



Oregon Coordinated Aquatic Bird Monitoring:
Description of Important Aquatic Bird Site

Nestucca Bay National Wildlife Refuge
BCS number: 47-22

Site description author(s)

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Primary contact for this site

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Site location (UTM)

Datum: NAD83, Zone: 10, Easting: 424575, Northing: 5003395

General description

Nestucca Bay National Wildlife Refuge is located near Pacific City and Neskowin in Tillamook County, Oregon. The Refuge was established in 1991 with the acquisition of a 384-acre dairy farm, and has since expanded to 893 acres, with an additional 2,500+ acres still in private ownership within the approved refuge boundary. The initial refuge boundary now comprising the Nestucca Bay Refuge Unit (Figure 1) was established to protect wintering habitat for the Aleutian Canada goose, which was listed as endangered in 1967 and delisted in 2001, and for the Dusky Canada Goose; and to protect diverse coastal wetland habitats and upland habitat buffers for a variety of migratory waterfowl, shorebirds, raptors, songbirds, anadromous fish, and other wildlife. The Neskowin Marsh Unit (222.6 acres) was established in 2002 and is located about 2.5 miles south of the original refuge (Figure 1). Neskowin Marsh incorporates unique wetland habitats and wildlife resources not found within the original refuge boundary.

Boundaries and ownership

Boundaries:

Nestucca Bay Refuge Unit is located in the Nestucca Valley near the communities of Pacific City and Oretown. See Figure 1 for approved refuge boundaries and acquired lands.

Neskowin Marsh Unit is located in a mile-long trough behind the sand dunes of Kiwanda Beach and within the community of Neskowin. The authorized refuge boundary is bounded on the east by U.S. Highway 101 and housing developments and on the south by Neskowin Beach State Wayside. The western edge of the authorized boundary is generally bounded by Hawk Street, with the exception of a 0.1 acre parcel located west of Hawk Street and adjacent to the riding stables. The northern boundary is the Sahlali Shores subdivision.

Ownership:

United States Fish and Wildlife Service (USFWS) land.

Water levels

The Nestucca Bay Unit of the refuge is composed of narrow tidelands, diked former tidelands, marine terraces ranging from 50 to 100 feet and a high spot of 338 feet on Cannery Hill. Two major streams flow into Nestucca Bay. The Nestucca River enters from the north, is 54.9 miles long, and drains 259 square miles. The Little Nestucca enters from the south and drains 59 square miles. The navigable length of the Nestucca River is 6 miles and the Little Nestucca River is 1.6 miles. These streams respond very quickly to heavy rainfall due to the steep surrounding topography and low surface permeability. This stream response and the congestion at the bay outlet, caused by shifting sand dunes, results in extended flooding in the bay lowlands. Approximately 40% of the Nestucca Bay Unit is lowland pasture behind dikes and tidegates. A portion of this unit is also tidally influenced by the Pacific Ocean. Salt water inundates the areas during the rise of the tide and retreats as the tide falls on a daily basis.

Neskowin Marsh Unit was originally a lake that formed when shifting sands blocked stream drainage to the ocean. Today, a series of small open water areas are scattered throughout the unit. Water levels within the marsh rise and fall dependant upon the rainfall amount.

Vegetation:

The Nestucca Bay Unit consists of open water, mudflats, intertidal marshes, lowland pastures, forested wetlands both diked and estuarine, grassy uplands, and forested uplands. Overstory vegetation in the forested wetlands consists primarily of red alder and Sitka spruce. The dense understory in the forested wetlands remains green throughout the summer. The forested uplands contain second growth Sitka spruce, western hemlock, and red alder. The old-growth forest was logged in the early 1900s.

The lowland pastures within the Nestucca Bay Unit are managed intensively for Dusky and Aleutian Canada Geese, using the management practices of grazing and silage production. Grass species including water foxtail (*Alopecurus geniculatus*), perennial ryegrass (*Lolium perenne*), clover (*Trifolium* spp.), lotus (*Lotus* spp.), and *Ranunculus* spp., are kept short and actively growing throughout the year under these management practices. Approximately 15 acres of upland pastures on Cannery Hill are mowed to maintain short grass for black-tailed deer; the remainder is dominated by tall, rank reed canarygrass (*Phalaris arundinacea*). These pastures are interspersed with spruce trees, which become denser with the increase in elevation. Table 1 details habitat types found on both units of Nestucca Bay NWR.

