

New Records of two species of *Cleora* Curtis (Lepidoptera: Geometridae) from Mt. Makiling, Luzon, with a full checklist of species known from the Philippines

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ABSTRACT: *Cleora contiguata bigladiata* is recollected from its type locality 48 years after its original description in 1953. Meanwhile, *C. decisaria* and *C. determinata* are recorded in Mt. Makiling for the first time. The latter species is also a new country record. These additional locality data are added to the updated checklist of *Cleora* from the Philippines.

The Mt. Makiling Forest Reserve is a solitary peak which rises to just over 1,000 meters. Its forest is generally of the lowland type. Above 900m however, some montane forest can be found (Mallari, *et al.*, 2001). While most current researches focus on floral, bird and mammal inventories, records of geometrid moths from Mt. Makiling are still wanting. In fact, the only geometrid species ever recorded from Mt. Makiling was *Cleora contiguata bigladiata* Fletcher (Scoble 1999). Meanwhile, other records of *Cleora* from the Philippines are made available through the studies of Sato (1989; 1997).

Like many boarmiine genera, *Cleora* possess strongly bipectinate antennae and distinct forewing fovea in males (Holloway, 1994). In the male genitalia, there is strong ornamentation of the sacculus. According to Holloway (1994), vesica of aedeagus is bifurcate. Meanwhile, female genitalia, are characterized by long sclerotized bursa copulatrix.

Cleora species are the most commonly collected moths from light trapping. Night collection or trapping of moths was done from 5:30 pm to 7:00 pm by means of an ultraviolet (UV) DC collecting light attached to a 12-volt battery through an improvised jumper cable adapter. The UV light trap was suspended in front of a white sheet. However, it was observed that these moths do not readily approach light traps. Rather, they fly or stay within the periphery of it; hence these moths were collected through sweep net. Once collected, the moths were placed inside an ethyl acetate killing jar. All specimens were labeled with a number for subsequent matching of specimen against records of date, locality, host plant or any observed habit. All collected materials were deposited in the UPLB Museum of Natural History (UPLB-MNH).

Cleora Curtis, 1825

Cleora contiguata bigladiata Fletcher, 1953

Carecomotis contiguata bigladiata Fletcher, 1953. Ann. Mag. nat. Hist. (12) 6: 141.

Geographical Distribution: The subspecies was first described by Fletcher in 1953 which indicated Mt. Makiling as the type locality (Scoble 1999). Sato (1989) reported that the subspecies is found in two other localities in Luzon, namely Banaway (=Banaue in North Luzon) and San, Jose, Mindoro. This is the first time *C. contiguata bigladiata* is recollected from its designated type locality after 48 years. It appears that the distribution of this subspecies is restricted to the Philippines.

Specimens examined: Philippines, Luzon, Los Baños, Laguna: Rizal National Park (formerly Pook ni Maria Makiling), Mt. Makiling, Los Baños [Elevation: 100 meters], 26.IX.2001 [1 male specimen, Voucher specimen: UPLBMNH LEP-04078]; Philippines, Luzon, Los Baños, Laguna: College of Forestry and Natural Resources, Mt. Makiling, Los Baños [Elevation: 100 meters], 19.IX.2001 [1 female specimen, Voucher specimen: UPLBMNH LEP-04079].



FIGURE 1. *Cleora contiguata bigladiata* Fletcher, male (scale bar = 3.3 mm).

Cleora decisaria Walker, 1866

Boarmia decisaria Walker, 1866. List Specimens lepid. Insects Colln Br. Mus. 35: 1589.

Geographical Distribution: Holloway (1994) listed the distribution range of this species to be Sundaland to Queensland and Solomons. In the Philippines, Sato (1989;

1997) reported that the species can be found in Palawan and Mindanao. This is a new record for Mt. Makiling, Los Baños of the Greater Luzon island.

