



Maine Coastal Islands National Wildlife Refuges

2015 Highlights

Seabirds have Successful Nesting Season

Favorable weather conditions and abundant forage fish resulted in a highly successful nesting season for many seabirds in Maine. In 2015, Maine supported 9,065 pairs of common terns, 2,400 pairs of state threatened Arctic terns, and 200 pairs of federally endangered roseate terns. Over 90% of the terns are nesting on one of the 11 islands managed by the Refuge and our conservation partners at National Audubon Society and Maine Department of Inland Fisheries and Wildlife.

Each summer, we place technicians on the islands to control predators, manage vegetation and monitor the seabirds. We document the number of birds nesting on each island, and number of eggs they lay, how well chicks are growing, and how many chicks survive to fledge from the island. We also monitor how often the chicks are fed and the size and species of fish that are being delivered to the chicks.



Deputy Refuge Manager Brian Benedict with Manx shearwater chick



Arctic tern on its nest

Similar monitoring efforts are also conducted for Atlantic puffins and razorbills. It can be very challenging to determine how many puffins and razorbills are nesting on an island since the birds often nest under large boulders or in rock crevices. We estimate that there were over 1,000 pairs of puffins and at least 700 pairs of razorbills breeding in Maine this summer. We are very excited that common murrelets appear to have started nesting on Matinicus Rock,



Common murrelets

where crews observed murrelets carrying fish into burrows this summer. Murrelets have not bred in Maine since the 1880's.

The Ship Island tern colony, located in Blue Hill Bay, increased to 680 pairs in 2015 and productivity at the colony was very good. This represents a 68% increase over our census results for that island in 2014. The tern colony on Metinic Island increased by 25%.

We are concerned that recent changes in the productivity of the Gulf of Maine, potentially linked to rapid warming of the Gulf, may result in a decrease in the forage fish. Seabirds need abundant supplies of fish to be available near their breeding colonies. In recent years, fish have not been available and many of the seabird chicks have starved to death. While the seabirds can persist with periodic "food shortage years" prolonged years of poor productivity can lead to declines in seabird populations. In addition, more frequent and intense weather events can lead to flooding on the islands, which results in the loss of eggs and chicks. The Refuge and our partners are working hard to try and understand what environmental conditions are most suitable for the seabirds and predict how climate change may alter the suitability of Gulf of Maine for our seabirds.



Common tern with herring



Puffin with bill full of sand lance

Refuge Acquires Inholding on Metinic Island

The Refuge purchased a five-acre lot on the east side of Metinic from a willing seller, and now owns 163 acres of the northern half of the island.

The island supports a thriving tern colony, great black-backed and herring gulls, black guillemots, Leach’s storm-petrels, and a pair of nesting bald eagles. In addition, the forest and shrub habitats on the island support countless nesting and migrating songbirds.

Our goal is to preserve as much of the natural landscape as possible and manage it for wildlife.

Aerial view of Metinic Island showing Refuge boundary and recent purchase



New Boat Storage Building Will Reduce Costs

This year we received funds from our Regional Office to begin construction on a new boat storage facility in Rockland. For the past several years, we have been leasing boat storage space in Thomaston. We are looking forward to the cost savings associated with owning our own building.

The new building will be located on property generously donated to us by the late Roland Richards. Mr. Richards’ former house now serves as seasonal housing for our Visitor Center interns.

The Penobscot Company is actively working on the structure this winter and we anticipate moving into the facility in late spring.

