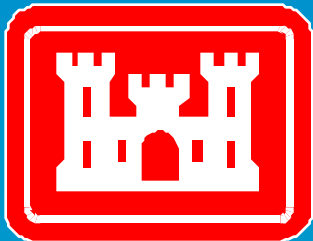


Response of Roseate Terns to a Shoreline Protection Project at Falkner Island, Connecticut

Prepared by:

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Joint Partnering Effort by:

Faulkner's Island Light Brigade

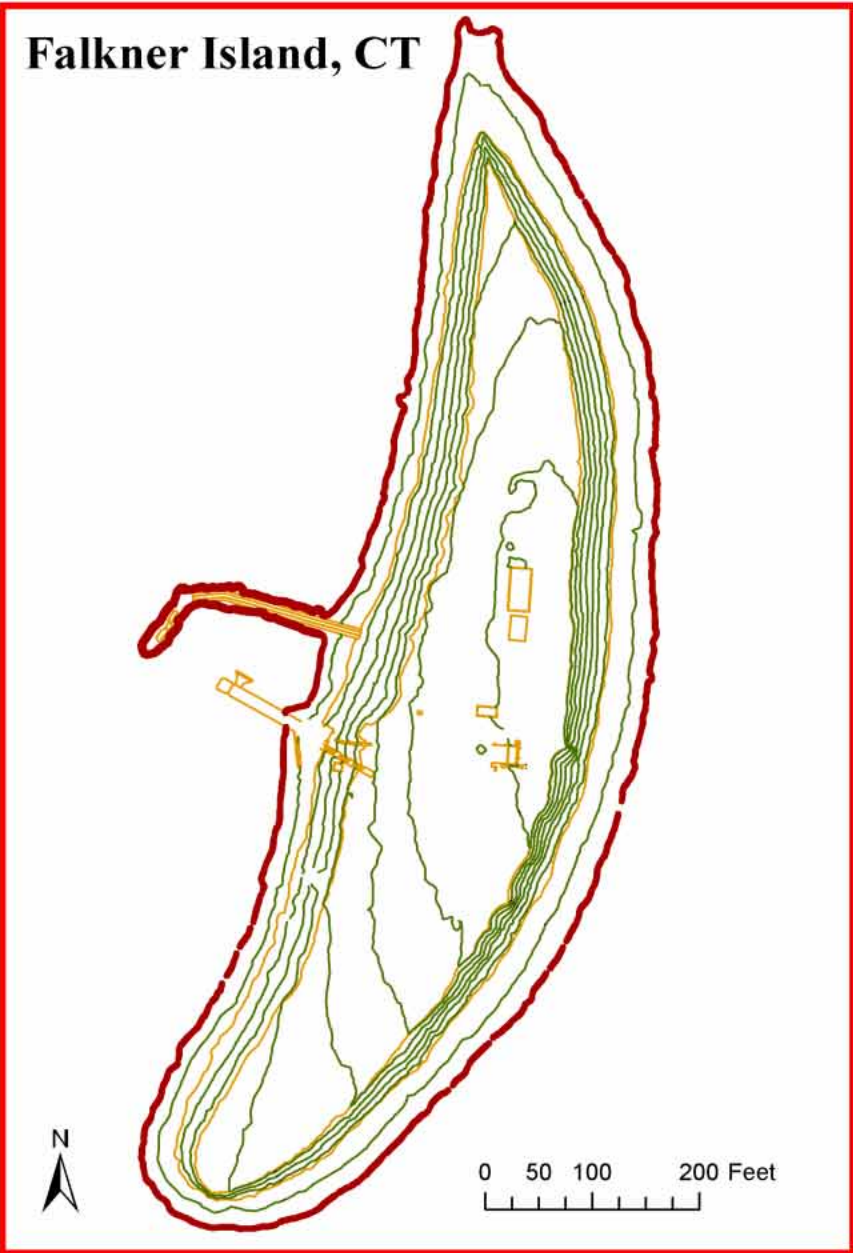
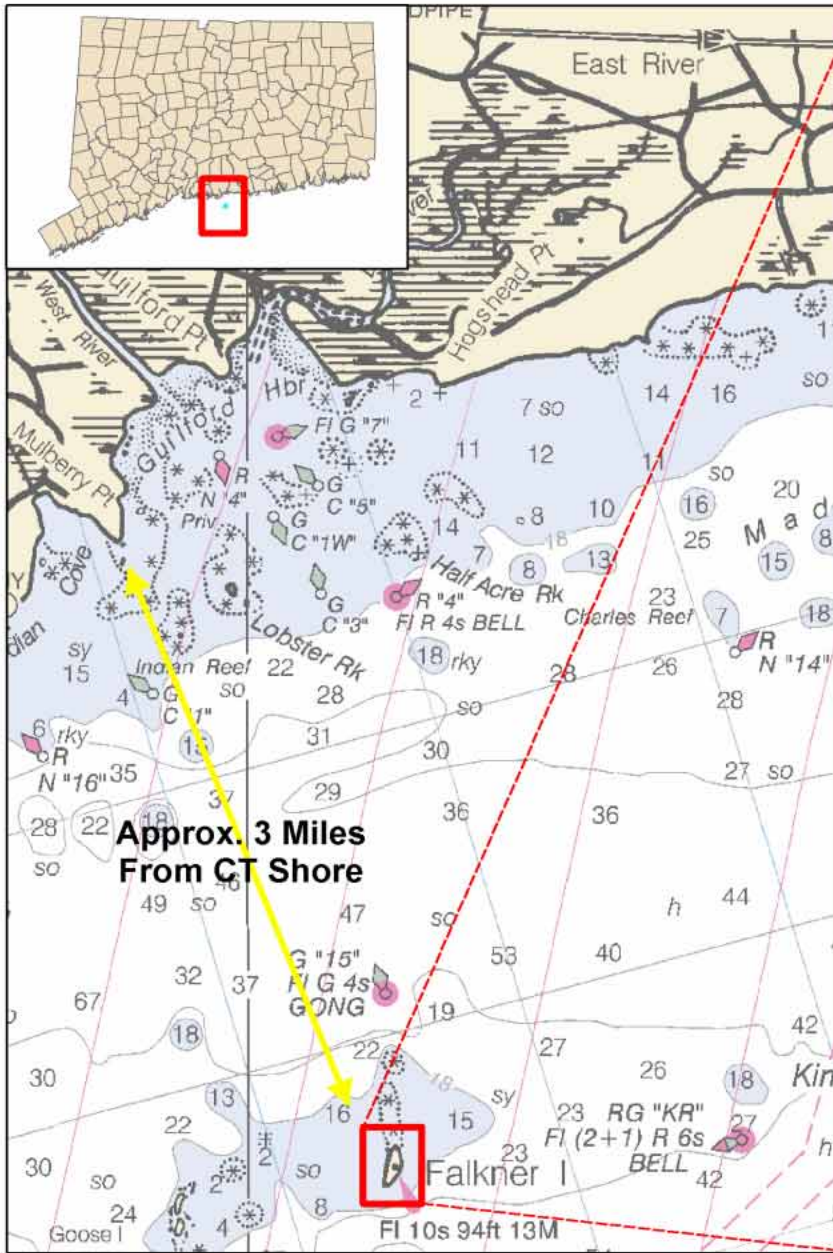
U.S. Fish and Wildlife Service

