

Rhinusa neta Germar

INVASIVE SPECIES ATTACKED: Dalmatian toadflax (*Linaria dalmatica* (L.) Mill.)
Yellow toadflax (*L. vulgaris* Mill.)

PREVIOUSLY KNOWN AS: *Gymnaetron netum*, *G. netum* and *Rhinusa netum*

TYPE OF AGENT: Seed head feeding beetle (weevil) **COLLECTABILITY:** Not permitted

ORIGIN: Europe

DESCRIPTION AND LIFE CYCLE

Adult:

Rhinusa neta colouring is quite variable, from ash-grey to olive-brown. Their oval, convex bodies are more rounded than other *Rhinusa*, and are usually significantly larger. Their rostrums (noses) are rigid, straight and have a blunt tip. Their bodies are covered with fine yellow-brown hairs arranged in rows. Adults appear in May when plants are 20 - 30 cm tall. At first, they feed on tender new growth which initiates branching lateral growth. They later move into flowers to feed on pollen and young seeds. Several adults can be present in a single blossom. Females normally lay eggs from June through August and sometimes need to delay oviposition until *Brachypterolus pulicarius* feeding damage has subsided. When flowers are near peak bloom, females chew round holes into the green seed capsules and deposit up to eight eggs, covering them with a yellow secretion. The base of the egg, pointed towards the oviposition hole, causes the site to become black and forms a barrier for the other end of the egg which is inflated. The barrier pushes the egg deep amongst the developing seeds. Seeds nearest the egg expand 8 - 10 times their normal size, becoming pale coloured. Each female averages 45 eggs, but can range from 21 to 66. They will continue to lay eggs as long as suitable flowers are available, even though eggs or larvae may not survive the winter. New adults resulting from spring mating emerge in August and September but do not mate or oviposit, instead they overwinter. Adults that emerged in the spring or early summer live until September.

Egg:

The eggs are oval and flattened, 1.23 x 0.67 mm when first laid, swelling over two or three days to 1.43 x 0.83 mm. Incubation takes 12 days.

Larva:

Full grown larvae are 0.63 mm long and have a vague light brown pattern. Typical of weevils, their distinct "C" shape can be easily identified in pods when opened. There are three larvae instars. The first instars feed on the enlarged pale seeds. Several larvae can occupy a single seed pod chamber. The final instar may feed on regular developing seeds.

Pupa:

Pupation occurs within the seedpod where mature larvae build an oval cell. They can be identified by two blunt horns at the top of their thorax. Five weeks after hatching from eggs, new adults emerge through the upper opening of dried seed capsules.

Overwintering stage:

Sometimes they will also spend winters above ground inside the dried seed capsules.

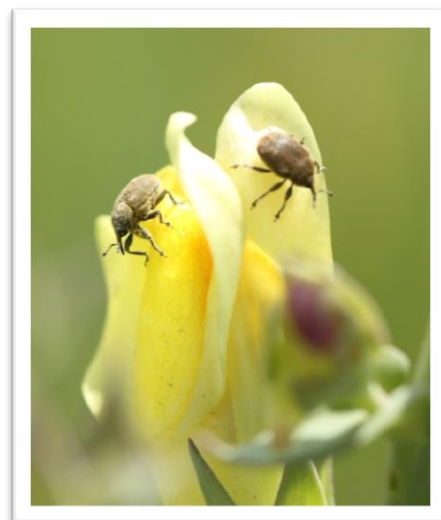


Fig. 1. *R. neta* adults



Fig 2. *R. neta* dispersal area at Comox on Dalmatian toadflax (Coastal western hemlock)

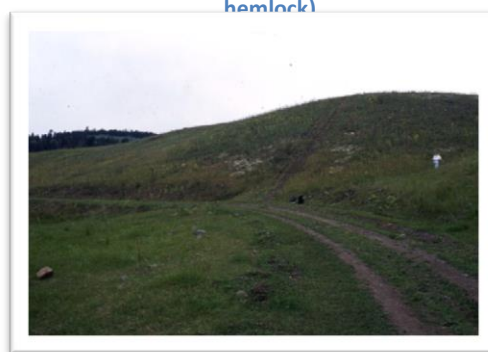


Fig. 3. *R. neta* dispersal area in Lac du Bois near Kamloops on Dalmatian toadflax (Bunchgrass zone)



Fig. 4. *R. neta* dispersal area near Merritt on Dalmatian toadflax (Ponderosa pine zone)



Fig. 5. *R. neta* dispersal area near Juliet Creek between Merritt and Hope on Dalmatian toadflax (Montane spruce zone)

BRITISH COLUMBIA RECORD

Origin:

The original population source of the *R. neta* in B.C. is unknown.

History:

R. neta is adventive to B.C. The weevil found its way here and is freely dispersing, adding to the control of toadflax.

Field results:

R. neta establishes on Dalmatian and yellow toadflax varieties alongside *Mecinus janthinus*, *R. antirrhini*, *B. pulicarius* and *R. linariae*. *R. neta* are harder to be teased or coax out of flowers than *R. antirrhini*. Initially thought to have a preference for yellow, it is found equally in B.C. on Dalmatian and yellow toadflax.

Collection for redistribution:

Not recommended for general distribution.

NOTES

- When existing on the same plants in their natural European habitat with *R. antirrhini*, *R. neta* is 50% larger.

EFFECTIVENESS ON HOST PLANT

Larvae feed on seed, completely destroying all the seeds in the capsule that they occupy. Adults feed on foliage which may add to plant stress and reduce vigour. Adult pollen and flower feeding also contribute to a decrease in seed production.

HABITAT AND DISTRIBUTION

Native:

Its native distribution is south and central Europe, through the Mediterranean to Iran but is absent in Denmark and Sweden. It is most common in locations with hot dry summers.

North America:

R. neta was unintentionally brought to North America. The first North American published record indicates it was present in the eastern seaboard states in 1937, and the Pacific Northwest, including B.C., in 1954. In Canada, it is common on invasive toadflax varieties in varying habitats and climates, including on the prairies. Subsequent research was performed by AAFC and CABI on the host specificity of this species with weevils from Canada, Macedonia and Germany and found it to be very specific to toadflax, however, a petition for its formal release in Canada has not been submitted for this widely dispersed weevil.

British Columbia:

R. neta has been found throughout the southern interior in the Bunchgrass, Coastal western hemlock, Interior Douglas-fir, Montane spruce, and Ponderosa pine biogeoclimatic zone.



Fig. 6. *R. neta* dispersal area in North Thompson north of Barriere on Dalmatian and yellow toadflax (Interior Douglas-fir zone)



Fig.7. *R. neta* dispersal area near Beaverdell (Interior Douglas-fir zone)

REFERENCES

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