

Draft Skagit Wildlife Area Management Plan



Washington
Department of
**FISH &
WILDLIFE**

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Acknowledging the indigenous people, land, and culture of the Pacific Northwest

Since time immemorial, Indigenous People have inhabited the Pacific Northwest with rich traditions of many diverse cultures, languages, traditional knowledge expressed artistically and practically with intricate principles passed down throughout generations. As the first stewards of this land, Indigenous People from this part of the world are ancestrally engrained in the very fabric of this region that is known today as Washington state.

Washington Department of Fish and Wildlife acknowledges the American Indian Tribes as the original occupants of this land enjoyed today by all Washingtonians. Their historic reliance to hunt, fish, and gather traditional foods defines their inherent responsibilities to protect and steward the precious resources on the waters and landscape shared today by all Washington residents.

The very survival of the Pacific Northwest tribes is a testament of resiliency of what they have endured and continue to endure throughout generations on this very landscape. Through scarred valor, many historical encounters of massacre, renunciation of religious freedom, systemic racism, cultural assimilation of native children through institutional residential schools, and the fight for their inherent rights and liberties, they have prevailed. Throughout this tormented history brought by colonization, abrogated treaties, infringement of civil rights, and the salmon protests of the 1960s, the Northwest Tribes and WDFW have founded a commitment of respect, unity, and alliance taught by the realities of the past.

Today, tribal governments and WDFW work collaboratively to conserve and manage aquatic and terrestrial resources across the state and practice sound science to ensure successful resource management decisions. The tribes and WDFW work together to ensure the sustainability of fish, wildlife, ecosystems, and culture for future generations.

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Acronyms

ALEA	Aquatic Lands Enhancement Account
DAHP	Washington State Department of Archaeology & Historic Preservation
DD22	Skagit County Consolidated Dike, Drainage, and Irrigation District 22
DNR	Washington State Department of Natural Resources
DPS	Distinct Population Segment
EIA	Ecological Integrity Assessment
EIM	Ecological Integrity Monitoring
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
GHG	Greenhouse Gas
IBA	Important Birding Area
IPM	Integrated Pest Management
LWCF	Land and Water Conservation Fund
MHHW	Mean Higher High Water
NAP	Natural Area Preserve
NMFS	National Marine Fisheries Service
NAWCA	North American Wetland Conservation Act
NPS	National Park Service
NRCS	National Resources Conservation Service
PHS	Priority Habitats and Species
PSNERP	Puget Sound Nearshore Ecosystem Restoration Project
RCW	Revised Code of Washington
RCO	Washington State Recreation and Conservation Office
SCD	Skagit Conservation District
SEPA	State Environmental Policy Act
SFEG	Skagit Fisheries Enhancement Group
SGCN	Species of Greatest Conservation Need
SRSC	Skagit River System Cooperative
SR	State Route
SWAP	State Wildlife Action Plan
USFWS	United States Fish and Wildlife Service
WAC	Washington Administrative Code
WAAC	Wildlife Area Advisory Committee
WDFW	Washington Department of Fish and Wildlife
WHCWG	Washington Wildlife Habitat Connectivity Working Group
WWRP	Washington Wildlife and Recreation Program
WHSRN	Western Hemisphere Shorebird Reserve Network

Executive summary

The Skagit Wildlife Area is in Skagit, Island, San Juan, and Snohomish counties and is comprised of 21 units totaling 17,968 acres. The area contains large concentrations of waterfowl, shorebirds, and raptors from August through April. The Skagit River and estuary provides important habitat for salmon. Each winter this delta serves as a significant refuge for waterfowl, including core habitat for trumpeter swans and snow geese within the Pacific Flyway

Management of the Skagit Wildlife Area is focused on units located in the Skagit and Samish deltas east of Whidbey Island and Camano Island. These units include riparian forests, wetlands, Douglas fir forests, estuaries, floodplains, marine intertidal areas, islands, backwater sloughs, and agriculture lands. The primary management focus is on estuary and floodplain restoration, providing forage for wintering waterfowl, recovering federal and state listed species, and providing recreation.

The Skagit Wildlife Area offers a wide variety of recreation opportunities. Providing quality recreation opportunities is a primary management objective of this plan alongside conserving habitat for fish and wildlife. The diversity and quantity of bird species and associated habitats found at the Skagit Wildlife Area make it an excellent year-round destination for bird watching and photography. The Skagit Wildlife Area is part of the Western Hemisphere Shorebird Reserve Network sites of regional Importance. The best time frame for viewing the greatest variety of bird species is fall through spring. Hunting for waterfowl, pheasant, small game, and to some degree for black tail deer is popular on the Skagit Wildlife Area. The diversity and concentration of migrating waterfowl of the Pacific Flyway makes the wildlife area one of the more popular waterfowl hunting destinations in the state.

The Skagit Wildlife Area supports a broad range of game and diversity (non-game) species. The greater Skagit Delta is best known for wintering waterfowl. Common species include mallards, northern pintails, American wigeon, green-winged teal, trumpeter swans, lesser snow geese, and Canada geese. Resident game species occurring within the wildlife area include black-tailed deer, band-tailed pigeon, and ruffed grouse. Many species of shorebirds and both tundra and trumpeter swans routinely use the wildlife area. The Skagit estuary provides critical habitat for a variety of native fish species including federally listed Skagit Chinook salmon, bull trout, and steelhead trout.

In the last 18 years, the Washington Department of Fish and Wildlife (WDFW) has engaged in significant estuary restoration projects on the Skagit Wildlife Area in Snohomish and Skagit counties. To date, the Department has restored 737 acres (Leque Island, Wiley Slough, Fir Island Farm, Island/Deepwater Slough) of WDFW-managed to support estuary habitat with a focus on salmon recovery.

Part 1. Wildlife Area management planning overview

Introduction and agency mission¹

The Washington Department of Fish and Wildlife (WDFW) provides active management for more than a million acres of public land, most of which fall within 33 wildlife areas across the state. In addition to protecting lands and water for habitat and people, WDFW manages land to preserve Washington's natural and cultural heritage, provide access for hunting, fishing, and wildlife-related recreation, and foster outdoor experiences and exploration throughout the state. This is done to support the species and habitats of Washington and ensure they prosper for the sake of the species and for our collective enjoyment well into the future. Reference the [Department's website](#) for more information about WDFW-managed lands.

WDFW-managed lands contain nearly all species and habitats present in Washington. With the loss of natural habitat posing the single greatest threat to native fish and wildlife, these wildlife areas play a critical conservation role. Wildlife area management plans address all aspects of resource management, highlight areas for public access, education, and stewardship, and align with statewide conservation goals.

An interdisciplinary team of WDFW staff members, including fish, habitat, and wildlife biologists, as well as enforcement and management, developed the Skagit Wildlife Area Management Plan with significant public involvement. This included input from and the Department's Skagit Wildlife Area Advisory Committee, public agencies, and interested residents. The Department also engaged tribal governments in the development of the plan.

Purpose and organization of the plan²

The Skagit Wildlife Area management plan will guide conservation and recreation management activities occurring on the wildlife area for the next 10 years.

¹ Under state law, the Washington Department of Fish and Wildlife (WDFW) is charged with "preserving, protecting, and perpetuating" the state's fish and wildlife species, while also providing sustainable recreational opportunities that are compatible with fish and wildlife stewardship.

² The organization of wildlife area plans is guided by the Wildlife Area Management Planning Framework (Framework), which summarizes the agency's mission, laws, policies, and approaches to management of fish and wildlife, as well as public use and recreation. To read the framework, visit: (wdfw.wa.gov/publications/01810).

The plan is organized into four parts. Part 1 provides an overview of the wildlife area and associated units, including size, location, purpose, and other features. It also includes success stories, which showcase conservation, restoration, and volunteer partnerships.

Part 2 covers the wildlife area in more depth with information to guide management activities and document the history, land ownership, stewardship, and recreation activities. Part II concludes with management goals and objectives for the planning area, summarizing priority actions and timelines for implementation.

Part 3 focuses on species and habitat management. It also describes the physical setting, such as soils, geology, hydrology, and climate, as well as climate change impacts. This section also describes the importance of the wildlife area as habitat for native game and non-game species.

Part 4 is a collection of appendices that include resources to support different areas of the plan, including the references section, species, and habitat information, weed management, wildfire response, research, and other studies.

Welcome to the wildlife area

Vision

The Skagit Wildlife Area provides important estuary, wetland, and other upland habitats that support fish and wildlife species while providing access for hunting, fishing, and other recreational opportunities compatible with agency conservation goals and local community values.

Goals

- 1 Maintain or improve the ecological integrity of priority sites.
- 2 Achieve species diversity at levels consistent with healthy ecosystems.
- 3 Maintain, enhance, and monitor waterfowl habitat.
- 4 Restore and improve habitat processes that limit Chinook and other salmonids' recovery.
- 5 Provide recreation opportunities in the wildlife area
- 6 Offer multiple and varied opportunities to inform and educate stakeholders while encouraging participation and engagement.
- 7 Maintain productive and positive working relationships with neighbors, partners, and permittees.
- 8 Properly train, equip, and license staff to meet the wildlife area's operational and management needs.
- 9 Maintain safe, highly functional, and cost-effective facilities and equipment.
- 10 Maintain consistent and positive communications and working relationships with local tribes.
- 11 Establish decontamination procedures and area to prevent new introductions and spread of aquatic invasive species.

Description of the landscape

The Skagit River runs for 125 miles from the Cascades of British Columbia into Washington state before draining into Puget Sound 60 miles north of Seattle. The upper half of the watershed is primarily within Mount Baker-Snoqualmie National Forest and North Cascades National Park. The mainstem flows for miles through forest and agriculture lands, and near the towns of Concrete, Sedro-Woolley, Burlington, and Mount Vernon. Interstate-5 transects the lower watershed where the floodplain landscape transitions into the Skagit Delta. Just below Mount Vernon and the interstate, the mainstem splits into the North and South fork. Where the forks of the river split, Fir

Island begins. The North Fork of the Skagit drains into Skagit Bay south of La Conner, and the South Fork empties into Skagit Bay just northeast of Camano Island.

Today, the Skagit Delta is a highly productive agricultural area. A 2001 study estimated the region generates \$262 million in crops and a total of \$500 million in economic activity, including recreation. The rich soils of the river's delta support the region's most productive farmlands appreciated not only for their crops of berries, potatoes, and vegetables, and dairy but especially renowned for their fields of daffodils and tulips (Puget Sound Partnership 2007).

Skagit County's estimated 2023 population is 133,309 individuals with a growth of .96% in the past year according to United States census data. By 2050, the population is expected to grow to 166,281 individuals (Growth Management Act projections 2022).

Introduction to the wildlife area

The Skagit Wildlife Area is in Skagit, Island, San Juan, and Snohomish counties and is comprised of 21 units totaling 17,968 acres. The Skagit Wildlife Area's 21 units are predominantly located on the Skagit River Delta and Skagit Bay Estuary between LaConner and Conway, northwestern Snohomish County, to the west on isolated parcels in the San Juan Islands, and in eastern Skagit County near the cities of Marblemount and Concrete. Management is focused on units located in the Skagit and Samish deltas east of Whidbey Island and Camano Island. Units include riparian forests, wetlands, Douglas fir forests, estuaries, floodplains, marine intertidal areas, islands, backwater sloughs, and agriculture lands. The area contains large concentrations of waterfowl, shorebirds, and raptors from August through April. The Skagit River and estuary provides important habitat for salmon. Each winter this delta serves as a significant refuge for waterfowl, including core habitat for trumpeter swans and snow geese within the Pacific Flyway. The primary management focus is on estuary and floodplain restoration, providing forage for wintering waterfowl, recovering federal and state listed species, and providing recreation. Supported recreation activities include fishing, hunting, wildlife viewing, photography, boating, walking, and hiking.

Success stories at the Skagit Wildlife Area

Fir Island Farm Reserve estuary restoration project



Fir Island Farm 3 years post restoration.

The Fir Island Farm Reserve Unit is located along Skagit Bay between the north and south forks of the Skagit River at the edge of an expansive agricultural landscape. It was historically tidal marsh. In the late 1800s, dikes and drainage infrastructure were constructed to protect the land from tidal flooding and convert the estuary for agricultural uses.

WDFW bought the Fir Island Farm property in 1995 with funding from the North American Wetlands Conservation Act Grants and Washington State Recreation and Conservation Office (RCO). The purchase of the property focused on providing upland waterfowl habitat and in particular forage areas (226 acres) outside of the Skagit Bay Estuary. Fir Island Farm was one of several properties purchased in the mid-1990s that were part of the North Puget Sound First Step Initiative.

In 2016, the Department restored 131 acres of tidal marsh on Fir Island Farm Unit by setting back dikes. The project benefitted Chinook salmon, while providing public access and flood protection for the local community. The Department continues to manage the remaining 95 acres of the unit, which provides waterfowl habitat. To protect the local community from flooding and drainage impacts, the project design included 5,800 feet of marine dike, tide gates, a 7-acre drainage storage

pond, and a pump station. The completed project provides neighboring farms, homes, and roads with reliable drainage and protection from tides, storm surge, and the effects of climate change.

WDFW collaborated with Skagit County Consolidated Dike, Drainage, and Irrigation Improvement District #22 (DD22), through the design, construction, and post-construction monitoring period. After 10 years, ownership and operation of the project's infrastructure was successfully transferred from WDFW to DD22.

A monitoring and adaptive management plan was developed to monitor ecological, drainage, and flood protection measures. Monitoring data shows the site is supporting tens of thousands of juvenile Chinook and other salmon, and invasive cattail plants are under control.

The restored intertidal area and agricultural area together make this unit a popular place for viewing various species of waterfowl, shorebirds, and raptors.

Reference [WDFW's blog for more information about the project](#).

Leque Island restoration project

Once entirely tidal marsh, much of Leque Island (just west of Stanwood between Port Susan and Skagit bays) was converted to farmland and homesteads by early European settlers. In 1957, WDFW began acquiring properties on the island, and now managed the entire island.

In 2013, WDFW partnered with Ducks Unlimited, the Stillaguamish Tribe, The Nature Conservancy, and the Skagit River System Cooperative in restoring tidal marsh habitat in the Stillaguamish River estuary. Completed in 2019, the project removed 2.4 miles of dike, and excavated over 5 miles of new tidal channels, resulting in 250 acres of restored tidal marsh habitat. In addition, the Department built a wave protection berm along the northeast side of the island, which features a walking trail and parking. WDFW also installed a hand boat launch on another location on site.

Skagit River System Cooperative found 15 different fish species in the restoration area including Chinook, chum, and coho salmon as well as bull trout. Higher species diversity of birds using the site has also been documented (Porro, et al. 2022). Vegetation monitoring shows a wide variety of native marsh plants taking root in the restoration area. Reference the [WDFW website for more information about the project](#).



Leque Island restoration pre-project. Photo by Loren Brokaw.



Leque Island restoration post-project.

Samish Unit waterfowl habitat management



Mowed pond with shallow water at Samish Unit.

Thirty-five waterfowl species regularly occur across the Puget Sound. All are wetland-dependent using estuary and nearshore habitats for winter and migratory periods. Many waterbirds use both marine and farmland habitats on a daily and seasonal basis seeking food, freshwater for drinking, and low disturbance resting areas. While geese and swans seek more terrestrial foods, for dabbling ducks (shallow water duck that feeds primarily on the surface of the water) in the Fraser-Skagit region, farmland near intertidal areas is an important component of coastal habitat complexes, as natural wetlands have been highly impacted or altered (Lovvorn and Baldwin 1996, Brophy et al. 2019). The Department acquired the Samish Unit primarily for winter waterfowl forage and estuary habitat with funding provided by the U.S. Fish and Wildlife Service.

Since 2012, the Department has worked with contractors, lessees, and volunteers to enhance and increase 235 acres of waterfowl forage areas at the Samish Unit. Once planted solely in barley and corn, plantings for waterfowl now include strategically planned areas of corn, wild and proso millet, fava beans, and buckwheat. The Department manages some areas for “moist-soil” plants, such as yellow nutsedge, smartweed, marsh bristlegrass, Bidens, goosefoot, and crab grass. The plant diversity provides waterfowl with forage resources that are available for a greater duration of the winter, and for different conditions such as water levels and weather.

Control of reed canary grass and other non-native vegetation has also enhanced forage production. The Department mows the Samish Unit each year to increase shallow water habitat, resulting in improved invertebrate production and seed availability. Enhanced shallow water impoundments create ideal foraging habitat for waterfowl. Shallow water is also created by water drainage control in select areas by manipulating culverts with stop logs and water control structures and creating

small berms in the fields. Waterfowl, particularly dabbling duck species, prefer shallow water to feed on millet, smartweed, yellow nutsedge, and invertebrates.

Western Hemisphere Shorebird Network Reserve

The Greater Skagit and Stillaguamish Delta (Skagit and Port Susan bays) supports tens of thousands of migrating and wintering shorebirds annually and is one of the most important sites for shorebirds in Washington. In 2012, the Western Hemisphere Shorebird Reserve Network recognized the Greater Skagit and Stillaguamish Delta as an area of regional importance. This designation is part of a larger international effort to identify and conserve western hemisphere sites vital to supporting shorebirds along their migratory routes. The Audubon Society also recognizes Skagit Bay as an Important Birding Area (IBA) (Map 1), providing essential habitat for bird populations. The Audubon IBA designation recognizes the area's importance to migratory waterfowl and raptors in addition to its significance for migratory shorebirds.

Shorebirds are long-distant migrants, often traveling thousands of miles between their wintering and breeding areas. Shorebirds rely on “stopover” locations along their migratory routes with abundant food resources. Shorebirds time their migration to coincide with seasonally available food resources to complete their migratory route. Shorebird populations have declined in North America and elsewhere globally in recent decades, in part due to the degradation and loss of stopover sites and the food resources that they provide (Rosenberg et al. 2019, Senner et al. 2016, Smith et al. 2023, Thomas et al. 2006). The loss diminishes the ability of shorebirds to consume the food resources needed to complete their long-distance migrations. To maintain and recover shorebird populations, it is essential that remaining stopover sites are conserved and managed to provide the habitats and food resources required by shorebird migrants.

Aerial surveys during the mid-1990s identified the delta complex as one of four locations in Washington supporting more than 20,000 migrating and wintering shorebirds. Later surveys between 2007 and 2011 estimated maximum shorebird abundances between 30,386 and 57,171. However, during migration periods a much larger number of individuals make use of these sites before heading to breeding areas in Alaska. Dunlin and western sandpipers are the most abundant shorebirds in the greater Skagit and Stillaguamish Delta. They mostly feed by probing the fine sediments of the delta's tidal flats and estuarine marshes in search of invertebrates, however, they also feed and roost in nearby agricultural fields and rely on them during extreme high tide and storm events to escape floodwaters. In addition to dunlin and western sandpipers, least sandpipers, lesser and greater yellowlegs, dowitchers, black-bellied plovers, semipalmated plovers, killdeer, Wilson's snipe, and numerous other species rely on the delta's tidal flats and marshes to support their migration. The area's rocky shorelines, e.g., Goat Island, supports black oystercatchers and black turnstones.



Greater yellow legs. Photo by Alan L. Bauer.

Shorebird habitat conservation and management in the delta is a joint effort by multiple landowners including Island County Parks, The Nature Conservancy, Stillaguamish Tribe of Indians, Whidbey-Camano Land Trust, and private individuals and businesses. Estuary restoration projects also benefit shorebirds by increasing the availability of marsh habitats and by controlling invasive species such as spartina.

Map 1. Greater Skagit and Stillaguamish delta tidelands designated by the Western Hemisphere Shorebird Reserve Network (WHSRN) as a site of Regional Importance to shorebird



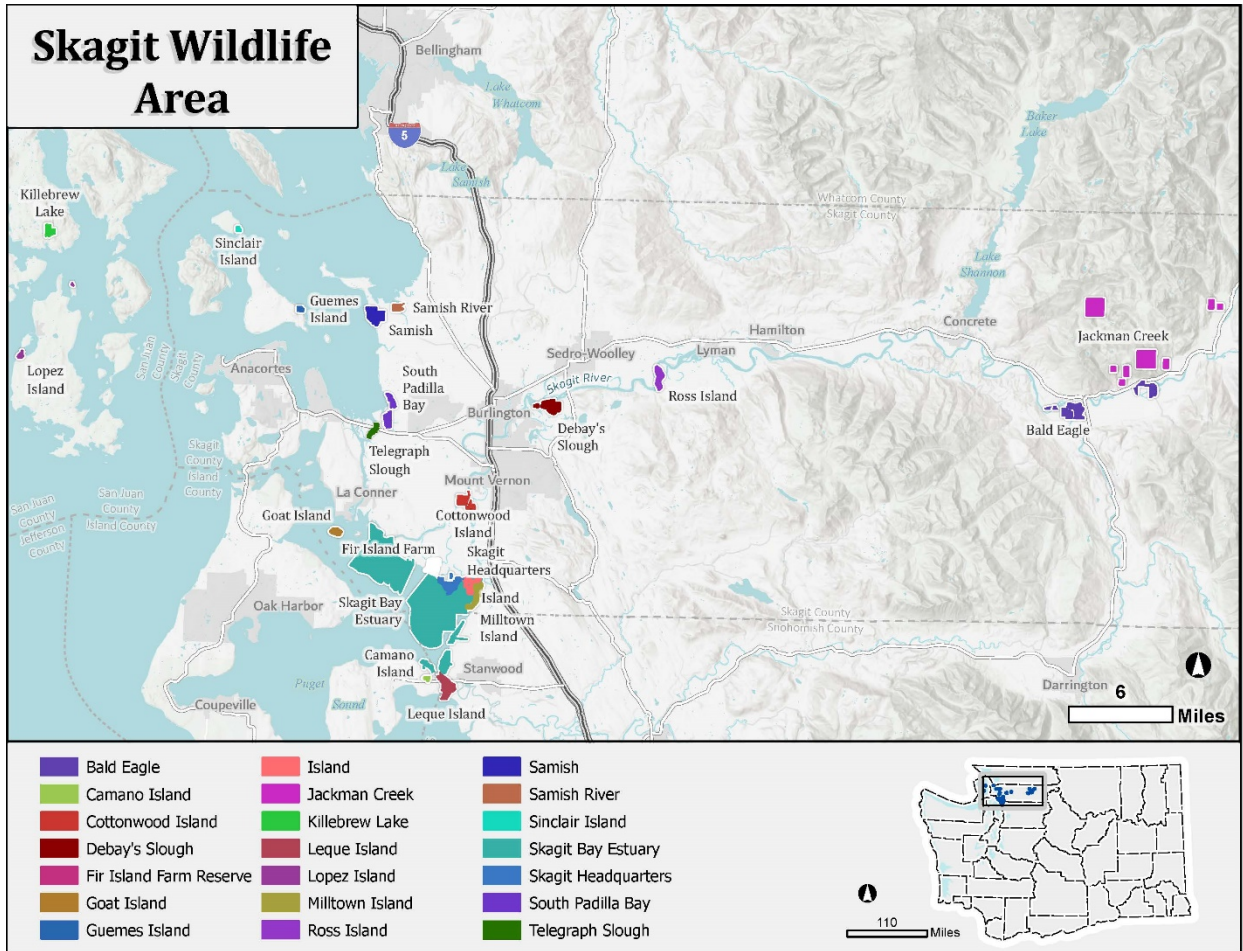
Wildlife Area Description

The Skagit Wildlife Area is 17,968 acres in Skagit, San Juan, and Snohomish counties. It includes 21 units ranging from 30 to 11,999 acres and varying in elevation from below mean tide level (intertidal) to 1,225 feet. This section includes an overview of the size and location of each unit as well as the types of resources, recreation/public use, land ownership, and land management activities on each unit. Unit descriptions are organized in three different geographic areas – island units located in Skagit, Island, and San Juan counties; Skagit County units located east of Interstate 5; and Skagit and Snohomish counties units located west of Interstate 5.

Skagit Wildlife Area Information

Acres	17,968
Acquisition Dates	1929 - 2014
Acquisition Funding	U.S. Fish and Wildlife Service – <i>Pittman Robertson, Dingell-Johnson National Coastal Wetlands Conservation, North American Wetlands Conservation Act, National Fish and Wildlife Foundation.</i> National Park Service – <i>Land and Water Conservation Fund.</i> Recreation and Conservation Office – <i>Washington Wildlife and Recreation Program; Aquatic Lands Enhancement Account, Boating Facilities Program, Bonds.</i> Washington Department of Fish and Wildlife – <i>State Duck Stamp, Wildlife Fund, donation, and transfer</i>
Elevation Range	0 – 1,225 ft
Recreational Opportunities	Hunting, fishing, wildlife viewing, hiking, walking, photography, bird dog training, boating, and swimming.

Map 2. Skagit Wildlife Area Vicinity



Island units located in Skagit, Island, and San Juan counties



Killebrew Lake Unit.

Killebrew Lake Unit Natural Area

Acres	151
Acquisition Dates	1968
Acquisition Funding	USFWS Dingell Johnson, State Wildlife Funds
Purpose	Natural Area Preserve, fishing
Elevation Range	294 – 745 ft
Recreational Opportunities	Black-tail deer hunting, waterfowl hunting, fishing, wildlife viewing, hiking, canoeing, and kayaking. Non-toxic shot and firearm restrictions apply.
County	San Juan
Access	https://wdfw.wa.gov/places-to-go/wildlife-areas/killebrew-lake-wildlife-area-unit

Killebrew Lake Unit Natural Area is located on Orcas Island approximately 2.5 miles east from the state ferry landing in Orcas. WDFW acquired the unit in 1968 to provide hunting and fishing access, which at that time was limited in the San Juan Islands.

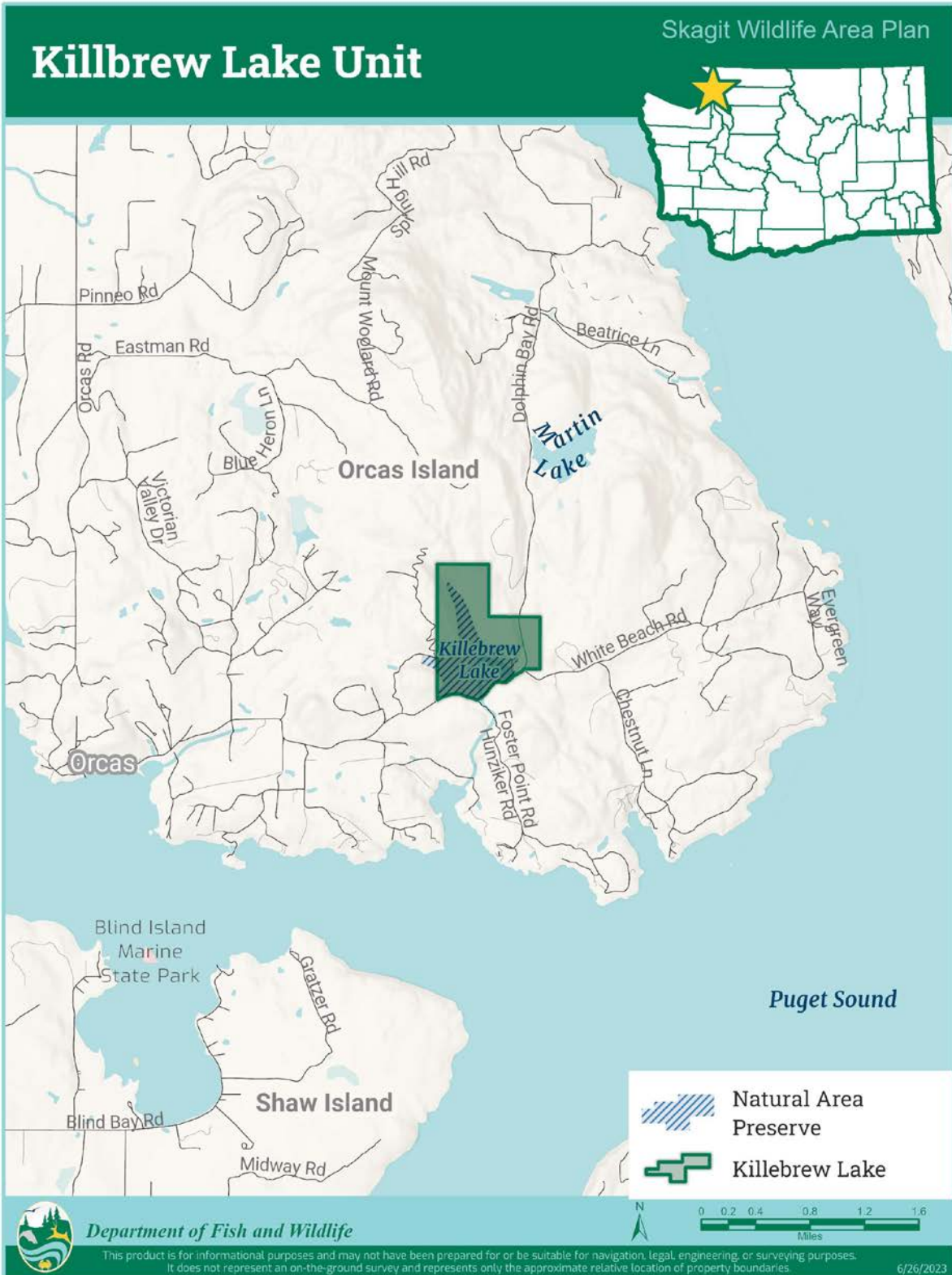
The unit is predominately comprised of second growth Douglas fir with a 20-acre lake and associated wetlands. In 1984, the Washington State Department of Natural Resources inventoried the native bog habitat at Killebrew Lake and developed a Natural Area Preserve proposal to protect 70 acres of the property as a Natural Area Preserve. The Washington Natural Heritage Program designated the natural area preserve in 1987 by and includes the lake and associated wetlands. The sphagnum bog had two state listed plants, twayblade (*Liparis loeselii*) and Adder's tongue (*Ophioglossum vulgatum*).

Killebrew Lake Unit Natural Area provides habitat for dabbling and diving ducks, songbirds, raptors, wading birds, Columbia black-tailed deer, Shaw Island Townsend's vole, and five state listed rare plants. There is a small parking area along the lake and entry road, which allows water access for launching kayaks or canoes. Remnant timber harvest roads and trails provide walking access around Killebrew Lake.



