

## **Study of nearshore great white shark behavior off the coast of Cape Cod using drone based tracking methods with implications for public safety.**

*Kristian Sexton, Koppi Kolyvek, John Reuland, Robert Holt*

The seal population on Cape Cod has exploded over the last several decades leading to the presence of a large great white shark population with great whites regularly swimming and hunting in areas frequented by recreational water users. This scenario had tragic consequences in the summer of 2018 with two great white attacks over a three week period resulting in one fatality and one near fatality. The present study aims to understand the behavior and swimming patterns of great white sharks in nearshore Cape Cod waters.

The large great white population as well as the relatively shallow waters make Cape Cod an unparalleled location for the study of great whites using drones. Over the summer of 2019 drones were used to locate and track sharks from July through early November along a number of Cape Cod ocean beaches. Somewhere in the vicinity of fifty hours of great white footage was collected. Custom software was developed to determine shark position, swim speeds, distances from shore, movement relative to shore, shark lengths and tail beat frequencies. A number of interactions with seals were also observed. Great whites were seen to travel largely parallel to shore for extended distances with movement to and from deeper offshore waters limited. The observations contained in this study will be of the utmost importance for the development and deployment of technologies to enhance the safety of recreational water users.

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