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YPONOMEUTIDAE OF THE GALÁPAGOS ISLANDS, WITH DESCRIPTION OF A NEW SPECIES OF *PRAYS* (LEPIDOPTERA: YPONOMEUTOIDEA)

BERNARD LANDRY¹ AND JEAN-FRANÇOIS LANDRY

Eastern Cereal and Oilseed Research Centre, Agriculture and Agri-Food Canada, Central Experimental Farm, Ottawa, Ontario K1A 0C6, Canada

ABSTRACT.- The Yponomeutoid fauna of the Galápagos Islands (Ecuador) comprises two species, *Prays galapagosella* **n. sp.** (Plutellidae: Praydiane) and *Atteva hysginiella* (Wallengren, 1861) (Yponomeutidae: Attevinae). *Atteva monerythra* Meyrick, 1926, is synonymized with *A. hysginiella*. *Atteva hysginiella* was reared from *Castela galapageia* Hooker *f.* (Simaroubaceae); its genitalia and immature stages are described and illustrated.

KEY WORDS: Amblothridia, Araliaceae, Atemelia, Atteva, Atteviae, Atteviae, biodiversity, Coleophoridae, Colombia, Cydosia, Depressariidae, Depressariinae, Ecuador, Elachistidae, Eucatagma, Gelechioidea, Gelechioidea, Neotropical, Orinympha, Pepilla, Plutella, Plutellidae, Prays galapagosella n. sp., Pseudorinympha, Simaroubaceae, South America, taxonomy, Tortricidae.

This is the 8th paper contributing to a survey of all Lepidoptera of the Galápagos Islands, Ecuador, following collecting efforts by the first author in 1989 and 1992 (see Landry and Gielis, 1992, and Landry, 1993, for more details).

The depauperate yponomeutid fauna of the Galápagos comprises two species, both presumably endemic. Apparently, one of these had not been collected before 1989 and is here described as new in the genus *Prays* Hübner (Praydinae). The second species, beautifully coloured, a species of *Atteva* (Attevinae), has been recognized for 137 years, but we present here for the first time a description of the genitalia, final instar larva, pupa, as well as host plant records.

MATERIAL AND METHODS

In 1989, from January to March, and in 1992, from March to June, the first author collected specimens of Lepidoptera with a mercuryvapour lamp on the islands of Española, Floreana, Genovesa, Isabela, Marchena, Pinta, Rábida, San Cristóbal, Santa Crúz, Santa Fé, Santiago and Seymour Norte (see Landry and Gielis, 1992, and Landry, 1993, for further details). Smaller specimens were collected in small vials and kept alive until the next day, when they were killed and mounted (Landry and Landry, 1994). Selected specimens of the larger species were killed with ammonia upon collecting and pinned usually the next day.

The type of the new species of *Prays* described hereafter is deposited in the Canadian National Collection (CNCI), Ottawa, Canada. Some of the other specimens collected in 1989 and 1992, are or will be deposited in the following collections: the first author's personnal collection (BLC); CNCI; the National Museum of Natural History, Washington, DC, USA (USNM); the Natural History Museum, London, England (BMNH); the Charles Darwin Research Station (CDRS), Isla Santa Crúz, Galápagos Is., Ecuador; and the Museo Ecuatoriano de Ciencias Naturales (MECN), Quito, Ecuador. Other institutions cited from which specimens of *Atteva* were borrowed: California Academy of Sciences, San Francisco, USA (CASC); and Naturhistoriska Riksmuseet, Stockholm, Sweden (NHRS).

Prays galapagosella B. Landry & J.-F. Landry, sp. nov. (Fig. 1-2, 7-14)

Diagnosis.– This small (\pm 7.4-9.1mm in wingspan) (Fig. 1-2) brown species is easily distinguished from its confamilial relative, the larger and richly coloured *Atteva hysginiella* (Wallengren) (Fig. 3-4). Superficially, it resembles species of Gelechiidae and Tortricidae that are also found on the Islands. From the former it can be distinguished by the absence of scales on the haustellum, the attenuate apex of the hindwing (versus a falcate apex) and drooping (versus upturned) labial palpi. From the Tortricidae, it can be distinguished by the thinly scaled and drooping labial palpi, whereas Tortricidae in the Galápagos have short, thickly-scaled and porrect labial palpi.

