

## Review of the Family Attelabidae (Coleoptera) of Western Siberia

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**Abstract**—The leaf-rolling weevil family Attelabidae is represented in Western Siberia by 9 genera including 19 species (*Auletobius irkutensis*, *A. sanguisorbae*, *Pselaphorhynchites nanus*, *P. tomentosus*, *Coenorrhinus germanicus*, *C. interpinatus*, *C. paucillus*, *Haplorhynchites pubescens*, *H. coeruleus*, *Involvulus cupreus*, *Rhynchites auratus*, *Rh. chamascensis*, *Byctiscus rugosus*, *B. betulae*, *B. populi*, *Deporaus mannerheimi*, *D. betulae*, *Apoderus coryli*, *A. erythropterus*).

Species of the family Attelabidae (leaf-rolling weevils) play an important part in biocenoses of Western Siberia. Many of them are agricultural and forest pests. The plum weevil *Involvulus cupreus* (L.) in the forest zone of Ob' Region damages up to 20% of buds and 14–18% of fruits of rennet (Babenko, 1982). In the forest zone of Novosibirsk the wrinkled leaf-rolling weevil impairs the decorative properties of poplars and reduces their photosynthesizing surface, gnawing twigs and rolling leaves into leaf-bales. The damage inflicted by leaf-rolling weevils on trees and shrub in Western Siberia has been noticed by many Siberian entomologists (Bassel', 1929; Kulik and Shevtsova, 1940; Mityuchenko, 1946, 1951; Egorov, 1958; Prokof'ev, 1966; Opanasenko, 1973, 1987; Kobets and Opanasenko, 1976; Babenko and Krivets, 1981; Babenko, 1982; etc.).

First data on the distribution of leaf-rolling weevils in Siberia were generalized in catalogs of Heyden (1880–1881) and Winkler (1930) where, respectively, 13 and 41 species were described. In a number of faunistic works isolated data on leaf-rolling weevils have been reported (Lavrov, 1926, 1927; Cherepanov and Opanasenko, 1963; Korshunov, 1973; Opanasenko, 1978, 1984; Krivets, 1984; etc.). The biology of some species of Western Siberia has been studied by Mityuchenko (1946, 1951), Prokof'ev (1966), Korshunov and Opanasenko (1973), Opanasenko (1973, 1987), and Babenko (1982). Noteworthy are works of Ter-Minasyan (1950, 1955, 1974), concerned with the leaf-rolling weevils of the USSR, where a great body of information was presented on the species from the region we study.

The present work is based on materials from authors' collections and those kept in the Zoological museum of the Biological Institute, Siberian Branch of the Russian Academy of Sciences.

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Six eco-geographical zones occupy the territory of Western Siberia: tundra, forest-tundra, taiga, small-leaved forests, forest-steppe, and steppe. In view of the zonal division with respect to height, mountain zone is singled out in the Altai-Sayany mountain system. Consider the distribution of leaf-rolling weevils over natural zones (Table 1). In tundra, leaf-rolling weevils do not occur owing to unfavorable temperature regime and lack of forage plants. In forest-tundra, 3 species have been found. Six species have been reported from the taiga zone. The widest species diversity is achieved by leaf-rolling weevils in small-leaved forests (13), forest-steppe (17), steppe (15), and mountain regions (14).

The population density of various leaf-rolling weevil species on plants is illustrated by Table 2. The highest number of species were found on willow (8), birch (7), and aspen and poplar (5 each).

The species developing on forest-shrub vegetation constitute the dendrophilous complex consisting of 16 species. Species related to herbaceous vegetation (herbophils) are much fewer in number than dendrophils—3 species. As regards the number, 72.1% of imago were collected from poplar, 8.4% from aspen, 4.3% from birch, and 4.6% of beetles from other plants. Consequently, poplar is subject to the strongest attack of leaf-rolling weevils.

2 specimens; Samysh, 6.VI.1965, 1 specimen; Troitskoe, 3.VII.1987, 1 specimen (Kolomiets); Barnaul, 24.V.1911, 1 specimen (Goretovskii); Artybash, 6.VI.1968, 1 specimen (Novikova).

*Apoderus (Comapoderus) erythropterus*  
(Gmelin, 1790).

Beetles found in damp meadows and forest herbs. Appear in the end of May, being caught in sweeping till the end of July. Beetles of new generation registered from the end of July till September.

