Reinstatement of *Daphnis torenia* Druce as a Species (Lepidoptera: Sphingidae)

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ABSTRACT

Daphnis torenia is a valid species as originally described and not a subspecies of *D. placida* as previously placed. It is related to the *D. hypothous* species-group, a fact that has escaped workers since 1892, and is indigenous to Fiji and Samoa. *Deiliphila placida steffanyi* is recognized as a new synonym of *torenia*.

INTRODUCTION

Daphnis Hübner presently includes 9 species. An apical white dot at the end of an oblique thin whitish line on the upper- and underside of the forewing and the process of the sacculus of the valve of the male genitalia easily separates 2 groups: the *hypothous* group, with *hypothous* (Cramer), *hayesi* Cadiou, *layardi* Moore, *torenia* Druce, and *dohertyi* Rothschild; and the *placida* group with *placida* (Walker), *minima* Butler, *nerii* (Linnaeus), and *protrudens* Felder. Only in the *hypothous* group does the thin whitish line at the forewing apex extend into a dot. The process of the sacculus in the *hypothous* group is planar and serrate; in the *placida* group it is boatlike and not serrate; *nerii* has a boatlike structure with a serrate extension.

Since *D. torenia* shows the above-mentioned white dot and the planar and serrate process of the sacculus, it belongs in the *hypothous* group. Therefore, Druce (1882) was correct when he stated in his original description that "in form resembles *D. hypothous*."

SYSTEMATICS

Daphnis torenia Druce — Fig. 1

Daphnis torenia Druce, 1882:16; Waterhouse 1883:126; Kirby 1892:672. Type in British Museum (Natural History).

Daphnis torenia Druce subsp. *rosacea*: Rothschild 1894:85.—Subspecies combined with wrong species.

Deilephila placida torenia: Rothschild & Jordan 1903:513; Bethune-Baker 1905:95; Viette, 1949:325; Robinson 1975:245.

Deilephila placida steffanyi Clark, 1927:106. Female holotype in Bishop Museum (BPBM); female paratype in Carnegie Museum (CMNH). **New synonym.**

Description. Adult with 2 color phases: brownish maroon or dark olive-silver gray. Hind wings in both phases dark purplish brown basally with light median band and warm reddish brown terminal area. Head and tegulae colored as forewing; thorax purplish gray; abdomen olive to olive-brown with silvery white dorsal stripe at intersection of 1st and 2nd segments. Underside of wings ochreous brown, either with maroon or olivaceous overtone, corresponding to color phase, rounded darker medial lines on both wings; apical area silverish gray overlaid

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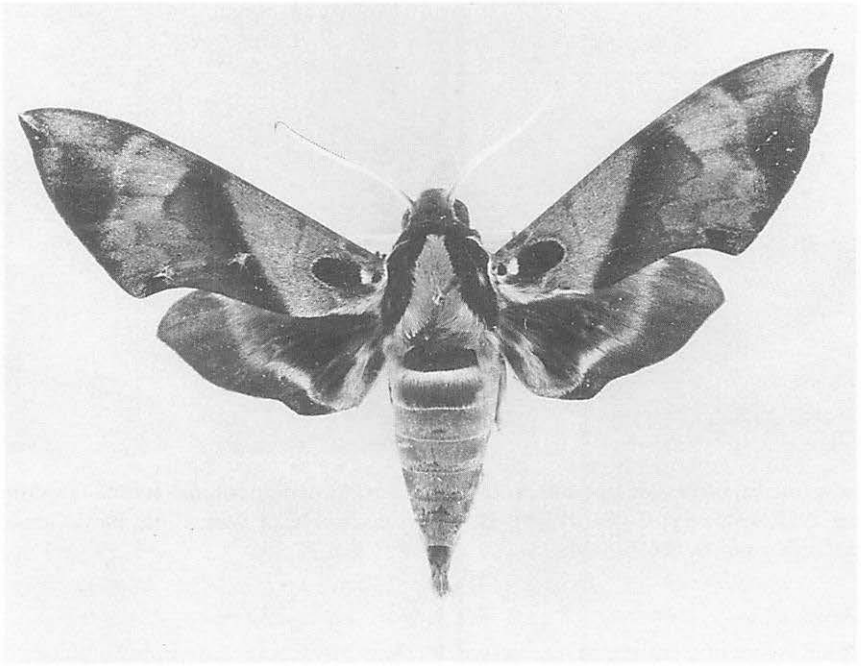


Fig. 1. *Daphnis torenia* ♂, American Samoa, Tutuila, Mulinu'u, 21 July 1961. Photo courtesy of the Royal Ontario Museum (ROM).

