

# Factsheet *Ceratitis anonae* Graham

**Original name:** *Ceratitis anonae* Graham, 1908: 114.

**Vernacular name:** none

## **Formal redescription** (after De Meyer & Freidberg, 2006)

Body length: 5.06 (4.35-5.90) mm; wing length: 5.15 (4.45-5.75) mm.

### Male

Head: Antenna yellow. First flagellomere three times as long as pedicel. Arista with short to moderately long rays; ventral rays shorter and sparser than dorsal rays, especially basally. Frons pale, sometimes completely yellow, center yellow; with short scattered setulae distinctly darker than frons. Frontal setae well developed. Face white, sometimes yellowish white. Genal seta and setulae dark, well developed.

Thorax: Postpronotal lobe white, sometimes yellowish white; without spot. Scutal pattern: ground color ash-gray; with streaks and darker markings but without distinct spots or clearly defined stripes except prescutellar white markings separate, sometimes with pale area in between. Scapular setae dark. Scutellum white, sometimes yellowish white, basally without spots, apically with three separate black spots, extending to basal 0.33, sometimes only to basal half. This has a strange meaning. The measurement should relate to apical 0.66 or 0.5 (global) I am not sure, the spots are apical spots reaching 'forwards' towards the basal margin. In some species they will reach the basal margin of the scutellum, in others only till halfway ('basal half' or 'apical half', whatever you choose), still in others till basal third. Referring this forward extension in relation to the apical length, sound a bit strange to me. I would therefore prefer to keep it in relation to the basal margin. However, if you feel very strongly about the apical aspect, you can still do a global change as such. Anepisternum on ventral 0.33-0.5 brown; setulae pale.

Legs: Yellow except where otherwise noted; setation typical for subgenus, mainly dark. Foreleg: femur dark anteriorly along entire dorsal margin, posteriorly along dorsal 0.66, with poorly developed bush of dispersed long dark setulae along entire length, posterodorsal setulae longer; ventral setae dark. Midleg: femur largely brownish black, anteriorly with silvery shine when viewed from certain angle, only distal end pale; ventrally with dark feathering along entire length, basally somewhat less dense; tibia broadened; largely brownish black with silvery shine when viewed from certain angle, with black feathering dorsally along distal 0.9 and ventrally along distal 0.8. Hindleg: femur dark brown except distally, at apical 0.25 with longer setulae dorsally and ventrally.

Wing: Markings yellowish brown. Interruption between marginal and discal bands near vein  $R_1$  clear and complete; discal band often partly or completely interrupted in discal cell; cubital band free; medial band absent; crossvein R-M opposite middle of discal cell. Apex of vein  $R_1$  distal to level of crossvein R-M. Crossvein DM-Cu oblique anterobasally.

Abdomen: Mostly yellow. Border between tergite 1 and 2 narrowly black. Tergites 2 and 4 with pale gray band occupying almost entire tergite, at most narrowly yellow anteriorly. Tergite 3 with distinct brownish black band along posterior half; rarely interrupted medially. Tergite 5 with basal 0.33 brownish, usually divided medially into two spots; posteriorly narrowly brownish. Male epandrium in lateral view with lateral surstylus curved, posterior lobe short.

### Female

As male except following characters. Anepisternal pilosity on ventral 0.33 partly dark, especially centrally. Legs without feathering; femora yellow, forefemur posteriorly, and midfemur and hindfemur anteriorly on basal 0.66 often with brownish streaks; sometimes femora completely yellowish brown;

forefemur posteroventrally with dark pilosity. Wing with discal band complete. Oviscape shorter than preabdomen. Aculeus at most six times as long as wide; tip with distinct apical indentation and lateral margin slightly sinuous.

Remark: *Ceratitis anonae* belongs to the FAR complex (see De Meyer et al., 2015 for a review). While male specimens can be easily differentiated from the other representatives in this complex, the differences between female specimens are minute and subtle and these can be easily confused.

Encyclopedia of Life link: <http://eol.org/pages/726782/overview>

## DNA barcoding

Multiple reference DNA barcodes from the species distribution are available on the Barcode of Life Data Systems (BOLD) at :

[http://www.boldsystems.org/index.php/Taxbrowser\\_Taxonpage?taxon=Ceratitis+anonae&searchTax=](http://www.boldsystems.org/index.php/Taxbrowser_Taxonpage?taxon=Ceratitis+anonae&searchTax=)

The molecular identification of *C. anonae* through DNA barcoding proved to be problematic as this species cannot be properly resolved from the closely related species of the FAR (*C. fasciventris*, *C. anonae*, *C. rosa*) complex (De Meyer et al. 2015) as well as from the recently described *C. quilicii* (De Meyer et al. 2016). Accordingly, in BOLD, these four species are recovered as part of multispecific BINs.

## Host plant list

It is a polyphagous species recorded from a number of commercial and wild hosts. Detailed studies on host range can be found for Kenya (Copeland et al., 2006). Throughout its range it is recorded from the hosts listed in the table below.

