

Hylobius transversovittatus Goeze

INVASIVE SPECIES ATTACKED: Purple loosestrife (*Lythrum salicaria* L.)

TYPE OF AGENT: Root feeding beetle (weevil)

COLLECTABILITY: Not available for general distribution

ORIGIN: Germany

DESCRIPTION AND LIFE CYCLE

Adult:

Hylobius transversovittatus are red coloured, stout weevils that measure 8-13 mm long. The adults will appear in the spring when plants are about 20 cm tall and will be present from April through October. They remain nocturnal, feeding at night until hibernation. Adults are long lived, often two or three years or more. They are slow to populate and will produce a single generation every one or two years. The adults that emerge by mid-August will oviposit the same year, those emerging later will overwinter. Females deposit their eggs in the soil near the host plants and occasionally onto plant stems just above the soil. During the yearly oviposition cycle, each female will lay up to 100 eggs, however, usually only one or two are laid each day. The females can lay up to 300 eggs over their life span. Congregations of adults are common in the field environment.

Egg:

The pale yellow, oval eggs hatch within two weeks.



Fig. 1. *H. transversovittatus* adult (credit Powell et al. 1994)



Fig. 3. *H. transversovittatus* larva

Larva:

The larvae are cream coloured with dark brown head capsules. The larvae bear a resemblance typical to those of other beetles/weevils by maintaining a crescent or "C" shape. The larvae hatching from eggs laid in the soil feed on root hairs and then burrow into the roots. Larvae that hatch from eggs laid on the stem mine the shoots before moving down to the roots. Root feeding can continue for two years. Larvae development will be prolonged to two years if the plants become flooded. During each period of flooding, larval development is interrupted, and resumes when the water subsides. Mature third instars move to the upper portion of the root crown where pupation commences. The duration from egg to adult takes one or two years.

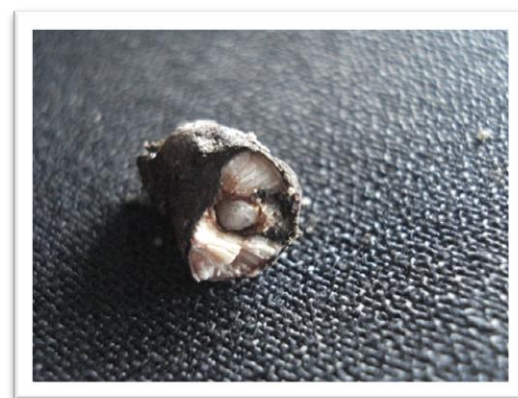


Fig. 2. *H. transversovittatus* larva in root

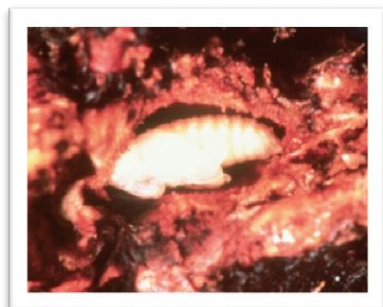


Fig. 4. *H. transversovittatus* pupa (credit Powell et al. 1994)

Pupa:

Pupation occurs in a pupal chamber inside the root and can occur at any time during the plant's vegetation period.

Overwintering stage:

H. transversovittatus can overwinter in any of its life cycle stages: as eggs in the soil or plants; as larvae or pupae in roots; or, as adults in soil litter.

EFFECTIVENESS ON HOST PLANT

Larvae feeding may cause death to attacked plants. Plants with small rootstocks can be killed within two years when attacked by two or more larvae. Large rootstocks require a higher number of larvae to achieve the same result. Adult feeding on leaves produce ragged leaf margins.

HABITAT AND DISTRIBUTION

Native:

H. transversovittatus is native to Europe. In Scandinavia it is most effective on sites not controlled by *Galerucella spp.*

North America:

H. transversovittatus is capable of tolerating a wide variety of habitats and environmental conditions. Sites free from prolonged or frequent flooding are best suited. *H. transversovittatus* has excellent host plant searching capability, which enables this agent to disperse easily to create new colonies. Establishment in Canadian provinces is variable; it is established in Alta. in a rearing garden, but its status is unknown in Man., Ont., and N.S.

British Columbia:

H. transversovittatus is released and established in the Coastal Douglas-fir biogeoclimatic zone. Significantly more field work is required to determine its desired habitats. The close proximity to salt spray and tides may indicate that it has a tolerance for saline conditions.



Fig. 5. General area of established *H. transversovittatus* in Richmond (Coastal Douglas-fir zone)

BRITISH COLUMBIA RECORD

Origin:

The *H. transversovittatus* releases made in B.C. originate from Germany via the U.S.A.

History:

A single release of *H. transversovittatus* was made in 1994 in Richmond in a tidal flat, within a protected ecological reserve. Forty potted plants infested with 178 eggs and larvae were transplanted at the release site. The release was made in July and during this same year high tides and a severe winter storm hit the site causing extreme devastation. Establishment was not confirmed until 2008 when a single larva was located in a plant root.

Field results:

The single release site was suspected not to have established due to the severity of a winter storm that destroyed the tidal flat area shortly after the release was made. The site was revisited in 2001, but no plants were excavated and the foliar feeding found at the time was attributed to *Galerucella spp.* In 2003, another attempt to locate the beetle was made and 15 plants were excavated and dissected, but, again no larvae were found. In 2008, a larva was found on the second plant excavated. Since 2008, monitoring has involved looking for larvae and feeding evidence by excavating and dissecting roots and has shown the weevil to be able to sustain a population. Although there has been suspicious leaf feeding that could be attributed to *H. transversovittatus* adults, no weevils have been found to date. Recent restoration efforts have been underway at the release site and throughout the general area resulting in the majority of plants excavated and disposed of. Future efforts will include dispersal monitoring outside of the restoration boundaries.

NOTES

- *H. transversovittatus* is difficult to handle and expensive to rear. Plant vigour and density controls the biocontrol agent population.

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