

Genus *Catopsilia* Hübner, [1819] Migrants

In: Hübner [1816-[1826]. *Verzeichniss bekannter Schmettlinge* 98 (432 + 72 pp.). Augsburg.

Type-species: *Papilio crocale* Cramer, by subsequent designation (Scudder, 1871. ?Reference.) [extralimital].

Synonym based on extralimital type-species: *Murtia* Hübner.

The genus *Catopsilia* belongs to the Family Pieridae Swainson, 1820; Subfamily Coliadinae Swainson, 1821. The other genera in the Subfamily Coeliadinae in the Afrotropical Region are *Terias* and *Colias*.

Catopsilia (**Migrants**) is an Old World genus of six species, three of which occur in the Afrotropical Region. One of the Afrotropical species also extends extraliminally.

Relevant literature:

Liseki & Vane-Wright, 2013 [Taxa on Mount Kilimanjaro].

Catopsilia florella (Fabricius, 1775)# African Migrant



Left: Male African Migrant (*Catopsilia florella*) feeding on Lantana flowers (image courtesy Raimund Schutte).
Right: Yellow form female African Migrant camouflaged on granadilla leaf (image courtesy Steve Woodhall).

Papilio florella Fabricius, 1775. *Systema Entomologiae* 479 (832 pp.). Flensburgi & Lipsiae.

Callidryas florella Fabricius. Trimen, 1862c.

Callidryas rhadia Boisduval. Trimen, 1862c. [Synonym of *Catopsilia florella*]

Callidryas florella (Fabricius, 1775). Trimen & Bowker, 1889.

Catopsilia florella Fabricius. Swanepoel, 1953a.

Catopsilia florella (Fabricius, 1775). Dickson & Kroon, 1978.

Catopsilia florella (Fabricius, 1775). Pringle *et al.*, 1994: 281.



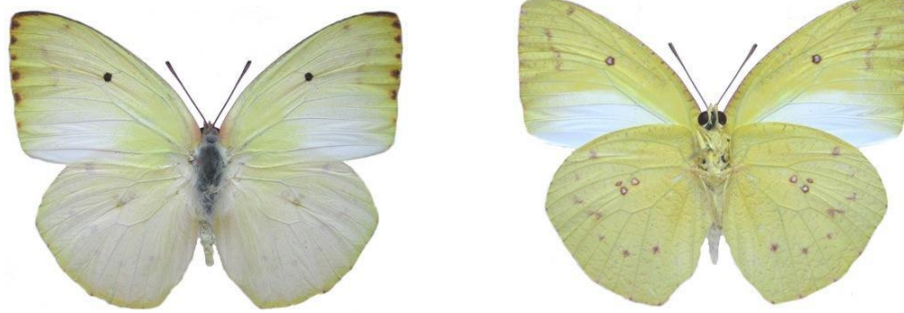
Catopsilia florella. Male (Wingspan 57 mm). Left – upperside; right – underside.
Lekgalameetse Nature Reserve, Limpopo Province, South Africa. 3 December, 2012. M. Williams.
Images M.C. Williams ex Williams Collection.



Catopsilia florella. Female. Left – upperside; right – underside.
Honeydew, Gauteng, South Africa. 16 December, 1970. S. Henning.
Images M.C. Williams ex Henning Collection.



Catopsilia florella. Female *f. florella* (Wingspan 61 mm). Left – upperside; right – underside.
Wingspan: 58mm. Rankin's Pass, Limpopo Province, South Africa. 5 April, 1998. M. Williams.
Images M.C. Williams ex Williams Collection.



Catopsilia florella. Female f. *hyblaea* (Wingspan 61 mm). Left – upperside; right – underside. Lekgalameetse Nature Reserve, Limpopo Province, South Africa. 3 December, 2012. M. Williams. Images M.C. Williams ex Williams Collection.

Alternative common name: African Emigrant.

Type locality: Sierra Leone: “Sierra Leon Africae”.

Diagnosis: Superficially similar to *Nepheronia buquetii*, which has green eyes, while *C. florella* has brown eyes.

