Review of the Family Attelabidae (Coleoptera) of Western Siberia

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Species of the family Attelabidae (leaf-rolling weevils) play an important part in bioenoses of Western Siberia. Many of them are agricultural and forest pests. The plum weevil Invovlacus cypriacus (L.) in the forest zone of Ob' Region damages up to 20% of buds and 4–18% of fruits of plum (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 (Hassen, 1929; Kalik and Shevtsonko, 1949; Mitryuchenko, 1946, 1951; Egorov, 1958; Prokofiev, 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 Mitryuchenko (1946, 1951), Prokofiev (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.

The authors are grateful to V. G. Mordkovich for furnishing a possibility to study the collection of leaf-rolling weevils kept in the Zoological museum of the Biological Institute, Siberian Branch of the Russian Academy of Sciences. We take an opportunity to thank M. E. Ter-Minasyan and B. A. Korotyaev (Zoological Institute, Russian Academy of Sciences) for assistance in determining leaf-rolling weevils.

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-Sayan 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, 5 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 (15), 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 dendrophi—5 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.
Leaf-rolling weevils develop in various parts of plants, which can be seen from Table 3. they mine leaves and twigs of 7 (46.6%) species. Leaf-bales are rolled by 6 (40%) species. Large chestnut weevils are represented by 2 (13.4%) species.

Leaf-rolling weevils may be subdivided into several phenological groups. Let us use the distribution adopted by Opanasenko (1978, 1984). Commonly, spring-autumn, spring, and summer groups are distinguished. To the spring-autumn group refer the species (Coenorrhinus panulius, Involvulus cupreus, Bytistes rugosus, B. betulae, B. populii, Apoderus coryli) whose imagoes emerge from wintering sites in spring and feed on plants at this time. The development of larvae continues during the whole summer. In autumn, beetles of a new generation emerge and retire to hibernation in September. The spring group is composed of the species (Coenorrhinus germanicus, Rhychnites auranti, Deporus betulae) wintering in the stage of beetle remaining in the pupigerous cradle in August–September. The summer group includes the species (Auletobius trivialis, A. sanguisorbae, Pselapho-rhynchites ramosus, P. tomentosus, Hoplorhynchites psu-
### Table 1. Distribution of leaf-rolling weevils over natural zones in Western Siberia

<table>
<thead>
<tr>
<th>Species</th>
<th>Forest-tundra</th>
<th>Tundra</th>
<th>Small-leaved forests</th>
<th>Forest-steppe</th>
<th>Steppe</th>
<th>Mountain regions</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>northern</td>
<td>middle</td>
<td>southern</td>
<td></td>
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<tr>
<td><em>Auletobius ivikutensis</em> Fst.</td>
<td>+</td>
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</tr>
<tr>
<td><em>A. sanguisorbae</em> (Schr.)</td>
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<td>+</td>
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<tr>
<td><em>Psephurus hercula</em> (Pav.)</td>
<td>+</td>
<td>+</td>
<td>+</td>
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</tr>
<tr>
<td><em>P. lineatus</em> (Ehrenb.)</td>
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<td>+</td>
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<tr>
<td><em>Coeomachus gerraricous</em> (L.)</td>
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<td>+</td>
<td>+</td>
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<tr>
<td><em>C. interpunctatus</em> (Steph.)</td>
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<td>+</td>
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<tr>
<td><em>C. panzalinus</em> (Germ.)</td>
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<tr>
<td><em>Hapalotribus subfuscus</em> (Eg.)</td>
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<td>+</td>
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<tr>
<td><em>H. coerules</em> (Deg.)</td>
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<tr>
<td><em>Ivokhujus impicus</em> (L.)</td>
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<tr>
<td><em>Rhychites carinatus</em> (Scop.)</td>
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<td>+</td>
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</tr>
<tr>
<td><em>Rh. choanogerus</em> T.-Min.</td>
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<td><em>Ryeicus exigus</em> (Gebl.)</td>
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<tr>
<td><em>B. betulæ</em> (L.)</td>
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<tr>
<td><em>B. populi</em> (L.)</td>
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<tr>
<td><em>Depuratrus manierei</em> (Hum.)</td>
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<tr>
<td><em>D. betulæ</em> (L.)</td>
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<tr>
<td><em>Apoderus coryli</em> (L.)</td>
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</tr>
<tr>
<td><em>A. erythropterus</em> (Gmelin)</td>
<td></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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</tr>
</tbody>
</table>

*bescens, H. coerules* in which larvae winter and reproduction occurs in June-July, occasionally even in August. The seasonal abundance of mass species is illustrated in the figure. The average numbers of beetles taken in one collection are given for separate ten-day periods. An increase in population is observed at the end of spring and beginning or second half of summer.

In view of difficulties in determining leaf-rolling weevils, we present a key to species and genera of leaf-rolling weevils from Western Siberia. It was composed on the basis of tables prepared by Ter-Minasyan (1955, 1965) and Baitenov (1974).