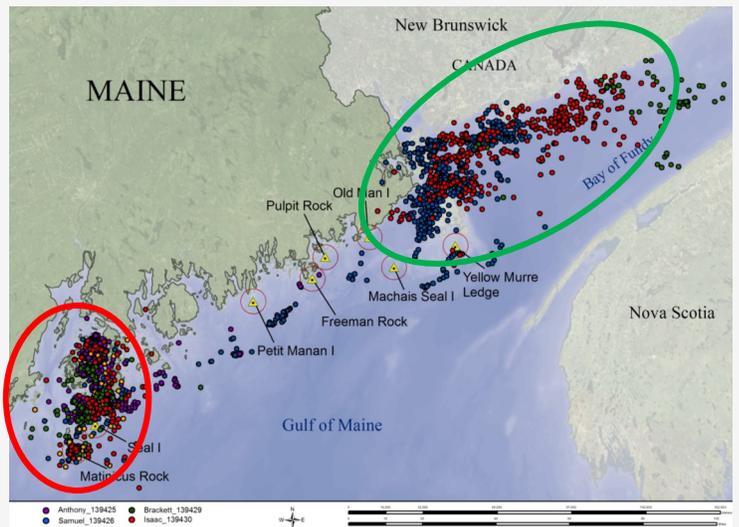


New boat storage building behind Richards’ garage

Satellite Tagging Razorbills

In July, Refuge biologists tagged five razorbills breeding on Matinicus Rock with solar-powered satellite tags to document their foraging behavior. Tags track where the birds go to find food for their chicks and their migration routes after the breeding season is completed.

In 2015, the majority of the birds foraged in the waters between Vinalhaven, Isle au Haut, and Stonington (red oval on map). Birds were often flying 30-45 km, each way, to find fish to feed their chicks. As the summer progressed, birds generally moved towards Passamaquoddy Bay and the Bay of Fundy (green oval on map). By understanding where birds forage throughout the year, we can better understand what conditions the birds are selecting when they are searching for food. We need this information to understand how razorbills are likely to be affected by a warming ocean and events like oil spills or offshore energy projects.



Location information from 5 razorbills tagged with satellite transmitters on Matinicus Rock in 2015

Shoreline Cleanup Effort Removes 9.6 tons of Marine Debris

As part of the Coast Week clean-up efforts, Maine Coastal Islands NWR cleaned up a section of Petit Manan Point's shoreline on Saturday, September 19th. More than 40 volunteers participated, including students from Unity College, staff from The Nature Conservancy, the Maine Island Trail Association (they also brought 2 boats), the Service's Old Town Ecological Service's Office, Friends of Acadia, and Refuge neighbors. We were also able to hire a barge to help transport volunteers to the Refuge and bring marine debris back to the staging area.

Cleanup efforts focused on a remote stretch of shoreline where crushed lobster traps and the many plastic bottles, buoys, floats and tangles of rope had been stacked in piles in the spring.

This material was laboriously dragged across the loose cobble beach and loaded onto boats, then off-loaded at the nearest boat launch and placed into dumpsters. The staff and volunteers removed **seven 30 Yard Dumpsters** (19,200 lbs) of marine debris from a 0.66 mile section of shoreline. This does not include the three 3 dumpsters of marine debris removed from the area last year. The Refuge really appreciates all of the time and dedication shown by our shoreline cleanup volunteers. Friends of Acadia provided a well deserved lunch to all the volunteers at the end of the day. We are also thankful for funds to pay for the dumpsters provided by the Friends of Maine's Seabird Islands through a grant from Maine's Coastal Program.

One of the greatest challenges we face in conducting these cleanups is that the lobster traps, constructed of plastic-coated heavy wire, can accumulate in large numbers along certain areas of the coast. The traps are crushed as they get tossed on shore and are no longer of value to the fisherman. Unfortunately, the plastic eventually breaks into little pieces and can be eaten by fish and wildlife, and the birds can get entangled and killed in the traps. We estimate that some Refuge islands have hundreds of these smashed lobster traps scattered on the shoreline.

Boats jockey for an unloading spot



Volunteers waiting for the next load of debris



Volunteers load a dumpster



Atlantic puffin with razorbill decoy on Eastern Brothers Island

Eastern Brothers Seabird Restoration Project

For the past 9 years the Refuge has been trying to establish a new seabird colony on Eastern Brothers Island. The funding for this effort comes from an oil spill settlement where razorbills were killed off the coast of Virginia. We are using puffin, razorbill, and tern decoys and sound systems to attract nesting seabirds to the island. This summer, we had numerous observations of puffins and razorbills interacting with the decoys and we are hopeful they will attempt to nest in 2016. Several pairs of common terns have been nesting on the island along with Leach's storm-petrels and hundreds of pairs of black guillemots.

