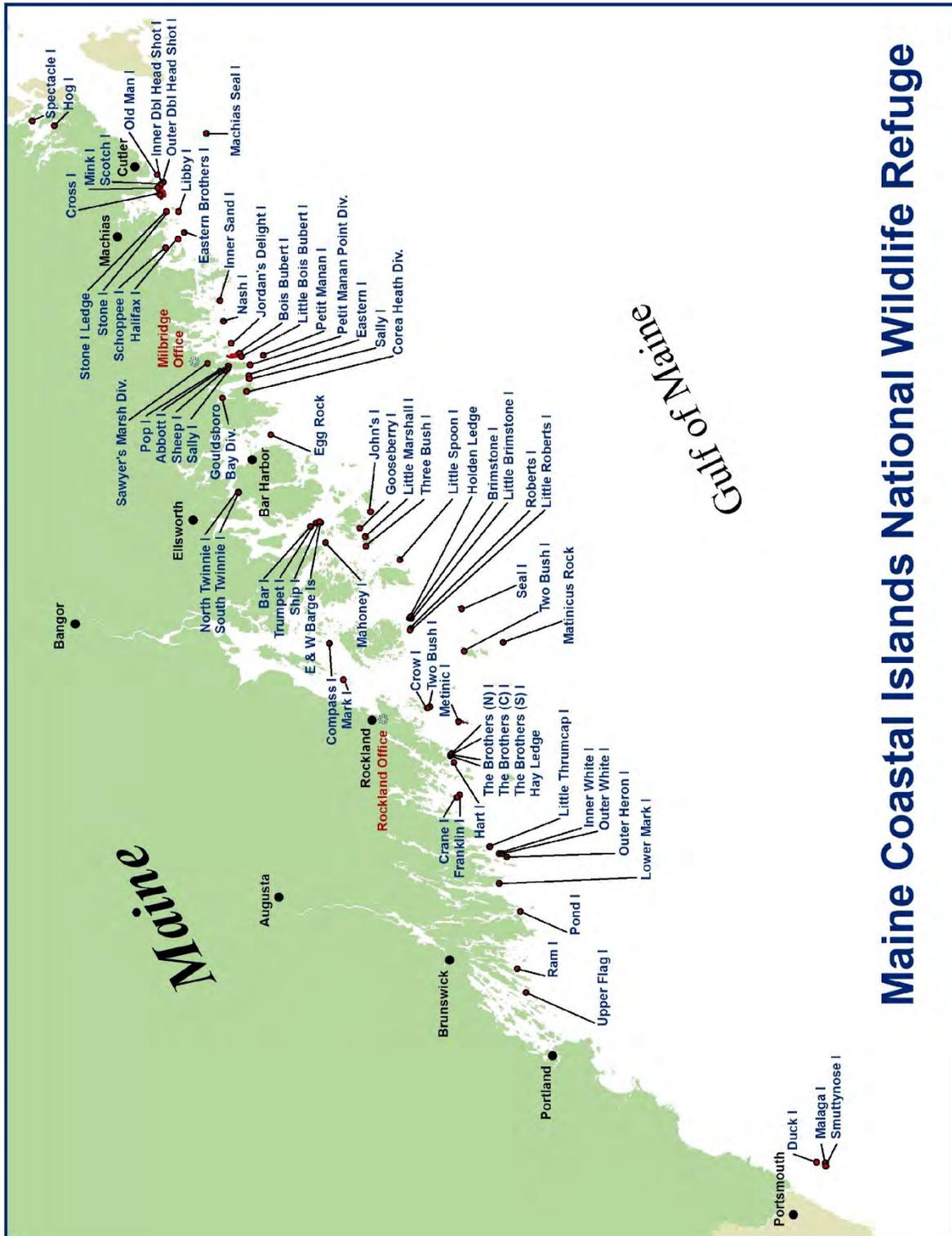




**Biological Summary
of Islands within
Maine Coastal
Islands
National Wildlife
Refuge**

December 2018





Maine Coastal Islands National Wildlife Refuge

Maine Coastal Islands NWR Island Summary

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Island Visitation: Cross, Scotch, Halifax, Bois Bubert and Bar Islands are open to visitors all year. Seal and Duck Islands are closed at all times. Refuge islands supporting nesting gulls, double crested cormorants, and common eiders are closed April 1 - July 31. Refuge islands supporting nesting terns, alcids, Leach's storm-petrels, and great cormorants are closed April 1 - August 31. Islands with active bald eagle nests are closed from February 15 - August 31. Historic eagle nesting islands are closed from February 15 - May 15, and are then open to public use if eagles have not re-established nesting on the island.

Maine Coastal Islands NWR

Data sources: The biological data contained in this document represent the efforts of many individuals and agencies, particularly Maine Department of Inland Fisheries and Wildlife, National Audubon Society, and U.S. Fish and Wildlife Service. Where possible, credit for a specific study has been acknowledged. Complete references may be obtained from the Maine Coastal Islands NWR office in Milbridge, Maine.

Invasive Plants: Reference to scientific names. IPANE=invasive plant atlas of New England. (Note: sheep sorrel and field sow-thistle records should be reviewed, may be missing refs in this doc)

Common Name	Scientific Name	Invasive Status	Common Name	Scientific Name	Invasive Status
Bull Thistle	<i>Cirsium vulgare</i>	ME	Narrowleaf Bittercress	<i>Cardamine impatiens</i>	ME & IPANE
Canada Bluegrass	<i>Poa compressa</i>	IPANE	Morrow's Honeysuckle	<i>L. morrowii</i>	ME & IPANE
Canada Thistle	<i>Cirsium arvense</i>	ME & IPANE	Oriental Bittersweet	<i>Celastrus orbiculata</i>	ME & IPANE
Celadine	<i>Chelidonium majus</i>	IPANE	Purple Loosestrife	<i>Lythrum salicaria</i>	ME & IPANE
Climbing Nightshade	<i>Solanum dulcamara</i> <i>var. villosissimum</i>	ME & IPANE	Sheep Sorrel	<i>Rumex acetosella</i>	IPANE
Coltsfoot	<i>Tussilago farfara</i>	ME & IPANE	Rugosa rose	<i>Rosa rugosa</i>	ME & IPANE
Drooping Bromegrass/ Downy Chess	<i>Bromus tectorum</i>	IPANE	Refuge noxious, not listed regionally as invasive:		
Field Sow-thistle	<i>Sonchus arvensis</i>	IPANE	Black Bindweed	<i>Fallopia convolvulus</i>	Potentially invasive
Garden Valerian	<i>Valeriana officinalis</i>	ME & IPANE	Dodder	<i>Cuscuta gronovii</i>	Native; island invasive
Garlic Mustard	<i>Alliaria petiolata</i>	ME & IPANE	Jimsonweed	<i>Datura stramonium</i>	Island noxious
Glossy Buckthorn	<i>Frangula alnus</i>	ME & IPANE	Cow Parsnip	<i>Heracleaum maximum</i>	Native; Refuge noxious & island invasive
Japanese Barberry	<i>Berberis thunbergii</i>	ME & IPANE	Timothy	<i>Phleum pratense</i>	Potentially invasive
Japanese Hops	<i>Humulus japonicus</i>	ME & IPANE	Wild Radish	<i>Raphanus raphanistrum</i>	Island invasive
Japanese Knotweed	<i>Polygonum cuspidatum</i>	ME & IPANE	Spiny-leaved sow thistle	<i>Sonchus asper</i>	Potentially invasive

Spectacle Island



Location: Eastport, Washington County

Date of Acquisition: Feb 2014

CIR #	79-132
Total Acreage	4.8
Intertidal	16

Habitat: Island is dominated by herbaceous vegetation and mixed grasses, with several standing dead trees (supporting DCCO nests). Shoreline is gradual slope with abundant cobble

Species of Concern: island supports nesting double-crested cormorants, common eider, great black-backed gulls, and herring gulls. In 2013, Spectacle Island supported the second largest DCCO colony in Maine date (619 prs)

Surveys Completed: * Photo Count

Year	DCCO	GBBG	HERG
1991		79	525
2008*	465	145	443
2013*	619	151	203

- Counted 317 DCCO nests on 8/29/16 and the remains of 173 DCCO fledglings (assume eagle predation)
- Botanical and invasive plant inventory - Mittelhauser 2015-2016

Invasive Plants: climbing nightshade, Japanese knotweed, and Canada bluegrass (2016). Cut-stump treatment of Japanese Knotweed from 2015-2018 greatly reduced size/distribution of patches. Also present but not controlled: Canada thistle and climbing nightshade. Other plants detected that are potentially problematic but not regionally invasive: wild radish, and black bindweed.

Management Concerns: Island is closed to public use during the seabird nesting season: April 1 - July 31

Hunting: The island is not open to hunting

Cross Island



Location: Cutler, Washington County



Date of Acquisition: 1980

CIR #	79-347
Total Acreage	1,654
Saltmarsh	15
Intertidal	267.2

Habitat: A large forested island dominated by red spruce and balsam fir. There are a few small stands of yellow birch, paper birch, and alder. There is a large salt marsh between the main portion of the island and western head. Several grassy openings with sedges, cranberry, and blueberry are found along the shore. Associated wetlands support eelgrass and other submerged aquatics, saltmarsh and salt meadow cordgrass, and sea lavender. The shoreline typifies the bold rocky coastline of Maine, and landing sites are limited to a few protected coves.

- cover-type map available

Species of Concern: History of nesting eagles (2 pairs)

- livid sedge (*Carex livida*): State Threatened
- Coast blite goosefoot (*Chenopodium rubrum*): State Threatened
- rare community type: Maritime Slope Bog

Eagle Nesting History: (territories 121 & 576)

- site first located in 1981, although it appeared to be an older nest structure
- 2008 new nest (576A) discovered along shore of Western Head. Pair produced 2 chicks in 2009 and 1 chick in 2010.

- Both nests active in 2013 and 2018

Surveys Completed:

- EA completed for Cross Island - 1978
- Habitat analysis of Cross Island using SPOT imagery Podolsky & Labaree 1990
- Deer pellet count - 1991
- Study to examine potential effects of aquaculture site development adjacent to the island (Famous 1991)
- Neotropical landbird monitoring program - 1993- Famous
- Botanical inventory(focusing on wetland habitats) - Mittelhauser & Morrison 2000
- Aerial monitoring by MDIFW for eagle nesting
- Passerine Banding Station and Acoustic Monitoring - Fall 2012
- Salamander genetic study - fall 2012

Invasive Plants: none identified during wetland survey (2000). Forested habitat and shorelines have not been surveyed. Risk of invasion in interior forested habitat is considered to be low.

Management Concerns / Issues:

- Cook Aquaculture operates a 35 acre Atlantic salmon aquaculture facility adjacent to the island.
- Outward Bound 19 acre inholding and summer program
- Native American (Passamaquody Tribe) interest in locating petroglyphs
- Island has been proposed for consideration as Wilderness Area
- The island is open to public access year round (day use only)
- New Refuge sign placed on north side of island in 2014

Hunting - No hunting is allowed on Cross Island

USFWS Owned Structures: Refuge owns a cabin on the northwest head

Scotch Island



Location: Cutler, Washington County

Date of Acquisition: 1980

CIR #	79-350
Total Acreage	10 forested
Intertidal	16.1

Habitat: Forested island with dense stands of red and white spruce, balsam fir, and yellow and paper birch. The island is immediately adjacent to the northeast corner of Cross Island.

Surveys Completed:

- Seabird survey completed in 2006 - no nests were located
- Invasive survey - Mittelhauser 2006-2007.

Invasive Plants: sheep sorrel (2007). No control conducted

Management Concerns: island is open year round for day use

Hunting: no hunting allowed

Outer Double Head Shot Island



Location: Cutler, Washington County

Date of Acquisition: 1980

CIR #	79-352
Total Acreage	14 (70% forested)
Intertidal	13.1

Habitat: Northern half of the island is dominated by red spruce / balsam fir, with the southern half of the island dominated by mixed grasses

Species of Concern: island supports nesting of Common Eider, Great Black-Backed Gulls, Herring Gulls, Leach's Storm Petrels, and Black Guillemots

Surveys Completed: Botanical inventory - Lewis 1979-1980 and 1982-1984

Year	COEI	GBBG	HERG	BLGU
1991	0	10	30	50 ad
1995	100	23	25	140 ad

Invasive Plants: None detected (1984). Potentially problematic but not regionally invasive: wild radish.

Management Concerns: Island is closed during the seabird nesting season: April 1 - August 31

Hunting: no hunting allowed

Inner Double Head Shot Island



Location: Cutler, Washington County

Date of Acquisition: 1980

CIR #	79-351
Total Acreage	8 (80% forested)
Intertidal	8.9

Habitat: Vegetation on the northern half of the island is dominated by red spruce / balsam fir, with the southern half dominated by mixed grasses

Species of Concern: Eagle nesting island

- island supports nesting of Black Guillemot, Herring Gulls, and Leach's Storm Petrel (all at low levels)
- Islands used by harbor seals for pupping and haul-out

Eagle Nesting History: Originally labeled territory 121 when a single pair of eagles also maintained nests on Cross and Mink Is. In 2004 territory was designated 427 when two nests sites were active

- nest was active in 2013 and 2018

Surveys Completed:

- Aerial monitoring by MDIFW for eagle nesting is now limited due to funding constraints
- Botanical inventory - Lewis 1979-1980 and 1982-1984
- Seabird survey completed in 2006, no nests found but 43 BLGU observed next to the island
- Initiated Migration Monitoring Network Study in 2010. Deployed acoustic equipment to monitor birds and bats. Also erected receiving station to track transmitters placed on passerines in Nova Scotia
- Invasive survey in 2006

Invasive Plants: sheep sorrel (2006). No control conducted.

