

NEW RECORDS OF MOTHS FROM MACAU, SOUTHEAST CHINA

EMMETT R. EASTON¹ AND WING-WAH PUN²

¹Centre for Extension Studies, University of Macau P.O. Box 3001, Macau (via Hong Kong); and

²Dept. de Servicos Agrários da Câmara Municipal Das Ilhas, Coloane, Macau

ABSTRACT.— Records of 145 species of moths are listed for the Portuguese territory of Macau, of which 127 are new records.

KEY WORDS: Agaristinae, Arctiidae, Asia, China, Cossidae, distribution, Geometridae, Hong Kong, hostplants, Lasiocampidae, Limacodidae, Lymantridae, Malaysia, Metarbelidae, Noctuidae, Nolinae, Notodontidae, Oriental, Psychidae, Pyralidae, Saturniidae, Southeast Asia, Sphingidae, Syntominae, Taiwan, Tortricidae, Uraniidae, Zygaenidae.



Fig. 1. General view of Macau harbor and hill vegetation.

Macau consists of a small land area situated near Hong Kong in Southeast Asia, composed of a peninsula of land connected to Guangdong Province of mainland China, in addition to two islands that are interconnected to the peninsula either by two road bridges (Taipa Is.) or by a causeway (Coloane Is.). Our recent paper (Easton and Pun, 1995) illustrates some of the moths of Macau. The records compiled in the present paper provide more detailed notes on species we have found in Macau, many of which are new records for Macau due to the lack of previously published information available on Macau moths, at least in English.

Geographically, both Hong Kong and Macau are situated north of the main Oriental or Indo-Malayan fauna but such standard works on moths as that of Barlow (1982), on the Southeast Asian fauna, contain only a small representation of the species found locally. In the family Sphingidae, in which more information is

available for purposes of comparison Barlow (1982) discusses 37 species of hawkmoths but less than half of these (11 of them), as well as their food plants, have been reported to occur in southeast China (Tennent, 1992). Fox (1986) notes even fewer species, as she confined her work to peninsular Malaysia. All of the 11 species found both in Barlow (1982) and in Tennent (1992) are also reported to occur in northern India, as the range of many of our local species extends inland into southern China reaching India, which has many similar floral elements. The range of species locally decreases rapidly beyond Macau, with either decreasing or increasing latitude. The island of Taiwan being geographically closer to Hong Kong and Macau shares more faunal elements with us than does Malaysia. Of some 63 hawkmoth species reported by Tennent (1992) to occur in southeast China, 22 of them (60%) have also been reported to occur in Taiwan. A much smaller number of species found locally reach



Fig. 2-4. Diverse moths from Macau: 2) *Daphnis hypothous* (Sphingidae). 3) *Seudya albifascia* (Agaristidae). 4) *Dysphania militarius* (Geometridae).

as far north as Japan, however.

Material reported here was collected partially by examining buildings or monuments that had been illuminated by light the previous evening. Larvae collected from host plants were reared to adults in the laboratory at Siac Pai Van. Identification was undertaken with the aid of color plates in D'Abbrera (1986) and Tennent (1992) for species of *Macroglossum*, as well as mainland China publications in Chinese (*Iconographia Heterocerorum Sinicorum* I-III. 1983. Academica Sinica, Beijing, China). Records are noted with the name of the collector or the authors: ERE (for E. R. Easton) or PWW (for W. W. Pun).

Names of hostplants follow the *Macau Catalogue of Plants* (Câmara Municipal das Ilhas, Macau and Instituto de Investigação Científica Tropical, Lisboa, 1991), as well as Thrower (1983, 1988), for climbing plants and trees in Hong Kong, respectively. Representatives of the species of moths named here are housed in the entomology museum of the Agrarian Services, Coloane, under the curatorship of the second author.

LEPIDOPTERA

AGARISTIDAE

Episteme lectrix (Linnaeus), 29 Sep 1992, Cheong Pak Fai leg. NEW RECORD: Coloane Is., Macau.

Seudya albifascia Walker, 27 Apr 1994, ERE leg. NEW RECORD: Macau Peninsula, attracted to lights of Friendship Monument.

SYNTOMIDAE

Amata germana (Felder), Tiger wasp moth, 27 Oct 1993. NEW RECORD: Coloane Is., Macau. Ex *Camellia sinensis* (Theaceae), *Morus alba* (Moraceae).

Amata grotei (Moore), 29 Mar 1994. NEW RECORD: Coloane Is., Macau.

Ceryx imaon (Cramer), Black wasp moth, 26 Mar 1994. NEW RECORD: Coloane Is., Macau. Ex *Cinnamomum camphora* (Lauraceae) and *Melia azedarach* (Meliaceae).

