

Establishment of the crown weevil *Trichosirocalus horridus* on a novel host, *Cirsium vulgare* in Western Australia

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Summary The rosette weevil, *Trichosirocalus horridus*, was introduced into Australia from Mediterranean Europe as a biological control agent for nodding thistle, *Carduus nutans*. Adult weevils break aestivation in autumn, following rainfall. They feed on thistle rosette leaves, and then begin to oviposit on the underside of the leaves from autumn until early spring. The larvae eat their way to the developing leaves. Both these and the apical meristem are ultimately eaten, causing the rosette to produce subsidiary meristems, which in turn are attacked. Fully fed third instar larvae leave the plant to pupate in the soil. Adults emerge in spring to feed on the cauline leaves, before aestivating over summer. There is one generation/year.

Reports from New Zealand indicated that this weevil will also attack a related thistle, *Cirsium vulgare*, where these co-occurred. Under laboratory conditions in Australia, larval attack can cause rosette leaves to become less spiny. Rosettes will die, if subjected to sustained attack. In 1999 *T. horridus* was released in WA at one site at Hopetoun and two sites at Boyup Brook. None of these sites had the weevil's preferred host nodding thistle, *Carduus nutans*, which is not established in Western Australia. However, the Boyup Brook sites do support populations of the slender/sheep thistles, *Carduus pycnocephalus* and *C. tenuifloris*, both of which are also attacked by the rosette weevil in New Zealand.

In 2000, multi-stemming of flowering plants was recorded at all three sites, indicating that weevil establishment had occurred. In 2001, attacked plants were again seen at both Boyup Brook sites, however, *T. horridus* appears to have died out at the Hopetoun site, since no attacked plants were seen. During a survey of *Cirsium vulgare* rosettes in mid May 2002, attacked rosettes were only noticed at one of the Boyup Brook sites. Since this trip occurred soon after the autumn break, the weevils may be present at the second site with weevil damage not being advanced enough to be apparent. However the authors' experience in establishing this weevil in Eastern Australia on *Carduus nutans*, where rapidly expanding populations are noticeable within three years of release, leads them to postulate that *Cirsium vulgare* is a marginal host for *T. horridus*. The rosette weevil was also released by the authors at Yanco, New South Wales in the mid 1990s on *C. vulgare*, where it was recorded in the year after release attacking *C. vulgare* rosettes, but has not been seen in subsequent years.

Further laboratory studies are required to document whether *T. horridus* needs to undergo a periodic generation on *Carduus nutans* (or *C. tenuifloris*/*C. pycnocephalus*) in order to sustain attack on *Cirsium vulgare*.