Management Concerns: Island is closed during the bald eagle and seabird nesting season:
February 15 - August 31

Hunting: no hunting allowed

Mink Island



Location: Cutler, Washington County



Date of Acquisition: 1980

CIR #	79-345
Total Acreage	11 forested
Intertidal	6.9

Habitat: Island vegetation is island dominated by red spruce and balsam fir

Species of Concern: nesting bald eagles

Eagle Nesting History: (territory 121, birds also nested on Cross Islands and Outer double Head Shot Islands)

- Nest was active in 2013, eagles were present but not nesting in 2018

Surveys Completed: Aerial monitoring by MDIFW for eagle nesting

Invasive Plants: Unknown; no surveys conducted. The risk of invasive plant invasion in forested habitat is considered to be low.

Management Concerns: Island closed to visitation during eagle nesting season: February 15
- August 31

Hunting: no hunting allowed

Old Man Island



Location: Cutler, Washington County

Date of Acquisition: 1980

CIR #	79-313
Total Acreage	6 non-forested
Intertidal	10.5

Habitat: Vegetation on the island is sparse, with a variety of mixed grasses interspersed with rock outcroppings. Steep cliffs and sea stacks are located along the perimeter of the island.

Species of Concern:

- one of six nesting islands in Maine for razorbills
- island supports nesting of Common Eider, Great Black Backed Gulls, Herring Gulls, Double Crested Cormorant, Leach's Storm Petrel, and Black Guillemots
- Of historical note, Old Man Island is reported to be the only island in Maine that supported nesting eiders in the early 1900's when two nests were discovered.

Surveys Completed:

- Botanical inventory - Lewis 1979-1980 and 1982-1984
- Status of Razorbill in the Gulf of Maine - Podolsky 1987

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Year	COEI	DCCO	GBBG	HERG	LHSP	BLGU	RAZO
1991	100	306	29	26	50	55 ad	140 ad
1994		302					80 ad
1995	100		164	126	400	125 ad	90 ad
1998							150 ad
1999							160 ad
2001							150 ad
2004		65+					115 ad
2006							240 ad
2008		52	98	195	Photo count		
2013		44	55	127	Photo count		
2015*	26	33	34	121		6	88

* Adults counted from a boat

Invasive Plants: None detected (1984)

Management Concerns: need accurate means of surveying the island without creating significant disturbance to the nesting birds

- Island is closed to public use during the seabird nesting season: April 1-August 31

Hunting: no hunting allowed

Libby Island



Location: Machiasport, Washington County



Date of Acquisition: 11/99

CIR #	79-360
Total Acreage	43 non-forested
Intertidal	53.2

Habitat: large bedrock out-croppings along western and southern shore

- The island contains a variety of habitats including: dense stands of shrubs (Virginia rose, meadowsweet, and black chokeberry), American cranberry, and creeping juniper. Beach strand community, dwarf ericaceous shrubs and grasses dominate the upland. Two wetland communities dominated by northern blue flag, and the island also has two sedge meadows

Species of Concern:

- *Carex recta* (salt marsh sedge): State Endangered (S1, G4)
- *Primula laurentiana* (Bird's eye primrose) State Special Concern (S2, G5)
- *Achillea millefolium* (northern yarrow) State Special Concern (S1, G5)
- rare community type: Maritime slope bog
- island supports nesting of Common Eider, Great Black Backed Gulls, Herring Gulls, and Black Guillemot
- historic tern nesting island

Surveys Completed:

- Botanical Inventory- Lewis 1979-1980 & 1982-1984, Bochan & DiGirolamo 1999

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Year	COEI	GBBG	HERG	BLGU	CAGO
1991 & 92	0	0	0	5	
1999		Some nesting			
2001	10	2	40	10 ad	
2004 Nest count	6	93 total gull nests			
2004 water count	70 ad	9	99	3	32
2007	13	47	110	75 ad	2 pr
2008		37	283	Photo count	
2013	0	31	210	Mink on island	
2015-17	No active nesting - <5 predated gull nests found				
2018	1	2	3 ad		1

Invasive Plants: garden valerian, Canada thistle, *Rosa rugosa*, field sow-thistle (1984). No control conducted.

Management Concerns:

- 20 acre aquaculture operation 370' north of island (lease operated for three years)
- coordinate with US Coast Guard regarding lighthouse
- Maintain historic structures
- little evidence of nesting in 2014-2018 -concern that mink or otter may be limiting seabird use of island, but little evidence of predation has been found
- Island is closed to public use during the seabird nesting season: April 1 - August 31

USFWS Owned Structures: Boardwalk, Libby Island light tower, fog signal building, and boat ramp (Nat. Register of Historic Places)

- New roof installed on generator building in 2011
- 2014: painted generator building and "dog house" on lighthouse, sealed roof, and installed new 4'x8' island sign and seabird nesting sign
- Boat ramp and seawall have been destroyed
- 2017: Coated steel cap on lighthouse with antifouling paint

Hunting: Waterfowl hunting permitted

Stone Island & Stone Island Ledge



Location: Machiasport, Washington County

Anticipate Acquisition in 2019

Stone Island

CIR #	79-356
Total Acreage	57

Stone Island Ledge

CIR #	79-357
Total Acreage	0.8

Habitat on Stone Island: The island is forested with dominant species being : balsam fir, red spruce, yellow, white, and gray birch.

Species of Concern: Island supported large great blue heron colony (50-85 pr) from the 70's to the mid 1990's. Bald Eagles were nesting on the island by the early 1990's. Surveys in 2005 and 2009 did not document any nesting by herons.
 - Nesting bald eagles (active in 2013 and 2018)

Invasive Species: Unknown; surveys have not been conducted

Management Concerns: Island is closed to public use during the eagle nesting season:
 February 51-August 31

Eastern Brothers



(Eastern Brothers is at bottom of photo)

Location: Jonesport, Washington County Date of Acquisition: 5/16/95

CIR #	79-573
Total Acreage	17 non-forested
Intertidal	14.2

Habitat: Vegetation on the island is dominated by grasses, raspberries and other herbaceous species where sheep grazing was heavy. Crowberry, ericaceous species, Arctic blue flag and grasses dominate on steeper slopes. The perimeter of the island is surrounded by rock ledges of varying height and associated 60-70' rock cliffs.

- Diversity of flora: 177 species, varieties, or hybrids have been identified

Species of Concern:

- Plants: *Lomatogonium rotatum* (marsh felwort) - state threatened, *Montia Fontana* (Blinks) - special concern, *Primula laurentiana* (Brid's-eye primrose)
- extensive Arctic blue flag population (20,000 individuals)
- *Arethusa bulbosa* (dragon's mouth orchid) and *Sagina nodosa* (pearl-wort) uncommon native species
- rare community type: Maritime slope bog
- historic peregrine nesting site
- Refuge initiated a seabird restoration effort on the island in 2007, but the project was terminated after the 2016 season due to extensive mink predation in the region and the poor response of nesting seabirds to our social attraction efforts.

Surveys Completed:

- Botanical inventory - Famous & Spencer-Famous 1999
- Rare plant monitoring effort in 2005 (Mittelhauser)
- Adaptive Management Study 2008-2010. We were looking at the effects of sheep grazing on island vegetation.

Year	COEI	GBBG	HERG	BLGU	LHSP	COTE
1995		1,131	0	144 ad	8	
2005	11	45	93	176 ad		
2007*	8	0	0	160 pr	34	1 ad
2008				250-300 pr		1 ad
2012	0	0	0	155 pr	0	1 ad
2013				169 pr		3 ad
2014				122 pr		2 pr
2015				168 pr		2 pr
2016				100 pr		3 pr
2018		2	10			1 pr

* Seabird restoration effort initiated in 2007. Refuge does not allow any gulls to nest on the island, and used social attraction equipment to attract terns and alcids

Invasive Plants: Canada thistle, sheep sorrel (detected during seabird restoration efforts 2007-2016)

Management Concerns:

- long history of sheep grazing (125+ years), sheep removed in the mid 1990's
- Sheep (25 animals) placed on island 2008-2013
- **Mink and raven predation remain a significant concern on the island
- Island has been proposed for consideration as Wilderness Area
- Island is closed to public use during seabird nesting season: April 1 - August 31.
- Refuge cabin on MDIFW owned Western Brothers

Hunting: Open to waterfowl hunting

Halifax Island



Location: Jonesport, Washington County

Date of Acquisition: 6/22/95

CIR #	79-570
Total Acreage	75 (45 acres wetland, 30 acres shrubs)
Intertidal	47

Habitat: Vegetation is comprised of 45 acres of peatland communities, and 30 acres of ericaceous shrub-dominated communities (huckleberry, sheep laurel, Rhodora, blueberries, crowberries, and small trees), lichen covered rock outcrops, sparsely vegetated nearshore headlands and cliffs, and beach strand. Several extremely fragile plant communities exist (acidic fen, plateau bog lawn, dwarf shrub bog, moss lawn bog, and acidic shoreline outcrop)

- diversity of flora: 250 species, varieties, or hybrids have been identified
- past history of sheep grazing

Species of Concern:

- Maritime Slope Bog community - very rare community type
- Northern Yarrow (*Achillea millefolium* var. *borealis*) - State Special Concern
- Peal-wort (*Sagina nodosa*)
- Dragon's mouth orchid (*Arethusa bulbosa*)
- Nationally significant population of whimbrels stop during their migration to forage on crowberries

Surveys Completed:

- Botanical inventories - Famous & Spencer-Famous 1999, Mittelhauser 2017
- population estimates (1991- 1995): No seabirds were observed nesting

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Year	COEI	GBBG	HERG	BLGU
2005	2	11	57	4 ad
2008		12	8	Photo count
2011*	0	0	0	0
2013		4	20	Photo count

* Refuge found otter den on island in 2011 and trapped 2 mink in 2016

Invasive Plants: Canada thistle, field sow thistle, Canada bluegrass, climbing nightshade (2017; not controlled). Coltsfoot eradicated when found (single stem removed in 2017). Potentially problematic but not regionally invasive: wild radish, spiny-leaved sow thistle

Management Concerns: Camp site for MITA - See report on status of vegetation resulting from visitor use (Linda's office)

- Western end of island is open year round
- Majority of island is closed to year round to public access (signs) due to concerns for fragile plant communities - no enforcement of closure
- TNC holds an easement on the island
- Island has been proposed for consideration as Wilderness Area

Hunting: open to waterfowl hunting

Schoppee Island



Location: Roque Bluffs, Washington County



Date of Acquisition: 11/00

CIR #	79-566
Total Acreage	16.5 forested
Intertidal	16.1

Habitat: The Island is dominated by red spruce. There is evidence of wind-throw over the

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years, resulting in a patchwork appearance created by a diversity of age classes and tree height. The island also supports a variety of hardwood species including: white & yellow birch, mountain ash, and alder

Species of Concern: Historic eagle nesting island

Eagle Nesting History: (territory 111) site occupied in 1968 & 1969

- unknown status 1970 - 1979
- site occupied in 1980, but has been vacant since that time

Surveys Completed:

- Seabird survey completed in 2006 - no nests were found
- Invasive survey - Mittelhauser 2006

Invasive Plants: climbing nightshade, *Rosa rugosa* (2006). No control conducted.

Management Concerns: Accessible at low tide to Roque Bluffs State Park

- Refuge has documented illegal camping on the island
- New 3'x3' Refuge sign in 2013
- Island closed to public use February 15 - August 31 if eagles are nesting, island is open after May 15 if they are not present

Hunting: island is open to waterfowl hunting

Inner Sand



Location: Addison, Washington County

Date of Acquisition: 9/26/99

CIR #	79-614
Total Acreage	17.8 (15 acres forested)
Intertidal	9

Habitat: Island is dominated by red spruce and balsam fir (15 acres) with extensive under-story development. Southern end of island supports a variety grasses, shrubs, wildflowers, and a variety of berry producing species, including blueberry, cranberry, and raspberry.

Species of Concern: Common Eider, Great Black Backed Gull and Herring Gulls have all nested on the island

- Rare plants: *Botrychium lunaria* (state endangered) and bird's-eye primrose (*Primula laurentiana*, species of conservation concern)
- 150 harbor seals (plus pups) observed on ledges in 2005

Surveys Completed:

Year	COEI	GBBG	HERG
1989	200	5	20
1995		0	0
2005	0	0	0

- Over 1,000 gulls were observed on the island in the mid 1970's, but none were observed during aerial surveys & photos in 1995
- Botanical Inventory - Mittelhauser 2006-2007

Invasive Species: garden valerian, Canada thistle, climbing nightshade, sheep sorrel, *Rosa rugosa* (2006). Potentially problematic but not regionally invasive: common dodder, wild radish.

- Garden valerian has been hand-pulled annually since 2006 to protect *Botrychium lunaria*, *B. matricariifolium* and *B. virginianum*. Best method is to pull first-year rosettes in July and August. Two patches have been reduced from 296 stems in 2006 to 30 in 2017.
- A small population of climbing nightshade (1-15 stems) has been hand annually since 2006. In 2017, 2 stems were removed.
- Canada thistle has not been controlled at this site.

Management Concerns: evidence of a mammal living on the island (2005)

- Island is closed to public use during the seabird nesting season: April 1 -July 31.

Hunting: open to waterfowl hunting

Nash Island



Location: Addison, Washington County



Date of Acquisition: 1/5/81

CIR #	79-627
Total Acreage	16.7 (USFWS owns 5) non-forested
Intertidal	17.8

Habitat: treeless island dominated by grasses and ericaceous shrubs

Species of Concern: Island supports nesting of Common Eider, Great Black Backed Gulls, Black Guillemot, and periodic nesting by terns. Roseate, Common, and Arctic terns all nested on the adjacent Big Nash Island when the PMI colony abandoned in the early 80's due to nesting gulls.

