

Two New Species of *Ochyromera* (Coleoptera, Curculionidae) Associated with a Coniferous Tree, *Keteleeria evelyniana* (Pinaceae) from Laos

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Abstract *Ochyromera keteleeriae* sp. nov. and *O. sonepheti* sp. nov. are described from Laos. The weevils were captured on a coniferous tree, *Keteleeria evelyniana* (Pinaceae). Both species occur sympatrically, but *O. sonepheti* was much rarer than *O. keteleeriae*, whose male is unknown at the moment.

Keteleeria evelyniana is an evergreen coniferous tree of the family Pinaceae, which is similar to *Abies* trees of the same family or *Podocarpus* trees of Podocarpaceae in general appearance, and occurs in southern China, Laos, and Vietnam. In Laos, *K. evelyniana* is relatively common in the northern mountainous areas above 1,000 m up to 2,000 m in altitude.

A number of ochyromerine weevils (Curculioninae: Tychiini: Ochyromerina) were unexpectedly captured on needle-like leaves of this tree in Laos. Though little known on the biology of Ochyromerina, association with coniferous tree is only in two Japanese species, *Ochyromera japonicus* (ROELOFS, 1874) with *Podocarpus macrophyllus* (Podocarpaceae) (KOJIMA & MORIMOTO, 1996 a) and *Parendaeus abietinus* KOJIMA & MORIMOTO, 1996 with *Abies homolepis* (Pinaceae) (KOJIMA & MORIMOTO, 1996 b). The weevils are classified into two species of the genus *Ochyromera* PASCOE in having the seven-segmented funicle of antennae and the greater fore femora than posterior pairs, and probably related with *O. japonicus*.

In this paper, I will describe these weevils as the second and third representatives of *Ochyromera* associated with coniferous tree.

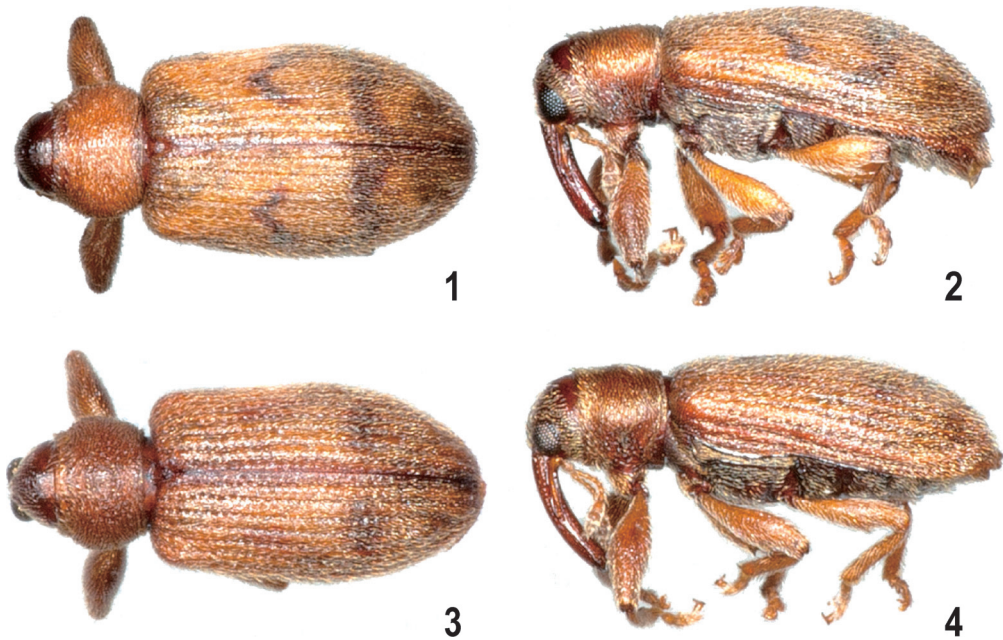
Type materials are preserved in the Laboratory of Entomology, Tokyo University of Agriculture, Atsugi.

Ochyromera keteleeriae sp. nov.