Distribution: Sub-Saharan Africa, including Senegal, Gambia, Guinea-Bissau (Aurivillius, 1910), Guinea, Mali, Sierra Leone, Liberia, Ivory Coast, Burkina Faso, Ghana, Togo, Benin (throughout), Nigeria, Niger, Cameroon, Equatorial Guinea (Rio Muni and Bioko), Gabon, Congo, Angola, Central African Republic, Democratic Republic of Congo, Chad, Sudan, Ethiopia, Uganda, Rwanda, Burundi, Kenya, Tanzania, Malawi, Zambia, Mozambique, Zimbabwe, Botswana, Namibia, South Africa (Limpopo Province, Mpumalanga, North West Province, Gauteng, Free State Province, KwaZulu-Natal, Eastern Cape Province, Western Cape Province, Northern Cape Province), Swaziland, Lesotho. Also in Madagascar, Reunion, Mauritius, Comoro Islands, Seychelles (Island of Aldabra), Cape Verde Islands, Arabia, Yemen (including Socotra). Recorded from Al-Baha Province, Saudi Arabia (El-Hawagry *et al.*, 2013).

Extralimitally in the Canary Islands (from the 1960’s), Egypt, Israel, Lebanon, India (according to Larsen (2005a) probably not resident here) and Sri Lanka (as for India, not resident here?).

Specific localities:

Cape Verde Islands – Brava Island (Tennent & Russell, 2019); Fogo Island (Tennent & Russell, 2019); Santiago Island (Tennent & Russell, 2019); Maio Island (Tennent & Russell, 2019); Boa Vista Island (Tennent & Russell, 2019); Sal Island (Tennent & Russell, 2019); Sao Nicolau Island (Tennent & Russell, 2019); Santa Luzia Island (Tennent & Russell, 2019); Sao Vicente Island (Tennent & Russell, 2019); Santo Antao Island (Tennent & Russell, 2019).

Gambia – Fajara, Bijilo, Abuko, Pirang, Farasutu, Sanyang, Kartong, Tintinto, Keneba, Tendaba, Brufut, Walikunda, Basse (Jon Baker, pers. comm., May 2020).

Guinea – Macenta (Dufrane, 1947); Ziama (Safian *et al.*, 2020).

Liberia – Wologizi (Safian *et al.*, 2020); Wonegizi (Safian *et al.*, 2020).

Ivory Coast – Man (Dufrane, 1947).

Ghana – Bobiri Butterfly Sanctuary (Larsen *et al.*, 2007); Boabeng-Fiema Monkey Sanctuary (Larsen *et al.*, 2009).

Togo – Klouto [6°57'15.07"N 0°34'54.40"E] (Safian *et al.*, 2009).

Benin – Noyau Central, Lama Forest (Fermon *et al.*, 2001); Lokoli (Tchiboza *et al.*, 2008); Houeyogbe Forest (Coache & Rainon, 2016); see Coache *et al.*, 2017.

Gabon – All open areas (Vande weghe, 2010).

Central African Republic – Dzanga (Noss, 1998).

Democratic Republic of Congo – Lacdi Lolo (Dufrane, 1947); Ituri Forest (Ducarme, 2018); Semuliki Valley (Ducarme, 2018); Central Forest Block (Ducarme, 2018); Mt Mitumba (Ducarme, 2018); Mt Blue (Ducarme, 2018).

Ethiopia – Atbara (Butler, 1876).

Uganda – Semuliki N.P. (Davenport & Howard, 1996).

Kenya – Kitale (Stoneham, 1957).

Tanzania – Amani (Strand, 1911); Semdoe Forest Reserve (Doggart *et al.*, 2001); Katavi National Park (Fitzherbert *et al.*, 2006).

Malawi – Mt Mulanje (Congdon *et al.*, 2010); Zomba Mountain (Congdon *et al.*, 2010); Nyika N.P. (J. Timberlake, pers. comm., 2019).

Mozambique – Mt Chipirone (Timberlake *et al.*, 2007); Njesi Plateau (Congdon *et al.*, 2010); Mt Inago (Congdon *et al.*, 2010); Mt Namuli (Congdon *et al.*, 2010); Mt Mabu (Congdon *et al.*, 2010); Mt Mecula [-12.0772 37.6297] (Congdon & Bayliss, 2013); Mt Yao [-12.4432 36.5114] (Congdon & Bayliss, 2013).

Zimbabwe – Motloutsi River (Westwood, 1881).