Specimens examined: Philippines, Luzon, Los Baños, Laguna: Rizal National Park (formerly Pook ni Maria Makiling), Mt. Makiling, Los Baños [Elevation: 100 meters], 16.V.2002 [2 male specimens, Voucher specimens: UPLBMNH LEP-04080 and UPLBMNH LEP-04081].



FIGURE 2. *Cleora decisaria* Walker, male (scale bar = 3.2 mm).

Cleora determinata Walker, 1860

Boarmia determinata Walker, 1860, *List Specimens lepid. Insects Colln Br. Mus.*, 21:384.

Geographical Distribution: Prior to this account, the only listed distribution records include the following: Borneo, Peninsular Malaysia and Sumatra (Holloway, 1994). This is a new country record from the Philippines.

Specimens examined: Philippines, Luzon, Los Baños, Laguna: College of Forestry and Natural Resources, Mt. Makiling, Los Baños [Elevation: 100 meters], 2007 [1 female specimen, Voucher specimen: UPLBMNH LEP-04082] and Philippines, Luzon, Los Baños, Laguna: Sipit Watershed, Mt. Makiling, Los Baños [Elevation: 100 meters] 28. VII. 2006 [1 female specimen, Voucher specimen: UPLBMNH LEP-04083].

Remarks: Species delineation was made using female material only and this may not be sufficient enough to separate *C. determinata* from *C. illustraria*. However, I temporarily identify it as *C. determinata* until male material becomes available.



FIGURE 3. *Cleora determinata* Walker, female (scale bar = 6 mm).

Cleora Known from the Philippines

An updated checklist of the 25 *Cleora* species that are known to occur in the Philippines is presented below. Species are alphabetically arranged and island distribution is also indicated alongside the species name. Annotations on the local distribution data are in curly brackets. New records are marked with an asterisk while an equal sign is used for synonyms. These names are indented under the senior name. The type genus of each species is in parenthesis. Lastly, authors of publications used as the basis for this list are cited after locality data.

1. *alienaria* (Walker, 1860) (*Boarmia*): Mt. St. Tomas {Mt. St. Thomas, Benguet} Banaway {Banaue}, Luzon; Mt. Province; Ifugao; Bohol; Cebu; Palawan, Mindanao; Sato, 1989;1997; Scoble, 1999.

2. *batillata* (Fletcher, 1953) (*Carecomotis*): Klondyke, Benguet, Los Baños, Laguna; San Jose, Mindoro; Mantalalingajan, Palawan; Leyte; Mt. Canlaon, Negros; Lapid Lapid, Manalik and Tarawakan, Tawi-tawi; Sato, 1989;1997; Scoble, 1999.

3. *concentraria* (Snellen, 1877) (*Boarmia*): Mt. Kalatungan, Mt. Kitanglad and Mt. Busa, Mindanao; Sato, 1997.

4. *contiguata blagiata* Fletcher, 1953 (*Carecomotis*): Mt. Makiling, Luzon; Banaway {Banaue}, Luzon; San Jose, Mindoro; Mt. Canlaon {Mt. Kanlaon}, Negros; Mindanao; Sato, 1989; 1997; Scoble, 1999.

5. *contiguata brooksi* (Fletcher, 1953) (*Carecomotis*): Balabac, Mantalingajan, Pingisan and Roxas, Palawan; Sato 1989; 1997.

6. *copia* Sato, 1997 (*Cleora*): Negros; Mindanao; Sato, 1997.

7. *cucullata* Fletcher, 1953 (*Carecomotis*): Philippines {locality unspecified}; Scoble, 1999.

8. *dacasini* Herbulot, 1981 (*Cleora*): Mt. St. Tomas {St. Thomas}, Baguio; Mt. Pugu, Mt. Province; Mt. Canlaon {Mt. Kanlaon}, Negros; Mt. Katanglad (Mt. Kitanglad), Bukidnon and Mt. Tagbud {Mt. Tagubud}, Davao, Mindanao; Sato, 1989;1997; Scoble, 1999.

inopinata Sato, 1989 (*Cleora*); Sato, 1989.