Surveys Completed:

Year	COTE	ARTE	COEI	GBBG	HERG
2005*	0	0	0	20	80
2006			18	118	165
2007	0	0	23	76	227
2012	5	0			
2013			18	20	255

- *The decline nesting seabirds observed in 2005 may have been due to significant storms at the end of May, and illegal shooting on the island. We later observed small number of eiders nesting on Nash.
- Botanical Inventory - Kausen and Lovit 2006
- Refuge, MDIFW, and UMO maintained nanotag receiving station on the island in 2013 and 2014 to monitor shorebird and tern use of the region.

Invasive Plants: Canada thistle and climbing nightshade (2006). No control conducted.

Management Concerns:

- historic light house structures (Friends of Nash Island Light)
- Maine Coast Heritage Trust owns half of island
- sheep graze on both Big Nash and Nash Islands
- GBBG are actively controlled on Big Nash to reduce predation on sheep
- Island is closed to public use during the seabird nesting season: April 1 - August 31

Hunting: Island is not open to hunting

Jordan's Delight



Location: Harrington, Washington County



Date of Acquisition: 5/07

CIR #	79-922
Total Acreage	26.7
Intertidal	18.4

Habitat: The Island has scattered cobble beaches on the northern end, flat or sloping meadows, granite outcroppings, and steep cliffs which are common on the southwestern shoreline. Vegetation is a mix of dense grasses and forbs with occasional pockets of white spruce, red pine, and mountain ash.

Species of Concern: Island supports nesting of Common Eider, Leach's Storm-Petrel, Double Crested Cormorants, Great Black-Backed Gulls, and Black Guillemots

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- Harlequin Ducks winter along the south-eastern shore of the island
- Peregrine Falcons frequently hunt from the cliffs on the western shore of the island

Surveys Completed:

Year	COEI	GBBG	HERG	DCCO	BLGU	LHSP
1995		228	420	93	234 ad	200
1998	350	160	27	128		
2008		87	117	0	Photo count	
2013		61	111	121	Photo count	
2016	13	27	31	0		
2018	0	0	0	0	70+ ad	

- Significant decline in nesting seabirds observed in 2016-18. Suspect combination of great horned owl, mink, and otter predation. Refuge staff observed mink and otter scat in 2017
- Botanical inventory - Mittelhauser 2003-2004
- Automated telemetry receiving station was placed on the island in 2012 & 13

Invasive Species: Canada thistle, bull thistle, field-sow thistle, climbing nightshade, sheep sorrel (2003). No control conducted. Potentially problematic but not regionally invasive: spiny-leaved sow thistle.

Management Concerns:

- A University of Maine graduate student conducted research on Jordan's Delight in 2008-099 (Parsons 2010). They looked at various techniques we could use to monitor rates of disturbance and nest site attendance in seabirds.
- Maine Coast Heritage Trust holds a conservation easement on 2 acres on the southern end of the island
- Small cabin and storage building are located on the easement property
- New 3'x3' Refuge sign erected in 2013
- Island is closed to the public during the seabird nesting season: April 1 - Aug 31.

Hunting: island is open to waterfowl hunting

Bois Bubert & Little Bubert



Location: Milbridge, Washington County Date of Acquisition: initial acquisition in 4/79 with numerous other acquisitions through 7/97

CIR #	79-824
Total Acreage	1,500 (USFWS owns 1,321) predominantly forested
Intertidal	53.2

Habitat: Large forested island, dominated by red spruce, balsam fir, tamarack, and associated hardwoods. Two freshwater wetlands (ponds) are also located on the island, as well as an extensive area of early successional habitat. The island provides extensive inter-tidal habitat. The island's jack pine woodlands represents two of eight known stands in Maine, and are considered rare community types by Maine Natural Areas Program.

- pond at the center of the island supports extensive lily population
- a covertime map is available (2002)

Species of Concern:

- active bald eagle nest
- island provides significant stopover area for waterfowl during fall migration, and no hunting is allowed for migratory birds
- *Agalinis neoscotica* (Nova Scotia false-foxglove) State Threatened (S1-critically imperiled in Maine because of rarity / G4-apparently secure globally)
- *Primula laurentia* (bird's-eye primrose) special concern (S2-imperiled in Maine because of rarity / G5-demonstrable secure globally)

Eagle Nesting History: (territory 267)

- Nest was active in 2013 and 2018

Surveys Completed:

- waterfowl banding - 1996
- spider inventory - Jennings 2001
- Rare plant monitoring - Mittelhauser 2004
- The Birds and Plants of Petit Manan NWR - Widrig 1996
- Invasive survey - Mittelhauser 2007-2008
- NVCS map 2001
- Aerial monitoring by MDIFW for eagle nesting
- Salamander genetic study - Fall 2012

Invasive Species: Canada thistle, bull thistle, field sow thistle (2008). No control conducted.

Management Concerns:

- Island has been proposed for consideration as Wilderness Area
- Camping is permitted at Seal Cove (as part of Maine Island Trail)
- portion of island is privately owned and contains several seasonal homes
- Majority of island is open year round, with area on southern end of island closed year round to protect nesting and roosting birds.
- New Refuge 3'x3' signed erected at MITA camp site in 2013

USFWS Owned Structures:

- Cabin on western portion of island
- New metal roof on cabin and cleared trees around the cabin 2016

Hunting: Islands are open to white tailed deer hunting

Petit Manan Island



Location: Steuben, Washington County



Date of Acquisition: 1974

CIR #	79-933
Total Acreage	10
Intertidal	5.9

Habitat: Vegetation on the north and east side of the island contains a variety of grasses, Angelica, raspberry, asters, blackberry, and beachpea. Southwestern portion of the island is dominated by Canada bluejoint and meadowrue. The invasive species dodder established a strong foothold on the northern end of the island in 2000 and has expanded across the island. Refuge staff annually mow portions of the island in the fall and burn the entire island each spring.

Species of Concern:

- Roseate Tern: Federal & State Endangered
- Arctic Tern, Razorbill, and Atlantic Puffin: State threatened
- Laughing Gull: State Special Concern
- Common Tern: State Special Concern
- brackish sedge (*Carex vacillans*): State Endangered (S1 / GNR)
- blinks (*Montia fontana*): State Special Concern (S2 / G5)
- white adder's mouth (*Malaxis monophyllos*): State Endangered (S1 / G5)

This island has historically been one of the most important colonial seabird nesting islands in the Gulf of Maine. Significant numbers of nesting terns had historically nested on PMI, including 1,500 nesting pairs observed in 1971. However, when human presence on the island ended with automation of the light station in 1972, the numbers of nesting gulls gradually increased to the point they excluded all nesting terns by 1983. The Service initiated gull control in 1984. Within a week of the DRC 1339

application, the common, Arctic, and roseate terns had returned to Petit Manan, where they have continued to nest every year since. In 2004 we documented the first successful razorbill nesting on the island. Leach’s Storm-Petrel, Black Guillemots, Laughing Gulls, and Common Eiders also nest on PMI.

Surveys & Research Completed:

- Annual seabird surveys conducted (see file)
- Adaptive Management Study 2008-2010, to document the vegetation's response to burning and mowing
- The Birds and Plants of Petit Manan NWR - Widrig 1996
- Botanical inventory - Mittelhauser 2001
- Arctic Tern metapopulation study (1999 - present) - Devlin
- Atlantic Puffin metapopulation study (1999 - present) Breton
- Spider survey - 2000
- Banding molting Common Eider 2002-2008.
- Assessing physical condition of ARTE and COTE (2005- 2007) Agius
- Puffin foraging ecology study (2008-09) - Spencer
- Fall passerine and shorebird banding (2009)
- Intertidal monitoring initiated in 2009 (partner with Acadia NP)
- Bat acoustic monitoring in 2009-2012
- Seabird Foraging and Behavior Study using Nanotags and Automated Receiving station - summer 2012 & 13
- Salamander genetic study - fall 2012
- Stable Isotope project to document seabird diet 2016-18. Expanded to include fecal DNA analysis
- Satellite tagging common terns -2017

Most recent data:

Year	COTE	ARTE	ROST	LAGU	ATPU	RAZO	BLGU	COEI
2009*	1,268	1,374	44	1,171	104	4	69	101
2014	668	524	0	560	73	5	73	54
2015	709	477	0	620	77	5	91	62
2016	574	384	0	543	55	3	94	60
2017	657	431	0	605	58	2	77	46
2018	899	378	0	766	62	3	71	47

* This was the largest number of terns nesting on the island in recent records

Invasive Species: Climbing nightshade, sheep sorrel (2001). Potentially problematic but not regionally invasive: spiny-leaved sow thistle, common dodder.

- Climbing nightshade has been hand-pulled in the old foundation area annually for the

last 10 years.

- The Refuge periodically controls native beach pea near Generator Blind and raspberry on the East Side for control to enhance tern habitat.

Management Concerns:

- Island is closed to public use during seabird nesting season: April 1 - August 31
- coordinate with US Coast Guard regarding lighthouse
- Maintain historic structures
- potential disturbance from ecotourism boats & aircraft
- The Service continued varying levels of gull control (i.e. poisoning) on Petit Manan and Green Islands between 1984-1990 and 2002.
- Researchers and students from the College of the Atlantic conducted research and monitored the colony on PMI between 1984-1998. In 1999, the USFWS assumed full management authority on PMI.
- Refuge staff actively enhances habitat for terns through island-wide burning, and smaller targeted mowing/brush-sawing, spot herbicide treatments, and hand-pulling plants.
- In 2008, Refuge began an effort to reduce the number of laughing gull nesting on the island. This involved a combination of lethal control and nest destruction. We set a target to reduce the gull population to 500 pairs. The laughing gull population had been increasing rapidly for years. Gulls were preying on tern eggs and chicks, stealing food from terns, and occupying potential tern nesting habitat.

USFWS Owned Structures: Lighthouse, Lighthouse keepers home, rain shed, generator building, and fog signal building (Nat. Register of Historic Places)

- Boat house, boat ramp, and boardwalk USFWS owned.
- Boat ramp was rebuilt in 2008
- Generator Building (2010) repointed masonry and fabricated roof tie rods for installation in 2011
- Fog signal building cupola built and painted in 2010
- Pantry and livingroom were renovated in 2011
- new flooring in entryway, hallway, and pantry - 2011
- new roofs for Generator, Fog signal, and building attached to lighthouse in 2011
- Lighthouse tower cap sealed in 2011
- Boat house painted in 2014
- Custom wooden doors and trim 2016
- Replaced all windows in keepers house 2017

Hunting: Island is open to waterfowl hunting

Sally Island



Location: Steuben, Washington County

Date of Acquisition: 8/15/96

CIR #	79-836
Total Acreage	1 forested
Intertidal	Included with Petit Manan Point

Habitat: Heavily wooded island surrounded by extensive inter-tidal habitat that connects the island to Petit Manan Point at low tide. Island is dominated by red spruce and several large white pines.

Eagle Nesting History: (territory 144)

- Nest was active in 2013 and 2018

Surveys Completed:

- Aerial monitoring by MDIFW for eagle nesting
- Botanical inventory - Mittelhauser 2012

Invasive Species: - climbing nightshade, field sow-thistle, Canada thistle (2012). No control conducted.

Management Concerns:

- Accessible at low tide to Petit Manan Point (Birch Point Trail)
- Island is closed to public use during the eagle nesting season: February 15 - August 31. Island will be opened to public use on May 15, if eagles do not nest.
- Eagle nesting sign erected in 2014

Hunting: Island is open to waterfowl hunting

Sheep Island



Location: Steuben, Washington County Date of Acquisition: 4/2010

CIR #	79-835
Total Acreage	7.9 forested
Intertidal	

Habitat: Island is dominated by red spruce.

Eagle Nesting History: (territory 144)

- Territory first documented in 2001
- Nest was active in 2013 and 2018

Surveys Completed:

- Botanical inventory - Mittelhauser 2012
- Aerial monitoring by MDIFW for eagle nesting

Invasive Species: None detected (2012).

Management Concerns:

- Eagle nesting sign erected in 2014
- Island is closed to public use during the eagle nesting season:
February 15 - August 31.

Hunting: Island is closed to hunting

Abbott Island



Location: Steuben, Washington County

Date of Acquisition: 9/18/96

CIR #	79-837
Total Acreage	1 forested
Intertidal	Included with Petit Manan Point

Habitat: This small island supports a variety of habitats and a diversity of plant species including indian cucumber, trillium, clintonia, hobblebush, striped maple, and various orchids all of which were not located on the mainland portion of the refuge. Island is surrounded by extensive mudflats.

Surveys Completed:

- The Birds and Plants of Petit Manan NWR - Widrig 1996
- Seabird surveys completed in 2006 - no nests located

Invasive Species: None detected (1996).

Management Concerns:

- Island is open year round for day use
- Extensive residential development on north side of Carrying Place Cove, including several violations of shoreland zoning (2004)

Hunting: Island is open to waterfowl hunting

Pop Island



Location: Steuben, Washington County

Date of Acquisition: December 2016

CIR #	79-832
Total Acreage	2.8

Habitat: Forested island dominated by spruce and fir

Species of Concern: Bald eagle nesting island, Nest was active in 2013

Invasive Species: Unknown; no surveys conducted. The risk of invasive invasion in forested habitat is considered to be low.

Management Concerns: Island is closed to public use during the eagle nesting season: February 15 - August 31. Island will be opened to public use on May 15, if eagles do not nest.

Eastern Island



Location: Steuben, Washington County

Date of Acquisition: 12/08

CIR #	79-843
Total Acreage	3
Intertidal	10.3

Habitat: Vegetation on the island is dominated by mixed grasses and raspberry. There is extensive ledge habitat along the perimeter of the island

Species of Concern: Island supports nesting double crested cormorants, great black-backed and herring gulls

Surveys Completed:

- Botanical inventory - Mittelhauser 2009-2010
- Seabird Surveys:

Year	COEI	GBBG	HERG	DCCO
2008		82	47	178
2013	Photo count - no nesting birds			

Invasives: climbing nightshade, bull thistle, spiny-leaved sow-thistle (2009). Potentially problematic but not regionally invasive: wild radish (2009).