**KEY TO GENERA AND SPECIES OF LEAF-ROLLING WEEVILS OF WESTERN SIBERIA**


2(3). 1–2 shortened striae between 3rd and 5th elytral inter-row spaces. Parasutural stria behind scutellum deviating sideways. Shortened stria present behind scutellum. Black, pronotum base and elytra red; rarely, head, entire pronotum and legs red, or wholly monochromatically black. Length 6–8 mm. On birch. ......................... *A. coryli* (L.).

3(2). Elytra with 8 regular rows of punctures. Parasutural stria not deviating behind scutellum. Rows of punctures thinner, inter-row spaces flat. Head conical. Black, elytra black to red; rarely, legs and abdomen red-yellow. Length 3.5–4.5 mm. On burnet, brier. ......................... *A. erythropterus* (Gmelin).

4(1). Claws free, divided or with dense, rarely simple. Inner margin of fore tibiae incrustulate, tibiae simple with only small spur on inner apical angle. Body commonly covered with erect hairs; rarely nearly bare dorsally.
<table>
<thead>
<tr>
<th>Species</th>
<th>total</th>
<th>birch</th>
<th>aspen</th>
<th>poplar</th>
<th>willow</th>
<th>apple-tree</th>
<th>cherry</th>
<th>hawthorn</th>
<th>brier</th>
<th>herbaceous plants</th>
<th>stratum</th>
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<td>Auletobius irktensis</td>
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<td>0.1</td>
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<td>0.05</td>
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<td>Rhinocetus arnatus</td>
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<td>1.52</td>
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<td>B. truncatus ricinosus</td>
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<td>0.1</td>
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<td>A. creuralpinus</td>
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<tr>
<td>In all</td>
<td>100.0</td>
<td>46.4</td>
<td>76.9</td>
<td>69.29</td>
<td>0.94</td>
<td>0.76</td>
<td>1.62</td>
<td>0.27</td>
<td>0.22</td>
<td></td>
<td>1.61</td>
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</tbody>
</table>

5(8). Elvtra uniformly punctate, but puncture striae not pronounced. 


8(5). Elvtra with regular striae and wide or narrow spaces in between. 


10(11). First segment of hind tarsus longer than 2nd and 3rd together. Pronotum as long as wide. Body dark blue or black, occasionally with greenish tinge, narrow. Legs slender. Length 2.5–3.5 mm. On birch. *D. mannerheimii* (Humm.). 

11(10). First segment of hind tarsus shorter than, or equal in length to 2nd and 3rd together. Pronotum shorter than wide. Body black, without metallic shine. Hind femora in males thickened. Length 2.5–4.0 mm. On birch, aspen, poplar... *B. bimaculatus* (L.). 

12(9). Temples behind eyes with parallel sides or somewhat broadened behind. Rostrum long. 

13(18). Outer margin of hind coxae not reaching to episterna of mesothorax. Commonly, bare dorsally for the most part. *B. truncatus* Ricinosus. 

14(17). Larger. No convex, shining shoulder rib. 

15(16). Elvtra with coarse sculpture, covered with deep puncture rows. Opaque green, with copper shine, rarely blue. Length 5.5–6.5 mm. On poplar, apple tree. *B. rufus* (Gepl.). 


18(13). Hind coxae elongate, reaching to the inner margin of episternum or going beyond them. Commonly pilose dorsally.


21(22). Frons wider than eye diameter. Fore tibiae without apical spicule from inside. Scutellar stria hardly discernible. Length 1.8–2.5 mm. On willow, birch. .................. *P. nanus* (Payk.).

22(21). Frons not wider than eye diameter. Fore tibiae with apical spicule from inside. Puncture striae deeper, scutellar stria pronounced. Length 2.2–2.8 mm. On willow, birch. .......................... *P. tomentosus* (Gyll.).

23(20). Body not long, wide, ovate. Elytra more than 1.5 times longer than wide. ........................................... *Coenorrhinus* Thoms.

24(25). Last but one stria on elytra not shortened. Last stria divided at base into two short striae. Spaces in elytra shining, weakly convex. Black, with metallic shine. Length 1.6–3.0 mm. On hawthorn. ....................... *C. germanicus* (Hbst.).

25(24). Last but one stria on elytra shortened, connected with the last before elytrum apex. Last stria simple at base.

26(27). Rostrum longer, weakly and uniformly curved or nearly straight. Elytral spaces with regular puncture rows. Dark blue, occasionally with greenish shine. Length 2.5–3.0 mm. On fruit trees. ............................ *C. interpunctatus* (Steph.).

27(26). Rostrum shorter, rather strongly curved near base of antennae. Last but one stria connected with the last in the middle of elytra or immediately behind the middle. Puncture striae deeper and sparsely rugose, convex. Black, with steely shine. Length 1.8–3.0 mm. On apple tree and other fruit trees. .................. *C. punctatus* (Germ.).