Neskowin Marsh: Habitats within the Neskowin Marsh Unit include marsh, bogs, forested wetlands, upland shrub and meadows, and adjacent forested uplands. Specifically, the vegetative communities within the Neskowin Marsh unit include freshwater marsh, bog, forested lagg, upland meadow, upland shrub, and upland forest (Figure 2). A small area of privately owned, undeveloped dune habitat is located northwest of the marsh and was identified as a priority acquisition for the refuge.

Vegetation within the emergent marsh includes bulrush (*Scirpus* spp.), giant bur-reed (*Sparganium eurycarpum*), Douglas spirea (*Spirea douglasii*), and water parsley (*Oenanthe sarmentosa*). There are three types of bog within Neskowin Marsh, including sedge fen, shrub carr, and sphagnum bog. The bogs comprise an estimated 48 acres of the marsh. The 40-acre sedge fen is distinguished from other bog habitats because of the neutral pH of the water, and is dominated by slough sedge (*Carex obnupta*) and Sitka sedge (*C. sitchensis*). The shrub carr bog is dominated by western crabapple (*Pyrus fusca*), Trapper's tea (*Ledum glandulosum*), and Hooker willow (*Salix hookeriana*). Most of the shrub vegetation occurs on undrained peatland along with conspicuously stunted Sitka spruce and western hemlock. A high quality sphagnum bog interspersed with pools and ponds also occurs within the undrained peatland. The sphagnum bog is significant because it contains the largest known occurrence of acid-forming mire on the Oregon coast, and it supports the rare moss, *Pohlia sphagnicola*, which occurs on the tops of sphagnum hummocks. The sphagnum bog is dominated by sphagnum moss (*Sphagnum fuscum*), bog cranberry (*Vaccinium oxycoccos*), round-leaved sundew (*Drosera rotundifolia*), and various small ground cover plants. A structurally diverse wetland known as a forested lagg occurs adjacent to the eastern edge of the bog habitats, between the bogs and the upland meadows and upland forest. The lagg's forest canopy is dominated by Sitka spruce, western hemlock, and red alder. Most of the shrub vegetation occurs on undrained peatland along with conspicuously stunted Sitka spruce. Shrub species include salal, thimbleberry (*Rubus parvifloris*), bracken fern (*Pteridium aquilinum*), nutka rose (*Rosa nutkana*), sword fern (*Polystichum munitum*), and black hawthorne (*Crataegus douglasii*). The upland meadow habitat is located east of the forested lagg and continues to the north end of the marsh, and is dominated by a variety of grasses, slough sedge, and trailing blackberry (*Rubus ursinus*). The marsh is bordered on the west by a small strip of woodland dominated by red alder and Sitka spruce, on the east by a larger area of alder/spruce forest, and on the north by rolling headlands covered with grass.

Focal species use and timing

Nestucca Bay Refuge provides critical habitat for the formerly endangered Aleutian Canada Goose (*Branta canadensis leucopareia*) and serves as an important overwintering site for declining populations of the Dusky Canada Goose. Other subspecies of Canada Goose, including Taverner's (*Branta canadensis taverneri*), Cackling (*Branta canadensis minima*), Lesser (*Branta canadensis parvipes*), Vancouver (*Branta canadensis fulva*), and Western, also use refuge pastures. The freshwater wetlands and estuarine marshland support thousands of migratory waterfowl and shorebirds, which in turn provide an important prey base for the federally threatened Bald Eagle and the recently delisted Peregrine Falcon (*Falco peregrinus*). Both birds breed locally and winter in the area. The riverine habitat provides critical habitat for spring runs of Chinook salmon, threatened coho salmon, chum salmon (*Oncorhynchus keta*), steelhead trout and cutthroat trout. Aquatic mammals such as marsh shrews, Oregon voles (*Microtus oregoni*), nutria (*Myocastor coypus*), mink (*Mustela vison*), river otters, and raccoons are common in the marshes and wetter pastures. Deer and elk graze the marsh and pasture grasses. The riparian forest patches and the forested wetlands support small mammals as well as many amphibians and reptiles such as long-toed salamanders (*Ambystoma macrodactylum*), newts, Pacific tree frogs (*Hyla regilla*), toads, lizards, and garter snakes (*Thamnophis sirtalis*). The forest areas are also home to typical forest passerine species in addition to those birds dependent on water edges such as Green and Great Blue Herons, Belted