- Climbing nightshade was hand-pulled in 2009, 2010 (958 stems), and 2011 (3,961). In 2011, 3 trips were made (July, Aug, Sept). Efforts were ineffective.

Management Concerns: Island is closed during nesting season: April 1 - July 31

Hunting: Island is closed to hunting

Sally Island



Location: Gouldsboro, Hancock County

Date of Acquisition: 9/2011

CIR #	59-037
Total Acreage	5.3
Intertidal	1.1

Habitat: Vegetation is dominated by spruce-fir forest with perimeter sections of the island supporting patches of mixed grasses. The shoreline of the island consists of bold granite headlands and ledges, with small patches of cobble beach.

Surveys Completed:

- Botanical Inventory - Mittelhauser 2015
- Seabird Surveys:

Year	COEI	GBBG	HERG
1998	31	6	55
2008	2	0	0

Invasive Species: field sow-thistle (2015).

Management Concerns: Island is closed during nesting season: April 1 - July 31

Hunting: The island is not open to hunting

Egg Rock



Location: Winter Harbor

Date of Acquisition: 11/99

CIR #	59-301
Total Acreage	12 non-forested
Intertidal	26.1

Habitat: Significant portion of island is dominated by rock out-croppings, with the remainder of the island dominated by mixed grasses, Angelica, hinge-bindweed, ragweed and goldenrod. The shoreline is predominantly granite ledge, with a cobble beach at the northern tip of the islands

Species of Concern: Island supports nesting of Common Eider, Great Black-Backed Gulls, Herring Gulls, and Black Guillemot

- Roseate, Common, and Arctic terns all nested on the island when the PMI colony abandoned in the early 80's due to nesting gulls. Terns returned to nest on PMI once the gull colony was removed in 1984.

Surveys Completed:

- Botanical Inventory - Mittelhauser 2004

Year	Terns	COEI	GBBG	HERG	BLGU	LAGU
1981	300					175
1984	325 inc 3 ROST					
1994 & 95		34	65		30 ad	
1999		< 5	< 20	200+		
Year	terns	COEI	GBBG	HERG	BLGU	LAGU
2006		6	439 gull nests			
2008	0	6	22	647		0
2012		17	17	729		

Maine Coastal Islands NWR

Year	Terns	COEI	GBBG	HERG	BLGU	LAGU
2013			15	605		
2017		8	5	660		

Invasive Species: *Rosa rugosa* (2004). Potentially problematic but not regionally invasive: wild radish spiny leaved sow thistle

Management Concerns: Maintain island closure during the seabird nesting season: April 1- August 31

- coordinate with US Coast Guard regarding lighthouse
- unauthorized use of helicopter pad
- Maintain historic structures
- Need to coordinate with numerous ecotourism boats that interpret the island throughout the summer

USFWS Owned Structures: Egg Rock light/ dwelling, fog signal building, boat ramp, and seawall (Nat. Register of Historic Places)

- Boardwalk
- Refuge stained roof of lighthouse in 2009, and started new roof on fog signal building. Boat ramp has been destroyed.
- Painted generator building in 2012
- Erected Refuge 4'x8' sign in 2013
- Three year (2015-17) effort to renovate and rehab exterior of lighthouse; replace soffits, repoint and rebuild brick foundation of both buildings, steel cap striped and painted, siding and trim repaired, replaced and repaired windows

Hunting: Island is open to waterfowl hunting

South Twinnie Island



Location: Bar Harbor, Hancock County



Date of Acquisition: 12/03

CIR #	59-161
Total Acreage	3.3 forested
Intertidal	22.6

Habitat: Forested island dominated by spruce/fir forest, with several white pines, and a mixed hardwood stand

Species of Concern: bald eagle nesting island

Surveys Completed: Aerial monitoring by MDIFW for eagle nesting

Eagle Nesting History: (territory 28)

- Nest was active in 2013, eagles were present in 2018 but didn't nest

Invasive Species: Unknown; surveys have not been conducted. The risk of invasive plant invasion in forested habitat is considered to be low, though climbing nightshade is present on North Twinnie (2007) and is likely present on South Twinnie. The close proximity of the island to the mainland (MDI) could increase the risk of introduction.

Management Concerns:

- Island is closed to public visitation during the eagle nesting season: February 15 - August 31
- Erected eagle nesting sign in 2013

Hunting: Island is open to waterfowl hunting

North Twinnie Island



Location: Bar Harbor, Hancock County



Date of Acquisition: 2011

CIR #	59-160
Total Acreage	3.6 forested
Intertidal	

Habitat: Forested island dominated by spruce/fir forest, with several white pines, and a mixed hardwood stand (including red oak)

Surveys Completed: Botanical and animal survey - Jill Weber August 2007

Invasive Species: climbing nightshade (2007).

Management Concerns: Refuge owned cabin located on the west side of the island.

- Metal roof installed on cabin - fall 2012
- Erected eagle nesting sign on south end in 2013
- The island is open year-round

Hunting: The island is closed to hunting

Ship Island



Location: Tremont, Hancock County

Date of Acquisition: 12/27/94

CIR #	59-341
Total Acreage	11.2 non-forested
Intertidal	11.9

Habitat: Majority of island is dominated by grasses and ericaceous shrubs, including rugosa rose, raspberry, elder, and Angelica. A small stand of black cherry is located next to the seasonal research camp. Western shore of island consists of a long sandy beach, with remainder of island surrounded by cobble. Connected to Trumpet Island by an inter-tidal bar

Species of Concern: Historically Ship Island supported over 300 Common Tern nests, while an additional 500 pairs nested on Trumpet Island. However, by the 1930's gulls had eliminated all nesting by terns. In 1993, a tern restoration project was initiated through a cooperative agreement with The Nature Conservancy. The Service acquired Ship and Trumpet from TNC in 1994. Gull control continued through 1995. After more than a 50 year absence, terns returned to Ship Island in 1995 when a single pair of Common Terns nested. The colony continued to grow and in 1999 the island supported 558 pairs of Common Terns. The colony completely abandoned the island during the 2000 nesting season. During the 2001 season, 261 pairs of terns established nests but abandoned the island after a mink arrived. Despite efforts to trap the mink and maintain the island as predator free, terns did not successfully nest on the island for several years. In 2005, the Refuge terminated the restoration effort due to excessive predation. In 2010, the Refuge returned to Ship and tried another restoration effort. The colony responded to our management efforts and over 100 pairs nested in 2011. In recent years over 600 pairs of terns have nested. Owls have caused significant disturbance on the island in recent years, and led to the complete abandonment of the colony in 2018.

Surveys Completed:

- Spider survey - 2000
- Botanical inventory - Mittelhauser 2005
- Annual seabird census:

Year	COTE		Year	COTE
1999	558		2014	405
2005	3		2015	680
2010*	41		2016	684
2011	102		2017	620
2012	251		2018	519
2013	436			

By the end of the 2010 season, 80 nests were documented on Ship Is

Invasive Species: Garlic mustard, Canada thistle, climbing nightshade, garden valerian, sheep sorrel, *Rosa rugosa* (2005). Problematic to Ship Island's tern nesting habitat but not regionally invasive: wild radish, cow parsnip, burdock, raspberry, lambsquarters, ragweed, black bindweed

- Garlic mustard has been controlled annually since 2006. The most effective method is hand-pulling flowering stems in the spring, immediately spraying the pulled area with concentrated vinegar (20% acetic acid), and treating the area with a thin layer of aluminum sulphate in the fall.
- spot herbicide treatment has been effective for Canada thistle, young valerian, and young cow parsnip plants.
- prescribed (2012-2017) fire may have increased the abundance of garlic mustard

Management Concerns:

- Maintain island closure during nesting season: April 1 - August 31
- Peregrine Falcon, merlin, owl, and mink predation on tern colony
- avian cholera outbreak in 1980 killed 1,700 eiders on Ship, Trumpet, & Bar
- Hundreds of cormorants were killed in the late 80's and early 90's (shot & clubbed to death)
- great horned owl have been removed from the island in 2011, 2012 (from Trumpet), 2016, and 2017. Believed to cause complete abandonment in 2018
- Terns nesting along the beach were subject to flooding from storm tides or high tide events. To try and get terns to nest in safer locations, Refuge created potential tern nesting areas (0.23 acres) in April 2014 and 2016. We used sand / gravel from the intertidal area to create open nesting habitat above the beach. Areas were quickly colonized by invasive plants, but have supported nesting terns.

USFWS Owned Structures: Cabin (built in 2012) and 2 tent platforms

Hunting: Island is open to waterfowl hunting

Trumpet Island



Location: Tremont, Hancock County

Date of Acquisition: 12/27/94

CIR #	59-340
Total Acreage	3.2 non-forested
Intertidal	22.5

Habitat: Heavily vegetated island with dense stands of raspberry, wild rose, and elder. Vegetated portion of island is surrounded by cobble beach. Island is connected to Ship Island by an inter-tidal bar.

Species of Concern: historic tern nesting colony (500 pairs)
 - currently supports nesting eiders, herring and black back gulls, cormorants, and possibly oystercatcher (one of only 4 sites in Maine)

Surveys Completed:

Year	COEI	GBBG	HERG	DCCO
1994	200	43	7	263
1995	89			338
2003	620	41	24	45
2008	134	41	12	0
2011*	40	37	15	114
2013**	5	33	48	0
2018	52	21	86	0

*Signs of mammalian predator found on the island. Raccoon predation observed in 2017

** Only surveyed perimeter of the island (to avoid disturbing eiders)

- Feasibility Study regarding management of Trumpet Island - Chipman 1997
- Botanical Inventory - Mittelhauser 2005

Invasive Species: - narrowleaf bittercress, Canada thistle, climbing nightshade, garden valerian, *Rosa rugosa*. Potentially problematic but not regionally invasive: spiny-leaved sow thistle

- Bittercress was treated from 2009-2012 but efforts were not effective (hand-pulling and vinegar application). Since 2013, we are testing treatments in study plots. The best success has been handpulling in combination with rock salt application (2017), though further monitoring is needed.

Management Concerns:

- Great horned owl removed from the island in 2012
- Potential seabird disturbance issues caused by people harvesting invertebrates from the inter-tidal zone around the island
- avian cholera outbreak in 1980 killed 1,700 eiders on Ship, Trumpet, and Bar
- Hundreds of cormorants were killed in the late 80's and early 90's (shot & clubbed to death)
- Raccoon was preying on gulls and eiders (eggs and adults) in 2017
- Island closed to public use during the seabird nesting season: April 1- July 31

Hunting: Island is open to waterfowl hunting

East Barge



(East Barge is island in lower right of photo)

Location: Tremont, Hancock County

Date of Acquisition: 12/27/94

CIR #	59-342
Total Acreage	0.5 non-forested
Intertidal	1.8

Habitat: small rocky ledge with little vegetation

Species of Concern: Island supports nesting cormorants, herring, and black-backed gulls, and low numbers of common eider

- Haul-out ledge for harbor seals

Surveys Completed:

Year	COEI	GBBG	HERG	DCCO
1984	3	8	0	85
1994	2	12	1	27
1997		8 unid gull nests		59
1999		20-30	1-2 ad	~10
2003		26 ad	1 ad	12 ad
2008		3	0	0 photo count
2013		3	1	0 photo count
2018		7ad	4ad	38 (boat count)

- Harbor seals: 35 observed in 1993 and 75 observed in 2002 (Gilbert)
- Botanical Inventory - Mittelhauser 2005

Invasive Species: climbing nightshade (2005).

Management Concerns: Island closed to public use during the seabird nesting season: April 1- July 31

Hunting: Island is open to waterfowl hunting

West Barge



(West Barge is island at bottom left of photo)

Location: Tremont, Hancock County

Date of Acquisition: 12/27/94

CIR #	59-343
Total Acreage	0.5 non-forested
Intertidal	1.7

Habitat: small rocky ledge with little vegetation

Species of Concern: Island supports nesting cormorants, common eiders, herring, and black-backed gulls

- Harbor seal haul-out

Surveys Completed:

Year	COEI	GBBG	HERG	DCCO
1984	1	14		5
1994	1	20	0	111
1997		23 unid gull nests		104
1999		~ 30 ad	<10 ad	~100 ad
2003		5 ad	41 ad	109 ad
2008*		10	0	106
2011				150 ad
2013*		17	1	184
2018 (boat count)		8	10 ad	180

* photo count

- Harbor seals: 100 seals observed in 2002 (Gilbert)
- Botanical Inventory - Mittelhauser 2005

Invasive Species: climbing nightshade (2005).

Management Concerns: Island closed to public use during seabird nesting season: April 1- July 31

Hunting: Island is open to waterfowl hunting

Bar Island



Location: Tremont, Hancock County

Date of Acquisition: 12/27/94

CIR #	59-244
Total Acreage	17.2 acres owned by USFWS - northern $\frac{1}{2}$ of island privately owned - predominantly non-forested
Intertidal	37.1

Habitat: Southern portion of island is dominated by a grassy meadow with small shrubs and red spruce trees.

Species of Concern: Common Eider, Great Black-Backed Gulls, and Herring Gulls nest on the island

Surveys Completed:

- Botanical Inventory - Mittelhauser 2005
- Seabird Survey:

Year	COEI	GBBG	HERG	DCCO
1976	700	300	1000-2000	15
1984	20	1	20	0
2003	0	0	0	0

Invasive Species: narrowleaf bittercress, Canada thistle, bull thistle, bittersweet nightshade, purple loosestrife, climbing nightshade, field sow-thistle, coltsfoot, garden valerian, *Rosa rugosa* (2005). Potentially problematic but not regionally invasive: black bindweed, wild radish.