29(30). Body without metallic shine, black or black with red. .................. *Homalorhynchites* Voss.

Pronotum covered with small sparse punctures. Wholly supplied with long black hairs. Body black, Length 2.5–3.5 mm. On sunrose. .................. *H. aethiops* (Bach.).

30(29). Body metallic-blue, green, purple, or of some other coloring.

31(34). Last but one stria on elytra not shortened, not fusing with the last in middle of elytrum. .......................... *Haplorhynchites* Voss.

32(33). Head without constriction laterally behind eyes. Spaces between rows of punctures on elytra wider than striae themselves, flat, densely and irregularly punctate. Length 5.0–5.5 mm. On foliage trees. .......................... *H. pubescens* (F.).

33(32). Head with constriction laterally. Elytra with regular, wide rows of punctures. Spaces convex, narrow, much narrower than striae, covered with rows of very fine punctures. Length 2.5–3.5 mm. On fruit trees. .......................... *H. coerulescens* (Deg.).

34(31). Last but one stria on elytra shortened, fusing with the last near middle of elytra.


Pronotum elongate, coarsely punctate. Rostrum not longer or slightly longer than pronotum.

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**Table 3. Relationship of leaf-rolling weevils with various plant hosts**

<table>
<thead>
<tr>
<th>Species</th>
<th>Leaves</th>
<th>Twigs</th>
<th>Fruit-damaging species</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Pselephorhynchites nanus</em></td>
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<td></td>
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</tr>
<tr>
<td><em>P. tomentosus</em></td>
<td>+</td>
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<td></td>
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<tr>
<td><em>Coenorrhinus germanicus</em></td>
<td>+</td>
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<tr>
<td><em>C. interpunctatus</em></td>
<td>+</td>
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<tr>
<td><em>C. punctatus</em></td>
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<tr>
<td><em>Haplorhynchites pubescens</em></td>
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<tr>
<td><em>H. coerulescens</em></td>
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<tr>
<td><em>Involvulus cupreus</em></td>
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<tr>
<td><em>Rhynchites auratus</em></td>
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<tr>
<td><em>Byctiscus rugosus</em></td>
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<tr>
<td><em>B. beetiae</em></td>
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<tr>
<td><em>B. populi</em></td>
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<tr>
<td><em>Depurus macrocephalus</em></td>
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<tr>
<td><em>D. beetiae</em></td>
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<tr>
<td><em>Apopetes coryli</em></td>
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<tr>
<td><em>E. erythropus</em></td>
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</table>

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36(35) Last tarsal segment longer than 1st. Punctuation striate on elytra in the form of rows of punctures, spaces between striae flat or weakly convex. Prothorax in males with spines or tubercles. ........................................ Rhychites Schneid.

37(38) Larger in size. Pronotum in males wider, much wider than one elytrum. Rostrum longer than pronotum. Pygidium finely and densely punctate. Golden green or golden red. Length 5.5-9.0 mm. On stone fruit trees, apple tree. .................................................. Rh. curvatus (Scop.).

38(37) Smaller in size. Rostrum as long as pronotal disk. Head more elongate. Sculpture of pronotum and elytra coarser. Pygidium very finely and sparsely punctate. Copper-green occasionally, pronotum purple, strongly shining dorsally. Length 4.8-5.4 mm. On steppe cherry. ........................................... Rh. chamaecerasi T.-Min.

SYSTEMATIC LIST

Subfamily RHYNCHITINAE Thomson, 1859

Tribe AULETINAE Reitter, 1912

Anieltus (Paranietes) irktatensis Faust, 1893.

Found on herbaceous vegetation in glades of birch groves and birch-pine forests, in meadows, and near water reserves in Tomsk, Novosibirsk, and Kemerovo Provinces, and in Altai Territory.


Anieltus (s. str.) sanginsorbarae (Schrank, 1798).

Found in birch and aspen-birch groves, on slashes and pine forest margins, in meadow-steppe areas, and near water reserves of Omsk, Novosibirsk, and Kemerovo provinces and Altai Territory.


Transpalaearctic species.


Tribe RHYNCHITINAE Thomson, 1859

Psleophorichites nana (Paykull, 1792).

Found in Novosibirsk Prov. and environs of Teletskoe Lake. Previously the species was registered from the environs of Barnaul (Heyden, 1880–1881).
Beetles knocked off birches in forest-steppe groves and collected from willows near water reserves in the second or third ten-day period of June. In this time, copulation and feeding were observed. As reported by Roginskaya (1966). 77% of this species was collected from birch near Moscow. In addition, beetles occur on aspen and hazel (Roginskaya, 1966) and alder (Ter-Minasyan, 1950). According to observations of Metesova et al. made in Kazakhstan, imagoes gnaw leaves and flowers of apple-trees.

Transpalaearctic species.