Within the US, Razorbills nest on 6 islands and puffins nest on only 5 islands. All of these islands are in Maine. An opportunity to establish a new breeding colony will enhance recovery efforts and reduce the threat of a single event (i.e. predator, disease, or oil spill) affecting a large percentage of the population.

Island Botanical Inventories and Invasive Plant Control

Thanks to a long-standing partnership with Glen Mittelhauser, Director of the Maine Natural History Observatory, the Refuge has completed botanical inventories for 48 of our 60 Refuge islands, including Spectacle and Mahoney Islands in 2015. Island field guides are produced after a survey is completed, a handy tool to use for plant identification. Survey data is compiled in a larger database for the Downeast Region, which will be developed by Mittelhauser into the first ever plant guide for Downeast coastal Maine in 2016.

Habitat is the first critical piece of information necessary for setting wildlife management objectives for any parcel of land. Through botanical inventories, we document plant presence and abundance, some of which are non-native invasive plants in need of management. In 2015, 13 invasive plant species were controlled on eight Refuge islands by Refuge staff, volunteers, and the non-profit Maine Natural History Observatory. During our annual control, we also collect data to determine the efficacy of treatments, like hand-pulling, concentrated vinegar applications, aluminum sulfate soil amendments, and spot herbicide treatments (glyphosate). Controlling invasive plants at these sites protects rare plants from extirpation, maintains native plant communities, and improves colonial sea-bird nesting habitat.

Two examples of how botanical inventories spurred immediate management occurred on Spectacle and Inner Sand Islands this year. During a botanical inventory of Spectacle Island in 2015, Mittelhauser identified Japanese knotweed growing amongst abandoned double-crested cormorant nests. The plants were likely brought to the island by the cormorants for nesting material, but may threaten the habitat of the gull and cormorant colony. Spectacle Island supported 619 cormorant pairs and 350 herring and great black-backed pairs in 2013. After reviewing historical aerial photographs, we estimate knotweed was introduced to Spectacle as early as 2008, and either overtook cormorant nests in 2013, or more likely, flourished because cormorants shifted their nest locations to another area of the island. The Refuge has a Maine Certified Pesticide Applicator on staff and was able to treat the infestation promptly after its discovery the fall of 2015.

On Inner Sand Island in 2006, Glen found garden valerian during a botanical inventory threatening to overtake the state endangered *Botrychium lunaria* and two additional moonwort species, *Botrychium matricariifolium* and *Botrychium virginianum*. Handpulling valerian each summer since 2006 has successfully protected the moonworts; valerian has not expanded and fewer stems grew in 2014 and 2015, but eradication is unlikely.

Fall Migration of Northern Saw-whet Owls

Dave Brinker from Project OwlNet operated a northern saw-whet owl banding station at Petit Manan Point in the fall of 2014 and 2015, and is working towards establishing a permanent migration banding station at the site. Interest was sparked after a pilot Refuge project in 2011 found the site to be extremely productive. Saw-whets breed in the boreal and northern hardwood forests of the US and Canada and migrate to lower latitudes for the winter, with a cyclical migration eruption about every 4 years.

Project OwlNet is a continental network of banding stations, and responsible for much of what is known about migration routes and timing. Dave Brinker tested nanotags in 2014 on saw-whets, and out of nine tags deployed, one was detected in St. Johns New Brunswick and two on Metinic Island. The nanotag project may be resumed after a more extensive array of towers has been established throughout the East Coast.



Japanese knotweed overtaking abandoned double-crested cormorant nests at Spectacle Island, Eastport, October 2015.