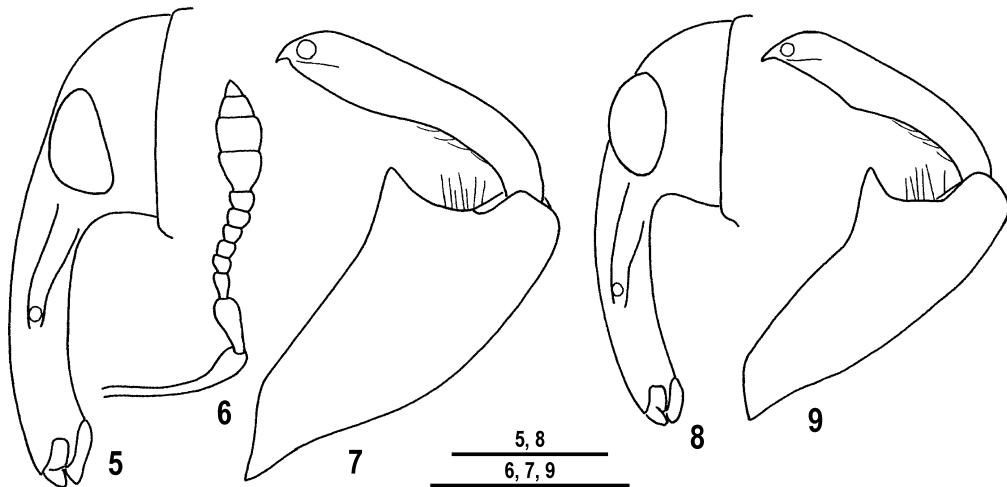
(Figs. 1, 2, 5–7, 16–18)

F e m a l e. Length: 2.6–3.3 mm; width: 1.1–1.5 mm. Derm yellowish brown, head, rostrum and venter dark reddish brown, elytra usually with two pairs of dark flecks on a little before and behind middle as illustrated (Fig. 1); body clothed with fine recumbent silky shine hairs.

Head closely and finely punctate and pubescent; forehead between eyes 0.6 times as wide as base of rostrum, with suberect hairs along inner margin of eyes, which are broadly ovate and moderately convex. Rostrum a little longer than pronotum, weakly and evenly curved in lateral view, weakly dilated at apex, with subconfluent punctures; scrobes almost lateral, widely separated at base. Antennae inserted at middle of rostrum; scape a little shorter than funicle, curved; funicle with 1st segment as long as or a little longer than 2nd and 3rd segments combined, 3rd to 7th subequal in length, progressively widening, 5th to 7th transverse; club about 2.5 times as long as broad.



Figs. 1-4. Habitus photographs of *Ochyromera* spp. — 1, 2, *O. keteleeriae* sp. nov., female; 3, 4, *O. sonepheti* sp. nov., female.



Figs. 5-9. Head, antenna and fore leg of *Ochyromera* spp. (5-7, *O. keteleeriae* sp. nov.; 8, 9, *O. sonepheti* sp. nov.). — 5, 8, head, lateral; 6, antenna; 7, 9, fore femur and tibia. Scale=0.5 mm.

Prothorax 1.5 times as wide as long, rounded laterally, widest at middle, weakly constricted near apex, and truncate at apex and base; dorsum closely punctate, clothed with subrecumbent stouter setae mixed with recumbent hairs. Scutellum subtriangular. Elytra 1.5 times as long as wide, weakly rounded laterally and widest at middle, conjointly rounded at apex, with weak

posterior calli; striae shallow, with close fine punctures gradually diminished posteriorly; intervals broad and flat, each with single row of stout curved subrecumbent setae. Legs with recumbent and subrecumbent silky shine hairs; fore tibiae weakly dilated internally at apical third.

Terminalia as illustrated (Figs. 16–18); bursa copulatrix with sclerotized ring patch ventrally ovate and broad; spermatheca with gland close to duct.

Male. Unknown.

Etymology. The specific name is derived from the adult feeding plant.

Type series. Holotype: female, 3 km east from Ban Muang (alt. 1,600 m), Xiengkhouang Prov., Laos, 28–IV–2008, H. KOJIMA. Paratypes: 152 females, same data as the holotype; 13 females, 3~4 km east from Ban Muang (alt. 1,600~1,700 m), Xiengkhouang Prov., Laos, 29–IV–2008, H. KOJIMA; 65 females, same locality as the holotype, 1–V–2008, H. KOJIMA; 6 females, Ban Tha (alt. 1,250 m), Xiengkhouang Prov., Laos, 2–VIII–2009, H. KOJIMA.

Distribution. Laos (Xiengkhouang Prov.).

Biological notes. Weevils were captured on needle-like leaves of *Keteleeria evelyniana*. Adult feeding traces were observed on *K. evelyniana* leaves (Fig. 22), but the immature stages and larval food resource are unknown.

I had an opportunity to visit the type locality again after an interval of two years, but it was unfortunately that the trees had been felled and replaced by the *Eucalyptus* plantation.

