

## ***Omiamima mollina* (Boheman) in the Netherlands, with notes on habitat and phenology (Coleoptera: Curculionidae)**

by

TH. HEIJERMAN

*Vakgroep Entomologie, Landbouwhogeschool Wageningen*

**ABSTRACT.** — *Omiamima mollina* (Boheman) is recorded for the Netherlands for the first time. More than 350 specimens, all females, were caught in pitfall traps placed on slopes of dikes in the Betuwe. Sampling localities are briefly described and some remarks are made about the phenology of the species. Special attention is paid to the deciduous mandibular appendages of newly emerged adults.

### Introduction

From April 1982 till May 1983 ground dwelling curculionid and carabid beetles of dikes were sampled at four sites in the Betuwe district (Heteren, Driel, Slijk-Ewijk and Winssen). The beetles were collected at irregular time intervals from pitfall traps containing 4% formalin. *Omiamima mollina* (Boheman), which was thus far not recorded for the Netherlands, occurred at all four localities. In the traps near Heteren and Winssen *O. mollina* and *Otiorhynchus porcatus* Herbst were the dominant curculionid species. Interestingly some beetles of the former species were still possessing their deciduous mandibular appendages.

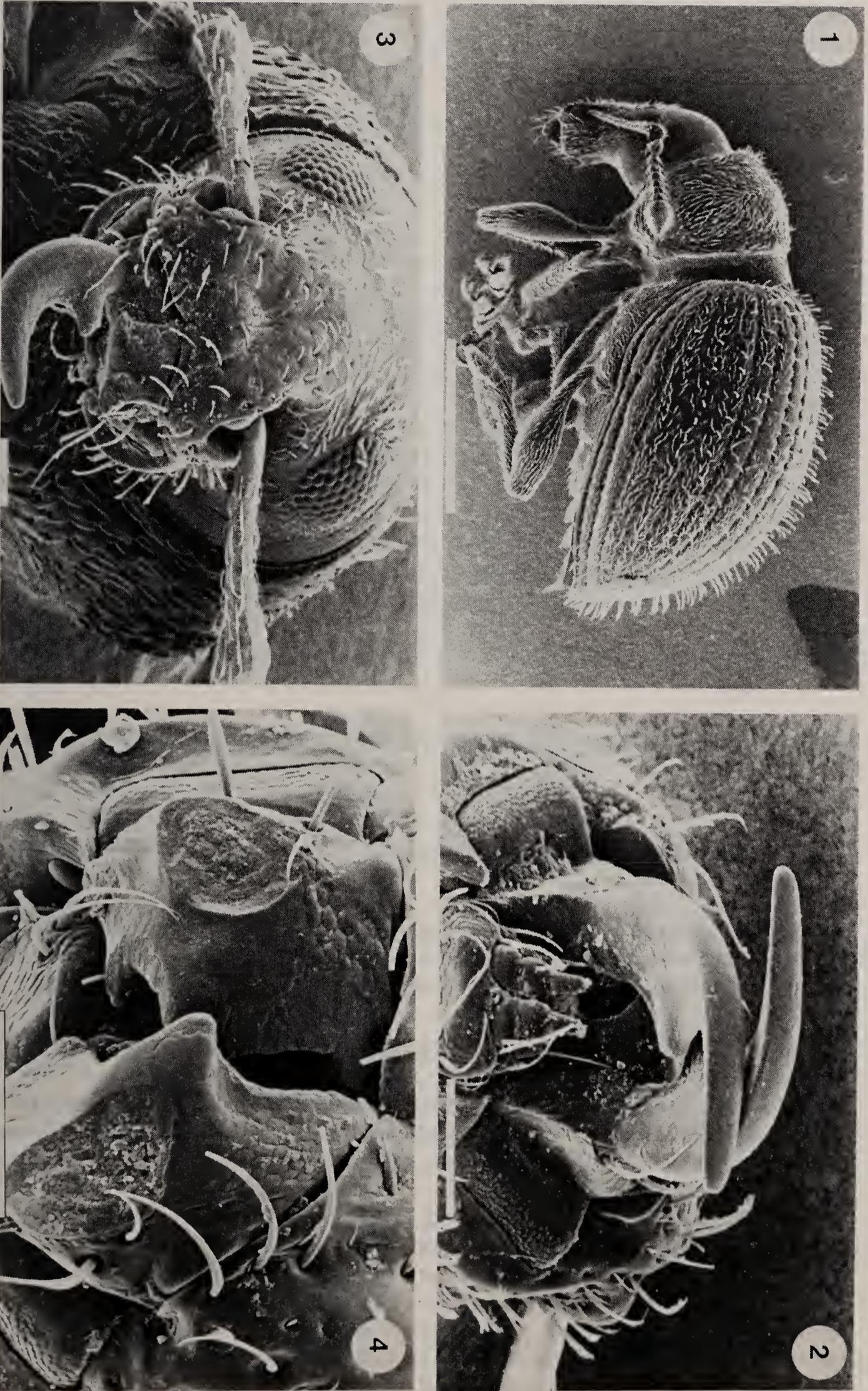
### Systematic position and biology

*Omiamima mollina* is known as *Omius mollinus* Boheman in Everts (1922) and Brakman (1966). Silfverberg (1977) erected the new genus *Omiamima* and designated *O. mollinus* as its type species.

*Omiamima* belongs to the Otiorhynchinae. Genera of the Otiorhynchinae and of some other subfamilies are characterized by the post-pupal stage possessing deciduous mandibular appendages (figs 2, 3). Everts (1922) and Hinton (1946) suggested that the false mandibles are used