



Chrysomya megacephala, Oriental Latrine Fly

(Diptera: Calliphoridae)

Rui Chen, Forest Huval, Chris Carlton

Description

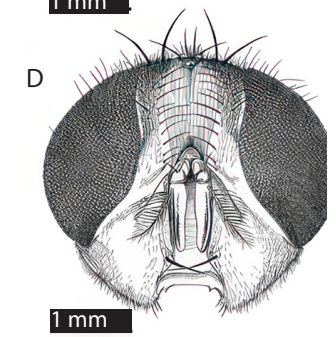
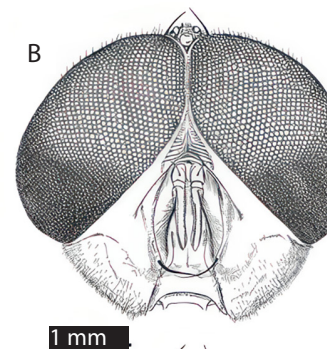
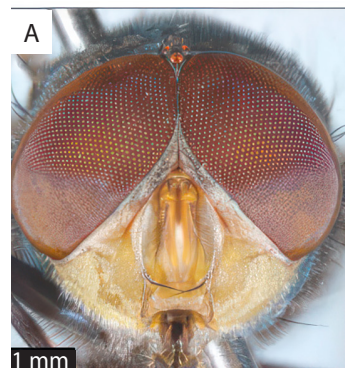
Chrysomya megacephala, commonly known as oriental latrine fly, is a widely distributed tropical blowfly originating in Asia and the Pacific regions. Adults are about 1/2 of an inch (12.0 mm) in length. The top of the head is gray and dominated by the large, red eyes. The front and sides of the head are yellow to orange. In females, the eyes are widely separated. In males, the eyes join together on the front and top of the head, and the upper eye facets are distinctly larger than the lower. Larvae are soft, legless maggots, without obvious heads. The sizes of the larvae vary with age and nutrition. Mature third stage (instar) larvae reach 5/8 of an inch (16.0 mm) in length. Species identification of various muscoid flies (flesh flies, blow flies, house flies and related species) requires careful inspection of the wing veins, arrangement of small hairs (chaetotaxy) on the body and coloration. Larval identification is difficult, requiring study of the spiracles and arrangement of minute mouth hooks, in addition to other details. The spiracles of various ages of oriental latrine fly larvae differ, allowing identification of the three growth stages, which is important in forensic investigations. Identifications of these insects should be performed by an experienced forensic entomologist, qualified diagnostician or taxonomic specialist.

Life Cycle

The oriental latrine fly is a holometabolous insect that undergoes complete metamorphosis. The life cycle consists of four stages: egg, larva, pupa and adult. Following hatch, the larvae grow rapidly at warm temperatures, often requiring only a few days to complete larval development through the three growth stages (instars). The duration of these stages varies with the temperature and humidity. The life cycle of the species, particularly the duration of development at various temperatures, has been well documented due to the species' importance in forensic investigations. An adult female may lay 200 to 325 eggs in feces, carcasses or other decomposing organic matter in one day. Females are active in daytime but lay eggs at night under warm conditions. Males emerge two to three hours prior to females.



Oriental latrine fly, preserved specimen (Pest and disease image library, Bugwood.org, Creative Commons 3.0).



Anterior view of the head of a male (A and B) and female (C and D) adult of *Chrysomya megacephala* (A and C, Ken Walker via <http://www.padil.gov.au>, Creative Commons Attribution 3.0 Australia License; B and D, Rozane Badenhorst and Martin H. Villet, Creative Commons 4.0).

Ecological Significance and Pest Status

Oriental latrine fly is an important insect in forensic research involving humans and wildlife. It colonizes corpses soon after death and is one of a suite of forensically important scavenging flies and other insects associated with animal carrion. The species is also significant to medical study and public health due to its association with poor hygiene and status as a causative agent of human myiasis.

Beginning around the 1970s, the species was introduced to many areas of the world from its native range in Asia and the Pacific, including New Zealand, Africa, Central and North America. The fly was first collected, recorded and documented in Louisiana during 2009.

Oriental latrine fly is often the first insect to occupy dead animals due to the ability to detect a corpse up to 10 miles away. Therefore, the species is important in forensic entomology to determine time of death and postmortem intervals. Incidents of infestations of oriental latrine fly maggots in tissue of living people (human myiasis) have been documented. This rare condition and the general association of these and other muscoid flies with unsanitary living conditions make the species important to medical and public health professionals.

Control

Good sanitation practices are critical to prevent establishment and population buildup of these and other flies that breed in decomposing animal tissues and products. The rapid generation times of carrion feeding flies requires immediate action when infestations

originate. Refuse containers should be well sealed, and discarded food, especially if meat products are included, must be removed on a regular schedule.

In situations where chemical control is required, many insecticides, including over the counter formulations, are effective against adult flies. Care must be exercised to avoid contamination of food, and all label directions must be followed.

References

- Badenhorst, R. and M. H. Villet. 2018. The uses of *Chrysomya megacephala* (Fabricius, 1794) (Diptera: Calliphoridae) in forensic entomology. *Forensic Sciences Research* 3: 2-15.
- James, M.T. 1947. The flies that cause myiasis in man. US Department of Agriculture Miscellaneous Publication 631. 175 pp.
- Pharr, L.R. 2009. A taphonomic model of concealment: Decomposition and the postmortem interval (PMI) in a 55-gallon barrel. Masters Thesis, LSU Masters Thesis 2527 https://repository.lsu.edu/gradschool_2527 (accessed 12 February 2024).
- Sangmala, S., K. Aiempnanakit, P. Khantee, and T. Pengsakul. 2020. Cutaneous Myiasis Caused by *Chrysomya megacephala* in an infant with psoriasis vulgaris. *Case Reports in Dermatology* 12: 249-254.
- Williams, K.A. and M. H. Villet. 2006. A new and earlier record of *Chrysomya megacephala* in South Africa, with notes on another exotic species, *Calliphora vicina* (Diptera: Calliphoridae). *African Invertebrates* 47: 347-350.

Contact Us: For advice about arthropod identification or diagnosis, contact the LSU AgCenter Department of Entomology. Reach the department through the Contact Us webpage: <https://bit.ly/36c4awm>.

