

**Weevils associated with Musk thistle (*Carduus nutans* L.) and
biology of *Lixus filiformis* (Fabricius) (Coleoptera:
Curculionidae) in Northeastern Turkey**

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ABSTRACT

It was determined that nine weevil species are associated with *Carduus nutans*; *Lixus filiformis*, *Larinus jaceae*, *Larinus latus*, *Larinus planus*, *Larinus turbinatus*, *Rhinocyllus conicus*, *Cleonis pigra*, *Ceratapion onopordi* and *Hadroplontus trimaculatus* in Northeastern Turkey.

The biology of *L. filiformis* is closely synchronized with that of its main host plant *Carduus nutans*. Univoltine weevil emerges in spring and chew shot-holes in the leaves of the host. As soon as the thistles begin to bolt, females lay their eggs into the growing stems and branches. A hole is chewed in the stem, into which eggs are laid, either solitarily or as a raft of several eggs. Newly hatched larvae bore directly into the stem and feed on pith and cambium tissue. Many larvae may develop in a single plant stem. Adults continue to feed on leaf tissue and oviposit until plants senesce and the weevil die. Pupation occurs in the stems and branches, and new generation adults hibernate there until the following spring. The infestation level may be as high as 80 %. Each plant stem including branches has 31 larvae on average. In the study area, the weevil prefer *C. nutans*, *C. crispus* and *Carduus* sp. as host plants, but very rarely some of the adults feed on *Cirsium arvense*.

Key words: Weevil diversity, *Carduus nutans*, *Lixus filiformis*, biology, host range

INTRODUCTION

The genus *Carduus* comprises many noxious weeds in Compositae (= Asteraceae), and one of the most important species is *Carduus nutans* L. (Musk thistle). The species is a biennial, or occasionally a winter annual, with erect stems branching near the top of plant, which is native in Europe, Turkey and North Africa,