

Blue Morpho Butterfly *Morpho peleides* Kollar (Lepidoptera: Nymphalidae)¹

Haleigh A. Ray and Jacqueline Y. Miller²

Introduction

Morpho peleides Kollar, the blue morpho butterfly, also known as the peleides blue morpho or common blue morpho, is a brightly colored butterfly abundant in tropical environments in Central and South America (**Figure 1**). It can be seen flying in open areas such as paths, trails, forest edges, and rivers, and avoiding dense forest (Young 1973).

This butterfly is often featured in museums and zoos having butterfly houses or butterfly rainforests in the United States.



Figure 1. Captive adult female *Morpho peleides* Kollar.
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Synonymy

Morpho peleides Kollar (1850) is sometimes referred to as *Morpho helenor peleides* in the literature, as some consider it a subspecies of *Morpho helenor* (Butterflies of America 2015). *Morpho peleides* has undergone extensive diversification in Central and South America, and numerous subspecies have been described (Young and Muyschondt 1972). The following subspecies have been identified (Young 1975, Encyclopedia of Life 2015):

Morpho peleides chocoanus Kruger

Morpho peleides cortone Fruhstorfer, 1913

Morpho peleides crispitaenia Fruhstorfer, 1907

Morpho peleides faustina Rousseau-Decelle, 1935

Morpho peleides insularis Fruhstorfer, 1912, 1913

Morpho peleides joannisi Le Cerf, 1925

Morpho peleides limpida Butler, 1872

Morpho peleides luminosa Le Cerf, 1925

Morpho peleides maculata Röber, 1903

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2. Haleigh A. Ray, former student Entomology and Nematology Department; and Jacqueline Y. Miller, curator, McGuire Center for Lepidoptera and Biodiversity; UF/IFAS Extension, Gainesville, FL 32611.

Morpho peleides narcissus Staudinger

Morpho peleides tucupita Le Moulton, 1925

Morpho peleides zela Fruhstorfer, 1912

Morpho peleides zonaras Fruhstorfer, 1912

Distribution

Morpho peleides is one of the most widespread and abundant *Morpho* species, occurring from Mexico through Central America, and in South America down to Paraguay. It occurs in large populations in montane and lowland forests, typically in areas of secondary plant growth (Young 1973, Young 1975, Ulrich and Emmel 1991).

Description

Morpho peleides is recognized by the iridescent blue coloration on the dorsal (top) side of the wings (**Figure 1**). Conversely, the undersides of the wings are brown and have a cryptic coloration and pattern (**Figure 2**). Large eyespots are present on the ventral (bottom) side of the forewings and hindwings. The number of forewing eyespots on each individual may vary (Young 1982). This coloration serves as protection from predators by making the butterfly somewhat camouflaged in the forest, and the eyespots can startle or intimidate potential predators. They are large butterflies, with adult wingspan measuring 5-8 inches (127-203 mm) (Rainforest Alliance 2015).



Figure 2. Ventral wing surface of an adult *Morpho peleides* Kollar, showing the cryptic coloration and eyespots. This individual has five eyespots, but patterns are variable.

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Adult *Morpho peleides* butterflies are frugivores, or fruit feeders, and often feed on decaying fruits. Unlike most butterflies, they do not visit flowers for nectar (Knopp and

Krenn 2002). They have been observed feeding on tree sap from *Samanea* trees (Fabaceae) (Young 1975). The adults typically feed on tree sap when decaying fruit is unavailable. Many adults can be present at the same feeding site without any aggressive interactions between them, even though they can become quite crowded (**Figure 3**) (Young 1975). Mating typically occurs at feeding sites or other areas where adults aggregate. Males and females are sexually dimorphic, meaning that they are able to be distinguished visually. Differences in wing appearances between the males and females help individuals locate and recognize the opposite sex (Young 1973). They can also recognize each other from different species by their flight patterns. During courtship, the male will chase the female, typically flying in a circular pattern, around a small area. Copulation can last from 8 hours to 3 days, in which the adults often rest on vegetation in tandem and rarely fly (**Figure 4**) (Young 1973).



Figure 3. *Morpho peleides* Kollar feeding on decaying bananas in captivity.

