

Population Locations of the Ozark Woodland Swallowtail (*Papilio joanae*)

McGowan K.G.,¹ Dupuis J.R.,²

1. Field Specialist in Horticulture, University of Missouri Extension, Springfield, MO 65807, mcgowank@Missouri.edu
 2. Assistant Professor, Department of Entomology, University of Kentucky, Lexington, KY 40546, Julian.Dupuis@uky.edu

INTRODUCTION

Papilio joanae is a rare butterfly species originally discovered in woodland habitats of the Ozarks region of Missouri. A positive identification has not been confirmed in many years, but populations are thought to still exist. Although tedious, efforts are underway to scout previous population sites.

HYPOTHESIS

Papilio joanae is closely related to *Papilio polyxenes* (Black Swallowtail) and nearly identical in appearance. Visual field differentiation between the two species is almost impossible and requires DNA testing for accurate identification. Because of the vast similarities, it is thought that *P. joanae* could possibly be misidentified as *P. polyxenes*, a common butterfly species, in some situations.



Original specimens from the collection of J. Richard Heitzman, whom discovered *Papilio joanae* in the 1970's. Specimens housed at the Enns Entomology Museum, University of Missouri, Columbia.

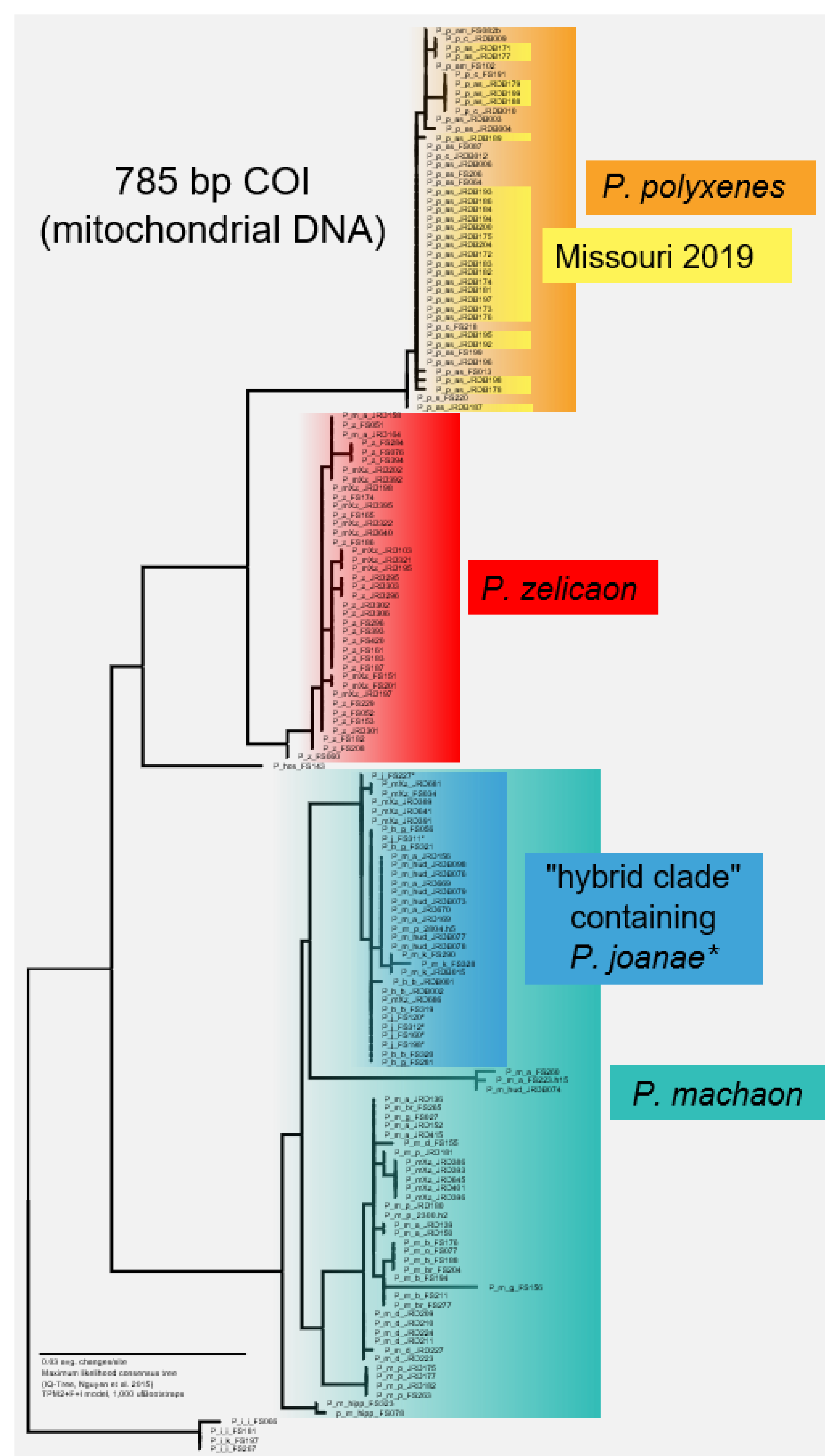
MATERIALS AND METHODS

- *Papilio polyxenes* caterpillars were collected from 25 locations in the Ozarks region of Missouri during 2019
- Caterpillars were collected and reared to the adult stage for testing purposes
- Adults underwent mitochondrial DNA testing at the University of Kentucky for identification

RESULTS

Multiple samples were DNA tested from each location, but none were determined to be *P. joanae*. Mitochondrial DNA markers, collected from previous work, were used to compare to the 2019 data set (see table below).

