

# Lepidopteran fauna from the Sal Island, Cape Verde (Insecta: Lepidoptera)

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## Abstract

An annotated list of Lepidoptera observed on Sal Island (Cape Verde), during December 17-23, 2007, is provided. From that list and from available literature a checklist of the Lepidoptera of Sal is elaborated. Eighteen species are recorded (1 Pyralidae, 1 Arctiidae, 2 Pieridae, 2 Lycaenidae, 2 Nymphalidae, 1 Geometridae, 2 Sphingidae and 7 Noctuidae), three of which are new to this island: *Zizeeria knysna* (Trimen, 1862), *Danaus chrysippus* (Linnaeus, 1758), *Dysgonia algira* (Linnaeus, 1767).

KEY WORDS: Insecta, Lepidoptera, distribution, Sal Island, Cape Verde.

## Fauna lepidopterológica da ilha do Sal, Cape Verde (Insecta: Lepidoptera)

## Resumo

O autor apresenta uma lista anotada das Lepidoptera da ilha do Sal (Cabo Verde), tendo sido elaborada a partir da literatura disponível e das espécies observadas entre 17 e 23 de Dezembro de 2007. Actualmente, são conhecidas 18 espécies do Sal (1 Pyralidae, 1 Arctiidae, 2 Pieridae, 2 Lycaenidae, 2 Nymphalidae, 1 Geometridae, 2 Sphingidae e 7 Noctuidae), três das quais são citadas pela primeira vez para esta ilha: *Zizeeria knysna* (Trimen, 1862), *Danaus chrysippus* (Linnaeus, 1758) e *Dysgonia algira* (Linnaeus, 1767).

PALAVRAS CHAVE: Insecta, Lepidoptera, distribuição, ilha do Sal, Cabo Verde.

## Fauna lepidopterológica de la isla Sal, Cabo Verde (Insecta: Lepidoptera)

## Resumen

Se presenta una lista comentada de los Lepidoptera observados en la isla de Sal (Cabo Verde), durante el 17 al 23 de diciembre de 2007. Con estos datos y la literatura disponible, se elabora una lista de los Lepidoptera en la isla de Sal. Se registran dieciocho especies (1 Pyralidae, 1 Arctiidae, 2 Pieridae, 2 Lycaenidae, 2 Nymphalidae, 1 Geometridae, 2 Sphingidae y 7 Noctuidae), tres de las cuales son nuevas para la isla: *Zizeeria knysna* (Trimen, 1862), *Danaus chrysippus* (Linnaeus, 1758), *Dysgonia algira* (Linnaeus, 1767).

PALABRAS CLAVE: Insecta, Lepidoptera, distribución, isla de Sal, Cabo Verde.

## Introduction

The Cape Verde is an volcanic archipelago situated in the Atlantic Ocean (14° 23' - 17° 12' N / 22° 40' - 25° 22' W), at the cross-road of Africa, America and Europe continents, approximately 450 Km off the western coast of Senegal (Africa). The archipelago is composed of ten islands divided into two groups named according to the trade winds that reach them from the African Continent: Barlavento

(windward) and Sotavento (leeward). The first group consists of the islands of Santo Antão, São Vicente, Santa Luzia, São Nicolau, Sal, Boavista, and the second, more to the South, comprises the islands of Maio, Santiago, Fogo and Brava.

The climate of Cape Verde is tropical and dry. The average temperature is approximately 25° C and changes do not exceed 10° C. The natural vegetation was practically destroyed to make way for cultivation fields, thus only in the highest areas those species are still to be found.

Sal island is the third smallest (216 Km<sup>2</sup>), the most arid and more distinguished by its long sandy beaches. Also, the flatness surface reach the maximum altitude at Monte Grande (412 m), the climatic differences (e.g. the long periods of drought, the dry winds blowing from the desert), and the use of inefficient techniques for water storage and supply, in relation from those other Cape Verde and Macaronesian islands, and the comparatively very small percentage of the total surface covered with crop fields and natural forestry are expected to influence the abundance of Lepidoptera species and their host plants.

The earliest records on the Lepidoptera of Cape Verde is scattered throughout a very small number of publications (e.g. VIETTE, 1953; HERBULOT, 1953; NYSTRÖM, 1958; LIMA, 1982; VIEIRA, 1997, 1998; MÜCK *et al.*, 1990; SEPA, 2000; AGUIAR & KARSHOLT, 2006). Since then, a preliminary checklist including fifteen species and subspecies for Sal was elaborated by BÁEZ & GARCÍA (2005).