Remarks. Among other congeners, this species most resembles *O. japonicus* ROELOFS, 1874 known from Japan in sharing the following morphological and biological features: derm yellowish brown, elytra with a pair of dark flecks, clothed with silky shine recumbent hairs; rostrum with antennal scrobes almost lateral in position; antennal scape shorter than funicle, club elongate, more than twice as long as broad; elytra conjointly rounded at apex; fore tibiae dilated internally in apical part, and associated with coniferous tree. However, they are easily distinguished by the characteristics in the key provided after the description of the second species.

Ochyromera sonepheti sp. nov.

(Figs. 3, 4, 8, 9, 10–15, 19)

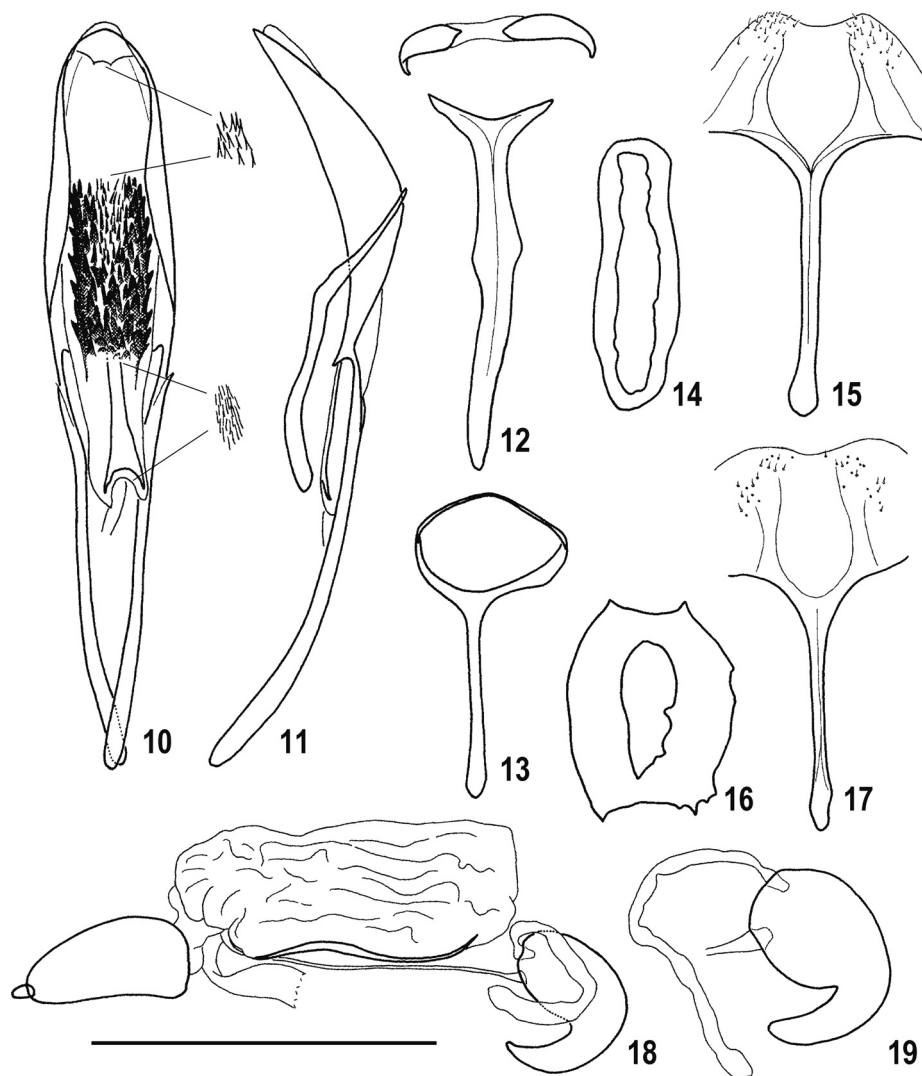
Male and female. Length: 2.8 mm (male) and 3.1 (female); width: 1.2 mm (male) and 1.3 mm (female). Very similar to *O. keteleeriae* sp. nov., except the following points: eyes distinctly convex; prothorax widest a little before middle; elytra 1.6 times as long as wide, with pair of dark flecks behind middle as illustrated (Fig. 3), striae impressed, with close distinct punctures; legs thinner, fore femora each with sharp triangular tooth, fore tibiae dilated internally a little beyond middle and weakly angulate, and terminalia as illustrated (Figs. 10–15, 19); internal sac of aedeagus denticulate around middle; bursa copulatrix with sclerotized ring patch ventrally elongate and narrow, spermatheca with gland a little distant from duct.