Round-leaved sundew.

Map 3. Killebrew Lake Unit Natural Area





Fisherman's Bay - Lopez Island. Photo by WDFW.

Lopez Island Unit

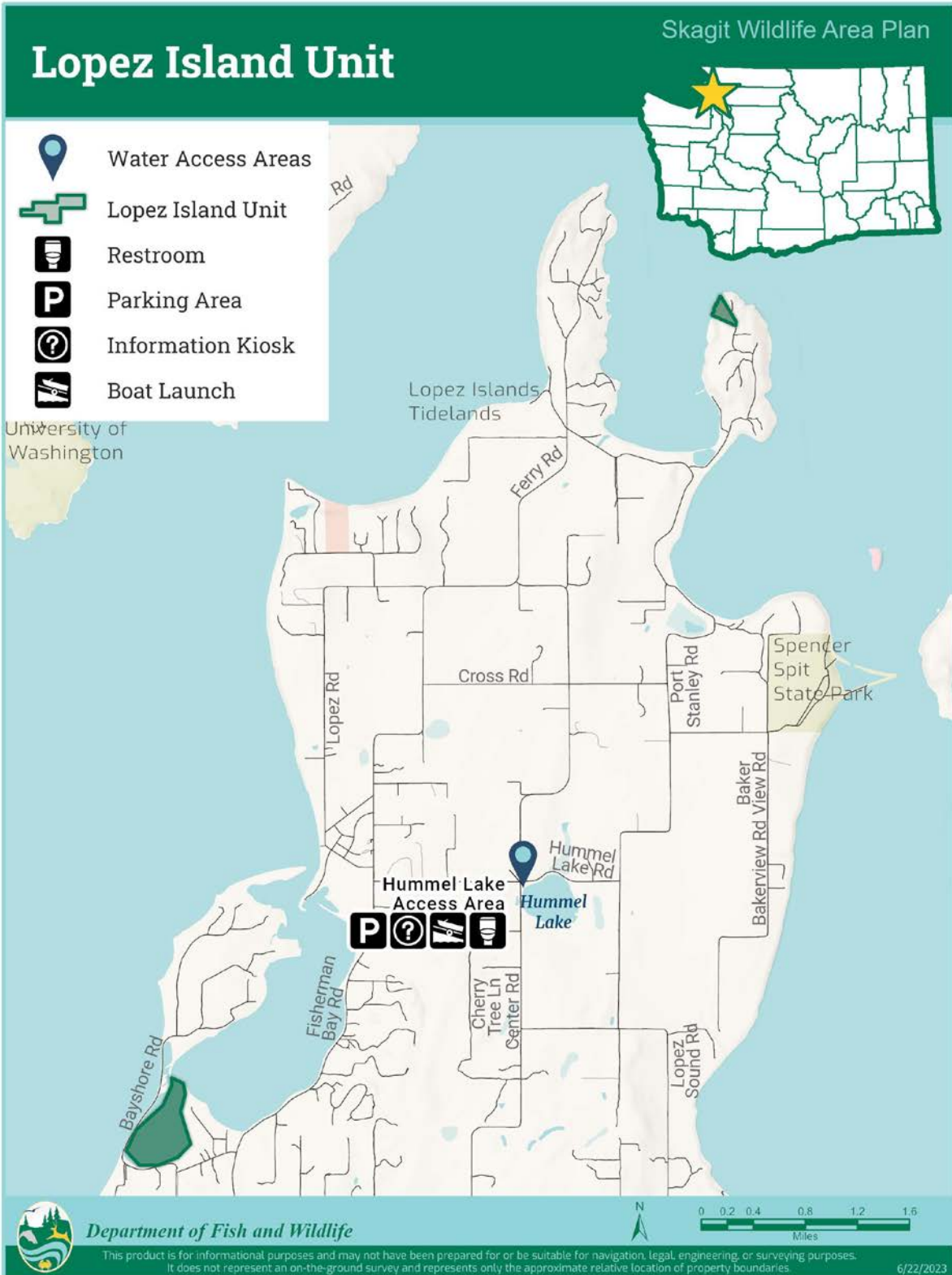
Acres	55
Acquisition Dates	1961, 1994
Acquisition Funding	RCO WWRP, State Transfer
Purpose	Protection of endangered species, oyster propagation
Elevation Range	0 – 193 ft
Recreational Opportunities	--
County	San Juan
Access	Closed for public use because of the presence of sensitive species.

The Lopez Island Unit includes two WDFW-managed parcels on Lopez Island. The Department bought a 5-acre parcel on Humphrey Head in 1994 to protect critical habitat for nesting peregrine falcons and access remains restricted to protect listed species. Access is also limited to a 50-acre tidelands parcel near Fisherman Bay that in the Department bought in 1961 to support oyster habitat.

The Lopez Island Unit provides habitat for dabbling and diving ducks, songbirds, raptors, shorebirds, and wading birds, Columbia black-tailed deer, harbor seal, Stellar sea lion, Pacific

herring, sand lance, and surf smelt. The federally listed island marble butterfly once occupied Lopez Island and is now extirpated.

Map 4. Lopez Island Unit



Camano Island Unit

Acres	32
Acquisition Dates	2003
Acquisition Funding	State Wildlife Funds
Purpose	Protection of endangered species, waterfowl
Elevation Range	140 – 159 ft
Recreational Opportunities	--
County	Island
Access	Closed for public use to support protection of sensitive species.

The Camano Island Unit is located approximately 2 miles west of Stanwood. The Department bought the unit in partnership with the Whidbey Camano Land Trust, Friends of Camano Island Parks, and Island County to protect sensitive species and wildlife habitat under immediate threat of development.

Camano Island Unit supports opportunities to observe songbirds, raptors, Columbia black-tailed deer, and great blue heron.

Map 5. Camano Island Unit





Goat Island Unit.

Goat Island Unit

Acres	158
Acquisition Dates	1949, 2004
Acquisition Funding	Federal transfer
Purpose	Conservation of wildlife, waterfowl
Elevation Range	5 – 150 ft
Recreational Opportunities	Waterfowl hunting, fishing, wildlife viewing. No camping allowed.
County	Skagit
Access	Beach access only

The Goat Island Unit is within the Skagit Bay estuary at the mouth of the North Fork of Skagit River approximately 2.5 miles south southwest of La Conner the Swinomish Channel. The island is connected to the mainland by the McGlinn Island jetty.

The Federal government bought Goat Island in 1908 to host Fort Whitman³, which guarded the entrances to Deception and Saratoga passes and was part of the Harbor Defense of Puget Sound during World War I and II. The Federal government transferred the property to WDFW via transactions in 1949 and 2004. Although the defense post was dismantled, four concrete gun emplacement structures remain intact.

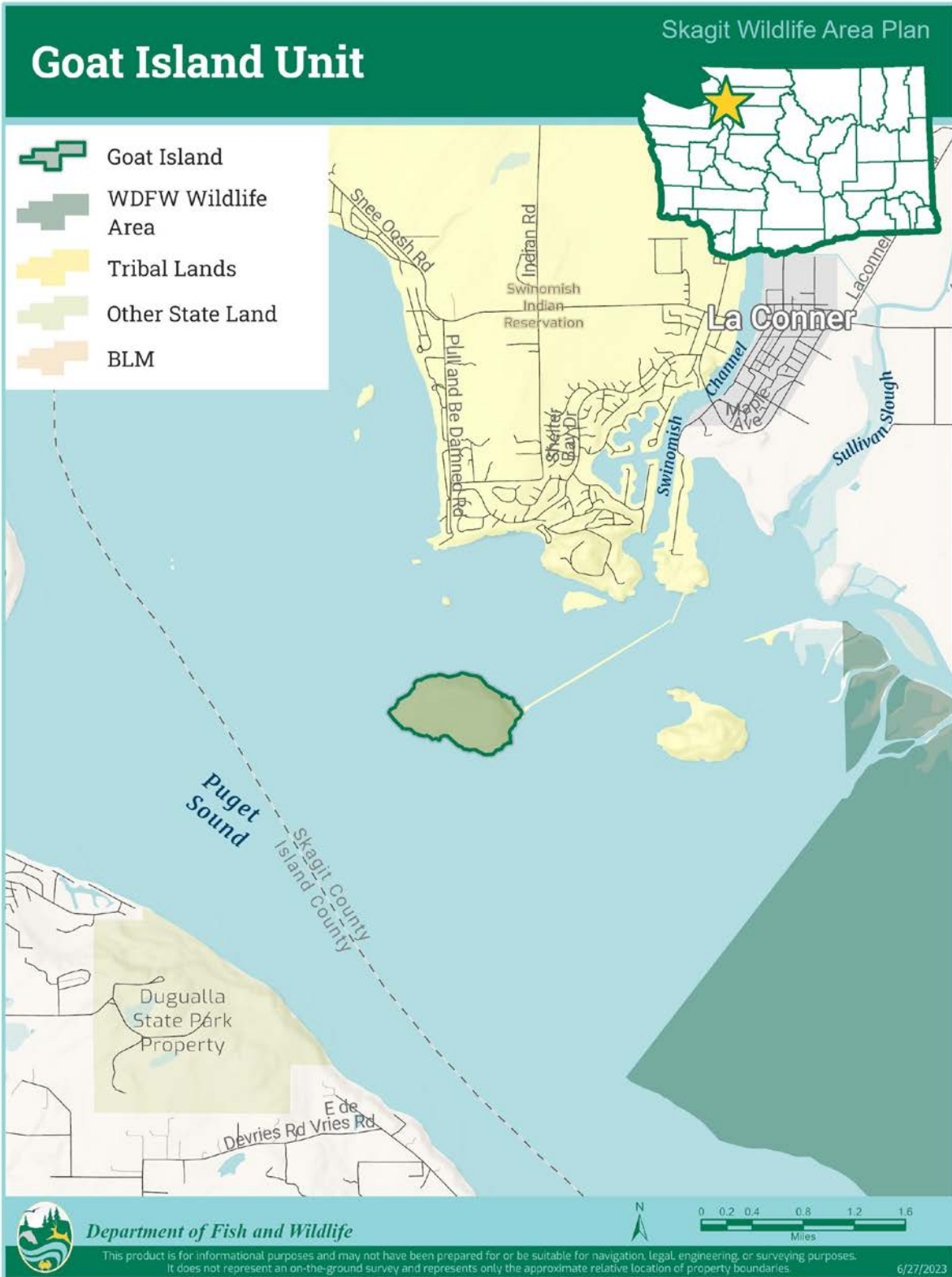
Habitat on the island includes second-growth forest and tide flats. The forest provides excellent roosting, nesting, and hunting areas for eagles, hawks, and falcons. While most of the island is elevated with steep rocky sides, surf smelt may spawn on the shoreline. Goat Island provides habitat for songbirds, dabbling and diving ducks, shorebirds and wading birds, harbor seal, raptors, great blue heron, and Columbia black-tailed deer.



Goat Island looking west (Skagit Bay).

³ Fort Whitman's history is described by Harland Eastwood in his book called Fort Whitman on Puget Sound 1911-1945 (fortwiki.com/Fort_Whitman)

Map 6. Goat Island Unit



Guemes Island Unit

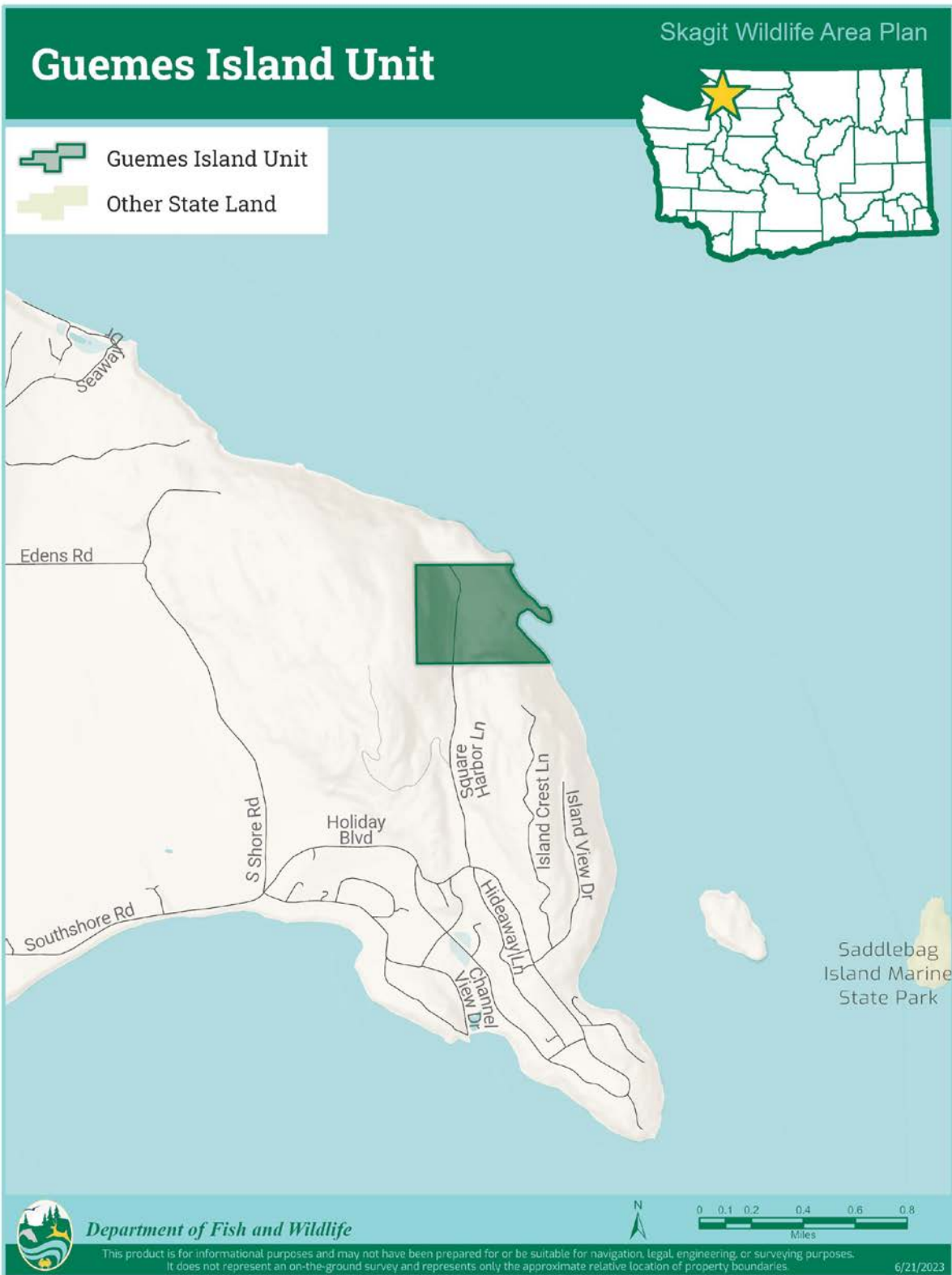
Acres	39
Acquisition Dates	1991
Acquisition Funding	RCO WWRP
Purpose	Protection of endangered species habitat
Elevation Range	0 – 546 ft
Recreational Opportunities	--
County	Skagit
Access	Closed for public use to support sensitive species.

WDFW bought the Guemes Island Unit in 1991 to protect critical habitat for cliff nesting species such as peregrine falcon. Habitat types include forests and balds, which are areas with low-growing vegetation, shallow soils, and dry topographic features on sunny slopes.

Guemes Island Unit supports opportunities to observe dabbling and diving ducks, songbirds, raptors, Shaw Island Townsend's vole, harbor seal, sharp-tailed snake, pacific herring, Columbia black-tailed deer.

Guemes Island Unit is closed to recreation access to help protect sensitive species.

Map 7. Guemes Island Unit



Sinclair Island Unit

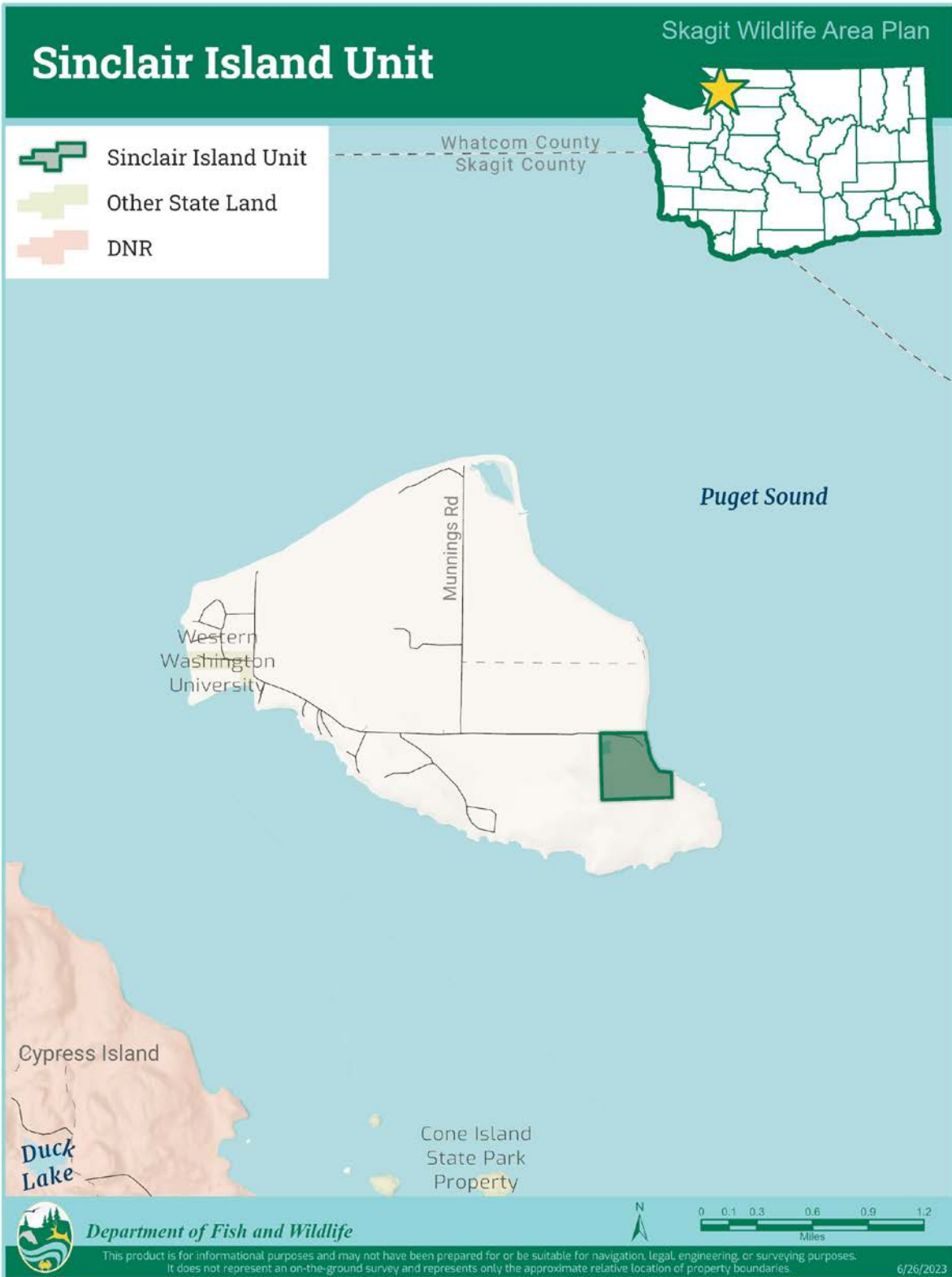
Acres	35
Acquisition Dates	1974, 2000
Acquisition Funding	Donation
Purpose	Protection of wildlife habitat, wildlife viewing and interpretation
Elevation Range	0 – 308 ft
Recreational Opportunities	--
County	Skagit
Access	Closed for public use due to limited access to the unit.

Sinclair Island, previously known as Cottonwood Island, is located one mile north of Guemes Island at the convergence of the Rosario and Georgia straits. In 1974, a local resident donated 35 acres at the southeast end of the island to WDFW to be preserved as a wildlife habitat.

The Sinclair Island Unit contains second-growth forest, a remnant orchard, fallow pastures, a wetland, and a seasonal stream. It provides habitat for and opportunities to observe songbirds, raptors, Columbia black-tailed deer, Shaw Island Townsend’s vole, and sharp tailed snake.

Adjacent land is largely privately owned and there is limited recreation access to the unit. In 2012, a storm swept away most of the public dock, which the County managed. The island does have a county road, but the lack of a public county dock is largely limiting access.

Map 8. Sinclair Island Unit



Skagit County units located east of I-5



Bald Eagle Unit on the Skagit River. Photo by Alan L. Bauer.

Bald Eagle Unit

Acres	653
Acquisition Dates	1975 -1988
Acquisition Funding	USFWS – Pittman Robertson; Park Service – Land and Water Conservation Fund; RCO Bonds; State Wildlife Funds
Purpose	Protection of overwintering habitat for bald eagles.
Elevation Range	225 – 273 ft
Recreational Opportunities	Access by boat for fishing, hunting, wildlife viewing Non-toxic shot restrictions apply
County	Skagit
Access	Limited public access.

Located .4 miles east of Rockport, the Bald Eagle Unit consists of six mature riparian forested habitat parcels along the south banks of the Skagit and Sauk rivers. Purchased from The Nature Conservancy, this unit supports a large wintering population of bald eagles that feed on chum salmon that spawn in the Skagit and Sauk rivers. Historically, this area boasted one of the five

largest wintering aggregations of bald eagles in the lower 48 states, however more recent declines in returning salmon has reduced the number of eagles.

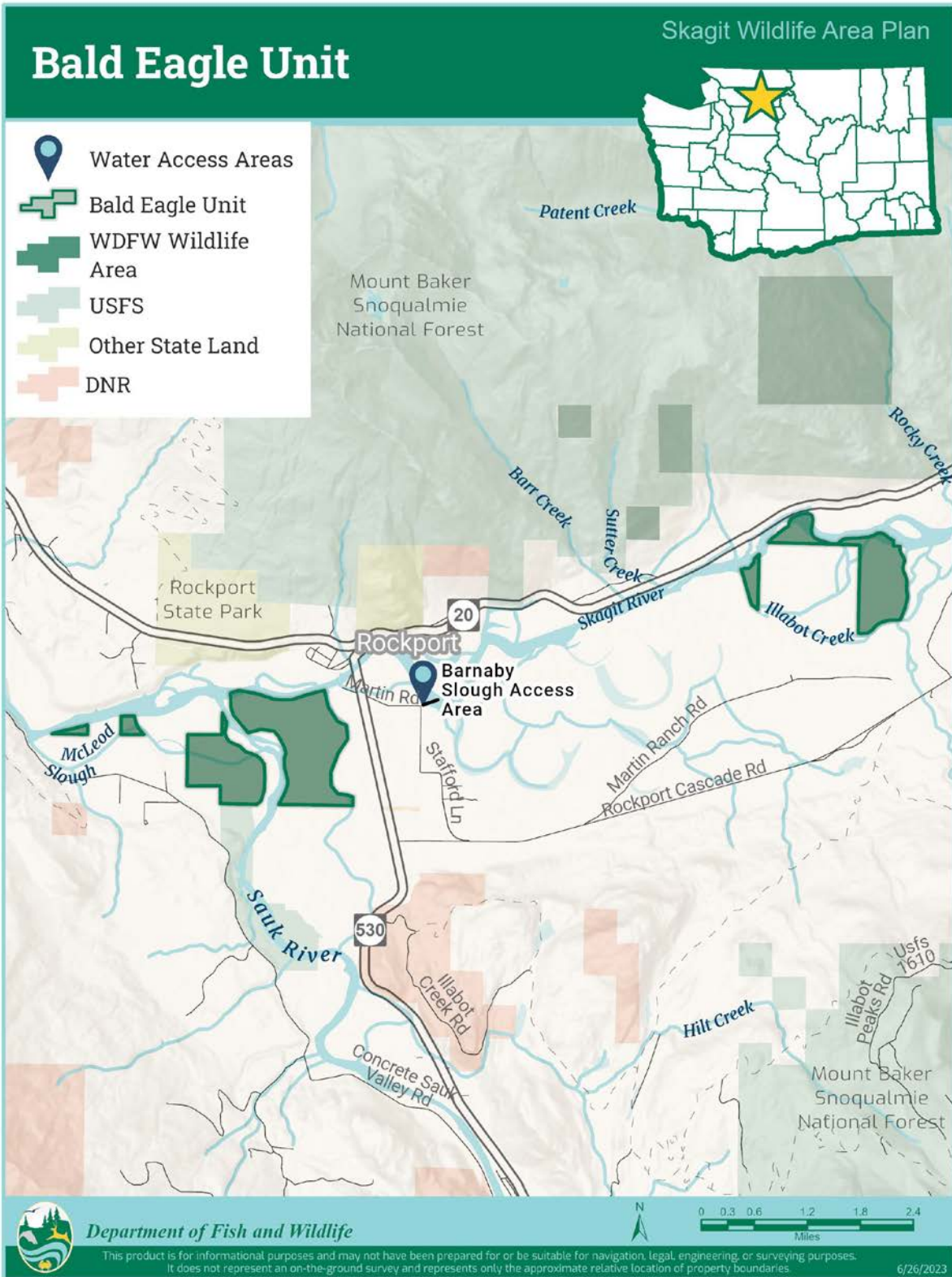
This area supports dabbling and diving ducks, songbirds, harlequin ducks, raptors, elk, Columbia black-tailed deer, black bear, cougar, bull trout, Chinook salmon, chum salmon, coho salmon, pink salmon, steelhead, sockeye salmon, and resident cutthroat trout, and western toad.

Limited access to the unit is possible by boat.



Bald eagles on log jam on Skagit River. Photo by Alan L. Bauer.

Map 9. Bald Eagle Unit



Jackman Creek Unit

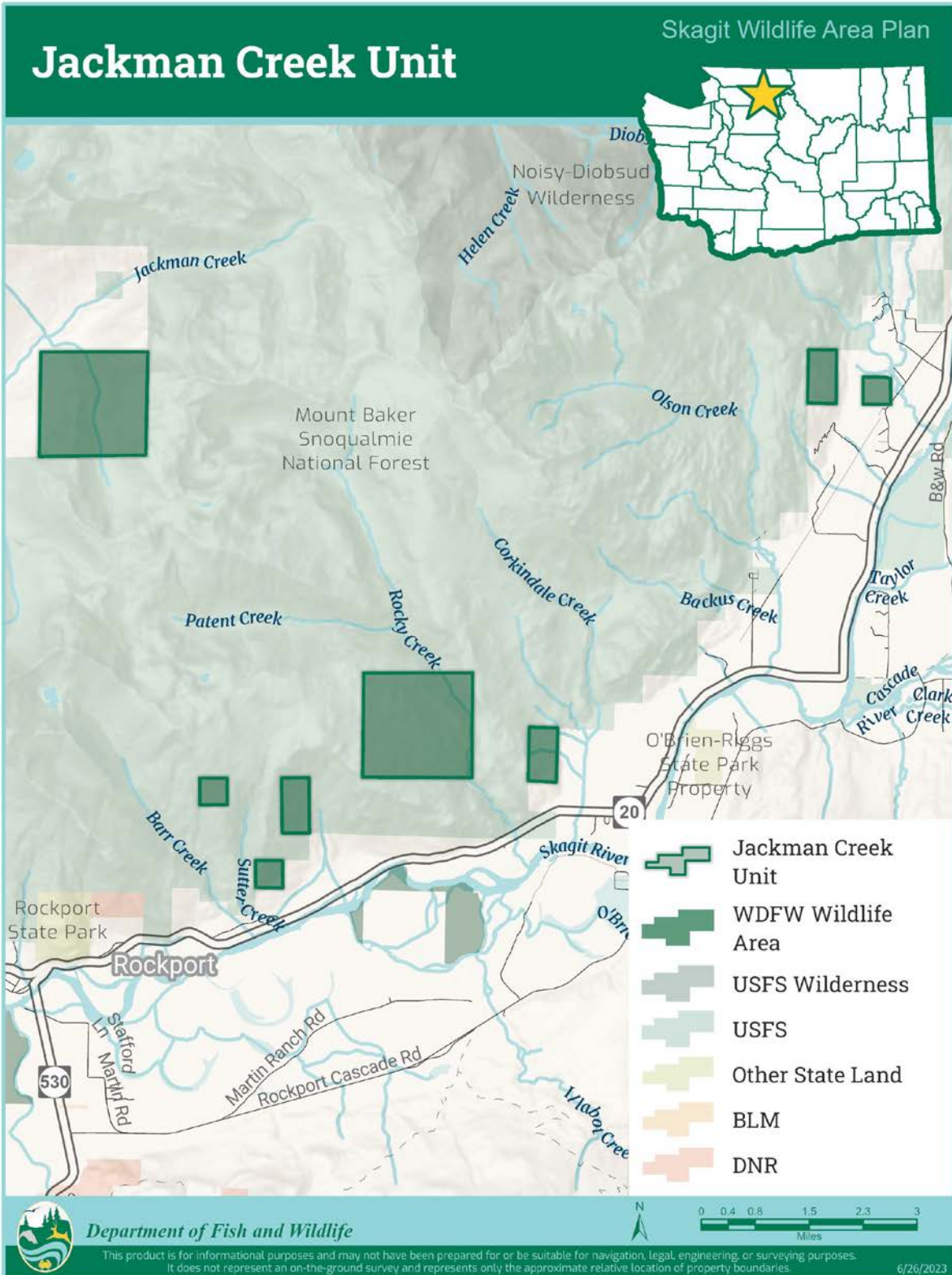
Acres	1,643
Acquisition Dates	2005
Acquisition Funding	USFWS – Section 6 (202 acres match); State Transfer
Purpose	Protection of Endangered Species Act species habitat
Elevation Range	225 – 1,225 ft
Recreational Opportunities	--
County	Skagit
Access	Closed for public access due to limited access.

Approximately 5 miles north/northeast of Rockport, the Jackman Creek Unit includes eight parcels along the Skagit River (between Jackman and Diobsud creeks) surrounded by the Mount Baker Snoqualmie National Forest north of the Cascades Highway. The Washington State Department of Natural Resources (DNR) transferred the parcels to WDFW to support conservation.