The present paper deals with butterflies and moths records obtained during a short visit to Sal. Such visit intended to provide complementary information on the knowledge of Arthropoda fauna from Macaronesian islands, mainly on Lepidoptera species considered crop pests and endemic ones.

## Material and methods

An Arthropod survey was conducted on Sal island during 17-23 December, 2007, of which the results concerning Lepidoptera species are treated here. For the collection or observation of lepidopterous specimens, the following techniques were used: (I) an entomological net, for moths and butterflies; (ii) the direct observation of various host plants (exotic and endemic) and larvae.

Lepidoptera families and species are listed and named following VIVES MORENO, 1994; BÁEZ & GARCÍA, 2005; AGUIAR & KARSHOLT, 2006. The specimens number observed were recorded for each species and ecological observations were noted. The host records and synonymous lists of the species hitherto recorded from the Sal island has been provided by using the information of the MÜCK *et al.*, 1990; ZHANG, 1994; VIEIRA, 1997; BÁEZ & GARCIA, 2005; KARSHOLT & VIEIRA, 2005; AGUIAR & KARSHOLT, 2006; KEMAL & KOÇAK, 2007.

Records of the occurrence of the treated taxa in other Cape Verde islands and the other Macaronesian archipelagos are given according to published data (e.g. VIETTE, 1953; HERBULOT, 1953; LIMA, 1982; MÜCK *et al.*, 1990; VIEIRA, 1997; PASSOS DE CARVALHO *et al.*, 1999; BÁEZ & MARTÍN, 2004; BÁEZ & GARCIA, 2005; KARSHOLT & VIEIRA, 2005; AGUIAR & KARSHOLT, 2006; VIEIRA, 2006). Species here recorded from Sal for the first time are marked with +, and those which are endemic to the Cape Verde archipelago are marked with \*.

## List of species

### PYRALIDAE Glaphyriinae

*Hellula undalis* (Fabricius, 1775)

Synonymy: *Evergestis occidentalis* de Joannis, 1930.

Common Names: Old world webworm, oriental cabbage webworm, Pyrale des Crucifères.

Host Records: Cruciferae, *Brassica* spp. In Philippines, these insect pests feed not only the pak-choi plant but also to other cruciferous crops. Principal plant hosts are broccoli, cabbage and

cauliflower. It also attacks Chinese cabbage, Chinese broccoli, Chinese mustard, daikon, eggplant flowering white cabbage, mustard cabbage and radish. In Hawaii it is a major pest of all Brassicaceae.

Distribution: Cape Verde (Santo Antão, São Vicente, Sal, Santiago), Madeira, Porto Santo, Canary Islands, Mediterranean countries, Portugal, Spain, France, Italy, Belgium, UK, Corse, the tropics of the Old World, the tropical regions of Africa, North and West Africa, SE Asia, Middle East, Australasia, Pacific Islands, Hawaii. However, it is not known in North and South America or the West Indies. Cosmopolitan in Old World.

## PIERIDAE

### Pierinae

#### *Pontia daplidice* (Linnaeus, 1758)

Common Names: Bath White, Piéride da Reseda, Verde Marmoreada.

Host Records: The green larvae feed on several Brassicaceae, *Sisymbrium sp.*, *Erysimum sp.*, *Ptilotrichum sp.*, *Arabis sp.*, *Moricandia arvensis*, *Biscutella sp.*, *Alyssum sp.*, *Sinapis sp.*, *Iberis sp.*, *Diplotaxis sp.*, *Descurainia sp.*, *Lepidium sp.*, *Raphanus sp.*, *Thlaspi sp.*, *Fibigia sp.*, *Cakile maritima*, *Turritis glabra*, also *Reseda luetola*, *R. villosa* (Resedaceae).

Distribution: Cape Verde (Santo Antão, Sal, Boavista, Fogo, Brava), Canary Islands, Portugal, Spain, Corsica, Sardinia, East France, West Germany; from Africa across South Europe to Middle Asia. Palaearctic.

Remarks: In Azores, *P. daplidice* was only recorded for S. Miguel by MORELET (1860) and DROUËT (1861), and no more was observed after these two authors, indicating that species was erroneously identified or located (VIEIRA, 2006). This Old World species is common on most different types of open landscapes, also on cultivated lands. The adults congregate in meadows and other flat open areas, and seemingly weak flyers. However, migrant *P. daplidice* specimens were recorded at high altitudes; so, exact distribution and residential status uncertain in some regions owing to possible confusion with a parapatric species *P. edusa* Fabricius, 1777, of which can not be superficially distinguishable.