- Purple loosestrife: hand-pulled annually from 2006 (46 stems) to 2018 (2 stems).
- Bittersweet control: 2009-2018, handpulling until 2014, cut stump herbicide treatment in 2015 and 2018. Patch size greatly reduced, but requires annual effort to be eradicated.

Maine Coastal Islands NWR

- Coltsfoot: 2006-2012, roots and plants removed by digging. No stems found 2013-2018. Currently eradicated.

Management Concerns:

- several seasonal homes are located on privately owned portion of island
- ATVs have been driven on beach
- USFWS portion of island is open to public use year round
- Refuge initiated efforts to reduce raccoon population in 2016. We removed a seven raccoons between May 2016 and Oct 2017.
- Large Native American shell midden on south shore. Started working with UMaine in 2018 to gather more information about the midden.

Hunting: Island is not open to hunting

Mahoney Island



Location: Brooklin, Hancock County

Date of Acquisition: 8/2014

CIR #	59-933
Total Acreage	6.9
Intertidal	19.2

Habitat: Mixed grasses and herbaceous vegetation

Species of Concern: Island supports nesting of Common Eider, Great Black Backed Gulls, Herring Gulls, Black Guillemot, and Double Crested Cormorant

Surveys Completed:

- Botanical Inventory - Mittelhauser 2015
- Seabird Surveys:

Year	COEI	GBBG	HERG	BLGU	DCCO
1995*		354	115		81
2008	50	11	100	18	28
2013**		11	100		28

* Photo count ** boat estimate only

Invasive Species: climbing nightshade, Canada thistle, garden valerian, field sow-thistle.

Potentially problematic but not regionally invasive: cow parsnip, black bindweed, common dodder, wild radish.

Management Concerns: Island is closed to public use during the seabird nesting season:

April 1 - August 31.

Hunting: Island is not open to hunting

John's Island



Location: Swan's Island, Hancock County Date of Acquisition: 9/23/98

CIR #	59-483
Total Acreage	43 non-forested
Intertidal	19.3

Habitat: Vegetation of island is composed primarily of low grasses and forbs with patches of low woody shrubs (choke cherry, winterberry, red berried elder, and common elder). Raspberry comprises ~ 25 % of the islands vegetation.

- perimeter of island consists primarily of granite ledge, ranging from gradual slope to steep cliff

Species of Concern:

- Sea - Beach Sedge (*Carex silicea*) - Maine Special Concern (S3 G5)
- one of seven islands in Maine that has supported nesting state threatened great cormorants
- island supports nesting of Common Eider, Great Black Backed Gulls, Herring Gulls, Black Guillemot, Double Crested and Great Cormorant
- harbor seal pupping area
- 144 seals observed in 1997 (Gilbert)
- 169 seals, including 60 pups, were observed in 2002 (Gilbert)

Surveys Completed:

- Botanical Inventory - Mittelhauser & Morrison 2000
- Seabird Surveys:

Year	COEI	GBBG	HERG	BLGU	DCCO	GRCO
1986	400	400	600	300		
95 & 96	1000	234	288	225	158	17
2000	277 ad on water	78	97	250 ad	42	1
2007	60	124 gull nests		75 ad	23	0
2008		79	116	Photo count		
2013	0	40	34	0 cormorants -Photo count		

2007 survey crew reported extensive eagle predation on eiders and also observed an otter on the island

Invasive Species: climbing nightshade, Canada thistle, bull thistle, field sow-thistle, *Rosa rugosa* (2006). Potentially problematic but not regionally invasive: wild radish, spiny-leaved sow thistle.

- control efforts for thistle were initiated in 2006, and were evaluated in 2007

Management Concerns:

- Island is closed to public use during seabird nesting season: April 1 - August 31.
- Island has been proposed for consideration as Wilderness Area

Hunting: Island is open to waterfowl hunting

Gooseberry Island



Location: Swan's Island, Hancock County Date of Acquisition: 3/2013

CIR #	59-398
Total Acreage	5.42 acres
Intertidal	

Habitat: Island is treeless and vegetation is dominated by mixed grasses

Species of Concern: A small number of Common terns nested on the island in the early 1990's. There is evidence of mammalian predation on nesting seabirds (2012)

Surveys Completed:

- Botanical Inventory - Mittelhauser 2016
- Seabird Surveys:

Year	COEI	GBBG	HERG	BLGU
1995		72	107	50 Ad
2008		8	70 photo count	
2013	0	3	35	

Invasive Species: climbing nightshade, Canada bluegrass, Canada thistle, bull thistle (2016).
Potentially problematic but not regionally invasive: cow parsnip, black bindweed.

Management Concerns: Island closed to public use during the seabird nesting season: April 1- July 31

Hunting: The island is not open to hunting

Little Marshall Island



Location: Swan's Island, Hancock County

Date of Acquisition: 11/00

CIR #	59-470
Total Acreage	14 forested
Intertidal	7.9

Habitat: forested island dominated by mixed hardwoods, red spruce, and balsam fir

Species of Concern: Bald eagle nesting island

Eagle Nesting History: (territory 152)

- Nest was active in 2013, in 2018 eagles were present but didn't nest

Surveys Completed: Aerial monitoring by MDIFW for nesting eagles

- Seabird survey completed in 2006 - no nests were found
- Botanical Inventory - Mittelhauser 2008

Invasive Species: Canada thistle (2007). Potentially problematic but not regionally invasive: cow parsnip.

- Canada thistle and bull thistle controlled 2008-2017 by handpulling and concentrated vinegar application (20% acetic acid). Extreme variation in plants between year: 1 stem in both 2012 and 2013, >300 in 2014, 98 in 2017. Efficacy of control is unknown.

Management Concerns: Island is closed to public use during eagle nesting season: Feb 15-August 31

Hunting: Island is open to waterfowl hunting

Three Bush



Location: Swan's Island Hancock County

Date of Acquisition: 9/2010

CIR #	59-980
Total Acreage	1.6
Intertidal	

Habitat: The island has a low, flat profile. The vegetation is composed of a mix of grasses and forbs with much of the vegetation <1 meter tall. There is one, stunted spruce tree on the island. The shoreline is a dominated by cobble beaches with interspersed slabs of granite ledge.

Species of Concern: The island has supported a small number of nesting common terns in recent years.

Surveys Completed:

- Botanical Inventory - Mittelhauser 2012
- Seabird Surveys:

Year	COTE
2009	37
2016	59
2017	108

Invasive Species: climbing nightshade (2012). Potentially problematic but not regionally invasive: burdock, cow parsnip, wild radish.

Management Concerns: Island is closed to public use during seabird nesting season: April 1-August 31.

Hunting: The island is closed to hunting

Compass Island



Location: Deer Isle, Hancock County



Date of Acquisition: 4/2010

CIR #	59-790
Total Acreage	7
Intertidal	7.9

Habitat: Perimeter of island is dominated by gravel / cobble beach with areas of granite ledge. Vegetation on the island is dominated by mixed grassed with a stand of spruce trees and small number of hardwoods.

Surveys completed - Botanical inventory completed in 2013

Species of Concern: Until the 1990's the island supported nesting black guillemots, herring and black-backed gulls, and common eider.

- Bald eagle nesting island

Invasive Species: Oriental bittersweet, glossy buckthorn, Morrow's honeysuckle, bull thistle, and Canada thistle. Refuge has been cut-stump herbiciding bittersweet.

Eagle Nesting History: (territory 473)

- pair first documented in 2005
- Nest was active in 2013 and 2018

Management Concerns: Island is closed to public use Feb 15- August 31 if eagles are nesting, island is open after May 15 if they are not present

Hunting: Island is closed to hunting

Little Spoon Island



Location: Isle au Haut, Knox County



Acquisition: 2/04

CIR #	63-289
Total Acreage	23 non-forested
Intertidal	28.9

Habitat: The shoreline is a mix of granite ledge, with boulder and cobble beaches. The interior of the island is composed of mixed grasses and forbs, with much of the vegetation <1 meter tall. There are several small wetlands or seepages scattered along the shoreline.

Species of Concern: Island supports nesting Common Eider, Great Black-backed Gull, Herring Gulls, Double-Crested and Great Cormorant, and Black Guillemot

- one of seven islands in Maine with nesting state threatened Great Cormorant

Surveys Completed:

- Annual count of nesting Cormorants
- Botanical Inventory - Mittelhauser 2004
- Seabird Surveys:

Year	COEI	GBBG	HERG	DCCO	GRCO	BLGU
1986	100	200 ad	1100 ad	25	37	20 ad
1994				189	66	245 ad
2007	67	164	220	5		200 n
2008*		120	321		12	
2011					0	
2012					30 ad	
2013*		103	139		13 pr	
2014					0	

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Year	COEI	GBBG	HERG	DCCO	GRCO	BLGU
2016					0	

* Photo count

Invasive Species: Canada thistle, bull thistle, *Rosa rugosa*, climbing nightshade (2004).
Potentially problematic but not regionally invasive: spiny-leaved sow thistle.

Management Concerns: Island closed to public use during seabird nesting season: April 1 - August 31

Hunting: Island is not open to hunting

Brimstone Island & Holden Ledge



Location: Vinalhaven, Knox Country

Acquisition anticipated in 2019

	Brimstone	Holden Ledge
CIR #	63-176	63-182
Total Acreage	32 acres	0.56 acres

Habitat: The interior of the island is composed of mixed grasses and forbs, including aster, raspberry, and Kentucky bluegrass

Species of Concern: the island supports nesting common eider, great black-backed and herring gulls, black guillemots, and Leach's storm-petrels

Surveys Completed:

Year	COEI	GBBG	HERG	BLGU
1996	278 ad	39*	267*	253 ad
2008	314	11	34	150 ad
2013**		4	27	
2017	85males			220 ad

* Aerial estimate ** Photo count

- TNC Plant species list available (grouped with Little Brimstone): Peter Blanchard (8/25-26/1987), Barbara Vickery (?12?/8/1987)

Invasive Species: Bittersweet nightshade, Canada and bull thistle (TNC)

Management Concerns: Island will be closed during the nesting seabird season, April 1- August 31

Little Brimstone Island



Location: Vinalhaven, Knox County

Acquisition anticipated in 2019

CIR #	63-179
Total Acreage	4 acres

Species of Concern: One of seven islands in Maine to recently support nesting state threatened Great Cormorants

Surveys Completed:

Year	COEI	GBBG	HERG	BLGU	DCCO	GRCO
1996	4	28	12	72ad	2	
2008	22	7	28		0	
2013		8	37		0	0
2017	29males			65 ad	Boat count	

- TNC Plant species list available (grouped with Brimstone): Peter Blanchard (8/25-26/1987), Barbara Vickery (?12?/8/1987)

Invasive Species: Unknown

Management Concerns: Island will be closed during the nesting seabird season, April 1- August 31

Roberts Island



(Roberts Island is large island on the right)

Location: Vinalhaven, Knox County

Date of Acquisition: 9/95

CIR #	63-174
Total Acreage	10 non-forested
Intertidal	14.7

Habitat: Vegetation is dominated by grasses and a few stands of shrubs

- cobble beach at north end
- high point of land is 120' above sea level

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Species of Concern: Island supports nesting Double Crested Cormorant, Common Eider, Black Guillemots, Herring Gulls, and Great Black-backed Gulls

- provides foraging habitat for migrating raptors and wintering harlequins

Surveys Completed:

- Drury 96,97,98,99 (as part of predator control effort). Mink predation significantly affected BLGU population and productivity on the island. Summary reports are in biological files
- Fall raptor migration study (Drury & Goodhue 1998)
- Botanical inventory - Mittelhauser 2008

Year	COEI	GBBG	HERG	BLGU	DCCO
1986	700	50	150	40	67
1996	272	10	425	6	
2003	489	11	471		
2008*		26	662		0
2013		14	270		0
2017	70males			75 ad	
2018	157	50	189	50 ad	0

- * Photo count

Invasive species: Canada thistle, *Rosa rugosa*, climbing nightshade, garden valerian, field sow-thistle (2008). Potentially problematic but not regionally invasive: spiny-leaved sow thistle and wild radish. Garden valerian was hand-pulled in 2009 and 2010. The area of the patch was smaller in 2010, but the number of stems increased (from 2,500 to 3,600).

Management Concerns:

- mink predation has significantly affected seabird production
- contract to remove mink was awarded for several years
- Island has been proposed for consideration as Wilderness Area
- Island is closed to public use during the seabird nesting season:
- April 1 - August 31

Hunting: Island is not open to hunting

Little Roberts Island



(Little Roberts is island on the left)

Location: Vinalhaven, Knox County

Date of Acquisition: 10/12/95

CIR #	63-175
Total Acreage	1 non-forested
Intertidal	5.8

Habitat: Island is dominated by mixed grasses and ericaceous shrubs

Species of Concern: Great Cormorant nesting site (one of seven in the state). Species is listed as a threatened species in Maine. Island supports nesting Common Eider, Black Guillemot, Great Black-backed Gull, Herring Gull, Double-crested and Great Cormorant

Surveys Completed: * photo count

Year	COEI	GBBG	HERG	BLGU	DCCO	GRCO
1995 & 96		21	23	110 ad	7	6
1997						3
1999				62-100 ad	100	
2008 *		20	201		126	12
2011						14
2012						10
2013*		16	36		101	9
2014						10
2016						5
2017	17males			75 adults	65	5

- Botanical inventory -Mittelhauser 2008

Invasive species: climbing nightshade (2008). Potentially problematic but not regionally invasive: wild radish, and cow parsnip.