There is a single species of Prays described from continental South America (Heppner, 1984), Prays stratella Zeller, 1877, from Colombia: it has more defined maculation on the forewings and a grey ground colour (illustrated in colour in Zeller, 1877). Zeller (1877) also described in the same publication, but did not illustrate, the Praydinae Atemelia contrariella Zeller from Colombia. However, Zeller's description of the shape and colour pattern suggests that A. contrariella is a different-looking species, superficially resembling Plutella xylostella (Linnaeus). Atemelia is a praydine genus closely related to Prays, but generic limits are still not defined cladistically within that subfamily (Kyrki 1984, 1990). We have not examined the type material of these two species and their generic placement remains unverified. Description.- Wing expanse: 8mm (holotype); varying from 7.4-9.1mm in paratypes. Vestiture (Fig. 1-2): Moth uniformly brown, with pale brown scales on head collar, labial palpus dorsally and on the legs and abdomen ventrally. The wings acquire a purple tinge when looked with the light source parallel to their edge. Head: Antenna slightly longer than 1/2 length of forewing; with erect scales ventrally from about middle. Labial palpus pale brown dorsally, brown ventrally, without scale-tufts, drooping at half right angle, slightly upturned, slightly longer than diameter of eye. Haustellum developed. Vestiture made of mostly long brown appressed scales, but pale brown and erect at collar with mostly round-tip scales, but with some slightly bifurcated ones. Thorax: Legs with full complement of spurs. Forewing: uniformly olive-brown, brown, or grey-brown (Fig. 1), in several specimens diffusely variegated or mottled with pale grey, in some specimens with diffuse pale and dark fascia in distal third; some specimens with grey colour nearly predominant (Fig. 2). Hindwing: uniformly olive-brown or grey-brown. Venation (Fig. 7): Forewing with pterostigma from Sc to R1. R4 and R5 forked basally. Hindwing with Rs and M1 separate. Apical margin of both wings with 5-8 short, fine setae inserted on ventral side of margin: between

^{1.} Present address: 18 rue Washington, Aylmer, Quebec, Canada J9H 4B9.



Fig. 1-6. 1) Prays galapagosella sp. nov., holotype δ from Finca Vilema, Santa Crúz Island. 2) Prays galapagosella, paratype 2, same locality as Fig. 1. 3) Atteva hysginiella 2, Punta Cormoran, Floreana Island. 4) Atteva hysginiella (Wallengren) δ , 2 km west Puerto Villamil, Isabela Island. 5) Atteva hysginiella resting on twig of larval host plant. 6) Webbing and feeding damage of Atteva hysginiella on Castela galapageia Hooker f. (Simaroubaceae); arrows point at larvae.

R4 and M1 on forewing, between Sc+R1 and M1 on hindwing (visible only on denuded wing; Fig. 7). *Abdomen*: brown dorsally, pale brown ventrally.

Male abdominal sclerites (Fig. 13): Segment 8 with broad pleural lobes; tergum 8 strongly sclerotized, free apical half pointed and down-curved, basal half broadly emarginate, with short lateral wing-like extensions; sternum 8 broader than long, broadly emarginate basally, apically with lateral angles slightly produced. Intersegmental membrane between segments VI and VII with an invagination on each side forming a pouch with androconial hairs; pouches extended cephalad to middle of segment 5. *Male genitalia* (Fig. 8-12): Tegumen convex dorsally, laterally narrow; in dorsal outline with lateral

constriction or notch (Fig. 9); postero-lateral teguminal processes about as long as tegumen, beak-like in lateral aspect, downwardly oriented, base dorso-laterally flanged at level of uncus, distal half setose, apex attenuate with a few small ventral pegs (Fig. 12). Uncus short, broadly fused to tegumen dorsally, apex truncate with pair of tiny protrusions and four setae. Gnathos (?) a pair of simple bars (caudal aspect) curved antero-ventrally beneath anal tube, meeting but not fused medially; anal tube with supporting ventral sclerotized bar (Fig. 9). Valvae (Fig. 8-10), apically rounded and down-curved; ventral margin recurved upwards on inner side, forming a furrow from base to subapex; cucullus setose mostly on apical half; sacculus



Fig. 7. Prays galapagosella sp. nov., wing venation. Note very fine setae at apex of both wings.

a curved narrow band, better sclerotized than cucullus, apically with glabrous rounded knob pointed inwardly. Vinculum narrow laterally, with narrow saccus about 0.25x length of valva. Juxta (or anellus ?) large, well developed as pair of densely setose, spatulate lobes dorsally projected, bracing aedeagus at mid-length, ventrally fused to posterior margin of vinculum (Fig. 8). Aedeagus about as long as valva; narrow; slightly downcurved; vesica with series of extremely fine, hair-like cornuti (Fig. 11).