State endangered fern, *Botrychium lunaria*



Northern saw-whet owl

Year	Owls Banded	Foreign Recaptures	Capture Rate (Owl/Hour)
2011	182	4	2.17
2014	56	0	1.49
2015	285	1	0.95

Tracking Tern Foraging and Migration

For the past four summers, Refuge staff have been tagging common and Arctic terns with small radio tags (nanotags) to monitor their foraging behavior and to document their migration patterns. This project is part of a much larger effort involving automated receiving stations scattered throughout eastern Canada and the eastern US. The research was conducted on Petit Manan Island in 2012-13 and on Matinicus Rock, Seal, and Metinic Islands in 2014-15. We learned that while raising their chicks, Arctic terns make an average of 11 foraging trips per day and are away from the colony for 14 hours each day. Common terns make an average of 7 trips per day to feed their chicks and are away from the colony for 11 hours per day. We have also documented that common terns nesting in Maine and Atlantic Canada may spend up to 3 weeks on Cape Cod building up their reserves for their long migration to South America.

The nanotag technology has allowed us to document how many other species of wildlife are utilizing the Refuge islands and other coastal properties during their fall migration. On a number of our islands, we have detected shorebirds tagged in the high Arctic, songbirds tagged in Nova Scotia and Maine, and saw-whet owls and bats tagged on Petit Manan Point. The Fish and Wildlife Service is working with our partners to extend the array of receiving stations to the southeastern US and Caribbean.



Receiving station with antennae array



Egg Rock Light "before"

Egg Rock Light Receives Much-Needed Attention

Given the extreme weather conditions that the offshore islands experience there is a constant need to provide repairs and maintenance to refuge buildings and associated structures. Refuge maintenance staff made numerous trips to replace rotten wood, scrape, prime, and paint portions of the Egg Rock Light in 2015. The light house's red roof is very prominent and with the island being situated at the mouth to Frenchmen's Bay and adjacent to the popular tourist destination of Bar Harbor, it is by far our most viewed island and light house. The Refuge will need to continue renovation on this building in 2016.



Roger Chandler paints the roof



Egg Rock Light "after"



Contact us at:

Maine Coastal Islands National Wildlife Refuges
 P.O. Box 1735
 9 Water Street
 Rockland, Maine 04658
 Phone: 207-594-0600

P.O. Box 279
 14 Water Street
 Milbridge, Maine 04856
 Phone: 207546-2124

Find us on the web:

<http://www.fws.gov/northeast/mainecoastal/>

Refuge Vision:

“With the help of our conservation partners, at Maine Coastal Islands National Wildlife Refuge we will apply sound, scientific principles and adaptive management strategies to sustain the long-term health and integrity of coastal Maine habitats; expand community outreach and environmental education and interpretive programs; and, stimulate visitors to embrace stewardship of natural resources.

We envision the future Refuge Complex epitomizing the mission of the National Wildlife Refuge System; conserving in perpetuity an incredibly rich tapestry of coastal islands, intertidal estuaries, freshwater wetlands, maritime forests and open fields; and, enabling nesting and migrating seabirds, and other wildlife of conservation concern in the Gulf of Maine, to thrive here.”

Refuge Voted 3rd Best in Country

USA Today listed 20 National Wildlife Refuges in its 2015 Reader’s Choice contest. MCINWR was initially ranked 8th, but thanks to many local supporters and puffin lovers from across the country the final ranking for the Refuge was 3rd place. We sincerely appreciate the great show of support we received!



Tern chick

Results of the 2015 Seabird Nesting Season

Island	Common Tern	Arctic Tern	Roseate Tern	Atlantic Puffin	Razorbill	Laughing Gull
Eastern Brothers	2	0	0	0	0	0
Petit Manan	709	477	0	77	5	620
Ship Island	680	0	0	0	0	0
Metinic	343	260	0	0	0	0
Seal	1,380	861	0	397	32	0
Eastern Egg Rock	894	75	77	145	0	1,943
Matinicus Rock*	206	709	0	355+	390+	0
Pond	685	6	0	0	0	0
Jenny	1,268	0	15	0	0	0
Stratton	1,395	12	108	0	0	0
Outer Green	1,353	0	0	0	0	0
All other islands	Est 150	0	0	2-4	No census	0
2015 TOTAL	9,065	2,400	200	1,000+	700+	2,563