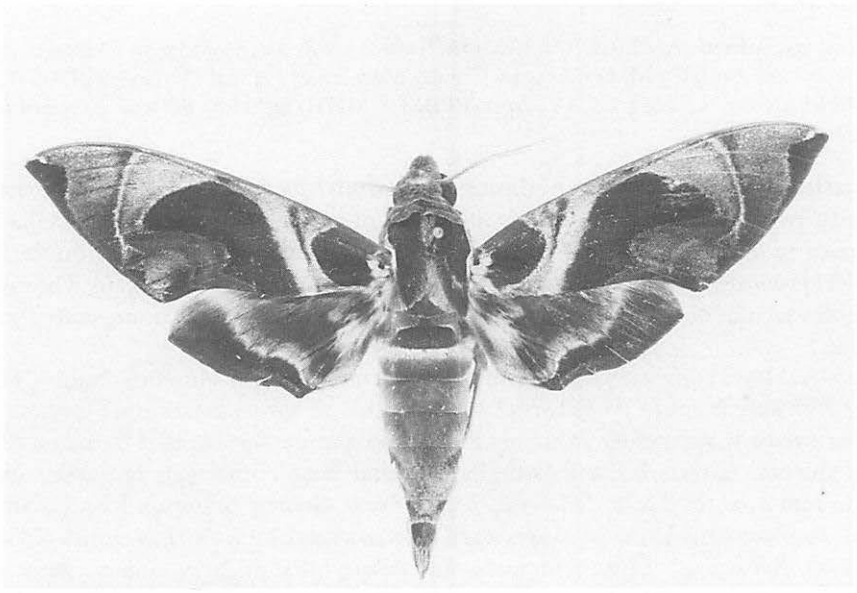


Fig. 2. *Daphnis hypothous* ♂, Vanuata, Pentecoste I, April 1969. Photo courtesy of ROM.

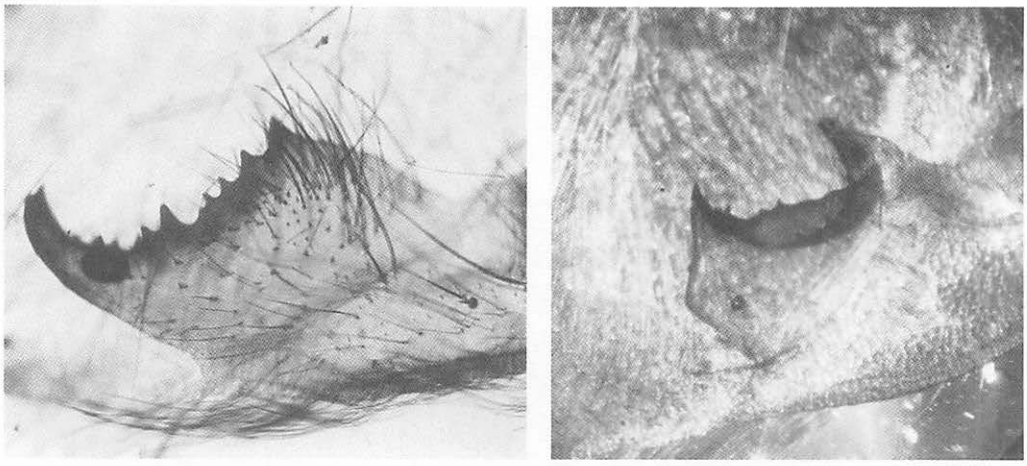


Fig. 3. ♂ genitalia, process of sacculus: **A,** *Daphnis torenia*, American Samoa, Tutuila, Taputimu Farm, 11 October 1963; gen. prep. 9–084 BPBM. **B,** *D. hypothous*, NE of Wau, Papua New Guinea, 11–13 March 1967; gen. prep. 9–086 BPBM.

with oblique white line ending in distinctive dot; legs olivaceous gray in both phases; anterior femora white-lined; venter of thorax strikingly reddish orange. Forewing lengths: male: 39 mm; female: 43 mm. (Cf. *Daphnis hypothous* from Vanuatu; Fig. 2.)

