

For Immediate Release
Wednesday, October 16, 2019

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Six Outer Cape Towns, the Cape Cod National Seashore, and the Atlantic White Shark Conservancy Release Public Safety Report on Shark Mitigation Strategies

Report evaluated strategies to support regional decision-making and public safety efforts

(Wellfleet, Mass.) – Town Managers and Administrators from Provincetown, Truro, Wellfleet, Eastham, Orleans and Chatham, the Superintendent of the Cape Cod National Seashore and the Chief Executive Officer of the Atlantic White Shark Conservancy announced the release of the “Outer Cape Shark Mitigation Alternative Analysis” report. There were 27 Shark Mitigation Strategies included in the 6-month study, which was compiled by the Woods Hole Group, an international environmental services and products organization headquartered in Bourne, Massachusetts.

The intent of the report was to provide a comprehensive and consolidated analysis of all the shark mitigation technologies currently available as well as strategies proposed to increase public safety and awareness along regional beaches of the Outer Cape.

“With so many stakeholders with varied interests, it was essential that we reviewed our options carefully and scientifically. The alternatives analysis provided us a research-based, unbiased review of options so that we would have a clear understanding of which options could be suitable for our Outer Cape beaches,” **said Rae Ann Palmer, Truro Town Manager.** “Those options included any adverse impacts to the environment or to the humans recreating in our waters; and most importantly—the effectiveness of preventing a shark/human interaction. It is very important to us to use research and science-based decision making that allows us to best protect the public’s safety, trust and tax dollars.”

“The Outer Cape Shark Mitigation Alternatives Analysis, consolidates ideas, available technologies, and current strategies for shark mitigation and will provide invaluable information for future shark management decisions,” **said Brian Carlstrom, Superintendent of the Cape Cod National Seashore.**

The mitigation strategies in the report were divided into three categories: technology-based, barrier-based and biological-based. This included barriers, tagging, visual detection, acoustic detection, magnetic, adaptive camouflage, culling, contraception, electric shock, scent smell and modifying behavior.

The Woods Hole Group worked to establish a comprehensive list of technology-based, barrier-based, and biological-based alternatives in the study. All available alternatives received equal consideration. The comprehensive list of alternatives was developed based on: 1) Researching strategies that had been implemented elsewhere around the world; 2) feedback from local Towns regarding alternatives suggested or presented by the public; 3) feedback given to municipal leadership by citizens, vendors, and/or stakeholder groups; and, 4) strategies suggested through a public survey conducted earlier this year, where over 500 members of the public responded.

The geographical range of the report was limited to beaches owned and maintained by the six Outer Cape Towns and the National Seashore. The beaches were either classified as open Atlantic Ocean, Cape Cod Bay, Nantucket Sound or estuaries. There were unique and variable environmental and marine conditions found due to the tides, winds and waves which created many challenges for the success of some of the Shark Mitigation Alternatives.

The most important finding to emphasize from the Shark Mitigation report is there is no one alternative or suite of alternatives that can ***100% guarantee the safety of individuals who choose to enter the water.*** Prior to the deployment of any alternative, it will be critical to develop a regional consensus regarding the most appropriate pathway forward. To work towards a regional consensus, Woods Hole Group recommends the continued expansion of education and outreach efforts and open dialogue between stakeholder groups.

“The Woods Hole Group report is the first step in making an informed decision on the Town of Wellfleet's actions regarding shark mitigation,” said **Dan Hoort, Wellfleet Town Administrator**. “We know that humans need to modify their behavior when in the presence of this apex predator. Now we begin to determine if there are additional strategies that may be effectively employed to reduce the possible human interaction with a shark.”

“Since its inception, The Atlantic White Shark Conservancy has been committed to supporting research on white sharks in this region and sharing that information with public safety officials, beach managers and the general public to help enhance public safety. We will remain steadfastly dedicated to this mission,” said **Cynthia Wigren, Chief Executive Officer, Atlantic White Shark Conservancy**.

Brief Summary of Report Findings

Visual and Acoustic Strategies: these strategies may alert beachgoers to the presence of a shark, but might not have the effect of reducing attacks:

- The success rate of visual observations is limited and once a shark is sighted it is already very close to the swimming area.
- Tagging efforts only sample a small portion of the shark population, but they do effectively identify and detect those particular sharks. An expanded program may help inform safer human behavior by improving our understanding of the shark population.
- Real-time buoys may have a role in improving public safety as part of a wider response strategy, but their deployment would not mean swimmers are safe from sharks.
- Sonar detection systems have not yet lived up to their potential.
- No technology-based alternatives separate sharks from humans.

Wearable and Repellent Mitigation Technologies

- May not deter a shark committed to an aggressive attack vector.
- The effect of camouflage is inconclusive.
- These technologies are personal purchases, not a regional form of protection, and individuals should be careful when employing them.

Barrier Technologies

- Suggested barriers would not work well in the open Atlantic Ocean, there are problems with marine life entanglements for some and all barriers would affect wave attenuation, making it difficult for the surfing community. Most, if not all, barriers studied would not be successful in open Atlantic facing beaches.
- The limited number of semi-rigid barrier installations in Australia have been effective at excluding sharks but might have long permitting timelines and high costs if proposed locally.

Biological-Base Alternatives

- Sharks and Seals are protected species by state and federal law. Therefore culling, drum lines, contraception or indigenous hunting are not permitted, nor feasible.
- There is also no evidence to suggest that reducing the local grey seal population would decrease the regional shark population.
- Scent/Smell deterrents have limited level of effectiveness as it may only work over a short range of time and sharks may develop a tolerance to this.

The Most Effective Form of Mitigating Human-Shark Interaction to date

- Modifying Human Behavior. The most effective way to minimize the risk of another fatality is for beachgoers to change their behavior during the peak shark activity season.
- The public and all stakeholders need to understand and acknowledge that different behaviors, whether wading or swimming or surfing pose different levels of risk. Everyone going into the ocean should exercise caution, follow established best management practices, such as *Shark Smart Behaviors*, and be willing to assume the level of risk associated with their behavior prior to entering the water.

Funding for this report was provided by the towns of Provincetown, Truro, Wellfleet, Eastham, Orleans, Chatham, the Friends of Cape Cod National Seashore and the Atlantic White Shark Conservancy. Partial funding for this project is also provided by the Department of Housing and Community Development's District Local Technical Assistance program through the Cape Cod Commission.

Cape Cod National Seashore Statement

“Since 2012, Cape Cod National Seashore has been part of the Regional Shark Working Group. This group collaborates on shark research, knowledge of shark experts and public safety efforts to include coordinating the action needed to commission a report to analyze all the different shark mitigation strategies that exist around the world. The report synthesizes these strategies, summarizes available technologies, and emphasizes the importance of vigilant shark smart behavior messaging.

We support and will be engaged in research that will help us to learn more about the behaviors of sharks in our waters. The seashore remains committed to educating the public, encouraging safe behavior while recreating in the water, and engaging the community of Cape Cod to further the public safety effort.”

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