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Life Cycle

Eggs: The eggs of *Morpho peleides* are small (approximately 1-2 mm in diameter), smooth, hemispherical, and laid on the upper surface of leaves (Ulrich and Emmel 1991, Constantino and Corredor 2004) (**Figure 5**). They are light green in color and have a circular band of small brown spots near the top (**Figure 6**). The egg stage has been recorded to last anywhere from 7 to 16 days, depending on the subspecies (Young 1982, Ulrich and Emmel 1991, Constantino and Corredor 2004).

Larvae: The larval stage of *Morpho peleides* has five instars or molts. All stages of larvae are known to feed at dawn and dusk (Young and Muyschondt 1972a). When they are not feeding, the larvae remain motionless (Young 1972). A study by Ulrich and Emmel (1991) found that the larvae grow from 5.25 mm in length after hatching up to 93 mm in length at the fifth instar, and another study by Constantino

and Corredor (2004) described the larvae as reaching 74.1 mm at the fifth instar. The growth rate and maximum size may vary by the subspecies and geographic location. Head width exceeds body width in the first three instars, and the head capsule is maroon in color and covered with hairs. In the early instars, the body is bright green-yellow with maroon patches, and pairs of red and white hair tufts (Figure 7) (Urich and Emmel 1991, Constantino and Corredor 2004). There are also white tufts of hair that extend from the sides of the body down toward the leaf surface, which may help to camouflage the caterpillar by breaking up its outline (Figure 8). By the fifth instar, the body is the same width as the head, and the head and body both change to a brownish color (Figure 9) (Urich and Emmel 1991, Constantino and Corredor 2004). Immediately before pupation the caterpillar enters a prepupal stage and the entire body color changes to light green, with only the tufts of hair on the dorsal side of the larvae remaining white and maroon (Figure 10) (Constantino and Corredor 2004). The first, second, third, fourth, and fifth instars last approximately 7, 7-8, 7-9, 8-12, and 11-14 days, respectively, with the prepupal stage lasting approximately three days (Urich and Emmel 1991, Constantino and Corredor 2004).



Figure 4. Mating *Morpho peleides* Kollar adults resting on a leaf in captivity.
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Pupa: The pupal stage of *Morpho peleides* (Figure 11) lasts approximately 14 days. During this time, the pupae are a pale green color and oval in shape. Just before the

emergence of the adult butterfly, the pupal skin becomes transparent and the adult is visible.



Figure 5. Eggs of a *Morpho peleides* Kollar butterfly on the surface of a leaf.

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Figure 6. Close up photograph of *Morpho peleides* Kollar eggs.
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Figure 7. Brightly colored first instar larva of *Morpho peleides* Kollar.
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Figure 8. Fourth instar larva of *Morpho peleides* Kollar, with long white hair tufts that reach down to the surface of the plant.

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Figure 9. Fifth instar larva of *Morpho peleides* Kollar.

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Adult: The adult *Morpho peleides* butterflies have black bodies and bright, iridescent blue wings, with the underside of the wings being cryptic brown. The margins of the wings have a black border, which is larger in females than in males. This black border has five or six white spots in the center, beginning at the apex of the forewing and extending downward (Urich and Emmel 1991). The average wingspan of an adult male *Morpho peleides* is 8.5 ± 1.4 cm (Young and Muysshondt 1972).

Host Plants

Several host plants of *Morpho peleides* larvae have been identified, and the species is thought to have a very broad host range. According to Urich and Emmel (1991), the primary wild host plant in Trinidad is *Paragonia pyramidata* (Bignoniaceae), and females were observed laying eggs on *Erythrina glauca* and *Erythrina micropteryx* (both Fabaceae). *Machaerium salvadorensis* (Fabaceae) is the major host plant of some *Morpho peleides* in El Salvador, and several legumes (Fabaceae) have been reported as hosts for *Morpho peleides* in Costa Rica. These include *Dalbergia*, *Lonchocarpus*, *Macharium*, *Mucuna*, *Platymiscium*, *Pterocarpus* and *Swartzia* species (Young and Muysshondt 1972, Urich and Emmel 1991).



Figure 10. *Morpho peleides* Kollar in the prepupal stage.

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Figure 11. *Morpho peleides* Kollar pupae.

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