Psalophorhynchites tomentosus (Gyllenhall, 1839).

Found in Novosibirsk Prov. and Altai Territory. Registered from environs of Omsk (Lavrov, 1927).

Beetles found from the end of May till the middle of August in birch-aspen and willow groves and mixed forests. Dendrophil.

We observed feeding of imago on willows. In addition to willow, damages birch, alder, and aspen (Ter-Minasyan, 1950, 1955).

Transpalaearctic species.

Material. Novosibirsk Prov.: Koltsovka, 10.VII.1959, 1 specimen, Yarkovo, 25.VI.1989, 1 specimen (Bataeva); Novosibirsk. 1–10.VIII.1988, 1 specimen (Legalov), 14.VI.1992, 1 specimen (Legalov), Altai Territory: Zvat'kov, 21.VI.1958, 1 specimen (Cherepanov); Krasnodubrovskii, 22.VI.1958, 1 specimen (Cherepanov); Kamenskii distr., 5.VI.1929, 1 specimen (Pogodina).

Coenorrhinus (s. str.) germanicus (Herbst, 1797).

Beetles collected from the end of May till the beginning of July in larch-birch, birch-aspen, and pine forests, on meadow banks of rivers in Novosibirsk Prov. and Altai Territory. Dendrophil. According to observations of Prokof'ev (1966), beetles leave wintering sites in spring and feed gnawing holes in young leafstalks and floral shoots, causing their withering. In the second half of May the female lays up to 30 eggs, placing them one at a time into leafstalks or floral shoots. Below the place of oviposition, the female gnaws circularly the leafstalk so that it breaks off. Larvae emerge in 1.5–2 weeks. During 1.5 months larvae feed inside leafstalks that have fallen off and then leave them to pupate in soil at a depth of up to 10 cm. Beetles emerge in 3–4 weeks, remaining to winter. According to Ter-Minasyan (1950, 1955), the beetle damages raspberry, hazelnut, hazel, vetch, rose, strawberry, etc.

Dendrophil. Larvae develop in petioles and median vein of the leaf of fruit and other foliage species. Damage strawberry and other soft fruit cultures (Ter-Minasyan, 1950).

Western Palaearctic species.

Coenorrhinus (s. str.) paucilus (Germain, 1824).

Registered from the environs of Omsk (Lavrov, 1927) where the beetles occasionally occur on apple trees.

According to data of Ter-Minasyan (1950), the beetles appear in crowds of apple, pear, cherry, plum, bird cherry, hazelnut, and other trees in early spring. During additional feeding, beetles damage fruit and leaf gemmae and flower buds. Copulation occurs during blossoming of the apple tree, oviposition starts with the end of blossoming. Females lay eggs into the petiole or median vein of a leaf, damaging leaf tissues around the place of oviposition. With the result that the leaf becomes brown. One female can lay up to 100 eggs. Egg development takes 6–8 days. Larvae fed inside the petiole and median vein of the leaf, so that it dies and falls off. The development of larvae continues in fallen leaves. Having finished their development larvae abandon the leaves and pupate in soil at a depth of up to 15 cm. Beetles emerge from pupae in autumn. Part of them go out for additional feeding, part remain in soil till next-year spring.

Western Palaearctic species.
Homalorhynhites aethiops (Bach, 1854).

Presumably, this species was registered as Rh. ursus Gebl. by Gebler (1830) from Ust'-Kamenogorsk.

Develops on sunrose (Helianthemum) (Ter-Minasyan, 1950).

Western Palaeartic species.

Haplorhynhites (s. str.) pubescens (Fabricius, 1775).

Beetles collected in June by sweeping over meadow vegetation in the Novosibirsk Province. One beetle found on willow. Dendrophi!. Related to hawthorn, alder, feathered columbine, etc. (Ter-Minasyan, 1950; Matesova et al., 1962).

Material. Novosibirsk Prov.: Novyi Sharap. 19-VI. 1958. 1 specimen; bank of Ubarmatva River. 25 VI. 1962. 1 specimen; Novodubrovka. 18 VI. 1961. 1 specimen (Zolotarenko); Kaily. 15 VI. 1962. 1 specimen (Gregor'ev); Zonovo. 12-19 VI. 1961. 2 specimens (Stebaev); Novosibirsk. 1 VI. 1927. 1 specimen (Pogodina); Serezhnik. 12 VI. 1926. 1 specimen; Skala. 6 VI. 1991. 1 specimen (Legalov).

Haplorhynhites (Teretirhynhites) coerules (Degeer, 1775).

Not found in our studies. Registered from Southern Siberia (Ter-Minasyan, 1950) and Northern Kazakhstan (Baitenov, 1974).