ARCTIIDAE

Argina cribaria (Clerck), 27 Sep 1993, PWW leg. NEW RECORD: Coloane Is., Macau. In the Hong Kong colony, Lee and Winney (1981) have reported it from *Crotalaria mucronata* (Leguminosae).

Cretonotus gangis (Linnaeus), 16 Oct 1993, Tong Veng-Va leg. NEW

RECORD: Coloane Is., Macau, 2 Jan 1995, ERE leg. Species in this genus are sometimes called ermine moths due to their likeness to the animal's fur (Fox 1986). It has been taken from *Camellia sinensis* (Lauraceae) and *Citrus* sp. (Rutaceae). In Malaysia, the species frequents the lowlands; it is also found in India.

Cretonotus transiens (Walker), 17 Feb 1994, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Citrus sinensis* (Rutaceae); *Ficus rumphi*, *Morus alba* (Moraceae). It is reported from hilly sites in Malaysia (Fox 1986). The male of this species and of *C. gangis* is unique in possessing scent glands that can be extruded from the posterior end of the body (Barlow, 1982).

Macrobrochis gigas Walker, 3 Mar 1994, ERE leg, Macau Peninsula. NEW RECORD: Macau.

Nyctemera adversata (Schaller) [= *Nyctemera plagifera* Walker], 2 Mar 1992, Coloane Is., Macau. Ex *Ficus carica* (Moraceae). Easton (1992) reported *N. plagifera* on University buildings on Taipa Is. earlier and this has been commonly attracted to lights from the Friendship Monument on the Macau peninsula during 1994.

Rhodogastris astreus (Drury), 1 Mar 1993, Cheung So Mui, NEW RECORD: Coloane Is., Macau. Barlow (1982) reported larvae feeding on *Beaumontia* (Apocynaceae).

Spilarctia bisecta (Leech), 27 Feb 1993, PWW leg. NEW RECORD: Coloane Is., Macau.

COSSIDAE

Zeuzera coffeae Nietner, Red coffee borer, 13 Apr 1993, Ip Tai leg. NEW RECORD: Coloane Is., Macau. Lee and Winney (1981) list several hosts for the larvae in Hong Kong such as *Acacia confusa*, *Bauhinia* spp. (Leguminosae); *Euphoria longan* and *Litchi chinensis* (Sapindaceae). The red-colored larvae with black patch on thorax feeds on the bark of its host at nite and is believed to retreat into the wood if disturbed where it pupates in late winter.

GEOMETRIDAE

Abraxas plumbeata Cockerell, Magpie Moth, 5 May 1994, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau. Also noted on Taipa Is. this species superficially resembles *A. lugubris* which feeds on the needles of *Pinus* trees (Pinaceae) in Malaysia.

Agathia lycaenaria Kollar, 9 Dec 1993, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau. Ex *Nerium indicum* (Apocynaceae). Fox (1986) called moths in this genus the Emeralds.

Buzura suppressaria (Guenée), 6 Oct 1993, PWW leg., Coloane Is., Macau, 30 Mar 1994, ERE leg. Macau Peninsula. NEW RECORD: Macau. Ex *Camellia sinensis*, *Cinnamomum camphor*, *C. cassia* (Lauraceae).

Calothysanis comptaria Walker, 9 Mar 1994, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau.

Dysphania militaris (Linnaeus), 17 Nov 1994, Ip Tai leg. NEW RECORD: Coloane Is., Macau. Ex *Pinus massoniana* (Pinaceae) and *Camellia oleifer* (Lauraceae). This species has also been noted in the wooded hills on Taipa Is.

Eumelea biflavata insulata Warren, 18 Nov 1991, Tong Chiu Fai leg. NEW RECORD: Coloane Is., Macau.

Nothomiza flavicosta Prout, 16 Feb 1993, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau.

Obeidia tigrata Thierry-Mieg, Brown tiger or geometrid, spring 1994, Coloane Is., Macau. Reported earlier on Taipa Is. (Easton 1992) active during early summer in forested glens on hill top. Adults were observed feeding on the white blossoms of *Homalium* trees (Flacourtiaceae). In Hong Kong, Dr. Mike Bascombe has reared this species on *Celastrus hindsii* (Celastraceae), Chinese bittersweet, a vine like plant.

Pingasa chlora Guenée, 13 Nov 1993, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau.

Problepsis paredra Prout, 13 Jan 1994, PWW leg. NEW RECORD: Coloane Is., Macau.

Semiothisa emersaria Walker, 1 Jul 1992, PWW leg. NEW RECORD: Coloane Is., Macau.

Thalassodes quadraria Guenée, 21 Mar 1994, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau. Ex *Cinnamomum camphora* (Lauraceae).