Type series. Holotype: female, 3~4 km east from Ban Muang (alt. 1,600~1,700 m), Xiengkhouang Prov., Laos, 29–IV–2008, H. KOJIMA. Paratype: 1 male, 3 km east from Ban Muang (alt. 1,600 m), Xiengkhouang Prov., Laos, 28–IV–2008, H. KOJIMA.

Etymology. Named after Mrs. Sonephet WAKAHARA, who and whose brother kindly took care of me in the field work.

Distribution. Laos (Xiengkhouang Prov.).

Remarks. Only one pair of specimens were found from a large number of *O. keteleeriae* specimens captured on *Keteleeria evelyniana* at the same locality. This species is easily confused



Figs. 10-19. Male and female terminalia of *Ochyromera* spp. (10-15, 19, *O. sonepheti* sp. nov.; 16-18, *O. keleteeriae* sp. nov.). — 10, Aedeagus, dorsal; 11, aedeagus and tegmen, lateral; 12, sternite 8 and spiculum gastrale, ventral; 13, tegmen, dorsal; 14, 16, sclerotized ring patch of bursa copulatrix, ventral; 15, 17, sternite 8, female, ventral; 18, ovipositor; 19, spermatheca. Scale=0.5 mm.

with *O. keleteeriae* sp. nov. due to the similar appearance, but they are distinguishable by the following key.

- 1 (2) Rostrum robust, shorter than pronotum in both sexes. Prothorax 1.2-1.3 times as wide as long. Elytra widest a little beyond middle, with pair of dark flecks a little behind middle and dark suture. Fore tibiae dilated internally at apical fourth. Length: 2.7-2.9 mm. Japan. *O. japonicus* ROELOFS
- 2 (1) Rostrum at least longer than pronotum in female. Prothorax 1.5 times as wide as long.
- 3 (4) Prothorax widest at middle. Elytra 1.5 times as long as wide, widest at middle, with two



Figs. 20–22. Photographs of habitat of *Ochyromera* spp. — 20, 3 km east from Ban Muang (alt. 1,600 m), Xiengkhouang Prov. and stands of *Keteleeria evelyniana*, firstly *Ochyromera* spp. were discovered; 21, leaves of *Keteleeria evelyniana*; 22, adult feeding traces on *Keteleeria* leaves.

- pairs of dark flecks a little before and behind middle. Fore tibiae dilated internally at apical third. Length: 2.6–3.3 mm. Laos. *O. keteleeriae* sp. nov.
- 4 (3) Prothorax widest a little before middle. Elytra 1.6 times as long as wide, widest a little beyond middle, with pair of dark flecks a little behind middle. Fore tibiae dilated internally a little beyond middle. Length: 2.8–3.1 mm. Laos. *O. sonepheti* sp. nov.

Discussion

Presently, only two ochyromerine weevils are known to be associated with coniferous trees among Tychiini of the flower weevil subfamily Curculioninae. Weevils of Tychiini sensu ALONSO-ZARAZAGA & LYAL, 1999 are associated with particular angiosperm families except Ochyromerina, which uses wider range of families than others: Fabaceae (Tychiina), Rubiaceae and Oleaceae (Lignyodina) and Moraceae (Demimaeina). Ochyromerina associated with a variety of plant taxa such as Mangoliaceae, Annonaceae, Lauraceae, Illiciaceae, Euphorbiaceae, Clusiaceae, Caesalpiniaceae, Moraceae, Sapotaceae, Ebenaceae, Theaceae, Ericaceae, Rubiaceae, Oleaceae and distantly related gymnosperms, Podocarpaceae (KALSHOVEN, 1956; KOJIMA *et al.*, 1998; KOJIMA, unpubl. data; OBERPRIELER, 1993) and Pinaceae (KOJIMA & MORIMOTO,

1996 b; present study). Similar case is known in another curculionine tribe Anthonomini. Twenty-fifth of angiosperm families serve as their hosts and only two of nearly 500 species are associated with Pinaceae (BURKE, 1976). Phylogenetic position of these two species among the clade (subgenus *Anthomorphus*) reconstructed by CLARK (1987) suggests the secondary association of them with gymnosperm taxa within the clade, most of which are associated with Malpighiaceae and Rosaceae. Thus, it will be natural to regard that the associations with gymnosperms are secondary among Ochyromerina.