Female abdomen and genitalia (Fig. 14): Papillae anales elongate; strongly sclerotized; well-connected on distal half dorsally; slightly longer than segment 8; strongly setose ventrally. Posterior apophyses about as long as papillae, not extending beyond anterior margin of segment 8; straight. Segment 8 strongly sclerotized; sternum with strongly emarginate and reinforced anterior margin; posterior margin straight, with bunch of setae on each side; tergum with short bump apically and laterally near middle on each side. Anterior apophyses absent. Ostium bursae median, at base of sternum 8. Antrum short, well-sclerotized, only slightly larger than ductus. Ductus bursae with lateral sclerotization for short length subapically. Corpus bursae shaped like a human cranium in face view, but slightly flattened dorsoventrally; single signum as a rounded plate partially detached from wall of corpus and connected by a short circular foot; edge of plate with a dozen quadrate extensions.

Types.– *Holotype* 3: GALAPAGOS IS. (Ecuador).– Santa Crúz Id., Finca Vilema, 2 km W Bella Vista, 1 Apr 1992, leg. B. Landry (MVL) (CNCI type # 22216, slide MIC 3990).

Paratypes.– 18*ö*, 16*°*, all collected by B. Landry at the mercury-vapour lamp in the Galápagos. *Allotype °*: same data as holotype (slide MIC 3991) (CNCI). *Other paratypes: Isabela Id.*: 1*ö*, 2 km W Puerto Villamil, 5 Mar 1989; 1*ö*, 3 km N Santo Tómas, Agr. zone, 8 Mar 1989; 1*ö* (slide MIC 3608), 8.5. km N Puerto Villamil, 11 Mar 1989; 1*ö*, ca. 15 km N Puerto Villamil, 25 May 1992 (slide JFL 1479). Pinta Id.: 2*ö* (slide BL 333), 1*°* (slide MIC 3609), 400m elev., 17 Mar 1992; 5*ö*, 1*°*, 400m elev., 18 Mar 1992. *San Cristóbal Id.*: 2*°*, 2 km SW Puerto Baquerizo, 11 Feb 1989; 1*ø* (slide MIC 3589), 4 km SE Puerto Baquerizo, 12 Feb 1989; 1*°*, Puerto Baquerizo, 17 Feb 1989. *Santiago Id.*: 1*°*, Bahía Espumilla, 4 Apr 1992; 1*ø*, 200m elev., 5 Apr 1992; 4*°* (slide MIC 3607), Aguacate, 520m elev., 6 Apr 1992; 2*ø*, same data, 12 Apr 1992; 1*ø*, 2*°*, Central, 700m elev., 9 Apr 1992. *Santa Crúz Id.*: 2*°*, same data as holotype; 1*°*, 4 km N Puerto Ayora, 20 Jan 1989; 1*ø*, Los Gemelos, 31 Jan 1989; 1*ø*, 2 km W Bella Vista, 27 Feb 1989.

Distribution.- In the Galápagos Islands of Isabela, Pinta, San Cristóbal, Santiago and Santa Crúz.

Flight period.- Available dates are from January 20 to May 25.

Hostplant and Biology.- Unknown.

Notes.– Kyrki (1984) singled out the *Prays* genus group on the basis of two autapomorphic characters: the absence of the accessory cell in the forewing, and the strongly sclerotized, and broader than long, male sternum VIII. He included 6 nominal genera in this genus group, among which *Pepilla* Guenée is a junior objective synonym

of *Prays* (see Nye and Fletcher, 1991). The other 5 genera are, in order of appearance in the literature: *Prays* Hübner, [1825], *Atemelia* Herrich-Schäffer, 1853, *Eucatagma* Busck, 1900, *Orinympha* Meyrick, 1927, and *Pseudorinympha* Clarke, 1971. We chose to put our new species in the genus *Prays* because it agrees with it in genital characters and because it is the oldest name of the group. However, there are no phylogenetic definitions of these 5 nominal genera. *Pseudorinympha* was described based on a single female and its status remains questionable (Clarke, 1971). *Orinympha* was synonymized with *Atemelia* by Kyrki (1990). In wing venation characters, *P. galapagosella* is more similar to both *Prays* and *Atemelia* in having R4 and R5 originating from a common, albeit very short, stalk.