Trigonoptila latimarginaria Leech, 25 Jan 1994, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Cinnamomum camphora* (Lauraceae).

LASIOCAMPIDAE

Dendrolimus punctatus (Walker), Pine Caterpillar, 8 Feb 1988, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Pinus elliotii*, *P. massoniana* (Pinaceae).

Trabala vishnou Lefebvre, Rose Myrtle Lappet moth, 7 Nov 1994, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Casuarina equisetifolia* (Casuarinaceae). The caterpillars are also reported to feed on *Rhodomyrtus tomentosa* (Myrtaceae), and their long setae have produced skin irritations in man when handled.

LIMACODIDAE

Thosea loesa (Moore), 14 Jul 1993, Tong Veng Va leg. NEW RECORD: Coloane Is., Macau. Ex *Caryota ochlandra* (Palmae).

Thosea sinensis (Walker), 30 Jun 1993, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau. Larvae have been found on *Acacia confusa* (Leguminosae); *Camellia sinensis*, *Cinnamomum camphora* (Lauraceae); and *Liquidambar formosana* (Hamamelidaceae).

LYMANTRIDAE

Aroa substrigosa Walker, 9 Mar 1994, Ip Tai leg. NEW RECORD: Coloane Is., Macau. Ex *Bambusa* sp. (Gramineae).

Euproctis bipunctapex (Hampson), 2 Sep 1992, Siu Meng leg. NEW RECORD: Coloane Is., Macau. Ex *Bischofia trifoliata* (Euphorbiaceae), *Cinnamomum camphora* (Lauraceae), *Cucurbita moschata* (Cucurbitaceae) and *Sapium sebiferum* (Euphorbiaceae).

Euproctis diploxutha Collenette, 26 Aug 1992, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Pyrus sinensis* (Rosaceae).

Euproctis fraterna (Moore), 3-spotted Yellow Tussock moth, 14 Oct 1993, PWW leg. NEW RECORD: Coloane Is., Macau. Collected from *Prunus persica* (Rosaceae) and *Bauhinia variegata* (Leguminosae).

Euproctis plana Walker, 28 Jun 1990, PWW leg. NEW RECORD: Coloane Is., Macau,

Euproctis scintillans (Walker), 18 Oct 1993, PWW leg. NEW RE-

CORD: Coloane Is., Macau. Ex *Bauhinia* sp. (Leguminosae) and *Hibiscus rosa-sinensis* (Malvaceae).

Lymantria obsoleta (Walker), 12 Oct 1994, PWW leg. Coloane Is., 11 Jun 1991, ERE leg, Taipa Is., Macau. NEW RECORD. Ex *Ficus microcarpa* (Moraceae).

Orgyia postica (Walker), 22 Jun 1992, PWW leg., wingless female. NEW RECORD: Coloane Is., Macau. A number of hosts are listed for this species in Hong Kong including *Acacia confusa*, *Bauhinia variegata*, and *Delonix regia* (Leguminosae); and *Casuarina equisetifolia* (Casuarinaceae) (Lee and Winney, 1981).

Perina nuda (Fabricius), Fig tussock moth, 7 Nov 1991. NEW RECORD: Coloane Is., Macau. Larvae are found on the leaves of *Ficus microcarpa* and *F. rumphii* (Moraceae). During early December of 1994, larvae and the pupae of this species were particularly common on the leaves of *F. microcarpa* in the Siac Pai Van Agriculture and Forestry Park on Coloane Is. The forewings of the adult male is mostly hyaline while the female is larger with both wings yellow-brown in color.

METARBELIDAE

Arbela dea Swinhoe, Carpenter moth, 18 Jan 1994, larva, PWW, Leg. NEW RECORD: Coloane Is., Macau. Ex *Acacia confusa* (Leguminosae) and *Casuarina equisetifolia* (Casuarinaceae). Larvae bore into the trunks of trees producing a characteristic frass tube on the bark outside composed of silk and droppings. The tubes are seen commonly on the trunks of *Acacia confusa* trees in both Hong Kong and in Macau. The larvae are believed to feed at night in the tube on the bark of trees and then retreat to a deeper hole during the day or when disturbed, and where they later pupate.

NOCTUIDAE

Achaea serva (Fabricius), 3 Nov. 1992, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau. Ex *Manikara achras* (Sapotaceae).

Agrotis ipsilon Hufnagel, Black Cutworm, 18 Feb 1993, PWW leg. NEW RECORD: Coloane Is., Macau. This species has a wide host range but has been found locally feeding on *Brassica oleracea* (Cruciferae).

Anua tirhaca (Cramer), 15 Oct 1993, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau. Ex *Rhus chinensis* (Anacardiaceae).

