

BIOLOGY AND IMMATURE STAGES OF THE BROMELIAD BASE BORER, *CASTNIA PSITTACUS*, IN CHILE (LEPIDOPTERA: CASTNIIDAE)

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ABSTRACT.—The biology and immature stages and genitalia of the bromeliad base borer, *Castnia psittacus* (Molina), are described. An account of other hostplant is given.

KEY WORDS: Bromeliaceae, chaetotaxy, Chile, distribution, hostplants, larvae, morphology, Neotropical, pupae, South America.

This species was first described as *Papilio psittacus* Molina (1788). It was inadvertently redescribed as *Castnia eudesmia* Blanchard (1852), this last name now a junior synonym. Some reports about the general natural history of this species have been made by Gazulla and Ruiz (1928) and by Reed (1935).

IMMATURES

LARVAL MORPHOLOGY: Figs. 2, 3, 13-19 illustrate details of the larval morphology of *Castnia psittacus* (Molina). Last instar larvae are ca. 8.0-9.0cm in length.

Description. HEAD: (Fig. 16) rounded head capsule light yellow in color, with blackish area on the ocular and median top areas, with secondary setae present; frons triangular, half length of large epicranial suture; stemmata in half circle of 6 (Fig. 18); Mandibles (Fig. 19) with 3 major teeth; lateral margin with 2 setae, the basal is twice longer than the other. Spinneret (Fig. 17) short and wide with round tip.

BODY: with scoli and verrucae present on all segments (Fig. 2-3), scoli yellow-brownish in color, specially those of dorsum. The scoli are situated in lateral and subventral region, verrucae are in dorsal and subdorsal area; in the prothorax all are scoli, and are projected forward and to the ventrad same to the other scoli (Figs. 2 and 3). Dorsum of meso and metathorax with large cervical shield, heavy black in color and velvet interrupted at the middle line. Anal shield (Fig. 14) concolor with cervical shields. Crochets (Fig. 15) are uniserial and biordinal, with ca. 80-100 in each prolegs.

PUPAL MORPHOLOGY: Obtecta (Figs. 4, 5, 8-12) pupal case is made of debris of the hostplant (Fig. 6-7) that is fastened with larval silk; this pupal case is inside of hostplant. 40-50mm in length and 10-15mm in maximum width. Tip of pterotecae reach to the posterior border of the third or fourth abdominal segment (Fig. 9); proboscis is more longer than pterotecae; tip of the metathoracic podotecae is situated posteriorly to the tip of the proboscis. Tip of ceratotecae and mesothoracic podotecae to the level of posterior border of metanotum. Dorsal view: mesonotum 3 time more longer than pronotum; metanotum half in length than pronotum. Each abdominal segment has in its anterior third an irregularly serrate border (Fig. 10), this serrate border is from one spiraculus to another one; in the posterior third of abdominal segment

there is a little serrated border similar to the anterior. There is no clear cremaster, only vestigial anal prolegs projected as 2 short spines.

ADULTS

As seen in Fig. 1, the wings are very colorful, with white, black, reddish, blue, and other hues. The male genitalia are shown in Fig. 21-24. The female genitalia are shown in Fig. 20. **MATERIAL EXAMINATED** (33 exs.): 2 exs. El Peumo, Santiago; 1 ex. 21 Dec 1949; 1 ex. Pelluhue, 13 Feb 1951; 2 exs. Dichato, 17 Jan 1950; 1 ex. Dichato, 15 Jan 1950; 1 ex. Dichato, 15 Jan 1952; 1 ex. Dichato, 5 Jan 1936; 1 ex. Concepción, 15 Nov 56, coll. Alister, 1 ex. colección Wagenknecht, 1973; 1 ex. Concepción, Desembocadura, 10 Jan 60, E. Pino coll.; 4 exs. Concepción, D. Bío Bío, 17 Jan 1960 E. Pino coll.; 3 exs. Chiguayante, 25 Dec 1955, Silva coll.; 1 ex. Tumbes, 24 Oct 54; 1 ex. Coelemu, 5 Mar 57, Hillenrs coll.; 2 exs. Recinto, 14 Jan 1950; 3 exs. Recinto, Las Trancas, Jan 1970, Ocares coll.; 1 ex. Las Trancas, 5 Jan 1975, Artigas coll. nacidas en lab.; 2 exs. Recinto, Las Trancas, Jan 1970, Ocares coll.; 1 ex. Llico, Curicó, 12 Jan 1936; 1 ex. Llico, Curicó, Dec 1940; 2 exs. Recinto, Las Trancas, Feb 1970, Ocares coll.

