Crocodile tears? Research findings can help to increase population size of endangered species

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The findings of a new study examining the behaviors of alligator and caiman hatchlings have enhanced our understanding of how we can

conserve, and increase, the population of endangered crocodilian species.

At adult size, there are key differences between the American alligator and the closely related spectacled caiman. However, at the time of hatching both species are tiny and might be expected to show similar behaviors in order to avoid being eaten by almost any carnivore around.

Now, researchers at the Universities of Lincoln (UK) and Vienna have conducted comparative studies between the hatchlings of these crocodilian creatures and found that the alligators are more active and likely to explore their surroundings.

The research, conducted at 'Crocodiles of the World', the only zoo in the UK specializing in keeping crocodilians, put American alligator and spectacled caiman hatchlings in unknown environments and presented them with unknown objects.

The team found that the alligators moved around much more than the caimans in all conditions and approached the unknown objects closer than the caimans, behavior which may reflect the strength of maternal protection they receive.

Anna Wilkinson is Professor of *Animal Cognition* at the University of Lincoln, and final author of the study. She said: "The findings of this study are exciting as they have important conservation implications.

"Several crocodilian species are endangered in the wild and one way to increase their population size is to release captive-bred juveniles into the wild. If the endangered species is a large crocodilian and at the top of the food chain, the juveniles should be allowed to grow to a larger size prior to release as they might have a lower natural predator avoidance.

"On the flip side, spectacled caimans are an invasive species in the natural range of other crocodilians, including the American alligator, and one reason for their success could be a higher survival rate of their hatchling because of their stronger tendency to avoid predators."

First author Dr. Stephan Reber, said: "During our research, the movements of the animals were coded automatically using a color tracking software developed specifically for this study.

"We used automatic coding because it allows us to catch even very small differences in behavior. The observed behavioral tendencies of the hatchlings are very reminiscent of those of adults. Adult American alligators are rather self-assured and confident, while adult spectacled caimans are, in comparison, a bit jumpier and more easily spooked."

Hatchlings of the two species are probably equally susceptible to predators due to their similar size, but the researchers suggest that the different behavior observed in the hatchlings is a reflection of the strength of maternal protection.

All crocodilians are guarded by a parent (usually the mother) for a considerable amount of time after hatching. The strength of that protection depends on the adult size of the parents.

Dr. Reber explains: "American alligator mothers have no natural enemies in their habitat and can protect their hatchlings effectively against any predator. On the other hand, adult spectacled caimans have many predators, including cougars, jaguars and giant snakes. Therefore, American alligator hatchlings can afford to be more explorative under their motherÿs watchful eye, while spectacled caimans probably behave more inconspicuously to avoid attracting attention even if they are guarded."

The findings of this study have been published in *Animal Cognition*.

More information: Stephan A. Reber et al. Early life differences in behavioral predispositions in two Alligatoridae species, *Animal Cognition* (2021). DOI: 10.1007/s10071-020-01461-5