Male genitalia. Valve elliptical; process of sacculus distinctive (cf. *torenia* and *hypothous*; Fig. 3). Friction scales on underside of valve slightly arched (Fig. 4). Uncus and gnathos beaklike (Fig. 5); gnathos with small dorsal subapical tooth.

Female genitalia. As in Fig. 6.

Egg and larva. Unknown. Foodplant unknown.

Distribution. Fiji, Samoa.

Material examined. AMERICAN SAMOA: Tutuila I: 6♂, 5♀, Pago Pago, Mulinu'u, Taputima Farm, July–November (BPBM, Los Angeles County Museum of Natural History). FIJI: 1♂ (CMNH). WESTERN SAMOA: Upolu I: 1♂, 1♀, Apia (BPBM, CMNH) including the female type of *D. placida steffanyi* Clark.

Discussion. *Daphnis torenia* can be distinguished from *hypothous* by the following characters: the slightly arched friction scales on the underside of the valve of the male genitalia (widely open-arched in *hypothous*) and the presence of a small dorsal subapical tooth on the gnathos (lacking in *hypothous*), and the shape and structure of the female genitalia (Fig. 6). The distinctive shape of the sacculus of the male genitalia (Fig. 3) is also found in the African genus *Temnoripais* Rothschild.

The late A. Hayes compared the type of *D. torenia* in the British Museum (Natural History), London, with specimens of related species and confirmed *torenia* as a distinct species.

Daphnis torenia is apparently restricted to Fiji and Samoa; *hypothous* is found in Australia, Borneo, Burma, China, India (North, South, and East Himalaya), Malaysia, Indonesia (Maluku, Tanimbar, Sumatra, Sulawesi), Papua New Guinea, Solomon Islands, Sri Lanka, Thailand, and Vanuatu. The other 3 species of the *hypothous* group also have restricted distributions: *layardi* (Sri Lanka), *hayesi* (Sulawesi), and *dohertyi* (Papua New Guinea, Bismarck Archipelago, and Solomon Islands). The *placida* group, on the other hand, is more widely distributed: from Africa eastward around the globe excluding the Americas. Two species,

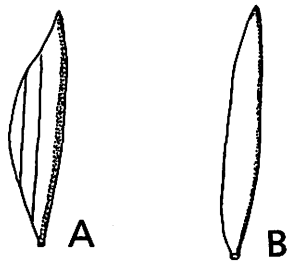


Fig. 4. Friction scales: **A,** *Daphnis hypothous*; **B,** *D. torenia.*

Fig. 5. Uncus and gnathos: **A,** *Daphnis hypothous*; **B,** *D. torenia.*

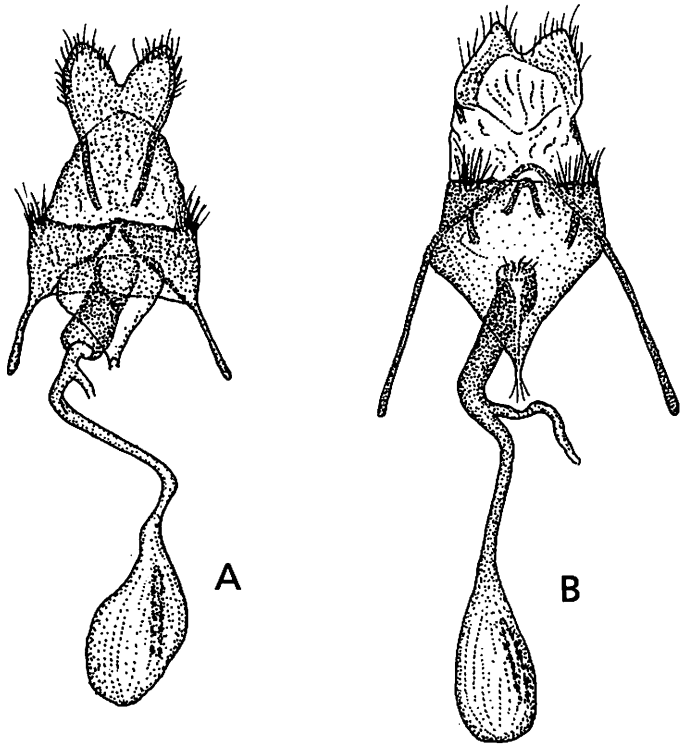
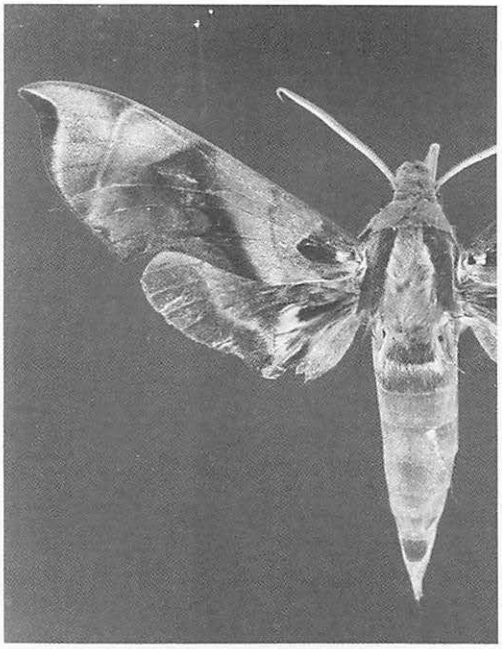