#### *Pontia glauconome* (Klug, 1829)

Common Names: Desert Bath White, Desert White, Marbré du désert.

Host Records: Families of Brassicaceae, Asteraceae, Capparidaceae, and Resedaceae. Larvae feed on *Zilla spinosa*, *Ochradenus baccatus*, *Dipterygium*, *Diploxis*, *Erigeron denticulatus*, *Cleome paradoxa*, *Schouwia purpurea*, *Morettia sp.*, *Caylusia sp.*

Distribution: Cape Verde (Santo Antão, Sal), North Africa, Sahara of Morocco, Mauritania, Algeria, Kenya, Somalia, Sudan, Chad, Socotra Island, SW. Arabia, Baluchistan, Karachi, Chitral, Punjab, S. Turkmenistan, Uzbekistan and Tajikistan, Iran, Iraq, Afghanistan, Pakistan.

Remarks: *P. glauconome* is an eremic species found in North Africa, Arabian and Middle Eastern deserts. It occurs in the xerophytic mountain slopes and foothills with poor vegetation, occurring at altitudes not exceeding 1,500 m a. s. l. The pupa can diapause for several years in desert areas of African countries. Moreover, the adult is an occasional migrant in presaharean valley areas, e.g. during the winter in Morocco.

## NYMPHALIDAE

### Nymphalinae

#### *Vanessa cardui* (Linnaeus, 1758)

Common Names: Painted lady, Thistle butterfly.

Host Records: *Carduus sp.*, *Onopordon sp.*, *Arctium minus*, *Lapa sp.*, *Boehmeria nivea*, *Cirsium arvense*, *C. vulgare*, *Galactites tomentosa*, *Gossypium sp.*, *Cynara cardunculus*, *Cynara scolymus*, *Medicago sativa*, *Lupinus sp.*, *Malva parviflora*, *M. sylvestris*, *Brassica napus* var. *oleifera*, *Ricinus sp.*,

*Glycine max*, *Helianthus anuus*, *Nicotiana tabacum*, *Nicotiana rustica*, *Xanthium spinosum*, Urticaceae, *Urtica sp.*, Asteraceae. The Fabaceae and Brassicaceae plants are only used in crisis situations.

Distribution: Cape Verde (Santo Antão, São Vicente, Santa Luzia, São Nicolau, Sal, Boavista, Santiago, Fogo, Brava), Azores, Madeira, Canary Islands, Portugal, Spain, Europe Mediterranean, West Europe, North and West Africa, Middle and Ethiopian Africa, West Asia, America Nearctic, USA, South Venezuela, cosmopolitan except South America and most of Australasia (eg. in Australia is rare).

A migratory species that is common on Macaronesian islands. Usually seen only in single numbers, but very occasionally present in vast numbers. Migrant. Cosmopolitan. Subcosmopolitan.

Additional Records: Sal island: 17-21-XII-2007 - Dunes of Boavista (3 adults), Ponta Preta (4 adults) and Baía do Algodoeiro (2 adults).

#### Danainae

+ *Danaus chrysippus* (Linnaeus, 1758)

Common Names: Plain Tiger, Tigre Comum, Rainha Africana.

Host Records: Asclepiadaceae, *Calotropis procera*, *Asclepias curassavica*, *Gomphocarpus fruticosus*, *Caralluma burchardii*, *Calotropis gigantea*, *Cynachum acutum*, *Ipomoea bona-nox*.

Distribution: Cape Verde (Santo Antão, São Vicente, São Nicolau, Sal, Boavista, Maio, Santiago, Fogo, Brava), Canary Islands, Spain, Cyprus, North Africa, Tunisia, Tanzania, South Africa, India, Pakistan, Australia.

*D. chrysippus* is of Asian origin. Migrant. Afrotropical, Palearctic and Indo-Australian. Subtropical.

Remarks: The Plain Tiger is a migrant butterfly widely distributed in the Old World tropical region. It inhabits in European Mediterranean region, and is continuously brooded in Canaries. However, *D. chrysippus* is probably errant in Azores, but is not resident (VIEIRA, 2006). AGUIAR & KARSHOLT (2006) stated that the specimen deposited in the Museu Municipal do Funchal is unlikely to be of Madeiran origin, and is removed from the list of Madeiran Lepidoptera until its occurrence there is confirmed.