Habitat consists of a mix of Douglas-fir, hemlock, and silver fir varying in species composition by elevation. Harvested prior to WDFW's ownership, the unit is regenerating with an early successional mix of trees and shrubs. The unit supports dabbling and diving ducks, songbirds, raptors, western bluebird, western screech owl, elk, Columbia black-tailed deer, black bear, cougar, western toad, bull trout, Chinook salmon, chum salmon, and steelhead.

Currently, there is no recreation access to this unit.

Map 10. Jackman Creek Unit





DeBay’s Slough Unit agriculture field. Photo by Alan L. Bauer.

DeBay’s Slough Unit (Game Reserve)

Acres	395
Acquisition Dates	1954 - 2010
Acquisition Funding	USFWS – NAWCA, Pittman Robertson; RCO WWRP; State Wildlife Funds, Donation
Purpose	Protection of habitat for waterfowl
Elevation Range	20 – 45 ft
Recreational Opportunities	Waterfowl hunting, wildlife viewing Non-toxic shot restrictions apply
County	Skagit
Access	https://wdfw.wa.gov/places-to-go/wildlife-areas/debays-slough-wildlife-area-unit

The DeBay’s Slough Unit is located along the Skagit River approximately 3.75 miles from Sedro-Woolly/Mount Vernon and off Francis Road. The unit was one of several properties purchased in the mid-1990s as part of the North Puget Sound First Step Initiative, a larger effort to protect

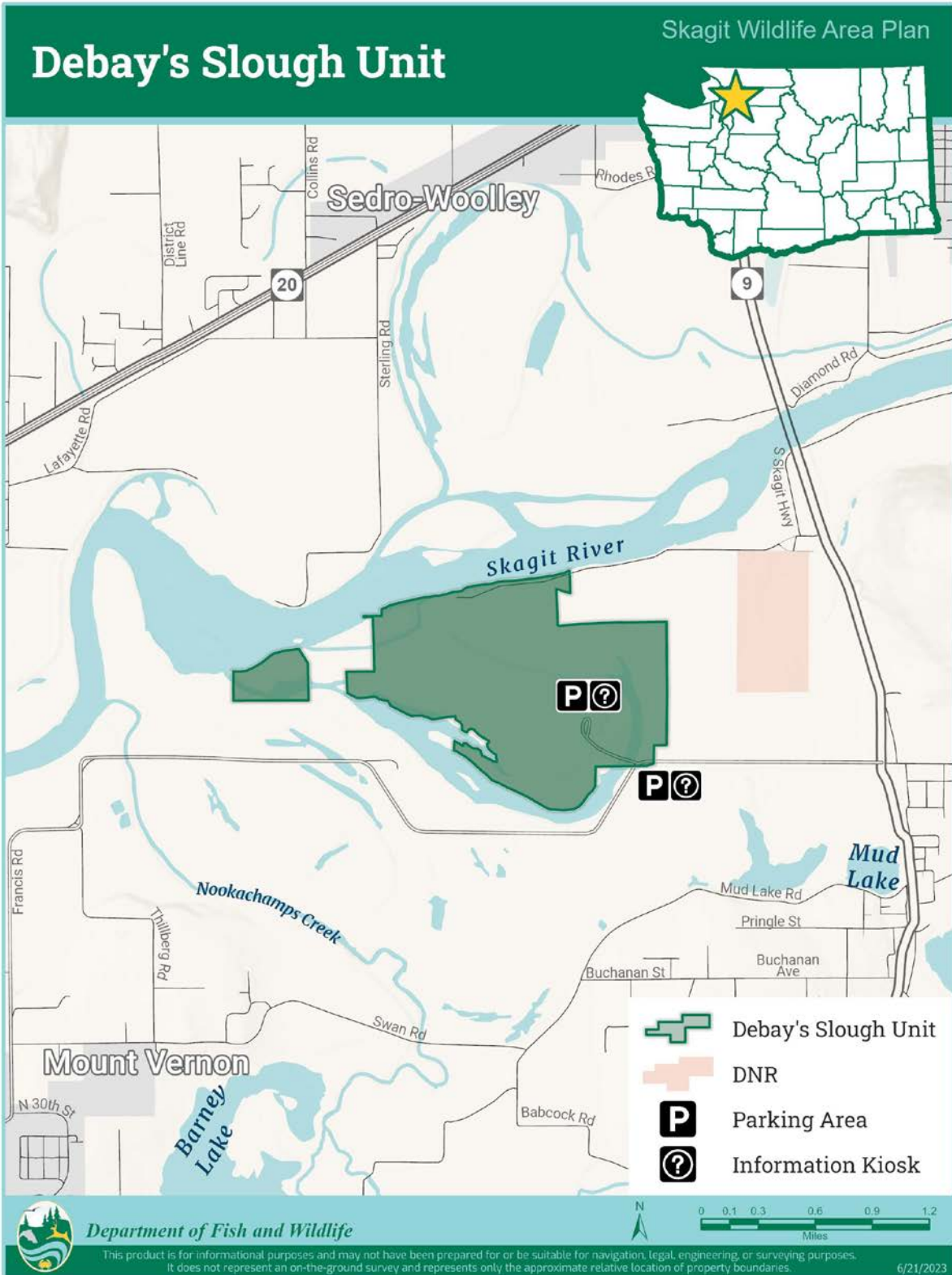
11 wetland and upland habitats for waterfowl in the north Puget Sound. The Department bought the site due to its popular swan night roost site. It also provides an area for trumpeter and tundra swans to feed and rest with limited disturbance.

Habitat consists of a mix of lowland riparian forest, off channel slough, and managed agricultural fields. This area supports trumpeter and tundra swans, dabbling and diving ducks, songbirds, raptors, wading birds, Columbia black-tailed deer, cougar, elk, Chinook salmon, chum salmon, and steelhead. The Department manages much of the unit acreage as a game reserve for swans and other waterfowl. The Department manages foraging on the site through a lease agreement with a local farmer who produces a commercial crop but also plants corn and other forage crops for swans and other waterfowl.

Public access to the unit is restricted to the parking/viewing area at the end of DeBay Isle Road and the mowed walking trail near the parking area. The game reserve parking area includes ADA parking and a raised mound from which to view the field to the west. The DeBay's Slough Game Reserve is approximately 380 acres including the majority of the DeBay's Slough Unit and two private properties. The game reserve was established in 1997 to provide winter forage and roosting habitat for trumpeter and tundra swans. Hunting isn't permitted within the game reserve. Waterfowl hunting is restricted to the eastern side of the property, including the portion of DeBay's slough to the north of DeBay Isle Road and a 35-acre field north of the Hunt Unit parking lot on Francis Road and east of DeBay's Slough.

WDFW and Skagit County are collaborating on a feasibility study to determine the impact of increasing slough connectivity to the river for the benefit of salmon, estimated completion date is December 2025.

Map 11. DeBay's Slough Unit



Ross Island Unit

Acres	154 (with the open water 239)
Acquisition Dates	1988
Acquisition Funding	USFWS Pittman Robertson; State Wildlife Funds
Purpose	Waterfowl protection
Elevation Range	50 – 75 ft
Recreational Opportunities	Accessible by boat only. Waterfowl and deer hunting, fishing, wildlife viewing. Non-toxic shot restrictions apply
County	Skagit
Access	Limited public access.

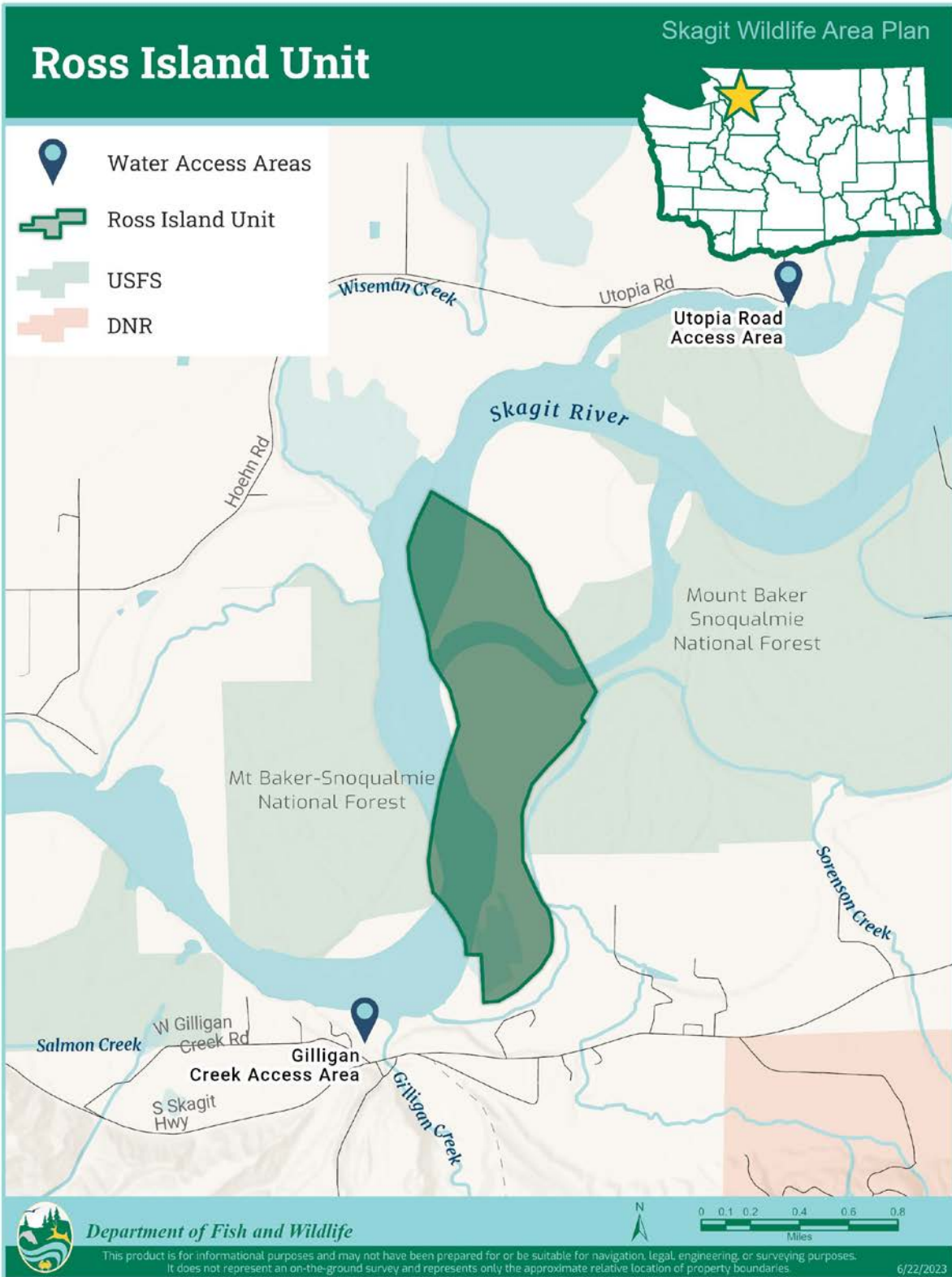
The Ross Island Unit is located about five miles east of Sedro Woolley on the south side of the Skagit River. The unit was acquired through a land exchange agreement between the Department of Game and the Simpson Timber Company in 1988. The unit has numerous small sloughs and channels that meander throughout the unit and is adjacent to the Mount Baker Snoqualmie National Forest. Seasonal ponds are distributed along with several sand bars along different segments along the Skagit River. A small island is also included within the unit.

The habitat consists of an overstory of western hemlock, red alder, cottonwood trees. The understory habitat includes vine maple, salmonberry and current. Conifer dominated stands, deciduous stands, and various natural open areas provide a wide variety of habitat types found within the unit.

A variety of wildlife species can be found within the unit. Common mammals include black-tailed deer, coyote, raccoon, beaver, and various other small mammals. The area supports dabbling and diving ducks, songbirds, raptors Columbia black-tailed deer, black bear, cougar, and elk.

The Ross Island Unit provides recreational opportunities including waterfowl and deer hunting, fishing, and wildlife viewing. Public access to this unit is limited to boat in only.

Map 12. Ross Island Unit



Skagit County units located west of I-5

In the late 1800s, Skagit County residents cleared and drained the land for agricultural purposes. Dikes and drainage infrastructure were constructed to protect farms from flooding events (tidal surges, river flooding and heavy rain).

With the listing of Skagit Chinook salmon under the Endangered Species Act in 1999, state and federal agencies began to identify sites where intertidal habitat could be restored or enhanced to provide critical rearing habitat for Chinook salmon. The following section describes Skagit County units that fit this category. The bulk of the management on the Skagit Wildlife Area focuses on this geographic area.

For more information about endangered Chinook salmon reference [EPA's website](#).



Craft Island View. Photo by Alan L. Bauer.

Cottonwood Island Unit

Acres	226
Acquisition Dates	2001 - 2008
Acquisition Funding	RCO WWRP, Salmon Recovery; DNR Transfer
Purpose	Protection of ESA habitat
Elevation Range	6 – 15 ft
Recreational Opportunities	Fishing, boating, wildlife viewing
County	Skagit
Access	wdfw.wa.gov/places-to-go/wildlife-areas/cottonwood-island-wildlife-area-unit

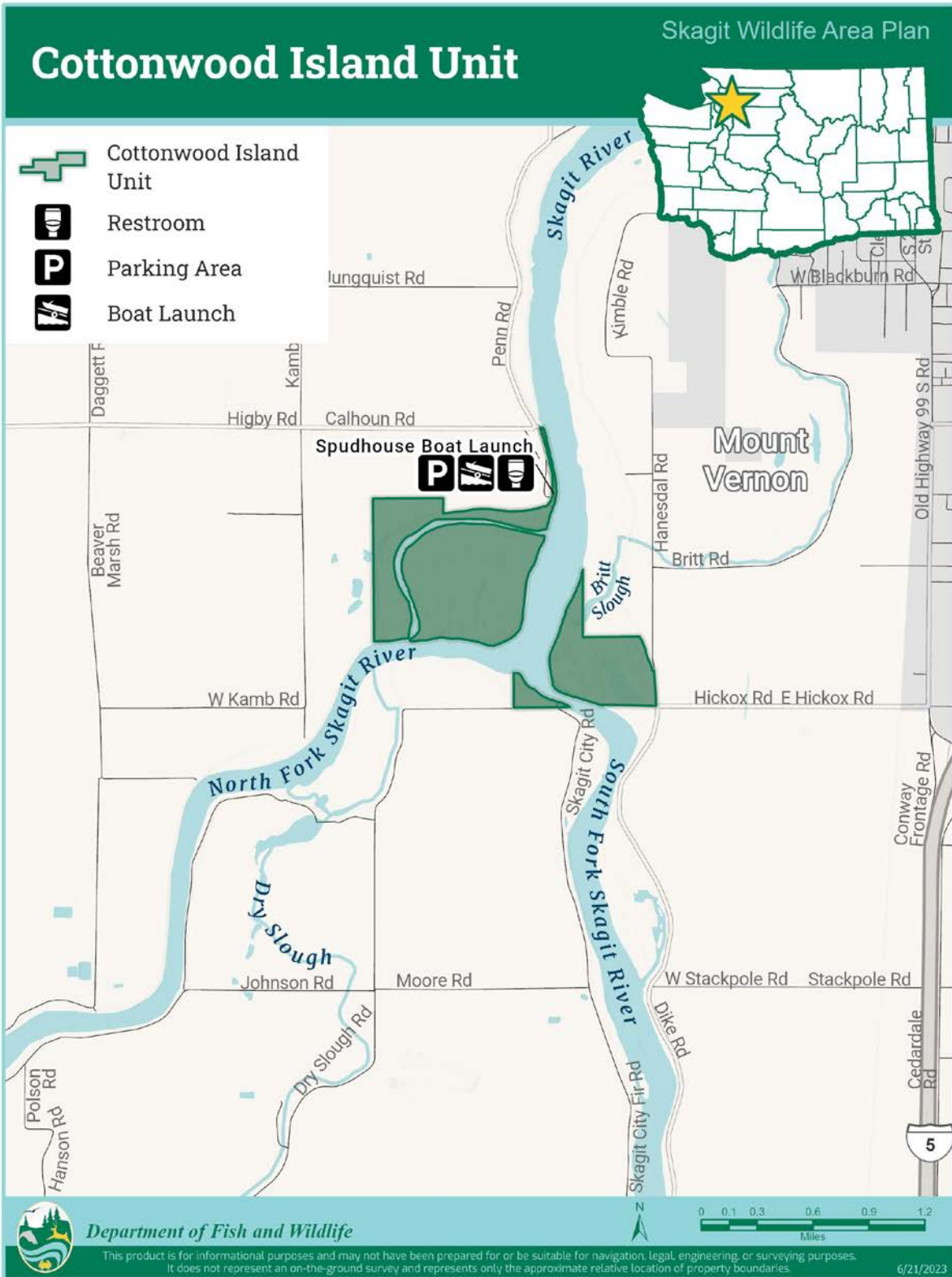
Cottonwood Island Unit is located 3 miles southwest of Mount Vernon and just northwest of the joining of the North Fork and South Fork Skagit rivers. Other portions of the unit are located on the tip of Fir Island and on the east bank of the South Fork of the river. These sites are outside of the dike system and exposed to seasonal flooding of the river. The eastside of the river includes mature mixed forest habitat and the outlet for Britt Slough. Historically, Cottonwood Island was isolated by Cottonwood Slough, a side channel of the Skagit River. Now only portions of this channel hold water except during very high flow events when most of the unit is flooded. Twelve acres are within the dike system and managed as farmland, which is leased to a local farmer for commercial agriculture.

Mature cottonwood forest provides quality habitat for a variety of forest birds and raptors. The slough also provides off-channel rearing habitat for salmonids. The unit supports songbirds, dabbling and diving ducks, raptors, Columbia black-tailed deer, Chinook salmon, chum salmon, coho salmon, cutthroat trout, sockeye salmon, and steelhead.

The Spudhouse Boat Launch is located at the northeast corner of the unit. It's a popular site for launching boats and bank fishing during the fishing season.

In 2021, the Skagit Fisheries Enhancement Group completed a restoration project that reconfigured the channelized portion of Britt Slough. This project reconnected seasonally isolated wetlands resulting in increasing and improving off-channel habitat and fish access (reference Restoration Appendix C).

Map 13. Cottonwood Island Unit





Fir Island Unit. Photo by Alan L. Bauer.

Fir Island Farm Unit (Game Reserve)

Acres	225
Acquisition Dates	1995
Acquisition Funding	USFWS NAWCA; RCO WWRP, Salmon Recovery
Purpose	Wintering foraging resting area for waterfowl and protection of ESA habitat - salmon recovery
Elevation Range	0 – 7 ft
Recreational Opportunities	Wildlife viewing, hiking
County	Skagit
Access	wdfw.wa.gov/places-to-go/wildlife-areas/fir-island-farm-wildlife-area-unit

The Fir Island Farm Unit consists of agricultural land and intertidal estuary on the south side of Fir Island Road approximately 3 miles west of Conway. The Fir Island Farm Unit is part of the larger tidal delta of the Skagit River. Dry Slough flanks it on the east boundary and Brown’s Slough on the west. The property was purchased in the mid-1990s as part of the North Puget Sound First Step

Initiative to conserve upland waterfowl habitat, including forage areas outside of the Skagit Bay Estuary.

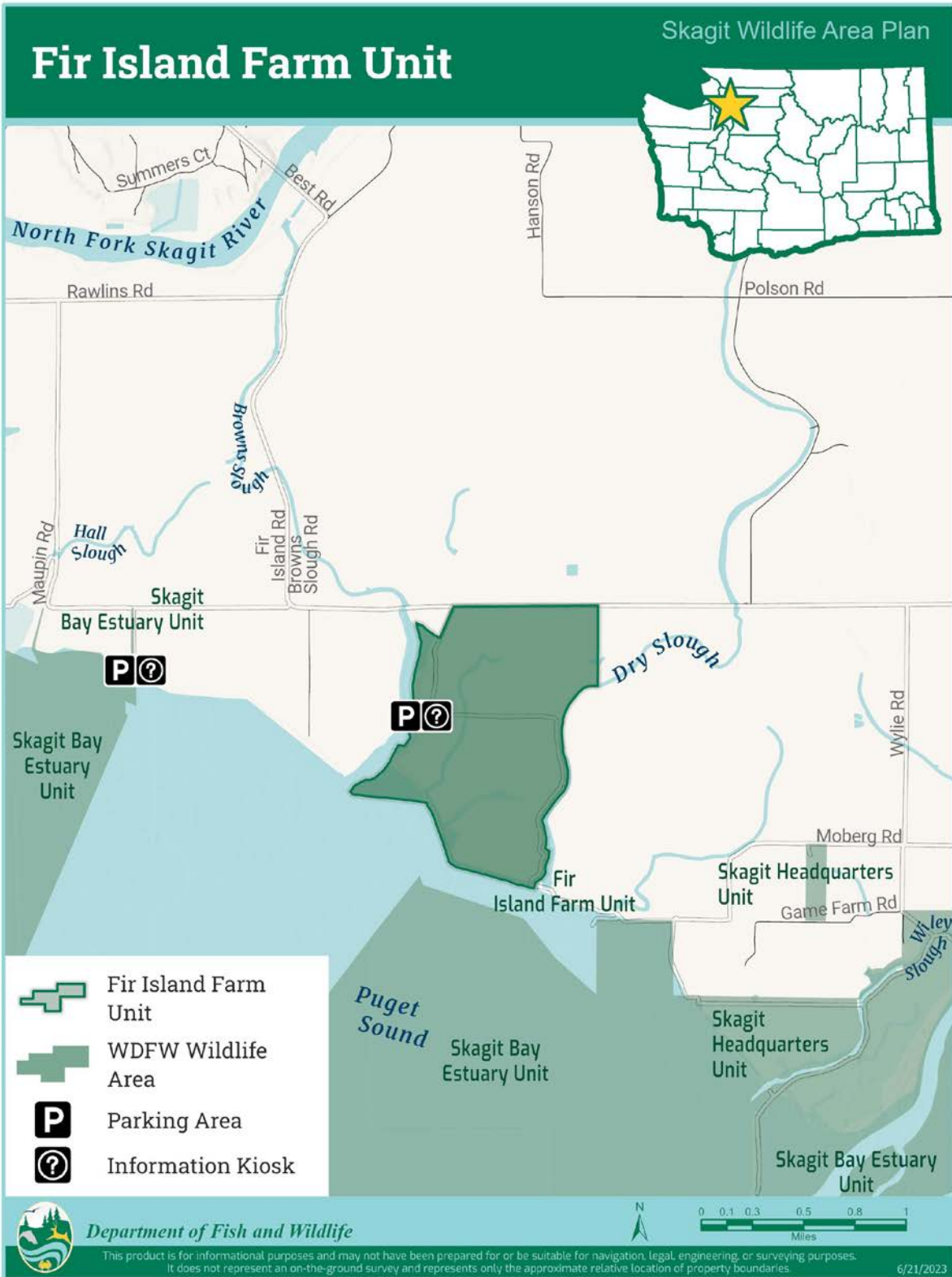
WDFW manages this non-hunted game reserve to provide winter foraging and resting for snow geese, shorebirds, and waterfowl, as well as valuable intertidal habitat for juvenile salmon and other estuarine dependent species. The unit supports lesser snow goose, trumpeter and tundra swans, shorebirds and wading birds, dabbling and diving ducks, songbirds, raptors, Chinook salmon, chum salmon, coho salmon, cutthroat trout, and steelhead. Between October and April each year, Fir Island Farm attracts tens of thousands of snow geese, shorebirds, and other waterfowl species. It is a popular wildlife viewing site and has a gravel entry road and parking area with two ADA parking spots. A short trail along the dike offers views of wildlife against a background of Skagit Bay and the Olympic and Cascade Mountains.

In 2016, the Department restored 131 acres of farmed fields to intertidal estuary on the unit. which are now tidal marsh and mudflat. Reference **Success Stories** page 14.



Birders at Fir Island Farm with Mt Baker. Photo by Alan L. Bauer

Map 14. Fir Island Farm Unit





Skagit Headquarters Unit and Olympic Mountains. Photo by Alan L. Bauer.

Skagit Headquarters Unit

Acres	333
Acquisition Dates	1944 – 2008
Acquisition Funding	USFWS Pittman Robertson; RCO WWRP, Bonds; State Wildlife Funds, State Appropriation
Purpose	Estuary protection and recreation
Elevation Range	1 – 11 ft
Recreational Opportunities	Waterfowl hunting, wildlife viewing, photography, dog walking, fishing, canoeing/kayaking, walking, and running Non-toxic shot restrictions apply
County	Skagit
Access	wdfw.wa.gov/places-to-go/wildlife-areas/skagit-headquarters-wildlife-area-unit

The Skagit Headquarters Unit is 190 acres of tidal marsh adjacent to Freshwater Slough of the South Fork of the Skagit River. The unit is located about 2.5 miles west of Conway and is home to the wildlife area office.

WDFW acquired the Headquarters Unit to manage the site for waterfowl habitat and hunting. During the late 1950s, the Department constructed a dike and drainage system to support forage production and seasonally flooded fields for wintering waterfowl. Management changed following the Endangered Species listing of Chinook salmon in 1999.

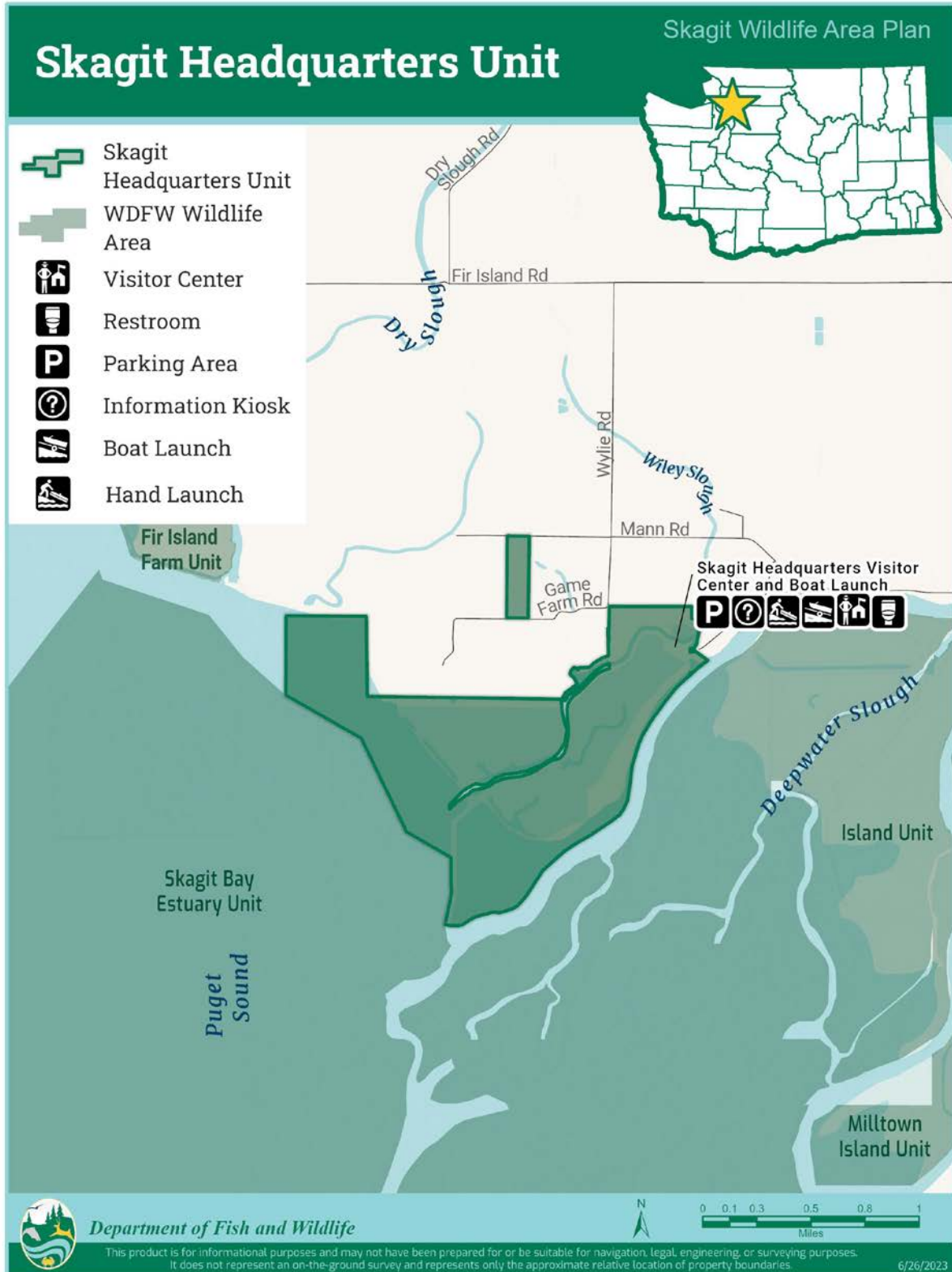
In fall 2009, the Department built set-back dikes, relocated tide gates, and removed parts of the old perimeter dike to allow tidal and river processes to reconnect and create channels and provide additional estuary habitat (Wiley Slough) (see Appendix C). The marsh habitat found within the restoration area includes emergent vegetation, open water, and mudflats that are used by waterfowl, water birds, and fish. This unit supports dabbling and diving ducks, tundra and trumpeter swans, songbirds, shorebirds and wading birds, raptors, harbor seal, Chinook salmon, chum salmon, coho salmon, and steelhead.

The Skagit Headquarters Unit includes a large, covered visitor center, two parking lots, two restrooms, a boat launch, a hand launch, and dike-top trail system. The one-mile-plus trail system terminates at the mouth of Freshwater Slough and Skagit Bay. Another route accesses the western side of the unit as the dike-top trail splits at the tide gates. That trail section is .5 miles long and ends at the unit boundary gate. The boat launch provides access to the Island Unit and portions of the Skagit Bay Estuary via Freshwater Slough.



Walkers on dike trail, Skagit Headquarters Unit. Photo by Alan L. Bauer.

Map 15. Skagit Headquarters Unit





Island Unit. Photo by Alan L. Bauer.

