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Redescription of type species *Aedia leucomelas* (Linnaeus) Noctuidae: Lepidoptera

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Abstract
The internal and external male reproductive organs of species *Aedia leucomelas* (Linnaeus) have been studied in detail for the first time.

Keywords: type species, external, internal, genitalia

1. Introduction
Genus *Aedia* Hübner was erected on its type species *leucomelas* Linnaeus, which was later on synonymised under the genus *Catephia* Ochsenheimer by Hampson (1894) [4]. In a later publication, Hampson (1902) [9] however, removed the genus *Aedia* from the synonymy and recharacterised it on apparent morphological characters. In present communication, the diagnosis of genus has been upgraded by incorporating internal and external genitalic attributes.

2. Materials and methods
The adult representatives of Noctuid moth species were collected from the florescent lights fitted at different places in Punja, Himachal Pradesh and Westren Ghats of India. The collected moths were killed and preserved in air tight wooden boxes. For the preparation of slides of external male and female genitalia, abdomens of preserved specimens were detached and potashed in 10% solution (Robinson 1976) [25], washed in 1% glacial acetic acid and dissected in 30% alcohol for taking out male and female genitalia. After proper dehydration, the genital structures were preserved in vials containing a mixture of alcohol and glycerol in the ratio of 3:1. For study of internal genitalic structures, the adult moths were captured and starved for 7-10 hours in small insect breeding cages made of wire gauge. This was done to avoid interference of super fluous fat, which otherwise hinders the process of dissections vis-à-vis clarity of internal male and female genitalic features (Haines, 1981) [3]. The starved moths were killed with ethyl acetate vapours in killing jars. After killing, the abdomens of the moths were detached and rolled on cellophane tape for the removal of scales (Fatzinger, 1970) [2]. After this, the dissections were done in physiological saline solution as advocated by different workers like Weidner (1935) [27], Williams (1941) [28], Swart (1966) [26], Drecktrah and Brindley (1967) [1] and Fatzinger (loc. cit.). During the dissections, various observations like color, transparency and shape of different internal reproductive organs were immediately noted in the field note book. This was done to avoid various postmortem changes which often appear after preservation. The internal genitalic organs were preserved in mixture of alcohol and glycerol (1:4) for further studies. The adult Noctuid moths along with dissected specimens were preserved in insect cabinets.

3. Results & Discussion
Genus Aedia Hübner
Aedia Hübner, 1816, *Verz. bekannter Schmett*, 1816: 260.
Type species: *Noctua leucomelas* Linnaeus.
Distribution: Ethiopian region; Japan; China; Asia and Australian regions.
Diagnosis: Labial palpus upturned, smooth, reaching just above level of vertex; antennae simple. Forewing with apex rectangular, discal cell less than half the length. Abdomen with dorsal tufts and ridges of scales on proximal segments.

***Aedia leucomelas* (Linnaeus)**
Linneaus, 1758, *Syst. Nat.*, 1: 518.

External Male genitalia: Uncus long, strong, curved, sclerotized, tip bearing small spine, sparsely setosed with hairs; tegumen longer than uncus, sclerotized with both the arms broad, inverted v-shaped; vinculum longer than tegumen u-shaped, slightly sclerotized; saccus well marked, v-shaped; valvae membranous well developed, differentiated into parts, costal margin excurved, apically with incurved row of spines; sacculus produced into lateral lobe like projection ornamented with small spines and one ventro-proximal small projection; transtilla membranous, juxta well developed, sclerotized with lateral processes; aedeagus broad proximally, weakly sclerotized; vesica membranous, armed with one stout row and one patch of bulbed cornuti; ductus ejaculatorious entering apically.

Internal Male reproductive system: Testis creamish, irregular rounded; seminal vesicle-I creamish, originating from testis in fused state, straight; seminal vesicle-II opaque, funnel shaped; vasa deferentia creamish, tubular, entering into ductus ejaculatorius duplex beyond middle towards accessory gland; ductus ejaculatorius duplex yellowish opaque, highly curved; primary simplex divided into two sections, section-I transparent, curved, section-II milky opaque, curved; constrictor muscular area with cuticular simplex creamish, much coiled, rope like; cuticular tube translucent, entering

into aedeagus laterally, not modified into bulbous ejaculatorius; accessory gland divided into four sections, section-I opaque, free, highly twisted, section-II translucent, free, straight, section-III opaque, free, intercrossed, section-IV transparent, fused, straight.