Dendrophi!.. According to observations of Savkovskii (1985) made in Ukraine, beetles appear in spring and feed on buds of fruit trees. Females lay eggs into young twigs after foliage expansion. Below the place of oviposition they gnaw deep pits in the twigs which then wither and break off. Larvae feed inside the twig. In the middle of summer they go into soil and winter in cradles. Pupation occurs in summer of the following year. Emerged beetles winter without leaving the cradles. Development occurs in summer, on apple, pear, cherry, plum, mountain ash, hawthorn, roses, alder, etc. (Ter-Minasyan, 1950; Savkovskii, 1983).

Transpalaeartic species.

Involutus cupreus (Linnæus, 1761), plum weevil.

Found in lime-tree forests, gardens, and herbage of Tomsk, Novosibirsk, and Kemerovo Provinces and Altai Territory. Bassel' (1929) observed the plum weevil in the environs of Barnaul on hawthorn. Krivets (1984) reported finding the beetle in the northern part of Kuznetsk Ala Tau.

Beetles registered from the end of May till the middle of August. In the middle of September found again. Dendrophi!. Beetles occurred on bird cherry, aspen, and apple-tree. According to Babenko (1982), beetles in Tomsk Province winter on ground surface under plant litter. Overwintered beetles appear in spring in the period of emergence of apple-tree gemmae and feed on them, and later on leaves. After apple and chokecherry fruits are formed, females start to oviposit. One female lays from 60 to 120 eggs. It gnaws a wide coniform cavity in the fruit pulp and deposits one egg on its bottom. After oviposition the female nibbles away part of the fruit pedicle. Such fruits rapidly fall off. In fallen fruits, larvae emerge from eggs in 8-10 days. They feed on the flesh of fruits and in 3-4 weeks leave them. Pupation in soil at depths up to 3 cm. Occasionally larvae pupate in the seed chamber of fallen fruits. Pupal stage lasts 1.5 months. Young beetles go out of the soil and feed on leaves till light frosts. In Western Siberia the plum-tree weevil develops on apple and chokecherry, more rarely on plum, hawthorn, and pear (Prokof'ev, 1966: Babenko, Krivets, 1981; Babenko, 1982). In other parts of the area also damages cherry, sweet cherry, blackthorn, and mountain ash (Ter-Minasyan, 1950). Beetles can feed on alder and birch.

Transpalaeartic species.

Material. Tomsk Prov.: Bakchar. 10 VIII. 1947. 1 specimen Novosibirsk Prov.: Novosibirsk. 2 VI. 1971. 1 specimen (Opanasenko). Kemerovo Prov.: Kuzdeevo. 1967. 1 specimen; Kuzdeevo distr., 25 V. 1948. 1 specimen; Geolog. 10 VI. 1970. 1 specimen. Altai Territory: Khvoshchevsky forest area, 8 VI. 1957. 2 specimens (Opanasenko); Otor, 16 IX. 1961. 1 specimen; Bystryi Istok, 12 VI. 1958. 1 specimen (Opanasenko); Barnaul. 20 VI. 1927. 1 specimen (Bassel'), 24 V. 1979. 1 specimen.

Rhynhites auratus (Scopoli, 1763), cherry weevil.

Beetles collected in Altai (Malyi Krasnovarsk, Kozhushka, environs of Barnaul) and Novosibirsk Province. According to Babenko (1982), they have been found in the environs of Tomsk. Kulik and Shvetsova (1940) registered the cherry weevil on cherry from the Omsk province.

Dendrophi!.. Beetles feed on twig bark, leaf petioles, and flower buds of various stone fruit trees, including sweet cherry, steppe cherry, and bird cherry. According to Shirkina (1958) and Khairushev (1974), the cherry weevil damages in North Kazakhstan up to 30, 75, and 63% of fruits of bird cherry, cherry, and wild black.
cherry respectively. In poor stone fruit harvest years inhabitants fruits of small-fruit apples (Bassel, 1929; Kharushev, 1974). Observations made in the environs of Novosibirsk indicate that on plots of the Central Siberian Botanical Gardens weevils live on bird cherry, laying eggs into its berries. Maac's, pin, wild black, sand, and silver cherries growing on the same plots were not inhabited. First adults noticed on trees in the beginning of May, no beetles found after 11.VII. Females lay eggs into the solid shell of the fruit stone during the whole active period. A count performed in the end of July on 702 drupes has shown that 99, or 14.1%, of them had eggs, which is indicated by the presence of a plug. Egg development continues about 10 days, and approximately 30 more days are necessary for larval development. Last-instar larvae gnaw an exit hole in fruit covers and fall on the ground. Emergence of larvae starts in the third ten-day period of July and was noticed by us beginning with July 31. By this time 13 larvae had emerged from 1345 berries. In the first five-day period of August, 70% of larvae emerged, and by the middle of the month the emergence was complete. A total of 97 larvae have emerged, i.e., 7.2% of fruits suffered damage. Comparison between the percentage of infested fruits and that of fruits with developed larvae shows that 51% of the progeny is lost in preimaginal stages of development prior to pupation. Larvae emerged from fruits remained in winter in soil at depths of up to 10 cm.