Island Unit

Acres	256
Acquisition Dates	1950 – 1953
Acquisition Funding	USFWS Pittman Robertson; State Wildlife Funds
Purpose	Wintering waterfowl forage and estuary
Elevation Range	4 – 15 ft
Recreational Opportunities	Boat access only - Waterfowl hunting, wildlife viewing, photography Non-toxic shot restrictions apply
County	Skagit
Access	wdfw.wa.gov/places-to-go/wildlife-areas/island-wildlife-area-unit

Located 1 mile south from Conway, the Island Unit lies within the Skagit River’s South Fork delta between Freshwater and Steamboat sloughs. Deepwater Slough flows between the two islands that comprise the Island Unit. Both islands were historically diked and drained for private agricultural use. In the early 1950s, WDFW implemented an agricultural enhancement program for wintering waterfowl and associated recreation. Along with the agricultural enhancements, water control structures were added to provide controlled shallow seasonal flooding of fields to make forage

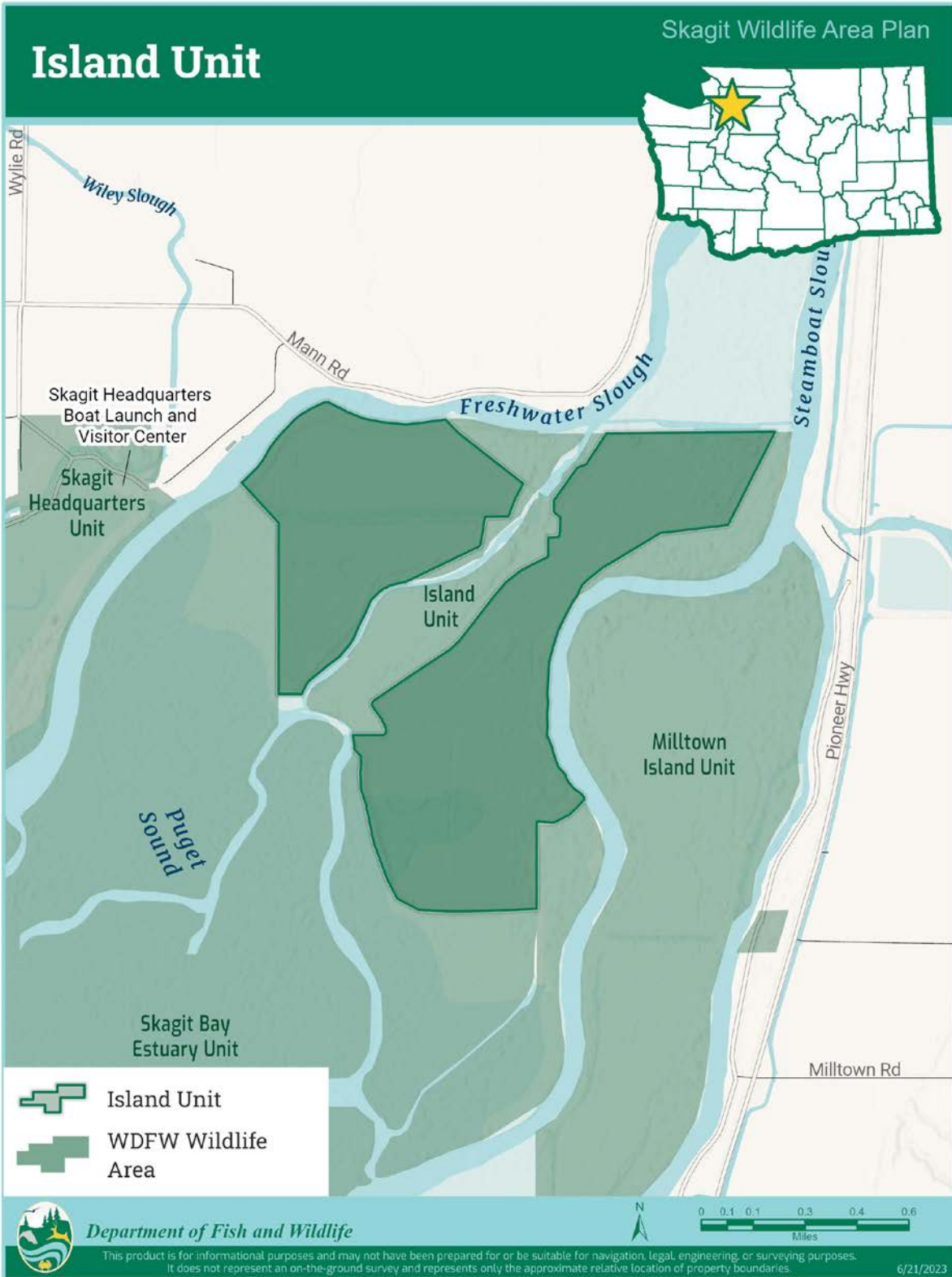
more available. Habitat on the Island Unit includes agriculture lands, riparian forest, and managed and unmanaged wetlands. In 2000, an estuary restoration project removed two segments of dike on Deepwater Slough and reconfigured 14,000 feet of dikes to reconnect flow from Freshwater Slough to six distributary channels of the South Fork Skagit River. The project returned intertidal connectivity to 200 acres of estuary habitat, provided access to rearing habitat for Chinook salmon, as well as migratory and overwintering habitat for waterfowl and shorebirds. Following the restoration project, WDFW continued to plant approximately 145 acres of enhanced forage annually for wintering waterfowl and associated hunting opportunities.

An additional restoration project to return the remaining 270 acres to tidal marsh is planned. For more information see Appendix C. In November of 2021, the east lobe of the Island Unit was breached during a flood event on the Steamboat Slough side. This part of the unit is now intertidal and can no longer be managed for enhanced forage for waterfowl.

The Island Unit supports dabbling and diving ducks, tundra and trumpeter swans, lesser snow goose, raptors, shorebirds and wading birds, songbirds, Columbia black-tailed deer, Chinook salmon, chum salmon, coho salmon, cutthroat trout, and steelhead.

Recreation opportunities include waterfowl hunting and wildlife viewing. The Island Unit dike-top trail system provides 5.5 miles of access circulating the perimeter of the unit; part of the trail has been breached but is still accessible. Access is provided from the Skagit Headquarters Unit, the Skagit County boat launch at the Conway bridge, and the private boat launch at Milltown Road.

Map 16. Island Unit





Leque Island - 2019 new dike constructed. Photo by Alan L. Bauer.

Leque Island Unit

Acres	474
Acquisition Dates	1957 – 2010
Acquisition Funding	USFWS Pittman Robertson, NAWCA, Coastal; Navy mitigation; RCO Bonds, WWRP, Salmon Recovery; State Wildlife Fund; donation from Ducks Unlimited
Purpose	Waterfowl and recreation
Elevation Range	4 – 9 ft
Recreational Opportunities	Hunting, walking, wildlife viewing, dog training Non-toxic shot restrictions apply
County	Snohomish
Access	wdfw.wa.gov/places-to-go/wildlife-areas/leque-island-wildlife-area-unit

The Leque Island Unit is located just west of Stanwood between Port Susan and Skagit Bays. WDFW began acquiring properties on Leque Island in 1957 and currently owns the entire Island aside from rights-of-way controlled by utility companies, Washington State Department of Transportation, and Snohomish County. Leque Island was one of several properties purchased in

the mid-1990s as part of the North American Wetland Conservation Act (1989) process, with priority focus areas informed by the North American Waterfowl Management Plan (1986).

Reference Success story page 15 - WDFW partnered with Ducks Unlimited to implement an estuary restoration project on the Leque Island Unit. During the summer of 2019, the partners removed 2.4 miles of levee and excavated over 5 miles of new tidal channels. More information about this project is available on [WDFW's website](#).

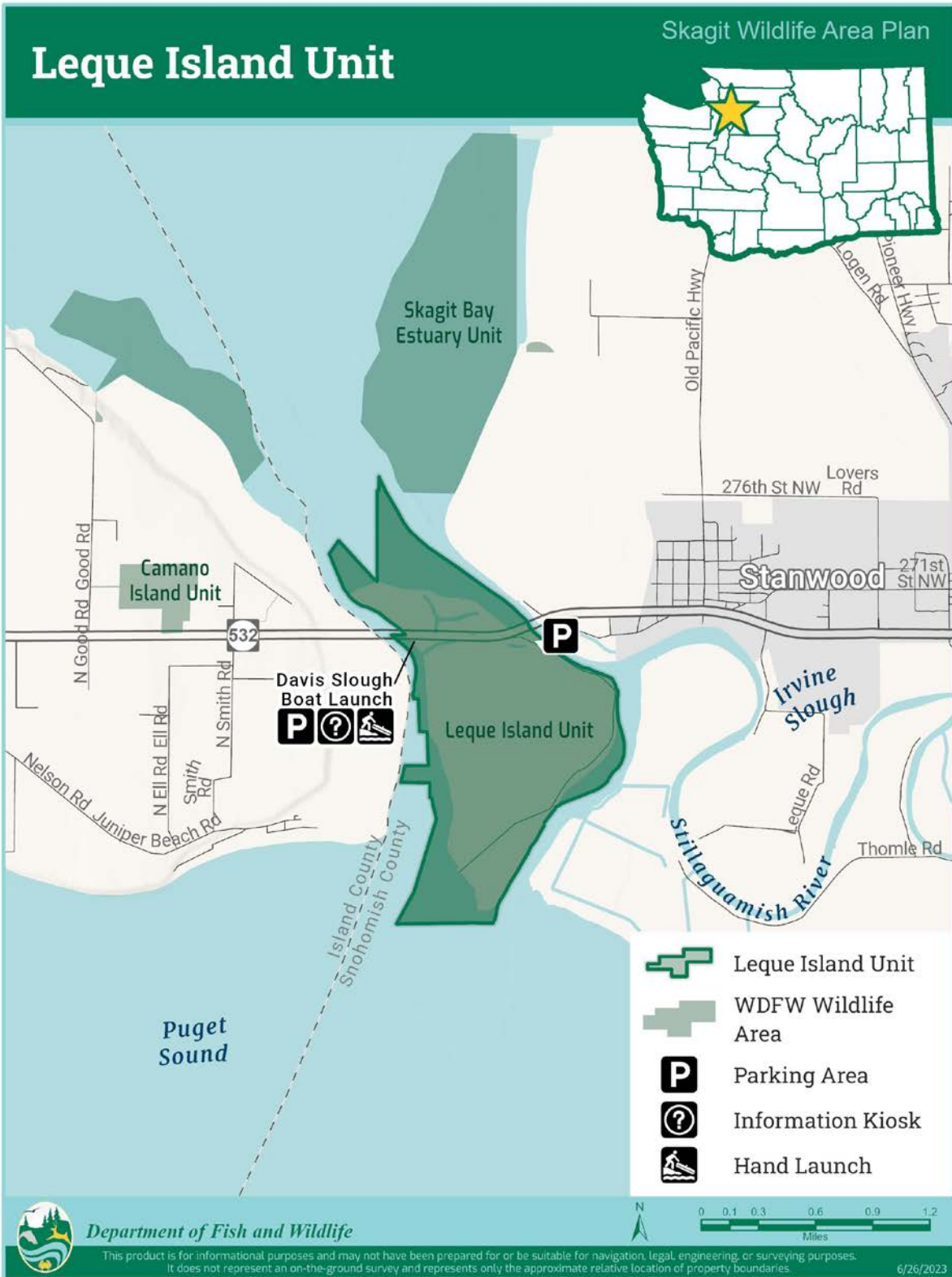
This unit supports dabbling and diving ducks, lesser snow goose, tundra and trumpeter swans, songbirds, raptors, shorebirds and wading birds, harbor seal, Chinook salmon, chum salmon, coho salmon, cutthroat trout, and steelhead.

Recreation opportunities include hiking on a .75-mile walking trail (Eide Road) wildlife viewing, photography, waterfowl hunting, and dog training. The Davis Slough Boat Launch lies on the western boundary of the unit south of the State Route 532 bridge and provides a boat and hand launch to access the Skagit Bay Estuary and Puget Sound.



Short-eared owl. Photo by Alan L. Bauer.

Map 17. Leque Island





Milltown Unit. Photo by Alan L. Bauer.

Milltown Island Unit

Acres	274
Acquisition Dates	1951 – 1973
Acquisition Funding	USFWS Pittman Robertson; National Parks Land and Water Conservation Fund; RCO Bonds; State Wildlife Fund; County transfer
Purpose	Estuary protection, recreation
Elevation Range	7 – 19 ft
Recreational Opportunities	Boat access only - Waterfowl hunting and wildlife viewing. Non-toxic shot restrictions apply
County	Skagit
Access	wdfw.wa.gov/places-to-go/wildlife-areas/milltown-island-wildlife-area-unit

The Milltown Island Unit is located on a mid-channel island in the South Fork Skagit River between Steamboat and Tom Moore Sloughs 2 miles south of the community of Conway.

The Department bought the unit to provide public access for waterfowl hunting, wildlife viewing, and fishing, but management and vehicle access changed after two major flood events in the 1970s that damaged the Milltown Island levee infrastructure and destroyed the bridge connecting the

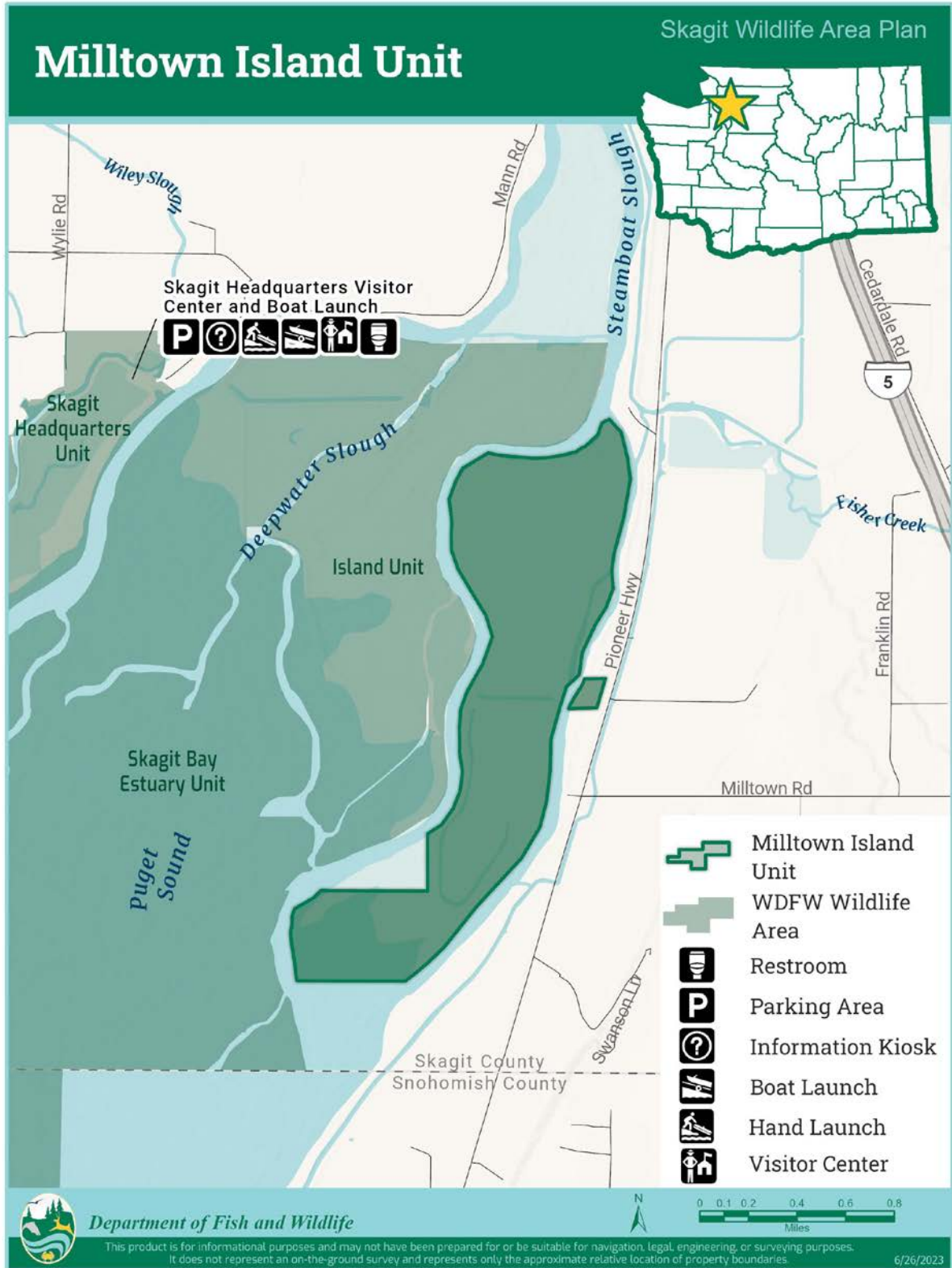
island to the mainland at Milltown Road. Between 1999 and 2014, dike breaches and channels were constructed to benefit salmon and estuary dependent wildlife.

Milltown Unit habitat consists of riparian forest, marsh, and estuary. In 2024, WDFW is planning to restore historic estuarine habitat and increase channel connectivity from the sloughs on either side of the island with additional dike breaches and channel connections which will benefit juvenile salmon (reference Appendix C for more information).

This unit also supports dabbling and diving ducks, songbirds, raptors, wading birds, cavity nesting ducks, Columbia black-tailed deer, harbor seal, Chinook salmon, chum salmon, coho salmon, cutthroat trout, and steelhead.

Recreation opportunities include boat-only access waterfowl hunting and wildlife viewing. Access is provided from the Skagit Headquarters Boat Launch, the Skagit County boat launch at the Conway bridge, and the private boat launch at Milltown Road.

Map 18. Milltown Island





Samish Unit – waterfowl hunter. Photo by Alan L. Bauer.

Samish Unit

Acres	411
Acquisition Dates	1963 – 2004
Acquisition Funding	USFWS NAWCA; RCO WWRP; State Duck Stamp Fund
Purpose	Managed Waterfowl habitat and winter forage
Elevation Range	0 – 9 ft
Recreational Opportunities	Waterfowl hunting, wildlife viewing, photography, walking, and pheasant hunting, dog training Non-toxic shot restrictions apply No dogs allowed from April 1 – July 15
County	Skagit
Access	wdfw.wa.gov/places-to-go/wildlife-areas/samish-wildlife-area-unit

The Samish Unit is 2.8 miles from the community of Edison between Samish and Padilla bays. The Department acquired the unit to provide wetland enhancements and winter forage for waterfowl. Samish Unit was one of several properties purchased in the mid-1990s as part of the North

American Wetland Conservation Act (1989) process, with priority focus areas informed by the North American Waterfowl Management Plan (1986).

In partnership with Ducks Unlimited, the Department implemented several wetland enhancement projects in 2015 to improve water management and wetland function. The Samish Unit water control structures provide approximately 200 acres of sheet water management for wetland and waterfowl habitat. This enhancement creates seasonal freshwater wetland habitat while maintaining the ability to annually drain and plant waterfowl forage crops on a portion of the unit (Goal/objective 3E).

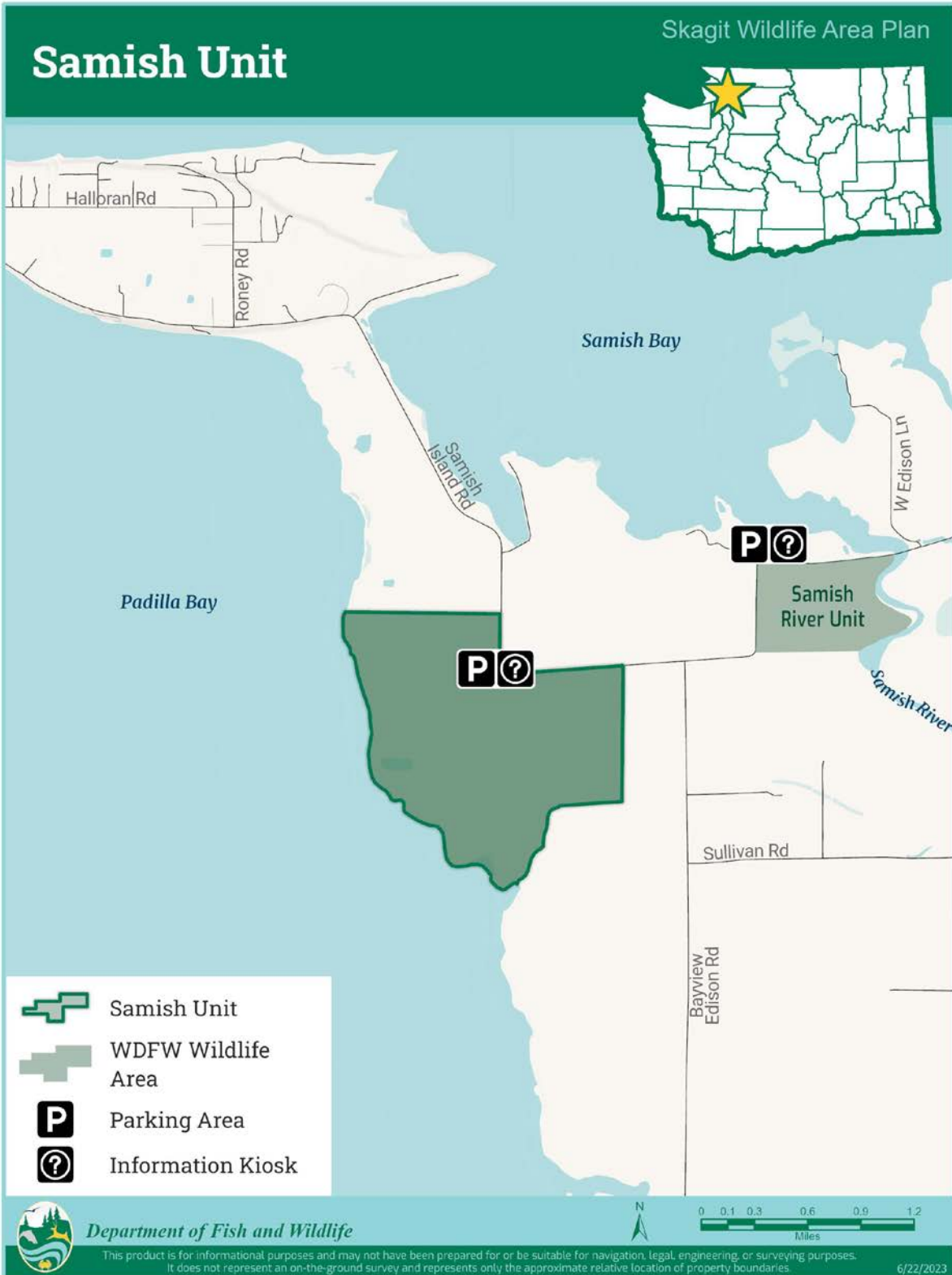
Winter food resources support a wide variety of waterfowl and water birds that use these areas during migration and over wintering. WDFW State Duck Stamp Program and local crop sharing agreements support agricultural plantings. This unit supports dabbling ducks, lesser snow goose, tundra and trumpeter swans, songbirds, great blue heron, shorebirds and wading birds, and raptors.

Recreational opportunities on the Samish Unit include waterfowl hunting, wildlife viewing, photography, walking, a two-day youth-only waterfowl and pheasant hunt, and a five-day senior only pheasant hunt. No dogs allowed from April 1-July 15.



Autumn waterfowl at sunset. Photo by Alan L. Bauer.

Map 19. Samish Unit



Samish River Unit

Acres	103
Acquisition Dates	2004
Acquisition Funding	USFWS NAWCA; NRCS; Ducks Unlimited, donation
Purpose	Waterfowl habitat and winter forage
Elevation Range	4 – 6 ft
Recreational Opportunities	Restricted access - Waterfowl hunting, fishing, walking, and wildlife viewing Non-toxic shot restrictions apply
County	Skagit
Access	wdfw.wa.gov/places-to-go/wildlife-areas/samish-river-wildlife-area-unit

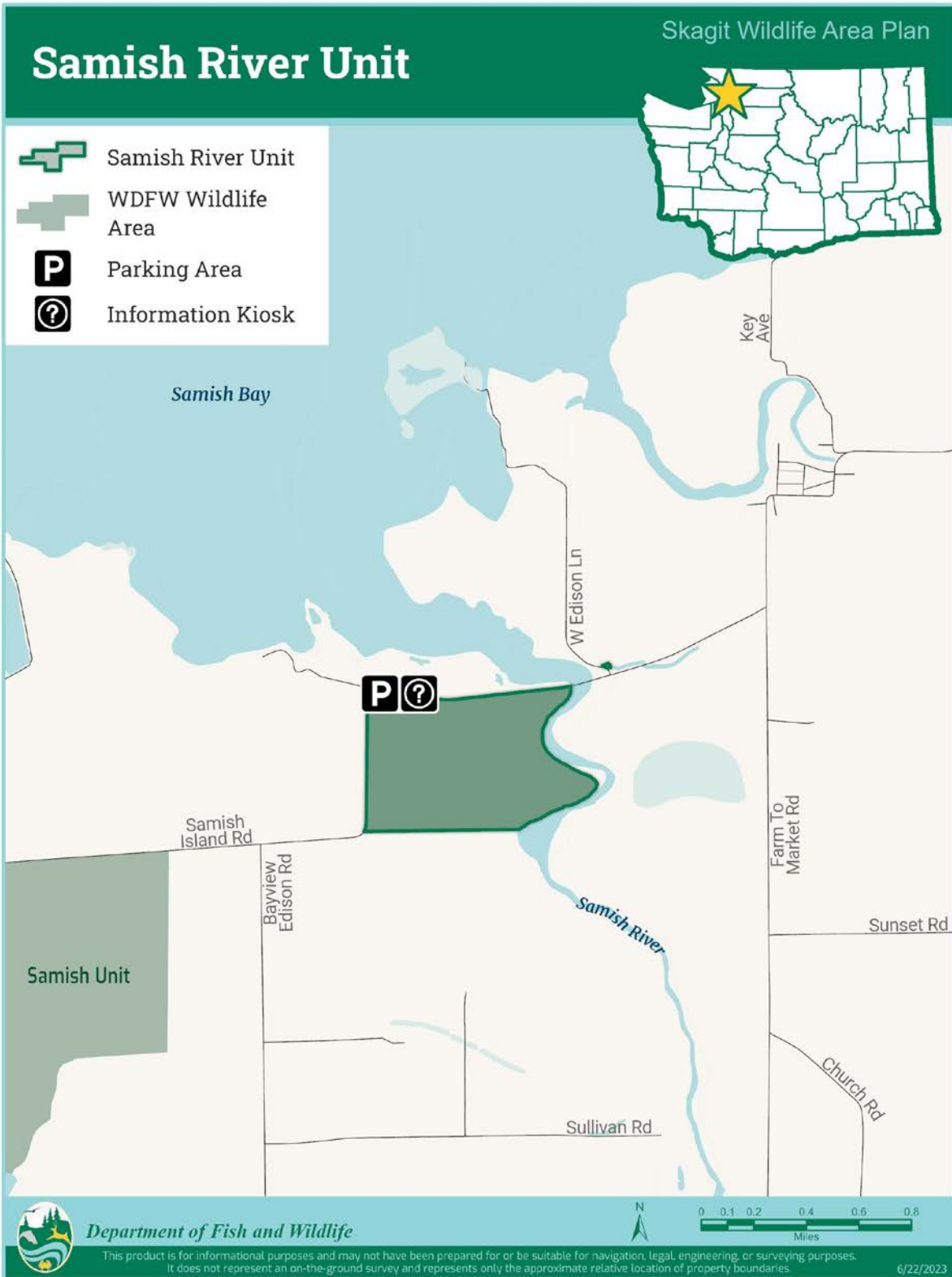
The Samish River Unit is located at the mouth of the Samish River 1 mile from the community of Edison. In 2004, the Department purchased the land from a family who had worked with the Ducks Unlimited and the Natural Resource Conservation Service (NRCS) to enroll this property in a permanent Wetland Reserve Program conservation easement.

In 2015, a 102-acre wetland enhancement project was completed with funding from the NRCS to improve seasonal wetland function. The project sculpted ponds and swales, removed drainage tile, and installed perch poles. It created diverse wetland habitat types in a highly altered system by providing freshwater wetland habitat along the Samish River. Funded by an NRCS grant, additional habitat and site improvements are planned and include tree and shrub planting. The Department anticipates completing a parking area, funded by RCO, in summer 2023.

This unit supports dabbling ducks, lesser snow goose, tundra and trumpeter swans, raptors, shorebirds, wading birds, songbirds, Columbia black-tailed deer, elk, harbor seal, and Pacific herring.

Recreational opportunities include waterfowl hunting, fishing, and wildlife viewing. Two hunting sites, identified as Edison East and Edison West, are accessible within the unit. Hunters are required to hunt from the Private Lands Access Program designated areas. Reference the WDFW website for more information about the [Private Lands Access Program](#). The Samish River Unit provides excellent opportunity for raptor viewing. In winter 2022, a new rule was implemented on the Samish River Unit designating hunter only zones on the unit to reduce user group conflict.

Map 20. Samish River Unit





Skagit Bay Estuary, north dike views. Photo by Alan L. Bauer.

Skagit Bay Estuary Unit

Acres	11,999
Acquisition Dates	1950 - 2002
Acquisition Funding	USFWS Pittman Robertson; RCO Bonds; State Wildlife Funds, donation
Purpose	Intertidal estuary, waterfowl habitat and winter forage, recreation
Elevation Range	0 – 12 ft
Recreational Opportunities	Waterfowl hunting, fishing, wildlife viewing, boating, and kayaking Non-toxic shot restrictions apply
County	Skagit
Access	wdfw.wa.gov/places-to-go/wildlife-areas/skagit-bay-estuary-wildlife-area-unit

The Skagit Bay Estuary Unit is located on Skagit Bay between the North and South forks of the Skagit River, and includes areas of the South Fork to Stanwood and Camano island. The Department acquired the unit from the U.S. Fish and Wildlife Service in 1959 in exchange for Columbia white-tailed deer habitat that WDFW owned in southwest Washington.