9. *decisaria* Walker, 1866 (*Boarmia*): Mt. Makiling, Los Baños, Laguna*, Palawan, Mindanao; Sato, 1989;1997.

10. *determinata* (Walker, 1860) (*Boarmia*): Mt. Makiling, Los Baños, Laguna*

11. *injectaria injectaria* (Walker, 1860) (*Boarmia*): Negros; Balabac, Mindanao; Tawi-tawi; Sato, 1989;1997.

12. *inoffensa* (Swinhoe, 1902) (*Boarmia*): Los Baños, Laguna; Mindanao; Mt. Salakot, Palawan; Tawi-tawi; Sato, 1989;1997; Holloway, 1994.

13. *isabella* Herbulot, 1985 (*Cleora*): Mt. Salakot, Palawan; Scoble, 1999.

14. *lacteata* Warren, 1897 (*Chogada*): Balabac, Mindoro; Sato, 1989.

15. *lipotera* West, 1929 (*Cleora*): Haight's Place Benguet, Mt. Data, Mt. Province Sato, 1989; Scoble, 1999.

16. *onycha limitata* (Fletcher, 1953) (*Carecomotis*): Los Baños, Laguna, Luzon; San Jose, Mindoro; Leyte; Balabac, Palawan; Mindanao; Tarawakan, Tawi-tawi; Sato, 1989.

17. *paepalima* West, 1932, (*Cleora*): Haight's Place, Benguet; West, 1932; Sato, 1989.

18. *pendleburyi* Prout, 1929 (*Cleora*): Mindanao; Pala-

wan; Sato, 1989; Holloway, 1994; Scoble, 1999.

19. *propulsaria* (Fletcher, 1953) (*Carecomotis*): Luzon; Mindanao; Surigao; Palawan; Tawi-tawi; Sato, 1989; Holloway, 1994; Scoble, 1999.

20. *pupillata luzonensis* (Fletcher, 1953) (*Carecomotis*): Benguet and Banaway {Banaue} Luzon; Leyte; Mt. Canlaon {Mt. Kanlaon}, Negros; Mantalingajan, Pingisan and Roxas, Palawan; Maitum, South Cotabato, Mindanao; Sato, 1989; 1997; Holloway, 1994; Scoble, 1999.

21. *repulsaria philippinica* Sato, 1997 (*Boarmia*): Bontoc, Mt. Province, Luzon; Banaway {Banaue}, Luzon; San Jose, Mindoro; Marinduque; Palawan; Mt. Canlaon {Mt. Kanlaon}, Negros; Sato, 1989; 1997; Scoble, 1999.

repulsaria Sato, 1989 (*Cleora*); Sato, 1989

22. *repetita* (Butler, 1882) (*Boarmia*): Negros; Palawan; Mindanao; Tawi-tawi; Barlow, 1982; Sato, 1989; 1997; Scoble, 1999.

23. *rhadia* Prout, 1929 (*Cleora*): Palali, Benguet; Sato, 1989; Scoble, 1999.

24. *tella tella* (West, 1929) (*Boarmia*): Mt. Canlaon {Mt. Kanlaon}, Negros; Sato, 1997.

25. *tella mindana* (*Cleora*) Luzon: Benguet; Baguio; Sagada; Barlig; Mt. Puguis; Palawan; Mt. Talomo, Apo Range, Davao, Mindanao; West, 1929; Sato, 1989; 1997; Scoble, 1999.

26. *telloides* Sato, 1989 (*Cleora*): Upper Baracatan, Apo Range, Mt. Talomo, Davao, Mindanao; Sato, 1989; 1997.

27. *tenebrata* Fletcher, 1953, (*Carecomotis*): San Vicente, Mantaligahan, Pingisan, Palawan; Scoble, 1999.

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