REMARKS

The hostplant of this species is *Puya chilensis* (Bromeliaceae), the larva feeds as a borer and makes its pupal case with some vegetal debris, with silk near the exterior, and at the base of the hostplant; when it emerges, it is helped by its tight exit hole and its abdominal serrated border.

The time of flight is October, December, January, February and March, on the coast in central and south Chile.

ACKNOWLEDGEMENTS

We give our thanks to Prof. Peter D. Lewis, for the larval material. Additionally, we give thanks to Project D.I. 91.38.04-6 from Direction of Investigation of the University of Concepción, Concepción, Chile.

REFERENCES

- Blanchard, E.**
1852. Insectos. Lepidópteros. In Gay, C., *Historia física y política de Chile*. 7:46-47. Santiago.
- Gazulla, P., and F. Ruiz P.**
1928. Los insectos de la Hacienda de "Las Mercedes". *Rev. Chil. Hist. Nat.* (Santiago), 32:290-291.
- Costa Lima, A. da**
1945. *Insetos do Brasil*. 5º Tomo. Capítulo XXVIII. Lepidópteros. 1ª Parte, 152-159.
- Molina, G. I.**
1788. *Compendio de la historia geográfica, natural y civil del reyno de Chile. Traducción al español por Domingo Joseph. Madrid. Libro cuarto: gusanos, insectos, reptiles, peces, pájaros y cuadrúpedos de Chile*, 213-378. Catálogo Primero nuevas especies descritas.
- Reed, E. R.**
1935. La *Castnia eudesmia*, Gray [error for Gay]. *Rev. Chile. Hist. Nat.* (Santiago), 39:267-271.
- Tindale, N. B.**
1928. Preliminary note on the life history of *Synemon* (Lepidoptera, fam. Castniidae). *Rec. S. Aust. Mus.* (Adelaide), 4:143-144.

ABBREVIATIONS

- aa.- anal opening.
AAN.- Anterior apophysis
abc.- Bursa copulatrix opening.
AED.- Aedeagus.
ant.- Antenna.
aovp.- Ovipositor opening.
AP.- Posterior apophysis.
BC.- Bursa copulatrix.
bcr.- crenulated border.
c.- Crochets.
cer.- Ceratothecae.
clp.- Clypeus.
COR.- Cornutus.
D.- Dorsal setae.
ea.- anal sclerite.
eadf.- adfrontal sclerite.
ec2,3.- cervical shield meso and metathoracic.
esp. proboscis.
espt.- Spinneret.
fr.- Frons.
GN.- Gnathus.
gon.- Gonopore.
L.- Lateral setae.
lbr.- Labrum.
LOV.- Ovipositor lobes.
md.- Mandibles.
n1,2.- Pro and mesonotum.
o.- Eye.
oc.- Ocelli.
plb.- Labial palpus.
plfr.- Pilifer.
pmx.- Maxilar palpus.
pod1,2,3.- Podothecae meso and metathoracic.
ptt.- Pterothecae.
sadf.- Adfrontal suture.
se.- Epistomal suture.
sep.- Epicranial suture.
sf.- Frontal suture.
spr.- Spiracle.
SV1,2.- Subventral setae pro and mesothoracic.
T1-9.- Thoracic segments.
UN.- Uncus.
VAL.- Valvae.



Fig. 1-7. *Castnia psittacus* (Molina): 1. Adult male. 2-3. Larva in lateral and dorsal view. 4-5. Pupal exuviae in lateral and frontal view. 6-7. Pupal case close and opened for seeing the pupa.

