent. Soc. Wash. 50:169, 1948 (N. Plainfield, N. J.).

Adults are common in late summer on trunks of deciduous trees and stone bluffs. No males have been taken in the state.

Records—Bloomington IX/24/49 (tulip tree trunk) 2 ♀, (limestone) ♀. Indpls. '44: VII/27 (elm trunk) ♀, VII/29 (window) ♀; VII/31/45 (deciduous trunks) 8 ♀; X/5/46 (elm trunk) ♀. IX/8/49 (maple trunk) ♀. VIII/14/50 (maple trunk) 4 ♀. Oaklandon IX/12/49 (pines) 2 ♀, (hickory trunk) 8 ♀ 14 N. Shades St. Pk. IX/11/50 (stone bluff) 2 ♀. Turkey Run St. Pk. IX/11 & 12/50 (stone bluffs & bridges) 31 ♀ 12 N. Winona Lake '47: VII/22 (silver maple trunk) ♀ 13 N, VIII/2 (light trap) 3 ♀, VIII/4 (wild cherry trunk) 2 ♀; VIII/1/48 (elm trunk) ♀. Yellowwood Lake VI/10/46 (oak trunk) ♀.

40. *Loensia moesta* (Hagen)

Psocus moestus Hagen. Syn. Neur. N. A., p. 11, 1861 (Dalton, Ga.).

An uncommon species found mostly on trunks of deciduous trees.

Records—Indpls. '44: VI/23 (wild cherry trunk) ♀, VII/1 (pine trunk) ♀. Winona Lake '47: VII/13 (light trap) ♂, VIII/4 (deciduous foliage) ♂; VII/7/49 (elm trunk) ♀; VII/5/50 (elm trunk) ♀.

41. *Psocus atratus* Aaron

Psocus atratus Aaron. Trans. Am. Ent. Soc. 11:39, 1883 (Philadelphia, Pa.).

Records—Indpls. VII/29/47 (hackberry trunk) ♂ ♀. Kosciusko Co.: 3 mi. S.W. Warsaw VIII/6/50 (elm trunk) ♀; Winona Lake VIII/11/47 (elm trunk) ♂; VII/29/48 (elm trunk) ♂; VII/20/49 (elm trunk) ♂.

42. *Psocus bisignatus* banks

Psocus bisignatus Banks. Proc. Ent. Soc. Wash. 6:203, 1904 (Falls Church, Va.).

Records—Indpls. VII/18/44 (wild cherry trunk) ♂; '45: VI/26 (conifers) ♂, (shrubs) ♂, VII/24 (conifers) ♀, VIII/3 (conifers) 2 ♀; IX/1/50 (light) ♂. Stone Lake nr. LaPorte VII/15/49 (elm branches) ♂.

43. *Psocus floridanus* Banks

Psocus floridanus Banks. Trans. Am. Ent. Soc. 32:2, 1905 (Biscayne Bay, Fla.).

Records—Dunes St. Pk. VII/15/50 (maple trunk) ♀.

44. *Psocus infumatus* Banks

Psocus infumatus Banks. Jour. N. Y. Ent. Soc. 15:165, 1907 (Falls Church, Va.).

Inhabits bare branches of deciduous trees.

Records—Bloomington '49: IX/23 & 24 (deciduous branches) 3 ♂ ♀, X/11 (deciduous branches) 4 ♀. Kosciusko Co.: E. Rd. 30 & Tippecanoe Riv. VII/2/50 (maple branches) 2 ♂ 4 N. Shades St. Pk. IX/11/50 (dry leaves) ♂.

45. *Psocus leidyi* Aaron

Psocus leidyi Aaron. Proc. Ac. Nat. Sci. Phila. 38:15, 1886 (Philadelphia, Pa.).

Found mostly on trunks of deciduous trees.

Records—Bloomington IX/24/49 (deciduous trunks) 2 ♂ 6 ♀ 4 N, (pine limbs) ♂. Dunes St. Pk. VIII/15/50 (deciduous trunks) 2 ♀. Winona Lake '47: VII/22 (wild cherry stump) 2 ♂ ♀ 2 N, VIII/4 (wild cherry trunk) 2 ♀; VII/14/50 (wild cherry trunk) ♂ 3 ♀ 5 N.

46. *Psocus lichenatus* Walsh

Psocus lichenatus Walsh. Proc. Ent. Soc. Phila. 2:183, 1863 (Rock Island, Ill.).

Records—Turkey Run St. Pk. IX/12/50 (bridge) ♀.

47. *Psocus lithinus* Chapman

Psocus lithinus Chapman. Jour. N. Y. Ent. Soc. 38:249, 1930 (Ithaca, N. Y.).

Inhabits stones, bridges, and branches of deciduous and coniferous trees.

Records—Hoffman Lake VIII/26/48 (willow foliage) ♂. Indpls. IX/8/49 (box elder branches) ♂ ♀; '50: VIII/8 (Scotch pine) ♂, IX/5 (bridge) ♀. Turkey Run St. Pk. IX/11 & 12/50 (hemlocks) 2 ♀, (stone bluffs) ♂ 9 ♀ 17 N. Winona Lake '47: VII/9 (on door screen) ♀, VII/11 (box elder foliage) ♀; VII/14/50 (deciduous trunks & branches) 3 ♀.

48. *Psocus nr. lithinus*

One of the commonest members of the genus in the state. Inhabits trunks of deciduous tree.