Botswana – Widespread (Larsen, 1991).

Limpopo Province – Doorndraai Dam Nature Reserve (Warren, 1990); Percy Fyfe Nature Reserve (Warren, 1990); Lekgalameetse Nature Reserve (“Malta Forest”); Highlands Wilderness (Bode & Bode, unpublished checklist); Rankin’s Pass (female form *florella* illustrated above); Soetdoring Farm [-24.561 28.233] (A. Mayer, pers comm. 2015); Bateleur Nature Reserve (Williams & Dobson, unpub., 2015); Buzzard Mountain Retreat [-23.012 29.765] (Williams, unpub., 2015).

Mpumalanga – Verloren Vallei Nature Reserve (Warren, 1990); Sterkspruit Nature Reserve (Williams); Buffelskloof Nature Reserve (Williams); Pretoriuskop (male illustrated above).

North West Province – Kgaswane Mountain Reserve (Williams); Mountain Sanctuary N.R. (Williams); Utopia Resort (C. Dobson, 2006); Borakalalo Nature Reserve (J. Dobson, unpublished, 2009).

Gauteng – Witwatersrand Botanical Gardens (J. Dobson, unpublished checklist, 2001); Buffelsdrif Conservancy (Williams).

Free State Province – Platberg, Harrismith (Dobson, Williams & Schutte, unpublished, 2010); Cyferfontein [-30.3736 25.8131] (R. Griesel, unpublished).

KwaZulu-Natal – Kosi Bay Nature Reserve (Pringle & Kyle, 2002); Tembe Nature Reserve (Pringle & Kyle, 2002); Ndumo Nature Reserve (Pringle & Kyle, 2002).

Northern Cape Province – Along the Kuruman River (van Son, 1959).

Swaziland – Mlawula N. R. (www.sntc.org.sz); Malolotja N. R. (www.sntc.org.sz).

Mauritius – Widespread and common (Davis & Barnes, 1991). Grand Gaube (Lawrence, 2016).

Seychelles – Mahe (a single specimen collected by R.P. Philibert (de Joannis, 1894)).

Habitat: Occurs in most habitats, excluding dense forest, true desert and the frigid alpine zone. This apparent wide habitat tolerance is probably due to the migratory nature of the species. Actual breeding populations are probably mostly in the dry and moist savanna zones, since this is where the larval host-plants occur. In Madagascar it is recorded as occurring in unnatural grasslands and marshlands (Lees *et al.*, 2003).

Habits: As the common name indicates, this is a well-known migrant. The flight is powerful, direct and a few metres above the ground. Both sexes are very partial to flowers and males are often seen in assemblages at mud-puddles. Migrations in southern Africa are usually in a north-easterly direction and take place mainly during mid to late summer (Pennington, 1967; Larsen, 1992). Yellow females predominate over white ones during these migrations when they occur in autumn. The source of the migrations in southern Africa is thought to be Bushmanland, in the area south of Kenhardt, but more research is needed (Pringle *et al.*, 1994). When not migrating, both sexes fly randomly (Pringle *et al.*, 1994).

Flight period: All year in warmer areas; summer in colder climates (Pringle *et al.*, 1994).

Early stages:

Trimen & Bowker, 1889: 183 and 188 [as *Callidryas Florella* (Fabricius)].

“**Larva.** Yellowish-green dorsally, minutely granulated with black; pale glaucous-greenish laterally; the two colours separated by a rather wide, conspicuous yellow stripe. Head coloured like the back. Legs pale glaucous-greenish.”

“**Pupa.** Pattern and colouring very like that of larva, but the green apparently more uniform and (except on wing-covers) inclining to glaucous; yellow lateral stripe paler. Acute cephalic projection tipped with reddish-brown. Attached to various bushes, grass, etc.”

“These descriptions of larva and pupa are made from a coloured drawing sent to me by Mrs. Barber in 1882. That of the pupa must be qualified by the following note, made by Mrs. Barber during the great abundance of the insect near Kimberley in 1881, viz., “The larvae suspending themselves to various plants resulted in pupae wonderfully adapted in colour to the particular plants occupied. Those upon dry grass were straw-coloured; one in a bunch of grass only half dry and half green was green on the underside and straw-coloured on the upper side. A number of caterpillars that I put into a tin-box suspended themselves on its sides and became pupae of a leaden colour. I think, however, that when at liberty the larvae preferred to pupate on the bluish-green upright stems of a small species of *Cyphonema*, common among the grass, for the bluish-green pupae were crowded together upon it in great numbers. The chrysalis state seldom lasted more than ten days”.