Herbophil. We have found beetles feeding on burnet. On the same plant occurs the development of larvae. Once, leaf-bales of these beetles were found near Teletskoe Lake on brier bushes. In the environs of Novosibirsk larvae develop in leaf-bales rolled from a leaflet of a compound burnet leaf. Into each leaf-bale female deposits one, rarely two eggs. In nature, leaf-bales with eggs were found in the second half of July; with larvae, from the end of June till the end of July; emergence of young beetles was registered beginning with the end of July. According to observations made in rearing cages, the development continues 40–40 days, proceeding wholly in leaf bales.

Transpalaeartic species.

Material. Tyumen' Prov.: Lugovoe, 1985, 1 specimen. Tomsk Prov.: Tika, 11–28.VIII.1957, 1 specimen (Kovalev). Novosibirsk Prov.: Eretnaya, 11.VI.1961, 1 specimen; Morozovka, 18.VII.1950, 1 specimen (Zolotarev); Aleus, 15.VI.1958, 1 specimen (Cherepanov); Novyi Sharap, 28.V.1959, 1 specimen; Chingisy, 1.IX.1960, 2 specimens; valley of Matrenka River, 5.VI.1959, 1 specimen; Nizhnyaya Matrenka, 9.VII.1958, 2 specimens, 23.VI.1956, 1 specimen; Ubinskoe, 20.VII.1962, 1 specimen (Tibatina); Korolevka, 24–30.VI.1959, 3 specimens (Korshunov), 1–8.VIII.1959, 1 specimen (Knysh); Zonovo, 10.VI.1961, 1 specimen (Stebaev), 6.VII.1961, 1 specimen (Stebaev); Revunka, 19.VI.1961, 1 specimen; Kaily, 14.VI.1962, 1 specimen, 23.VI.1962, 2 specimens, 8–12.VII.1962, 2 specimens; Novosibirsk, 9.VII.1955, 3 specimens (Litvenchuk); Berdsk, 2.VIII.1930, 1 specimen (Petrova); Petlevskoe, 23.VI.1956, 1 specimen; Uburmanka, 25.VI.1962, 3 specimens. Kemerovo Prov.: Kuzedevskii distr., 16.VIII.1967, 1 specimen (Morozova). Altai Territory: Martinsk, 25.VII.1952, 1 specimen; Abai, 6–18.VII.1954, 1 specimen (Malinovskaya); Zav'yalovo, 22.VI.1958, 1 specimen; Teletskoe Lake, Samysh, 8.IX.1965, 1 specimen; Yailyu, 14.VI.1963, 1 specimen; Iolgo Range, 12–13.VIII.1974, 2 specimens; Barnaul, 16.V.1901, 1 specimen (Goretovskii); Kozlushka,

30.VI.1925, 2 specimens (Lebedev); Malyi Krasnoyarsk, 24.VI.1925, 1 specimen (Lebedev).

In all, 19 leaf-rolling weevil species have been revealed in the territory of Western Siberia. Wrinkled, polyphagous, nut, and birch weevils are mass species. Species belonging to the Transpalaeartic (57.9%) and Western Palaeartic (31.6%) complexes predominate in the fauna. Wrinkled weevil and *Auletobius irkutensis* have an Eastern Palaeartic type of area. Only one endemic species *Rhynchites chamaecerasi* is known from Western Siberia. In most part of the region we studied, polyphagous (aspen) and birch weevils are widespread. Remaining 16 species occur only in the southern part of Western Siberia.

Of practical importance are five species. Poplar field-protecting belts are heavily damaged by wrinkled weevil. Plum-tree, cherry-tree, wrinkled, birch and polyphagous weevils are harmful to garden cultures.