PlantFamily	PlantLatinName	PlantCommonNameEnglish
Anacardiaceae	Mangifera indica	mango
Annonaceae	Annona diversifolia	
Annonaceae	Annona montana	
Annonaceae	Annona muricata	soursop
Annonaceae	Annona reticulata	custard apple
Annonaceae	Annona senegalensis	wild custard apple
Annonaceae	Anonidium mannii	
Annonaceae	Artabotrys monteiroae	
Annonaceae	Monodora sp.	
Annonaceae	Rollinia mucosa	wild sweetsop
Annonaceae	Rollinia sp.	
Arecaceae	Areca alicae	
Cecropiaceae	Myrianthus arboreus	bugtree?
Cecropiaceae	Myrianthus sp.	
Clusiaceae	Guttiferae sp.	

Combretaceae	<i>Terminalia catappa</i>	tropical almond
Dichapetalaceae	<i>Dichapetalum bangii</i>	
Euphorbiaceae	<i>Drypetes gossweileri</i>	
Fabaceae	<i>Cynometra</i> sp.	
Flacourtiaceae	<i>Flacourtia</i> sp.	
Flacourtiaceae	<i>Rawsonia lucida</i>	
Irvingiaceae	<i>Irvingia smithii</i>	
Lauraceae	<i>Persea americana</i>	avocado
Melastomataceae	<i>Bellucia</i> sp.	
Menispermaceae	<i>Tiliacora funifera</i>	
Moraceae	<i>Antiaris africana</i>	upas-tree
Moraceae	<i>Antiaris toxicaria</i>	antiaris, false iroko, false mvule
Moraceae	<i>Artocarpus</i> sp.	
Moraceae	<i>Dorstenia</i> sp.	
Moraceae	<i>Morus mesozygia</i>	
Myrtaceae	<i>Eugenia uniflora</i>	surinam cherry, pitanga cherry
Myrtaceae	<i>Pseudomycrnanthes rosea</i>	
Myrtaceae	<i>Psidium cattleianum</i>	strawberry guava, cherry guava
Myrtaceae	<i>Psidium guajava</i>	common guava
Myrtaceae	<i>Psidium</i> sp.	
Olacaceae	<i>Strombosia scheffleri</i>	
Pandaceae	<i>Panda oleosa</i>	
Passifloraceae	<i>Passiflora foetida</i>	
Rhamnaceae	<i>Ziziphus abyssinica</i>	
Rubiaceae	<i>Coffea arabica</i>	arabica coffee
Rubiaceae	<i>Coffea canephora</i>	robusta coffee
Rubiaceae	<i>Coffea</i> sp.	coffee
Rubiaceae	<i>Leptactina platyphylla</i>	
Rubiaceae	<i>Omaralia calycina</i>	
Rutaceae	<i>Citrus aurantium</i>	sour orange
Rutaceae	<i>Citrus sinensis</i>	sweet orange
Rutaceae	<i>Citrus</i> sp.	
Rutaceae	<i>Citrus x paradisi</i>	grapefruit
Rutaceae	<i>Murraya</i> sp.	
Sapindaceae	<i>Nephelium lappaceum</i>	rambutan
Sapindaceae	<i>Pancovia laurentii</i>	
Sapotaceae	<i>Achra sapota</i>	
Sapotaceae	<i>Chrysophyllum imperiale</i>	
Sapotaceae	<i>Chrysophyllum</i> sp.	
Sapotaceae	<i>Englerophytum oblancoletum</i>	
Sapotaceae	<i>Mimusops</i> sp.	milkwood
Sapotaceae	<i>Pouteria altissima</i>	
Sapotaceae	<i>Synsepalum brevipes</i>	
Sapotaceae	<i>Vitellaria paradoxa</i>	shea butter
Solanaceae	<i>Solanum mauritianum</i>	bugtree

Sterculiaceae	Sterculia sp.	
Sterculiaceae	Theobroma cacao	cocoa

Additional information on host records and associated specimens can be found on :  
<http://projects.bebif.be/fruitfly/taxoninfo.html?id=56>

## Impact & management

Details on losses incurred by *Ceratitis anonae* on commercial crops are very limited. Foba et al. (2012) list this as one of the main pest species on several Citrus varieties in Ghana (together with *C. ditissima* and *Bactrocera dorsalis*). Vayssières et al. (2004, 2015) reports very minor occurrence of this fly in mango orchards in Mali and Benin respectively.

Management for this species is, as for most fruit fly pests, most efficient using an IPM (Integrated Pest Management) program, including aspects such as orchard sanitation, bait sprays, mass trapping among others. General reviews on the current IPM components applied in Africa can be found in chapters 13 to 20 of Ekesi et al. (2016).

No SIT (Sterile Insect Technique) application specifically for this species has been developed in Africa.

## Attractants & trapping

Both sexes can be attracted by protein bait products such as liquid protein baits and three component Biolure

Male flies can be attracted by the following lures: trimedlure

General information on trapping, types of traps, lures and required density of trapping stations can be found in IAEA (2013), Shelly et al. (2014), and Manrakhan (2016).

## Distribution

*Ceratitis anonae* is found throughout Sub-Saharan Africa, but along a belt approximately 12°N and 10°S of the Equator. In eastern Africa its occurrence east of the Gregory Rift is doubtful (see Copeland et al., 2006 for detailed occurrence in Kenya). Not established outside mainland Africa.

Distribution map for Africa, based upon specimen records with georeferences is available at:

<http://projects.bebif.be/fruitfly/taxoninfo.html?id=56>

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