Management Concerns:

- mink predation
- Island has been proposed for consideration as Wilderness Area
- Island is closed to public use during seabird nesting season: April 1 - August 31

Hunting: Island is not open to hunting

Mark Island



Location: North Haven, Knox County

Acquired in 2018

CIR #	63-339
Total Acreage	31 acres

Habitat: Mark Island supports a rich and diverse assemblage of plants associated with the northern deciduous forests. Giant sugar maple and yellow birch dominate the overstory. Some of these trees have trunks over two feet in diameter. A red oak in excess of three feet in diameter spreads out between two ledges on the western side of Mark. These trees in addition to American beech comprise what is generally referred to as the northern hardwood forest. Baneberry, alternate-leaf dogwood, American yew, willow, and other species are found in the understory of this climax community.

Species of Concern:

- Island supported a great blue heron colony from the early 1970s until 1983, when bald eagles established a nest on the island. The eagles have established several alternate nest sites on the island since the early 1980's. Nest was active in 2013
- Wild leek (*Allium tricoccum*), a state species of concern and rare (S3) is found in the understory of Mark Island.

Surveys Completed:

- TNC species lists are available (flora and fauna)
- Botanical Inventory - Kathy Kehoe 1980

Invasive Plants: *Rosa rugosa* (1980). Potentially problematic but not regionally invasive: cow-parsnip.

Management Concerns: Island is closed during the eagle nesting season February 15-August 31

Seal Island



Location: Vinalhaven, Knox County

Date of Acquisition: 1972

CIR #	63-923
Total Acreage	65 non-forested
Intertidal	33.1

Habitat: Interior of island is a mix of exposed bedrock and shallow soils supporting a variety of mixed grasses and forbs. There are a few patches of woody shrubs in the interior of island. Shoreline is a mix of granite ledge, with boulder and cobble beaches.

Species of Concern: Arctic Tern, Razorbill, Great Cormorant, and Atlantic Puffin: State threatened

- Laughing Gull: State Special Concern (limited nesting & not in recent years)
- Common Tern: State Special Concern
- Roseate Tern: Federal & State Endangered (limited nesting)

Seal Island was once the largest Atlantic puffin colony in the Gulf of Maine. For over 200 years it was also a summer campsite for fisherman harvesting herring, groundfish, and lobster. The fishermen also used their nets to harvest the nesting seabirds, which led to the demise of the colony by 1887. The island was eventually recolonized by cormorants, gulls, and terns. However, by 1953 the growing gull population had completely displaced all nesting terns. From the 1940's to the early 1960's the Navy used the island as a bombing target. The US Fish and Wildlife Service acquired the island in 1972. After six years of gull control and tern attraction using decoys and tape recordings, 20 pairs of Arctic and Common Terns nested at Seal Island in 1989. The colony has increased dramatically since 1989 and now is the largest tern colony in Maine supporting approximately 2,000 pairs of terns. Between 1984 - 1989, NAS translocated 791 puffin chicks from Newfoundland to Seal Island. Puffins first successfully bred on Seal Island in 1992. In 2018, the island

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supported at least 550 pairs of puffins and 59 pairs of razorbills. In addition to the Common and Arctic Terns; Leach's Storm-Petrel, Common Eider, Double-crested and Great Cormorant, Great Black Backed and Herring Gulls nest on Seal Island. The island continues to be cooperatively managed by NAS and the Service.

- largest pupping area for gray seals in the state of Maine
- Great Cormorant colony represents one of seven islands in the state supporting this species

Surveys Completed:

- Annual census of nesting seabirds (see file)
- One pair of roseate terns nested in 2006, 2 pairs nested in 2010, and 1 pair nested in 2012
- Arctic Tern metapopulation study (1999 - present) - Devlin
- Atlantic Puffin metapopulation study (1999 - present) Breton
- Vegetation study (Rappaport & Wesley 1985)
- Evaluation of Livestock grazing and habitat restoration on tern nesting islands (Williamson & Schubel 1995)
- Eider & Gull Survey (Drury et al 1995)
- Fall raptor migration study - (Drury 1997, Drury & Goodhue 1998)
- Aerial surveys are used to determine status of gray seal population (NMFS)
- Botanical Inventory - Mittelhauser 2003
- Fall passerine banding effort (2007-2009)
- Tagged terns with nanotags and had receiving station on the island 2014-15
- Most recent Seabird Data:

Year	COTE	ARTE	ATPU	RAZO	GCCO	DCCO
2014	1,383	855	492	19	20	
2015	1,380	861	446	32	17	
2016	1,309	949	510	26	23	9
2017	1,079	739	509	36	22	11
2018	1,207	831	550+	59	32	17

Invasive Species: *Rosa rugosa*, climbing nightshade, Canada thistle, Canada bluegrass, *Rosa rugosa*, sheep sorrel (2003). Potentially problematic but not regionally invasive: spiny-leaved sow thistle, common dodder, cow parsnip, and wild radish.

Management Concerns:

- Island was a former bombing range for Navy (unexploded ordnance) and therefore the Island is not open to the public. This also limits the scope of our tern surveys, as we cannot survey the entire colony.
- Eagle predation on great cormorant chicks
- Note: Island is co-managed with National Audubon Society

Hunting: Island is not open to hunting (UXO)

Two Bush Island



Location: Muscle Ridge Shoals Twp, Knox Cty

Date of Acquisition: 11/99

CIR #	63-653
Total Acreage	8 non-forested
Intertidal	9.4

Habitat: Treeless island, densely vegetated with timothy, yarrow, nightshade, bayberry, rugosa rose, Scotch lovage, and buttercup.

Species of Concern: former tern nesting island. Island currently supports nesting Common Eider, Herring and Great Black-backed Gulls, Black Guillemots, and Double Crested Cormorant

Surveys Completed:

Year	COEI	GBBG	HERG	DCCO	BLGU
1992	66	27	154	27	
1995/96	14	11	83	15	44 ad
2001	93	14	111	0	
2008		5	277	Photo count	
2013		6	132	Photo count	

- aerial census for nesting gulls in 1996 recorded 231 nests - Schauffler
- Botanical Inventory - Mittelhauser 2016

Invasive Species: Canada thistle, bittersweet nightshade, field sow-thistle (2016).

Potentially problematic but not regionally invasive: spiny-leaved sow thistle, cow parsnip, black-bindweed.

Management Concerns: Coordinate with US Coast Guard regarding lighthouse & navigational aids

- EA completed for colonial seabird management (USFWS 1992)
- Island is closed to public use during the seabird nesting season: April 1 - July 31

USFWS Owned Structures: Light tower (not on Historic Register). Major renovations were completed on the light tower in 2009. Replaced roof on a portion of the building in 2013

Hunting: Island is open to waterfowl hunting

Crow Island



Location: Muscle Ridge Shoals Twp, Knox Cty



Date of Acquisition: 4/2010

CIR #	63-651
Total Acreage	11.7
Intertidal	10.8

Habitat: Island is dominated by spruce forest, with small open meadows along the shoreline. Perimeter of island is dominated by granite ledge

Species of Concern: active eagle nesting island

Eagle Nesting History: (territory 191)

- territory first occupied in 1990
- Nest was active in 2013, but was not active in 2018

Surveys Completed: Aerial monitoring by MDIFW for eagle nesting

- Botanical Inventory - Mittelhauser 2015

Invasive Plants: Bull thistle, Canada thistle, Canada bluegrass, sheep sorrel, climbing nightshade, field sow-thistle, and Morrow's honeysuckle (2015). Potentially problematic but not regionally invasive: wild radish, spiny-leaved sow thistle. No control conducted.

Management Concerns: Island is closed to public use during eagle nesting season: Feb 15-August 31

Hunting: Island is closed to hunting

Matinicus Rock



Location: Matinicus Isle Plantation, Knox County Date of Acquisition: 11/99

CIR #	63-940
Total Acreage	28 non-forested
Intertidal	20.3

Habitat: The island is dominated with granite out-croppings interspersed with vegetation. Dominant vegetation includes witch grass, timothy, angelica, aster, red fescue, and chickweed. The east side of island is steep and rocky with large boulders that plunge into the sea. The west side of the island tapers off gradually and contains a gravel beach.

Species of Concern:

- Arctic Tern, Razorbill, Great Cormorant, and Atlantic Puffin: State threatened
- Laughing Gull: State Special Concern
- Common Tern: State Special Concern
- Common Murre (only nesting site in Maine)
- Manx shearwater have nested since 2005 (only location in U.S.)

Matinicus Rock was the only puffin colony within Maine to have survived the market hunting that decimated most seabird colonies. Since 1900, Matinicus Rock has been a principal breeding site for Arctic Terns on the Maine coast. In 1901, there were approximately 500 pairs of terns, and the population had increased to approx. 3,000 pairs by 1931. By 1990, approximately 1,252 pairs of Arctic Terns nested, but the colony has declined in recent years. In 2017, 166 Common Terns and 600 Arctic Terns nested on the island. In 2008, the Refuge initiated a large effort to reduce the number of laughing gull nests on Matinicus Rock. We have also implemented a lethal control effort for adult laughing gulls in an effort to reduce predation on terns. Laughing gulls abandoned the island in 2015 and only 1 pair nested in 2017. Manx shearwater initiated nesting on the

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island in 2005, and raised their first chick in 2009. This represents the first successful nesting effort for this species in the United States. They were able to raise at least three chicks in 2018, and 10 adult shearwater were routinely observed. In 2018, Matinicus Rock supported the first successful nesting of common murrelets in over 130 years (for the state of Maine). The island continues to be cooperatively managed by NAS and the Service.

Surveys Completed: Annual census of nesting seabirds (see file)

- Vegetation study - Rappaport & Wesley 1985
- Partial Botanical Inventory - Mittelhauser 2006
- Razorbill foraging ecology study (2008-09)
- Tagged terns with nanotags and maintained receiving station on island 2014-15

Year	COTE	ARTE	ATPU	RAZO	COMU	LAGU
2014	223	564	No count			689
2015	206	709	No count			0
2016	167	621	401	355+		35
2017	166	600	No count			1
2018	268	717	355+	400+	8	8

Invasive Species: Climbing nightshade, bull thistle, Canada thistle, field sow-thistle (2006). Potentially problematic but not regionally invasive: black bindweed, wild radish.

Management Concerns:

- Note: Island is co-managed with National Audubon Society
- Coordinate with US Coast Guard regarding lighthouse & navigational aids
- Maintain historic structures and boat ramp
- Island is closed to public use during seabird nesting season: April 1 - August 31

USFWS Owned Structures: Two light towers, light keepers home, boat house, and boat ramp (Nat. Register of Historic Places)

- 2005: New boat ramp constructed
- 2010 Maintenance: Lighthouse was sandblasted, primed and painted 85% of metalwork, masonry repointed, 2 glass panes replaced, door on catwalk replaced
- House: new electrical wiring installed, fire alarms installed new front door, new roof, chimney repointed, sheetrock repaired, exterior primed and painted, replaced boards on deck
- Moe's Tower - new door installed
- 2011: all new windows installed in house, new railing on lighthouse, Repaired boat ramp

Hunting: Island is open to waterfowl hunting

Two Bush Island



Location: Matinicus Island Plt., Knox County



Date of Acquisition: 11/28/06

CIR #	63-901
Total Acreage	2
Intertidal	6.9

Habitat: Island is dominated by herbaceous cover, large boulders and granite outcroppings

Species of Concern: Island has supported or now supports nesting of common eiders, great black-backed gulls, herring gulls, and black guillemots

Surveys Completed:

Year	COEI	GBBG	HERG	BLGU
1977	75	20	50	15
1995		7	0	155 ad
2008		10	165	Photo count
2013		8	94	Photo count
2015	28	0	153	28 ad

- Botanical Inventory - Mittelhauser 2017

Invasive Species: bull thistle, Canada thistle, and *Rosa rugosa*. Potentially problematic but not regionally invasive: common dodder, wild radish, and spiny-leaved sow thistle.

Management Concerns: Island is closed during the seabird nesting season April 1- July 31

Hunting: Island is open to waterfowl hunting

Metinic Island



Location: Matinicus Isle Plantation

Date of Acquisition: 6/22/95

CIR #	63-584
Total Acreage	USFWS owns 149 acres out of 300 acre island 30 acres forested , 119 acres non-forested
Intertidal	140.5

Habitat: Majority of Service owned property is dominated by various grass species and shrubs, significantly affected by decades of sheep grazing. The most common species include chickweed, sheep sorrel, raspberry, and bayberry. Fencing placed around vegetation plots indicates that grazing is significantly altering the height and species composition of the vegetation on the island. For example, Kentucky bluegrass, redtop, and sweet vernal grass are common in fenced areas, while these species are uncommon in grazed areas. There is a large forested area in the center of the island, dominated by red spruce and balsam fir.

Species of Concern:

- Arctic Tern: State threatened
- Common Tern: State Special Concern
- Roseate Tern: Federal & State Endangered (limited nesting)

The Service initiated a tern restoration project (decoys and sound system) on the north end of the island in 1998. In 1999 one pair of Common Terns and two pairs of Arctic Terns nested adjacent to the decoy area. Later in the season, an additional nine pairs of terns nested near the decoy area. The colony continued to grow and by 2010, 406 pairs of COTE and 352 pairs of ARTE nested on the island. Unfortunately, a combination of a significant

storm, gull predation, and potential disturbance created by our gull control measures caused the colony to abandon the island in 2012. The colony returned in 2013. Roseate terns have occasionally nested on the island. Common Eider, Black Guillemot, Herring Gull, Great Black Backed Gull, and Leach's Storm Petrel also nest on the island. A Common Eider banding effort was conducted on Metinic Island between 2002-08.