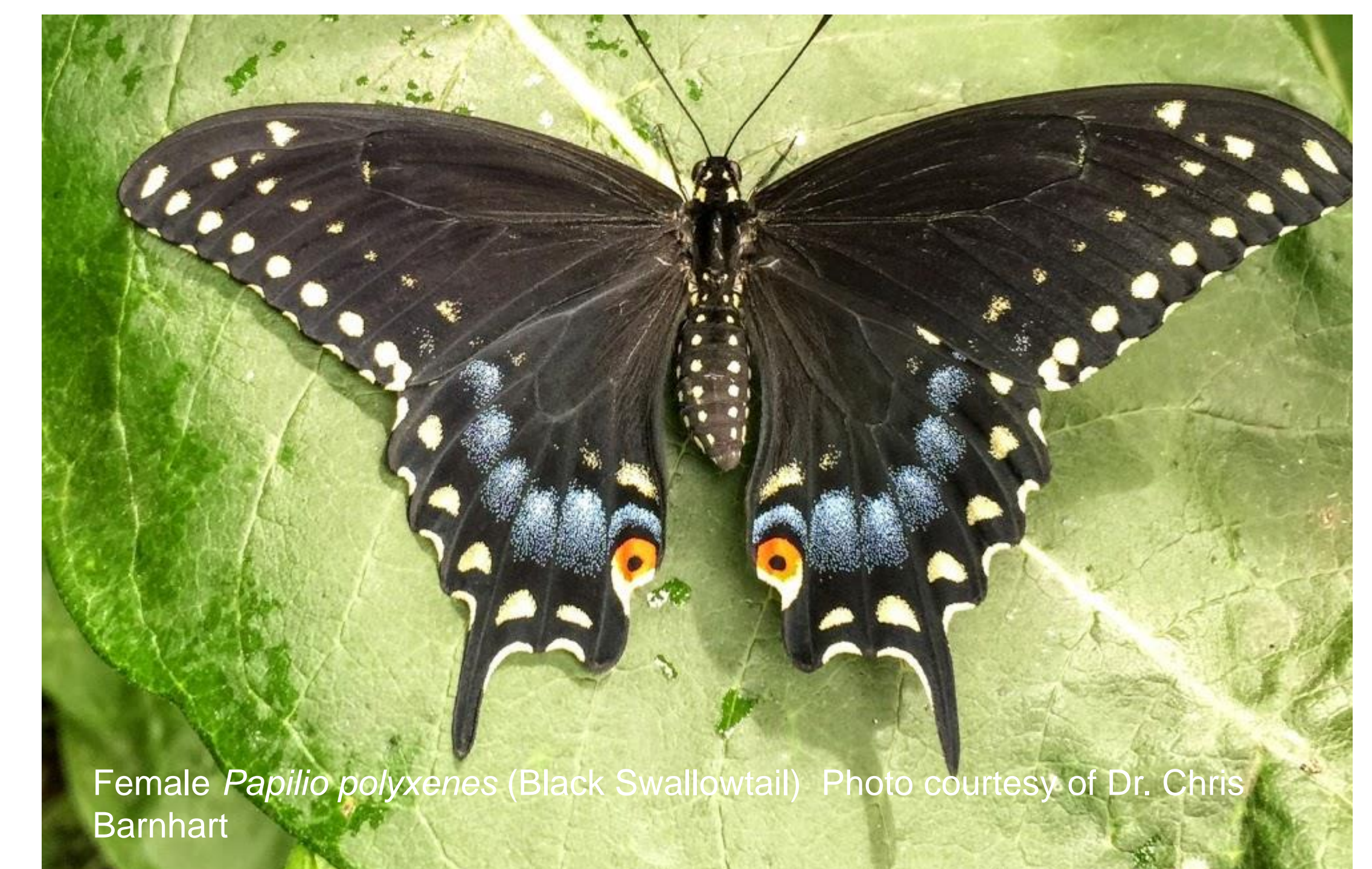
Although this particular data collection set did not prove the hypothesis, it is thought misidentification between the two species (*P. joanae* and *P. polyxenes*) could still exist.



Results of mitochondrial DNA testing from 2019 samples compared with mtDNA sequencing from previous work (Dupuis and Sperling, 2015).

CONCLUSIONS

Work will continue in locating populations of the Ozark Woodland Swallowtail. As the importance of pollinators continues to gain attention, both as an asset to crop pollination and as an indicator of healthy ecosystems, field research is essential. Such research provides assessments of the health of this species and others as well as the viability of remaining habitats.



Female *Papilio polyxenes* (Black Swallowtail) Photo courtesy of Dr. Chris Barnhart



Papilio polyxenes caterpillar on dill (*Anethum graveolens*) Photo courtesy of Dr. Chris Barnhart



Field scouting for *Papilio joanae* at Truman State Park in Warsaw, Missouri, the original discovery site for *P. joanae*.