Rhyynchites chamaecerasi Ter-Minasyan, 1966.
Beetles found in the environs of Kurgan (Kurgan Prov.) on steppe cherry (Ter-Minasyan, 1950, 1966).
Distributed in the south of Western Siberia.

Tribe BYCTISCNI Voss, 1930

Bytynchis (s. str.) rugosus (Gebler, 1836), wrinkled weevil.

Found in foliage and mixed forests. Near water reserves of Novosibirsk Province and Altai Territory. Heyden (1880–1881) reported this species from Salair. A communication of Miltyuchenko (1951) about finding Bytynchus hirtulae in the environs of Novosibirsk refers to wrinkled weevil. Related to flood-land poplar forests and poplar forest belts. Dendrophi. Prefers poplars of the laurel-leaved group, although leaf-bales also occur on white poplar in mass reproduction. Near forest belts also develops on apple tree and, according to Egorov (1958), on birch.

After hibernation, beetles appear in the first ten-day period of May and feed on young poplars, eating around the leaf plate. In callous leaves they gnaw out the plate parenchyma in the form of tracks. Soon after hibernation, copulation and oviposition into leaf bales are noted. Between 2 and 12 eggs are deposited in one leaf-bale. Eggs of the wrinkled weevil are found in leaf-bales till the middle of June. Larvae occur from the first ten-day period of June till the end of July. They develop equally well in leaf-bales hanging on trees and in those fallen on the ground. Having finished their development, larvae leave the leaf-bales and go into soil to depths of up to 5 cm. There, they produce a soil cradle, in which later pupate. Beginning with the middle of August, beetles of a new generation emerge. They go out to the surface and feed on leaves until the onset of light frosts in September. Beetles hibernate in fallen leaves. Part of beetles do not leave their soil cradles till the spring of the next year. In addition, a large number of nonpupate larvae remain to winter.

Eastern Paleartic species.


Byciscus (s. str.) betulae (Linnæus, 1758), polyphagous weevil.

In Western Siberia, the polyphagous leaf-rolling weevil heavily damages fruit-berry cultures and forest plantations.

Transpalaearctic species.


Byciscus (s. str.) populi (Linnæus, 1758), aspen weevil.

In Western Siberia, found in all forest formations that include aspen and poplar, from Gornii Altai on the south to forest-tundra (Oktyabr'skoe and Labytnangi) on the north. Occurs in steppe groves, forest belts, and glades in pine forests, in slash, and river floodlands.

Dendrophil. We have found beetles of the species on aspen, poplar, birch, and willow. On the south-west of Western Siberia develops in one generation. Females
roll a leaf-bale using one leaf and deposit there one egg. Oviposition continues till the middle of July. We found larvae in rolls during the whole July. Last-instar larvae leave the leaf-bale and go into soil, where they pupate in soil cradles. Part of larvae remain to winter. Pupae were found in August. Emergence of beetles to the surface begins in the end of August. During September they feed additionally on aspen and poplar leaves.

In Western Siberia aspen weevil may damage aspen and poplar plantations.

Transpalaeartic species.


Tribe DEPORAINI Voss. 1938

Deperaus (Hypodeperaus) mannsheimeri
(Hummel, 1823).

One beetle found in August in a relict lime forest in the southern part of Kemerevsk Provence and in July in the environs of Novosibirsk. Krivets (1984) reported this species from the northern part of Kuznetsk Ala Tau.

Dendrophi. Develops on willow and birch. According to Rokinskaya (1966), 95% of beetles collected in Moscow Province are related to the latter. In Primorsky Territory damages Anur lime (Azaronova, 1974). Females lay eggs into the plate of a leaf and gnaws its petiole. Larvae develop inside fallen leaves, feeding on decomposing parenchyma. For pupation, larvae go into soil (Ter-Minasyan, 1950).

Transpalaeartic species.


Deperaus (s. str.) heudae (Linnceus, 1761). birch weevil.

In Western Siberia occurs in any place where birch, on which larvae develop, grows. On the shores of Teletskoe Lake a leaf-bale of beetles of this species was also been found on alder. In addition to species noted, larva can develop in leaf-bales of beech, hornbeam, hazel, oak, bird cherry, poplar, lime, and chestnut leaves (Escherich, 1925; Ter-Minasyan, 1955; Brauns, 1964).

For oviposition, females prepare a funnel-like leaf-bale from the cut-off upper part of leaf. Preference is given to young birches and lower branches of older birches, which has been reported previously from Germany (Brauns, 1964). Occasionally several beetles work on one leaf-bale, with male taking no part in this work, according to Brauns (1964). About one hour is necessary for a leaf-bale to be prepared. Eggs are laid by females under the epidermis. One leaf-bale contains between 1 and 7 eggs. They are found from the beginning of June till the middle of July. First larvae appear in the middle of June. First-instar larvae mine the leaf plate. Later, they completely gnaw away the leaf plate, making tunnels in the leaf-bale. Approximately in a month larvae leave the leaf-bale and go into soil to pupate there in a soil cavity. In September, there are beetles in the soil, which hibernate without going out to the surface.