In Sal Island, the Plain Tiger is found at low altitudes around Asclepiad plants and in small parks and gardens close to human habitation. Probably occasional migrant butterfly to Sal, but I believe that is also resident, because I found the pupae tegument suspended on the wall of Santa Maria's street, and the larvae can survive on the main food plant *Calotropis procera* or other Asclepiadaceae growing in this island.

Additional Records: New to Sal: 17-21-XII-2007 - Adults flying at dunes of Boavista (3 adults) and Ponta Preta (2 adults), also a pupae tegument have also been suspended on the wall of street at Santa Maria.

#### LYCAENIDAE

##### Lycaeninae

*Lampides boeticus* (Linnaeus, 1767)

Synonymy: *L. coluteae* (Fuessly, 1775)

Common Names: Long-tailed blue, Pea blue butterfly, Bean butterfly, Azulinha, Borboleta azul.

Host Records: Leguminosae, *Pisum sativum*, *Colutea arborescens*, *Lupinus sp.*, *Genistra sp.*; the adult feeds on *Sophora japonica*, *Aptenia cordifolia*, and *Ulex europaeus* (VIEIRA, 2006). In Madeira, the larva feeds on *Lupinus luteus*, and *Cytisus scoparius*; recently females were observed laying eggs on floral buds of *Sesbania punicea* (Leguminosae), *Senna didymobotrya* (Caesalpinaceae), also on *Teline maderensis* bush and *Lotus glaucus* in Porto Santo Island (AGUIAR & KARSHOLT, 2006).

Distribution: Cape Verde (Santo Antão, São Vicente, São Nicolau, Sal, Boavista, Maio, Santiago, Fogo, Brava), Azores, Madeira, Porto Santo, Canary Islands, Portugal, Spain (including Balears)

Islands), Europe, Europe mediterranean, North and West Africa, Middle and West Europe, Africa ethiopian, Asia, Australia, Hawaii, Africa, Asia, India, China, Australasia, New Zealand, USA (Hawaii), Ascencion, Sainte Helene. Long-tailed Blue has Subtropical origin, and is widely distributed in the Paleotropics from which it migrates into the region. Cosmopolitan with exception to American continent; Subcosmopolitan.

Remarks: A cosmopolitan Palaearctic migrant species that is common at low altitudes on Cape Verde archipelago but present everywhere. The Long-tailed Blue is an active and territorial species that rarely settles for long (ie. migrant indigenous). Macaronesian moths are not different those of North Africa and Europe Mediterranean. Larvae feed on a wide range of legume species, and it is considered a major pest of “feijão congo” and other similar Leguminosae (MÜCK *et al.*, 1990).

#### Polyommatainae

+ *Zizeeria knysna* (Trimen, 1862)

Synonymy: *Zizeeria lysimon* (Hübner, [1804]).

Common Names: African grass blue, The “flower bed” blue, Azurè de la Surelle.

Host Records: The larvae are found on legumes. *Medicago sativa*, *M. tribuloides*, *M. minima*, *M. lupulina*, *Melilotus messanensis*, *Acanthyllis sp.*, (Fabaceae), *Polygonum equisetiforme* (Polygonaceae), *Armeria delicatula* (Plumbaginaceae), *Tribulus terrestris* (Zygophyllaceae), also some genera of Amarantaceae, and Malvaceae.

Distribution: Cape Verde (Santo Antão, São Vicente, São Nicolau, Sal, Santiago, Fogo, Brava), Canary Islands, Portugal, Spain, Africa, Tropical Asia, Australia. Migrant. Subtropical / Tropical.

Remarks: *Z. knysna* inhabits on hot sunny grassy areas. For example, in Sal (Cape Verde) and Tenerife (Canaries), the African grass blue lived in flower beds around built up hotel complexes; it is always associated with damp places, usually with lucerne or mint, such as irrigation ditches or drains and desert oases. In Morocco, it is found everywhere, and inhabits damp stream sides at lower elevations. It flies much more rarely and locally in the Iberian Peninsula (South of Spain and Portugal).

*Z. knysna* is considered a bio-indicator for the control of biocides with impact on agricultural cultures; the adult absence indicating an excessive quantity of pesticides.

