

The first European records of the arborvitae weevil *Phyllobius intrusus* Kono, 1948 (Coleoptera, Curculionidae) in Norway

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The arborvitae weevil *Phyllobius intrusus* is reported for the first time from Europe and the Western Palearctic region. Two specimens were collected at two different sites near Kristiansand in Norway. The species originate from Japan, but is widely distributed in the US and in Canada due to introduction with the host plants, *Thuja* spp. A short description of the species and illustrations of habitus and male genitalia are presented. A further dispersal and establishment elsewhere in Europe is expected as a result of the massive trade with *Thuja*-trees.

Key words: alien species, Curculionoidea, introduced species, Norway, *Phyllobius intrusus*, weevils, identification

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Introduction

The weevil genus *Phyllobius* belongs to the broad-nosed weevils (Curculionidae, Entiminae), and is well known among entomologists and nature enthusiasts as many species are brightly green metallic colored, and commonly occur on foliage of broadleaved trees and shrubs throughout our region. The genus *Phyllobius* is of Palearctic origin and includes about 130 species of which more than 80 are known from the Western Palearctic region (Pesarini 1981). Only ten species are hitherto known from Fennoscandia (Silfverberg 2004).

P. intrusus originate from Japan (O'Brian & Wibmer 1982, Masahiro et al. 2000), but was described from Rhode Island (Kono 1948) after the species was introduced and established at the eastern coast of the US. Later, it has been recorded from the western coast of the US (Anonymous 1994), and in Canada (Cote & Bright 1995). The present paper reports the first records of *P.*

intrusus from the Western Palearctic region based on specimens from Norway.

The records

Two specimens were collected at two different sites near Kristiansand in Norway, EIS 2, VAY, Kristiansand: Nedre Timenes, 32V Ø0447063 N6447049, 18 June 2009, one male beaten from hazel shrub (*Corylus avellana*), leg. K. Berggren & F. Ødegaard; Bråvann, 32V Ø0437202 N6441482, July 2009, one male on black light, leg. K. Berggren.

The species

P. intrusus is placed in the subgenus *Metaphyllobius* Smirnov, 1913 (Pesarini 1981). The species is neither described in the review of the

Metaphyllobius in Eastern Europe and Siberia (Yunakov & Korotyaev 2007) nor in the Western Palearctic review of the Phyllobiini (Pesarini 1981). We, therefore, include a short description with some diagnostic characters for identification help below. The species is listed in the Palearctic catalogue of Phyllobiini (Pesarini 1981) as a synonym of *P. japonicus*, but the two names are currently both considered as good species according to the recent catalogue Curculionoidea of Japan (Anonymous 2010a).

The size of the present specimens is 5.5 mm from the eye to the tip of the elytra. The habit reminds of that of *P. argentatus*, but *P. intrusus* is of somewhat more slender body shape. The funiculus is prominently curved and reddish in color. The scape is of the same color and the mid-segments are about as long as wide. The club is somewhat darker brown. The legs are brownish black, and all femora are possessed with prominent teeth. A very prominent character is the sharp blade-like outer edge of all tibiae, which also is seen in the former subgenus *Ustavenus* (see Freude et al. 1981). The metallic lustre of the elytra is dark golden-green and the scales are long, sharply pointed like those of *P. pomaceus* and *P. pyri*. The elytral setae are inclined upstanding all over, but quite short and weak. The penis is parallel and bluntly pointed and similar to that of *P. scutellaris* or *P. contemptus* (see Pesarini 1981) (Figs 1–3).

Host plants

Phyllobius intrusus is recorded from coniferous trees of the family Cupressaceae, particularly of the genera *Thuja* and *Thujopsis*. There are five species of *Thuja* of which three occur in eastern Asia (*Thuja koraiensis*, *T. standishii*, *T.*

sutchuenensis) and two in North America (*Thuja occidentalis* and *T. plicata*). The only species of *Thujopsis* (*T. dolabrata*), originate from Japan (Anonymous 2010b). Particularly, the Northern white-cedar or arborvitae (*Thuja occidentalis*)



FIGURE 1. Male of *Phyllobius intrusus* Kono, 1948, recorded from Norway: Kristiansand, Nedre Timenes, dorsal view. Photo: Arnstein Staverløkk, NINA.



