

The presence of lateral abdominal 'glands' in some species of Zygaenidae (Insecta, Lepidoptera)¹

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Abstract: A pair of gland-like structures on abdominal segments 2 and 7 in larvae, pupae and adults of Zygaenidae is described, figured and discussed. Their function is not known so far.

Key words: Zygaenidae, Zygaeninae, Chalcosiinae, Procridinae, abdominal glands.

Some larvae of Zygaenidae have a pair of elliptical, semi-eversible, double-lobed, lip-shaped 'glands' on abdominal segments 2 and 7. These glands are situated laterally just below the spiracles. This character is present in all studied Procridinae (Fig. 1, 2) and in some Zygaeninae (only on the second abdominal segment), but seems to be absent in the Chalcosiinae (YEN 2003). Among *Zygaena* species the presence of the glands on abdominal segment 2 was observed by the first author in *Zygaena (Mesembrynus) brizae* (ESPER 1800) (Fig. 3), *Z. (M.) minos* ([DENIS & SCHIFFERMÜLLER] 1775) (Fig. 4), *Z. (M.) purpuralis* (BRÜNNICH 1763) (Fig. 5), *Z. (Zygaena) dorycnii* OCHSENHEIMER 1808, *Z. (Z.) ephialtes* (LINNAEUS 1767), and some other species (EFETOV 2004).

In the tribe Artonini of the Procridinae, bulb-shaped evaginations can be found on abdominal segments (2 and 7) in the pupae and the adults (Fig. 6, 7). In other Procridinae these glands can only be found in late instar larvae (TOTHILL et al. 1930; STEHR 1987; EFETOV & TARMANN 2003a, 2003b, 2003c) but not in the pupae or the adults. In all species where the adults have abdominal lateral glands, these glands can also be observed in the pupa. However, as the spiracle is covered by the edge of the wing on the second abdominal segment, they can only be seen on this segment if the wing is lifted up (Fig. 6).

The presence of bulb-shaped evaginations on abdominal segments 2 and 7 in the imago, together with the specific form of the chaetosemata and the valvae, has been used as an important argument to separate the tribe Artonini as a monophyletic group (TARMANN 1994: 121, fig. 3). These abdominal structures had already been discovered, figured and described by TOTHILL et al. (1930: 95, fig. 36 (larva), 107 (pupa)), who, surprisingly, did not mention its presence on the abdomen of adult specimens. These structures seem to be reduced in all adult Procridini and can be reduced in a few Artonini (e.g. *Hestiocho-*

ra MEYRICK 1886, *Thyrassia* BUTLER 1876 (completely reduced), *Turneriprocris* BRYK 1936, *Pollanisis* WALKER 1854, and *Onceroptyga* TURNER 1906 (only found on the second abdominal segment)). *Homophylotis* TURNER 1904, and a new but undescribed genus have not only the full set of evaginations, but these are also significantly enlarged on the second abdominal segment in the male (Fig. 7) (TARMANN 2004).

The function of these structures is unknown. A characteristic odour is produced by some species of Artonini (TARMANN 2004) that is different from that of many other Zygaenidae in which the odour emanates from the poisonous haemolymph that is expelled from the head and thorax and it is possible that this and the lateral evaginations are in some way related.

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Zusammenfassung

Bei Zygaeniden konnten am 2. und 7. Abdominalsegment bei vielen Raupen, Puppen und Imagines (Männchen und Weibchen) paarige laterale Ausstülpungen gefunden werden. Diese stellen vermutlich Drüsen dar, die Substanzen zur Abwehr produzieren. Ihre tatsächliche Funktion ist derzeit noch unbekannt. Diese Strukturen werden beschrieben und Beispiele werden abgebildet.

¹ This paper is dedicated to Prof. Dr Horst Aspöck, Vienna, for his 65th birthday.



Fig. 1: Adult larva of *Adscita (Adscita) jordani* (NAUFOCK 1921) (Zygaenidae: Procridinae, Procridini) showing lateral 'glands' (arrowed) on abdominal segments 2 and 7 (Spain. Photo: K.A. EFETOV, Simferopol).



Fig. 2: Adult larva of *Adscita (Tarmannita) bolivari* (AGENJO 1937) (Zygaenidae: Procridinae, Procridini) showing lateral 'glands' (arrowed) on abdominal segments 2 and 7 (Spain. Photo: K.A. EFETOV, Simferopol).



Fig. 3: Adult larva of *Zygaena (Mesembrynus) brizae* (ESPER 1800) (Zygaenidae: Zygaeninae) showing lateral 'gland' (arrowed) on second abdominal segment (Crimea. Photo: K. A. Efetov, Simferopol) (ex EFETOV 2004).



Fig. 4: Adult larva of *Zygaena (Mesembrynus) minos* ([DENIS & SCHIFFERMÜLLER], 1775) (Zygaenidae: Zygaeninae) showing lateral 'gland' (arrowed) on second abdominal segment (Crimea. Photo: K.A. EFETOV, Simferopol) (ex EFETOV 2004).



Fig. 5: Adult larva of *Zygaena (Mesembrynus) purpuralis* (BRÜNNICH 1763) (Zygaenidae: Zygaeninae) showing lateral 'gland' (arrowed) on second abdominal segment (Crimea. Photo: K.A. EFETOV, Simferopol) (ex EFETOV 2004).



Fig. 6: Lateral bulb-like structure (gland?) on second abdominal segment of a pupa of *Pollanisus viridipulverulenta* (GUÉRIN-MÉNEVILLE 1839) (Zygaenidae: Procridinae, Artonini) (Australia. Photo V. Rangsi, Canberra) (ex TARMANN 2004).

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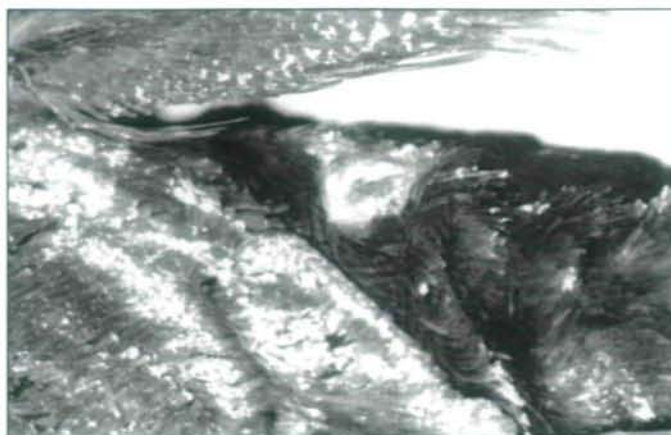


Fig. 7: Enlarged lateral bulb-like structure (gland?) on second abdominal segment on male of an undescribed species of Australian Artonini (Zygaenidae: Procridinae) (Photo J. Green, Canberra) (ex TARMANN 2004).

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