Additional Records: New to Sal island: 17-21-XII-2007 - Santa Maria (2 adults), Ponta Preta (4 adults), and Murdeira (1 adult).

#### GEOMETRIDAE

##### Geometrinae

*Microloxia ruficornis* Warren 1897

Synonymy: *M. halimaria* (Chrétien, 1909); *M. innotata* (Warren, 1901); *M. stenopteraria* (Turati, 1930) (KEMAL & KOÇAK, 2007).

Distribution: Cape Verde (São Nicolau, Sal, Santiago), from Mediterranean to Turkestan, Atlantic coast of Africa, Egypt, Israel, Jordan, United Arab Emirates, Yemen. Mediterranean!

Remarks: *Microloxia herbaria* (Hübner, [1813]) from Cape Verde and similar to typical European species (further more detail's see HERBULOT, 1958; VIVES MORENO, 1994) stated that *Microloxia herbaria* (Hübner, [1818]) is a valid species.

#### SPHINGIDAE

##### Sphinginae

*Hippotion celerio* (Linnaeus, 1758)

Synonymy: *Sphinx tisiphane* L., 1758, *Phalaena inquilinus* Harris, [1780], *Hippotion ocy*s (Hübner, [1819]), *Deilephina albolineata* Montrouzier, 1864.

Common Names: Silver-striped hawk moth.

Host Records: *Gossypium sp.*, *Ipomoea batatas*, *Colocasia sp.*, *Caladium sp.*, *Boerhavia sp.*, *Nicotiana tabacum*, *Nicotiana rustica*, *Vitis sp.*, *Dioscorea sp.*, *Alocasia sp.*, *Galium sp.*, *Linium sp.*, *Rumex sp.*, *Parthenocissus sp.*, *Boerhavia sp.*

Distribution: Cape Verde (Santo Antão, São Vicente, São Nicolau, Sal, Santiago), Azores, Madeira, Porto Santo, Deserta Grande, Canary Islands, Portugal, Spain, Europe mediterranean, Middle and West Europe, Africa, Asia, S-India, Pacific Islands, Papua New Guinea, Australia. An occasional migrant in Europe. Afrotropical, Palaearctic, Indo-Australian. Subcosmopolitan.

Remarks: In Cape Verde, the larvae feed on the leaves of *Vitis* spp.; the eggs are frequently parasited by *Trichogrammatoidea lutea* Girault (MÜCK *et al.*, 1990).

*Hyles livornica* (Esper, 1779)

Common Names: Striped hawk moth.

Host Records: *Galium sp.*, *Linaria sp.*, *Rumex sp.*, *Vitis sp.*, *Polygonum sp.*, *Fuchsia sp.*, *Plantago sp.*, *Acacia sp.*, *Asparagus sp.*, *Pelargonum sp.*, *Fabago sp.*

Distribution: Cape Verde (Santo Antão, São Vicente, São Nicolau, Sal, Santiago, Fogo, Brava), Madeira, Porto Santo, Selvagem Grande, Canary islands. Europe, North Africa, East Africa, South Africa, Middle East, India, China, Japan. Subcosmopolitan.

## ARCTIIDAE

### Arctiinae

*Utetheisa pulchella* (Linnaeus, 1758)

Common Names: Crimson-speckled Moth.

Host Records: *Heliotropium indicum*, *Trichodesma indicum*, *Crotolaria sp.*, *Melilotus indica*, *Oryza sativa*, *Allium ascalonicum*, green manure legumes, shade plants, *Borago officinalis*, *Myosotis*.

Distribution: Cape Verde (Santo Antão, São Vicente, São Nicolau, Sal, Boavista, Santiago, Fogo), Azores, Madeira, Porto Santo, Canary Islands, widespread in the Mediterranean region, Europe, UK, Asia, Somalia, Iraq, India, Sri Lanka, Indonesia (Java), Vietnam, China, Australia. Migrant species with tropical origin. Palaearctic.

## NOCTUIDAE

### Catocalinae

+ *Dysgonia algira* (Linnaeus, 1767)

Synonymy: *Phalaena achatina* Sulzer, 1776, *Noctua triangularis* Hübner, [1803], *Ophiusa albivitta* Guenée, 1852, *Ophiusa olympia* Swinhoe, 1885, *Ophiusa festina* Walker, 1858.

Common Names: The Passenger.