#### REFERENCES

1. Azarova, N. N., Leaf-Rolling Weevils (Coleoptera, Atteblidae) of Kurile Islands. *Entomol. Obozr.*, 1974, vol. 53, no. 4, pp. 783–790.
2. Babenko, Z. S., *Nasekomye–fitofagi plodovkhi i yagodnykh rastenii lesnoi zony Priob'ya* (Insects Feeding on Fruit and Berry Plants in the Forest Zone of Ob' Region). Tomsk: Tomsk Univ., 1982.
3. Babenko, Z. S. and Krivets, S. A., Weevils and Leaf-Rolling Weevils (Coleoptera: Curculionidae, Atteblidae) as Pests of Fruit and Berry Cultures in the Forest Zone of the Ob' Region. *Fauna i ekologiya nazemnykh chlenistonogikh Sibiri* (Fauna and Ecology of Terrestrial Invertebrates in Siberia). Irkutsk, 1981, pp. 44–53.
4. Baitenov, M. S., *Zhuki-dolgonosiki (Coleoptera: Atteblidae, Curculionidae) Srednei Azii i Kazakhstana* [Weevils (Coleoptera: Atteblidae, Curculionidae) in Middle Asia and Kazakhstan]. Alma-Ata: Nauka, 1974, pp. 5–27.
5. Bassel', D. G., List of Insects—Garden Pests for Barnaul. *Izv. Sib. Kr. STAZRa*, Tomsk, 1929, no. 3(6), pp. 147–150.
6. Brauns, A., *Taschenbuch der Waldinsekten*. Jena, 1964, pp. 221–223.
7. Cherepanov, A. I. and Opanasenko, F. I., The Weevil Fauna of the Coastal Region of the Novosibirsk Water Reserve. *Fauna, sistematika i ekologiya nasekomykh i kleshchei* (Fauna, Systematics, and Ecology of Insects and Mites). Novosibirsk: Sib. Otd. Akad. Nauk SSSR, 1963, pp. 7–23.
8. Egorov, N. N., Insects—Pests of Strip Pine Forests in Western Siberia. *Zool. Zh.*, 1958, vol. 38, no. 10, pp. 1488–1499.
9. Escherich, K., *Forstinsekten Mitteleuropas*. Berlin, pp. 336–349.
10. Gebler, F., *Nota et addidamenta ad Catalogum Coleopterorum Sibiriae occidentales et confinis Tatariae Op-*

