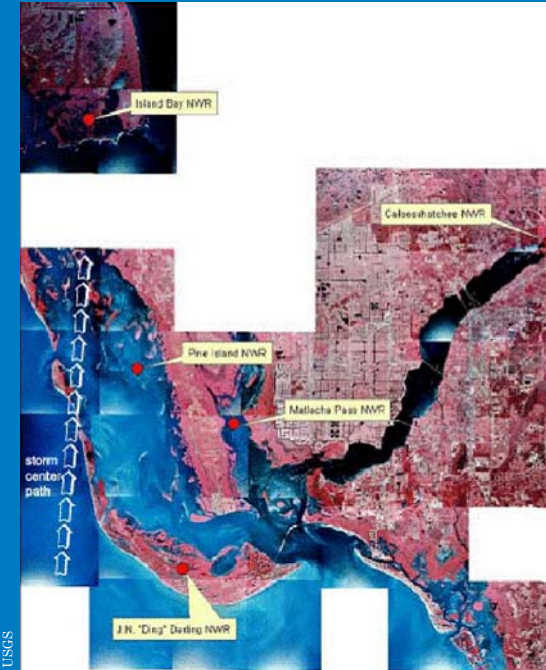


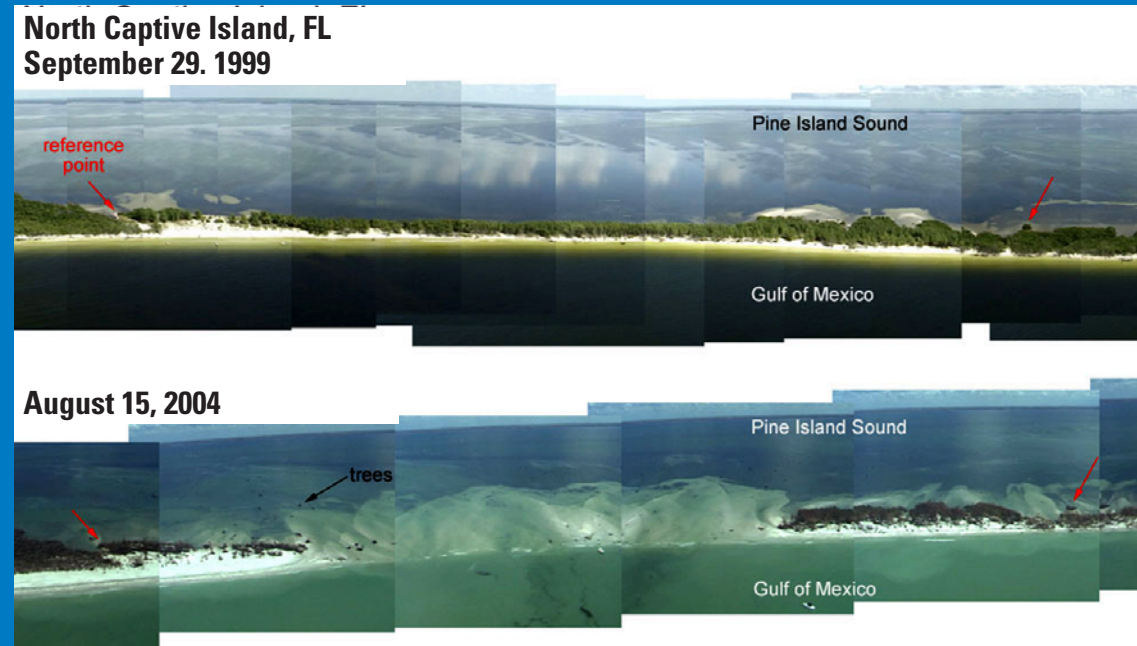
Resource Damages from Hurricane Charley: Recommendations for J.N. "Ding" Darling National Wildlife Refuge (NWR) Complex



Catastrophic damage from Hurricane Charley, August 13, 2004, on Hemp Island: island rim (top) and interior (bottom), Pine Island National Wildlife Refuge, Lee County, Florida.



J.N. "Ding" Darling National Wildlife Refuge Complex, Charlotte and Lee Counties, Florida.



