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Spicebush Swallowtail, *Papilio troilus* Linnaeus (Insecta: Lepidoptera: Papilionidae)¹

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Introduction

The spicebush swallowtail butterfly is a large, dark swallowtail. It is one of our most beautiful and interesting swallowtails. All developmental stages are great examples of adaptive coloration.

Distribution

The spicebush swallowtail is found throughout the eastern half of the United States from southern Canada south to southern Florida except the Miami area and Keys and west to Texas. It is less common farther west from the Mississippi River. Two subspecies are recognized: *Papilio troilus troilus*, which is distributed throughout the range, and *Papilio troilus ilioneus*, which is restricted to the southern coastal plain including the Florida peninsula.

Description

The wingspread range is 4.1 to 5.6 cm. The upper surface of the fore wings is black with a narrow marginal row and a broader submarginal row of light yellow row spots. The upper surfaces of the hind wings also have the rows of spots, but they are light

green in color. The median areas of the hind wings are dusted with blue in females (Figure 1) and blue-green to green in males (Figure 2).



Figure 1. Adult female spicebush swallowtail, *Papilio troilus* Linnaeus. Credits: Jerry F. Butler, University of Florida

Eggs (Figure 3) are greenish-white. Young larvae (Figure 4) are bird-dropping mimics. Last instar larvae (Figure 5) are green with a pale yellow lateral line edged beneath with a fine black line. The

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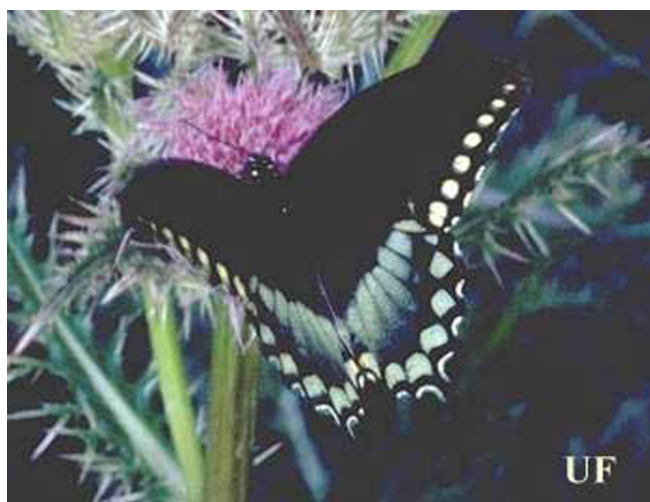


Figure 2. Adult male spicebush swallowtail, *Papilio troilus* Linnaeus. Credits: Jerry F. Butler, University of Florida

underside of the larva is pinkish-brown. Abdominal segments have a transverse band of six blue dots with each dot ringed by a fine black line (much thicker than those on larvae of the palamedes swallowtail, *Papilio palamedes*). One dot on each side is beneath the lateral line. There is a pair of large tan false eyespots lined with black on the rear of the thorax. The eyespots have a large black center with a white "false reflection." Larvae also have a smaller pair of tan spots at the front of the abdomen. Pupae have two anterior "horns" and may be brown (Figure 6) or green (Figure 7).



Figure 3. Egg of the spicebush swallowtail, *Papilio troilus* Linnaeus. Credits: Jerry F. Butler, University of Florida



Figure 4. Young larva of spicebush swallowtail, *Papilio troilus* Linnaeus. Credits: Jerry F. Butler, University of Florida



Figure 5. Mature larva of spicebush swallowtail, *Papilio troilus* Linnaeus. Credits: Jerry F. Butler, University of Florida

Life Cycle

There are many flights in Florida with peaks in late spring and early fall in central Florida. The host plants are species of Lauraceae. The most commonly used hosts are sassafras (Figure 8), *Sassafras albidum* (Nutt.) Nees; spicebush (Figure 9), *Lindera benzoin* (L.) Blume; camphortree (Figure 10), *Cinnamomum camphora* (L.) J. Presl, and red bay (Figure 11), *Persea borbonia* (L.) Spreng. In the experience of the



Figure 7. Green pupa of spicebush swallowtail, *Papilio troilus* Linnaeus. Credits: Donald W. Hall, University of Florida

authors, red bay is not used as frequently as the other species. The foliage of all of these plants is pleasingly aromatic when crushed -- a characteristic that aids in differentiating them from similar plants in other families.

Eggs are laid singly on the undersides of leaves of the host plants. Young trees are usually selected and eggs are typically laid from two to five meters above the ground. First instar larvae bend a leaf edge over and silk it down to make a leaf next. Older larvae spin a silk mat on a leaf that contracts to curl the two lateral leaf edges upward and together to form a leaf nest. Larvae usually hide in the leaf nest during the daytime and to molt when birds and other predators are unlikely to see them. They come out to feed at night. Young larvae are bird-dropping mimics, and mature larvae with their swollen thorax and eyespots are believed to mimic either green snakes or tree frogs. Larvae pupate on slender stems among vegetation, and pupae of the late summer or fall generation hibernate. Pupae may be either green or brown during the summer, but over-wintering pupae



Figure 6. Brown pupa of spicebush swallowtail, *Papilio troilus* Linnaeus. Credits: Jerry F. Butler, University of Florida



Figure 8. Sassafras, *Sassafras albidum* (Nutt.). Credits: Donald W. Hall, University of Florida



Figure 9. Spicebush, *Lindera benzoin* (L.) Blume. Credits: Donald W. Hall, University of Florida



Figure 10. Camphortree, *Cinnamomum camphora* (L.) J. Presl. Credits: Donald W. Hall, University of Florida

are brown. Both are leaf mimics. Adults are believed to be Batesian (palatable) mimics of the poisonous blue swallowtail.

Selected References

Gerberg, E.J. and R.H. Arnett. 1989. Florida Butterflies. National Science Publications, Inc. Baltimore, MD.



Figure 11. Red bay, *Persea borbonia* (L.) Spreng. Credits: Donald W. Hall, University of Florida

Hagen, R.H. and J.M. Scriber. 1991. Systematics of the *Papilio glaucus* and *P. troilus* species groups (Lepidoptera: Papilionidae): inferences from allozymes. *Annals of the Entomological Society of America* 84: 380-395.

Lederhouse, R.C., M.P. Ayres, J.K. Nitao and J.M. Scriber. 1992. Differential use of lauraceous hosts by swallowtail butterflies, *Papilio troilus* and *P. palamedes* (Papilionidae). *OIKOS* 63: 244-252.

Nitao, J.K., M.P. Ayres, R.C. Lederhouse and J.M. Scriber. 1991. Larval adaptation to lauraceous hosts: geographic divergence in the spicebush swallowtail butterfly. *Ecology* 72: 1428-1435.

Opler, P.A. and G.O. Krizek. 1984. *Butterflies East of the Great Plains*. The Johns Hopkins University Press. Baltimore, MD.

Opler, P.A. and V. Malikul. 1998. *A Field Guide to Eastern Butterflies*. Peterson Field Guides. Houghton Mifflin Company. New York.

Scott, J.A. 1986. *The Butterflies of North America*. Stanford University Press. Stanford, CA.

West, D.A. and W.N. Hazel. 1996. Natural pupation sites of three North American swallowtail butterflies: *Eurytides marcellus* (Cramer), *Papilio cresphontes* Cramer, and *P. troilus* L. (Papilionidae). *Journal of the Lepidopterists' Society* 50: 297-312.