

A new acoustic pH transmitter for studying the feeding habits of free-ranging sharks



Little is known about the feeding habits of large free ranging fish, due in large part to lack of an appropriate technique for quantifying feeding variables. A previous study demonstrated that changes in gastric pH can be used as a proxy for feeding events in free-ranging sharks. Here we describe the development of a new acoustic pH transmitter to remotely measure gastric pH in sharks in the field. The transmitter consists of a dual sensor (pH and temperature) continuous pinger, and was tested in captive adult blacktip reef sharks (*Carcharhinus melanopterus*). The transmitter was retained in the shark's stomach for between 5–12 days. The empty stomach had a low pH (1.6 ± 0.2) and feeding induced a rapid increase in gastric pH, which was clearly distinguishable from baseline levels. Meal size showed a significant linear relationship with the magnitude of the pH changes. Measurement accuracy of the pH transmitter ranged from 0.05–0.9, although resolution of the VR100 receiver that decoded the transmitter signal was 0.1 units. The pH transmitter can be used to determine when free-ranging sharks in the field are feeding and hence quantify feeding

chronology, frequency and daily ration.

Auteurs du document : Yannis P. Papastamatiou, Carl G. Meyer, Kim N. Holland

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