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Animal Behaviour

Volume 12, Issues 2–3, April–July 1964, Pages 362–367

Electric discharge and associated behaviour in the stargazer

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[https://doi.org/10.1016/0003-3472\(64\)90025-9](https://doi.org/10.1016/0003-3472(64)90025-9)

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Abstract

1. The stargazer, *Astroscopus y-graecum*, discharges its electric organs during feeding.
2. The usual pattern of discharge consists of a high-frequency ‘burst’ of pulses followed, after about 100 milliseconds, by a ‘train’ of discrete pulses lasting several seconds. Prey are captured within 150 or 300 milliseconds.
3. The ‘burst’ of pulses appears just before or during the opening of the mouth and positive correlation exists between the ‘burst’ duration and the size of prey.
4. The ‘train’ of pulses is observed only if prey are captured and swallowed. The number of pulses in the ‘train’ is directly correlated with the length of the prey and possibly with its movement within the mouth of the stargazer.

5. "Bursts" and "trains" of pulses similar in appearance to those observed during feeding can be evoked by pressure and by a combination of visual and mechanical stimuli. If the "bursts" result from stimulation of the same receptors which produce discharges during feeding, the results suggest that the visual properties of the prey combined with the water-borne waves set up by swimming movements trigger the "burst". "Trains" appear to result from activation of proprioceptors sensitive to stretch and probably are located in the pharyngeal region.
6. The discharge is too weak to stun predators or prey and does not appear to be used in electro-echolocation or as a signalling device, but the latter cannot be totally excluded. Although it is normally observed only during feeding, the function of the electric discharge is still unknown.



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† Part of this study was completed at The Institute of Marine Science, University of Texas, Port Aransas, Texas, and was supported by a National Science Foundation Grant, (NSF) G-10690, in Environmental Biology.

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