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Bionomics and Host Plant of *Herpes porcellus* Lacordaire, 1863 (Coleoptera: Curculionidae)

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ABSTRACT

A study on the bionomics of *Herpes porcellus* Lacordaire, 1863 recorded for the first time from northeastern Anatolia (Turkey), supports the recent transfer of the genus *Herpes* to the subfamily Phytonominae. The primary host plant of *H. porcellus* is *Nonea pulla* (L.) DC., but adults feed also on *Anchusa orientalis* (L.) Reichenb., and on an unidentified species of Boraginaceae. Eggs are laid on leaves and flowers. Larvae feed externally on these organs. Mature larvae make a silky cocoon and proceed inside to the pupal stage. The species produces one generation per year and hibernates as adult.

Keywords: *Herpes porcellus*, biology, life cycle, host plant, Curculionidae, Turkey

INTRODUCTION

The genus *Herpes* Bedel, 1874 was transferred recently from Entiminae to Phytonominae Gistel, 1848 (= Hyperinae Marseul, 1863; see Colonnelli, 2003) by Alonso-Zarazaga & Lyal (2002). The genus includes a single species, *Herpes porcellus* Lacordaire, 1863 distributed in Bulgaria, Romania, southern Ukraine, Southwestern European Russia and Turkey (Weise, 1893; Schenkling & Marshall, 1939; Alonso-Zarazaga & Lyal, 1999). *Herpes korbi* (Weise, 1893) is here synonymized with *H. porcellus* based on my comparison of specimens from northeastern Turkey with those from the Ukraine in the Zoological Institute, St. Petersburg. *Herpes korbi* was described from specimens collected on *Heliotropium* sp. (Boraginaceae) in Western Turkey (Amasya Province); no distinctive characters from *H. porcellus* were given in the original description.

Bourgeois (1906) stated that *H. porcellus* hibernates as adult, and that it makes a silky whitish colored cocoon and attaches it on a plant part. However, there isn't previously published information about host plant, oviposition, larvae, adult or larval feeding, nor the complete life cycle or parasitoids which resulted from this study.

MATERIAL AND METHODS

This study was carried out in NE Anatolia during 2002-2003. Biological observations were performed each seven to ten days in Erzurum Province at an altitude of 1900 m, 9 km southwards of Çat; further observations were made in lthe aboratory. For rearing parasitoids, collecting of immature stages for taxonomical studies were made during several expeditions, and infested *Nonea pulla* plants with live *H. porcellus* specimens were transplanted to pots in rearing cages in a climate-controlled room at Atatürk University. Reared parasitoid pupae are held in natural conditions and are still hibernating.

RESULTS AND DISCUSSION

Herpes porcellus was found in NE Anatolia only in Erzurum Province, 9 km S. of Çat, 1900 m, in a relatively humid mountain locality. This is the first record of the species from NE Anatolia. The adults were collected in the first week of May. Although adults feed on *Anchusa orientalis* (L.) Reichenb. (Boraginaceae), the primary host plant is *Nonea pulla* (L.) DC. (Boraginaceae) (Fig. 1). Eggs were also found on another species of Boraginaceae which is not yet identified. Adults (Fig. 2-A) feed on the upper epidermis of leaves and rest under leaves near the root crown. Eggs were found in the second week of May; females oviposit on epidermis of the upper side of leaves after feeding on this part of the plant. Females can lay eggs on parts of the plant where no feeding has occurred. The newly deposited eggs are covered with a secretion that subsequently hardens and turns black (Fig. 2-B). The female usually deposits two or rarely three eggs under this secretion. When flower buds appear, the female may oviposit on them. The larvae hatch in seven to ten days (20 ^{o}C, 50 % humidity, 12/12 light-darkness period) and start feeding externally (Fig. 3) on leaves and flower parts, spreading over the plant. In the first week of June, larval damage on the plant is very heavy on leaves, buds and flower structures. Mature larvae leave the plant and find pupation sites away from the host plant. After making a white silky cocoon, they pass to the pupal stage inside the cocoon (Fig. 4).

The pupal stage lasts 8-14 days under laboratory conditions (20 °C, 50 % humidity, 12/12 h light-darkness period). Teneral adults open the cocoon and emerge.

Thus, in NE Anatolia *H. porcellus* produces one generation per year and adults apparently aestivate. This species exhibits an aggregative behavior; six individuals were found under a single plant on 3rd of May. A chalcid wasp (Hymenoptera: Chalcidae) and another parasitoid with vividly jumping pupae (Fig. 5) when disturbed, have been reared from the pupae.

Members of the Phytonominae larva live as external feeder on plant and mature larva prepares a silky cocoon for pupation (Scherf, 1964). Present data on the life cycle of *Herpes porcellus* support the placement of the genus *Herpes* in the subfamily Phytonominae firstly proposed by Alonso-Zarazaga & Lyal (2002).

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Figure 1. *Nonea pulla* (L.) DC., host plant of *Herpes porcellus* Lacordaire (photo: L. Gültekin)

Figure 2. *Herpes porcellus* Lacordaire, A-adult, B- closed egg by secretion (photo: L. Gültekin)

Figure 3. *Herpes porcellus* Lacordaire, larva (photo: L. Gültekin)

Figure 4. *Herpes porcellus* Lacordaire, pupa cocoon (photo: L. Gültekin)

Figure 5. *Herpes porcellus* Lacordaire, parasitoid pupae (photo: L. Gültekin)