by the newly emerged adult to escape from the pupal cocoon and/or pupal chamber in the soil. Immediately after the beetles have reached the soil surface these appendages usually break off, along a preformed suture, leaving a characteristic cicatrice (fig. 4). The presence of this cicatrice is sometimes used as a diagnostic character (Everts, 1903, and others). Species of the mainly east-mediterranean genus *Psalidium*, however, sometimes keep the false mandibles during their entire lifetime.

There are 25 Palearctic species belonging to the genus *Omiamima*, 5 of which occur in the central parts of Europe. In the Netherlands the species was not collected thus far, but it was recorded from surrounding countries (Everts, 1922 and Brakman, 1966). Dieckmann (1980) summarizes the distributional data of *O. mollina* in N, C, and SE Europe. The species is said to live in wet pastures, often in the vicinity of water. The adults are diurnal; several adult weevils were caught, using a sweeping net, during daytime at Heteren 8.V.1982. Both adults and larvae are polyphagous. Since males were never recorded, the species is probably parthenogenetic. Apomictic parthenogenetic reproduction is common among Otiorhynchinae and Brachyderinae (Suomalainen, 1969).

*Omiamima* spp. resemble both *Barypeithes* and *Omius* spp. in habitus, but *O. mollina* (fig. 1) can be characterized by the presence of two types of setosity; the elytra are covered with short adpressed as well as long erect setae.



Figs 1-4. Scanning electron micrographs of *O. mollina* (Boheman). 1, habitus; 2, detail of mandibles with both deciduous appendages (ventral view); 3, detail of mandibles with one appendage; 4, detail of cicatrices. Scale 1: 1 mm; 2-4: 100  $\mu$ m (Photos: TFDL, Wageningen, F. Thiel).