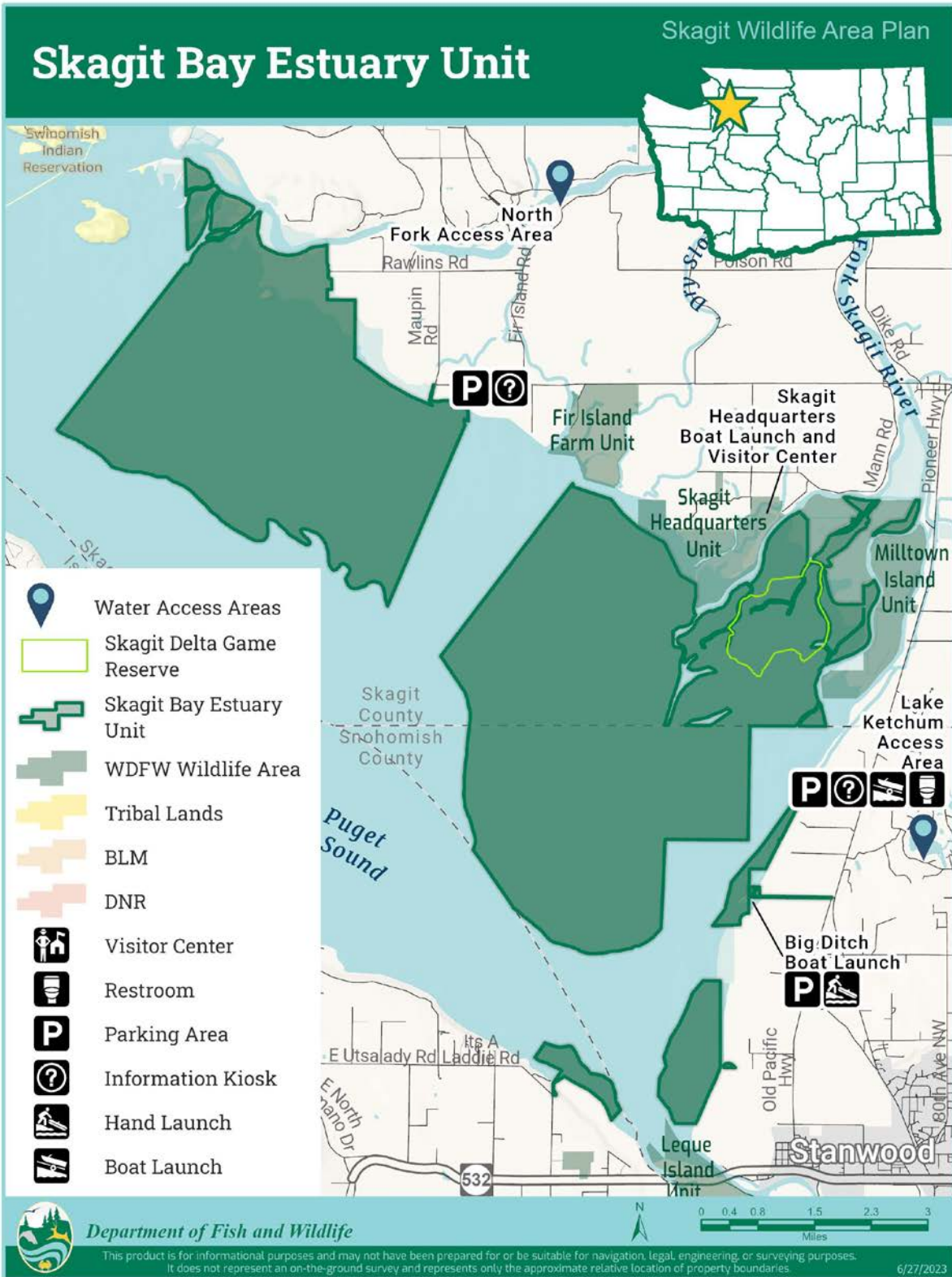
The Skagit Bay Estuary Unit contains habitats for dabbling and diving ducks, lesser snow goose, tundra and trumpeter swans, songbirds, shorebirds and wading birds, raptors, harbor seal, Chinook salmon, coho salmon, chum salmon, sockeye salmon, cutthroat trout, steelhead, bull trout, Pacific herring, sand lance, and surf smelt. The 334-acre Skagit Bay Delta Game Reserve is located within the Skagit Bay Estuary Unit southwest of the Island Unit. The Skagit Delta Game Reserve was established in 1962, limits hunting traffic in Deepwater Slough and provides waterfowl foraging and resting with minimal disturbance within the marsh. Hunting is not permitted within the game reserve.

Six sites provide direct visitor access to the Skagit Bay Estuary, Skagit Headquarters Unit (boat launch), Milltown launch (private), Big Ditch, Jensen, North Fork, and Davis Slough, Leque and Island Units. Recreation opportunities include waterfowl hunting, wildlife viewing, boating, kayaking, and fishing. Hunting is not permitted within the game reserve.



North dike view toward Craft Island. Photo by Alan L. Bauer.

Map 21. Skagit Bay Estuary



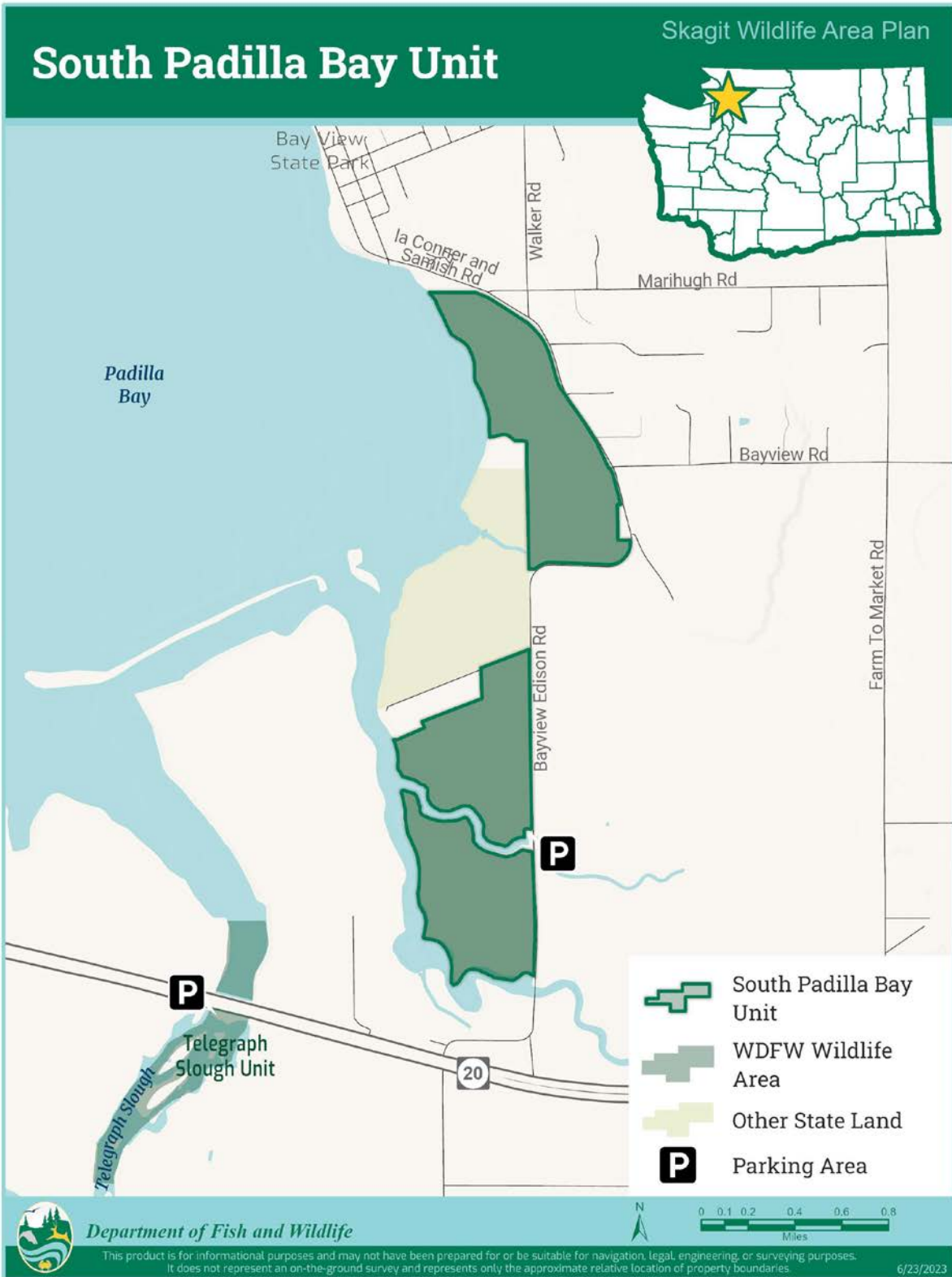
South Padilla Bay Unit

Acres	266
Acquisition Dates	1955 - 2009
Acquisition Funding	USFWS Coastal; RCO ALEA; State Wildlife Funds, donation
Purpose	Intertidal estuary restoration, waterfowl hunting
Elevation Range	4 – 6 ft
Recreational Opportunities	Restricted access - Waterfowl hunting, wildlife viewing, hiking Non-toxic shot restrictions apply
County	Skagit
Access	wdfw.wa.gov/places-to-go/wildlife-areas/south-padilla-bay-wildlife-area-unit

The South Padilla Bay Unit is located between Bayview-Edison Road and Padilla Bay just north of Highway 20. The Padilla Bay Unit maintains a commercial farming program with minor habitat changes. Local farmers leasing the land for agriculture and provide share crops for wintering waterfowl forage.

The South Padilla Bay Unit supports dabbling ducks, songbirds, shorebirds and wading birds, raptors, lesser snow goose, tundra, and trumpeter swans.

Recreational opportunities include waterfowl hunting and wildlife viewing. The Padilla Bay trail runs adjacent to these agriculture parcels and is a popular walking trail within Skagit County. There are three designated hunting blinds on the unit the Private Lands Access Program manages, known as Bayview 1, 2, and 3. When these blinds are operational, they are listed on [WDFW's website](#).





Telegraph Slough Unit. Photo by Alan L. Bauer.

Telegraph Slough Unit

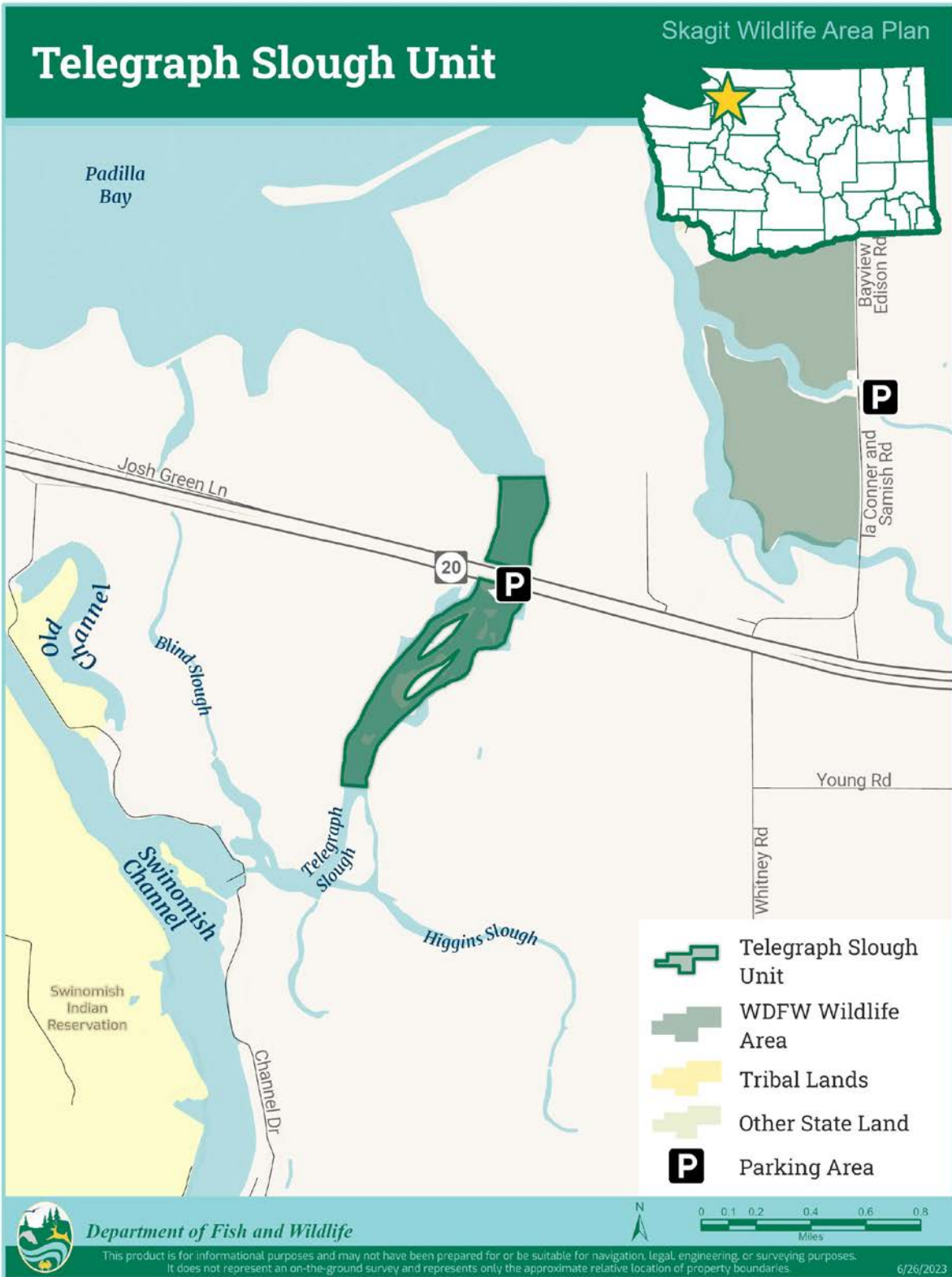
Acres	30 leased
Acquisition Dates	1971
Acquisition Funding	DNR lease
Purpose	Waterfowl, recreation
Elevation Range	3 – 6 ft
Recreational Opportunities	Waterfowl hunting, wildlife viewing Non-toxic shot restrictions apply
County	Skagit
Access	wdfw.wa.gov/places-to-go/wildlife-areas/telegraph-slough-wildlife-area-unit

The Telegraph Slough Unit is located 6 miles east of Anacortes. The unit is connected to South Padilla Bay and is split into two areas by Highway 20. Habitat includes tidal salt and brackish marshes, emergent marsh, and riparian.

Due to roadway and railroad construction in the late 1800s and early 1900s, the northern portion of the Telegraph Slough was disconnected from remainder of the channel but is intertidal and connected to Padilla Bay. As dike and drainage work from the late 1930s to present continued, the southern connection to tidal water was blocked from the Swinomish Channel. This resulted in a shorter intertidal slough on the north side of the highway and a freshwater wetland on the south side. The Telegraph Slough Unit supports dabbling and diving ducks, songbirds, wading birds, and raptors.

Recreational opportunities on the Telegraph Slough Unit include waterfowl hunting and wildlife viewing. A parking area on the south side of Highway 20 provides access to the site.

Map 23. Telegraph Slough Unit



Part 2. Wildlife Area Management and Planning

Land Ownership and Management

Acquisition history, funding, and purpose

The following state and federal agencies provided funding to acquire properties in the wildlife area: Recreation and Conservation Office (RCO) – Washington Wildlife and Recreation Program (WWRP), Aquatic Lands Enhancement Account (ALEA), Boating Facilities Program; U.S. Fish and Wildlife Service (USFWS) – Dingell-Johnson, National Coastal Wetlands Conservation, North American Wetland Conservation Act, Pittman Robertson, National Fish and Wildlife Foundation; National Park Service (NPS) – Land and Water Conservation Fund; Natural Resources Conservation Service (NRCS) and Washington Department of Fish and Wildlife (WDFW) - State Wildlife Fund and Migratory Waterfowl and Wetland Conservation Fund (State Duck Stamp). Lands were also acquired through government transfers and donations and some properties are leased to the Department to manage.

The most notable acquisition on the wildlife area occurred in 1993 under the North Puget Sound Initiative (North American Wetlands Conservation Act – Pacific Coast Joint Venture), which resulted in the purchase of DeBay’s Slough, Fir Island, Samish and Leque Island units with the goal to improve habitat for waterfowl and other wetland dependent species through the North American Wetland Conservation Act (1989) process, with priority focus areas informed by the North American Waterfowl Management Plan (1986).

Future Acquisitions

WDFW is committed to working with partners on public recreation and long-term conservation ownership to meet agency objectives in targeted areas within the Skagit and Samish River deltas. Protecting habitats critical for waterfowl management and salmon recovery is the focus of this plan. These habitats include aquatic, agricultural, river riparian, freshwater wetlands, and intertidal habitats with a special focus on conservation and restoration of estuaries and managed freshwater wetlands. The Department will accomplish much of this work through collaborative partnerships with federal, state, and local governments, non-governmental organizations, and landowners in the region. Future acquisitions goals include purchasing lands connected to existing WDFW-managed land and other public lands, and other properties with high potential to provide important habitat and recreation values (Goal/objective 1E).

Leases

The Skagit Wildlife Area includes a total of seven agriculture leases for the general purpose of commercial agriculture, weed control, and waterfowl forage production (Table 1) (Goal/objective 7A).

Table 1. Agriculture Leases on the Skagit Wildlife Area

Unit	Lease term	Acres	Year to renew	Purpose
Cottonwood Island	2019 - 2028	11	2029	Commercial agriculture and weed control
DeBay's Slough	2020 - 2024	138	2025	Commercial agriculture and waterfowl forage production
Fir Island Farm	2021 - 2023	93	2024	Commercial agriculture and waterfowl forage production
Skagit Headquarters	2021 - 2023	5.5	2024	Commercial agriculture and weed control
Samish	2020 - 2025	93	2026	Organic Commercial agriculture and forage production
South Padilla Bay	2021 - 2025	130	2026	Commercial agriculture and waterfowl forage production
South Padilla Bay	2021 - 2025	100-115*	2026	Commercial agriculture and waterfowl forage production

Easements

Easements are rights that an entity other than WDFW holds that allow the easement holders to cross or use a portion of WDFW-managed land for a specific purpose. Most management easements on the Skagit Wildlife Area provide access to infrastructure, e.g., dikes, drainage ditches, pumps, and tide gates. Others include access to gas and utility lines, county roads, and highways. DeBay's Slough, Fir Island Farm, Headquarters, Leque, Samish, Jackman Creek, and Skagit Bay Estuary units have easements within their unit boundaries.

A conservation easement is a voluntary, legal agreement between a landowner and a land trust or agency that permanently limits uses of the land to protect its conservation values. Ownership of the land stays with the landowner. It allows landowners to continue to own and use their land. The Skagit Wildlife Area includes two conservation easements both held by the conservation organizations and were in place at the time of acquisition. The easements are located on Samish River and the Camano Island units. In both cases, WDFW owns the property, but the easement is owned by a conservation organization. The Samish River Unit easement was in place prior to the acquisition, it consists of a wetland reserve managed by NRCS, under a compatible use agreement. WDFW manages public recreation on the unit. Camano Island Land Trust and Island County hold the conservation easement for protection of a great blue heron rookery on Camano Island.

Management Setting

Administration and staffing

The Skagit Wildlife Area is in WDFW's Northwest Region (Region 4) headquartered in Mill Creek. The Skagit Headquarters Unit office is located near Conway. Wildlife area staff based at the Unit

Office include a full-time permanent wildlife area manager, an assistant wildlife area manager, a natural resource technician 3, and a seasonal natural resource worker. Four access area managers are based out of the Mill Creek Regional Office (Table 7). The Noxious Weed Crew is based out of Skagit Wildlife Area and supports weed control efforts. Wildlife area and access area managers are supervised by the Region 4 Assistant Regional Wildlife Program Manager. Wildlife surveys, wetland development projects and estuary restoration projects are often led or conducted by other agency staff and/or conservation partners in coordination with wildlife area staff.



DeBay's Slough Unit. Photo by Alan L. Bauer.

Facilities and maintenance

Wildlife area staff restore and maintain habitat (including weed control), manage public use and recreation, maintain facilities, fences, roads and parking lots, trails, kiosks, signs, and monitor the results of management activities (Table 2) (Goal/objective 9F). The goal is to ensure wildlife area facilities and infrastructure are safe and remain in good working condition.

Table 2. Management facilities and recreational structures associated with each wildlife area unit

Unit	Management facilities	Recreational Infrastructure
Skagit Headquarters	Residence house, shop, office, interpretation center, boat house, dock, two parking lots, Kiosks and sign boards, fence lines, two restrooms	Wildlife viewing blind, boat launch, hand launch, dike-top trails, interpretative signs
Island		Eight waterfowl hunting blinds, dike-top trails
Leque Island	Two parking lots, kiosks, and sign boards	Hand launch, dike-top trail and interpretative signs

Unit	Management facilities	Recreational Infrastructure
DeBay's Slough	Two parking lots, fence lines, kiosks, and sign board	Two waterfowl hunting blinds
Fir Island Farm	Parking lot, fence lines, kiosks, and sign boards	Dike-top trail and information signs
Samish	Parking lot, fence lines, kiosk, and sign board	Fifteen waterfowl hunting blinds
Samish River		Two waterfowl hunting and viewing blinds
South Padilla Bay		Three waterfowl hunting blinds
Telegraph Slough	Parking lot, sign board	

Road and Trail Management

County and state roads provide access to wildlife area entry roads and/or parking areas. Most roads within the Skagit Wildlife Area are closed to motorized use except with a special permit, easement right, or the wildlife area managers' approval. Access to the internal unimproved and dike-top roads are limited to minimize maintenance issues and disturbance to wildlife and their habitats. The Skagit Wildlife Area has approximately three miles of public entry roads leading to Skagit Headquarters, DeBay's Slough, Samish, Leque Island, Jenson, and Big Ditch Boat Launch and parking areas. The wildlife area has approximately 15 miles of trails mostly located on dike-tops, unimproved agricultural field pathways, and unimproved natural surfaces.



Fir Island Farm corn planted fields. Photo by Alan L. Bauer.



Fir Island Farms access road. Photo by Alan L. Bauer.

Local land use compliance

Management of the Skagit Wildlife Area must be consistent with Island, San Juan, Skagit, and Snohomish County Comprehensive Plans, Natural Resource Ordinances, Critical Areas Ordinances, and Shoreline Master Programs. Table 3 identifies applicable land use regulations for each wildlife area unit.

Table 3. Land use designations by wildlife area unit

Wildlife Area Unit	Comprehensive Plan Land Use Designation and Zoning	Shoreline Management Plan Designation
Island County		
Camano Island	Rural – 91 undeveloped land	N/A
San Juan County		
Killebrew	Forest Reserve – 76 parks	Conservancy
Lopez	Waterfront – 91 undeveloped land	Rural residential
Skagit		
Debay's Slough	Agriculture Natural Resource Land 82- Agriculture related activities	Rural Conservancy
Fir Island Farms	Agriculture Natural Resource Land 74- recreational activities	Natural
Island Unit	Public Open Space of Regional/Statewide Significance 74- recreational activities	Natural
Ross Island	Agriculture Natural Resource Land	Rural Conservancy – Skagit Floodway
Samish Unit	Agriculture Natural Resource Land 91 Developed land	Rural Conservancy
Samish River	Agriculture Natural Resource Land 91 Developed land	Rural Conservancy
Skagit Bay Estuary	Public Open Space of Regional/Statewide Significance	Natural

Wildlife Area Unit	Comprehensive Plan Land Use Designation and Zoning	Shoreline Management Plan Designation
Skagit Headquarters	Public Open Space of Regional/Statewide Significance – 74 Recreational activities	Natural
Telegraph Slough		Rural Conservancy
Bald Eagle	Industrial Forest-Natural Resource Lands – 91 Undeveloped Lands	Conservancy – Skagit Floodway/Rural Conservancy
Milltown	Public Open Space of Regional/Statewide Significance – 74 Recreational activities	Natural
Sinclair Island	Rural Reserve – 92 Vacation and cabins	Rural conservancy
Cottonwood Island	Public Open Space of Regional/Statewide Significance - 91 Developed land	Natural
Goat Island	Public Open Space of Regional/Statewide Significance – 92 noncommercial forest	Natural
Guemes Island	Rural reserve - 92 noncommercial forest	Natural
Jackman Creek	Public Open Space of Regional/Statewide Significance – 67- Governmental services	N/A
South Padilla Bay	Agriculture Natural Resource Land 82- Agriculture related activities	Rural conservancy
Snohomish County		
Leque Island	Agriculture – 91 – undeveloped land	Resource

Cultural resources

In addition to stewarding fish, wildlife, and habitats, WDFW is responsible for protecting cultural resources on WDFW-managed lands. Cultural resources provide evidence of pre-contact Native Americans or historic activities. Cultural resources can include archaeological materials and sites, structures, landscapes, and objects of importance to a culture or community for scientific, traditional, religious, or other reasons.

Cultural resources management is governed by agency policy, and state and federal laws. Governing regulations include Revised Code of Washington (RCW) 27.34.200; RCW 27.44, RCW 27.53.060, and RCW 79.105.600; The Washington Administrative Code (WAC) 232-12-251 and WAC 25-48; Executive Order 21-02: Archaeological and Cultural Resources; and the National Historic Preservation Act of 1966 (Section 106). State and federal laws require the protection of cultural, geological, and other non-renewable resources. WDFW’s cultural resources specialists have developed guidelines for meeting policy and regulatory requirements and ensuring appropriate management of cultural resources. WDFW communicates, coordinates, and consults with tribes when WDFW actions and decisions may affect tribal interests. WDFW coordinates and consults with a broad array of interested parties, promotes heritage education, and provides cultural resources management expertise to external partners. WDFW’s tribal consultation procedures are guided by internal policy (Policy 5007 Consultation and Coordination with Tribes), Washington [Governor’s Centennial Accord and Millennium Agreement](#), and specific processes determined via consultation to meet the needs and practices of tribes with reserved interests within Washington state.

WDFW has a team of in-house specialists, but also employs cultural resources management consulting firms, to manage the volume of review needed to remain in compliance with cultural resources management regulations. Cultural resource specialists evaluate and implement practices

to protect and preserve cultural resources on WDFW-managed lands. They lead or guide consultation with the Department of Archaeology and Historic Preservation (DAHP) and affected Tribes. WDFW's cultural resource specialists also work with wildlife area and program managers to provide relevant historical information and recommendations for appropriate management practices around cultural resources (Goal/objectives 10A, B).

Enforcement

Laws and regulations governing the use and activities permitted on WDFW lands are located in [RCW Title 77](#) as well as [WAC 220](#).

A WDFW Enforcement captain oversees and directs the operation of five separate detachments in North Puget Sound Region (Region 4). Each detachment is comprised of a sergeant and up to six or more officers. Through field operations aimed at enhancing public safety and encouraging responsible recreation, WDFW Enforcement officers engage the recreating public in several different ways including officer/enforcement presence, education, partnership, and community involvement (Goal/objective 9A).

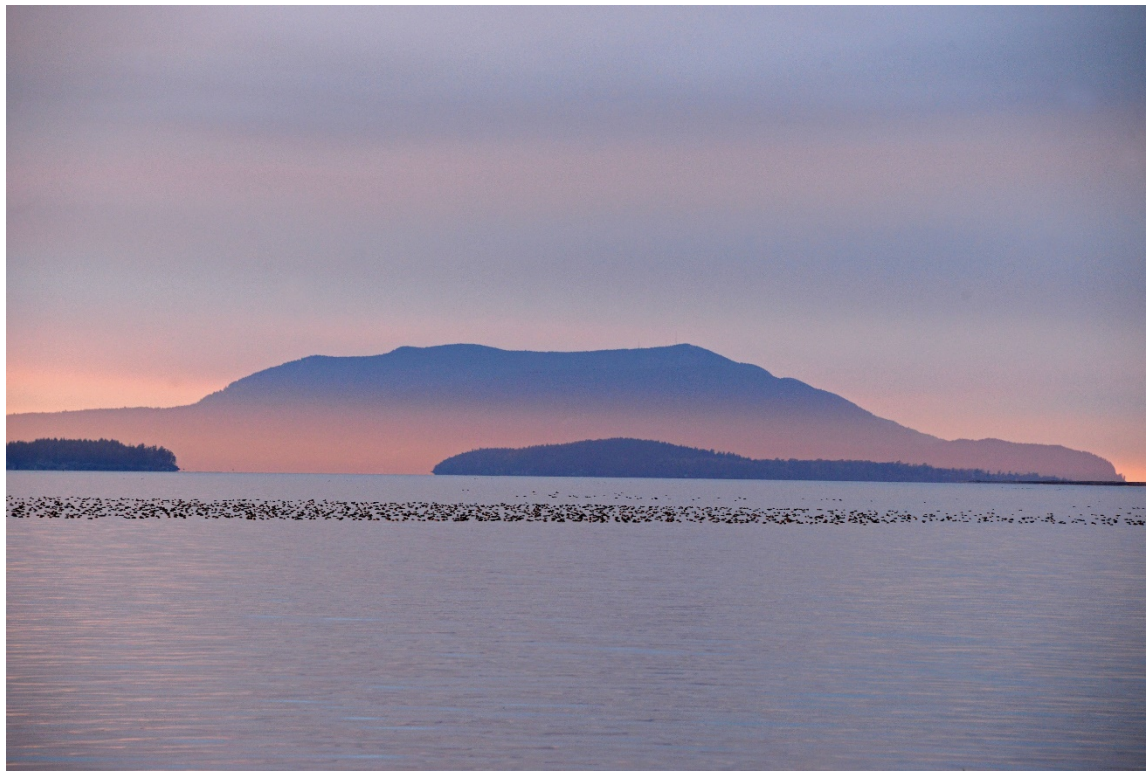
The Skagit Wildlife Area requires WDFW Enforcement officers to use a variety of patrol techniques. In addition to using patrol vehicles, officers patrol these lands by boat, foot, and aircraft. Officers have the authority to enforce all laws and regulations related to the protection of the state's wildlife and lands, including poaching, vandalism or illegal off-road vehicles, unlawful dumping of household garbage, littering, illegal fires, and other illegal activities. WDFW Enforcement officers spend as much time educating and informing the public about the reasons for regulations as they do enforcing them. Officers also work closely with WDFW biologists and local land stewards to anticipate where and when a problem may occur.