Western Palaeartic species.

Material. Tyumen Prov.: Labzanangi, 16.VII.1963, 1 specimen. bank of Sera River. 1.VII.1964, 2 specimens. Oktjabr'skoe, 5.VII.1964, 1 specimen. 25.VII.1963, 2 specimens. Komsomol'shchanka, 4-
16.VII.1964, 4 specimens; Levava Kormuzhikhanka, 27.VI.1964, 9 specimens; Salekhard, 2.VII.1954, 1 specimen (Cherepanov); Tomsk Prov.: Kopylovka, 2.VI.1961, 4 specimens; Balagachevo, 29.VI.1957, 11 specimens; Novosibirsk Prov.: Kupino, 7.VI.1953, 1 specimen (Cherepanov); Novyi Sharap, 13.VI.1958, 1 specimen (Cherepanov), 5.VI.1959, 1 specimen, 3–4.VII.1959, 4 specimens; Chimgan, 16.VI.1960, 2 specimens; Krasnyi Yar, 4.VI.1961, 1 specimen; Moshkovskii, 4–6.VI.1965, 1 specimen; Sergiyevka, 2.VI.1961, 1 specimen; Pashino, 30.VI.1954, 1 specimen, 1.VII.1954, 1 specimen; Berdsk, 16.VI.1986, 7 specimens (Opanasenko), 23.V.1988, 3 specimens; L'nikha, 16.VI.1972, 1 specimen; Tomsk Prov.: Novosibirsk, 17.VI.1971, 2 specimens (Opanasenko), 14.VI.1989, 1 specimen (Legalov); Mochisheche, 15.VI.1987, 1 specimen (Legalov); Yarkovo, VII.1963, 2 specimens; Kirza, 10–17.VII.1991, 1 specimen (Legalov); Altai Territory, valley of Chir River, 20.VI.1965, 4 specimens (Opanasenko); Klyuchi, 24.V.1952, 1 specimen (Zolotarenko); Teletskoe Lake, 20.V.1959, 1 specimen; Sanivsh, 27–31.V.1965, 7 specimens, 11–14.VI.1965, 3 specimens; Yailu, 6–16.VII.1963, 1 specimen (Opanasenko); Barnaul, 24.V.1901, 1 specimen (Gorelovskii).

Subfamily APODERINAE Voss, 1926

Tribe APODERINAE Voss, 1926

Apoderus (s. str.) coryli (Linnaeus, 1758), nut weevil.

Found in Western Siberia anyplace birch grows. Found in the undergrowth of pine forests, in fir and mixed forests, on slashes, river flood-lands, and meadows in Tomsk, Novosibirsk, and Kemerovo Provinces and in Altai Territory. Registered from the environs of Omsk (Lavrov, 1927) and foothills of the Sayany mountains (Lavrov, 1926). Occurrence of nut weevil reported by Krivits (1984) from the northern part of Kuznetsk Alatau.

Dendrophi. Development commonly occurs on birch. In addition to birch, can develop on aspen, hazel, alder, oak, hornbeam, lime, and willow (Ter-Minasyan, 1953, 1974). In Germany more frequently occurs on hazel and rarely on birch (Brauns, 1964). According to observations made in Moscow Province, this species is distributed in approximately equal shares between alder and hazel (Roginskaya, 1966). In Western Siberia, only 2 of two hundred collected beetles were taken from aspen and 2 from willow. Others were found on birch. Larvae develop on birch in a leaf-bale rolled by the weevil from one leaf. Females deposit into each leaf-bale 1–7 eggs (more often 2). Characteristically, eggs are deposited by females in pairs. with eggs placed near one another. One more egg or other pairs lie at a considerable distance. Eggs can be found in nature from the first ten-day period of June till the beginning of July. Larvae in leaf-bales were found from the first ten-day period of June till the beginning of August. Last instars were found in amount of 1, rarely 2 per tube. Having finished their development, larvae pupate in leaf-bale. Young beetles gnaw a hole and go out. Emerged beetles feed additionally and winter in litter.

Transpalaeartic species.