Anua trapezium Guenée, 17 Dec 1993, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Citrus* spp. (Rutaceae).

Anua triphaenoides Walker, 2 Mar 1993, A. Castilho leg. NEW RECORD: Coloane Is., Macau.

Anisoneura hypocyanea Guenée, 5 Dec 1994, Coloane Is., Macau; 9 May 1994, Macau Peninsula, NEW RECORD. Several individuals were attracted to light at the Friendship Monument in May 1994.

Argyrogramma agnata Staudinger, 3-spotted plusia, 4 Jan 1993, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau. Ex *Brassica chinensis* (Cruciferae), *Bambusa* sp. (Gramineae), and *Paulownia fortunei* (Scrophulariaceae).

Calloptistria albomaculata Leech, 22 Feb 1993, Cheang Chi Kong leg. NEW RECORD: Coloane Is., Macau.

Calyptra minuticornis Guenée, 19 Feb 1994, Cheong Pak Fai leg. NEW RECORD: Coloane Is., Macau. Ex *Cocculus* sp. (Menispermaceae).

Carea subtilis Walker, Angular owlet moth, 24 Oct 1994, PWW leg. NEW RECORD: Coloane Is., Macau. Adult reared from larva feeding on *Eucalyptus maculata* (Myrtaceae); also feeds on *Rhodomyrtus tomentosa* (Myrtaceae).

Chalciope geometrica (Fabricius), 28 Apr 1989, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Rubus moluccanus* (Rosaceae) and *Sapium discolor* (Euphorbiaceae).

Chalciope mygdon (Cramer), 8 Sep 1992, Ip Tai leg. NEW RECORD: Coloane Is., Macau. Ex *Citrus* spp. (Rutaceae)

Chlumetia guttiventris Walker, 19 Feb 1994, Cheong Pak Fai leg. NEW RECORD: Coloane Is., Macau. Ex *Mangifera indica* (Anacardiaceae).
Dichromia sagitta (Fabricius), 24 Jan 1994, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau.
Eligma narcissus (Cramer), Summer 1994, Coloane Is., Macau. Earlier reported from Taipa Is. (Easton 1992) attracted to light it was also noted attracted to lights at the Friendship Monument on the Macau Peninsula (2 specimens from Sep-Dec 1994). It is believed to feed as larvae on *Prunus persica* (Rosaceae) and *Bauhinia* sp. (Leguminosae).
Entomogramma faurix Guenée, 25 Jul 1994, Ip Tai leg. NEW RECORD: Coloane Is., Macau.
Erebis crepuscularis (Linnaeus), 27 Jul 1994, Cheong Chi Kong leg. NEW RECORD: Coloane Is., Macau.
Ericia fraterna (Moore), 15 Nov 1993, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau.
Eudocima salamina (Cramer), 12 Jan 1994, Ng Wai Man leg. Coloane Is., Macau; Sep 1994, ERE leg., Macau Peninsula, NEW RECORD. Ex *Prunus persicus* (Rosaceae). Moths in this genus have a stiff proboscis and can pierce the rind of citrus fruit.
Flammona trilineata Leech, 16 Apr 1993, Sin Meng leg. NEW RECORD: Coloane Is., Macau.
Gadirtha inexacta Walker, 27 Apr 1994, C. P. Fai leg. NEW RECORD: Coloane Is. Adult reared from larva collected from *Sapium sebiferum*; another host in this area is *Sapium discolor* (Euphorbiaceae).
Hulodes caranea (Cramer), 23 Sep 1994, Ip Tai leg. NEW RECORD: Coloane Is., Macau. Ex *Acanthus ilicifolius* (Acanthaceae).
Hypocala subsatura Guenée (ab. *limbata* Butler), 8 Jul 1994, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Diospyros khaki* (Ebenaceae).
Hypopyra vespertilio (Fabricius), 27 Jun 1994, PWW leg. NEW RECORD: Coloane Is., Macau. Larvae collected from *Albizia lebbek* (Leguminosae) were reared to adult.
Lacera alope (Cramer), 24 Aug 1993. NEW RECORD: Coloane Is., Macau.
Lagoptera dotata Fabricius, 7 Jul 1994, Cheong Chi Kong leg. NEW RECORD: Coloane Is., Macau. Ex *Paulownia* (Scrophulariaceae) and *Citrus* sp. (Rutaceae).
Lagoptera juno (Cramer), Sep-Dec 1994, ERE leg. NEW RECORD: Macau Peninsula. Attracted to lights illuminating the Friendship Monument at entrance to the inner harbour.
Mocis frugalis (Fabricius), 2 Dec 1993, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Acacia confusa* (Leguminosae).
Mocis undata Fabricius, 5 Mar 1994, Laertes de Costa leg. NEW RECORD: Coloane Is., Macau. Ex *Derris trifoliata* (Leguminosae).
Nodaria niphona Butler, 20 Jul 1993, Alex Castilho leg. NEW RECORD.
Ophideres (= *Othreis*) *fullonica* (Linnaeus). Coloane Is. Easton (1992) reported it from Taipa Is. During 1994, adults were trapped in lights at the Friendship Monument throughout the year (109) even though the majority were noted from September to December. A stiff proboscis in this genus allows the rind of citrus fruit to be pierced. The pinhole sized puncture (D. Nafus, *Tree Pests of the Marianas*. U.S. Forest Service Leaflet, Guam) can serve as an entry hole for plant pathogens to develop resulting in early fruit drop. Guava, papaya, and tomato are other fruits in this area the moth can feed upon. In Macau, edible citrus fruits are not grown but the moth may feed upon the ornamental tangerines that are grown to decorate store fronts for the Chinese New year holiday. Figs are also abundant in Macau that can serve as a food source. On the island of Guam, Don Nafus (above) noted eggs being laid on the leaves of *Erythrina* trees (Leguminosae) upon which the larva feed. *Erythrina caffra*, the coral tree can be found in Macau.
Oraesia emarginata (Guenée) 2 Jun 1994, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Ficus carica* (Moraceae) and *Pyrus sinense* (Rosaceae).