Prays and the Praydinae have been included in the family Plutellidae (e.g., Heppner, 1991, 1993). Kyrki's (1990) analysis included Praydinae in a redefined concept of Yponomeutidae, which we follow, along with Nielsen and Common (1991), Scoble (1992), Robinson *et al.* (1994), and Dugdale *et al.* (in press). Albeit tentative, Kyrki's classification is currently the only cladistic one available for the Yponomeutoidea.

Atteva hysginiella (Wallengren) (Fig. 3-6, 15-32)

Amblothridia hysginiella Wallengren, 1861:386. Cydosia sylpharis Butler, 1877:[87]. Atteva monerythra Meyrick, 1926:278, syn. nov.

Type material.– All primary type specimens were examined. The labels are printed or handwritten in black ink, unless otherwise indicated.

Amblothridia hysginiella Wallengren, 1861. Holotype 9 with the right forewing glued back to the thorax; only the forelegs are complete, the right metathoracic leg is missing and the other three legs are without variable numbers of tarsal segments; the right antenna without the last few flagellomeres. Labelled: "Pana/ma" [square, white, printed]; "Kinb." [rectangular, white, printed]; "Amblothridia/ hysginiella/ Wallengr." [rectangular, beige, handwritten]; "genitalia slide/ BL 971 9" [rectangular, pale green, printed (except for 9)] (NHRS).

Cydosia sylpharis Butler, 1877. Holotype 2 with somewhat rubbed forewings, with the inner margin and the outer margin partly damaged, and without the left fore- and hindlegs and the last few flagellomeres of the left antenna. Labelled: "Holo-/type" [circular, red-bordered, white, typed]; "Albermarle/ Isl./ 76 32" [rectangular, grey, handwritten]; "Cydosia/ sylpharis/Butler Type" [rectangular, white, handwritten]; "sylpharis/ Butler." [rectangular, white, handwritten]; "TYPE" [rectangular, white, printed, black-bordered, with thin horizontal line at basal third]; "genitalia slide 2/ JFL 1468" [rectangular, pale green, printed (except for 2)] (BMNH).

Atteva monerythra Meyrick, 1926. Holotype 9 missing right hindleg and last few flagellomeres of each antenna. Labelled: "Holo-/type" [circular, redbordered, white, printed]; "Charles Island,/ Galapagos,/ at light,/ 31.7.24./ St. George Expedn./ C. L. Collenette." [square, white, printed except for first, third and fourth lines]; "M 26" [rectangular, white, handwritten]; "Atteva/ monerythra/Meyr./ Tr. Ent. Soc. Lond. p 278 (1926)/ TYPE 9 :" [rectangular, white, handwritten except for "TYPE", black-bordered, with thin horizontal line at basal third]; "Brit. Mus./ 1925?-488." [rectangular, white, printed, upside down, with number 5 mostly damaged by pin hole]; "9 genitalia on/ slide 29.v 1948/ J.F.G.C. 7533" [rectangular, white, printed except for numbers, sub-bordered with thin black line] (BMNH).

Diagnosis.– This is a striking species unlike any others in the Galápagos. Its forewing colouration, shining blue green with bright yellow and (in most specimens) reddish markings, is especially distinctive (Fig. 3-5).