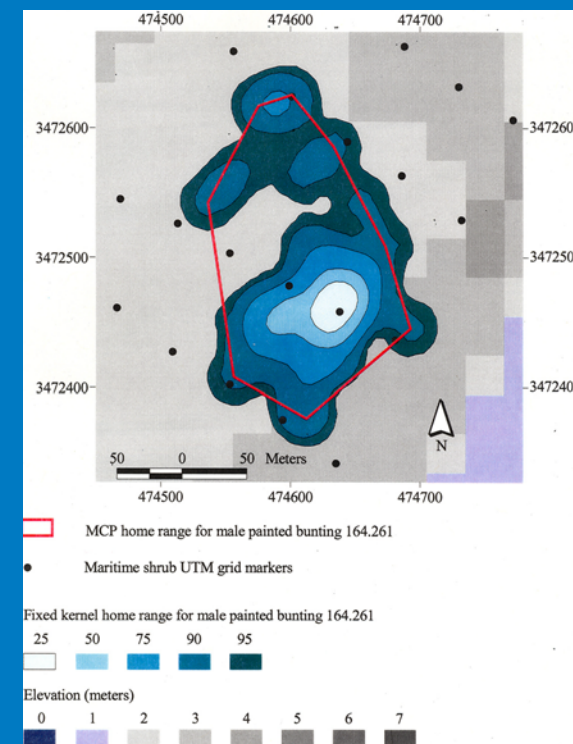
Aerial photograph of the breach at North Captiva Island. Graphic provided by the USGS Coastal & Marine Geology Program, Hurricane

and Extreme Storm Impact Studies. Accessed November 2004 <<http://coastal.er.usgs.gov/hurricanes/charley/index.html>>.

USGS Contributions to Wildlife Resource Protection and Management in the Southeast Region, USFWS

E. J. Williams, U.S. Fish and Wildlife Service
Migratory Birds and State Programs, Atlanta, Georgia
J. Michael Meyers, USGS Patuxent Wildlife Research Center
University of Georgia, Athens, Georgia

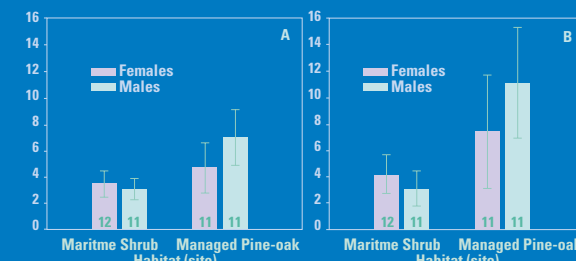
Painted Bunting Density Estimates, Survival, and Home Range by Habitat in Southeastern U.S.



Home range in optimum habitat = 3.1 ha; Sapelo Island, Georgia.



Photos (clockwise from top left): maritime oak habitat and nesting site of PABU; painted bunting; optimum maritime shrub habitat, Sapelo Island, Georgia; aerial view of maritime shrub



(A) Mean fixed kernel and (B) mean minimum convex polygon home range (ha) with 95% CI for male and female painted buntings in maritime shrub and managed pine-oak habitats, Sapelo Island, Georgia, 1997-1998. Numbers at base of bars are sample sizes.

Effects of Disturbance and Predation on American Oystercatchers During the Breeding Season



Causes of nest failure over two seasons:

- Predation: 13 losses
- Egg predators raccoon, $n = 9$; bobcat, $n = 3$; American crow, $n = 1$; (ghost crab, 1 chick)
- Other causes of nest failure: overwash, $n = 1$; horses, $n = 1$; abandonment, $n = 2$; child, $n = 1$.

Management recommendations:

- Cover trash cans and seal dumpsters to reduce raccoon presence
- Consider predator control
- Reduce feral horse population
- Place signs around nests at 137m

Density and habitat use of a Swainson's warbler breeding population at Bond Swamp NWR



A manager's 4-variable habitat model for Swainson's Warbler territories, Bond Swamp NWR:

$$SWWA = -8.8304 + 0.0109 (\text{number of cane stems}) + 0.0158 (\text{number of shrub stems}) + 0.0945 (\text{mean depth of litter}) - 0.4107 (\% \text{ ground cover by water})$$

Chi-square = 141.67, $df = 4$, $P < 0.0001$
Akaike's Information Criterion = 80.6

Photos, top left: counting dense cane stems at Bond Swamp NWR (3.5 m x 97.5 m transect) in a 50 x 50 m plot of a Swainson's Warbler territory; bottom: bird's eye view of ideal foraging habitat at litter layer and in a cane patch at Bond Swamp NWR. It is open for walking SWWAs to move and turn leaves in search of insects and spiders. Litter depth and cane stems are important indicators of SWWA territories.