Oraesia excavata Butler, 4 Mar 1994, Cheong Vak Fai leg. NEW RECORD: Coloane Is., Macau. Ex *Ficus carica* (Moraceae), *Citrus reticulata* (Rutaceae), and *Prunus persica* (Rosaceae).
Oxyodes scrobiculata (Fabricius), 27 Apr 1993. Leong Kwok leg. NEW RECORD: Coloane Is., Macau. Ex *Litchi chinensis* (Sapindaceae).
Parallelia arcuata (Moore), 7 Mar 1994, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau.
Parallelia fulvotaenia Guenée, 20 Dec 1994, Ip Tai leg. NEW RECORD: Coloane Is., Macau.
Parallelia maturata Walker, 17 Nov 1994, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Citrus* sp. (Rutaceae), *Punica granatum* (Punicaceae), and *Sapium sebiferum* (Euphorbiaceae).
Pericyma cruegeri Butler, Flame Tree looper, Sep 1994. NEW RECORD: Coloane Is., Macau. Ex *Delonix regia* (Leguminosae). In parts of its range, the caterpillars completely defoliate the host tree, but locally and in Hong Kong complete defoliation of *D. regia* has not been noted.
Polydesma otiosa Guenée, 24 Jul 1994, PWW leg. NEW RECORD: Coloane Is., Macau. Adult reared from larvae collected from *Albizia lebbek* (Leguminosae).
Selepa celtis Moore, Olive owlet, 21 Feb 1994, PWW leg. NEW RECORD: Coloane Is., Macau. Adults reared from larvae collected from *Lagerstroemia indica* (Lythraceae) and *Eriobotrya japonica* (Rosaceae).
Serrodus campana Guenée, Soapberry noctuid, 23 May 1994, PWW leg.; Sep-Dec 1994, Macau Peninsula, ERE leg. NEW RECORD. Ex *Sapindus mukorossi* (Sapindaceae). Attracted to lights at the Friendship Monument on Macau Peninsula (15 specimens).
Speiredonia retorta (Linnaeus), summer 1994, Coloane Is., Macau. Easton (1992) reported it attracted to lights on Taipa Is. in late summer. Ex *Citrus* sp. (Rutaceae).
Spodoptera festiva (Donovan), 20 Oct 1992, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau.
Spodoptera litura (Fabricius), Fall armyworm, 28 Apr 1994, Cheong Pak Fai leg. NEW RECORD: Coloane Is., Macau. This species feeds on a wide variety of host plants but in Macau it has been reported from *Acacia confusa* (Leguminosae).
Spodoptera mauritia (Boisduval), Rice Armyworm, 17 Jul 1994, PWW leg. NEW RECORD: Taipa Is., Macau.
Trigonodes hyppasia (Cramer), 21 Oct 1993, PWW leg. NEW RECORD: Coloane Is., Macau.
Xanthodes transversa Guenée, 1 Jun 1990, PWW leg. NEW RECORD: Taipa Is., Macau. Adult reared from larva collected from *Hibiscus mutabilis* (Malvaceae).

NOLIDAE

Melanographia flexilineata Hampson, 30 Sep 1994, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Eriobotrya japonica* (Rosaceae).