As regards the larva, Mrs. Barber further notes: "I observed them literally in thousands on the *Cassia* plants; they cleared off every leaf, and then devoured the young shoots, and even the bark of the stems. I noticed no variation whatever in these caterpillars."

Clark, in Van Son, 1949: 69.

Egg elongate-elliptical; 1,6 mm high and 0,4 mm in diameter; white; egg stage 4 to 6 days. Five larval instars lasting 13 days; head and dorsum greenish yellow; pale glaucous-green laterally; wide yellow subdorsal stripes separating the two colours; the final instar with black lateral bands; surface finely granulated with black; length of newly-emerged larva about 2 mm, reaching 47 mm in the final instar. Pupa green or pale greenish brown with a pale yellow lateral stripe; cephalic process acute, slightly upturned, reddish brown at tip; dorsal thoracic carina yellow, rather small and not high, roundly excurved behind; wing-covers projecting furthest at about middle, where they are fairly widely separated, converging in the posterior third without forming a sharp carina; cremaster about as long as cephalic process, but wider and deeply sulcate above; length of pupa about 32 mm; pupal stage rarely more than 10 days.

Carcasson, 1981 [larva and pupa].

Henning, S.F., 1984: 35.

Larsen, 1991c: 120.

"Eggs are laid on the fresh shoots and sometimes large numbers may be found on each plant. Larvae in all stages are often avidly tended by ants, though they do not have a well-defined honey gland as is the case in many Lycaenidae. The pupae are usually green, but a small proportion are light brown, a type of colour dimorphism that recurs in several butterfly families."

Clark, in Pringle *et al.*, 1994: 354; plate 8.

"The eggs are laid singly on leaves or on the tips of young shoots of the foodplant and are 0,5 mm in diameter and 1,6 mm high. They are creamy white but change to a yellowish colour. There are 16 longitudinal ribs braced by 45 cross ribs. The larva eats its way out of the top of the egg and then eats the discarded shell. The first instar is creamy white, while subsequent instars are green and become progressively darker. The first instar larva feeds by eating a round hole in the leaves of the foodplant while sitting on the midrib of the leaf. The later instars feed on the edge of the leaf. When it is ready to moult, the larva spins a small pad of silk between two leaves and changes its skin on it. In later moults the larva stays on the midrib. The final instar can have heavy black markings or may be almost devoid of marks; if feeding on yellow flowers, it can be bright yellow. Larva: On emergence 2,0 mm, egg duration five days. 1st instar 2,0 mm to 4,0 mm in three days; 2nd instar 4,0 mm to 7,0 mm in three days; 3rd instar 7,0 mm to 13,0 mm in four days; 4th instar 13,0 mm to 24,0 mm in four days; 5th instar 24,0 mm to 46,5 mm in four days. Pupa 32,0 mm hatched after 12 days. The pupa is attached, head upwards, by the cremastral hooks and a silken girdle around the middle."

Henning, Henning, Joannou, & Woodhall, 1997: 259 (photograph of final instar larva and pupa).

Larsen, 2005a.

Larvae are often associated with small ants, which appear to feed on exudations from the edges of leaves eaten by the larvae. Even though ants swarm all over the larvae they do not appear to be a threat to the caterpillars.



Catopsilia florella early stages.
Left – egg; centre left – 2nd instar larva; centre right – final instar larva; right – pupa.
Images courtesy Steve Woodhall.