FIGURE 2. Male of *Phyllobius intrusus* Kono, 1948, recorded from Norway: Kristiansand, Nedre Timenes, dorsolateral view. Photo: Arnstein Staverløkk, NINA.

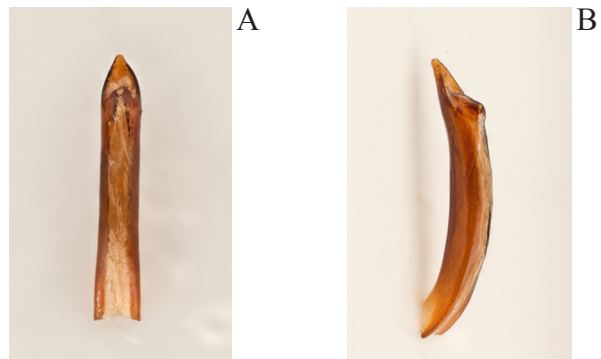


FIGURE 3. Apex of penis of *Phyllobius intrusus* Kono, 1948, recorded from Norway: Kristiansand, Nedre Timenes. A. Dorsal view. B. Lateral view. Photo: Arnstein Staverløkk, NINA.

seems to be a suitable host for this weevil in North-America. The name arborvitae or "tree of life" dates from the 16th century when the French explorers learned from the Indians how to use the tree's foliage to treat scurvy (Burns & Honkala 1990).

Thuja occidentalis was the first North American tree species introduced to Europe already in 1534 (Reisæter 1977). The first *Thuja*-trees in Norway were cultured at Rød manor in Halden, Østfold, in the 1770s. Nowadays, *Thuja*-trees is frequently imported and cultivated at nursery gardens and distributed from garden markets all over Norway. The species is commonly wildered from gardens and parks, particularly near urban areas in southern Norway (Stenberg 2007).

Thuja-trees are very poisonous and do not have very many insects associated with them. In addition to *P. intrusus*, the carpenter ant *Camponotus pennsylvanicus* and the leafminers *Argyresthia thuiella* and *Coleotechnites thujaella* are mentioned from North America as the primary insect pests, while the bagworm (*Thyridopteryx ephemeraeformis*), juniper scale (*Carulaspis juniperi*), spruce spider mite (*Oligonychus ununguis*), fletcher scale (*Lecanium fletcheri*), and arborvitae aphid (*Cinara tujafilina*) are reported to feed on ornamental *Thuja* (Rose & Lindquist 1980, Wilson 1977). The bark beetles *Phloeosinus thujae*, *P. aubei*, *Scolytus rudis* as well as *Cryphalus abietis*, *Pityogenes chalcographus*, *Xyleborus dispar*, which are native in Norway, are mentioned from *Thuja*-trees in Europe (Freude et al. 1981).

Discussion

Undoubtedly, *P. intrusus* is accidentally introduced to Norway with *Thuja*-trees. The species is reported as a pest to ornamental *Thuja*-plantations, and the potential for wide dispersal and establishment in Norway and other European countries is high, due to the massive trade with *Thuja*-trees. As the species also is recorded in quite harsh climatic conditions in Canada, it is not surprising that establishment has taken place in Norway. The species can easily be mixed up

with the common and widespread congenetics, and thus, the dispersal of *P. intrusus* may have been in progress for some time without being detected. We, therefore, expect further reports of this species from Europe in the near future.

At one of the collecting sites for *P. intrusus* (Bråvann), *Thuja*-trees were planted in the neighborhood some few years ago, and at the other site (Nedre Timenes), there is a nursery-garden and a garden market some hundred meters away. These companies, in the Kristiansand-area, report that their *Thuja*-plants are imported from the Netherlands. It is already documented that many stowaways are accidentally imported with horticultural plants from Central Europe (Sæthre et al. 2010), so a plausible hypothesis for the introduction of *P. intrusus* to Europe is trade between North America and the large distributors in Europe. Eventually, the arrival of the plants in Norway probably represents secondary sources of dispersal.

The specimen from Nedre Timenes was beaten from hazel shrubs together with numerous *P. argentatus*. Whether this occurrence was accidental or the specimen is able to establish associated with broadleaved trees, as its close relatives, is not known. Host shifts are always a risk when species establish in new areas (Strong et al. 1984). Further studies will have to reveal if *P. intrusus* stays with the *Thuja*-trees as its only host plants, or if it expands into natural nature types in Europe.

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