Description.– Meyrick's description (1926: 278) of the colouration of *A*. *monerythra* is accurate and it is repeated here verbatim:

"Head dark indigo-blue, sides of crown, two spots on forehead and two on lower edge of face pale yellow. Palpi blackish, white posteriorly and towards base of joints. Thorax dark indigo-blue, collar on sides towards tips, and two posterior stripes sometimes connected by bar pale



Fig. 8-13. Male abdomen and genitalia of *Prays galapagosella* sp. nov.: 8) Vinculum, juxta, valvae (setae omitted), ventral aspect, aedeagus shown in outline. 9) Genitalia, dorsal aspect, aedeagus and valval setae omitted. 10) Genitalia, lateral aspect, aedeagus shown in outline. 11) Aedeagus, lateral aspect. 12). Teguminal process with setae and apical pegs (lateral aspect). 13) Abdominal segments 6-8, dorsal aspect, showing coremata (with inset) and modified 8th segment with sclerotized tergum (T8), sternum (S8), and expanded pleural lobes (Pl8). (Abbreviations: gna = gnathos; jx = juxta; ptp = postero-lateral teguminal process; teg = tegumen).

yellow. Abdomen blue-blackish, a lateral stripe and ventral series of blotches yellowish-white. Anterior coxae orange in front. Fore-wings dark indigo-green; markings pale yellow, viz. a streak below costa from near base to 3/5 variably interrupted into spots or dots, an irregular streak in disc from 1/3 to 2/3, a submedian streak from near base to 4/5, a subdorsal streak (dorsal near base) to middle or 3/4, an irregular spot towards apex, and a group of dots before lower half of termen; a small red spot beneath costa at 2/3; several variably connected white dots along costa towards apex; cilia white, basal half dark fuscous. Hind-wings subhyaline white, tinged grey on posterior half, veins on posterior half and a terminal fascia becoming broader towards apex dark fuscous; cilia white, basal half dark fuscous on termen."

There is a slight amount of variation in the extent of red-spotting and the yellow streaks on the forewings (Fig. 3-4). Male hindlegs with tibia and tarsus reduced, the latter very slender, without spines nor claws, apex of last article attenuate with very small setae; tibia without spurs (Fig. 29-30).

Male abdominal sclerites (Fig. 18): Terga 1-7 with medial sclerotized/melanized area, area on T6-7 triangular. T8 sclerotized as elongate, distally finely tapered triangle. S8 ± elongate trapezoid, shorter than T8, medially with two longitudinal sclerotized cuticular thickenings, posterior margin transverse and medially notched. Pleural lobes very large, longer than segments 6+7, broadly elongate-oval; medially with elongate sclerotized band alongside T8; fused to and extended beyond apex of T8; anteriorly emarginate at point of insertion of large coremata (the latter easily removed in dissection). Male genitalia (Fig. 16-28): Tegumen developed, latero-ventrally fused with vinculum (Fig. 19); subquadrangular in outline in dorsal aspect, anterior margin with deep medial notch (Fig. 17), with lateral zone of fine spiculate microsculpture (Fig. 23-24); postero-lateral teguminal processes (Fig. 16-17, 19) as long as tegumen (dorsal length), extended down to saccular margin of valvae; apex with whorl of blunt flat spines (Fig. 27-28). Vinculum narrow, transverse, with long saccus ca. half length of genitalia (Fig. 16). Uncus developed, apically bilobate, medially with X-shaped strengthening sclerotizations (Fig. 17). Tuba analis with elongate, narrow ventral supporting sclerotization, extended to two-thirds of teguminal processes. Gnathos developed, recessed under tegumen, distal arm digitiform, slightly upcurved, darkly melanized, dorsal surface covered with dense, finely pointed microsculpture (Fig. 17, 23, 25). Valvae broad, distal two-thirds spoon-shaped, inner surface corrugated, sparsely setose (Fig. 20, 23); at onethird a large, inwardly recurved, coarsely wrinkled spatulate lobe; anterodorsal angle extended into short apodeme; outer wall of anterior third with arched sclerotized strengthening bar; antero-ventral (saccular) angle inwardly protruded into square lobe with outer surface covered with dense, short setae (Fig. 19, 26). Aedeagus slender, tubular, with slight dorsal bend at one-third, with 5 large, slender, dehiscent cornuti about half length of aedeagus (Fig. 21-22).

