Appendices

Extended Methods

Extended study site description

The study location in Cusuco National Park, Honduras, comprises a tropical, montane environment that includes both sympatric and allopatric populations of coral snakes and coral snake mimics (Townsend & Wilson, 2008). The park is a protected area located in the Merendón Mountains of northwest Honduras and is roughly 200 square km in area, with an elevational range of approximately 115 m to just over 2200 m (Alliance, 2019; Brown & Arrivillaga, 2017). Cusuco National Park spans a variety of forest types including cloud forest (distinguished by frequent cloud cover), dwarf forest (distinguished by high elevations, small trees, and increased number of epiphytes), and forest fringes (distinguished by little to no tree cover). These habitats are predominately broad-leaf, pine, or mixed forests (Brown & Arrivillaga, 2017; Townsend & Wilson, 2008). There are two species of coral snakes found in the park: *Micrurus diastema* and *Micrurus nigrocinctus*. Both of these species exhibit tricolor patterns of red, black, and white/yellow, although both have also been found to exhibit bicolor a red and black morph (Brown & Arrivillaga, 2017; Townsend & Wilson, 2008). In addition, there are nine species of colubroid snakes found in the park that are considered coral snake mimics: *Geophis nephodrymus*, *Lampropeltis abnorma*, *Ninia sebae*, *Oxyrhopus petolarius*, *Pliocercus elapoides*, *Scaphiodontophis annulatus*, *Scolecophis atrocinctus*, *Sibon dimidiatus*, and *Tropidodipsas sartorii* (Brown & Arrivillaga, 2017; Townsend & Wilson, 2008). All of these species are considered mimics because at least one morph in each species has banded patterns of black, red, and/or white. They range from tricolor mimics such as *P. elapoides* and *L. abnorma*

to bicolor red and black (some *G. nephodrymus*) or white/yellow/orange and black (*T. sartorii*) (Brown & Arrivillaga, 2017; McCranie & Savage, 2011; Townsend & Wilson, 2008).

Extended transect description

In order to assess predation rates on various mimetic and non-mimetic color patterns, we analyzed the number of attacks on clay replicas. We constructed these non-toxic, pre-colored clay replicas to have patterns loosely based on snakes found in the park. Replicas were either cryptic (brown) or mimetic (white-and-black banded, red-and-black banded, or tri-colored with red, white, and bands) (Figure S1a).

We placed clay replicas in groups of four, hereafter referred to as a tetrad, which included one of each replica color pattern. Over a span of eight weeks from June to August in 2018 and in 2019, we arranged the tetrads along transects at varying elevations within the park (Table S1). Transects higher than 1800m in elevation were classified as allopatric, and those lower than 1800m were classified as edge sympatric. Of the nine transects in 2018, three were allopatric and six were edge sympatric. Of the 18 transects in 2019, three were allopatric and 15 were edge sympatric. There were fewer allopatric transects because there was much less space to lay out transects in the higher elevations of the mountaintop. Each transect contained seven (in 2018) or ten (in 2019) branches, spaced approximately ten meters apart, with one tetrad per branch (Figure S1a). We placed each replica within a tetrad at least three meters apart from other replicas in the tetrad. The order of the replicas within each tetrad was randomly determined using a random number generator. We calculated an ideal sample size for the total number of clay replicas on transects for 2019 through a power analysis based on the attack data from 2018. We left replicas out on transects for a period of two weeks and checked them every three to four days for marks of predation (e.g. distinct beak, bite, or claw marks). Once checked, replicas were

smoothed over and placed in the same spot. If a replica was attacked more than once during the two weeks, only one attack was counted. Each instance of attack was scored for type of predator (bird, mammal, or unidentifiable) and recorded. Different observers checked and scored the replicas from year to year.

Statistical Analyses

We analyzed the data using a combination of mixed effect models compared with model selection and contingency analyses. The mixed effects models and model selection demonstrated whether sympatry and color pattern had meaningful effects on attack rates, and contingency analyses were used to estimate differences in predation rates between clay replica types, habitats, and years. To avoid missing patterns of selection that could occur by discarding ambiguous attack marks, we combined bird and mammal attacks into an overall "attacked" category. We performed contingency analyses in JMP v 13.1.0 (SAS Statistical Institute, Cary, NC, USA) with all samples pooled regardless of transect. We created logistic mixed effect models in R and compared them using small sample size-corrected Akaike information criterion (AICc) values to determine which statistical models were most effective in predicting attack rates (Bates et al., 2015; Mazerolle, 2019; R Core Team, 2020). The response variable for these statistical models was whether a replica was attacked or not attacked at any point during the two week period. The null models for each year included only transect as a random effect. The remaining statistical models included transect as a random effect as well as all potential combinations of: level of sympatry, one of the five color variables, and interaction terms.