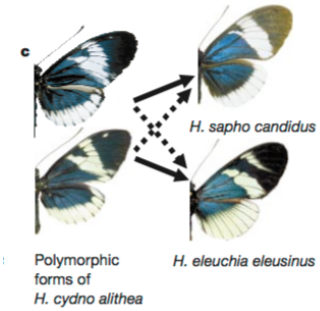
Prediction from the Mullerian theory: There is an individual advantage to sharing a warning signal with many others. It is better to be common than to be rare.

Hypothesis: If morphs of H. cydno are moved into an environment where they mimic the less common co-model (ie, yellow morphs are moved into a place where H. sapho is more common than H. eluchia), they will have lower survival than controls that share the dominant morph.

Design:



tion)[10,11,30]. **c**, Reciprocal transfer of polymorphic *H. cydno*. White *H. cydno* are control butterflies (solid arrow) when transferred to sites dominated by the white co-model (*H. sapho*) and experimental butterflies (dashed arrow) when transferred to sites dominated by the yellow co-model (*H. eleuchia*). The opposite is true for the yellow *H. cydno* butterfly.

Results: Butterflies were released, and survival estimated based on re-capture data. Ignore part b, just look at a, c, and d. Do the results support the hypothesis? Does it support the prediction made by theory?

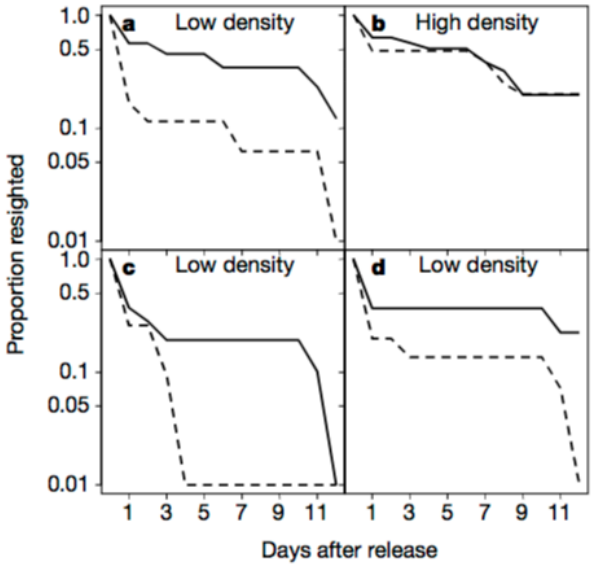


Figure 2 Observed proportion (log_{10} scale) of control and experimental *H. cydno* butterflies resighted after initial release. Control (solid line) and experimental butterflies (dashed line) resighted at Manta Real (**a**), Maquipucuna (**b**), Agua Caliente (**c**) and Tinalandia (**d**). To ensure even coverage, all possible locations to resight butterflies were visited daily on a rotating basis (except for Tinalandia where these sites were visited every 1.5 days).

Prediction from the Mullerian theory: The efficacy of the warning signal is stronger the more common it is. Predators must consume a certain number of unpalatable individuals before learning to avoid the signal; if many individuals share the signal, the per capita risk of predation as predators learn is lower. (ie, if it takes a bird two butterflies of a specific pattern to learn to avoid them, and there are 4 per bird, then only half of the individuals sharing that pattern will survive; if there are 10 per bird, 80% will survive).

Hypothesis: If morphs of H. cydno are moved into an environment where they mimic the less common co-model (ie, yellow morphs are moved into a place where H. sapho is more common than H. eluchia and vice versal), survival will be higher if they are released at higher densities.

Design: Morphs of H. cyndo were captured and transplanted: experimental butterflies into places where their co-model was less common, and controls that were foreign but matched the local co-model. This was done in two densities; in one treatment, the experimental butterflies were released approximately every 100 m (low density), and in the other treatment, they were released every 40 m (high density). Survival was assessed with recapture experiments.

Results: (compare a, c, and d with b). Do these results support the hypothesis? Do they conform to Mullerian theory?

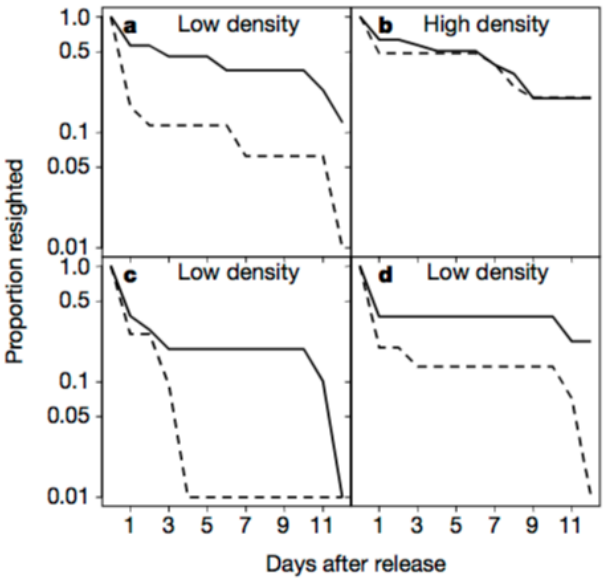


Figure 2 Observed proportion (log_{10} scale) of control and experimental *H. cydno* butterflies resighted after initial release. Control (solid line) and experimental butterflies (dashed line) resighted at Manta Real (**a**), Maquipucuna (**b**), Agua Caliente (**c**) and Tinalandia (**d**). To ensure even coverage, all possible locations to resight butterflies were visited daily on a rotating basis (except for Tinalandia where these sites were visited every 1.5 days).