Fig. 6. ♀ genitalia: **A,** *Daphnis torenia*, American Samoa, Tutuila, Mulinu'u, 17 July 1966, gen. prep. 9–174 BPBM; **B,** *D. hypothous*, Edie, Papua New Guinea, 22 November 1963; gen. prep. 9–183 BPBM.



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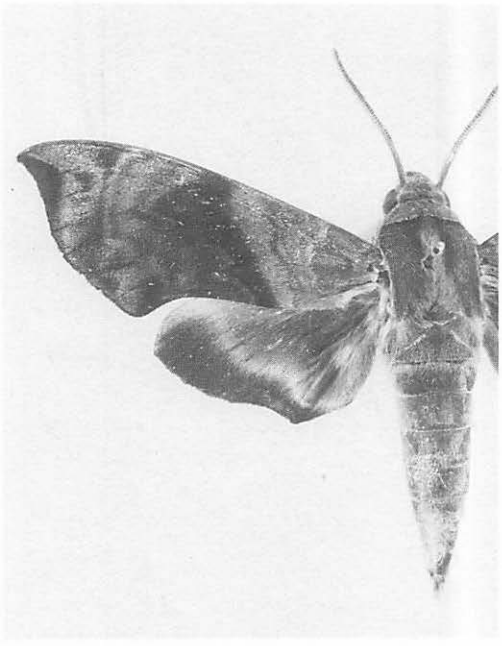

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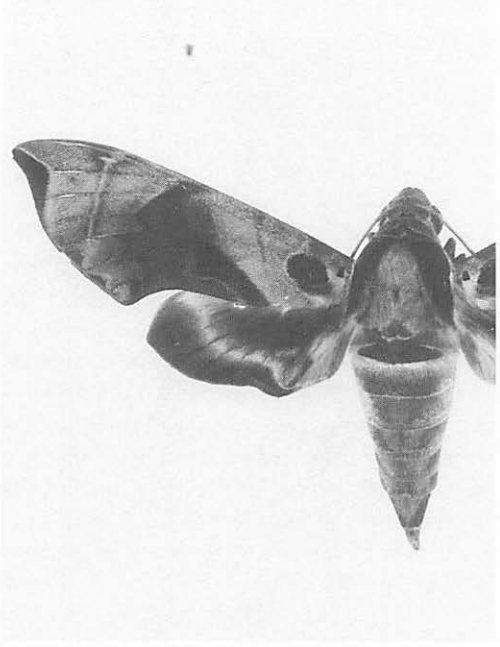

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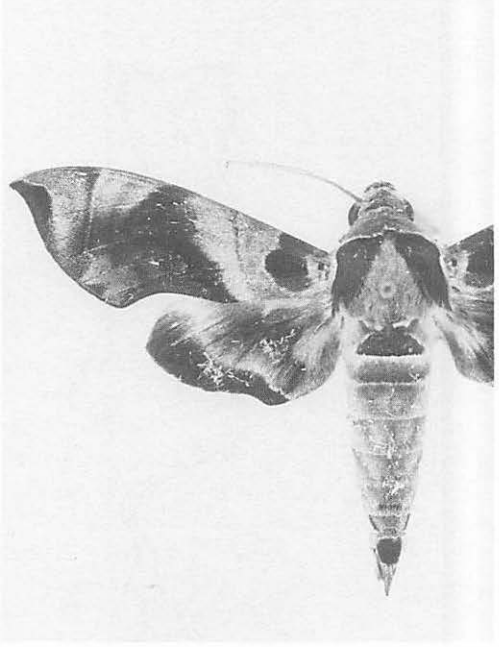

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Fig. 7. *Daphnis placida* ♂: **A,** Loyalty Is, Lifu, no data, in CMNH. Photo courtesy of ROM. **B,** Solomon Is, Malaita, Dala, 20–22 April 1964, in BPBM. Photo courtesy of ROM. **C,** Papua New Guinea, Wau, 25 October 1966, in BPBM. **D,** Micronesia, Guam, Yimo, February 1972, in BPBM. Photo courtesy of ROM.