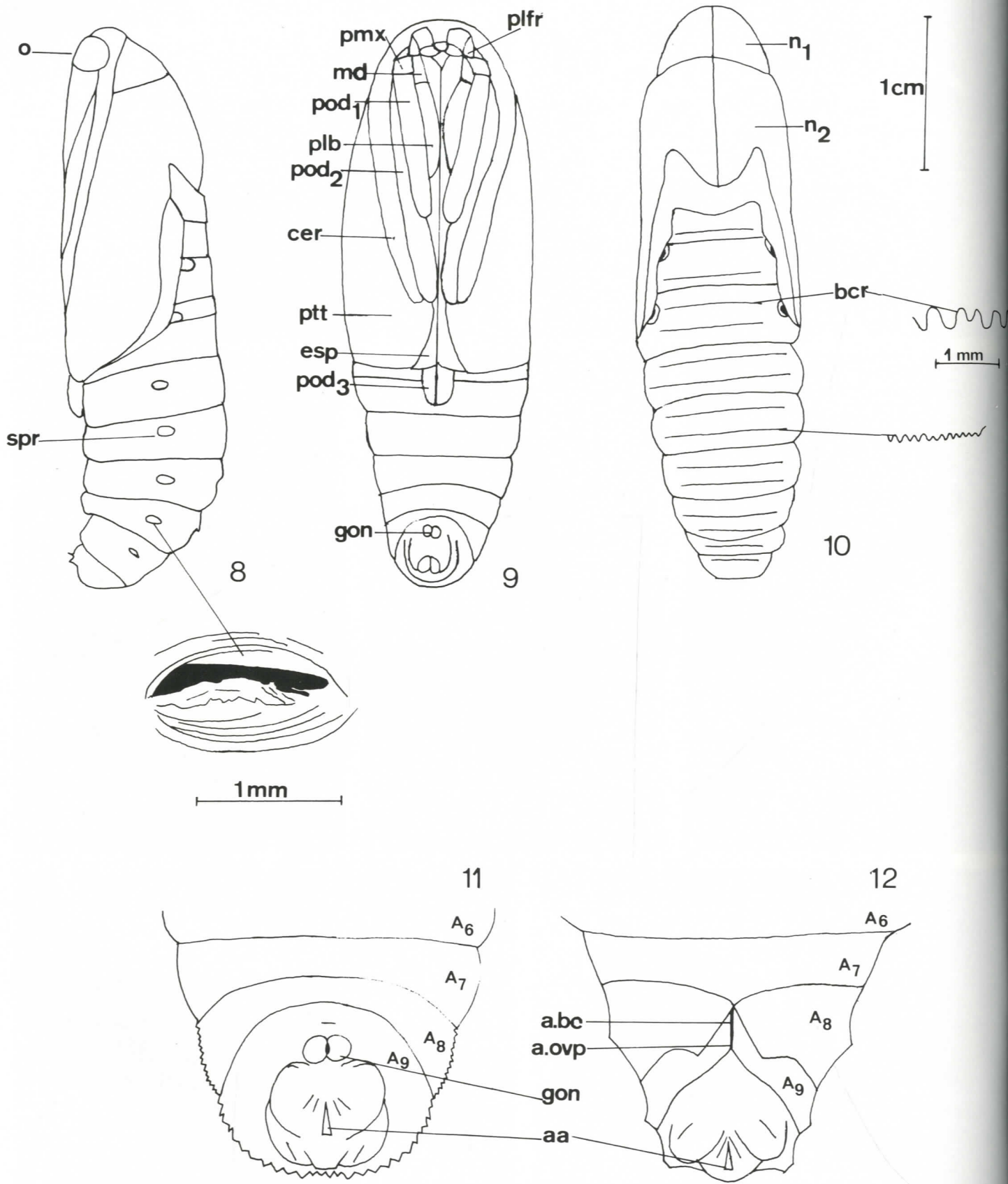
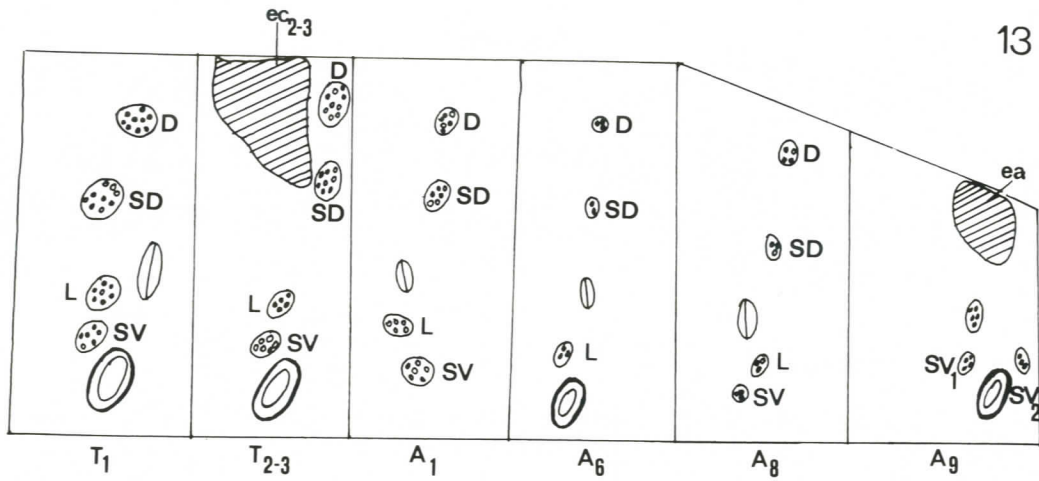
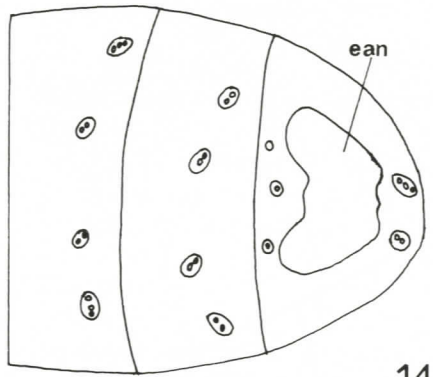