Host Records: The larva of this moth lives on various food plants which are *Rubus ulmifolius*, *R. fruticosus*, *Salix sp.*, *Genista sp.*, *Lythrum portula*, *Punica granatum*, *Ricinus sp.*, *Parietaria judaica*, grapes, peaches, pomegranates, bramble, willow.

Distribution: Cape Verde (Santo Antão, Sal, Fogo). From N-Africa and Europe to central Asia. Portugal, Spain, Italy, ex-Yugoslavia, Morocco, Algeria, Congo, Asia Minor (Iran), Afghanistan, Turkmenistan, Kirghizia, India, Pakistan. Migrant. Asiatic-Mediterranean.

Additional Records: New to Sal. 20-XII-2007 - a single male alive in the tree closed to the swimming pool from Hotel Riu Funana.

### Heliiothinae

*Heliothis armigera* (Hübner, [1808])

Synonymy: *Chloridea barbara* (Fabricius, 1794). In the Azores, it was first erroneously identified as *Hadena oleracea* (Linnaeus, 1758).

Common Names: Corn earworm, tomatoworm, scarce bordered straw, American bollworm, lagarta do tomate, bicho do tomate, lagarta do algodão.

Host Records: *Lycopersicum esculentum*, *Capsicum annum*, *Cucumis sativus*, *Rosa sp.*, *Chrysanthemum sp.*, *Zea mays*, *Brassica sp.*, *Lactuca sativa*, legumes, *Medicago sativa*, *Helianthus annuus*, *Solanum tuberosum*, *Sorghum bicolor*, ornamental plants, *Glycine max*, *Nicotiana tabacum*, *Nicotiana rustica*, *Dianthus*.

*H. armigera* is a very well known pest of tomato (*Lycopersicon esculentum*). In recent years it has been intercepted in Madeira infesting imported carnation flowers (*Dianthus caryophyllus*). It also feed on *Gerbera jamesonii* and *Malva parviflora* (AGUIAR & KARSHOLT, 2006).

Distribution: Cape Verde (Santo Antão, São Nicolau, Sal, Boavista, Maio, Santiago, Fogo, Brava), Azores, Madeira, Porto Santo, Selvagem Grande, Canary Islands, Europe, Southern and Central Europe, Portugal, Spain, Germany, Italy, Israel, Africa, Morocco, Sudan, Ethiopia, Tanzania, India, Japan, China, Australasia region, tropical, subtropical and warmer temperate regions of the Old World. Migrant. Almost cosmopolitan tropical and subtropical.

*Heliothis peltigera* (Denis & Schiffermüller, 1775)

Synonymy: *Heliothis alpheia* (Cramer, 1780), *H. florentina* (Esper, 1788), *H. charmione* (Stoll, 1790), *H. straminea* (Donovan, 1793).

Common Names: Bordered straw.

Host Records: Tobacco (*Nicotiana tabacum*, *Nicotiana rustica*), *Ricinus sp.*, tomatoes, sorghum sunflowers, cotton, *Ulex sp.*, soyabeans, *Atropa belladonna*, *Senecio sp.*, chickpeas, *Acanthospermum sp.*, *Triumfetta pilosa*. In Cape Verde islands, *H. peltigera* is a very well known pest of maize, *Zea mays*; it also feed on spontaneous *Acanthospermum hispidum* and other Asteraceae plants.

Distribution: Cape Verde (São Nicolau, Sal, Boavista, Maio, Santiago, Fogo), Madeira, Porto Santo, Selvagem Grande, Canary Islands. From southern Europe to southern Russia, North of Africa, Middle East to India and Myanmar, Israel. Migrant. Paleotropical-Subtropical.

#### Ipimorphinae

*Spodoptera exigua* (Hübner, 1808)

Synonymy: *Noctua fulgens* Geyer, [1832], *L. caradrinoides* (Walker, 1856), *C. pygmaea* (Rambur, 1834), *C. junceti* (Zeller, 1847), *C. sebhghana* (Austaut, 1880), *C. venosa* (Buttler, 1880).

Common Names: Beet armyworm, lucerne caterpillar, "rosca".

Host Records: *Zea mays*, *Beta vulgaris*, *Helianthus annuus*, *Allium sp.*, *Amaranthus spinosus*, asparagus, *Astragalus sp.*, *Brassica turnefortii*, *Gossypium sp.*, *Cucumis sativus*, *Vicia faba*, *Linum usitatissimum*, *Vitis sp.*, *Medicago sativa*, legumes, *Carthamus tinctorius*, *Glycine max*, *Spinacia oleracea*, *Nicotiana tabacum*, *Nicotiana rustica*, *Lycopersicon sp.* In Cape Verde islands, larvae feed on Brassica and *Beta vulgaris*.