Kingfisher (*Ceryle alcyon*), Wood Duck, Winter Wren (*Troglodytes troglodytes*), and Varied Thrush. The endangered California Brown Pelican uses Nestucca Bay adjacent to the refuge for foraging in summer and early fall. Peregrine Falcon observations are numerous from fall through spring. Cannery Hill hosts several Bald Eagle roosting sites adjacent to refuge lands, and a pair of Bald Eagles nests on Brooten Mountain north of Nestucca Bay and forages in the marshlands surrounding Nestucca Bay.

The complexity of marsh, forested wetlands and adjacent upland woodlands found within the Neskowin Marsh Unit provide important habitat for neotropical migrant birds such as warblers, flycatchers, and thrushes. Waterfowl use the marsh throughout the winter and in the fall and spring migration periods. Species commonly observed include Mallard, Wood Duck, American Wigeon, Northern Pintail, Green-winged Teal, Ring-necked Duck, Lesser Scaup and Bufflehead. Both the Mallard and Wood Duck are thought to breed here. A variety of other waterbirds using the marsh include Great Blue Heron, Green Heron, Virginia Rail and Sora. Signs of mammals such as deer, elk, black bear (*Ursus americanus*), and beaver are abundant. Anadromous fish, including Chinook salmon, threatened coho salmon, chum salmon, steelhead, and cutthroat trout use Neskowin Creek adjacent to refuge lands for spawning and rearing. Refuge biologists have documented substantial use of Neskowin Marsh by juvenile coho salmon and cutthroat trout. In the spring, thousands of egg masses appear in the marsh, indicating its importance as a breeding area for red-legged frogs (*Rana aurora*) and northwestern salamanders (*Ambystoma gracile*). The recently delisted Peregrine Falcon and the threatened Bald Eagle have nested in the vicinity and use the wetlands and surrounding upland habitat for hunting, foraging, and resting.

Focal Group/Species	Wintering	Breeding	Migration
Secretive Marsh Bird Group	Present	Present	Present
Colonial Nesting Bird Group	Absent	Absent	Absent
Migrating Shorebird Group	Present	Present	Present
Ground-based Waterbird Group	Present	Present	Present
American Bittern	Unknown	Unknown	Unknown
American White Pelican	Unknown	Unknown	Unknown
Barrow's Goldeneye	Present	Present	Present
Black Tern	Unknown	Unknown	Unknown
Black-crowned Night Heron	Unknown	Unknown	Unknown
Black-necked Stilt	Unknown	Unknown	Unknown
Bufflehead	Present	Present	Present
California Gull	Present	Present	Present
Caspian Tern	Absent	Absent	Absent
Clark's Grebe	Unknown	Unknown	Unknown
Common Loon	Present	Present	Present
Dusky Canada Goose	Present	Absent	Present
Eared Grebe	Unknown	Unknown	Unknown
Forster's Tern	Unknown	Unknown	Unknown
Franklin's Gull	Unknown	Unknown	Unknown
Great Blue Heron	Present	Present	Present
Greater Sandhill Crane	Unknown	Unknown	Unknown
Green Heron	Unknown	Unknown	Unknown
Least Bittern	Unknown	Unknown	Unknown
Lesser Sandhill Crane	Unknown	Unknown	Unknown
Long-billed Curlew	Unknown	Unknown	Unknown
Pied-billed Grebe	Unknown	Unknown	Unknown
Red-necked Grebe	Unknown	Unknown	Unknown
Snowy Egret	Unknown	Unknown	Unknown
Sora	Unknown	Unknown	Unknown
Upland Sandpiper	Unknown	Unknown	Unknown
Virginia Rail	Unknown	Unknown	Unknown
Western Grebe	Present	Present	Present
Western Snowy Plover	Present	Present	Present
White-faced Ibis	Unknown	Unknown	Unknown
Yellow Rail	Unknown	Unknown	Unknown