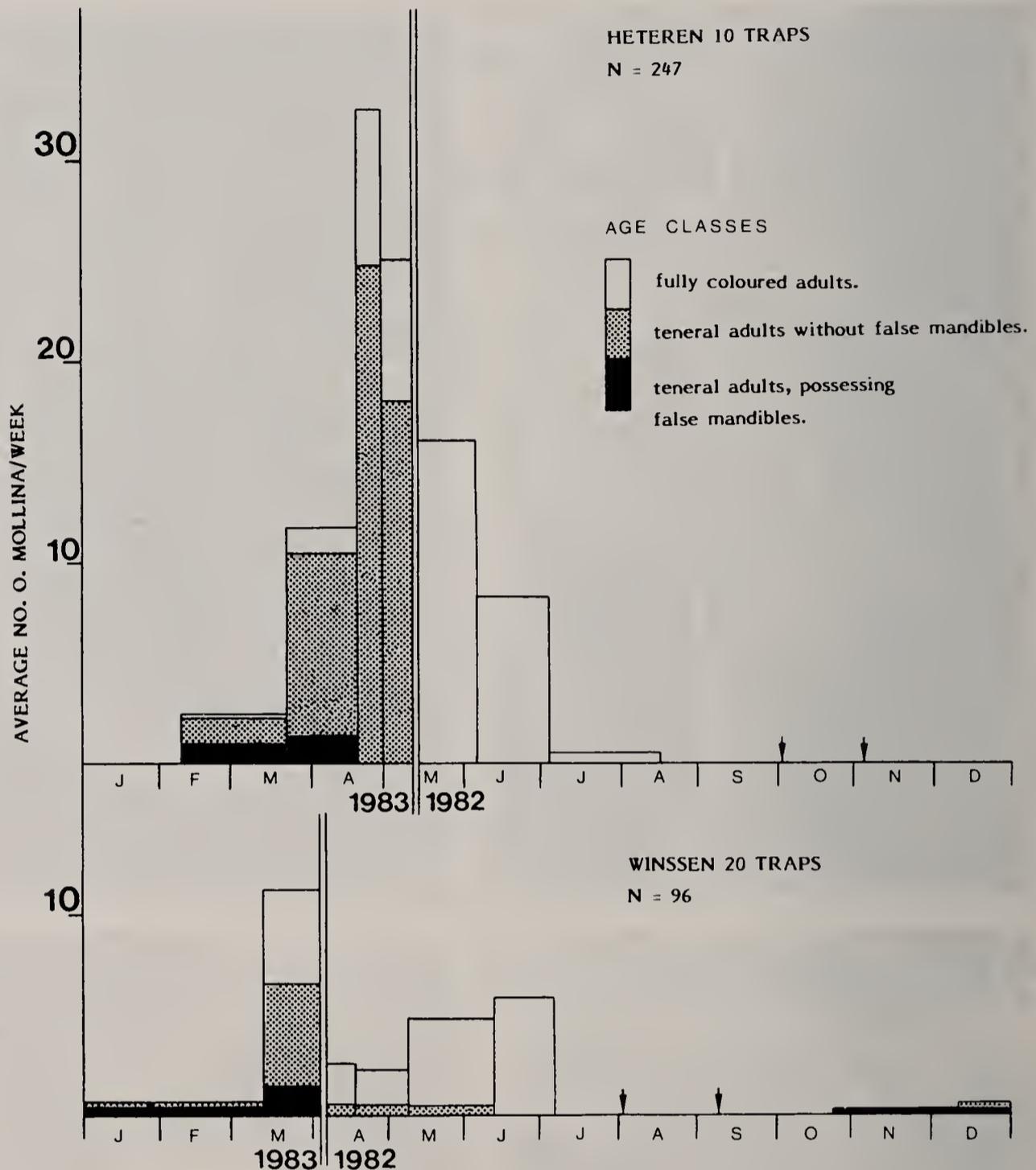


Fig. 5. Distribution of numbers of *O. mollina* specimens over sampling dates. The sampling periods of 1982 and 1983 are combined in such a way that a continuous diagram results. Sampling dates are at the beginning and end of each bar or denoted by an arrow ( $\downarrow$ ).

#### Observations on habitat and phenology

Both at Heteren and Winssen 11 species of grounddwelling weevils were collected, the respective numbers of specimens being 732 and 347. The proportion belonging to *O. mollina* was 34% at Heteren and 28% at Winssen, and the relative abundance of *O. porcatus* was 36 and 28%, respectively.