NOTODONTIDAE

Neocerura wisei (Swinhoe), 11 Apr 1994, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau.
Stauropus alternus Walker, Longan prominent moth, [no date]. NEW RECORD: Coloane Is., Macau. Ex *Euphoria longan* (Sapindaceae); *Acacia confusa* and *Cassia fistula* (Leguminosae); and *Camellia sinensis* (Lauraceae).

PSYCHIDAE

Acanthopsyche subferalbata Hampson, 14 Oct 1992, Ng Wai Man leg. NEW RECORD: Taipa Is., reared from larva feeding upon *Macaranga tanarius* (Euphorbiaceae).

Chalioides kondonis Matsumura, [no date]. NEW RECORD: Coloane Is., Macau. Ex *Acacia confusa* and *Delonix regia* (Leguminosae); *Casuarina equisetifolia* (Casuarinaceae); *Cinnamomum camphora* (Lauraceae); and *Prunus persica* (Rosaceae).

Hyalarcta spp., 15 May 1991, ERE leg. NEW RECORD: Taipa Is. Macau. Ex *Aegiceras corniculatum* (Myricaceae). In Hong Kong, Hill *et al.* (1982) reported it feeding on the leaves of the bamboo palm as well as a mangrove plant.

PYRALIDAE

Algedonia coclesalis (Walker), 16 May 1994, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Bambusa* spp. (Gramineae).

Ancylolomia japonica Zeller, 5 Sep 1992, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Oryza sativa* (Gramineae).

Botyodes diniasalis Walker, 25 Jun 1992, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Salix babylonis* (Salicaceae).

Cirrhochrista brizoalis Walker, 10 Jan 1994, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau. Ex *Ficus carica* (Moraceae).

Cnaphalocrocis medinalis Guenée, Small brown rice leaf roller, [no date]. NEW RECORD: Coloane Is., Macau. Ex *Amaranthus blitum* (Amaranthaceae); *Oryza sativa* and *Saccharum officinarum* (Gramineae).

Cotachena histricalis (Walker), 20 Aug 1992, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau. Ex *Celtis sinensis* (Ulmaceae).

Diaphania annulata (Fabricius), 6 Jul 1992, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Ligustrum sinense* (Oleaceae).

Diaphania bicolor (Swainson), 17 May 1994, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau.

Diaphania bivitalis (Guenée), Cucumber moth, 23 May 1994. NEW RECORD: Coloane Is., Macau. Ex *Ficus elastica* and *Ficus microcarpa* (Moraceae).

Diaphania canthusalis Walker, 29 Oct 1994, PWW leg. NEW RECORD: Coloane Is., Macau.

Diaphania indica (Saunders), 25 Jun 1992, Ip Tai leg. NEW RECORD: Coloane Is., Macau.

Diastictis inspersalis (Zeller), 30 Sep 1992, Siu Meng leg. NEW RECORD: Coloane Is., Macau.

Epipagis cancellalis Zeller, 5 Jan 1994. NEW RECORD: Coloane Is., Macau.

Euclasta defamatalis (Walker), 2 Feb 1994, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau.

Hymenia perspectalis Hübner, 13 Oct 1972, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau.

Hymenia recurvalis Fabricius, Beet webworm, 5 Jan 1994, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Alternanthera ficoidea* var *versicolor*, *Celosia argentea* f. *plumosa*, and *Gomphrena globosa* (Amaranthaceae).

Maruca vitrata (Fabricius) [= *testulalis* (Geyer)], Bean pod borer (Mung moth), 6 Nov 1992, Ip Tai leg. NEW RECORD: Coloane Is., Macau. Ex *Canavalia ensiformis* and *Vigna sesquipedalis* (Leguminosae).

Nausinoe geometralis Guenée, 29 Mar 1994, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau. Ex *Jasminum sambac* (Oleaceae).

Sylepta derogata Fabricius, Cotton leaf roller, 12 Oct 1993, PWW leg. NEW RECORD: Coloane Is., Macau. Ex *Hibiscus rosa-sinensis*, *H. syriacus* (Malvaceae); and *Ipomoea batatas* (Convolvulaceae).

Tryporyza nivella (Fabricius), Sugar cane top borer, 25 Aug 1992, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau. Ex *Saccharum officinarum* (Gramineae) and *Eleocharis dulcis* (Cyperaceae).

SATURNIIDAE

Actias selene ningpoana Felder & Felder, Moon moth, 18 Jun 1992, Cheong Pak Fai leg. NEW RECORD: Coloane Is., Macau. Ex *Schefflera*

octophylla (Araliaceae). In Hong Kong, this species has been reported feeding on *Liquidambar formosana* (Hamamelidaceae) (Lee and Winney 1981).