Material. Tomsk Prov.: Batalino, 20.VI.1955, 2 specimens (Kolomenskii); Balagachevo, 16.VII.1957, 2 specimens; Chichka-Yul, 14.VII.1959, 1 specimen; Kaly, 1–4.VI.1962, 1 specimen; Kopylovka, 2.VI.1961, 1 specimen (Patrusheva); 20.VI.1961, 1 specimen; Tomsk, 1947, 1 specimen. Omsk Prov.: Lyubino, 1.VI.1989, 3 specimens (Barkalov); Novosibirsk Prov.: Kirza, 12.VII.1950, 2 specimens (Cherepanov), 9–14.VI.1991, 2 specimens (Legalov); Orekhov Log, 15.VII.1950, 1 specimen; Morozovka, 18.VII.1950, 3 specimens (Cherepanov); Akulov, 3.IX.1950, 1 specimen; Novosibirsk, 15.VII.1956, 1 specimen (Dyatlova); 23.VI.1951, 1 specimen, 2–22.VII.1965, 3 specimens, 8–27.VII.1974, 7 specimens (Opanasenko), 13–29.VII.1974, 2 specimens (Opanasenko); Berdsk, 6.VIII.1988, 1 specimen; Kupino, 24.VI.1952, 1 specimen (Cherepanov), VII.1952, 1 specimen, 7.VI.1953, 3 specimens (Cherepanov); Mitrofanovka, 11.VI.1953, 2 specimens, Karasuk, 25.VI.1953, 1 specimen; Krasnozerskoe, 25.VI.1953, 2 specimens; Pashino, 30.VI.1954, 2 specimens; Dubrovka, 21.VI.1956, 1 specimen (Kortavina); Novyi Sharap, 30.VI.1957, 2 specimens. 16.VII.1957, 1 specimen, 8–10.VI.1958, 3 specimens, 13–27.VII.1958, 3 specimens, 3.V.1959, 1 specimen, 4–29.VI.1959, 13 specimens, 4–26.VI.1959, 6 specimens, 12–22.VII.1959, 3 specimens; Zonovo, 20.VI.1961, 1 specimen (Stebsov); Korolevka, 16.VII–22.VIII.1959, 5 specimens (Knysiv, Korshunov); Izdrevaya, 14–27.VI.1959, 2 specimens (Shevtsov); Chimgan, 10–30.VI.1960, 7 specimens (Stroganov, Grogor'ev, Opanasenko); Krasnyi Yar, 4.VI.1961, 1 specimen; Kainskaya, 29.VI.1964, 3 specimens, 3.VIII.1964, 2 specimens; Eretnaya, 13.VI.1961, 1 specimen; Borovoe, 9.VI.1970, 1 specimen; Roven'skoe, 6.VII.1972, 1 specimen (Zolotarenko); Nauka, 24.VII.1976, 1 specimen; Malaya Krutshikha, 27.VI.1960, 1 specimen (Chernyshova); Kemerovo Prov.: Kuzdeevka, 6.VI.1967, 1 specimen; Altai Territory: Zalesovo, 5.VI.1956, 1 specimen; Korzhavina, 13.VIII.1960, 1 specimen; Yalily, 18.VI.1965, 2 specimens, 4.VII.1963, 2 specimens, 6–16.VII.1969, 2 specimens, 15.IX.1963.
Beetles found in damp meadows and forest herbs. Apoderus (Coniopodera) erythropterus (Gmelin, 1790).

Beetles of new generation registered from the end of July till September. Herbophil. We have found beetles feeding on burnet. On the same place 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.

Transpalaearctic species.

Material. Tyumen'. Prov.: Lugovoe, 1985, 1 specimen; Tomsk Prov.: Tika, 11-28 VIII 1957, 1 specimen (Kovalov); Novosibirsk Prov.: Erstymaya, 11. VI 1961, 1 specimen (Morozova); 18. VII 1960, 1 specimen (Zolotarev); Aleus, 15. VI 1958, 1 specimen (Cherepanov); Novy Sharap, 24. VI 1959, 1 specimen; Chingis. 1. IX 1960, 2 specimens: valley of Matrenka River, 5. VI 1959, 1 specimen; Nizhnaya Matrenka, 9. VIII 1958, 2 specimens, 23. VI 1966, 1 specimen; Ubinskoe, 20. VI 1962, 1 specimen (Tibatina); Koryolva, 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, Kaly, 14. VI 1962, 1 specimen; 23. VI 1962, 2 specimens, 8-12 VII 1962, 2 specimens (Novosibirsk); 9. VII 1955, 3 specimens (Liventchuk); Berdsk, 2 VIII 1930, 1 specimen (Petrowska); 23. VIII 1956, 1 specimen; Uburmanka, 25. VI 1962, 3 specimens. Kemerovo Prov.: Kuzetskii distr., 16 VIII 1967, 1 specimen (Morozova); Altai Territory: Marinsk, 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; Yaituy, 14. VI 1963, 1 specimen; Iloga Range, 12-13 VIII 1974, 2 specimens; Barnaul, 16. V 1901, 1 specimen (Gorelovskii); Kozhushka, 30. VI 1925, 2 specimens (Lebedev); Malay 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 Transpalaearctic (57.9%) and Western Palaearctic (31.6%) complexes predominate in the fauna. Wrinkled weevil and Anthrenus irkutensis have an Eastern Palaearctic type of area. Only one endemic species Rhynchosites 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.

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