Stewardship and volunteerism

The Skagit Wildlife Area offers a wide variety of volunteer opportunities ranging from routine maintenance to education and outreach. Table 4 describes volunteer opportunities on the Skagit Wildlife Area.

Table 4. Stewardship and volunteer opportunities for Skagit Wildlife Area

Activity	Units	Time of year
Education and outreach	Skagit Headquarters	May – September
Litter control and pickup	All	Year round
Blind cleanup post waterfowl hunting season	Samish, Leque Island, Island, Samish River, DeBay’s Slough, Telegraph Slough, Jensen, Big Ditch Boat Launch, and North Fork	March – May
Waterfowl hunting blind maintenance	Samish, Island, DeBay’s Slough, Telegraph Slough	Year round
Footbridge construction and maintenance	Samish	May - September
Installation of perch poles	Samish, Samish River	May - September
Wood duck box construction and maintenance	Skagit Headquarters, Island, DeBay’s Slough, Skagit Bay Estuary	January - March
Trail maintenance	DeBay’s Slough, Telegraph Slough, Skagit Bay Estuary	June - September



Sunset across Padilla Bay. Photo by Alan L. Bauer.

Recreation

The Skagit Wildlife Area offers a wide variety of recreation opportunities (Table 5). Providing quality recreation opportunities is a primary management objective of this plan alongside conserving habitat for fish and wildlife. Recreation management will help respond to pressures on natural resources for increased access and support for changing recreation interests, while mitigating conflict among users (e.g., between hunters and bird watchers).

For more information about recreation management on WDFW-managed lands, Reference the *10-year Recreation Strategy for WDFW-managed Lands* on the [Department's website](#).

Recreation Use Trends

Earth Economics recently studied the amount of recreation occurring on state lands using mobile device user data (Lin, A., Cousins, et. Al 2022). A heat map of mobile device locations (Figure 1) at the Skagit Headquarters unit shows high use along the dike-top trail. Seasonal use was concentrated during the winter months during popular wildlife viewing periods (Figure 2). The distribution of recorded mobile device locations at the Skagit Headquarters unit show trends in use from Jan. 2019 to May 2021 broken down by month, day of week, and time of day (Figure 2). Using models based on the mobile device location data, Earth Economics estimated the total visitation for the Skagit Wildlife Area during this period at approximately 3,696,000 individual visits, indicating that the Skagit Wildlife Area is a popular destination for outdoor recreation. The Skagit Bay Estuary unit was the eight most visited management unit during the study period, based on the modelled visitation estimates.

Earth Economics estimated that the economic impact of recreation opportunities on the Skagit Wildlife Area is also significant. During the study period visitors spent approximately \$160 million. This supported labor income of approximately \$760 million and approximately 1,600 jobs (full/part-time). Tax contributions associated with consumer expenditures and supported jobs were approximately \$18 million at the state and local level and an additional \$18 million at the federal level.

Modelled visitation for Skagit Wildlife Area (Approximate)

Year	Total Visits
2019	1,705,000
2020	1,422,000
2021 (Jan. - May)	568,000
Total	3,696,000

Modelled visitation for Skagit Headquarters Unit (Approximate)

Year	Total Visits
2019	120,000
2020	104,000
2021 (Jan. - May)	54,000
Total	278,000

Figure 1. Heat map of mobile device location data (January 2019-May 2021) at Skagit Headquarters Unit shows high use along dike-top trail.

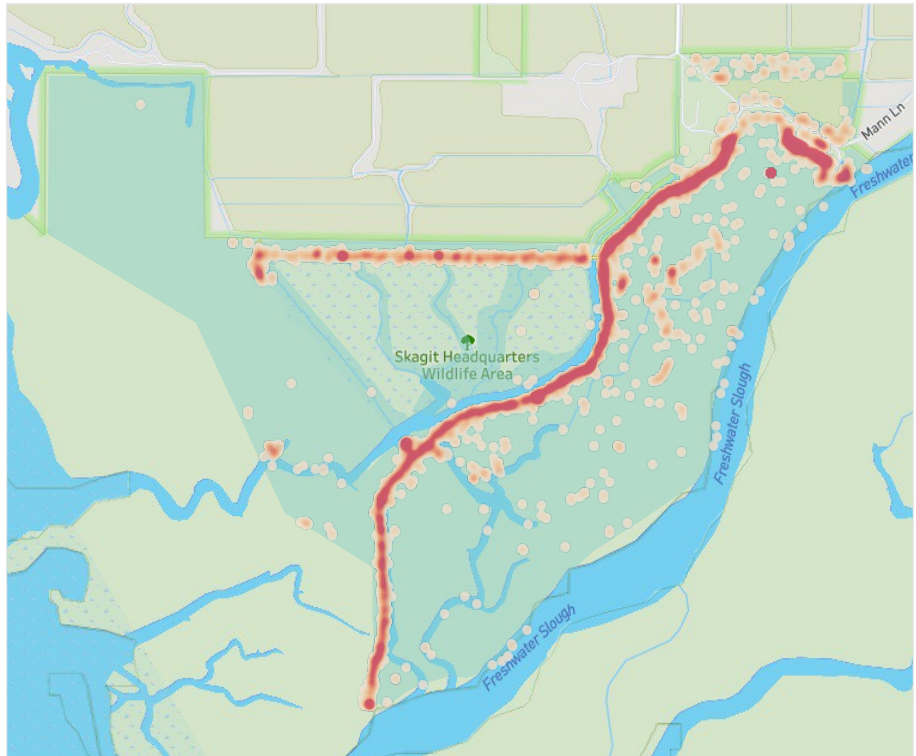
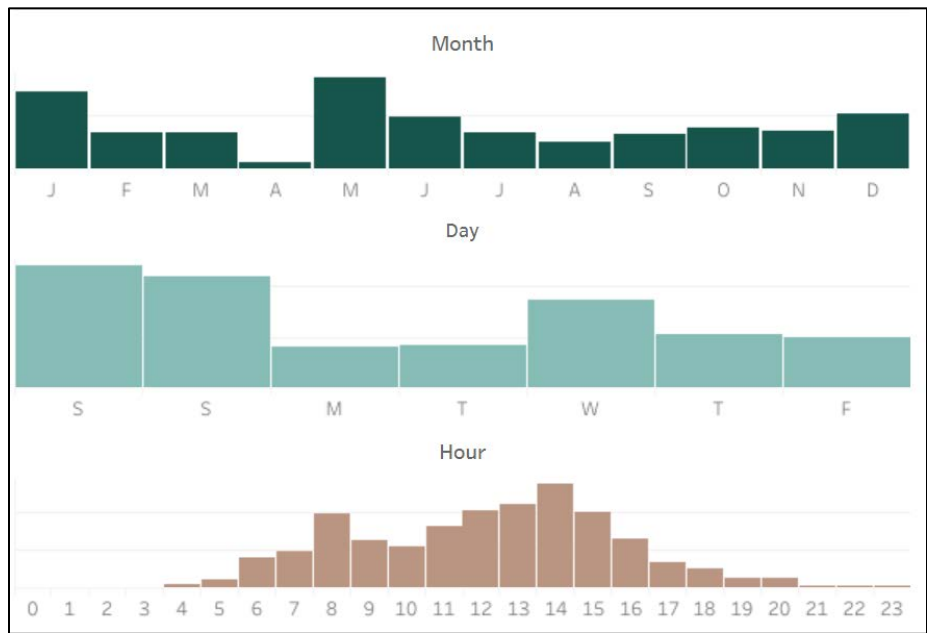


Figure 2. Temporal distribution of mobile device location data (January 2019-May 2021) at Skagit Headquarters Unit shows higher visitation during winter months, on weekends, and during early afternoon.



Wildlife Viewing

The diversity and quantity of bird species and associated habitats found at the Skagit Wildlife Area make it an excellent year-round destination for bird watching and photography. The Skagit Wildlife Area is part of the Western Hemisphere Shorebird Reserve Network sites of regional Importance. The landscape and habitat collectively support large numbers of shorebirds during winter periods and spring and fall migration. Data shows since the early 2000s, an average of 110,000 lesser snow geese and 14,000 trumpeter and tundra swans winter annually in the Greater Skagit/Stillaguamish Delta. Skagit, Padilla, and Port Susan bays support thousands of dabbling ducks (mallards, wigeon, green-winged teal and northern pintail) during late fall and winter. Raptors, songbirds, and numerous other bird species can also be found within the wildlife area.

The best time frame for viewing the greatest variety of bird species is fall through spring. Notable bird watching opportunities include Skagit Headquarters, Leque Island, and Fir Island Farm units. These units provide viewing opportunities for an average of 212 different species of birds throughout the year, with the composition of species changing each season (eBird 2023). The Skagit Headquarters Unit includes an ADA accessible viewing blind along the dike-top trail and adjacent to the Wiley Slough. Those interested in viewing raptors and short-eared owls should visit the North Fork entrance, Samish, and Samish River units. The DeBay's Slough Unit is an excellent location for viewing trumpeter swans from late fall through spring (Goal/objective 5A).



Leque Island Unit photographers. Photo by Alan L. Bauer.

Hunting

Hunting for waterfowl, pheasant, small game, and to some degree for black-tail deer is popular on the Skagit Wildlife Area. The diversity and concentration of migrating waterfowl of the Pacific Flyway makes the wildlife area one of the more popular waterfowl hunting destinations in the state. Reference the [Audubon Society's website](#) for more information about the Pacific Flyway. Skagit County regularly ranks in the top-40 counties nationwide for duck harvest, and second statewide

for total duck harvest (>49,000 ducks) and hunter days afield (>21,000 days), related to the waterfowl concentrations in this region during the fall and winter months. Waterfowl hunting opportunities can be excellent throughout the season. Peak dabbling duck populations occur in mid- to late- November and gradually decline as the season continues into late-January.

Wintering waterfowl habitat creates good public hunting opportunities in the vicinity of Port Susan, Skagit, and Padilla bays. The Skagit Bay Estuary Unit (intertidal marsh) extends from the mouths of the North and South forks of the Skagit River southward toward Stanwood, south Skagit Bay, at the northern end of Port Susan Bay and portions of the Stillaguamish River. Non-toxic shot restrictions apply on all units where hunting is allowed.

Reference WDFW's website for a [hunting guide to Skagit Wildlife Area waterfowl](#).



Samish Unit waterfowl hunter. Photo by Alan L. Bauer.

Agricultural enhancement projects are implemented annually on the Island, Samish, Samish River, South Padilla Bay, and the DeBay's Slough units. These units are planted with crops (e.g., barley, corn, fava beans, millet, and winter wheat) and left unharvested to provide food for wintering waterfowl. These activities attempt to mitigate the extensive loss of seasonal freshwater wetlands that would have supplied necessary seeds, tubers, and invertebrates for a diverse suite of ducks, geese, and swans throughout the region. Mallards, green-winged teal, pintail, and wigeon are the main dabbling duck species present in this area. Visitors may also encounter Gadwall, northern shovelers, and various diving and sea ducks such as bufflehead, scaup, and goldeneye, as well as coots and snipe. Snow geese are plentiful throughout the season, though hunting opportunities on public lands are limited, the focus of management is dabbling ducks. Small numbers of Canada geese are also present during the early and regular hunting seasons.

Youth and senior hunting for pheasant occurs on the Samish Unit during specified days in September through mid-October each season.

Black-tailed deer

Black-tailed deer hunting is allowed in the Island, Milltown, Killebrew Lake, and Ross Island units. Access to the Island, Milltown, and Ross Island units is by boat only.

Small Game

Small game hunting opportunities are limited based on site-based rules and regulations.

Boating

Kayaking, canoeing, and standup paddleboarding opportunities are abundant on the wildlife area. The best places to launch are on the Skagit Headquarters and Leque Island units and at several other access areas near the wildlife area. The best time of year to kayak/canoe is during the summer months. To support paddling in the wildlife area, the Department is developing a series of water trails within the South Fork Skagit River slough network (Goal 5M).

Hiking and walking

A 2-mile point-to-point dike-top hiking trail on the Skagit Headquarters Unit meanders through the Wiley Slough Restoration site to the mouth of the South Fork Skagit River. The trail provides views of Mount Baker, Olympic Mountains, South Fork Skagit River, and the Skagit Bay.

A .25-mile dike-top walking trail provides interpretive signage and benches near the Fir Island Farm Restoration project site and offers views of the Olympic Mountains, Cascade Mountains, Whidbey and Camano Islands, and Skagit Bay.



Skagit Bay Estuary Unit – Craft Island walkers. Photo by Alan L. Bauer.

The Leque Island Unit has a .45-mile dike-top point-to-point trail that provides views of the Leque Island Restoration Project. Interpretive signs describe the salmon restoration project and fish and

wildlife resources, and hikers can enjoy views of Port Susan Bay, Skagit Bay, Camano Island, Mount Baker, and the Cascades Mountains.

The Island Unit dike-top trail system includes 5.5 miles of trail circulating the perimeter of the unit. A bridge connects the trail to West and East lobes of the unit. During a November 2021 flood, a breach occurred on the east lobe of the unit dike adjacent to Steamboat Slough. That the section of dike will not be repaired, and the overall future of the trail is yet to be determined. The trail provides views of surrounding estuary, Skagit Bay, and Mount Baker. Public access is by boat or kayak only.

The DeBay's Slough Unit has two trails. The Game Reserve trail is a .40-mile loop trail starting from the northeast corner of the parking lot heading toward DeBay's Slough. The hunt side (non-reserve side of the unit) contains a second trail, a point-to-point 0.6-mile trail that begins from the parking lot and follows the east bank of DeBay's Slough.

The Samish Unit trail system consists of a total of 3.3 miles of trails surrounding agricultural fields throughout the unit. Adjacent to the parking lot is a short, paved trail segment that provides limited ADA access. These trails provide views of Guemes Island, Samish Island, Anacortes, Padilla Bay, and Mount Baker.

The Skagit Bay Estuary Unit trail, accessed via the North Fork entrance, is a 1-mile unimproved natural surface trail from the end of Rawlins Road to Craft Island. Most of the trail is in the estuary and subject to tidal inundation. Hikers can view Craft Island, Whidbey Island, Camano Island, Skagit Bay, and the Cascade Mountains.



Skagit Bay Estuary hunter and his dog. Photo by Alan L. Bauer.

Dog Training

Dog walking, training, and hunting are allowed on the Skagit Wildlife Area. WAC 220-50-170 requires owners to leash dogs while on WDFW-managed lands between April 1 and July 31 unless otherwise posted. Current regulations indicate dog training may be conducted year-round on

designated portions of the Skagit Wildlife Area units. Currently wildlife area does not have any designated areas within individual units. Wildlife area staff will collaborate with the Skagit Wildlife Area Advisory Committee and other stakeholders to develop dog appropriate designated training areas on the wildlife area (Goal/objective 5B). The Samish Unit is doesn't allow dogs from April 1- July 15 signage to protect ground nesting birds and their habitat.

Training bird dogs for hunting is only allowed on the Skagit Wildlife Area outside of the ground bird nesting season (April 1- July 15). Designated training areas can be used for other recreational activities throughout the year.

Fishing

Fishing opportunities occur throughout the year within and in the vicinity of Skagit Wildlife Area. Most seasons and regulations are reviewed, updated, or set annually, and there are often in-season management actions for some species. Prospective anglers should review [information](#) on [WDFW's website](#) for the latest opportunities, regulations, and licensing needs. The website provides the current WDFW sport fishing pamphlet. Anglers can download the [Fish Washington App](#) to check for emergency rule changes in areas they're interested in angling.

Private Lands Access Program

The South Padilla Bay and Samish River units present unique recreational management challenges. To address safety concerns of neighboring landowners, WDFW develops land management agreements with private landowners to address safety issues, establish public trails, and build additional recreation infrastructure (Goal/objective 3D, 5H, 5I). WDFW develops parking and hunting areas for each hunting site for each unit. WDFW limits the number of hunters that can occur at a location and establishes designated areas. Currently, there are three designated hunting areas on the South Padilla Bay Units (Erickson Parcel and Hulbert Parcel) and two on the Samish River Unit.

Table 5. Recreation use on the Skagit Wildlife Area

Wildlife Area Unit	Hunting and Fishing Opportunities	Other Recreation	Restrictions	Recreation Demand	Education/ Interpretation	Parking and other facilities
Bald Eagle	Hunting, fishing Fishing-see current regulations	Wildlife viewing	No public access – boat access only Non-toxic shot required	Low	None	None
Camano Island	None	None	No public access	Low	None	None
Cottonwood Island	None Fishing-see current regulations	None		Medium – high seasonally	None	Boat launch, parking and bank fishing area provided by SpudHouse Boat Launch

Wildlife Area Unit	Hunting and Fishing Opportunities	Other Recreation	Restrictions	Recreation Demand	Education/ Interpretation	Parking and other facilities
DeBay Slough	Waterfowl hunting in designated hunt unit. Large portion of the site is a Game Reserve closed to public access.	Walking and bird watching.	Game Reserve has restricted access to the parking area and short trail Hunt Unit is open to public access Non- toxic shot required	High seasonally	Kiosks and sign boards on both parking areas.	Two parking areas one on the Reserve and other on the hunt unit
Fir Island Farm	None	Bird watching and photography Walking, hiking	Game Reserve No access beyond short trail and parking area	High seasonally	Sign board and interpretive signs	Parking Short ADA trail Benches Interpretive signs
Guemes Island	None	None	No public access	Low	None	No parking or developed trails. Fire concerns
Goat Island	Fishing-see current regulations	Wildlife viewing	Beach access only. No fires No camping.	Medium	None	None, boat in access only Shore access limited by tides
Island	Boat access only Waterfowl and deer hunting Fishing-see current regulations	Bird watching Photography 5.5 miles of hiking/walking trails	Hunting - 15 shell limit Non-toxic shot required	High seasonally		Boat access only. Parking available at Skagit WLA Headquarters and Conway (Skagit County) boat launches.
Jackman Creek	Fishing-see current regulations	None	No public access	Low	None	None
Killebrew Lake	Fishing-see current regulations Waterfowl and deer hunting	Hiking Bird watching Photography	Non-toxic shot required	Low	None	Limited

Wildlife Area Unit	Hunting and Fishing Opportunities	Other Recreation	Restrictions	Recreation Demand	Education/ Interpretation	Parking and other facilities
Leque Island	Waterfowl Fishing-see current regulations	Walking Bird watching Photography	Non-toxic shot required	High seasonally	Sign boards Kiosk	Davis Slough Eide Road ¾ mi walking trail
Lopez	Fishing-see current regulations	None	No public access	Low	None	None
Milltown Island	Waterfowl and deer hunting Fishing-see current regulations		Non-toxic shot required	Low	None	No parking boat access only
Ross Island	Waterfowl and deer hunting, Fishing-see current regulations	Wildlife viewing	Boat access only Non-toxic shot required	Low	--	--
Samish Unit	Waterfowl Fishing-see current regulations	Bird watching Walking/hiking 3.3 miles of trails Photography Dog walking/training	Non-toxic shot required 15 shell limit No Dogs Allowed from April 1-July 15	High	Kiosk	Yes Sani-can year around Mowed walking paths
Samish River	Limited access hunting (waterfowl) Fishing-see current regulations	Walking Bird watching Photography	Non-toxic shot required 15 shell limit	High	None	No parking currently Public access development limited by NRCS easement
Sinclair Island	No hunting or fishing	No developed public access			Sinclair Island	No hunting or fishing
Skagit Bay Estuary	Waterfowl Fishing-see current regulations	Bird watching Photography Walking Swimming	Game Reserve (part of unit) Non-toxic shot required	High seasonally	Sign boards in some locations	WDFW parking at Jensen and the; Big Ditch and Davis Slough boat launches. North Fork entrance has county road parking only

Wildlife Area Unit	Hunting and Fishing Opportunities	Other Recreation	Restrictions	Recreation Demand	Education/ Interpretation	Parking and other facilities
Skagit Headquarters	Waterfowl Fishing-see current regulations	Bird watching	Non-toxic shot required	High	Waterfowl	Bird watching
South Padilla Bay	Limited access hunting (waterfowl) No fishing	None	No other public access Opportunity to view from the Padilla Bay trail (Skagit County) Non-toxic shot required	Medium seasonally	None	Limited to hunt sites
Telegraph Slough	Waterfowl	None	Non-toxic shot required	Medium seasonally	None	Yes on the south side of Highway 20

Water access areas

The Department manages water access areas primarily for recreation associated with fishing and boating. Skagit, Snohomish, and San Juan counties feature 50 water access areas. Twenty-two provide access to lakes, 26 to streams, and two to Puget Sound. Collectively, 29 boat ramps and five hand launches provide access by boats and other watercraft to 32 waterbodies in the planning area (Table 6). The following four water access areas, comprised of boat launches, are embedded in four separate wildlife area units:




Spudhouse Boat Launch is located on the right bank of the Skagit River just above the North and South forks and is the primary public use area in the 226-acre Cottonwood Island Unit. Facilities include a concrete boat ramp, large parking lot, and vault toilet. Visitors use this site for boat launching and fishing during salmon seasons.




The **Skagit Headquarters Boat Launch** in the Skagit Headquarters Unit is fully developed with a concrete ramp, hand launch, vault toilet, and ample parking. It provides boaters with direct access to Freshwater Slough and Skagit Bay. It is the primary boating access area on the unit and is heavily used by waterfowl hunters and other boaters. The launch provides access to the Island, Milltown, and Skagit Bay Estuary units, which visitors can only access by boat. A Boating Facilities Program grant from the Recreation and Conservation Office funded full redevelopment of the launch in 2016.




The **Big Ditch Boat Launch** is located within the Skagit Bay Estuary Unit south of Milltown near the intersection of Old Pacific Highway and Pioneer Highway. A hand launch and small parking lot facilitate direct access by small watercraft to the southern reaches of Skagit Bay. The site supports waterfowl hunting and quality bird watching opportunities and is adjacent to critical infrastructure owned and operated by Drainage and Diking Improvement District 7 (South Skagit Flats, Snohomish County). This site is proposed to be open seasonally during waterfowl hunting season.

The **Davis Slough Boat Launch** lies on the western boundary of the Leque Island Unit just south of the SR 532 bridge. A small parking lot and hand launch provide access by small watercraft to Davis Slough, Skagit Bay, and the new interior channel on Leque Island constructed during the 2019 restoration project. Popular uses include waterfowl hunting and bird watching.

Table 6. Water Access area acres on and near the Skagit Wildlife Area

County	Waterbody	Water Access Area	WLA Unit	Public Fishing Easement	Fishing and Boating Opportunities			Water Access Area Facilities		
					 Fishing*	 Hand launch	 Trailered boat launch	Boat Ramp Surface	Toilet ^ = ADA	Parking
San Juan	Egg Lake	Egg Lake			•	•				•
	Hummel Lake	Hummel Lake			•		•	Gravel	•	•
	Sportsmans Lake	Sportsmans Lake			•		•	Gravel		•
Skagit	Beaver Lake	Beaver Lake			•		•	Gravel	•	•
	Big Lake	Big Lake			•		•	Concrete	•^	•
	Clear Lake	Clear Lake			•		•	Concrete	•	•
	Lake Campbell	Lake Campbell			•		•	Concrete	•	•
	Lake Cavanaugh	Lake Cavanaugh			•		•	Gravel	•	•
	Lake Erie	Lake Erie			•		•	Concrete	•	•
	Lake McMurray	Lake McMurray			•		•	Gravel		•
	Samish River	Samish River		•	•					•
	Sixteen Lake	Sixteen Lake			•		•	Concrete	•	•
	Skagit River	Baker River			•		•	Unimproved		•
	Skagit River	Barnaby Slough			•					
	Skagit River	Birdsview			•		•	Concrete		
	Skagit River	Edgewater Park			•		•	Concrete	•	•
	Skagit River	Faber Ferry			•		•	Concrete	•	
	Skagit River	Gilligan Creek			•					
	Skagit River	Hamilton			•		•	Concrete	•	•
	Skagit River	Lyman Ferry			•		•	Unimproved		
	Skagit River	Pressentin Creek			•					•

County	Waterbody	Water Access Area	WLA Unit	Public Fishing Easement	Fishing and Boating Opportunities			Water Access Area Facilities		
					 Fishing*	 Hand launch	 Trailered boat launch	Boat Ramp Surface	Toilet ^ = ADA	Parking
	Skagit River	Sedro-Woolley			•		•	Concrete	•	•
	Skagit River	Spudhouse	Cottonwood Island		•		•	Concrete	•	•
	Skagit River	Utopia Road			•					
	Skagit River	Young's Bar			•				•	•
	Skagit River NF	North Fork		•	•					
	Skagit River SF	Skagit Headquarters	Skagit Headquarters		•	•	•	Concrete	•	•
	Vogler Lake	Vogler Lake			•		•	Gravel	•	•
Snohomish	Bryant Lake	Bryant Lake			•					
	Canyon Creek	Canyon Creek		•	•					•
	Cook Slough	Cook Slough			•					•
	Crabapple Lake	Crabapple Lake			•		•	Gravel	•	•
	Lake Armstrong	Lake Armstrong			•		•	Concrete		•
	Lake Howard	Lake Howard			•		•	Gravel	•	•
	Lake Ketchum	Lake Ketchum			•		•	Gravel	•	•
	Lake Loma	Lake Loma			•		•	Gravel	•	•
	Lake Martha	Lake Martha			•		•	Gravel	•	•
	Lake Shoecraft	Lake Shoecraft			•		•	Gravel	•	•
	Puget Sound	Big Ditch	Skagit Bay Estuary		•	•				•
	Puget Sound	Davis Slough	Leque Island		•	•				•
	Riley Lake	Riley Lake			•		•	Gravel	•	•
	Stillaguamish River	Hat Slough			•		•	Concrete	•	•

County	Waterbody	Water Access Area	WLA Unit	Public Fishing Easement	Fishing and Boating Opportunities			Water Access Area Facilities		
					 Fishing*	 Hand launch	 Trailered boat launch	Boat Ramp Surface	Toilet ^ = ADA	Parking
	Stillaguamish River	Blue Stilly		•	•					•
	Stillaguamish River NF	Boulder River		•	•					•
	Stillaguamish River NF	Fortson Hole			•				•	•
	Stillaguamish River NF	Hazel		•	•					•
	Stillaguamish River NF	Gladsjo		•	•					
	Stillaguamish River NF	Lime Quarry			•					•
	Stillaguamish River SF	Jordan		•	•					•
	Sunday Lake	Sunday Lake			•	•			•	•

* Fishing opportunities on WDFW-managed lands. Refer to current WDFW sport fishing rules, as fishing seasons change and may not occur at all sites.

Research and other studies

Consistent with WDFW's mission to preserve, protect, and perpetuate fish, wildlife, and habitat, WDFW supports independent studies to achieve wildlife area objectives. Appendix E describes studies that have occurred on the wildlife area.



Skagit Bay Estuary, Mt. Baker. Photo by Alan L. Bauer.

Wildlife Area Goals, Objectives, and Monitoring

Goals, objectives, and performance measures

This plan sets management priorities for the Skagit Wildlife Area for the next 10 years. Regional and headquarters staff members, with input from the Skagit Wildlife Area Advisory Committee and the public, collaboratively developed the goals, objectives, and performance measures in this plan (Refer to Table 7).

Monitoring and adaptive management

Wildlife area objectives will be evaluated and updated annually with input from the wildlife area advisory committee and regional district team. The update reports progress on goals and objectives and identifies any new actions to meet plan goals. Every two years, wildlife area staff prepare a summary of management highlights and new issues published on the agency website. Further, over the term of the plan (10 years), the agency will evaluate the funding level required to successfully implement the plan.



Snow geese. Photo by Alan L. Bauer.

Table 7. Skagit Wildlife Area goals, objectives, and performance measures

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
Goal 1. Maintain or improve the ecological integrity of priority sites.				
A. Establish an ecological integrity baseline and associated goals for ecological systems of concern/priority systems by 2028.	All	1. Baseline established (y/n); 2. EI goals established (y/n).	Ecological Integrity (EI) Monitoring Team	(When funded) Work with WLA manager to design monitoring plan to achieve objective A over 10-year planning term. Conduct data collection to determine baseline within 5-year planning term. Provide EI baseline report to WLA manager prior to start of subsequent 10-year planning term. Work with WLA manager to establish EI goals.
B. Identify and implement forest health treatments for the wildlife area over the next 10 years.	Jackman Creek, Killebrew Lake NAP	1. # of acres treated.	WLA Manager /Forest Management Team Lead	Jackman Creek - Thin western hemlock to accelerate succession and increase species/structural diversity if forests sufficiently mature within ten years.
C. Conduct weed survey and control activities annually, consistent with guidance from the weed management plan and site-specific habitat management plans annually.	All	1. # acres inspected; 2. # acres treated; 3. # of acres restored/enhanced*; 4. Cattail management thresholds set for each unit (y/n); 5. Annual weed control report produced (y/n). (*Refers to specific grant annual reporting performance measures e.g., RCO)	WLA Manager/ North Puget Sound Weed Crew/ Habitat Program Project manager/ Assistant Regional Habitat Program Manager/ WLA Manager	Support and coordinate with North Sound Weed Crew to prevent/eradicate Spartina (Leque Island and Skagit Bay Estuary units). Develop annual work plan (priority treatment areas) and funding strategy. <i>Climate change may result in common invasive species in western Washington becoming more abundant. Consider accounting for the additional capacity/resources needed to effectively address this threat.</i> Explore options to develop ecological targets and monitoring protocols with partners. The focus is increasing the percentage of cover of native plant communities.

