

Factsheet *Ceratitis rubivora* Coquillett

Original name: *Ceratitis rubivora* Coquillett, 1901: 29.

Vernacular name: Blackberry fruit fly

Formal redescription (after De Meyer & Freidberg, 2006)

Body length: 4.56 (3.95-5.00) mm; wing length: 4.98 (4.45-5.45) mm.

Male

Head: Antenna yellow. First flagellomere 2-3 times as long as pedicel. Arista with short to moderately long rays; ventral rays shorter and sparser than dorsal rays, especially basally. Frons pale, in center more yellow; with short scattered setulae of same color as frons. Frontal setae well developed, occasionally anterior one slightly underdeveloped. Face white. Genal seta and setulae dark or dark reddish, latter moderately to poorly developed.

Thorax: Postpronotal lobe yellowish white, without spot, at most with darker yellow coloration near postpronotal seta. Scutal pattern: ground color, grayish-brown, usually with orange tinge, sometimes without; with streaks and darker markings but without distinct spots or clearly defined stripes, except prescutellar white separate markings, with paler gray area in between. Scapular setae dark reddish or black. Scutellum yellowish white, basally with ill defined separate dark spots (occasionally well developed), apically with three separate black spots, extending to basal 0.33, sometimes only to half-way. Anepisternum on ventral half yellowish orange to brown; setulae pale.

Legs: Yellow except where otherwise noted; setation typical for subgenus, mixed pale and dark.

Foreleg: femur anteriorly with dorsal margin brownish over entire length; posterodorsally brown, with dispersed long dark setulae along entire length, but not forming distinct bush; ventral setae pale, distally dark, rarely dark over entire length. Midleg: femur brown on distal half to 0.66 (usually only ventral part brown anteriorly) except at apical margin where white, with weak silvery shine; ventrally with dark feathering along distal half, basally with more dispersed pale or dark setulae; tibia broadened, largely brownish black except at extremities, with conspicuous silvery shine when viewed from certain angle, with black feathering dorsally along distal 0.8-0.9 and ventrally along distal 0.8. Hindleg: femur partly brownish colored; at apical 0.25 with longer setulae dorsally and ventrally. Darker coloration of legs in some specimens more pronounced and more extensively blackish.

Wing: banding yellowish brown. Interruption between marginal and discal bands near vein R₁ clear and complete; discal band often partly, occasionally fully interrupted in discal cell; cubital band free; medial band free (not always well defined, sometimes missing); crossvein R-M at or just proximal to middle of discal cell. Apex of vein R₁ distal to level of crossvein R-M. Crossvein DM-Cu oblique anterobasally.

Abdomen: Mostly yellow. Tergite 1 with black patches across posterior margin. Tergites 2 and 4 with pale gray band on posterior half; tergite 4 with anterior margin brown. Tergite 3 with brown transverse band along posterior half to 0.66; tergite 5 with brown band along anterior 0.33 and narrowly brownish black across posterior margin. Brown bands on tergites 3, 4 and 5 often interrupted in middle. Male epandrium in lateral view with posterior lobe of lateral surstylus short and slightly curved, anterior lobe pronounced.

Female

As male except for the following characters: First flagellomere more yellowish orange. Gena sometimes darker yellow. Genal setula and seta black and well developed. Scapular seta black. Anepisternal pilosity rarely with few dark setulae. Legs without feathering; femora yellow, often with

dark patches; forefemur posteroventrally with pale pilosity. Discal band complete. Oviscape shorter than preabdomen. Aculeus at most five times longer than wide; tip pointed and lateral margin straight.

Remark: This species is very similar to *Ceratitis anonae* and where both co-occur can be confused. They can be differentiated by the presence of a posterior apical wing band in *C. rubivora* (absent in *C. anonae*). Specimens where this band is poorly developed need to be compared with description of both species (differences in coloration and pilosity of the mid leg in males, in pilosity of anepisternum and shape of aculeus in females).

Encyclopedia of Life link: <http://eol.org/pages/727299/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+rubivora&searchTax=

In BOLD (March 2017), *C. rubivora* only forms monospecific BINs. For this reason, DNA barcoding might be considered as a suitable tool for the molecular identification of this species.

Host plant list

This is a stenophagous species attacking only representatives of the genus *Rubus*, including commercially grown berries such as blackberry, and raspberry. Throughout its range it is recorded from the hosts listed in the table below.

PlantFamily	PlantLatinName	PlantCommonNameEnglish
Rosaceae	<i>Rubus apetalus</i>	
Rosaceae	<i>Rubus flagellaris</i> x <i>R. loganobaccus</i>	youngberry
Rosaceae	<i>Rubus fruticosus</i>	blackberry
Rosaceae	<i>Rubus idaeus</i>	raspberry
Rosaceae	<i>Rubus keniensis</i>	
Rosaceae	<i>Rubus loganobaccus</i>	loganberry
Rosaceae	<i>Rubus niveus</i>	
Rosaceae	<i>Rubus pinnatus</i>	
Rosaceae	<i>Rubus rigidus</i>	
Rosaceae	<i>Rubus scheffleri</i>	
Rosaceae	<i>Rubus</i> sp.	
Rosaceae	<i>Rubus steudneri</i>	

Additional information on host records and associated specimens can be found on : <http://projects.bebif.be/fruitfly/taxoninfo.html?id=64>

Impact & management

Data on losses incurred by *Ceratitis rubivora* or its impact on fruit production are largely lacking. Only Silvestri (1913) mentions 20% infestation in *Rubus* samples from South Africa.

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, protein bait capsules (Questlure) and three component Biolure

Male flies can be attracted by the following lures: trimedlure and Enriched Ginger Oil (EGO) lure. White & Elson-Harris (1994) indicate terpinyl-acetate but there is no evidence that this lure attracts *C. rubivora*.

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 rubivora is found in southern and eastern Africa, from the Cape regions in South Africa northwards till eastern DR Congo, Uganda and Kenya. Reported from Cameroon (White & Elson-Harris, 1994) and Ghana (Billah & Wilson, 2016) but these require confirmation. 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=64>

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