SPHINGIDAE

Acherontia lachesis (Fabricius), Death's Head hawkmoth, 15 Mar 1993, Ng Wai Man leg.; Coloane Is., 1 May 1994, ERE leg.; Macau Peninsula, NEW RECORD. Hosts in China include *Solanum melongena* and *S. tuberosum* (Solanaceae). Dr. M. Bascombe in Hong Kong has reared it on *Ipomoea batatas* (Convolvulaceae). Three individuals were attracted to the Friendship Monument in May 1994.

Acherontia styx Butler, Apr-Jun, 1994, Macau Peninsula (6). Easton (1991) recorded it from Taipa Is. attracted to a lighted building. Sometimes known as the Eastern Death's Head hawkmoth, it is believed to feed as a larva on solanaceous crops. Ten individuals were attracted to the Friendship Monument during 1994.

Agrius convululi (Linnaeus), Convolvulus hawkmoth, Coloane Is., Macau. This was the most abundant species found attracted to the Friendship Monument (204 individuals) during 1993/94. Moths were collected throughout the year but the majority occurred from Sep-Dec (155). Reported on Taipa Is. (Easton, 1991), this moth was observed feeding on the blossoms of *Lantana* and *Duranta* (Verbenaceae) in Hong Kong (Tennent, 1992).

Cephanodes hylas (Linnaeus), Clearwing hawkmoth (coffee hawkmoth), 15 Apr 1994, PWW leg. Noted feeding on blossoms of ornamental plantings in the S. Francisco garden on the Macau Peninsula. Larvae in Macau most likely feed upon *Gardenia jasminoides* (Rubiaceae), as coffee plants are not available.

Daphnis hypothous (Cramer), Nov 1993, ERE leg. NEW RECORD: Macau Peninsula. Suspected to be a migrant species larvae feed upon *Cinchona* (Rubiaceae) and *Uncaria* (Naucleaceae).

Daphnis nerii (Linnaeus), Oleander hawkmoth, 19 Jan 1994, PWW leg.; Taipa Is. (reared from larva), 8 Nov 1994, ERE leg; Macau Peninsula attracted to Friendship Monument (NEW RECORD). This is a widespread species; reported in India to migrate as far north as Europe. Larvae feed on *Nerium oleander* (Apocynaceae) and *Gardenia* (Rubiaceae).

Eupanacra mydon Walker, 6 Apr 1994, ERE leg. NEW RECORD: Macau Peninsula. Three larvae of this species were also reared by one of us (PWW) on Coloane Is., from *Alocasia odora* (Araceae).

Gurelca hyas (Walker), 1 Jun 1994, ERE leg. Friendship Monument, Macau Peninsula. Larvae have been taken from *Morinda umbellata* (Rubiaceae). It is a common species attracted in summer to lighted buildings on Taipa Is. (Easton 1992).

Hippotion rafflesii (Butler), 12 Feb 1993, Ip Tai leg. NEW RECORD: Coloane Is., 27 Apr 1994, ERE leg, Macau Peninsula. Five individuals were attracted to lights Apr-Jun 1994.

Macroglossum belis (Linnaeus), Summer, Taipa Is. (Easton, 1991)

Macroglossum fringilla (Boisduval), 2 Jan 1994, Tong Veng Va leg. NEW RECORD: Coloane Is., Macau. Ex *Psychotria rubra* (Rubiaceae).

Macroglossum pyrhosticta (Butler), 4 May 1993, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau. This species was also commonly attracted to light from the Friendship Monument, Macau Peninsula, during 1994.

Macroglossum sitiene Walker, Taipa Is. (Easton, 1992)

Marumba dyras (Walker), 19 Apr 1994, Tong Veng Va leg.; Coloane Is., Macau, 1 Sep, 18 Oct 1994, ERE leg. Macau Peninsula, NEW RECORD. Mr. James Young, in Hong Kong, has reared this species on *Hibiscus mutabilis* (Malvaceae) (Tennent, 1992).

Psilogramma menephron (Cramer), 13 Nov 1991, P. F. Cheong leg. NEW RECORD: Coloane Is., Macau. Ex *Melia azedarach* (Meliaceae) and *Paulownia fortunei* (Scrophulariaceae).

Theretra alecto cretico (Boisduval), 20 Oct 1992, Ip Tai leg. NEW RECORD: Coloane Is., Macau. Ex *Psychotria serpens* and *Paederia* sp. (Rubiaceae).

Theretra clotho clotho (Drury), 3 Mar 1994, ERE leg. NEW RECORD: Macau Peninsula. Twenty individuals were attracted to lights from the Friendship Monument from September to December 1994. Dr. M. Bascombe in Hong Kong has reared it on *Saurauia tristyla* (Actinidiaceae).

Theretra latreille Mell, 30 Jun 1993, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau.