Eagle Nesting Island: (territory 395)

- nest first discovered in 2003 (no eaglets produced)
- Nest was active in 2013, eagles were present in 2018 but didn't nest

Surveys Completed: Complete nesting seabird survey of USFWS property in 2012

- Annual census of nesting seabirds (see file)
- Island wide eider census 1993?
- Botanical inventory completed in 2007
- Adaptive Management study 2008-10 to determine the best method of managing the vegetation on the island for nesting terns
- Fall banding program for passerines (2009-10) Spring banding program 2010
- Intertidal Monitoring effort 2009-10 (partner with Acadia NP)
- Bat acoustic monitoring 2009-10, bird acoustic monitoring 2010
- Tagged terns with nanotags in 2014-15, maintained receiving station on the island (still active in 2018)
- Most recent data:

Year	COTE	ARTE	GBBG*	HERG*
2014	220	257	11	156
2015	343	260	12	120
2016	290	317	1	125
2017	331	295	6	155
2018	351	491	2	214

* Only represents USFWS property north of the forest

Invasive Species: Oriental bittersweet, *Rosa rugosa*, bittersweet nightshade, Canada thistle, bull thistle. Potentially problematic but not regionally invasive: spiny-leaved sow thistle, Jimson weed.

- Control efforts initiated in 2008 for nightshade, thistle, bittersweet and Jimson weed. Thistle herbicide treatments on the NE peninsula are ongoing (2014-2018)
- Mowing to encourage grazing off-season in tern nesting areas may have inadvertently spread thistle seed

Management Concerns: Garter snake predation on tern eggs and chicks. We have removed 198 snakes from the island (2012-17), and control efforts will continue.

- LURC developed a Resource Plan for the northern portion of Metinic Island - 1992

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- The island has been grazed by sheep for generations and approximately 120 sheep remain on the island. At this point in time, the Service is using the sheep to manage the vegetation for the nesting terns. In 2007, the Refuge began excluding the sheep from the entire USFWS owned portion of the island during the seabird nesting season.
- Metinic is listed by MDIFW as essential habitat for Roseate Terns
- Island is closed to public use during the eagle and seabird nesting seasons: February 15 - August 31

USFWS Owned Structures: Cabin on north end of island, replaced cabin roof in 2014

Hunting: Island is not open to waterfowl hunting

Hay Ledge



Location: St. George, Knox County

Acquisition anticipated in 2019

CIR #	63-582
Total Acreage	5

Species of Concern: island supports nesting black guillemots, common eider, great black-backed and herring gulls, and double-crested cormorants

Surveys Completed:

Year	COEI	GBBG	HERG	DCCO	BLGU
1995	24 ad	75*	15*	145*	
2008*		50	84	19	
2013*		23	37	0	
2017					40 ad

* Photo count

- TNC Plant species list available (Hay and Brothers are combined), survey date unknown

Invasive Plants: sheep sorrel and climbing nightshade. Potentially problematic but not regionally invasive: common dodder, cow parsnip, wild radish, spiny-leaved sow thistle

Management Concerns: Island will be closed during the nesting seabird season, April 1- August 31

Brothers Island (North)



Location: St. George, Knox County

Acquisition anticipated in 2019

CIR #	63-579
Total Acreage	3.8

Habitat: The interior of the island is composed of mixed grasses and forbs, including yarrow, ragweed, raspberry, timothy, and fireweed

Species of Concern: Island has supported great black-backed and herring gulls, black guillemots, and common eiders.

Surveys Completed:

Year	GBBG	HERG	COEI	BLGU
1983			250 ad	
1995*	14	52		10 ad
2008*	2	79		
2013*	1	76		

*Photo Count

- TNC Plant species list available (Hay and Brothers are combined), survey date unknown
- A botanical inventory will be conducted in 2019.

Invasive Plants: sheep sorrel and climbing nightshade. Potentially problematic but not regionally invasive: common dodder, cow parsnip, wild radish, spiny-leaved sow thistle

Management Concerns: Island will be closed during the nesting seabird season, April 1- August 31

Brothers Island (Central)



Location: St. George, Knox County

Acquisition anticipated in 2019

CIR #	63-581
Total Acreage	7.4

Species of Concern: Island has supported great black-backed and herring gulls, common eiders, and common and roseate terns.

Surveys Completed:

Year	COTE	ROST	GBBG	HERG	COEI
1987	0	0	3	12	1
1996	23	1	2	0	
1997	39	1			
2008	0	0	0	0	1
2013*			0	0	

* Photo Count

- TNC Plant species list available (Hay and Brothers are combined), survey date unknown
- A botanical inventory will be conducted in 2019.

Invasive Plants: sheep sorrel and climbing nightshade. Potentially problematic but not regionally invasive: common dodder, cow parsnip, wild radish, spiny-leaved sow thistle

Management Concerns: Island will be closed during the nesting seabird season, April 1- August 31

Brothers Island (South)



Location: St. George, Knox County

Acquisition anticipated in 2019

CIR #	63-581
Total Acreage	7.4

Habitat: The interior of the island is composed of mixed grasses and forbs, including yarrow, ragweed, raspberry, timothy, and fireweed

Species of Concern: Island has supported great black-backed and herring gulls, double-crested cormorants (in the 60's and 70's), black guillemots and common eiders

Surveys Completed:

Year	COEI	GBBG	HERG	DCCO	BLGU
1995*		27	5		28 ad
2008	75	13	39	0	
2013*		2	123		

* Photo count

- TNC Plant species list available (Hay and Brothers are combined), survey date unknown
- A botanical inventory will be conducted in 2019.

Invasive Plants: sheep sorrel and climbing nightshade. Potentially problematic but not regionally invasive: common dodder, cow parsnip, wild radish, spiny-leaved sow thistle

Management Concerns: Island will be closed during the nesting seabird season, April 1- August 31

Hart Island



Location: St. George, Knox County

Date of Acquisition: 9/03

CIR #	63-833
Total Acreage	13 non-forested
Intertidal	3

Habitat: Approximately 80% of the island is dominated by mixed grasses, with the other 20% supporting various species of shrubs (cherry and raspberry)

Species of Concern: Island supports nesting Common Eider, Great Black-backed and Herring Gulls

Surveys Completed:

Year	COEI	GBBG	HERG
1996		15	224
2006	57	9	358
2008*		7	414
2013**	4	15	235

* Photo count

**Partial survey of interior of island due to cow parsnip

- Botanical Inventory - Mittelhauser 2010

Invasive Species: Canada thistle, bull thistle, common thistle, field sow-thistle, coltsfoot, *Rosa rugosa*, creeping nightshade (2010). Potentially problematic but not regionally invasive: spiny-leaved sow thistle, cow parsnip, wild radish.

Management Concerns: Refuge is concerned about shoreline erosion

- Huge accumulation of lobster traps on the shoreline. Evidence of seabirds being trapped and killed in derelict traps
- Island is closed to public use during seabird nesting season: April 1 - July 31

Hunting: Island is open to waterfowl hunting

Franklin Island



Location: Friendship, Knox County Date of Acquisition: 11/1/73

CIR #	63-707
Total Acreage	12
Intertidal	5.2

Habitat: Approximately 8 acres of red spruce forest, with 4 acres of dense raspberry thickets and mixed grasses along the western shore

Species of Concern: Island once supported the largest eider nesting population in the state (eliminated by avian cholera)

- Common Eider, Herring and Great Black-backed Gulls, Black Crown Night Heron, Leach's Storm Petrel, Black Guillemot, Great Blue Heron and Osprey have nested on the island

Surveys Completed:

Year	COEI	GBBG	HERG	BCNH
1983	1300		100	50+
1996	present	55	36	2-4
2003	336	38	74	
2008*		20	3	
2013**		25	50	
2015	98	6	0	0

* photo count

** boat estimate

Botanical Inventory - Mittelhauser 2009

Invasive Species: bull thistle, Canada thistle, Canada bluegrass, sheep sorrel, climbing nightshade (2009). Potentially problematic but not regionally invasive: common dodder, black bindweed, wild radish, spiny-leaved sow thistle.

Management Concerns: historic lighthouse structure (owned by USCG)

- Avian cholera significantly reduced Common Eider population
- Significant boat ramp and "tent" platform illegally constructed on island in 2001
- Island is closed to public use during seabird nesting season: April 1 - August 31

USFWS Owned Structures: USCG owns light tower (Nat. Register of Historic Places)

Hunting: Island is open to waterfowl hunting

Crane Island



Location: Friendship, Knox County Date of Acquisition: 9/01

CIR #	63-705
Total Acreage	USFWS owns easement for 12 acre island
Intertidal	12

Habitat: Northern 5 acres of island is dominated by red spruce, with the remaining area of island supporting a mix of grasses, forbs, and dense thicket of raspberry, bayberry, and gooseberry. Island also has patch of poison ivy.

Species of Concern:

- island has supported nesting of osprey, Common Eider, Herring and Great Black-Backed Gulls

Surveys Completed:

- Seabird survey completed in 2006

Year	COEI	GBBG	HERG	Osprey
1976	200	35	35	
1983	300		12	
1995		4	0	aerial photo
2006	147	8	0	2
2008		6	0	Photo Count
2013		6	0	Boat estimate

- Botanical Inventory - Mittelhauser 2010

Invasive Species: Canada thistle, bull thistle, field sow thistle, wild radish, *Rosa rugosa*, climbing nightshade, Canada bluegrass, sheep sorrel. Potentially problematic but not regionally invasive: common dodder, cow parsnip, spiny-leaved sow thistle, wild radish,

Management Concerns: privately owned cabin located on north end of island

- Island is closed to public use during seabird nesting season: April 1 - July 31

Hunting: The island is not open to hunting

Little Thrumcap Island



(Little Thrumcap is wide section in middle of photo)

Location: South Bristol, Lincoln County Date of Acquisition: 7/23/95

CIR #	65-267
Total Acreage	8.5 non-forested
Intertidal	6.3

Habitat: Treeless island dominated by mixed grasses and forbs, with some small stands of shrubs. Small sand beach is located on the north side of island

Species of Concern: island has supported nesting of Common Tern, Roseate Tern, Common Eider, Herring Gull, and Laughing Gull

Surveys Completed:

Year	COTE	ARTE	ROST	LAGU	HERG	COEI
1982	175		5	75	10	
1984	200 ad	30 ad	4 ad			
1995	0		0	0	0	
1999	0		0	0		present

- Botanical Inventory - Mittelhauser 2010

Invasive species: Canada thistle, bull thistle, *Rosa rugosa*, climbing nightshade, Canada bluegrass. Potentially problematic but not regionally invasive: common dodder, cow parsnip, wild radish, spiny-leaved sow thistle, poison ivy

Management Concerns: Refuge had cooperative agreement with Damariscotta River Association for environmental education opportunities on island (not currently active)
 - Public access is allowed year-round on 60% of island, while remaining 40% is closed to public use during the seabird nesting season: April 1 - July 31

Hunting: Island is open to waterfowl hunting

Inner White Island



(Inner White is island at top of photo)

Location: Boothbay, Lincoln County

Date of Easement: 9/17/98

CIR #	65-276
Total Acreage	USFWS owns easement on 5 acre island non-forested
Intertidal	3.8

Habitat: Island sparsely vegetated (20%) with grass and forbs, with majority of island dominated by bedrock out-croppings

Species of Concern: island supports nesting of Common Eider, Black Guillemot, Herring Gull, Great Black-Backed Gull, and Double Crested Cormorant

Surveys Completed: Seabird survey completed (from the water) in 2006

Year	GBBG	HERG	DCCO	BLGU	COEI
1982			558	1	
1984	208	0	925		
94-95	177	78	94	5 ad	
2006	21	65	83	25 ad	100 ad
2008	64	98	170	Photo count	
2013	48	110	244	Photo count	

Invasive Plants: Unknown

Management Concerns: Island is closed to public use during seabird nesting season: April 1 - August 31

Hunting: hunting is not permitted on the island

Outer White Island



Location: Boothbay, Lincoln County

Date of Acquisition: 5/17/95

CIR #	65-278
Total Acreage	16 non-forested
Intertidal	4.7

Habitat: Island is treeless, with vegetation dominated by mixed grasses. Perimeter has high cliffs on one end

Species of Concern: Island supports nesting of Common Eider, Black Guillemot, Herring Gull, Great Black-Backed Gull, Black Crowned Night Heron, and Double Crested Cormorant. Harbor seals use island for pupping

Surveys Completed: Seabird survey completed in 2006

- Great horned owl observed on the island in 2006
- Botanical Inventory - Mittelhauser 2009

Year	COEI	GBBG	HERG	DCCO	BCNH	BLGU
1977	150	80	80			3
1995	50			25	6	15 ad
1996		65	169			
2006	270	28	42	0	0	
2008		60	81	0	Photo count	
2013		80	52	0	Photo count	

- Seals: 191 seals including 22 pups were observed in 2002 (Gilbert). 30 harbor seals observed in 2006

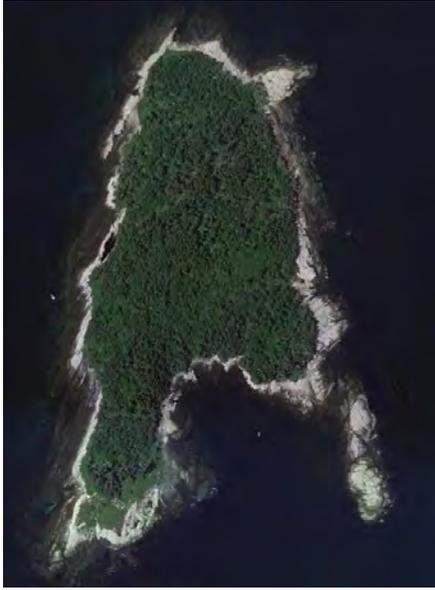
Invasive Plants: *Rosa rugosa*, field sow-thistle (2009). Potentially problematic but not regionally invasive: common dodder, spiny-leaved sow thistle.

Management Concerns: Island is closed to public use during the seabird nesting season: April 1 - August 31

- Refuge has a partnership with Damariscotta River Association and Boothbay Regional Land Trust to monitor seabirds and other migratory bird use.

Hunting: Island is open to waterfowl hunting

Outer Heron Island



Location: Boothbay, Lincoln County

Date of Acquisition: 10/6/99

CIR #	65-279
Total Acreage	66 forested
Intertidal	19.8

Habitat: Large forested island, dominated by red spruce with mixed hardwood species. Extensive felling of trees (illegal activity) has created a variety of openings within the canopy. Dense raspberry thickets have developed in these openings.

Species of Concern: Bald eagle nesting island
 - island supports nesting of Common Eider, Black Guillemot, Herring Gull, Great Black Backed Gull, and until recently a great blue heron rookery

Eagle Nesting History: (territory 292)
 - nesting first observed in 1999, nest tree fallen by 2000
 -Nest was active in 2013 and in 2018

Surveys Completed:

Year	COEI	GBBG	HERG	GBHE
1977	35	5	10	75
1983				125
1995		10	0	10
2002				0
2008*		0	8	0
2013*		0	0	0

* Photo count

- Aerial monitoring by MDIFW for eagle nesting

Invasive Plants: Unknown

Management Concerns: extensive illegal cutting of trees occurred in an effort to recover buried treasure and rare stones.

- local community has traditionally used the island for picnics and camping
- Island has been proposed for consideration as Wilderness Area
- Island is closed to visitation during eagle nesting season: February 15 - August 31

Hunting: Island is open to waterfowl hunting

Lower Mark Island



Location: Southport, Lincoln County

Date of Easement: 9/98

CIR #	65-461
Total Acreage	USFWS owns easement on 9.5 acre island
Intertidal	8.6

Habitat: large stand of standing dead red spruce trees, with only 30% of island vegetated (mixed grasses and forbs). Shoreline is dominated by ledge

Species of Concern: island supports nesting of Great Black-backed and Herring Gulls, Double Crested Cormorant and Great Blue Heron

Eagle Nesting History: (territory 589A)

- new nesting territory discovered in 2008
- Pair produce 1 chick in 2008 and 2 chicks in 2009
- Territory was occupied but unsuccessful in 2010
- Nest active in 2013, but unoccupied in 2018

Surveys Completed:

Year	DCCO	GBHE	GBBG	HERG
1994	189	10		
1995		15		
2008*	126		7	116
2013*			0	0

*Photo count

Invasive Plants: Unknown

Management Concerns: Island is closed to public use during the eagle nesting season: February 15 - August 31

Pond Island



Location: Phippsburg, Sagadahoc County

Date of Acquisition: 3/73

CIR #	73-282
Total Acreage	10 non-forested
Intertidal	7.2

Habitat: treeless island dominated by mixed grasses

- eastern and northern sides of island features steep rock outcropping
- small sand beach on north end of island

Species of Concern: Common Tern: State Special Concern

- Roseate Tern: Federal & State Endangered (limited nesting)

The island is located in the mouth of the Kennebec River, and until 1937 supported a Common Tern colony. North and South Sugarloaf Islands are within a quarter of a mile from Pond Island and until 1987 supported both Roseate and Common Terns. At one point in time, North Sugarloaf was the largest Roseate colony in Maine. The terns were displaced by nesting gulls, until the restoration program was initiated in 1996. One pair of Common Terns nested in 1996, and five pairs nested in 1997, however none of these nesting attempts produced any chicks. In 1998, when the one pair of terns failed to hatch their eggs, NAS transplanted two Common Tern chicks from the nearby Jenny Island. The chicks were immediately cared for by the adults, and later fledged from the island. In 1999, Pond Island produced its first tern chick in more than 60 years, when 10 pairs of Common Terns successfully nested. Eleven additional pairs nested later in the season, with a total of 20 chicks produced. The colony has continued to grow and in 2017, 942 pairs of Common terns and eight pairs of Arctic terns nested on

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the island. Small numbers of Roseate terns nest on the island. Great horned owl and mammal predation continue to be a significant problem for the colony. Prior to tern restoration efforts, the island supported 125 pairs of Common Eider. The island is cooperatively managed by NAS and the Service.

Surveys Completed: Annual seabird census conducted

- Most recent seabird data:

Year	COTE	ARTE	ROST
2014	612	4	0
2015	685	6	0
2016	773	6	1
2017	942	8	0*
2018	1,065	11	2

* 3 pairs of ROST nested late in the season

Invasive Plants: No surveys conducted. Potentially problematic but not regionally invasive: poison ivy and wild radish. Periodic control of poison ivy (herbicide) to enhance tern habitat: 2012, 2016, 2019 planned.

Management Concerns:

- Note - Island is co-managed with National Audubon Society
- significant owl predation on tern colony (often annual event)
- mammalian predators have accessed the island during the nesting season
- Coordinate with US Coast Guard concerning lighthouse and navigational aids
- Voles on island may attract owls to the island during the spring
- Island is closed to public use during seabird nesting season: April 1 - August 31

USFWS Owned Structures: USCG owns light tower (Nat. Register of Historic Places)

- tent platform

Hunting: Island is open to hunting

Ram Island



Location: Harpswell, Cumberland County

Date of Acquisition: 4/12/99

CIR #	55-605
Total Acreage	10 non-forested
Intertidal	4

Habitat: Vegetation on the island is dominated by mixed grasses with several stands of shrubs (raspberry and cherry) on the north end of island

Species of Concern: Island supports nesting Common Tern, Common Eider, Great Black-Backed and Herring gulls, Double Crested Cormorant, and Black Crowned Night Heron

Surveys Completed:

Year	COTE	COEI	GBBG	HERG	DCCO	BCNH
1980		60	10	70		
1989						25
1991	67					
1992	53					
1995	0		25	295		
2004	0	214	47	184	162	0
2008	Photo count		14	289	136	
2013	Photo count		23	252	280	0

- Botanical Inventory - Mittelhauser 2010

Invasive Species: bull thistle, *Rosa rugosa*, Canada bluegrass, climbing nightshade.

Potentially problematic but not regionally invasive: common dodder, spiny-leaved sow thistle, wild radish, poison ivy

Management Concerns:

- Island is closed to public use during seabird nesting season: April 1 - July 31

Hunting: Island is open to waterfowl hunting

Upper Flag Island



Location: Harpswell, Cumberland County Date of Acquisition: 6/17/98

CIR #	55-415
Total Acreage	30 primarily non-forested
Intertidal	7.2

Habitat: Island is generally flat on the north side with tall cliffs (up to 10 meters) on the southern and western shorelines. Island vegetation is composed primarily of dense, low, woody shrubs with scattered patches of trees and low vegetation. The shrub community is dominated by bayberry, winterberry, chokeberry, and choke-cherry. A variety of grasses including: common hairgrass and Rhode Island bentgrass were common. Island also contains small sandy beach and a freshwater wetland on the northern end.

Species of Concern: island supports nesting of Common Eider, Herring and Great Black-Backed Gulls

Surveys Completed:

Year	COEI	GBBG	HERG
1982	500	40	200
1984	300	10	25
1993	25		
1998	110		

- Botanical Inventory and Small Mammal Inventory - Mittelhauser & Morrison 2001

Invasive Species: Oriental bittersweet, bull thistle, Canada thistle, *Rosa rugosa*, climbing nightshade, Canada bluegrass, sheep sorrel, field sow-thistle. Potentially problematic but not regionally invasive: burdock, common dodder, wild radish, and poison ivy. Bittersweet control efforts (cut-stump herbicide) ongoing (2009-2017).

Management Concerns: Island is closed to public use during the seabird nesting season: April 1 - July 31. Island has traditionally been used by recreational beach-goers. Community outreach needed

Hunting: Island is open to waterfowl hunting

Duck Island



Location: Kittery, York County



Date of Acquisition: 9/03

CIR #	81-181
Total Acreage	9
Intertidal	5

Habitat: Vegetation is dominated by mixed grasses, interspersed with rock outcroppings.

Island has a small fresh water pond.

- Includes numerous inter-tidal ledges around island

Species of Concern: Island supports nesting Common Eider, Herring and Great Black-Backed Gulls, and Double-Crested Cormorants

- Glossy Ibis and Great Egrets forage on the island. Canada geese also nest on the island
- Harbor and gray seal haul-out site

Surveys Completed:

Year	COEI	GBBG	HERG	DCCO
1984		549		1,077
1994				916
1995	50	301 ad	69 ad	743
2005	52 ad	150 ad	288 ad	1388 ad
2013	photo	295	155	777

Invasive Plants: Unknown

Management Concerns: Island was used as a bombing target by the military and has unexploded ordnance on the island and in adjacent waters. ACOE survey of ordnance completed in 2007

- No anchor zone delineated around island on charts (due to ordnance)
- Island is closed to public use year round

Hunting: Island is not open to hunting

Smuttynose Island



Location: Kittery, York County

Date of Easement: 3/02

CIR #	81-182
Total Acreage	USFWS owns easement on 40 acre island, Non-forested
Intertidal	10

Habitat: Approximately 20 acres of the island is dominated by shrubs, while the other half is covered with grass, forbs, and shrubs

Species of Concern: island has supported nesting by Black Guillemot, Canada Geese, Common Eider, Herring and Great Black-backed Gulls

- State endangered *Cyperus erythrorhizos*, red-root flatsedge

Surveys Completed:

Year	COEI	GBBG	HERG	BLGU	COTE
1984	19	912	1,442		30 ad
1995	15 ad	1,030	387	3	
2005	69 ad	667 ad	141 ad	4 ad	
2013		369	63		

- GPS data collected for all structures on the island
- Botanical Inventory - Nichols & Nichols 2006, published in *Rhodora* 2008 (110)

Invasive species: Japanese hops, climbing nightshade, downy chess, celadine, bull thistle, Canada thistle, purple loosestrife, Canada bluegrass, garden valerian, sheep sorrel, *Rosa rugosa*. Potentially problematic but not regionally invasive: black bindweed, cow parsnip, poison ivy, wild radish.

- Purple loosestrife *Galerucella* beetles were released (biocontrol) for 3 successive years (2008-2010). Efficacy monitoring conducted 2009-2012. Hand-pulling

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tested in plots in 2013. Beetles were abundant in 2012, though damage may not have been significant enough to reduce the size of the loosestrife infestation. Follow up monitoring and a new control strategy is needed.

Management Concerns:

- numerous historic structures
- extensive public visitation to island (provided by Starr Island Corp), with trail running through gull nesting area
- seasonal care-takers present on island
- island accessible from adjacent islands by inter-tidal bar
- need to coordinate with researchers at Shoals Marine Lab
- Raccoons eliminated all gull nesting efforts in 2004, 11 animals were removed from the complex of islands
- extensive archeological dig conducted in recent years (Cornell University)
- Island is closed to public use during the seabird nesting season: April 1 - August 31

Malaga Island



(Malaga Island is small outcropping attached to Smuttynose Island)

Location: Kittery, York County

Date of Easement: 3/02

CIR #	81-193
Total Acreage	USFWS owns easement on 3 acre island Non-forested
Intertidal	7

Habitat: Island is non-forested with grasses and low shrubs

Species of Concern: Island supports nesting great-black backed and herring gulls (historically)

Surveys Completed:

Year	GBBG	HERG
2013	22	0

Management Concerns: Island is closed to public use during the seabird nesting season: April 1 - August 31

Machias Seal Island



Location: 12 miles SE of Cutler, Washington County

Date of Acquisition: ownership of island is disputed between United States and Canada

Total Acreage	USFWS manages 15 acre island under cooperative agreement with MDIFW
Intertidal	7

Habitat: Vegetation is dominated by a variety of herbaceous species including Irises, Asters, Meadow Rue, Angelica, Canada bluejoint, and other grasses. Extensive boulder habitat around island provides nesting habitat for alcids.

Species of Concern: Arctic Tern, Razorbill, and Atlantic Puffin: State threatened

- Common Tern: State Special Concern
- Common Murre
- Supports the largest alcid colony along the Maine coast
- Until 2004 supported the largest tern colony along coast of Maine
- island also supports nesting Leach's Storm-Petrel and Common Eider
- Machias Seal Island is the only known breeding colony of Common Murre in the Gulf of Maine (breeding first documented in 2003)
- Gannets nested for the first time on the island in 2012 (only recent record in Gulf of Maine)

Surveys & Research Completed: University of New Brunswick (Atlantic Co-operative Wildlife Ecology Research Network) maintains research crew on the island

- Summary of Historical Information on the Seabirds of MSI (MacKinnon & Smith 1985)
- Arctic Tern Metapopulation study (1999 - present) - Devlin
- Use of Radio Telemetry to Census Breeding Razorbills - Grecian
- Stable isotopes and mercury in seabirds (2005 & 2006)- Bond

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- Foraging behavior of Puffins and Razorbills (Symons 2016)
- other research topics have focused on the use of seabirds as indicators of changes in the availability of commercial fisheries of herring, identification of foraging areas, and time budgeting behavior of Arctic Terns
- Most recent seabird data:

Year	COTE	ARTE	ATPU	RAZO	COMU
2003	1329	1994	3500+	560	45+
2004	1006	2158	No count		148+
2006*	213	904		900 ad	250 ad
2007-2010	0	0	No count		
2011	0	0	6,563		
2012	0	0		1740pr	
2013	90 prs of terns attempted to nest, all abandoned				219 pr
2014	8	179	Only 4 chicks survived		
2015	9	141	5,000+	2,550	
2016	11	164	5400-6100	2850-3500	500 pr
2017	250-300pr				
	26	450	No surveyed		338

- Excessive gull control in 2006 resulted in significant reduction of nests during GOMSWG census. Tern colony completely abandoned in late June.
- In 2007 the entire tern colony abandoned the island

Invasive Plants: Unknown

Management Concerns: ownership disputed between United States and Canada

- coordinate with Canadian Wildlife Service and University of New Brunswick
- potential disturbance from eco-tourists which land on island throughout season (permit system limits landings)
- CWS stations seasonal warden / lighthouse keeper on the island