Habitat description of *O. mollina* — Both Heteren and Winssen are south facing dike slopes, extensively managed by mowing. At Winssen open water occurs close to the sites of the pitfall traps. Clay forms the soil substrate of both localities, Winssen having a more sandy clay, and consequently a more xerophilous type of vegetation. Both localities are characterized by species-rich and xerophilous plant communities of the Arrhenateretum elatioris association. On part of the dike at Heteren a tendency can be recognized towards the alopecuretosum subassociation, indicating a somewhat moister habitat. Winssen shows the effects of the extensive mowing regime in the shooting of brushwood (*Rosa canina* L., *Crataegus monogyna* Jacq., *Prunus spinosa* L.). The two dike localities contain plant species which in the Netherlands generally occur on dike slopes along the main rivers, and in the south of the province of Limburg, e.g.:

*Tragopogon pratensis* L., *Senecio erucifolius* L., *Trisetum flavescens* (L.) P.B. (Heteren), *Origanum vulgare* L., *Agrimonia eupatoria* L., *Campanula rapunculus* L., and species of the chalkgrasslands (Mesobromion alliance) like *Sanguisorba minor* Scop. and *Helicotrichon pubescens* (Huds.) Pilger (Winssen). (W. J. Drok, pers. comm.).

Phenology of *O. mollina*. — As for most curculionids, little is known about the life-history of *O. mollina*. Several observations led Dieckmann (1980) to the suggestion that pupation takes place during summer and autumn, and imaginal ecdysis in autumn; the adults then remain in their pupal chamber to become active early in spring.

Pitfall sampling can only provide a rough estimate of the phenology of a species. However it was possible to recognize three more or less distinct age categories. Newly emerged weevils are teneral and still in possession of the deciduous mandibular appendages. The second class contains teneral adults without false mandibles. At last, some time after emergence, the adults have acquired their ultimate dark brown or blackish colour. Fig. 5 depicts the distribution of numbers of *O. mollina* specimens over sampling dates, during one full year of trapping.

In general the suggestions of Dieckmann seem to be confirmed. Stein & Kütke (1967), studying *Otiorhynchus ovatus* Linnaeus, found that immediately after adult emergence from the soil a relative short period of activity follows, whereafter the beetles become more sedentary. The number of weevils caught in the traps depends on their mobility. When *O. mollina* exhibits a comparable pattern of activity, one may expect that the method of pitfall trapping will underestimate numbers of *O. mollina* during their period of lower activity.

Pitfall traps are not often used for sampling curculionids. Many rare surface dwelling curculionid species, however, may appear to be more common, when this method will be practised more frequently.

#### REFERENCES

- Brakman, P. J., 1966. Lijst van Coleoptera uit Nederland en het omliggend gebied. — *Monogr. ned. ent. Vereen.* 2: 1-X, 1-219.
- Dieckmann, L., 1980. Beiträge zur Insektenfauna der DDR: Coleoptera Curculionidae (Brachycerinae, Otiorhynchinae, Brachyderinae). — *Beitr. Ent.* 30 (1): 145-310.
- Everts, Ed., 1903; 1922. *Coleoptera Neerlandica. De schildvleugelige insecten van Nederland en het aangrenzend gebied.* 2: I-IV, 1-796, pls I-VIII; 3: 1-XVIII, 1-667, 's-Gravenhage. M. Nijhoff.
- Hinton, H. E., 1946. A new classification of insect pupae. — *Proc. zool. Soc. Lond.* 116: 282-328.
- Silfverberg, H., 1977. The identity of *Omius* Germar (Coleoptera, Curculionidae). — *Not. ent.* 57: 124.
- Stein, W. and Kütke, K., 1967. Ein Beitrag zur Biologie und Oekologie von *Otiorhynchus ovatus* L. (Col.; Curculionidae) — *Ztschr. Pflanzenkr. Schutz* 76: 625-632.
- Suomalainen, E., 1969. Evolution in parthenogenetic Curculionidae. — *Evolut. Biol.* 3: 261-296.

Postbus 8031, 6700 EH Wageningen.

---