Theretra nessus (Drury), 15 Oct 1994, ERE leg. Macau Peninsula. This species is also common in the Siac Pai Van Agricultural Park, on Coloane Is.; and Easton (1991) reported it earlier on Taipa Is. Between November 1993 and March 1994, 12 individuals were noted attracted to lights of the Friendship Monument.

Theretra silhetensis Walker, Sep-Dec 1994, ERE leg. NEW RECORD: Macau Peninsula.

TORTRICIDAE

Cryptophlebia ombrodelta Lower, Macademia nut borer, 16 Nov 1992, Lo Yiu Kei leg. NEW RECORD: Coloane Is., Macau. Ex *Abarema lucida*, *Cassia fistula* (Leguminosae); also recorded from *Bauhinia variegata* (Leguminosae) in Hong Kong.

Enarmonia koenigana Fabricius, 9 Dec 1993, Ip Tai leg. NEW RECORD: Coloane Is., Macau Ex. *Melia azedarach* (Meliaceae).

URANIIDAE

Micronia aculeata Guenée, 3 Sep 1994, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau.

Lyssa monoetius (Hopffer), 4 Jun 1994, ERE leg. Macau Peninsula. Nine individuals of this moth were observed attracted to the Friendship Monument from Apr-Jun, with 2 observed between Sep-Dec 1994. Larvae are believed to feed on *Ficus* spp. (Moraceae), according to the *Iconographia of Forest Insects in Hunan*, China. Dudgeon and Corlett (1994), in Hong Kong, illustrate this species nectaring from a flower cluster of *Syzygium* (= *Cleistocalyx*) *operculata* (Myrtaceae).

ZYGAENIDAE

Cyclosia papilionaris Drury, Black veined moth, [no date]. NEW RECORD: Coloane Is., Macau. Ex *Aporosa chinensis* (Euphorbiaceae).

Gynautocera papilionaria Guérin-Méneville, Navy Blue burnet moth, 4 Jun 1991, ERE leg. NEW RECORD: Taipa Is., Macau. Attracted to lights of university building. This is a day flying moth observed also along hiking trails on Taipa island. It is believed to mimic swallowtail butterflies (Papilionidae) such as the birdwing, *Troides helena*, or the common rose, *Atrophaneura aristolachiae* (M. Bascombe, pers. comm.).

Pidorus gemina Walker, 3 Jun 1994, Ng Wai Man leg. NEW RECORD: Coloane Is., Macau. Ex *Hemerocallis fulva* (Liliaceae).

Pidorus glaucopsis Drury, 22 Oct 1992, Ip Tai leg. NEW RECORD: Coloane Is., Macau. Ex *Camellia sinensis* (Lauraceae).

ACKNOWLEDGEMENTS

We would like to thank Mr. António Júlio Emerenciano Estácio, Head of Agrarian Service, Câmara Municipal Das Ilhas, for permission to access island government records at Siac Pai Van, Coloane Is.

LITERATURE CITED

Barlow, H. S.

1982. *An Introduction to the Moths of South East Asia*. Kuala Lumpur: Malayan Nature Soc. 305pp, 50pl.

D'Abbrera, B.

1986. *Sphingidae Mundi: Hawk Moths of the World*. Faringdon: E. W. Classey. 226pp.

Dudgeon, D., and R. Corlett

1994. *Hills and Streams: An Ecology of Hong Kong*. Hong Kong: Hong Kong Univ. Pr. 234pp.

Easton, E. R.

1991. Annotated list of insects of Macau observed during 1989. *Ent. News* (Philadelphia), 102:105-111.

1992. 1990 additions to the annotated list of the insects of Macau. *Ent. News* (Philadelphia), 103:30-36.

Easton, E. R., and W. W. Pun

1995. *Some Moths We Have Found in Macau*. Macau: Univ. Macau. 27pp.

Fox, A.

1986. *Common Malaysian Moths*. Malaysia Selangor: Longmans. 105pp.

Hill, D. S., P. Hore, and I. W. B. Thornton

1982. *The Insects of Hong Kong*. Hong Kong: Hong Kong Univ. Pr. 503pp.

Lee, L. H. Y., and R. Winney

1981. *Checklist of Agricultural Insects of Hong Kong 1981*. 164pp.

Lin, C.-S.

1990. Distribution of sphingid moths. *J. Taiwan Mus.* (Taipei), 43: 41-94.

Tennent, W. J.

1992. The hawk moths of Hong Kong and South-East China. *Ent. Rec. J. Var.* (London), 104:88-112.

Thrower, S. L.

1983. *Hong Kong Climbing Plants*. Hong Kong: Urban Council. 134pp.

1988. *Hong Kong Trees*. Omnibus vol. Hong Kong: Urban Council. 438pp.