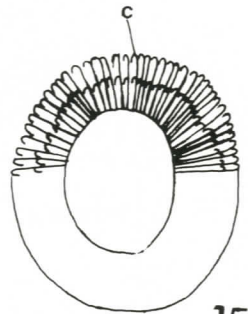
Fig. 8-12. *Castnia psittacus* (Molina): 8-9. Pupa in lateral, frontal and posterior views. 11-12. Pupal terminalia male and female.



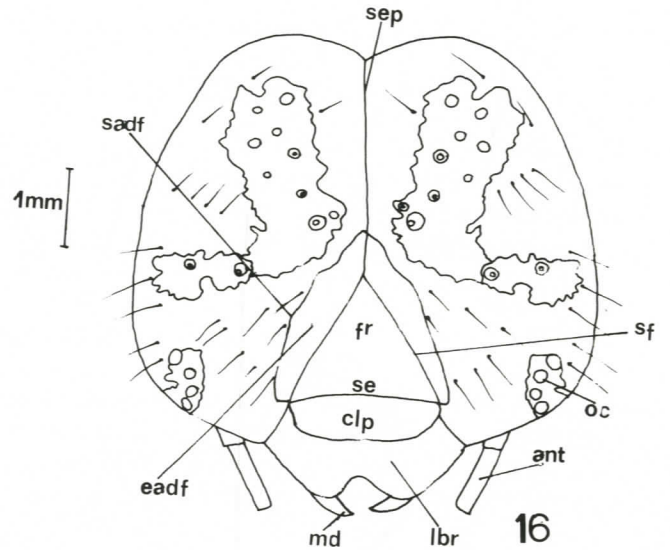
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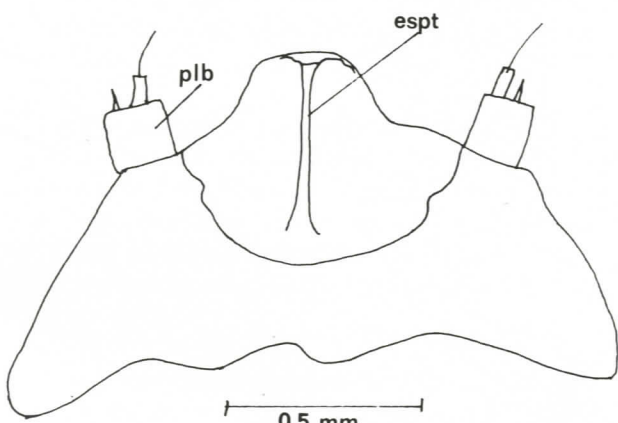
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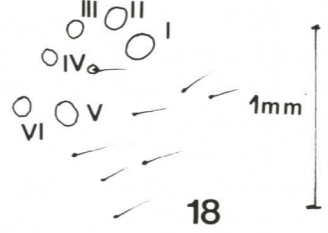
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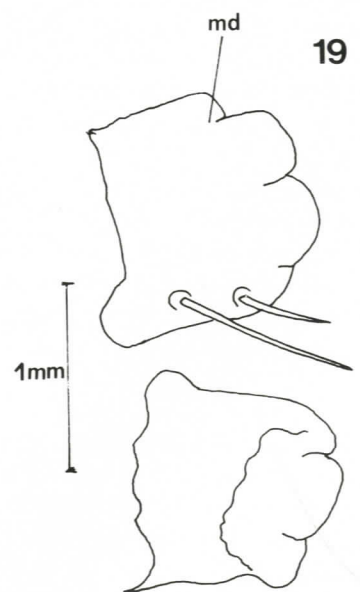
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Fig. 13-19. *Castnia psittacus* (Molina): 13. Larval chaetotaxy. 14. Dorsal view of posterior segments of abdomen. 15. Detail of crochets on proleg (ventral view). 16. Head front view and chaetotaxy. 17. Hypopharynx and spinneret (dorsal view). 18. Ocular area of stemmata. 19. Mandible ventral and lateral and inner view.