Larval habits of *Ochyromera* are also diverse such as fruit- or seed-feeder of Moraceae, Theaceae and Oleaceae, leaf-miner of Ericaceae and cone-feeder of Podocarpaceae. Larval feeding habits of *O. keteleeriae* and *O. sonepheti* are presently unknown. However, if these species are related to *O. japonicus*, cones of *Keteleeria* appear to be the most probable organ as their larval food resource.

Male of *O. keteleeriae* is unknown at the moment. Female biased sex ratio is known in some Ochyromerina weevils. Males of *Endaeus hikosanus* KOJIMA & MORIMOTO, 1995, *Ochyromera hiramatsui* KOJIMA & MORIMOTO, 1996, *O. hirsuta* KOJIMA & MORIMOTO, 1996 and *O. pieridis* KOJIMA & MORIMOTO, 1998 are unknown, but the reason is uncertain.

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要 約

小島弘昭：ラオス産アブラスギ属針葉樹の1種 *Keteleeria evelyniana* (マツ科) から得られた *Ochyromera* 属 (コウチュウ目ゾウムシ科) の2新種。—— *Ochyromera* 属としては例外的に針葉樹を寄主とすると思われる2新種がラオスから見つかったので命名記載し、本属の寄主利用についてこれまでの知見をまとめた。*Ochyromera sonepheti* sp. nov. は、アブラスギ属の1種 *Keteleeria evelyniana* から得られた多量の *O. keteleeriae* sp. nov. の標本を検鏡中、雌雄各1個体のみが発見された。また、多数の個体が得られた *O. keteleeriae* は、すべて雌個体で、雄は未知である。アシプトゾウムシ亜族 (Ochyromerina) において雄が未知の種がいくつか知られるが、その原因は分かっていない。

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Record of Some Weevils New to the Fauna of Hachijō-jima and Aogashima Islands, the Izu Islands, Japan

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Hachijō-jima and Aogashima Islands are located on the southern end of the inhabited Izu Islands. Weevil fauna of the Izu Islands has intensively been studied by MORIMOTO & MIYAKAWA (1985) excepting Anthribidae, Scolytidae and Platypodidae, and a total of 55 and 26 species were recorded from Hachijō-jima and Aogashima Isls., respectively. The anthribid fauna of Hachijō-jima Is. was added by SENOH (1979, 1981, 1983, 1985), MATOBA (1980, 1982) and MORIMOTO (1984), and totally nine species have so far been known from the island. After that, only one curculionid species was added to the fauna of Hachijō-jima Is. (NOTSU, 2010). As a result, 65 and 26 species are known from Hachijō-jima and Aogashima Isls., respectively.

Recently, the author collected some weevils new to the fauna of these islands, and records them below. Two of them, the alfalfa weevil (*Hypera postica*) and the coffee bean weevil (*Araecerus coffeae*), are newly recorded from the Izu Islands.

Hachijo-jima Is.

Curculionidae

1. *Cyrtepistomus castaneus* (ROELOFS, 1873)
Specimen examined. 1 ex., Konsawa-rindō, Sueyoshi, 4-X-2011.
Comment. This species has only been recorded from Mikura-jima Is. on the Izu Islands.
2. *Hypera postica* (GYLLENHAL, 1813)
Specimens examined. 7 exs., Sokodo, 10-X-2011.
Comments. This is the first record of the alfalfa weevil from the Izu Islands. As the weevils were found only at Sokodo Beach near the port, they may be introduced into the island recently by shipping.

Aogashima Is.

Anthribidae

1. *Illis anna* SHIBATA, 1969
Specimens examined. 2 exs., Ôhashi, 7-X-2011.
Comment. The weevil has been known from Mikura-jima and Hachijo-jima Isls. on the Izu Islands.
2. *Araecerus coffeae* (FABRICIUS, 1801)
Specimens examined. 2 exs., Nishigou, 7-X-2011.
Comment. This is the first record of the coffee bean weevil from the Izu Islands.

Curculionidae

3. *Oedophrys sakaguchii* (KÔNO, 1930)
Specimen examined. 1 ex., Ôtonbu, 7-X-2011.
Comment. The weevil was found from the Izu Islands in 1993 on Hachijô-jima Is. at the small area and then rapidly expanded on the island as well as on the other island of the Izu Islands (MORIMOTO *et al.*, 2006; KOJIMA & FUJISAWA, in press).
4. *Pimelocerus perforatus* (ROELOFS, 1873)
Specimen examined. 1 ex., Nishigou, 7-X-2011.
Comment. The olive weevil has widely been known from the Izu Islands except Toshima, Shikine-jima, Mikura-jima and Aogashima Isls.

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