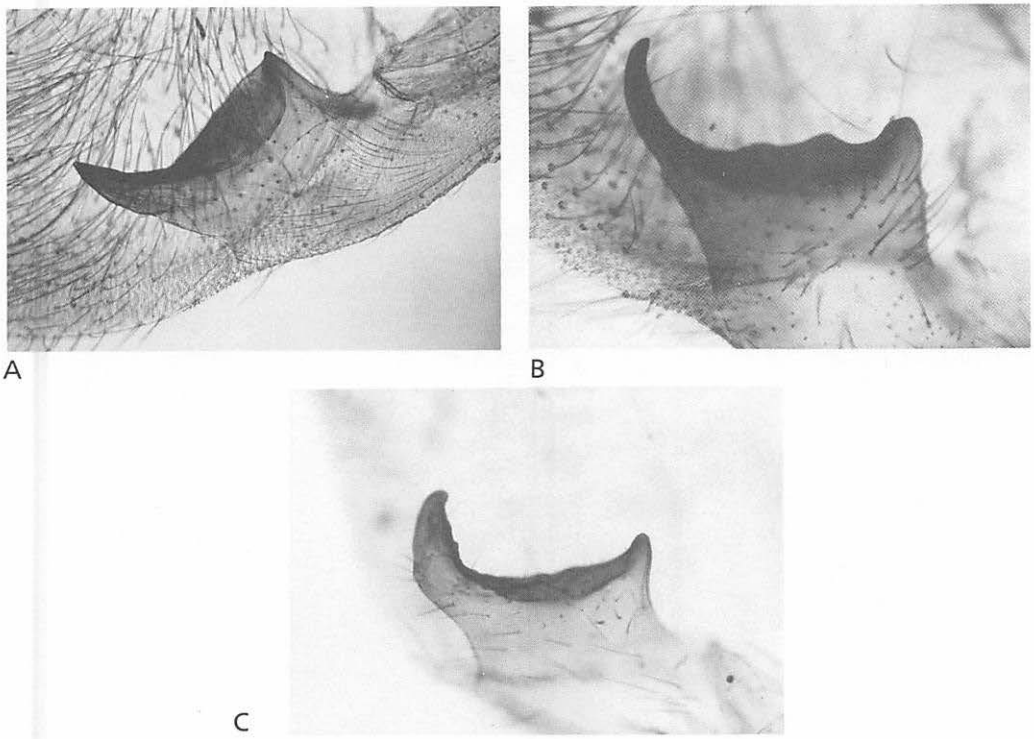

Fig. 8. *Daphnis placida* ♂ genitalia: **A,** Solomon Is, Malaita, Dala, 50 m, 6–11 June 1964; gen. prep. 9–078 BPBM. **B,** Papua New Guinea, Wau, 6–8 March 1963; gen. prep. 9–082 BPBM. **C,** Guam, Tumon, 6 May 1936; gen. prep. 9–038 BPBM.

however, have restricted distributions: *minima* (Sri Lanka, South India) and *protrudens* (Papua New Guinea, Australia, Solomon Islands, and the Moluccas).

The brownish maroon color phase of *torenia* has been found in Mulinu'u, Samoa; the dark olive-silverish gray color phase has been found in Pago Pago, Samoa.

It should be noted that the remarks concerning biology under *Daphnis placida torenia* in Robinson (1975:245) have nothing to do with *torenia* from Fiji, but are taken from records of *placida* from Papua New Guinea.

Robinson (1975) was correct when he stated the following regarding *torenia*: "Wing pattern completely diagnostic: differs from other *placida* subspecies (except *steffanyi* Clark which I cannot distinguish from *torenia*) in the abrupt straight proximal edge to and shape of the deep olive medial fascia." A paratype female of *D. placida steffanyi* Clark was compared with specimens of *torenia* from Samoa and Fiji and corroborates Robinson's (1975) statement above. *Daphnis placida steffanyi* is here considered a junior synonym of *torenia*.

