

# Post-release behavior, physiological stress, and survival rates of longline-caught Greenland sharks

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Many species of sharks and rays are increasingly threatened worldwide, primarily due to direct and indirect effects of fishing. In the Arctic, Greenland sharks *Somniosus microcephalus* are a primary bycatch species of longline fisheries targeting Greenland halibut *Reinhardtius hippoglossoides*. Although the sharks caught alive in halibut fisheries are released to the sea, they are often badly entangled, and it is unclear how likely they can survive following release or how long they need to recover from capture stress. In this study, we combined blood chemistry, accelerometry, and acoustic and satellite telemetry to examine the stress level and its consequence of longline-captured Greenland sharks (N=9) off Baffin Island, Canada. Mean lactate (4.8 mmol L<sup>-1</sup>) and glucose concentrations (5.3 mmol L<sup>-1</sup>) in the blood were lower than most other shark species previously examined. Based on the accelerometer records, sharks exhibited unusual behavior following release, but recovered from it in 7-9 h. Based on acoustic and satellite telemetry, all sharks survived at least one month following release. Our results indicate that Greenland sharks are relatively resilient to capture stress caused by longline fisheries, presumably due to their depressed metabolic rates stemming from low water temperature in the Arctic.