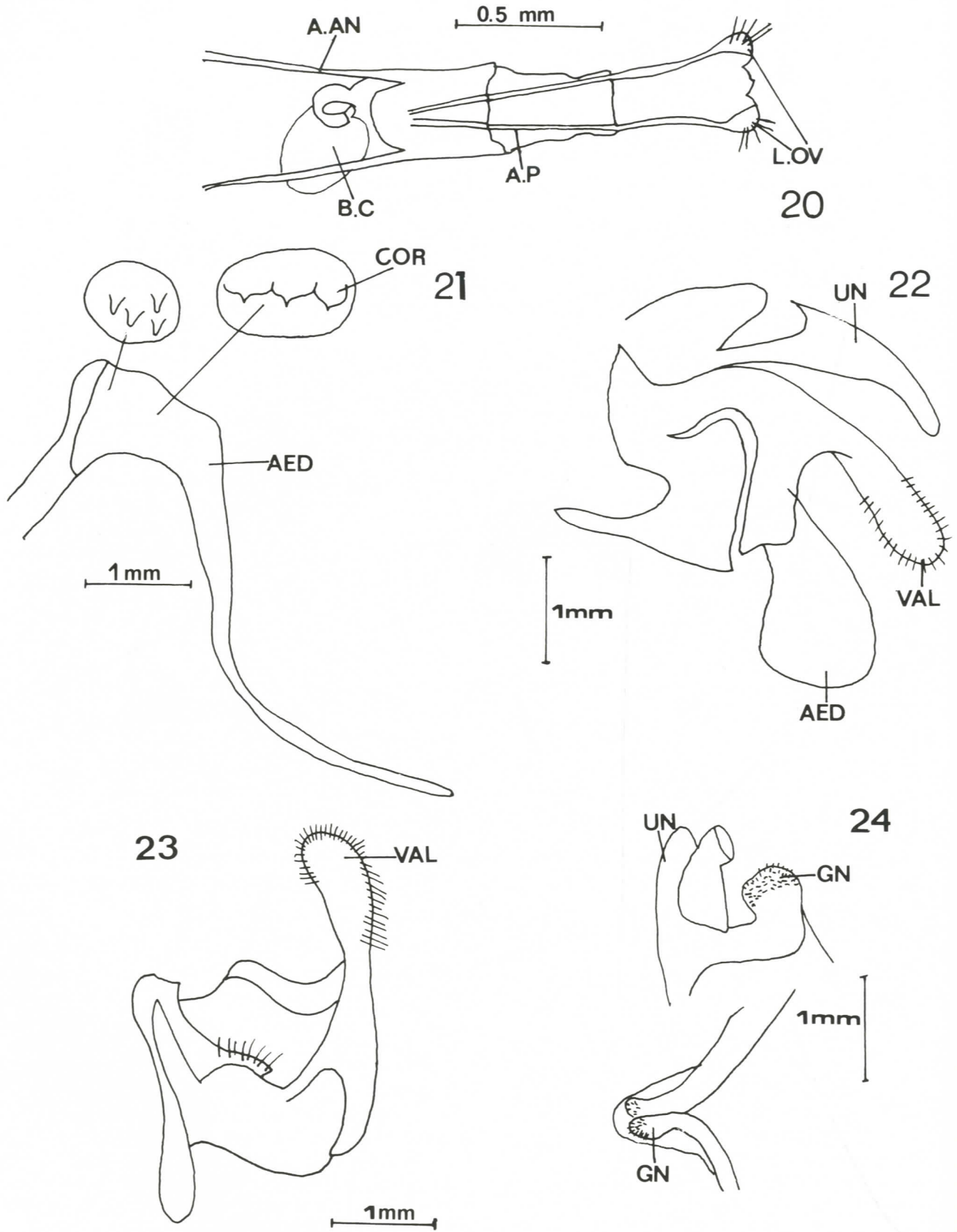


Fig. 20-24. *Castnia psittacus* (Molina): 20. Ovipositor dorsal view. 21. Aedeagus with inflated vesica. 22. Male terminalia (lateral view). 23. Valva (lateral view). 24. Uncus and gnathos (lateral and ventral view).