

Fine-scale behavioral analysis of the Greenland shark using 3-axis accelerometers

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【Introduction】

The Greenland shark *Somniosus microcephalus* is an apex predator that is considered to occupy a high trophic position similar to polar bears and killer whales. It is a relatively abundant species in the arctic and may play an important role in regulating and transporting nutrients within arctic food webs. Nevertheless, basic research on this species is lacking including specific aspects of their foraging ecology such as feeding frequency and how they consume prey.

【Material and method】

To examine their feeding behavior under natural conditions, we attached bio-loggers measuring triaxial acceleration (ORI1300-3MPD3GT by Little-Leonardo, DTAG-4 by Mark Johnson) on Greenland sharks captured in Tremblay Sound, Baffin Island (Canada).

【Result】

In total we obtained data from 5 Greenland sharks. Recording duration during deployment ranged from 1.5 to 3.4 days. Rapid changes in all axes of acceleration data (i.e. acceleration peaks) were observed in low frequency for all studied sharks.

【Discussion】

An acceleration peak can be considered an event in which an animal suddenly changes its posture or rapidly increases its swimming speed. Consequently, it is possible that most of the acceleration peaks represent foraging events. By examining the body posture (which is calculated from acceleration), and the depth change before/during /after each acceleration peak event, we can estimate whether it is reasonable to assume that each acceleration peak is associated with foraging activity. Traits of acceleration peak can be extracted. In the future, these acceleration events can be combined with video data to validate the observed behaviors.