Distribution: Cape Verde (Santo Antão, Sal, Santiago, Fogo), Azores, Madeira, Porto Santo, Selvagem Grande, Canary Islands, Central and South Europe, Portugal, Spain, Russia, Middle East, Iraq, India, Asia, Africa, Japan, Thailand, Australasia region, USA, Hawaii, Canada. Migrant in Europe. Cosmopolitan.

#### Hadeninae

*Dicestra trifolii* (Hufnagel, 1766)

Common Names: Nutmeg, clover cutworm, "traça do trevo".

Host Records: Larva polyphagous; *Brassica sp.*, *Beta vulgaris*, *Chenopodium sp.*, *Atriplex sp.*, (e.g., in Cape Verde), *Allium cepa*, *Polygonum aviculare*, *Alyssum saxatile*, *Lycopersicon esculentum*, *Ipomoea batatas*, *Trifolium*, *Vaccinium*, *Empetrum nigrum*.

Distribution: Cape Verde (Santo Antão, Sal, Santiago, Brava), Azores, Porto Santo, Canary

Islands as *Dicestra trifolii cinnamomina* Rothsch., Europe, Portugal, Spain, Italy, Algeria, Tibet, Syria, Turkestan, USA. Holarctic.

Remarks: In Sal island, the larvae cause frequently moderate economic damages to their preferred food plants (*Brassica oleracea* and *Beta vulgaris*). However, some natural enemies like *Drina zonata* certainly facilitate the biological control of *D. trifolii* larvae (MÜCK *et al.*, 1990).

Additional Records: 19-XII-2007 - An adult flying under streetlights into the garden of the Hotel Riu Funana.

*Mythimna loreyi* (Duponchel, 1827)

Synonymy: *Noctua caricis* Treitschke, 1835, *Leucania exsanguis* Guenée, 1852, *L. curvula* Waker, 1856, *L. collecta* Walker, 1856, *L. exterior* Walker, 1856, *L. thoracica* Walker, 1856, *L. designata* Walker, 1856, *L. denotata* Walker, 1856.

Common Names: Rice armyworm.

Host Records: Polyphagous; Poaceae including *Zea mays*, *Oryza sativa*, *Saccharum officinarum*, *Sorghum bicolor*, *Avena sativa*, *Triticum aestivum*, *Triticum durum*, *Pennisetum purpureum*, and many other plants, eg. *Arundo donax*.

Distribution: Cape Verde (Sal, Santiago), Azores, Madeira, Porto Santo, Canary Islands, Portugal, Spain, Mediterranean countries, Western and Eastern Africa, Middle East, India, China, Japan, Papua New Guinea. Cosmopolitan species with tropical-subtropical origin.

Remarks: In Cape Verde, *M. loreyi* larvae cause economic damages to their preferred food plants, *Zea mays* and *Arundo donax*. In other hand, the noctuid larva is parasitized by *Drina zonata*, it is a prey for some species of Eumenidae (Hymenoptera), and it is also susceptible to *Bacillus thuringiensis* (MÜCK *et al.*, 1990). These enemies are certainly important agents in the biological control of this agricultural pest.

#### Noctuidae

\* *Agrotis trux caboverdensis* Traub & Bauer, 1983

Host Records: Grasses.

Distribution: Cape Verde (Santo Antão, São Vicente, São Nicolau, Sal, Boavista, Maio, Santiago, Fogo).

#### Discussion

We list 18 species and subspecies of Lepidoptera from Sal island, three of which are new to this island: *Zizeeria knysna*, *Danaus chrysippus*, *Dysgonia algira*. Other specimens that were observed, but could not be captured and identified, suggest the presence of tree additional taxa (1 Tineidae, 1 Pyralidae, 1 Geometridae). This number represents about 9.1% of the total number of Lepidoptera species in Cape Verde, which today is 198 (BÁEZ & GARCÍA, 2005).

None of them is endemic to Sal or has been found exclusively on this island (Table 1), but *A. trux caboverdensis* seems to be common to other islands of the Cape Verde archipelago. Most taxa have been recorded on the Barlavento and Sotavento islands, as well as in other Macaronesian archipelagos (Table 1). In fact, the majority of the listed species have a large geographic insular and continental distribution. Many of the species are widespread by reason of their ability to migrate (e.g. Noctuid and Nymphalid species) or are introduced from time to time with imported plant material and can survive only in very narrow conditions, or live mainly in the Cape Verde farm buildings, like some Pyralid pests of stored products.