Larval food:

- Bauhinia galpinii* N.E. Br. (Fabaceae) [Otto *et al.*, 2013: 72].
Cassia abbreviata Oliv. (Fabaceae) [Henning, Henning, Joannou & Woodhall, 1997: 260; as species of *Senna*].
Cassia fistula L. (Fabaceae) [Davis & Barnes, 1991: 152; Mauritius].
Chamaecrista mimosoides (L.) Greene (Fabaceae) [Henning, Henning, Joannou & Woodhall, 1997: 260; as *Senna mimosoides*].
Gossypium species (Malvaceae) [Kielland, 1990d: 51].
Senna corymbosa (Lam.) H.S.Irwin & Barneby (Fabaceae) (exotic) [A. Millar, *in* Trimen & Bowker, 1889: 188; as *Cassia corymbosa*].
Senna didymobotrya (Fresen.) H.S.Irwin & Barneby (Fabaceae) (exotic) [Claassens & Dickson, 1980].
Senna italica Mill. subsp. *arachoides* (Burch.) Lock (Fabaceae) [Trimen & Bowker, 1889: 188; as *Cassia arachnoides*].
Senna occidentalis (L.) Link (Fabaceae) (exotic) [Van Son, 1949: 70].
Senna petersiana (Bolle) Lock (Fabaceae) [Van Son, 1949: 70].
Senna septemtrionalis (Viv.) H.S.Irwin & Barneby (Fabaceae) (exotic) [Dickson & Kroon, 1978].
Senna singueana (Delile) Lock (Fabaceae) [Henning, Henning, Joannou & Woodhall, 1997: 260].
Sesbania species (Fabaceae) [Van Someren, 1974: 317].

pyrene Swainson, 1821 *in* Swainson, 1820-1 (as sp. of *Colias*). *Zoological illustrations, or original figures and descriptions of new, rare or interesting animals selected chiefly from the class of Ornithology, Entomology and conchology* (1) **1**: pl 51 ([xxvii] pp.). London. South Africa: “Interior of the Cape of Good Hope”.

hyblaea Boisduval, 1836 (as sp. of *Callidryas*). *In*: [Roret, Suites à Buffon] *Histoire naturelle des Insectes. Species général des Lépidopteres* **1**: 612 (690 pp.). Paris. Senegal.

rhadia Boisduval, 1836 (as sp. of *Callidryas*). *In*: [Roret, Suites à Buffon] *Histoire naturelle des Insectes. Species général des Lépidopteres* **1**: 617 (690 pp.). Paris. Senegal; Mauritius: “île Maurice”.

marcellina Bertoloni, 1850 (as sp. of *Pontia*). *Memorie della Reale Accademia del Scienze dell’Istituto di Bologna. Class de Scienze Fisiche. Bologna* (1) **2**: 178 (165-188). “Orientale africana”.

aleurona Butler, 1876 (as sp. of *Catopsilia*). *Annals and Magazine of Natural History* (4) **18**: 489 (480-490). Ethiopia: “Atbara, Abyssinia”.

rufosparsa Butler, 1880 (as sp. of *Catopsilia*). *Annals and Magazine of Natural History* (5) **5**: 395 (333-344, 384-395). Madagascar.

swainsoni Westwood, 1881 (as sp. of *Callidryas*). *In*: Oates, F., *Matabeleland and the Victoria Falls*, 1st edition: 335 (331-365). London. ?Zimbabwe: “Motloutsi River”.

subpyrene Strand, 1911 (as ab. of *Catopsilia florella*). *Internationale Entomologische Zeitschrift* **4**: 220 (219-220, 226-227). Tanzania: “Amani”.

inornata Dufrane, 1947 (as f. of *Catopsilia florella florella*). *Bulletin et Annales de la Société Royale Entomologique de Belgique* **83**: 62 (46-73). Guinea: “Macenta, Guinée”.

biannulata Dufrane, 1947 (as ab. of *Catopsilia florella florella*). *Bulletin et Annales de la Société Royale Entomologique de Belgique* **83**: 62 (46-73). Democratic Republic of Congo: “Lacdi Lolo, Kasai”.

houzeau Dufrane, 1947 (as ab. of *Catopsilia florella florella*). *Bulletin et Annales de la Société Royale Entomologique de Belgique* **83**: 63 (46-73). Ivory Coast: “Man, Côte d’Ivoire”.

peregrina Stoneham, 1957 (as female f. of *Catopsilia florella*). *Bulletin of the Stoneham Museum* (70): [2] ([3 pp.]). Kenya: “Kitale”.

duplicata Stoneham, 1957 (as female f. of *Catopsilia florella*). *Bulletin of the Stoneham Museum* (70): [2] ([3 pp.]). Kenya: “Kitale”.

wandriana Stoneham, 1957 (as female f. of *Catopsilia florella*). *Bulletin of the Stoneham Museum* (70): [2] ([3 pp.]). Kenya: “Kitale”.