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
				<p>Setup annual meetings to discuss work to date and planned activities, what has worked well and what has not.</p> <p>Identify focal species site specific plans and tailor back to individual sites.</p> <p>Discuss budget needs regarding WLA infrastructure to meet weed management needs.</p> <p>Infrastructure needed for access into the marsh and equipment repair facilities.</p> <p>Work with staff and weed crew to produce report, including GIS layer(s) of treatment type, area, date, and target species.</p> <p>Identify techniques and practices for use in the intertidal area*.</p> <p>Plan elements include timing, allowable activities, and where and when does it make sense to manage.</p> <p>* Intertidal estuary work focuses on Milltown, Island, Skagit Bay Estuary, Headquarters, Fir Island Farm and Leque to ensure broad species benefits.</p>
<p>D. Support development of research with conservation organizations and tribal governments to understand the impact of invasive species in estuary habitats by 2027.</p>	<p>Estuary units</p>	<ol style="list-style-type: none"> 1. Proposals/grant applications completed (y/n); 2. Funding obtained (y/n); 3. Research initiated (y/n); 4. Scientific report completed (y/n). 	<p>WLA Manager/ <i>North Puget Sound Weed Crew/ Project manager/ Assistant Habitat Regional Program Manager</i></p>	<p>Convene partners group.</p> <p>Identify key questions and data gaps.</p> <p>Develop definitions of ecological targets regarding vegetation.</p> <p>Develop scope, budget, and submit funding proposals to address data gaps.</p> <p>Identify and hire research team.</p>

Draft Objective	Unit	Performance Measure	WDFW Lead <i>Support</i>	Tasks
				<p>Write up results in both scientific report and for public outreach.</p> <p>Identify operations and maintenance funding sources.</p> <p>Incorporate findings into weed management.</p> <p>Consider adding non-vegetative invasive species.</p>
<p>E. Pursue opportunities to expand wildlife area when they meet wildlife area and regional objectives, including but not limited to areas contributing toward waterfowl forage, hunting, wildlife viewing, and/ or providing habitat for ESA-listed species.</p>	<p>All</p>	<p>1. # of grant applications funded;</p> <p>2. # of acres of land acquired.</p>	<p>WL Regional Program Manager <i>/WLA Manager /Regional Lands Agent</i></p>	<p>Review and evaluate potential properties that meet WDFW objectives.</p> <p>Coordinate with partners and regional director to identify project areas.</p> <p>Individual projects will go through the Lands 20/20 annual review.</p> <p>Seek grant funding for acquisition.</p> <p>Implement awarded grants.</p>
<p>Goal 2. Achieve species diversity at levels consistent with healthy ecosystems.</p>				
<p>A. Annually integrate Diversity (e.g., SGCN) and Game priorities on the wildlife area into district biologist work plan when appropriate.</p>	<p>All</p>	<p>1. Annual coordination occurs (y/n).</p>	<p>WL Program Manager/ <i>Wildlife Program District Biologists/ WLA Manager</i></p>	<p>Division managers coordinate with District Biologists and regional program manager during work planning.</p> <p>District biologists coordinates priorities with wildlife area manager.</p> <p>Plan on short pre- and post- work planning conversations to prioritize district and wildlife area actions.</p> <p>SGCN and state listed species specific priorities lists provided from Diversity Division.</p> <p>Game species specific priorities provided by Game Division.</p>

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
B. Coordinate with DNR Natural Heritage Program to determine the health of the Killebrew Lake Natural Area Preserve and to establish management objectives by 2025.	Killebrew Lake NAP	1. DNR Consulted (y/n); 2. Rare plant surveys conducted annually (y/n); 3. Management objectives written and included in plan (y/n); 4. Signage updated (y/n); 5. Dock removal permit obtained (y/n); 6. Dock removed (y/n); 7. Stewardship agreement developed (y/n).	WLA Manager/WL District Biologist/ Regional Restoration Projects Coordinator	Consult with DNR bog specialist during winter/spring seasons to evaluate site conditions, survey for rare plants. Consider test wells to determine hydrography of Killebrew Lake bog. Work with DNR to get a better understanding of the impacts of the Beaver deceiver installed in the culvert and how it is currently being managed. Develop management objectives for site, as appropriate. Update signage. Discuss with local conservation partners to establish a stewardship and monitoring agreement. Remove dock (HPA required).
Goal 3. Maintain, enhance, and monitor waterfowl habitat.				
A. Discuss options to maintain and/or increase enhanced and managed forage for waterfowl by 2025.	DeBay's Slough, Fir Island Farm, Samish, Samish River, Island, South Padilla Bay	1. # of acres enhanced and managed annually; 2. # of management areas identified; 4. # of Agricultural leases maintained annually within WLA and outside estuary.	WLA manager/ Wildlife Program District Biologists/ Waterfowl Section Manager/ Assistant Regional Wildlife Program Manager	Develop hunting and forage strategy for each site. Integration of ag leases, shared crops, site by site evaluation, driven by funding, process will be evaluated based on loss of ag lands – and other factors. Develop a table of current and future forage projections via unit, incorporating planned estuary restoration. Relates to 3B – status of Game Reserves. Include seasonal changes at the end of each year and management changes at the end of lease cycle. Include cattail management to improve waterfowl habitat on WDFW managed lands.

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
				<p>Consider utilizing ongoing data collection events where waterfowl counts are taken before/after cattail control to see if use patterns change. Data collection opportunities include Audubon Skagit Bay Christmas Bird Counts, USGS Bay View and Warm Beach Breeding Bird Survey routes.</p> <p>Discuss incorporation of secretive marsh bird monitoring.</p> <p>Note: Existing annual waterfowl flights monitor trends in waterfowl numbers over time and include the entire Whidbey Basin.</p>
<p>B. Evaluate the current and future status of game reserves on the wildlife area by 2027.</p>	<p>DeBay's, Fir Island Farm, Skagit Bay Estuary</p>	<p>1. Biological concerns assessed (y/n);</p> <p>2. Management changes addressed during 3-year rule making process (y/n).</p>	<p>Waterfowl Section Manager, Wildlife Regional Program Manager/ WLA Manager</p>	<p>To be evaluated during the 3-year rule making process – starts May 2023. The 3-year season setting process starts with gathering ideas from the WDFW regions and the public. After gathering public input draft rules go through a formal rulemaking process which includes public comment period.</p> <p>Work internally to develop a recommendation.</p> <p>WAAC to review and comment on draft recommendation.</p> <p>Consider Skagit Delta Game Reserve as a pilot.</p> <p>SEPA process will occur.</p> <p>Adjustment and/or removal of boundaries.</p> <p>Consider if habitat management changes should occur.</p> <p>Determine the impact on site specific wildlife and waterfowl use with modification to user access.</p>

Draft Objective	Unit	Performance Measure	WDFW Lead <i>Support</i>	Tasks
				<p>Establish seasonal restriction access at different zones.</p> <p>Management measures would be updated, as needed.</p> <p>Commission review results.</p> <p>Note: This objective has broader and statewide implications and maybe added to Game Management Plan.</p>
<p>C. Coordinate with Natural Resources Conservation Service to evaluate longer term habitat objectives for the wetland reserve easement on Samish River by 2024.</p>	<p>Samish River</p>	<p>1. NRCS agreement completed (y/n).</p>	<p>WLA Manager/ <i>Capital and Asset Management Program</i></p>	<p>Coordinate Skagit County, NRCS, Ducks Unlimited.</p> <p>Samish Unit parking lot constructed will be completed fall 2023, implementation complete by 12/2024.</p> <p>Meet with NRCS to discuss changes in draft list of tasks related to project implemented in 2016 factoring in habitat improvements within the reserve agreement.</p>
<p>D. Consider development of cooperative management opportunities with the Private Lands Access Program on other WDFW- and privately-owned lands.</p>	<p>--</p>	<p>1. # of cooperative management agreements per year.</p>	<p>Private Lands <i>/WLA Manager</i></p>	<p>Coordinate with DNR, and Dept of Ecology at private lands sites.</p> <p>Identify WDFW-managed properties available for partnership on private lands as opportunities become available.</p>
<p>E. Evaluate opportunities to improve water management on the Samish and Samish River units to benefit waterfowl habitat.</p>	<p>Samish, Samish River</p>	<p>1. Water conditions monitored annually (y/n);</p> <p>2. # of grants successfully awarded;</p> <p>3. # of projects implemented.</p>	<p>WLA Manager</p>	<p>Coordinate with neighbors and partners in identifying off-site water projects and monitor sites for sheet water management considerations.</p>

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
F. Develop a collaborative agreement with Dept. of Ecology regarding the wetland enhancement project on Padilla Bay.	South Padilla Bay	1. Agreement completed (y/n); 2. # of blinds installed.	WLA Manager/ <i>Wildlife Program District Biologist</i>	Work with Dept of Ecology on the wetland enhancement project. Considerations include - private lands hunting blinds. Determine if the project has been vetted with local ag community. Pre-project monitoring conducted.
Goal 4. Restore and improve habitat processes that limit Chinook and other salmonids' recovery.				
A. Monitor and adaptively manage restoration projects to maximize benefits as new information becomes available.	Estuary units	1. Adaptive management actions identified (y/n); 2. Adaptive management actions implemented (y/n).	Assistant Regional Habitat Program manager/ <i>WLP Restoration Coordinator/ North Sound Weed Crew</i>	Manage sites post project for maximum salmon habitat values. Consider how to meet future recovery goals – with lack of available properties – e.g., restoration banking. Coordinate with tribes and stakeholders. Integrate cultural resources review and consultation early in planning to manage risks, maintain compliance, and identify opportunities. Supporting the larger process. Manage sites pre- and post-project for habitat value. Support weed management actions: (1) determine if the proposed outcome of the project is at risk from nearby weeds; (2) provide the engineers with access requirements needed to manage weeds; and (3) provide funding for ongoing weed management.
B. Monitor and manage 131 acres estuary restoration at Fir Island Farm annually.	Fir Island Farm	1. # of acres managed /monitored annually.	Project Manager/ <i>WLA Manager/ North Sound Weed Crew</i>	Continue to monitor and treat noxious weeds. Work with partners to evaluate if additional channel work is warranted. <i>Consider potential</i>

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
				<p><i>impacts from sea level rise and increased winter streamflow as part of this discussion.</i></p> <p>Ensure appropriate equipment and staff for the level of work.</p>
C. Restore 270 acres on the Island Unit to intertidal estuary by 2030.	Island Unit	1. Preliminary design completed (y/n); 2. Final design completed (y/n); 3. Construction completed (y/n).	Project Manager/ WLA Manager	<p>Complete 60% design and review.</p> <p><i>Consider mid and late-century sea level rise projections and streamflow projections in the development of design.</i></p> <p>Complete 90% design and review.</p> <p>Develop adaptive management plan document.</p> <p>Complete construction.</p> <p>Ensure long-term vegetation management is planned for and funded.</p>
D. Repair (Wiley) setback dike and transfer operations to Dike, Drainage, and Irrigation Improvement District #22 by 2026.	Skagit Headquarters	1. Construction completed (y/n); 2. Infrastructure ownership transferred (y/n).	Project Manager/ WLA Manager/ Regional Lands agent	<p>Complete 90% design and review (done)</p> <p><i>Consider mid and late-century sea level rise projections and streamflow projections in the development of design.</i></p> <p>Develop agreement with DDIID #22 for transfer.</p> <p>Complete construction project.</p> <p>Transfer infrastructure to DDIID #22.</p> <p>Work with District on long-term management agreement memorandum of understanding.</p>
E. Monitor and manage 276 acres estuary restoration at Leque Unit annually.	Leque	1. # of acres managed /monitored annually.	Project Manager/ WLA Manager/ North Sound Weed Crew	<p>Continue to monitor and treat noxious weeds.</p> <p>Continue to work with partners to evaluate if additional channel work is needed. <i>Consider potential impacts from sea level rise and increased winter streamflow as part of this discussion.</i></p>

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
				Ensure long-term vegetation management is planned for and funded.
F. Improve connectivity of 220 acres at the Milltown Unit to surrounding marsh by 2025.	Milltown Island	1. Final design completed (y/n); 2. Construction completed (y/n).	Project Manager/ WLA Manager	Complete preliminary design. Complete final design. Develop vegetation management, monitoring, and adaptive management plan.
G. In partnership with Skagit County, complete feasibility study on the potential DeBay's Slough restoration project by 2025.	DeBay's Slough	1. Feasibility study complete (y/n); 2. Additional deliverables to be determined.	Regional Restoration Coordinator /Assistant Regional Habitat Program Manager	Coordination and review of each step consistent with the Restoration Pathway. Species considerations fully vetted. Next steps will be determined in feasibility study. Address potential weed management needs pre- and post-restoration.
Goal 5. Provide recreation opportunities in the wildlife area.				
A. Increase wildlife viewing and waterfowl hunting on the wildlife area annually.	Skagit Headquarters, Island, Milltown, Leque Island, Samish, Samish River, Skagit Bay Estuary, South Padilla Bay	1. Wildlife viewing locations and opportunities are identified (y/n); 2. # of new blinds added annually (hunting and wildlife viewing).	WLA Manager/Private Lands Division/ <i>Regional Communications Specialist</i>	Partner with WAAC, local waterfowl and wildlife viewing organizations, e.g., Washington Waterfowl Association, Ducks Unlimited, Pilchuck Audubon Society, Whatcom Audubon, and Skagit Audubon. Identify prime wildlife viewing locations on the wildlife area. Identify timing (night flights) and opportunities. Focus on opportunities when hunting is not occurring to reduce conflict. - Work with Private Lands Division to develop agreements for parking and wildlife viewing access at prime spots.

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
B. Provide public bird dog training opportunities on the wildlife area by 2025.	Skagit Headquarters, Samish, DeBay's Slough	1. Unit specific maps provided for the website, signs, and kiosks (y/n).	WLA Manager/ <i>Assistant Wildlife Regional Program Manager</i>	Develop maps and include closed areas. Follow WAC's Consider unit specific rulemaking that defines training. Involve stakeholders and WAAC in outreach efforts. Differentiate between bird dog training and areas where on leash dog walking is allowed.
C. Develop a strategy to address conflicts between pets and wildlife by 2025.	Skagit Headquarters, Leque Island, Samish, DeBay's Slough Hunt Unit (area), Skagit Bay Estuary, Telegraph Slough	1. Strategy developed and implemented (y/n); 2. Monitoring conducted (y/n); 3. Enforcement strategy developed (y/n).	WLA Manager	Provide education and outreach materials to the public to reduce pets off leash. Consider areas that have seasonal closures for pets.
D. Evaluate the status of game reserves on the wildlife area in preparation of the three-year rule making package planning process.	DeBay's Slough, Fir Island Farm, Skagit Delta	1. Recommendations for the three-year package developed (y/n).	Game Division Waterfowl Section Manager/ <i>WLA Manager/ WLP District Biologist</i>	WLP staff develops a proposal in coordination with waterfowl section and Lands Division. Initiate internal discussions (Skagit and Snohomish District Teams and Regional Management Team). Completion of objective 3B. Discuss and solicit feedback from the Wildlife Area Advisory Committee.
E. Develop a strategy to reduce recreation conflict on the wildlife area by maintaining, close and/or develop trails and other access facilities to support recreation	Samish Unit, Samish River, DeBay, Skagit Bay Estuary (Craft Island),	1. Strategy developed (y/n); 2. # of trails closed;	WLA Manager/ <i>Watchable Wildlife/ Private Lands Program/ Regional</i>	Coordinate with neighboring landowners. Consult with tribes on potential recreation impacts at project and cumulative levels.

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
while considering ecological/conservation goals for each unit by 2026.	South Padilla Bay	3. # of trails improved/opened.	<i>Communications Specialist</i>	<p>Coordinate with Skagit and Pilchuck Audubon Society (wildlife viewing) in developing a Code of Conduct for the wildlife area.</p> <p>- The Regional communication specialist will work in collaboration with Audubon chapters, local Chambers of Commerce, and tourism bureaus, etc., to communicate appropriate behavior in relation to wildlife and other recreationists on WDFW-managed lands.</p> <p>Consider deed restrictions and other limits.</p> <p>Determine ADA needs.</p> <p>Timing – different for each unit – plan development and implementation.</p> <p>Balance/separate conflicting user groups thru access facilities.</p> <p>Site specific signage needed. Include regulation – user information, allowed/not allowed activities.</p> <p>Conduct vegetation management.</p> <p>Consider safety zones.</p> <p>Determine how to restrict non-hunting activities during hunting season.</p> <p>Ongoing monitoring – e.g., Earth Economics data and car counters.</p> <p>Consider making pilot rules implemented on Samish River Unit in 2022 permanent. The pilot rules separated waterfowl hunting zones from wildlife viewing for safety purposes.</p>

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
F. Develop a strategy to integrate ADA hunting and viewing access into the wildlife area by 2026.	DeBay's Slough, South Padilla Bay, Samish	<ol style="list-style-type: none"> 1. Identify priority sites; 2. # of sites developed; 3. # of ADA viewing blinds installed. 	WLA Manager	<p>Build into current and ongoing restoration planning and future acquisitions.</p> <p>Contact local neighbors for identifying easement/access opportunities.</p> <p>Engage with groups most interested in ADA issues (e.g., Wounded Warriors)</p> <p>Consider a reservation permit system for disabled blind use.</p> <p>Consider ATV use as mobility devices.</p> <p>Road improvements on Samish unit – high priority – (main walking path for users – cannot use in winter due to slick conditions) admin use important too, enforcement needed.</p> <p>Focus area hunt side of DeBay Unit and South Padilla Bay.</p>
G. Evaluate boat launch and landing infrastructure needs at Skagit WLA and water access sites by 2025.	<p>Skagit Headquarters, Skagit Bay Estuary – Big Ditch,</p> <p>Leque/Davis Slough, DeBay's Slough, Samish River, Leque Island, Cottonwood Island</p>	<ol style="list-style-type: none"> 1. Evaluation completed (y/n); 2. # of grants applied for and received (y/n); 3. # of sites maintained; 4. # of sites improved. 	WLA Manager/ <i>Water Access Program</i>	<p>Evaluate/conduct public surveys on available launches.</p> <p>Inventory needs and prioritize.</p> <p>Improvements may include kiosk, parking, water access developments and hunting blinds (e.g., Headquarters Boat Launch Project).</p>
H. Develop a strategy to address wildlife viewing and photography's best sites, routes,	All	1. Strategy developed and implemented (y/n);	WLA Manager/ Private Lands Division/ <i>Diversity</i>	Understand wildlife supported and historic sighting locations at each unit – eBird as a resource.

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
best practices to reduce conflict with other users by 2026.		2. Maps created (y/n); 3. Website updated (y/n); 4. Outreach material developed (update birding pamphlet) (y/n).	<i>Division/ Regional Communication Specialist/ Private Lands Biologist</i>	Outreach to birding groups, updated per activity and hunting season (hunting ed). Consider adding viewing blinds and platforms in key locations. Create trail maps. Tap into existing web-based platforms. Engage stakeholders and WAAC. Update website, Facebook, YouTube videos. Unit specific signs and information. Waterfowl hunt guide includes private lands information. Inventory use to determine sites.
I. Improve fishing access and parking for the Samish River Unit.	Samish River	1. Grants solicited (y/n); 2. Funding acquired (y/n); 3. # of projects implemented.	<i>Private Lands/ Statewide Water Access Area Coordinator/ Fish Program/ WLA Manager</i>	WDFW Private Lands Biologist to reach out to private landowners to solicit for specific projects. Seek funding for private lands access for fishing and hunting. Dingle Johnson funding available only for O&M.
J. Discuss the potential for a cooperative management agreement with Dept of Ecology for access on Padilla Bay by 2027.	South Padilla Bay	1. Cooperative management agreement completed (y/n).	<i>WLA Manager/ Private Lands</i>	Participate in discussions with Dept of Ecology. Applies to Ecology lands adjacent to South Padilla Bay for public hunting access.
K. Develop a strategy on managing recreation on Goat Island Unit by 2026.	Goat Island	1. Cultural resource consultation and survey completed (y/n);	<i>Lands Agent/ WLA Manager/ Wildlife Program District Biologist/</i>	Cultural resource consultation and surveys completed. Determine the relevance of historic use vs future use.

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
		2. Site habitat/wildlife evaluation completed (y/n); 3. Site recreation plan drafted; 4. Coordinate with federal government conducted (y/n).	<i>Cultural Resources</i>	District biologist assesses habitat and determines species at risk. Monitor recreation use – enforcement to install cameras. Direct or maintain activities in these discrete areas.
L. As part of the lease renewal process, evaluate the cost benefit of commercial lease vs waterfowl forage at South Padilla Bay by 2025.	South Padilla Bay	1. Cost benefit evaluation completed with new lease (y/n).	WLA Manager/ <i>Assistant Regional Program Manager/</i> <i>State Waterfowl Manager</i>	Determine forage needs on South Padilla Bay vs commercial private leases. Outreach to local agriculture community. This process will address revenue, forage, and public perception issues.
M. Develop opportunities for water trail system and/or sites on the wildlife area by 2027.	Skagit Headquarters, Skagit Bay Estuary, Leque Island	1. Water trails developed (y/n).	WLA Manager/ <i>WL Science Division – Manager/</i> <i>Region Communications Specialist/</i> <i>Statewide Water Access Area Coordinator</i>	Create seasonal water trail for kayaks, canoes, and stand up paddle boards. Monitor impacts to seals and pups due to Increased traffic concerns. Work with Washington Water Trails Assoc., North Sound Sea Kayakers, to determine feasibility. Add signage. Conduct outreach. Create something similar to the waterfowl hunting guide. Address safety concerns and other considerations.

Draft Objective	Unit	Performance Measure	WDFW Lead <i>Support</i>	Tasks
				<p>Wildlife access sites and WLA units would be utilized.</p> <p>Potential for future expansion.</p> <p>Consider impacts on marine mammals.</p>
Goal 6. Offer multiple and varied opportunities to inform and educate stakeholders while encouraging participation and engagement.				
A. Coordinate and maintain a Wildlife Area Advisory Committee that meets at least annually and communicates regularly.	--	1. # of meeting(s) per year; 2. # of emails sent out to WAAC per year.	WLA Manager/ <i>Assistant Regional Program Manager</i>	<p>Setup meeting time and place based on group members' availability.</p> <p>Draft agenda with attention to group interest and time constraints.</p> <p>Hold meeting and collect group comments and recommendations for consideration relative to future management actions (proposed or ongoing).</p> <p>Include meeting notes on WDFW Advisory Group website.</p>
B. Coordinate communication with community members/groups/neighbors about current wildlife area management activities.	--	1. # of members/groups/constituents contacted; 2. # of community meetings attended; 3. # of partnerships created; 4. # of public tours/events; 5. # of multimedia products produced annually; 5. # of public presentations.	WLA Manager/ <i>Regional Communication Specialist</i>	<p>Identify key user groups.</p> <p>Identify tribes and their areas of interest.</p> <p>Engage with user groups.</p> <p>Promote use of pre-existing WDFW public reporting tools via on site signage (QR codes, etc). https://wdfw.wa.gov/get-involved/report-observations</p> <p>Provide WLA information to local organizations, through email, telephone calls, community group meeting attendance and presentations, and written notices and newsletters.</p> <p>Attend community group meetings, present as needed, and distribute WDFW and wildlife area information.</p>

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
C. Work with local community business and tourism associations to communicate opportunities on and benefits of the wildlife area.	All	1. # of stories or events promoted on the wildlife area annually; 2. # of local entities contacted.	WLA Manager/ <i>Regional Communication Specialist</i>	Develop 1-2 stories each biennium or as opportunities arise.
D. Coordinate with regional volunteer coordinator.	All	1. Maintain list of potential volunteer projects	WLA Manager/ <i>Regional Volunteer coordinator</i>	Coordinate tasks appropriately – facilitate with WLA manager. Advocate/develop volunteer groups, e.g., “friends of Skagit WLA”, especially for remote units (e.g., Killebrew Lake), Fish program and Private Lands involvement with Skagit Steelhead.
E. Increase volunteer opportunities on the wildlife area by coordinating with stakeholders and partners.	All	1. # of projects organized by stakeholder and partners annually.	WLA Manager	Develop a list of priority activities on the wildlife area. Distribute list to partners and stakeholders.
Goal 7. Maintain productive and positive working relationships with neighbors, partners, and permittees.				
A. Management of current and future agricultural leases.	Samish, DeBay’s Slough, South Padilla Bay, Fir Island Farm, Cottonwood Island, Moberg/Skagit Headquarters	1. # of leases renewed; 2. # of leases monitored.	WLA Manager/ <i>Assistant RPM</i>	Monitor leases for compliance and utilization. Meet regularly with lessee. Renew leases as required.
Goal 8. Properly train, equip, and license staff to meet the wildlife area’s operational and management needs.				
A. Identify resources for additional operations and maintenance funding (O&M) – investigate sources of funding.	All	1. # of funding applications submitted for O&M;	WLA Manager/ <i>Lands Division Manager</i>	Explore funding opportunities. Apply for grants as they become available. Implement funded requests.

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
		2. # of O&M requests granted (\$ amount received and purpose).		
Goal 9. Maintain safe, highly functional, and cost-effective administrative facilities and equipment.				
A. Develop and implement a plan to reduce illegal dumping and vandalism on the wildlife area within two years.	All	1. Plan developed and implemented (y/n).	WLA Manager/ <i>Enforcement Program</i>	<p>Reduce hours of use – signage and gates.</p> <p>Closing gates nightly is an option.</p> <p>Include QR code for scanning, website link.</p> <p>Add security camera.</p> <p>Improve lighting.</p> <p>Engage neighbors, stakeholders to help – utilization of Master Hunters.</p> <p>Conduct vegetation management to increase visibility/ no place to hide.</p> <p>Communicate law enforcement needs to ENF.</p> <p>Cooperate with access program for specific sites.</p> <p>Big Ditch Access site annual closure.</p> <p>Milltown Access county gate issue (private landowner needs).</p>
B. Install Discover Pass iron ranger (pay station) at priority units.	Skagit Headquarters, Samish	1. Iron rangers installed (y/n).	WLA Manager	<p>Coordinate with Lands Division Assistant Manager.</p> <p>It’s a great opportunity to sell more Discover Passes.</p>
C. Review and update information on the wildlife area webpages annually.	All	1. Wildlife area web pages reviewed and updated annually (y/n).	WLA Manager/ <i>Regional Communications Specialist</i>	<p>Keep information available to the public on the web pages current.</p> <p>As soon as possible, post information about closures or major events that could limit public access. Post information widely and timely.</p>

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
D. Coordinate internally in surplus of remote units.	Lopez, Guemes, Sinclair, Camano	1. # of units surplus.	WLA Manager/ <i>Real Estate Services</i>	Coordinate with Lands Agent to evaluate and prioritize each unit. The outcome depends on original funding strings and capacity. Hummel Lake and Killebrew – ongoing discussions with land trust regarding long-term management.
E. Update signage on the wildlife area consistent with WDFW new sign standards.	All	1. Signs installed and updated (y/n).	WLA Manager	RCO signs need to be placed on lands purchased with RCO funding. Applies to developments, access areas, interpretative centers, and parking lots.
F. Maintain wildlife area infrastructure and facilities annually.	Skagit Headquarters	1. Completion of twice-yearly inspections; 2. Completion of needed repairs to maintain safety and operations.	WLA Manager/ <i>Capital Asset and Management Program</i>	Conduct inspections two times a year. Document safety and other concerns. Complete needed repairs*. Work with CAMP to repair boathouse and dock. *Applies to residence, office, shop building, pheasant pens and loading facility, interpretive center, public restrooms), moorage facility (boat house, dock.
Goal 10. Maintain consistent and positive communications and working relationships with local tribes.				
A. Produce a Skagit Wildlife Area Cultural Resources Plan by 2028.	All	1. Interested tribes and the geographic or functional areas of interest identified (y/n); 2. Ethnographic/historical contexts for the WLA completed (y/n); 3. Cultural Resource Protection and	Cultural Resources Division/ <i>WLA Manager</i>	Requires funding to proceed with plan. Consult with tribes on the appropriate measures to evaluate cultural resource risks and identify opportunities for management and restoration activities for cultural resources. Create ethnographic and historical context documents that can be used in current and future cultural resource reviews and consultation [This

Draft Objective	Unit	Performance Measure	WDFW Lead Support	Tasks
		Management Plan completed (y/n).		would be a portion of the CRPMP, but completed earlier and useful as a free-standing doc Create the CRPMP to guide future compliance and management.
B. Maintain compliance with state and federal cultural resource laws.	All	1. Ensure that projects go through the appropriate cultural resource review and consultation.	Cultural Resources Division/ <i>WLA Manager</i>	Project review and consultation under NRHP Section 106, GEO 21-02, Centennial Accord, and any applicable statutes such as SEPA, SMA, and FPA. Whenever possible, include cultural resource input from planning stages on.
Goal 11. Establish decontamination procedures and area to prevent new introductions and spread of aquatic invasive species.				
A. Support, facilitate, and coordinate with WDFW Aquatic Invasive Species Unit (AIS) to suppress populations and prevent spread of European Green Crabs.	Samish, Leque Island, Skagit Bay Estuary, South Padilla Bay, Skagit Headquarters	1. WDFW AIS Unit will provide an annual written summary of activities in the area. 2. Signs installed (y/n).	AIS Policy Coordinator/ EGC Regional Biologist	- Maintain regular correspondence with WDFW AIS Unit regarding European Green Crab removal efforts in the area. - Establish signage in 2024 at appropriate areas for public awareness of European Green Crabs.
B. Increase public awareness of threats from aquatic invasive species.	Samish, Leque Island, Skagit Bay Estuary, South Padilla Bay, Skagit Headquarters	1. Signs installed (y/n); 2. # of public education events attended.	Decontamination Biologist/ AIS Outreach Specialist	- Install invasive species signage, as well as other signage at appropriate areas for public awareness of threats from relevant aquatic invasive species in 2024. - Integrate aquatic invasive species public education into wildlife area events.
C. Establish and maintain dedicated decontamination area by 2025.	Skagit Headquarters	1. Decontamination area established (y/n); 2. Staff trained (y/n).	WLA Manager/ Decontamination Biologist	- Establish a permanent decontamination area that includes hot water pressure washer unit, water trap mats, and chemical treatments. - Training for staff to inspect and decontaminate conveyances and properly handle decontamination equipment.

Draft Objective	Unit	Performance Measure	WDFW Lead <i>Support</i>	Tasks
D. Implement WDFW protocols for decontamination of all field-based and water-based work by 2029.	Skagit Headquarters	1. Protocols established (y/n).	Decontamination Biologist	<ul style="list-style-type: none"> - Needs to be reviewed on an annual basis. - Coordinate with WDFW AIS Unit to establish, maintain, and update decontamination protocols.