The relatively low number of species recorded from Sal might be due to insufficient collecting, as well as the isolation, small size, the long periods of drought, the dry winds blowing from the desert, and relatively small percentage of the surface of the island covered with wild plants and other vegetation influence de presence of Lepidoptera species and their host plants. More fieldwork needs to be



conducted for a comprehensive account on the composition of the Lepidopteran fauna of Sal, including the microlepidoptera species. The same holds true for other arthropod taxa.

**Table 1.** The Lepidoptera taxa recorded from Sal in 2007 with indications of their distribution in Cape Verde, and also in other Macaronesian archipelagoes (Madeira, Canaries, Azores). Numbers and percentages of the taxa from Sal in relation with other islands are also given. Cape Verde: A = Santo Antão; V = São Vicente; SI = Santa Luzia; N = São Nicolau; S = Sal; B = Boavista; M = Maio; T = Santiago; F = Fogo; Br = Brava. Zoogeographical distribution (Dist.): E = Endemic, P = Palearctic, H = Holarctic, ST = Subtropical, T/ST = Tropical/Subtropical, AM = Asiatic-Mediterranean, SC = Subcosmopolitan, C = Cosmopolitan. ? = Doubtful presence, \* = Taxon endemic to the Cape Verde, + = new records for Sal island.

Species	Cape Verde											Canary Islands	Madeira	Azores	Dist	
	A	V	SI	N	S	B	M	T	F	Br						
<b>Pyralidae</b>																
<i>Hellula undalis</i>	x	x	.	.	x	.	.	x	.	.	x	x	.	.	.	C
<b>Pieridae</b>																
<i>Pontia daplidice</i>	x	.	.	.	x	x	.	.	x	x	x	x	.	.	.	P
<i>Pontia glauconome</i>	x	.	.	.	x	.	.	.	.	.	.	.	.	.	.	P
<b>Nymphalidae</b>																
<i>Danaus chrysippus</i> +	x	x	.	x	x	x	x	x	x	x	x	x	?	?	?	ST
<i>Vanessa cardui</i>	x	x	x	x	x	x	.	x	x	x	x	x	x	x	x	C
<b>Lycaenidae</b>																
<i>Lampides boeticus</i>	x	x	.	x	x	x	x	x	x	x	x	x	x	x	x	SC
<i>Zizeeria knysna</i> +	x	x	.	x	x	.	.	x	x	x	x	x	.	.	.	T/ST
<b>Geometridae</b>																
<i>Microloxia ruficornis</i>	.	.	.	x	x	.	.	x	.	.	.	.	.	.	.	M
<b>Sphingidae</b>																
<i>Hippotion celerio</i>	x	x	.	x	x	.	.	x	.	.	.	x	x	x	x	SC
<i>Hyles livornica</i>	x	x	.	x	x	.	.	x	x	x	x	x	x	x	x	SC
<b>Arctiidae</b>																
<i>Utetheisa pulchella</i>	x	x	.	x	x	x	x	.	x	.	.	x	x	x	x	P
<b>Noctuidae</b>																
<i>Agrotis trux</i>																
<i>ssp. caboverdensis</i> *	x	x	.	x	x	x	x	x	x	.	.	.	.	.	.	E
<i>Discestra trifolii</i>	x	.	.	.	x	.	.	x	.	x	.	x	x	x	x	H
<i>Dysgonia algira</i> +	x	.	.	.	x	.	.	.	x	.	.	.	.	.	.	AM
<i>Helicoperva armigera</i>	x	.	.	x	x	x	x	x	x	x	x	x	x	x	x	T/ST
<i>Heliothis peltigera</i>	.	.	.	x	x	x	x	x	x	.	.	x	x	.	.	T/ST
<i>Mythimna loreyi</i>	.	.	.	.	x	.	.	x	.	.	.	x	x	x	x	C
<i>Spodoptera exigua</i>	x	.	.	.	x	x	.	.	x	.	.	x	x	x	x	C
<b>Total number of species</b>	15	9	1	11	18	9	6	13	12	8	14	11	8			
Percentage (%)	83	50	6	61	100	50	33	72	67	44	78	61	44			

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