Female genitalia (Fig. 15): Papillae anales moderately sclerotized, elongate, with some long setae. Posterior apophyses thin, extending slightly beyond anterior margin of tergum 8, slightly curved inwardly at apex. Tergum VIII with short and long setae in the middle apically; with straight lateral sclerotized bands curved downwards from apical third (dorsal branches of anterior apophyses of Kyrki (1984)), connected at base to a transverse sclerotized band widest on each side, and to which the anterior apophyses (or ventral branches of anterior apophyses of Kyrki (1984)) are also connected. The latter thin, slightly shorter than posterior apophyses, broadly curved at base, straight afterwards. Sternum 8 weakly sclerotized, sparsely setose on whole surface, but with more setae in the middle apically. Ostial plate rectangular, apical of ostium, about three times wider than long, more sclerotized laterally, with 2-3 setae on each side. Ductus bursae well sclerotized ventrally for short distance (abouth one-tenth of length), scobinated on a little more than first half of length. Ductus seminalis attached dorso-medially at base of ductus bursae. Corpus bursae rounded, signum a conspicuous "flower" of inwardly curved heavily sclerotized spikes of various lengths, the shorter ones being in the middle of the structure; with scobination from base to tips of cornuti; also with a few small evaginations in wall, apparently for the purpose of catching the tips of the elongate and dehiscent male cornuti (seen in one dissected specimen, slide MIC 3625 in CNCI).

Notes on Genitalia.—"Postero-lateral teguminal processes" is used by Kyrki (1984) in lieu of the term "socii". We follow his usage, which we believe more prudent in view of the fact that there is considerable confusion about the homology of various structures called "socii". In the present case the processes are clearly extensions of the tegumen, although there is also a fusion line between their base and the sides of the uncus. The flat spines at the apex of the processes (Fig. 27-28) are somewhat analogous to those seen

on the gnathos in some gelechioid groups (Coleophoridae, Depressariidae, Elachistidae, etc.).

The genitalia of A. hysginiella, and of the widespread continental A. punctella (Cramer), are remarkably similar in both sexes. However, the two species are easily separable on coloration and geographical distribution. Biological Notes .- Final instar larva: Head entirely red-brown to rusty brown with irrorate patches of paler yellowish brown, with white spots surrounding setal bases; area around stemmata, mandibles, and ventralmost portion of fronto-clypeus dark brown to black; antennae and palpi black. Head capsule width 2.3-2.6mm. Thorax with black and pale, unevenly distributed irrorations. Ground color of abdomen olive-green (faded to yellowish white in preserved specimens), with brown to black irrorations/reticulations, longitudinally striped with black and white laterally and dorsally: dorsum with three white stripes each lined by thin black stripes; middle of each segment between stripes with dark brown area forming diffuse broad spot; one broader white stripe laterally at level of L setae from T3 to A10. A1-A8 with subventral elongate brown, diffuse spot. Legs and prolegs dark brown to black. Setae and crochet arrangements as in A. exquisita /A. punctella (illustrated in Powell et al., 1973), abdominal crochets a little more numerous (40-45). Body length about 19-30mm.

Pupa (Fig. 31-32).– Ground color yellowish white with antennae, mouthparts, dorsum of head and thorax, and sides of abdomen with brown shading, areas between several wing veins brown (thus highlighting the veins); dorsum of abdomen with three longitudinal white lines medially, interrupted on intersegmental joints, each line surrounded by brown lining on each side. Frons with two slight humps between antennal bases, each with two hooked setae. A10 cremaster with flat, notched apical process bearing four apical hooked setae; with eight ventral (four small, four large), four dorsal, and two lateral stiff hooked setae around base of process. Antennae, haustellum, and forewings extended to two-thirds of A4. Abdomen smooth, without tergal spines. Spiracles on A2-A7 barely protruded (not on raised tubercles).

Powell *et al.* (1973) noted that in the pupa of *A. exquisita* Busck the frontal humps form marked protuberances and the cremasteral hooked setae are numerous and fragile.

Distribution.– In the Galápagos Islands of Baltra, Fernandina, Floreana, Isabela, Marchena, Pinta, Pinzon, Rábida, San Cristóbal, Santa Crúz, Santa Fé, Santiago and Seymour Norte. Specimens examined: 29 &, 39 \circ (BLC, BMNH, CNCI, CASC, NHRS).

Flight Period.– We have seen specimens collected all months of the year except August, November and December. The species could be multivoltine like *A. exquisita* Busck from southwestern USA and Mexico (Powell *et al.*, 1973).