- eris. *Ledebour's Reise in das Altai-Gebirge und die soongorische Kirgisen-Steppe*. Berlin, 1830, pp. 292–293.
11. Heyden, L., *Catalog der Coleopteren von Sibirien*. Berlin, 1880–1881, pp. 157–181.
  12. Khairushev, E. K., Materials on the Biology and Harmfulness of Cherry Weevil (*Rhynchites auratus* Scop.), *Materialy 3-i respubl. nauchno-proizvodstvennoi konferentsii po zashchite rastenii v Kazakhstane* (Proc. of 3rd Republ. Scientific-Industrial Conf. on Plant Protection in Kazakhstan). Alma-Ata, 1974, pp. 68–69.
  13. Kobets, N. V. and Opanasenko, F. I., Coleoptera in Willow Groves of the Central Siberian Botanical Garden, *Okhrana sredy i ratsional'noe ispol'zovanie rastitel'nykh resursov* (Environment Protection and Rational Use of Plant Resources). Moscow: Nauka, 1976, pp. 278–279.
  14. Korshunov, Yu. P., Remarks on the Entomofauna of the Northern Part of Middle Taiga in Western Siberia, *Priroda taigi zapadnoi Sibiri* (Nature of Taiga in Western Siberia). Novosibirsk: Nauka, 1973, pp. 136–152.
  15. Korshunov, Yu. P. and Opanasenko, F. I., Remarks on the Fauna of Coleoptera in the Nature Reserve "Stolby". Pt. 2. *Tr. Gos. Zap. "Stolby"* (Collection of Scientific Works of the Nature Reserve "Stolby"). Krasnoyarsk: Krasnoyarsk Kn., 1971, issue 8, pp. 115–127.
  16. Krivets, S. A., Specific Features of the Fauna of Leaf-Rolling Weevils (Coleoptera: Attelabidae, Curculionidae) in the Northern Part of Kuznetsk Ala Tau, *Nasekomye v ekosistemakh lesnoi zony Sibiri* (Insects in Ecological Systems of the Forest Zone in Siberia). Tomsk, 1984, pp. 52–61.
  17. Kulik, A. A. and Shbetsova, A. N., *Vrediteli sel'skokhozyaistvennykh rastenii v Omskoi oblasti i hor'ba s nimi* (Pests of Agricultural Plants in Omsk Province and Pest Control). Omsk: Omsk Obl. Gos., 1948.
  18. Lavrov, S. D., Remarks on the Entomofauna of the Foothills of the Sayan Mountains, *Tr. Sib. S.-Kh. Akad.* (Collection of Scientific Works of the Siberian Agricultural Academy), Omsk, 1926, vol. 6, issue 7, pp. 1–17.
  19. Lavrov, S. D., Materials to Investigation of the Entomofauna of the Environs of Omsk, *Tr. Sib. In-ta S.-Kh. i lesovodstva* (Collection of Scientific Works of the Siberian Institute of Agriculture and Forestry), Omsk, 1927, vol. 8, issue 8, pp. 51–100.
  20. Matesova, G. N., Mityaev, I. D., and Yukhnovich, L. A., *Nasekomye i kleshchi-vrediteli plodovoyagodynykh kul'tur Kazakhstana* (Insects and Pest Mites of Fruit-Berry Cultures in Kazakhstan). Alma-Ata: Akad. Nauk Kaz. SSR, 1962.
  21. Mityuchenko, K. Z., Materials to Investigation of the Harmful Etnofauna of Tree and Shrub Plantations in Novosibirsk, *Tr. Novosib. S.-Kh. In-ta* (Collection of Scientific Works of Novosibirsk Agricultural Institute), Novosibirsk, 1946, issue 6, pp. 225–235.
  22. Mityuchenko, K. Z., Entomofauna of Tree and Shrub Plantations in Novosibirsk), *Tr. Novosib. S.-Kh. In-ta* (Collection of Scientific Works of Novosibirsk Agricultural Institute), Novosibirsk, 1951, issue 8, pp. 159–166.
  23. Opanasenko, F. I., Experience of Controlling the Wrinkled Weevil, *Inf. listok* (Information Leaflet) no. 464–73, Novosibirsk, 1973.
  24. Opanasenko, F. I., Dendrophilous Weevils of upper Ob' Region, *Cand. Sci. (Biol.) Dissertation*, Moscow, 1978.
  25. Opanasenko, F. I., Landscape-Biotope Distribution and Biocenotic Relationships of Dendrophilous Weevils in upper Ob' Region, *Bolezni i vrediteli kul'turnykh rastenii v Novosibirskoi oblasti* (Diseases and Pests of Cultured Plants in Novosibirsk Province), Novosibirsk, 1984, pp. 48–66.
  26. Opanasenko, F. I., Carpophagous Insects Feeding on Stone Fruit Trees in Novosibirsk Province, *Ekologiya i geografija chlenistonogikh v Sibiri* (Ecology and Geography of Anthropods in Siberia), Novosibirsk: Nauka, 1987, pp. 181–183.
  27. Prokof'ev, M. A., *Vrediteli i bolezni sadov Sibiri* (Pests and Diseases in Gardens of Siberia), Barnaul: Altai Knizhn., 1966.
  28. Roginskaya, E. Ya., Materials on Food Specialization of Dendrophilous Leaf-Rolling and Short-Proboscis Weevils (Coleoptera, Attelabidae, Curculionidae) in Moscow Province, *Entomol. Obozr.*, 1966, vol. 45, nos. 1–2, pp. 36–50.
  29. Savkovskii, P. P., *Atlas vreditel' plodovyykh i yagodnykh kul'tur* (Atlas of Fruit and Berry Cultures), Kiev: Urozhai, 1983.
  30. Slivkina, K. A., Pests of Trees and Shrub of Forest Plantations in Steppe and Forest-Steppe Regions of Kazakhstan, *Tr. NII zashchity rastenii* (Collection of Scientific Works of the Scientific Research Institute of Plant Protection), Ural'sk, 1958, vol. 4, pp. 160–171.
  31. Ter-Minasyan, M. E., Leaf-Rolling Weevils (Attelabidae), *Fauna SSSR: nasekomye zhestikokrylye* (The Fauna of the USSR: Coleoptera), Moscow: Akad. Nauk SSSR, 1950, vol. 27, issue 2.
  32. Ter-Minasyan, M. E., Leaf-Rolling Weevils of Fam. Attelabidae, *Vrediteli lesa* (Forest Pests), Moscow: Akad. Nauk SSSR, 1955, vol. 2, pp. 581–592.
  33. Ter-Minasyan, M. E., Leaf-Rolling Weevils of Fam. Attelabidae, *Opredelitel' nasekomykh Evropeiskoi chasti SSSR* (Key to Insects of the European Part of the USSR), Moscow: Nauka, 1965, vol. 2, pp. 481–485.
  34. Ter-Minasyan, M. E., New Beetle Species of the Genus *Rhynchites* Schneid. (Coleoptera, Attelabidae) in the Fauna of the USSR, *Entomol. Obozr.*, 1966, vols. 4–5, no. 4, pp. 854–856.
  35. Ter-Minasyan, M. E., Leaf-Rolling Weevils of Fam. Attelabidae, *Nasekomye i kleshchi vrediteli sel'skokhozyaistvennykh kul'tur* (Insects and Mites—Agricultural Pests), Leningrad: Nauka, 1974, vol. 2, pp. 209–218.
  36. Winkler, A., *Catalogus Coleopterorum Regionis Palaearcticae*, Wien, 1930, Pars 11, pp. 1370–1392.