The larvae of two closely-related blowfly species of the genus *Chrysomya* (Diptera, Calliphoridae)

Y. Z. Erzinclioglu

Erzinclioglu, Y. Z. 1990: The larvae of two closely-related blowfly species of the genus *Chrysomya* (Diptera, Calliphoridae). — Entomol. Fennica 1:151–153.

The third instar larvae of two closely-related blowfly species, *Chrysomya megacephala* (Fabricius) and *Chrysomya regalis* Robineau-Desvoidy (= *marginalis* Wiedemann) are described and illustrated, and a simple key is given to separate them. As with some other blowfly larvae, it was found that the structure of the spines was a most useful diagnostic feature. Although the natural ranges of these two species do not overlap to any extent, the recent introduction of *Ch. megacephala* into Africa (part of the range of *Ch. regalis*) makes it desirable to separate these two species in the larval stage.

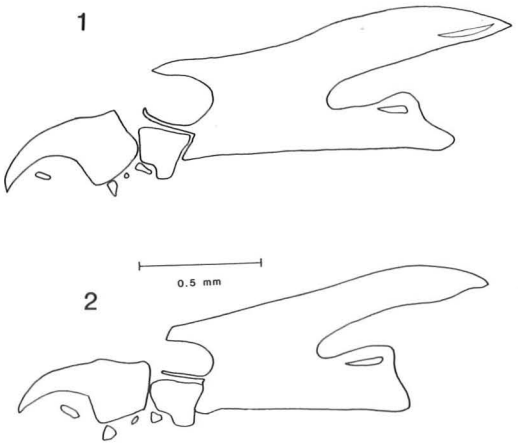
Y. Z. Erzinclioglu, Field Studies Council, Research Officer, Department of Zoology, University of Cambridge, Downing Street, Cambridge, U.K.

The larvae of the blowfly species *Chrysomya megacephala* (Fabricius) and *Chrysomya regalis* Robineau-Desvoidy (= *marginalis* Wiedemann) are known to cause myiasis in tropical parts of the world (Zumpt, 1965). In addition, *Ch. megacephala* is a pest of smoked fish in south-east Asia, laying its eggs on the fish, the resulting larvae feeding on the tissues (Dr John Esser, pers. comm.); this species has also been implicated in the transmission of enteric diseases (Sulaiman et al, 1988).

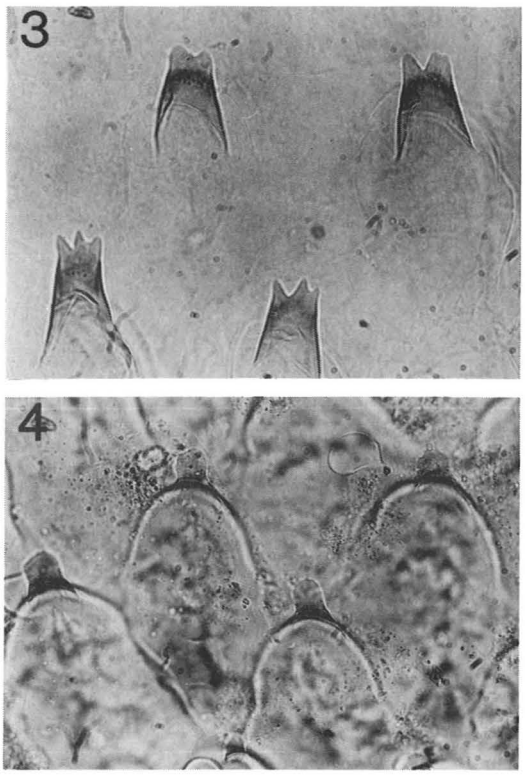
Although the natural distributions of these two species hardly overlap — *Ch. regalis* being a common species of Africa south of the Sahara, southern Arabia and India west of the Indus Valley, while *Ch. megacephala* is a fly of the Australasian and Oriental regions, and also the neighbouring parts of the Palaearctic region such as China and Japan — *Ch. megacephala* has been introduced into Africa in recent years (Laurence, 1986). Both species, therefore, now coexist in the same area. Furthermore, a number of *Chrysomya* species (an exclusively old world genus), including *Ch. megacephala*, has been introduced into the New World (mainly South America, but also Central America and the southern United States) (Guimaraes &Buralli, 1979). Although *Ch. regalis* has not been recorded from the New World, it may well be introduced during the next few years. For these reasons, it is clearly desirable to be able to separate the larvae of these two species. This paper describes and illustrates the third instar larvae of these species, and provides a simple key to separate them.

Methods

Larvae were killed and preserved by immersion in acetic alcohol (3 parts 70% ethanol: 1 part glacial acetic acid) or KAAD (1 part kerosene: 10 parts 95% ethanol: 2 parts glacial acetic acid: 1 part dioxane). Larvae were dissected under a stereomicroscope, slide-mounted in Berlese's Fluid and examined under a compound microscope at magnifications of up to ×360. Sources of material are given with the descriptions. At least fifty specimens of each species were examined and dissected.