Location of Type 1 and 2 habitat within the site

Functional Group	Type 1 Habitat	Type 2 Habitat
Ground Based Aquatic Birds	Uplands, pastures, tidal influenced bays	Unknown
Secretive Marsh Birds	Wetlands, riparian areas, marsh	Unknown
Colonial Nesters	Unknown	Unknown
Migrating Shorebirds	Wetlands, uplands, pastures, bay shoreline	Unknown

Access to Type 1 and Type 2 habitats

The Nestucca Bay and Neskowin Units are bordered by Hwy 101 and other maintained county roads, however, vehicles are not allowed off road on refuge lands. Refuge lands are easily accessible since they are close to public roads. Permission and Special Use Permits must be obtained and filed at the refuge headquarters in Newport, Oregon before accessing lands. Lands can be accessed through hiking on foot. Cannery Hill has a paved foot path and is wheelchair accessible with a viewing deck and rest benches. Portions of Neskowin Marsh are only accessible via boat, canoe, or kayak.

Currently, there is no formal public access to the Nestucca Bay Refuge. Organized tour groups are infrequently taken on tours of refuge lands by refuge staff or volunteers. There is a foot trail located in the Neskowin Marsh Unit, leading east from Hawk Creek Drive, but its use is limited to residents of the community of Neskowin. The trail is a designated “tsunami escape route” for the community, and continued community use and refuge maintenance of this trail was a condition of the establishment of the Neskowin Marsh Unit.

Audibility/visibility of focal species

Noise from farming equipment, vehicles on Hwy 101 and local roads may be an issue and limit the detectability of birds. Vegetation is very dense at some locations of the refuge which may obstruct audibility and visibility of birds. The refuge experiences strong coastal winds, fog, and rain that would limit audibility and visibility of species during the winter months. Also, summer ocean winds occur regularly throughout the day and will limit audibility.

The refuge has constructed a paved trail and viewing deck at Cannery Hill, Nestucca Bay unit. The trail and viewing deck would be an excellent location to conduct upland grassland bird species survey. Trees and tall vegetation has been cleared resulting in good visibility.

Conservation issues

Conservation issues include introduction of exotic vegetation and wildlife.

Conservation measures taken, in progress, or proposed

- Tidal salt marsh restoration project at Little Nestucca River area (86 acres) completed in 2007.
- Comprehensive Conservation Plan (CCP) initiated 2010 and to be completed 2012.

Past and current surveys

- Mid-winter waterfowl aerial survey conducted annually during the second week of January.
- California Brown Pelican aerial survey conducted annually during the second week of September.
- Winter Goose Monitoring conducted October through April.

Contact refuge manager for survey specifics, reports, publications, or data at (541) 867-4550, Newport, Oregon.

Potential survey methods

Description: (describe survey methods that are appropriate for your site and recommend the best means in which to complete them considering the limitations and history above. Include information on suggested standardized or specialized protocols)

Land-based bird surveys to detect presence, absence, and abundance are appropriate on refuge lands. Suggested standardized or specialized protocols can be obtained by contacting refuge personnel.

Selection bias: (Discuss the potential for selection bias when designing a survey in the future, especially when sub-sample of the site will be studied. Point out how bias could be introduced and recommend ways to prevent this)

Discuss the potential for selection bias with refuge personnel.

Measurement error and bias:

Contact refuge personnel.

Potential pilot studies

Unknown

Literature cited

U.S. Fish and Wildlife Service (USFWS). 2004. Wildlife Fire Management Plan. Oregon Coast National Wildlife Refuge Complex, Bandon Marsh NWR, Nestucca Bay NWR, and Siletz Bay NWR. U.S. Fish and Wildlife Service Unpublished Document, Newport, Oregon.

Table 1. Vegetation of Nestucca Bay NWR (USFWS 2004).

Habitat	Fuel Model*	Acres	
		Nestucca Bay Unit	Neskowin Marsh Unit
Tidal Marshes / Mudflats	1	31	
Diked Lowland Pastures	1	357	
Freshwater Marsh	1		100
Bog	3		48
Upland Meadow	3	40	4
Forested Lagg	5		21
Upland Shrub	5		20
Woodlands (sparsely scattered)	8	140	
Upland Forest	8		30
Administrative Areas		28	

* NFFL Fuel Model

Figure 1. Nestucca Bay National Wildlife Refuge with Nestucca Bay and Neskowin Marsh Units (USFWS 2004).