***Catopsilia thauruma* (Reakirt, 1866)**

Island Migrant



Island Migrant (*Catopsilia thauruma*) male, Perinet, Madagascar.
Image courtesy Raimund Schutte.

Callidryas thauruma Reakirt, 1866. *Proceedings of the Academy of Natural Sciences of Philadelphia* **1866**: 238 (238-249).



Catopsilia thauruma. Male (Wingspan 57 mm). Left – upperside; right – underside.
Grand Baie, Mauritius. 15 April 2009. J. Dobson.
Images M.C. Williams ex Dobson Collection.



Catopsilia thauruma. Male. Left – upperside; right – underside.
Zombitse, Madagascar. 16-17 April 2018. J. Dobson.
Images M.C. Williams ex Dobson Collection.



Catopsilia thauruma. Female. Left – upperside; right – underside.
Zombitse, Madagascar. 16-17 April 2018. M. Williams.
Images M.C. Williams ex Dobson Collection.



Catopsilia thauruma. Female form *grandidieri* (Wingspan 49 mm). Left – upperside; right – underside.
Black River Gorges, Mauritius. 31 December 2006. J. Dobson.
Images M.C. Williams ex Dobson Collection.

Type locality: Madagascar.

Distribution: Madagascar (Paulian, 1951), Mauritius (Davis & Barnes, 1991), Reunion (Martire & Rochat, 2008).

Specific localities:

Madagascar – Fianarantsoa (Butler, 1880); Perinet Forest (R. Schutte, pers. comm., April 2010).

Mauritius – Widespread and common (Davis & Barnes, 1991). Especially common at Beau Bassin (Davis & Barnes, 1991); Mon-Désert (Le Cerf, 1916); Black River Gorges (J. Dobson, unpublished, 2006); Grand

Baie (J. Dobson, unpublished, 2009); Grand Gaube (Lawrence, 2016); Le Morne (Lawrence, 2016).

Habitat: Forest margins and anthropogenic environments (Lees *et al.*, 2003).

Habits: Extremely rapid flight typical of the genus, occasionally settling when the sun is obscured. A common resident (R. Schutte, pers. comm., April 2010).

Early stages: Nothing published.

Larval food:

Senna siamea (Lam.) H.S.Irwin & Barneby (Fabaceae) [Davis & Barnes, 1991: 152; Mauritius; as *Cassia siamea*].

fiaduma Hewitson, 1867 *in* Hewitson, 1867-71 (as sp. of *Callidryas*). *Illustrations of new species of exotic butterflies* 4: 7 (118 pp.). Madagascar.

grandidieri Mabille, 1877 (as sp. of *Eronia*). *Bulletin de la Société Entomologique de France* (5) 7: 38 (37-39). Madagascar.

decipiens Butler, 1880 (as sp. of *Catopsilia*). *Annals and Magazine of Natural History* (5) 5: 338 (333-344, 384-395). Madagascar: “Madagascar, Fianarantsoa”.

mauritania Le Cerf, 1916 (as var. of *Catopsilia grandidieri*). *Bulletin de la Société Entomologique de France* 1916: 112 (112-113). Mauritius: “Ile Maurice, Mon-Désert”.

mabillei Neustetter, 1929 (as sp. of *Catopsilia*). *Internationale Entomologische Zeitschrift* 23: 336 (336-337). Madagascar: “Madagaskar”. Synonymized with *C. thauruma* by Lees *et al.*, 2003.

Catopsilia pyranthe (Linnaeus, 1758)

Mottled Migrant

Papilio pyranthe Linnaeus, 1758. *Systema Naturae* 1, Regnum Animale, 10th edition: 1-824. Holmiae.



Male (left) and female (right) of the Mottled Emigrant, *Catopsilia pyranthe*.
Images from Wikipedia.

Type locality:

Distribution: Oriental Region, In the Afrotropical Region recorded from the United Arab Emirates by B. Roobas and G. Feulner (*The Gulf Today*, 14 January 2018).

Specific localities:

United Arab Emirates – Al Noor Island, Sharjah.

Habitat:

Habits:

Early stages:

Larval food: