From the egg, baby crocodiles call to each other and to mom

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For the first time, researchers have shown that the pre-hatching calls of baby Nile crocodiles actually mean something to their siblings and to their mothers. The calls—which are perfectly audible to humans and sound like "umph! umph! umph!"—tell the others in the nest that it's time to hatch, according to the report in the June 23rd issue of *Current Biology,* a Cell Press publication. Those cries also tell the mother croc to start digging up the nest.

The new findings, made from a series of "playback" experiments, confirm what had only been suspected on the basis of prior anecdotal observation, according to the researchers Amélie Vergne and Nicolas Mathevon of Université Jean Monnet in France.

The researchers said that the calling behavior is probably critical to the early survival of the young crocodiles.

Although it has not yet been clearly shown, "We can well suppose that hatching synchrony can be of vital importance for crocodiles," Mathevon said. "Indeed, most mortality occurs early in life and hatching vocalizations might well attract predators. Therefore, adult presence at the nest and its response to juvenile vocalizations may offer protection against potential predators. In this sense, it is important for all embryos in the nest to be ready for hatching at the same time so that they all receive adult care and protection."

Crocodilians were known to make sounds within the egg shortly before

hatching, the researchers said. To find out what those calls might mean in the new study, the researchers divided crocodile eggs that were due to hatch within 10 days into three groups. One of those groups was played recordings of pre-hatching calls, one was played recordings of noise, and the last was left in silence until they hatched.

The eggs played the pre-hatch sounds more often answered back, they report. Many of the eggs in that group also moved. Finally, all of the eggs in the pre-hatch group hatched during the playback or within 10 minutes of it. Only once did the eggs hearing noise hatch, and the rest hatched at least five hours after the last test.

The researchers then tested the mothers' responses to the calls. "In the zoo where we did the experiments, eggs are removed [from the nest] within a few days following the laying date," the researchers explained. "In spite of this, females continue to guard the nest."

At the end of the incubation period, the researchers hid a loudspeaker underground near the empty nest. They then played pre-hatching calls interspersed with noise to ten mothers. The adults more often turned their heads or moved after egg sounds than after noise, they showed, and eight of the mothers responded to the recorded calls by digging.

The behavior may have a long history, the researchers said.

"As birds also produce embryonic vocalizations that induce parental care, such acoustic communication at an early stage of development may be a shared behavioral feature of past and present Archosaurs," an ancient group of reptiles now represented by modern birds and crocodiles.

Source: Cell Press