

sounds may play an important role in mate selection by female cichlids.

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SONIFEROUS BEHAVIOUR OF THE STRIPED CUSK-EEL *OPHIDION MARGINATUM*

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INTRODUCTION

The striped cusk-eel *Ophidion marginatum* is an abundant coastal marine species occurring from Florida to Long Island, New York, and rarely to Cape Cod, Massachusetts. Relatively little is known about the ecology of this species because of its cryptic nocturnal habits. We conducted a preliminary study of its reproductive behaviour based on laboratory observations made during 1985 and 1989-91 and field recordings of calls during August-September 2000. This study is the first to describe the soniferous behaviour of any Ophidid (Fahay 1992, Mann et al. 1996).

RESULTS

Cusk-eels normally remain the day and did not emerge at night in the laboratory within 40 times during the study after mid-September and 10 hours after sunset corresponding to laboratory observations in September.

Mate attraction – The male calling just before sunset continues through a gradual dusk. Calling continues after sunset. Sounds consisted of (Mann et al. 1996). Females increasing their activity. Often a loud call would be followed by a call of lower amplitude (tit-for-tat) to another male or a female.

Contact – In the laboratory the male. However, we suggest that females more typically. Typically a male would approach with his mouth and barbels in sand (sometimes the female). At other times the male would approach from the bottom. The male would approach the dorsal surface between the female placed at right angles to his body and would end with either.

Pair swimming – In the laboratory pair would then swim rapidly. The male would maintain position alongside the female's body and his body alongside. Video sequences of a mass begins within the laboratory. Occasionally two rival males would approach a female. They would vigorously attempt to dislodge their partner.

Surface rush – Pairs would approach the surface with the female above. The male would twist around the female from above lasting a fraction of a second.

Egg release – After spawning the male would swim slowly off with the female.

RESULTS

Cusk-eels normally remained burrowed under the substrate during the day and did not emerge until sunset or later. Spawning occurred nightly in the laboratory with one large female (264 mm TL) spawning over 40 times during the July-September study period. Calls were rare after mid-September and occurred from sunset until approximately 3 hours after sunset corresponding with spawning. Based on both field and laboratory observations, calling and spawning ceased after mid-September.

Mate attraction – This stage usually begins with the onset of calling just before sunset while the cusk-eels are still burrowed and continues through a gradual emergence lasting up to 20 minutes. Calling continues after emergence until peaking around 1 hour after sunset. Sounds consisted of 1-27 pulses between 500 and 1800 Hz (see Mann et al. 1996). Females often appeared to react to a call by increasing their activity and circling as if searching for the caller. Often a loud call would be followed immediately by a shorter call of lower amplitude (tit-for-tat?). It is not clear if the response call is from another male or a female.

Contact – In the laboratory, contact was most often initiated by the male. However, we suspect this is an artifact of confinement and that females more typically seek out calling males in the wild. Typically a male would approach a burrowed female and nudge her with his mouth and barbel-like pelvic fins until she emerged from the sand (sometimes the female nudged a burrowed male out of the sand). At other times the male would approach a female resting on the bottom. The male would rub its chin and barbels along the female's dorsal surface between the eyes and dorsal fin origin with its body placed at right angles to her's. This stage would last from 5-30 seconds and would end with either the female darting off or in pair swimming.

Pair swimming – If the female was receptive to the male, the pair would then swim rapidly around the tank for 1-3 minutes. The male would maintain position with his head placed at right angles to the female's body and his body bent sharply backward as he swam alongside. Video sequences show that extrusion of a gelatinous egg mass begins within the first moment of this courtship stage. Occasionally two rival males would attempt to mate with a single female. They would vigorously push and shove each other in an attempt to dislodge their rival and retain their own hold on the female.

Surface rush – Pair swimming terminates in a rapid rush to the surface with the female arching over to expose her vent. The male would twist around the female to accomplish a brief ventral mount from above lasting a fraction of a second and would then flip away.

Egg release – After a few seconds, the female would turnover and swim slowly off with the egg mass still attached. It is uncertain

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