PREDATOR EXCLUSION CAGES ARE THE MOST WIDELY USED PREDATOR MANAGEMENT METHOD ON NORTH CAROLINA SEA TURTLE NESTING BEACHES

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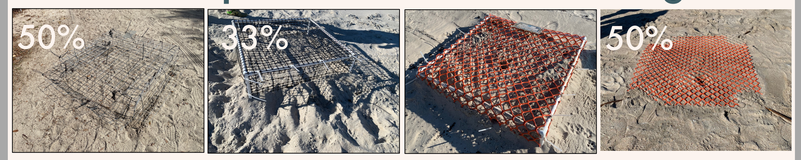
BHI CONSERVANCY

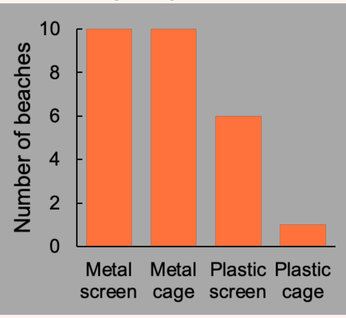
90%

of NC sea turtle nesting programs use a predator exclusion cage



Welded wire box | Plastic box | Plastic box (MasterNet) | Flat screen

- 100% of volunteer and state programs used PECs
- 67% of federal and nonprofit programs used PECs
- Some programs used multiple methods

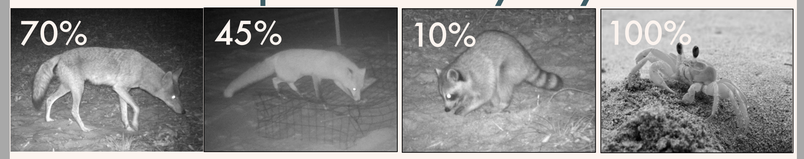


Self-releasing cage

The most common PECs are constructed of metal or plastic, may be box-shaped or flat, and must be "self-releasing", allowing hatchlings to escape upon emergence. Bald Head Island Conservancy conducted a controlled study in 2021 finding that metal and MasterNet™ box-shaped cages were equally effective against non-native coyotes (Hillbrand et al. *in prep.*).

70%

of NC sea turtle nesting beaches had nest depredation by coyotes



Coyote | Red fox | Racoon | Ghost crab

- Ghost crabs were present on all beaches but not as destructive as mesocarnivores
- Domestic dog (30%), birds (5%), fire ants (5%)

INTRODUCTION

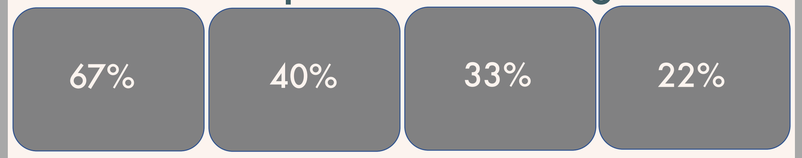
Sea turtle nests are subject to a variety of pressures, but predation is one of the few pressures that can be directly addressed by resource managers. North Carolina averaged 1257 nests/year from 2009 – 2022, primarily laid by loggerheads (*Caretta caretta*). Since NC nesting density is relatively low compared to other SE US states, most programs have the capacity to place predator exclusion cages (PECs) on individual nests. PECs are designed to exclude the most common mammalian predators. **Our objective was to determine prevalence and utility of PEC use compared to other methods.**

METHODS

We sent a survey to all NC programs, inquiring about types of predator management, types of predators, nesting and beach statistics for the 2021 nesting season. Response rate was 91% (20 of 22 programs).

35%

of NC sea turtle nesting programs used lethal predator management



Federal | State | Nonprofit | Volunteer

- A higher percentage of government programs used lethal methods than nonprofit/volunteer programs
- Trap-and-cull was the most prevalent lethal method

"Removing coyotes before breeding season and not giving them the opportunity to live on the site for consecutive years is something that has been successful for our sea turtle nesting."

"We have had some predation issues in the past but our nest management techniques work well to keep our nests safe. I am shocked to see the culling/killing of other animals as listed in the protection options. This is something our project never has done and never will do."

Managers had varied opinions about lethal predator management.

CONCLUSIONS

In the face of novel predators and as an alternative to controversial lethal methods, predator exclusion cages are a viable predator management technique. Next steps will be to determine if predator management approaches are related to historical nest density and personnel capacity.

ACKNOWLEDGMENTS: North Carolina sea turtle nesting programs who participated in the survey, including N.E.S.T., Pea Island NWR, Cape Lookout NS, Ft Macon SP, Atlantic Beach Sea Turtle Program, NC Sea Turtle Watchers, Emerald Isle Sea Turtle Patrol, Hammocks Beach SP, Marine Corps Camp Lejeune, Topsail Turtle Project, Audubon NC, UNCW, Masonboro Island Reserve, Pleasure Island Sea Turtle Project, Ft Fisher SRA, Bald Head Island Conservancy, Caswell Beach Sea Turtle Watch, Oak Island Sea Turtle Protection Program, Holden Beach Turtle Watch, Ocean Isle Beach Sea Turtle Protection Organization, Sunset Beach Turtle Watch. Thanks to the hundreds of staff and volunteers working to protect nesting sea turtles throughout NC.