Wing expanse: 38 mm.
Old distribution: Tropical Asia; China; Japan; Australian regions.

Material Examined
Solan : Sairighat 23.ix.05, 2♂♂.
Kangra : Balakrupi, 8.xii.06, 2♂♂, 16.vii.07, 2♂♂.
Chamba : Saho, 13.ix.06, 2♂♂.
Karnataka : BR. Hills: 09.xii.06, 7 ♂ ♂.
Himachal Pradesh: Koti: 11.viii.10,1 ♂.

Table: Morphometry of internal male reproductive organs of *Aedia lencomelas* (Linnaeus).

S. No.	Organ	Length (mm)	Intraspecific range in length (mm)	Width (mm)	Intraspecific range in width (mm)
1.	Testis	1.26	1.24-1.28	1.40	1.38-1.42
2.	Seminal Vesicle - I	0.98	0.96-1.02	0.28	0.26-0.30
3.	Seminal Vesicle - II	1.83	1.81-1.85	0.53	0.51-0.55
4.	Vasa deferentia	5.91	5.88-5.93	0.14	0.13-0.15
5.	Ductus ejaculatorius duplex	11.26	11.24-11.29	0.84	0.82-0.85
6.	Primary simplex	116.05	116.01-116.09	-	-
	Section – I	68.87	68.85-68.89	0.30	0.28-0.31
	Section – II	47.18	47.16-47.20	0.73	0.71-0.75
7.	Constrictor muscular area	6.61	6.59-0.63	0.35	0.34-0.36
8.	Cuticular tube	5.49	5.47-5.51	0.19	0.18-0.20
9.	Accessory gland	96.88	96.80-96.96	-	-
	Section – I	44.92	44.90-44.94	0.23	0.19-0.25
	Section – II	7.74	7.72-7.76	0.22	0.19-0.23
	Section – III	35.35	35.33-35.37	0.20	0.18-0.22
	Section – IV	8.87	8.85-8.89	0.14	0.12-0.16