Records—Bloomington IX/23/49 (deciduous branches) 2 ♀. Indpls. '44: VII/1 & 22 (wild cherry trunks) ♂ 3 ♀ N; '45: VII/12 & 20 & VIII/3 (deciduous trunks) 2 ♀ N; VII/30/47 (silver maple trunk) 3 ♀ N. Plymouth VIII/27/48 (deciduous foliage) ♂ 3 ♀. Simonton Lake VIII/25/48 (wild cherry trunk) 8 N. Winona Lake VII/30/47 (deciduous foliage) ♀; VII/28 & 29/48 (deciduous trunks) 13 ♀ 2 N.

49. *Psocus novaescotiae* Walker

Psocus novaescotiae Walker. Cat. Neur. Brit. Mus., p. 485, 1853.

This species is particularly fond of bare pine branches. It also occurs on deciduous trees.

Records—Indpls. IX/5/50 (pines) ♂. Jasper-Pulaski St. Game Preserve VII/3/50 (deciduous branches) 8 ♂ 2 ♀ 9 N, (pines) 4 ♂ ♀ N. Oaklandon IX/12/49 (pines) 2 ♂ 5 ♀. Pokagon St. Pk. VIII/18/49 (pines) 2 ♀ 3 N. Shades St. Pk. IX/11/50 (stone bluffs) N. Winona Lake VII/13/47 (deciduous foliage) ♂ ♀; VII/14/50 (hickory branch) ♂.

50. *Psocus oppositus* Banks

Psocus oppositus Banks. Jour. N. Y. Ent. Soc. 15:165, 1907 (Falls Church, Va.).

Occurs on branches of deciduous trees.

Records—Bloomington '49: IX/24 ♀, X/11 ♀. Shades St. Pk. IX/11/50 3 ♀ 3 N.

51. *Psocus pollutus* Walsh

Psocus pollutus Walsh. Proc. Ac. Nat. Sci. Phila. 14:361, 1862 (Rock Island, Ill.).

Prefers dead pine branches; also occurs on deciduous branches.

Records—Bloomington '49: X/11 (deciduous branches) 2 ♀, X/29 (pines) ♀. Dunes St. Pk. VIII/15/50 (deciduous branches) ♀. Indpls. VII/11/49 (deciduous foliage) ♀. Oaklandon IX/12/49 (pines) 7 ♀.

52. *Psocus purus* Walsh

Psocus purus Walsh, Proc. Ac. Nat. Sci. Phila. 14:361, 1862 (Rock Island, Ill.).

Records—Dunes St. Pk. VIII/15/50 (deciduous trunks) 3 ♂ ♀ 3 N. Shades St. Pk. IX/11/50 (hemlocks) N. Winona Lake VII/19/49 (cottonwood trunks) 7 ♂ 6 ♀ 10 N. Yellowwood Lake VII/21/46 (hickory trunk) ♀ 5 N.

53. *Psocus quietus* Hagen

Psocus quietus Hagen. Syn. Neur. N. A., p. 12, 1861 (N.Y.).

Records—Bloomington '49: IX/23 & 24 (deciduous branches) ♂ N, X/11 (deciduous branches) 2 ♂ 3 ♀. Shelby VIII/13/47 (light) ♀. Winona Lake VIII/14/50 (deciduous foliage) ♀.

54. *Psocus striatus* Walker

Psocus striatus Walker. Cat. Neur. Brit. Mus., p. 486, 1853.

Records—Bloomington IX/23/49 (deciduous branches) ♂. Clare VII/26/47 (light) ♂. Dunes St. Pk. VIII/15/50 (cottonwood trunk) ♀. Indpls. VII/25 & 27/44 (wild cherry trunk) 6 ♀; '45: VII/17 & 20 (wild cherry trunk) 5 ♂ 8 ♀, VII/25 (light) ♀, VIII/3 (conifers) 3 ♂; VII/29/47 (blue ash trunk) ♀. Winona Lake VIII/16/48 (light trap) ♂.

55. *Psocus subquietus* Chapman

Psocus subquietus Chapman. Jour. N. Y. Ent. Soc. 38:279, 1930 (Ballston Lake, N. Y.).

The most common *Psocus* in Indiana; it is found on trunks of deciduous trees.

Records—Dunes St. Pk. VIII/15/50 2 ♀. Indpls. '44: VII/5 & 14 ♀ 2 N; '45: VII/9-VIII/7 3 ♂ 6 ♀ 8 N, VII/20 (light) ♂; '47: VII/29

3 ♀ 11 N, X/20 (light) ♀. Shelby VIII/15/47 ♀ 10 N. Winona Lake '47: VIII/2 & 5 (light trap) 2 ♂, VIII/11 3 ♀.

56. *Psocus variabilis* Aaron

Psocus variabilis Aaron. Trans. Am. Ent. Soc. 11:38, 1883 (Philadelphia Penn.).

Records—Bloomington IX/23/49 (deciduous branches) 2 ♀.

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57. *Lichenomima sparsa* (Hagen)

Psocus sparsus Hagen. Syn. Neur. N. A., p. 11, 1861.

Records—Bloomington IX/24/49 (limestone) 2 ♀. Winona Lake VIII/4/47 (silver maple trunk) 22 ♂ 8 ♀ 36 N.

Literature Cited

1. AARON, S. F. 1886. On some new Psocidae. Proc. Acad. Nat. Sci. Phila. 38:13-19.
2. CHAPMAN, P. J. 1930. Corrodentia of the United States of America: I Suborder Isotechnomera. Jour. N.Y. Ent. Soc. 38:219-290, 319-403.
3. PEARMAN, J. V. 1936. The taxonomy of the Psocoptera: Preliminary sketch. Proc. Royal Ent. Soc. Lond. (B) 5:58-62.
4. SOMMERMAN, K. M. 1946. A revision of the Genus *Lachesilla* North of Mexico. Ann. Ent. Soc. Amer. 39:627-661.