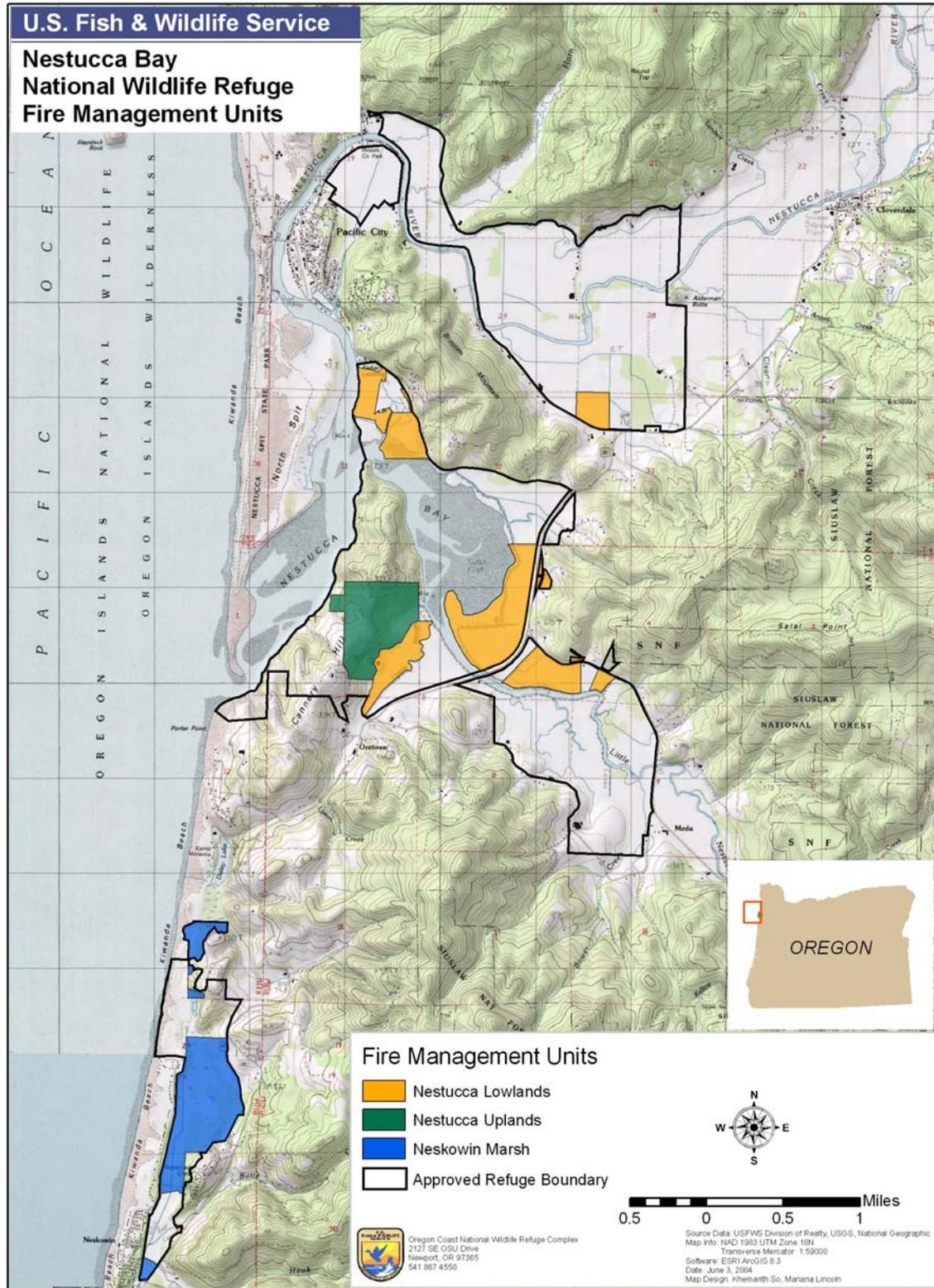


Figure 2. Neskowin Marsh Unit land cover (USFWS 2004).