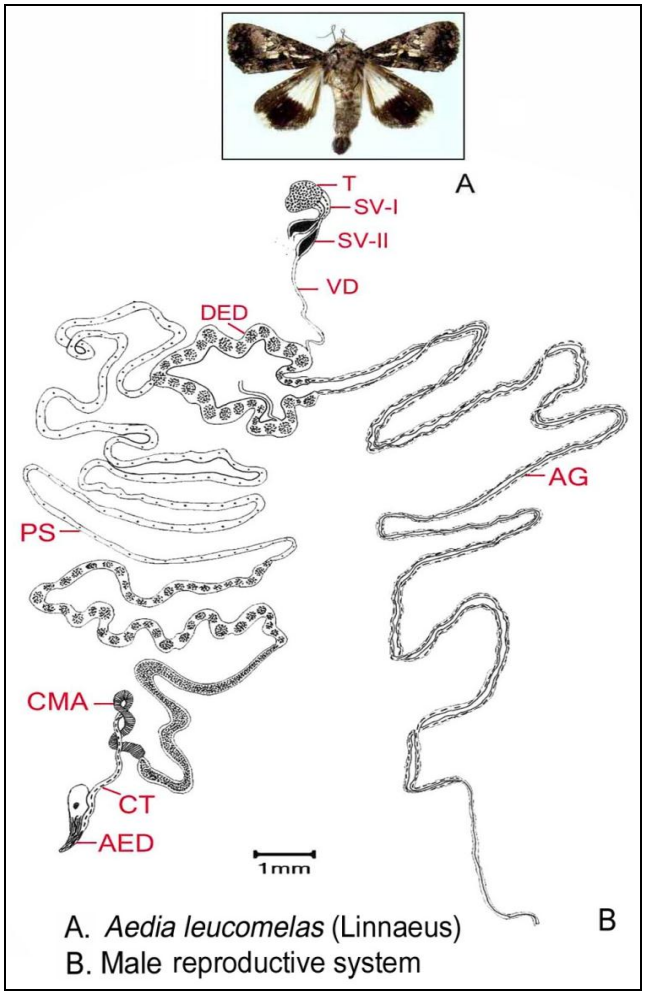

Fig 1

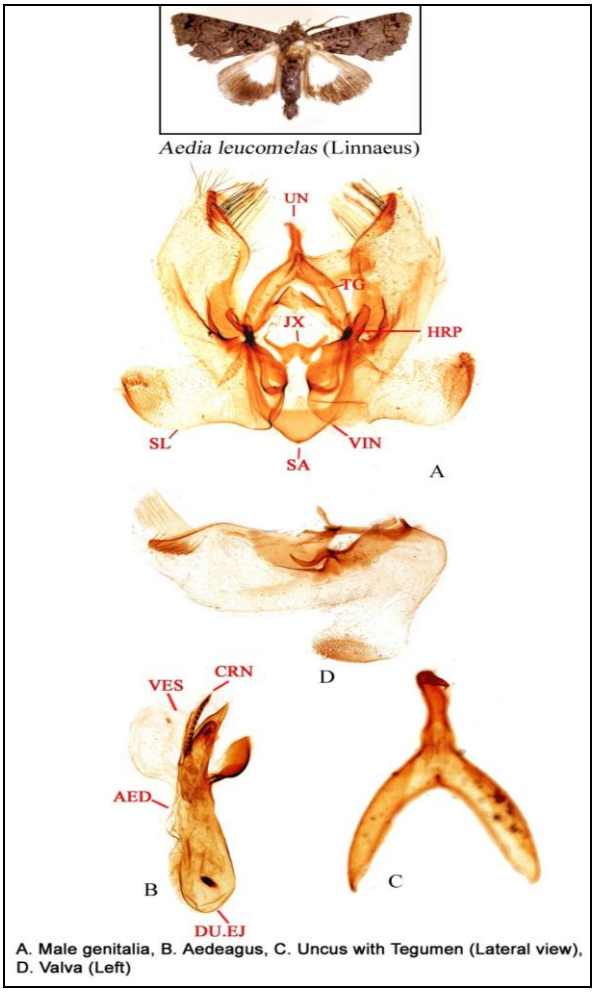

Fig 2

4. Conclusion
This type species is examined critically for the study of internal and external reproductive organs for the first time. The reproductive characters found in this species can be included in the diagnosis of genus to update its characterisation.

5. Abbreviations
AEG: Aedeagus; AG: Accessory glands; AGD: Accessory gland duct; AGRD: Accessory gland reservoir duct; ANT. APO: Anterior apophysis; ASV: Accessory seminal vesicle; B.EJ: Bulbous ejaculatorius; BS: Bulla seminalis; CAGR: Common accessory gland reservoir; CB: Corpus bursae; CMA; Contrictor muscular area; CO: Corpus Bursae; COD: Common oviduct; CT: Cuticular tube; CTF: Common terminal filament; CU: Cucullus; DB: Ductus bursae; DED: Ductus ejaculatorius duplex; DS: Ductus seminalis; DU.EJ: Ductus Ejaculatorius; ET: Egg tube; HRP: Harpe; INF: Infundibulum; JX: Juxta; LAG: Lagena; LAGR: Lateral accessory gland reservoir; LOD: Lateral oviduct; OB: Ostium bursae; OVP: Ovipositor; PAP.A: Papilla Analis; PD: Pedicel; PO.APO: Posterior apophyses; PS: Primary simplex; SA: Saccus; SD: Spermathecal duct; SG: Spermathecal gland; SIG: Signum; SL: Sacculus; SV I: Seminal vesicle I; SV II: Seminal vesicle II; T: Testis; TG: Tegumen; UN: Uncus; UT: Utriculus; VAG: Vagina; VD: Vasa deferentia; VES: Vestibulum**;** VIN: Vinculum; VLA: Valvula; VLV: Valva; VS: Vesica.

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