U.S. Geological Survey

U.S. Coast Guard

U.S. Army Corps of Engineers

Project Background
of the
Shoreline Revetment Project
with
Catherine Rogers









What is the Problem?

<<< **EROSION** >>>

- Instability of Falkner Island Lighthouse
- Loss of Roseate Tern Nesting Habitat



Purpose of Project

- To identify and evaluate which alternative would reduce or eliminate erosion without jeopardizing the existence of the Roseate Tern
- Section 527 of the WRDA 1996 states,
“... design and construct shoreline protection measures for the coastline adjacent to the Falkner Island Lighthouse, Connecticut ...”

Alternatives Evaluated

- No Action Taken
- Sand fill
- Groins
- Offshore Breakwater
- Seawall
- Lighthouse Relocation
- Groins and Sand Fill
- Artificial Seaweed

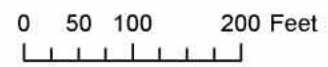
<< Revetment >>

Selected Alternative - Rock Revetment

- 1,400 feet of stone revetment along the east side and would wrap around the north and south ends of the island.
- Upland tip of the island rounded to 35 feet.
- Toe would not extend below MLW.
- Fill added to slope and vegetated.
- Berm at top of slope to redirect rainfall.

Falkner Island, CT

 Roseate Tern Nests



Roseate Tern Nesting Box



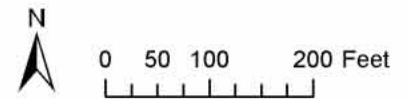
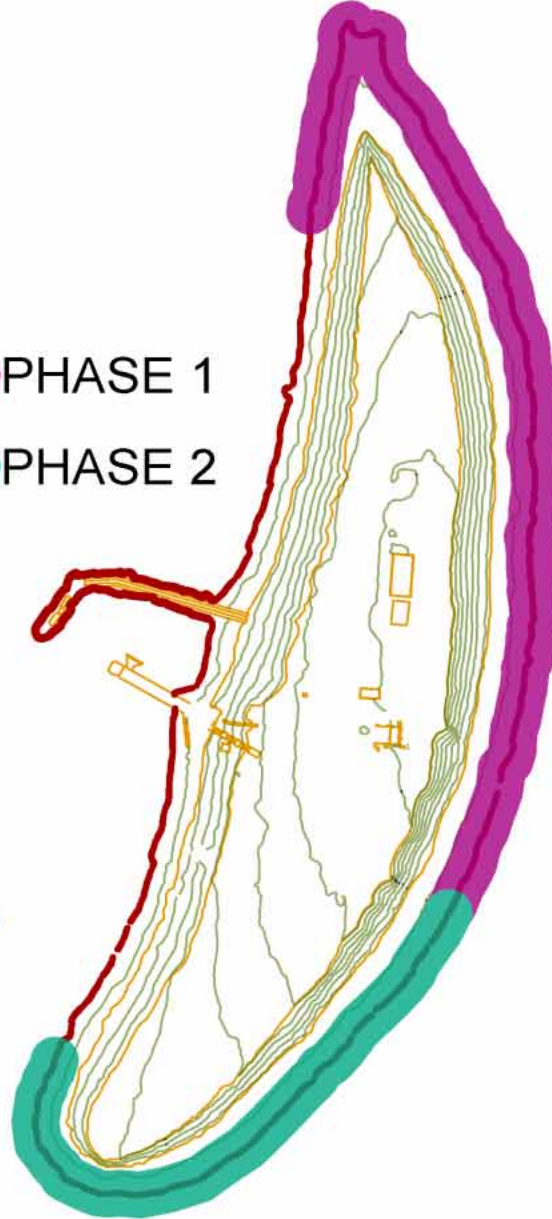
Roseate Tern Alternative Nesting



Falkner Island, CT

- PHASE 1
- PHASE 2

Access



Mitigation

- Reduced Construction Schedule
 - Construction outside the nesting season
 - Construction to be completed in 2 phases
- Fill Holes Within 3 Feet of the Surface
- Create “Rock Houses”













Response of Roseate Terns to the Rock Revetment with Jeff Spendelow





2-egg Roseate Tern (ROST)
clutch in open...

...but ROSTs prefer cover



Beach habitat before modification

ROSTs will use whatever
washes ashore





Chicks become mobile
soon after hatching



ROST chicks are banded with
BBL and Field-readable bands

Chicks develop quickly



One-week-old chick



Two-week-old chick



Adding chick shelter to
secondary revetment
on SW Shelf



Searching for chicks is FUN!?



Almost ready to fledge
at about 25 days



ROST chicks get 3 colors
for long-distance identification



ROST adults are trapped,
colorbanded, and colormarked



We can track the movements of
adults and chicks by observing
them from blinds

Falkner Island, CT

 Roseate Tern Nests



0 50 100 200 Feet

Impacts to Nesting Areas - 2001

- Nesting habitats for 3 of 6 subcolony areas modified extensively
- Northern tip (plots 17-18) nesting area modified slightly, but nearby “chick-hiding habitat” (plots 16 & 19) modified extensively
- Creation of “secondary revetment” (SW Shelf) not in original plans, and constructed differently than main revetment
- Extension of SW Shelf into ROST subcolony area due to communication error

Impacts to ROST Adults - 2001

- One adult ROST found dead, stuck in crevice of main revetment; second adult rescued from SW Shelf, released, not seen again

- Tires and nestboxes placed as in prior years, so...
 - No major impact on timing of nest initiation
 - Relatively minor impact on nestsite distribution

- No use of “rock houses” by ROSTs

- Possible impact on hatching success as a result of predator (Black-crowned Night-Heron [BCNH]) behavior

Impacts to ROST chicks - 2001

- Major impact on survival on chicks
 - At minimum, 20% of ROST chicks that entered the main revetment died
 - Most known deaths (8 of 11) were of first-hatched A-chicks, which usually have high (~95%) survival
 - We lost track of 6 families, so mortality of chicks entering the main revetment may have been as high as 50%
- Losses of ROST chicks that entered edges of SW Shelf were not unusually high (3 of 23, 13%)
- Research studies of chick growth, behavior, and survival to fledging were made much more difficult

Impacts to ROSTs – 2002 and 2003

- Researchers did not put nestboxes on shelf areas in plots 25-27 and 45-46 in 2002
 - Some ROSTs nested in rock crevices in these areas in 2002, but all 3 failed (2 due to predation)
- BCNH/disturbance much greater in 2002-2003 than in 2001
- All ROSTs nesting on SW Shelf in 2002 predated at least once
- Only 3 chicks entered main revetment and only 13 ROST fledglings in 2002
- In 2003: no subcolony in plots 25-27, at least 2 chicks that entered main revetment died, and only 12 ROST fledglings

Conclusions

- Construction of secondary revetment has had “mixed results” on ROST productivity...
 - but has been better for ROST chicks than main revetment
- Construction of main revetment has not prevented BCNH predation on eggs
- Construction of main revetment has had a negative impact on ROST productivity due to loss of chicks in revetment labyrinth

Lessons Learned

- Fill crevices to within 6" of surface
- Control vegetation on top of shelf areas
- Phased construction is preferable

Questions??