Remarks on the *Placida* Group

Because of the placement of *torenia* as a subspecies of *placida* by Rothschild & Jordan (1903), which has continued without question by subsequent workers, I give here some further information concerning the *placida* group.

Daphnis placida has a very wide distribution: Ambon Island, Andaman Island, Australia, Bismark Archipelago, Hainan Island, Malaysia, Micronesia, New Caledonia, Loyalty Islands,

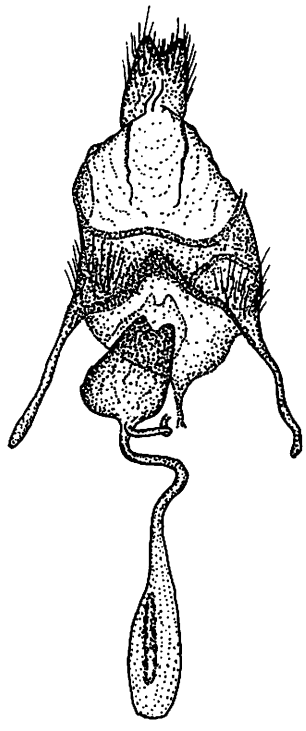

Fig. 9. *Daphnis placida* ♀ genitalia, Solomon Is, Malaita, Auki, 1–2 June 1964; gen. prep. 9–175 BPBM.

Papua New Guinea, Philippines, Singapore, Solomon Islands, and Sulawesi. It shows remarkable variation throughout its range. It is small wonder that the population of the Loyalty Islands at first sight suggested something new to Rothschild and Jordan. Rothschild's (1894) note, "I have typical *D. torenia* from Lifu," cannot be substantiated from specimens in collections, but nevertheless should have kept him from assigning his *rosacea* as a subspecies of *torenia*. Rothschild & Jordan (1903:xliii) state "Synoecic varieties—i.e., varieties from the same locality—are never subspecies." Rothschild's subsequent placement of both *torenia* and *rosacea* as subspecies of *placida* is a decision difficult to fathom. However, it was without question followed by many (see synonymy). J. D. Holloway, while researching for his book on the Lepidoptera of New Caledonia (1979) found (in litt.) that *placida* specimens from "Lifu . . . are . . . referable to *rosacea* and are in wing pattern somewhat intermediate between *placida* and *salomonis*. I can see no evidence of genetic introgression with *torenia*." In the same letter he states, "I have dissected . . . two from Lihu including the type of *rosacea*." I have dissected one of the *rosacea* specimens from the B. P. Clark collection (CMNH), which originally came from the Rothschild Collection, and confirmed the placement of *rosacea* as a subspecies of *placida*. Figure 7 shows *placida* specimens from different localities; Figs. 8 and 9 show the male and female genitalia. The labial palpus, which neatly separates *placida* from both *hypothous* and *torenia* is shown in Fig. 10.

As with many lepidopterans, especially tropical ones, rearing of the *Daphnis* species and collections of associated immatures are needed for future research. Currently only a few colored illustrations of the larvae of the more common species are available: *nerii* and *minima* (Bell & Scott 1937); *hypothous* (Mell 1922); and *placida* (as *augustana*) (Semper 1896–1902). These authors also noted their foodplants.

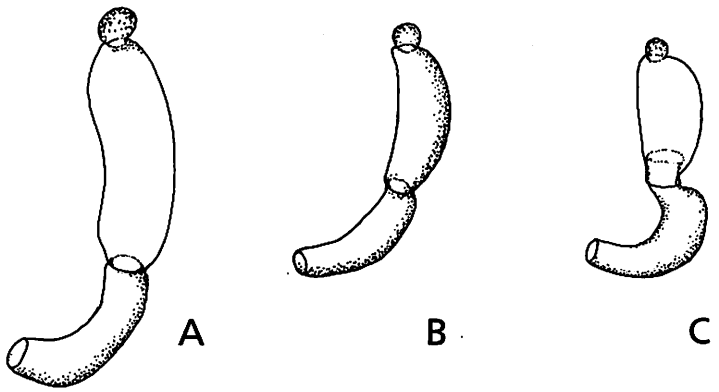

Fig. 10. Labial palpi: **A**, *Daphnis hypothous*; **B**, *D. torenia*; **C**, *placida rosacea*.

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