Figs. 1–2. Cephalopharyngeal skeleton of third instar. — 1: *Chrysomya megacephala* (Fabricius). — 2: *C. regalis* Robineau-Desvoidy.



Figs. 3–4. Spines of third instar larvae. — 3: *Chrysomya megacephala* (Fabricius). — 4: *C. regalis* Robineau-Desvoidy.

The descriptions follow the protocol of Erzinclioglu (1985). Biometric and meristic data are summarised in Table 1.

Chrysomya megacephala (Fabricius)

Cephalopharyngeal skeleton (Fig. 1) with mouthhook tooth much longer than depth of base; oral sclerite small and pigmented at base, unpigmented at the tapering anterior end; dental sclerite weak; liguloid arch narrow but well-pigmented; windows usually present on dorsal and ventral cornua; angle between dorsal and ventral cornua wide. Posterior spiracle with unpigmented ecdysial scar. Anterior spinal bands (segments 2–12) complete on 2–8, absent laterally but present dorsally and ventrally on 9, incomplete dorsally on 10–12; bands on 6–12 cleft ventrally; bands on 2–8 with anterior pleural band. Posterior spinal bands (segments 6–11) incomplete dorsally on 6–10, complete on 11 but faint ventrally. Spines present all round anal region but fewer laterally than dorsally and ventrally. Most spines with two or three teeth each (Fig. 3). Papilla P2 closer to P1 than to P3.

Specimens examined: Australia (Queensland); Japan; Java; Thailand.

Table 1. Biometric (mm) and meristic data on *Chrysomyia* larvae.

	Length ± *SD*	Greatest width ± *SD*	Greatest width/length	Anterior spiracle lobes	Posterior spiracle diameter
C. megacephala	15.9±1.26	3.37±0.27	0.20–0.22	12–13	0.53–0.60
C. regalis	15.41±0.35	3.59±0.32	0.22–0.28	11–13	0.55–0.63

Chrysomya regalis Robineau-Desvoidy

Cephalopharyngeal skeleton (Fig. 2) with mouth-hook tooth longer than depth of base; mouth-hook with prominent dorsal ridge; oral sclerite rather robust, pigmented at base, unpigmented at tapering anterior end; dental sclerite robust; liguloid arch narrow and well-pigmented; dorsal cornu lacking windows, ventral cornu with small windows. Posterior spiracle with unpigmented ecdysial scar. Anterior spinal bands (segments 2–12) complete on 2–11, incomplete on 12; bands on 6–12 cleft ventrally. Posterior spinal bands (segments 5–11) all incomplete. Spines present all round anal region, but fewer laterally than dorsally and ventrally. Spines with rounded tips, never forked (Fig. 4). Papilla P2 closer to P1 than to P3.

Specimens examined: South Africa (Natal); Namibia.

Remarks

Of the two species described above, *Ch. regalis* has not, to my knowledge, been described before, while *Ch. megacephala* has been described, inadequately, by Patton & Evans (1929). The specimens described by these authors were boiled in KOH, and no doubt this removed all trace of pigmentation from the oral sclerite in their preparations, since they make no mention of this structure in their description, nor does it figure in their illustration.

As may be seen from the above descriptions, the two species are very similar, especially with regard to the form of the cephalopharyngeal skeleton. The skeleton of *Ch. regalis*, however, is more heavily sclerotised than that of *Ch. megacephala*. Also, the spinulation is more extensive in the former than the latter species. The two species are, however, easily separable on the basis of the form of the spines themselves, using the following simple couplet:

1. Most spines with two or three teeth each (Fig. 3) .... *megacephala*
— Spines never with more than one tooth (Fig. 4) .... *regalis*

Acknowledgements. I thank Dr Lewis Davies for interest and discussion, and Dr L. E. O. Braack, Dr J. Esser, Mr P. Ferrar, Dr Melanie O'Flynn and Dr S. Shinonaga for supplying me with specimens.

References

Erzinclioglu, Y. Z. 1985: Immature stages of British Calliphora and Cynomya, with a re-evaluation of the taxonomic characters of larval Calliphoridae (Diptera). — J. Nat. Hist. 19:69–96.

Guimaraes, J. H. & Buralli, G. M. 1979: Dispersal and distribution of three newly introduced species of Chrysomya Robineau-Desvoidy in Brazil (Diptera, Calliphoridae). — Rev. Brasil. Entomol. 23:245–255.

Laurence, B. R. 1986: Old World blowflies in the New World. — Parasitology Today 2:77–79.

Patton, W. S. & Evans, A. M. 1929: Insects, ticks, mites and venomous animals of medical and veterinary importance. Part I. Medical. — H. R. Grubb Ltd. London. 786 pp.

Sulaiman, S., Sohadi, A. R., Yunus, H. & Iberahim, R. 1988: The role of some cyclorrhaphan flies as carriers of human helminths in Malaysia. — Med. Vet. Entomol. 2:1–6.

Zumpt, F. 1965: Myiasis in man and animals in the Old World. — Butterworths, London. 267 pp.

Received 9.V.1989