Hostplant and Biology.– The first author reared one adult male, eclosed 7 Mar 1992, from caterpillars found in a loose web on the shrub *Castela* galapageia Hooker f. (Simaroubaceae), on Santa Cruz Island (CNCI) (Fig. 6). A pair of adults were also reared from the same host plant on Santiago and issued 14 Jun 1964 (CASC). This plant is endemic to the Galápagos and probably present on most of the islands of the archipelago (Wiggins and Porter 1971). Several members of the genus *Atteva* feed on Simaroubaceae (Fletcher, 1920; Powell *et al.*, 1973) but one Australian species feeds on *Polyscias* (Araliaceae) (Common, 1990).

Notes on Synonymy.– In his description of *A. monerythra*, Meyrick (1926) indicated that it differed from *A. hysginiella* by the absence of "antemedian and tornal red spots" on the forewing of that species. While we have not found any specimens from Floreana (the type locality of *A. monerythra*) with an antemedial red spot among ten specimens examined, several have a small or a large tornal spot. One specimen from Floreana also has a red spot medially on the inner margin of the forewing. Although this specimen is unusual, it shows that on the same island, the red and yellow markings are variable in size and shape and probably of no taxonomic value, even at the subspecific level. The genitalia examined (43, 49) from specimens collected on various islands did not show consistent differences. One male, (slide MIC 3634, CNCI) has the apex of the saccus forked, apparently an aberration.

Note on Ranking of *Atteva*.– Some authors have given the Attevinae, or "*Atteva* group" of Kyrki (1984, 1990), family status (e.g., Heppner, 1991, 1996), thus reinstating Mosher's (1916) old concept initially based on pupal characters. This, however, has not gained universal acceptance (e.g., Nielsen and Common, 1991; Scoble, 1992;



Fig. 14-15. Female genitalia, ventral aspect: 14) Prays galapagosella sp. nov,; inset with arrow : lateral aspect of signum, thorn-like process pointed inwards bursa. 15) Atteva hysginiella (Wallengren).



Fig. 16-22. Male abdomen and genitalia of *Atteva hysginiella* (Wallengren): 16) Vinculum- valvae in ventral aspect, with visible parts of gnathos, anal tube and posterolateral teguminal processes; aedeagus and setae omitted. 17) Genitalia, dorsal aspect, aedeagus omitted. 18. Abdominal segment 8, dorsal aspect, showing modified, sclerotized tergum (T8), sternum (S8), and expanded pleural lobes (Pl8). 19) Genitalia, lateral aspect, aedeagus omitted. 20) Valva, lateral aspect, setae of cucullus omitted. 21) Aedeagus, dorsal aspect. 22 Aedeagus, lateral aspect. Abbreviations : ats = anal tube sclerite; ptp = postero-lateral teguminal processes; sp = setal patch; un = uncus; gna = gnathos.





Fig. 29-30. Leg structures of *Atteva hysginiella*: **29** $\,$ hindleg, with normal complement of tibial spurs, tarsal spines and claws. **30**) σ hindleg, showing tibia without spurs and reduced tarsus without spines and claws. Insets: enlarged views of last two tarsomeres. Whole legs and inset tarsi each drawn at same magnifications, respectively.

Robinson *et al.*, 1994). *Atteva* is aberrant within the Yponomeutidae due to the presence of chaetosemata in the adult, and the pupa with labial palpi that are not exposed. Possession of chaetosemata generally is a plesiomorphic trait. These structures are present in most primitive Lepidoptera and in many Ditrysia. Their presence in *Atteva* could represent a reversal, thus, a specialization. The concealed labial palpi of the pupa are also a specialization. In a cladistic framework, these are insufficient grounds for excluding *Atteva* from the Yponomeutidae. For the time being, we prefer to retain the more traditional placement of Atteviae as a subfamily within the Yponomeutidae, which was supported by Kyrki's (1990) analysis, until a more refined phylogenetic analysis of the family is carried out to support rank changes.

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Fig. 23-28. Atteva hysginiella (Wallengren), δ genitalia: 23) Tegumen, lateral aspect (teg) showing field of microsculpture; apex of gnathos (gna) visible. 24) Closeup of microsculpture of tegumen. 25) Distal part of gnathos, lateral aspect. 26. Setal patch at base of inner side of valva (see Fig. 19-20). 27 Apex of posterolateral teguminal process, inner side. 28) Apex of postero-lateral teguminal process, outer side.



Fig. 31-32. Pupa of Atteva hysginiella: 31 Ventral aspect. 32 Dorsal aspect.

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