Animal & Plant Health Agency

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Original thinking... applied

Lime butterfly or Chequered swallowtail

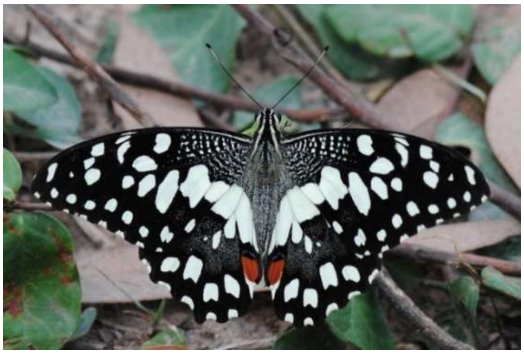
Taxonomy

Order: Lepidoptera
Family: Papilionidae
Species: ***Papilio demoleus*** Linnaeus

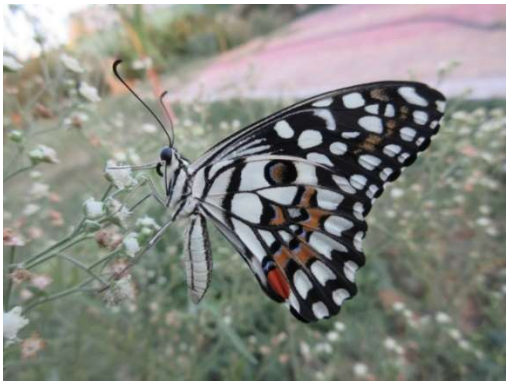
Summary

Due to its rapid expansion globally and its threat to agriculture in the New World (particularly the *Citrus* industry and other Rutaceae), *Papilio demoleus* is one of the best studied butterflies in the world. It is a very striking species and belongs to a group of butterflies known as the swallow-tail butterflies. So-called as many species have elongate extensions to their hind wings (absent in *P. demoleus*).

An Old-World species, *P. demoleus* is found throughout tropical and subtropical regions of the Middle East across southern Asia and into Australia.



Dorsal view of the adult of *Papilio demoleus* © Rohit Girotra (www.inaturalist.org)



Profile view of the adult of *Papilio demoleus* © Dr. Rajesh Prabhakar Mahajan (www.inaturalist.org)

Biology

The eggs take a week to 10 days to hatch, darkening in the process. The larvae or caterpillars develop through 5 instars, taking 2-3 weeks. The first few instars feed openly on the outer surface of leaves relying on deceptive camouflage to evade predation. The final instar behaves differently in that when not feeding they rest away from the main growth of the plant utilizing their cryptic camouflage. Larvae feed predominantly on species of *Citrus*, as well as related plants in the family Rutaceae, such as *Murraya koenigii* (curry leaf tree) amongst others. Larvae pupate and upon emerging the adult may last up to 6 days approx. with mating its sole purpose.

Distribution in Caribbean

Common throughout the Caribbean region, including Anguilla and TCI.

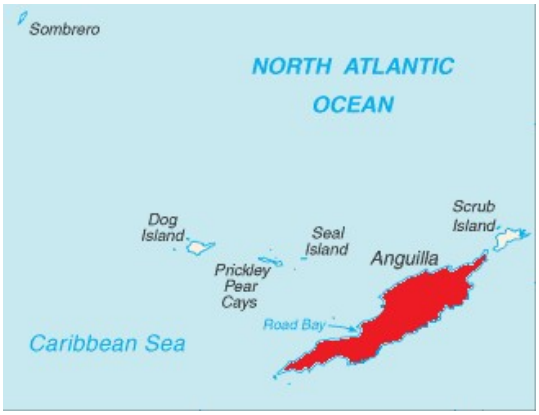
Pathway of Entry

Natural dispersal: mass migration of the adults. It is a rather strong flyer. Dispersal may be influenced by things like solar radiation, temperature, wind and humidity.

Intentional/Anthropogenic dispersal: Generally, introduction is via the import of infested citrus stock with eggs, larvae or pupae. Under the right conditions, spread can occur quickly from the point of introduction.

Impact

Larvae can become so numerous they can cause severe defoliation, particularly on younger trees and bushes, which may ultimately lead to the death of the plant.



Further Information:

University of Florida:

http://entnemdept.ufl.edu/creatures/bfly/lime_swallowtail.htm

CABI 2020: https://www.cabi.org/isc/datasheet/38758

Field Description

Eggs are a pale-yellow colour, spherical and darken as the larva develops interiorly.

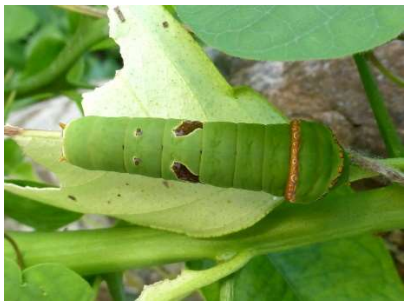
Larvae tend to be quite different in the earlier stages of development than the latter stages. Early instars tend to be black or dark brown with fleshy spines and dorsal, "V-shaped" splodges of white giving the overall appearance of bird droppings. Latter instars tend to be a rich velvet green colour with rows of orange spots edged with black and other scattered, black markings throughout. The anterior end of fully developed larvae has a fork-shaped osmeterium (yellow and orange) that when everted may deter predators. Noxious compounds may also be secreted to repel predators.

Pupae tend to be stout, green/brown and rugose and may be attached to sticks, stones or the woody stems of the host plants.

Adults are striking in appearance. Black fore and hind wings with "chains" of yellow spots on the outer edge. From the inner posterior of the wing, there are more yellow markings, initially spaced close together and then becoming more separate anteriorly. There is yellow speckling at the anterior region of the wing. These patterns can vary slightly. The ventral side is similar to the dorsal side. Close to the body there are four yellow lines. The hind wing contains two eyes. A posterior red one and a more anterior blue one (often concealed under the posterior margin of forewing). There are blue and orange spots. The body is black, but the underside is pale/yellow.

The yellow, spherical egg of *Papilio demoleus* . © Minh Gia Hoang 2015

Third instar larva of *Papilio demoleus*. Note the close resemblance to a bird dropping © Soh Kam Yung (www.inaturalist.org)



Fifth instar of ***Papilio demoleus*** © Tim Norriss

Pupa of *P. demoleus* © Tim Norriss