Part 3. Species and Habitat Management

Physical characteristics

Geology and soils

The path of the Skagit River was heavily influenced by the advances and retreats of the Puget Lobe of the Cordilleran Ice Sheet. Ice and gravel moraines repeatedly blocked the Skagit, causing it to pool into lakes and forcing it to drain south into the future North Fork Stillaguamish River. After the ice retreated, the Skagit breached the moraine dam near Concrete to find its present course. The Sauk and Suiattle rivers continued to drain into the future North Fork Stillaguamish River until eruptions of Glacier Peak choked the rivers with debris, causing the formation of an alluvial fan near present-day Darrington. The debris forced the two rivers north to join the Skagit (Tabor, Haugerud 1999).

The eastern mountainous region of the upper Skagit River basin consists of ancient metamorphic rocks, largely phyllites, slates, shales, schists, and gneisses together with intrusive granitic rocks and later andesitic lavas and pyroclastic deposits associated with Mount Baker and Glacier Peak (U.S. Army Corps of Engineers 2008). The valleys are generally steep-sided and flat-floored. Valley walls are mantled with a mixture of rocky colluvium and to a considerable elevation by deposits of continental and alpine glaciation (U.S. Army Corps of Engineers 2008). These deposits are a heterogeneous mixture of sand and gravel together with variable quantities of silt and clay depending on the mode of deposition (U.S. Army Corps of Engineers 2008). Some of these deposits are susceptible to land sliding when saturated.

The floodplain of the Skagit River below Concrete is composed of sands and gravels that diminish to sands, silts, and some clays further downstream. Below Hamilton, fine-grained floodplain sediments predominate.

The Skagit River transports between 1.7 million and 4.5 million tons of sediment annually (Collins 1998, Curran et al 2016; Pacific International Engineering, 2008). Recent studies present evidence that sediment delivery has increased dramatically since 1850 due to a combination of land use change (e.g., timber harvesting and road building), clearing, dredging in the lower river, and channelization of flow, which reduced connectivity between the river and floodplain (Grossman et al., 2011) Largely as a consequence of these changes the Skagit River delta is increasing in area (Beamer et al., 2005a). Extensive diking of the lower river has also dramatically changed where sediment is deposited, concentrating it at the mouths of the South and North Forks and on the outer face of the delta (Hood, 2004; Collins, 1998; Grossman et al. 2011). Fine sediments, however,

primarily bypass the delta, shoreline and tidal flats and are transported offshore (Grossman and others, 2007).

Recent studies suggest that since about 1850 the entire Skagit tidal flats has converted from a mud-rich system to a sand-dominated system, which has led to habitat impacts and lost marine resources. For example, the Swinomish Indian Tribal Community used to harvest soft shell clams in the delta, but this species is no longer viable in areas now dominated by sand deposition. (Grossman et al. 2011; Grossman et al. 2007).

Hydrology

The Skagit River is the largest drainage into Puget Sound and the third largest river on the West Coast of the continental United States and the second largest in Washington. The 3,100 square mile Skagit River watershed runs for 125 miles from the Cascades of British Columbia, Canada, into Washington state. Within this river system there are numerous habitat types, from fast water with cascading watercourses to slow lowland streams. More than two miles of the Skagit River flows through this wildlife area. The Skagit River system has four dams on its upper reaches and an average discharge of 16,530 cubic feet per second.

The presence and movement of water through the landscape creates a diversity of habitat types on the Skagit Wildlife Area. The Skagit and Stillaguamish rivers provide an abundance of fresh water. The North Fork of the Skagit River forms the wildlife area's northern border and many channels of the South Fork run through the Area's core. The South Fork of the Stillaguamish River approximates the southern limit of department ownership.

Skagit Bay forms the western boundary for a portion of the wildlife area. Tidal action and the mixing of fresh and saltwater create a rich estuarine environment. The hydrologic functions of this estuary hold nutrients and produce a high volume of organic material. Its intertidal zone fluctuates from minus three feet to more than 14 feet (mean tidal range is 7.8 feet).

Estuarine habitat in Puget Sound has declined dramatically since Euro-American settlement (Bortleson et al. 1980, Collins and Montgomery 2001). Prior to settlement, tidal channels were numerous and wetland complexes covered more than half of the Skagit River delta. Since settlement, many open (river) channels and blind (ocean) channels were converted to ditches to drain low-lying farmland and were no longer accessible to fish. Phinney et al (1975) report that more than 100 miles of drainage ditches exist in the Skagit delta alone. In addition, much of the land isolated by dikes has been ditched, dredged, or filled, resulting in considerable loss and conversion of estuary wetland habitat.

In the Skagit River delta approximately 60% of tidal emergent habitat and 94% of tidal scrub shrub habitat has been lost (Hood 2004). These areas provide critical habitat for a wide variety of fish and wildlife, including shorebirds, ducks, geese, swans, raptors, river otters, beavers, harbor seals, and many fish, most notably juvenile salmonids. Of the salmonids, Chinook are the most dependent on estuarine rearing habitat.

Major flooding has occurred on a regular basis in the Skagit River basin. Because of its geographic location, it is subject to winter rains and an increase in discharge during spring due to snowmelt runoff. Winter rain-type floods usually occur in November or December but may occur into late February. Precipitation builds up ground water reserves. Two or more crests may be experienced within a period for a week or two as a series of storms move across the basin.

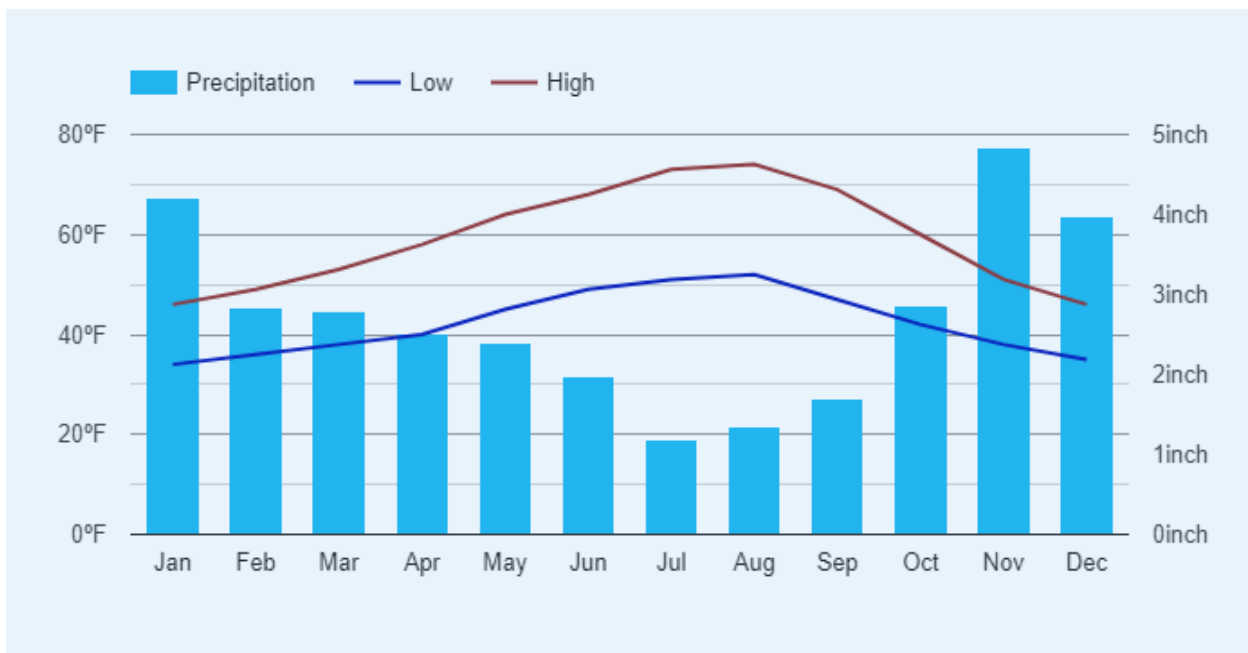
The Skagit River has reached flood stage more than 60 times during the past 100 years, or an average of once every 1.5 years. Reference [Skagit County's website](#) for more information. The 1990 Fir Island flood caused major dike breaches and damage to the Skagit Wildlife Area, as well as neighboring land and residences. This flood event also damaged machinery, roads, and the Skagit Wildlife Area moorage facility. The other previous flood that caused major damage on Fir Island occurred in 1951.

Climate

Mount Vernon on average per year gets 38 inches of rain, 5 inches of snow, and 156 sunny days.

The major factors influencing the climate of the Skagit River basin are its terrain, proximity to the Pacific Ocean, and the position and intensity of semi-permanent high and low pressure centers over the north Pacific Ocean. The basin lies about 100 miles inland from the moisture supply of the Pacific Ocean. Westerly air currents from the ocean prevail in these latitudes bringing the region considerable moisture, cool summers, and comparatively mild winters. Major storms during the winter include heavy frontal rains associated with cyclonic disturbances generated by the semi-permanent Aleutian Low. During the summer months, the weather is relatively warm and dry due to increased influence of the semi-permanent Hawaiian high-pressure system (Pacific International Engineering 2008).

Figure 3. Mount Vernon, Washington average monthly high and low temperatures and precipitation (US Climate Data 2022)



Ecological Values & Species Management

Ecological systems and ecological integrity

WDFW uses Ecological Integrity Assessments (EIA) and Ecological Integrity Monitoring (EIM) to track management progress on the wildlife area. Ecological integrity is defined as the ability of a system to support and maintain a community of organisms that has species composition, diversity, and functional organization comparable to those of natural habitats. EIM is a tool to evaluate ecological integrity and changes to integrity over time within priority systems and sites on the wildlife areas. Reference the complete classification system, including descriptions of all ecological systems, on [DNR's website](#).

The Skagit Wildlife Area includes seven Ecological Systems of Concern defined by the State Wildlife Action Plan as those most imperiled in the state (Refer to Table 8).

Appendix A contains the list of [Species of Greatest Conservation Need \(SGCN\)](#) believed to be present on the wildlife area and their relationships with ecological systems of concern. Actions associated with maintaining and improving ecological integrity are included in the goals and objectives section (page 102). These include actions to establish an ecological integrity baseline to create a monitoring plan to evaluate progress toward ecological integrity objectives over time for each of these systems (Goal/objective 1A).



Skagit Headquarters Unit spring low tide. Photo by Alan L. Bauer.

Table 8. Ecological systems of concern on the Skagit Wildlife Area

Ecological System of Concern	Units	Estimated Acres	Description
North Pacific Bog and Fen	Killebrew Lake	4	The North Pacific Bog and Fen ecological system is located primarily in the North Pacific Ecoregion, but is sporadically distributed through the west side and eastern slopes of the Cascades. Elevations are mostly under 1500 feet, and annual precipitation ranges from 35 to 120 inches. However, fens are also found within the Cascades and Olympic Mountains. The system is found in primarily in glaciated terrain but also in river valleys, around lakes and marshes, behind coastal sand dunes, or on slopes. Four SGCN are closely associated with this ecological system: Olympic Mudminnow, Beller's Ground Beetle, Hatch's Click Beetle, and Makah Copper.
North Pacific Dry Douglas-fir Forest and Woodland	Goat Island, Guemes Island, Jackman Creek, Killebrew Lake, Lopez Island, Sinclair Island	206	Forests or woodlands primarily dominated by <i>Pseudotsuga menziesii</i> on dry soils within relatively dry to mesic climatic west of the Cascade crest. <i>Arbutus menziesii</i> , <i>Pinus contorta</i> , and <i>Abies grandis</i> can be co-dominant. The North Pacific Dry Douglas-fir Forest and Woodland is a large and small patch system. In Washington, it occurs in the Puget lowlands, west slope of the Cascades and lee side of the Olympic Mountains.
North Pacific Hardwood - Conifer Swamp	Bald Eagle	10	Coniferous or hardwood tree-dominated swamps that occur in poorly drained environments with slowly moving or stagnant surface water. They are primarily found in the lowlands up to 1,500 feet elevation but also occur in montane environments west of the Cascades.
North Pacific Intertidal Freshwater Wetland	Skagit Bay Estuary, Island, Milltown Island, Skagit Headquarters	3,047	Represents a small patch, tidally influenced freshwater ecological system that forms as narrow strips as well as more extensive patches of habitat. It occurs primarily in the Puget Trough and Pacific Northwest Coast Ecoregions. More specifically occurrences are found in bays and inlets of Washington's southern outer coast, at outlets of large rivers that discharge into Puget Sound (e.g., Skagit River Delta), and along the Columbia River and its tributaries downstream of Bonneville Dam. Although little detailed vegetation data has been collected for this system, plants communities are complex and can include patches dominated by trees, shrubs or herbaceous species.
North Pacific Lowland Riparian Forest and Shrubland	Bald Eagle, Telegraph Slough, DeBay's Slough, Samish, Sinclair Island, Cottonwood Island,	1,011	North Pacific Lowland Riparian Forest and Shrublands is a linear system that occurs on low-elevation, alluvial floodplains that are confined by valleys and inlets or lower terraces of rivers and streams. This ecological system is widely distributed across lowland

Ecological System of Concern	Units	Estimated Acres	Description
	Killebrew Lake, Ross Island		western Washington in the Puget Trough, Pacific Northwest Coast, and West Cascade Ecoregions. Scattered occurrences also occur in the North and East Cascades and the Columbia Plateau Ecoregions. Riverine flooding and the succession that occurs after large flood events are the major drivers of this system. Consequently, this system does not develop under stagnant hydrological regimes. North Pacific Lowland Riparian Forest and Shrubland is primarily dominated by broadleaf species such as bigleaf maple (<i>Acer macrophyllum</i>), black cottonwood, and red alder, though in the absence of major disturbances conifers tend to increase.
Temperate Pacific Freshwater Emergent Marsh	Bald Eagle, Goat Island, DeBay's Slough, Skagit Bay Estuary, Camano Island, Cottonwood Island, Island, Samish, Samish River, Telegraph Slough	82	In Washington, Temperate Pacific Freshwater Emergent Marshes are most abundant in the Puget Trough Ecoregion, though it occurs throughout the Pacific Northwest Coast and North Cascades Ecoregions and in sporadic locations across the foothills of the East and West Cascades. This freshwater system ranges from seasonally to permanently flooded wetlands found in depressions, along streams, and shorelines. A consistent freshwater source is essential to the function of this system. Therefore, waters generally remain at or above the surface, though water levels can radically fluctuate and by late summer bare soil can become exposed. Waters are nutrient rich, which favor aggressive species and low plant species diversity. Vegetation is frequently made up of graminoids (e.g., grasses, sedges, rushes), though forbs can be present. Trees, shrubs and non-vascular plants are typically absent or sparse.
Temperate Pacific Tidal Salt and Brackish Marsh	Leque Island, Fir Island, Telegraph Slough, Samish, Lopez Island, Skagit Bay Estuary, Island, Skagit Headquarters, Samish River	1,034	Coastal salt and brackish marshes found in large bays on the outer coast and around the waters of Puget Sound. Occurrences are confined primarily to intertidal portions of estuaries, coastal lagoons, and bays, and behind sand spits or other locations protected from wave action. Vegetation composition varies according to tidal fluctuations and varying degree of salinity (saline to brackish). This is a small patch system found along the Pacific Coast, from south-central Alaska to the central California coast. In Washington, it occurs in large bays on the outer coast and around the waters of Puget Sound.

Habitat connectivity

WDFW is a member of the Washington Wildlife Habitat Connectivity Working Group (WHCWG). This group is a science-based collaboration of resource management agencies, non-governmental organizations, universities, and treaty tribes.

Key wildlife habitat connectivity linkage networks at the statewide level were identified by the WHCWG in 2010, which looked at 16 focal species. Although the Statewide Analysis does not reveal much for units of the Skagit Wildlife Area within 12.4 miles of Puget Sound, the Statewide Analysis can be used to draw broad conclusions about patterns around the Bald Eagle and Jackman Creek units. Both units lie near or adjacent to the Skagit River. The analysis shows lands around the Skagit River as a major habitat corridor connecting large blocks of contiguous, mostly protected habitat in the upper watershed.

The statewide assessment reveals a potentially important linkage at a more local scale for American Marten. American Marten is a focal species modeled to represent the movement patterns of species requiring mature forested habitat. The model shows the Jackman Creek Unit positioned in an area connecting two blocks of core habitat for this species. This potential corridor is centered around Rocky Creek. Because this is a local pattern of connectivity, more detailed habitat and species information is needed to validate its significance.

The Skagit units farther west provide steppingstones for species movements and especially for populations of lower mobility species that might otherwise be isolated if the landscape was entirely agriculture or otherwise developed.

Killebrew Lake Natural Area Preserve

Natural Area Preserves (NAP) are defined by RCW 79.70 as areas of land or water that have retained their natural character, although not necessarily completely natural and undisturbed, or which are important in preserving rare or vanishing flora, fauna, geological, natural historical, or similar features of scientific or educational value. The Washington State Department of Natural Resources manages most of the natural areas in Washington.

Killebrew Lake Unit is one of the five natural area preserves owned and managed by WDFW. Killebrew Lake received this designation because of a “well-developed, exceptionally diverse bog” (WDFW 1987). The sphagnum bog had two state listed plants, twayblade (*Liparis loeselii*) and Adder’s tongue (*Ophioglossum vulgatum*). The Killebrew Lake bog is perhaps the highest quality, well developed, lowland bog in the Puget Sound region. The uplands around the lake have been logged and are surrounded by second growth Douglas fir. Recreation on the site includes hunting and fishing. Bogs are highly sensitive to trampling and alteration of water levels. Management recommendations at the time of the NAP designation include monitoring and working with San Juan County to develop a county road and right-of-way maintenance agreement to reduce impacts to the hydrology and water quality of the lake and wetland system. Camping was identified as a potential issue. Monitoring of the status of the rare plants was also recommended to detect any threats or changes. Rare Care did a survey in 2008, at that time the two state listed plants were not located, and made the following recommendation, the site has a good assemblage of native species and shows little sign of habitat disturbance, and further recommended annual surveys (mid-late

summer) to monitor the status of the rare plants. Objectives in the 10-year management plan include coordinating with DNR Natural Heritage Program to determine the health of Killebrew Lake NAP and establish management objectives by 2025 (Goal 2, objective B).

Species Management

The Skagit Wildlife Area supports a broad range of game and diversity (non-game) species (Table 9). The Greater Skagit Delta is best known for wintering waterfowl. Common species include mallards, northern pintails, American wigeon, green-winged teal, trumpeter swans, lesser snow geese, and Canada geese. Resident game species occurring within the wildlife area include black-tailed deer, band-tailed pigeon, and ruffed grouse. Diversity species include bald eagle, peregrine falcon, short-eared owl, common loon, marbled murrelet, purple martin, and Townsend’s big-eared bats. Many species of shorebirds and both tundra and trumpeter swans routinely use the wildlife area. Western toad is the only amphibian of concern verified in the wildlife area. The Skagit estuary provides critical habitat for a variety of native fish species including federally listed Skagit Chinook salmon, bull trout, and steelhead trout.

Table 9. State and federal conservation status, SGCN inclusion, WDFW Priority Habitats and Species (PHS) criteria and priority areas for species that may occur on the Skagit Wildlife Area

Common Name	Scientific Name	Federal/State Status/SGCN/PHS	Wildlife Area Unit
Birds			
American white pelican	<i>Pelecanus erythrorhynchos</i>	SS, SGCN, PHS	Fir Island, Island, Leque Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Bald eagle	<i>Haliaeetus leucocephalus</i>	SGCN	Bald Eagle, Camano Island, Cottonwood Island, DeBay's Slough, Fir Island, Goat Island, Guemes Island, Island, Jackman Creek, Killebrew Lake, Leque Island, Lopez Island, Milltown Island, Samish River, Sinclair Island, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Band-tailed pigeon	<i>Columba fasciata</i>	SGCN, PHS	Camano Island, Fir Island, Guemes Island, Island, Jackman Creek, Killebrew Lake, Leque Island, Lopez Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough, Sinclair Island
Barrow's goldeneye	<i>Bucephala islandica</i>	SGCN, PHS	Camano Island, Goat Island, Guemes Island, Leque Island, Lopez Island, Skagit Bay Estuary

Common Name	Scientific Name	Federal/State Status/SGCN/PHS	Wildlife Area Unit
Cavity-nesting ducks: Wood Duck, Barrow's Goldeneye, Common Goldeneye, Bufflehead, Hooded Merganser		PHS	DeBay's Slough, Island, Skagit Headquarters, Milltown Island, Skagit Bay Estuary
Brant (western high arctic)	<i>Branta bernicla</i>	SGCN, PHS	Camano Island, Fir Island, Island, Lopez Island, Samish, Headquarters, South Padilla Bay, Telegraph Slough
Brown pelican	<i>Pelecanus occidentalis</i>	SGCN, PHS	Lopez Island, South Padilla Bay
Cinnamon teal	<i>Spatula cyanoptera</i>	SGCN	Bald Eagle, Camano Island, Cottonwood Island, DeBay's Slough, Fir Island, Island, Jackman Creek, Leque Island, Lopez Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, South Padilla Bay, Headquarters, Telegraph Slough
Clark's grebe	<i>Aechmophorus clarkii</i>	SC	South Padilla Bay, Telegraph Slough
Common loon	<i>Gavia immer</i>	SS, SGCN, PHS	Camano Island, Fir Island, Goat Island, Guemes Island, Island, Killebrew Lake, Leque Island, Lopez Island, Milltown Island, Samish, Samish River, Sinclair Island, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Golden eagle	<i>Aquila chrysaetos</i>	SC, SGCN	Bald Eagle, Fir Island, Island, Jackman Creek, Leque Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Great blue heron	<i>Ardea herodias</i>	PHS	Bald Eagle, Camano Island, Goat Island, Leque Island, Lopez Island, Samish, Skagit Bay Estuary
Harlequin duck	<i>Histrionicus Histroinicus</i>	SGCN	Camano Island, Goat Island, Killebrew Lake, Lopez Island, Samish, Samish River, Sinclair Island, Skagit Bay Estuary, South Padilla Bay, Telegraph Slough, Sinclair Island
Lewis' woodpecker	<i>Melanerpes lewis</i>	SGCN	Bald Eagle, Fir Island, Island, Jackman Creek, Milltown Island, Skagit Bay Estuary, Headquarters
Loggerhead shrike	<i>Lanius ludovicianus</i>	SC, SGCN, PHS	Bald Eagle, Camano Island, Jackman Creek, Skagit Bay Estuary
Long-tailed duck	<i>Clangula hyemalis</i>	SGCN	Camano Island, Fir Island, Goat Island, Guemes Island, Island, Killebrew Lake, Leque Island, Lopez Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary,

Common Name	Scientific Name	Federal/State Status/SGCN/PHS	Wildlife Area Unit
			Headquarters, South Padilla Bay, Telegraph Slough
Marbled godwit	<i>Limosa fedoa</i>	SGCN	Camano Island, Fir Island, Goat Island, Island, Leque Island, Lopez Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Marbled murrelet	<i>Brachyramphus marmoratus</i>	FT, SE, SGCN, PHS	Camano Island, Goat Island, Jackman Creek, Killebrew Lake, Lopez Island, Sinclair Island, Skagit Bay Estuary, South Padilla Bay, Telegraph Slough
Northern goshawk	<i>Accipiter gentilis</i>	SC, PHS	Jackman Creek
Northern spotted owl	<i>Strix occidentalis</i>	FT, SE, SGCN, PHS	Jackman Creek
Oregon vesper sparrow	<i>Pooecetes gramineus affinis</i>	SE, SGCN, PHS	Bald Eagle, Jackman Creek, Lopez Island
Peregrine falcon	<i>Falco peregrinus</i>	SGCN	Lopez Island
Purple martin	<i>Progne subis</i>	SGCN	Camano Island, Fir Island, Island, Killebrew Lake, Leque Island, Lopez Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Red knot	<i>Calidris canutus</i>	SGCN	Fir Island, Island, Leque Island, Milltown Island, Skagit Bay Estuary, Headquarters
Red-necked grebe	<i>Podiceps grisegena</i>	SGCN	Camano Island, Fir Island, Goat Island, Island, Killebrew Lake, Leque Island, Lopez Island, Milltown Island, Samish, Samish River, Sinclair Island, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Ring-necked pheasant	<i>Phasianus colchicus</i>	PHS	Samish Unit (introduced seasonally)
Short-eared owl	<i>Asio flammeus</i>	SGCN	Camano Island, Cottonwood Island, DeBay's Slough, Fir Island, Island, Leque Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Snow goose	<i>Chen caerulescens</i>	PHS	Fir Island Farm, Samish, Leque Island, South Padilla Bay, Skagit Bay Estuary
Surf scoter	<i>Melanitta perspicillata</i>	SGCN	Camano Island, Fir Island, Goat Island, Island, Leque Island, Lopez Island, Milltown Island, Samish, Samish River, Sinclair Island,

Common Name	Scientific Name	Federal/State Status/SGCN/PHS	Wildlife Area Unit
			Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Trumpeter swan	<i>Cygnus buccinator</i>	PHS	DeBay's Slough, Killebrew Lake, Leque Island, Milltown Island, Telegraph Slough
Tufted puffin	<i>Fratercula cirrhata</i>	SE, SGCN, PHS	Lopez Island
Tundra swan	<i>Cygnus columbianus</i>	PHS	Skagit Valley Estuary, Leque Island, Milltown Island, Telegraph Slough
Waterfowl concentrations		PHS	Camano Island, Island, Leque Island, Milltown Island, Skagit Bay Estuary
Western bluebird	<i>Sialia mexicana</i>	SGCN	Bald Eagle, Cottonwood Island, DeBay's Slough, Jackman Creek, Skagit Bay Estuary
Western grebe	<i>Aechmophorus occidentalis</i>	SC, SGCN, PHS	Bald Eagle, Camano Island, Cottonwood Island, DeBay's Slough, Fir Island, Goat Island, Island, Killebrew Lake, Leque Island, Lopez Island, Milltown Island, Samish, Samish River, Sinclair Island, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Western screech owl	<i>Megascops kennicottii</i>	SGCN	Bald Eagle, DeBay's Slough, Jackman Creek, Killebrew Lake, Skagit Bay Estuary
White-winged scoter	<i>Melanitta fusca</i>	SGCN	Camano Island, Fir Island, Goat Island, Killebrew Lake, Leque Island, Lopez Island, Samish, Samish River, Sinclair Island, Skagit Bay Estuary, South Padilla Bay, Telegraph Slough
Wood duck	<i>Aix sponsa</i>	PHS	Island, Skagit Headquarters, DeBay's Slough, Killebrew Lake, Lopez Island
Nonbreeding concentrations of: Loons, Grebes, Cormorants, Fulmar, Shearwaters, Storm-petrels, Alcids		PHS	Fir Island Farm, Skagit Bay Estuary, Leque Island
Nonbreeding concentrations of: Barrow's Goldeneye, Common Goldeneye, Bufflehead		PHS	Camano Island, Island, Leque Island, Milltown Island, Skagit Bay Estuary
<u>Shorebird concentrations -</u> Nonbreeding concentrations of shorebirds: Charadriidae,		PHS	Camano Island, Fir Island, Goat Island, Island, Leque Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough

Common Name	Scientific Name	Federal/State Status/SGCN/PHS	Wildlife Area Unit
Scolopacidae, Phalaropodidae			
Mammals			
American pika	<i>Ochotona princeps</i>	SGCN	Bald Eagle, Jackman Creek
California sea lion	<i>Zalophus californianus</i>	PHS	Goat Island, Skagit Bay Estuary
Columbian black-tailed deer	<i>Odocoileus hemionus columbianus</i>	PHS	Camano Island, Fir Island, Goat Island, Guemes Island, Island, Leque Island, Lopez Island, Milltown Island, Samish, Samish River, Sinclair Island, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Roosevelt Elk	<i>Cervus elaphus roosevelti</i>	PHS	Bald Eagle, Jackman Creek
Fisher	<i>Pekania pennanti</i>	SE, SGCN	Bald Eagle, Jackman Creek
Gray whale	<i>Eschrichtius robustus</i>	FE, SS, SGCN, PHS	Leque Island
Gray wolf	<i>Canis lupus</i>	FE, SE, PHS, SGCN	Jackman Creek, Bald Eagle
Harbor seal	<i>Phoca vitulina</i>	PHS	Camano Island, Fir Island, Goat Island, Guemes Island, Island, Leque Island, Lopez Island, Milltown Island, Samish, Samish River, Sinclair Island, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Hoary bat	<i>Lasiurus cinereus</i>	SGCN	All units
Killer whale, southern residents		FE, SE, SGCN	
Shaw Island Townsend's vole	<i>Microtus townsendii pugeti</i>	SGCN	Guemes Island, Killebrew Lake, Lopez Island, Sinclair Island
Silver-haired bat	<i>Lasionycteris noctivagans</i>	SGCN	All units
Steller sea lion (northern)	<i>Eumetopias jubatus</i>	PHS	Lopez Island
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	SC, SGCN, PHS	All units
Western spotted skunk	<i>Spilogale gracilis</i>	SGCN	Bald Eagle, Jackman Creek
Wolverine	<i>Gulo gulo luscus</i>	SGCN, PHS, SC, FC	Bald Eagle, Jackman Creek

Common Name	Scientific Name	Federal/State Status/SGCN/PHS	Wildlife Area Unit
Reptiles			
Sharp-tailed snake	<i>Contia tenuis</i>	SC, SGCN	Lopez Island, Guemes Island, Sinclair Island
Amphibians			
Western toad	<i>Bufo boreas</i>	SC, SGCN, PHS	Bald Eagle, Jackman Creek, Skagit Bay Estuary
Fishes			
Bull Trout/Dolly varden	<i>Salvelinus confluentus/S. malma</i>	FT, SC, SGCN, PHS	Bald Eagle, Cottonwood Island, DeBay's Slough, Fir Island, Island, Jackman Creek, Leque Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary
Chinook	<i>Onchorhynchus tsawytcha</i>	FT, SC, SGCN, PHS	Bald Eagle, Camano Island, Cottonwood Island, DeBay's Slough, Fir Island, Island, Jackman Creek, Leque Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Chum	<i>Onchorhynchus keta</i>	SC, PHS	Bald Eagle, Camano Island, Cottonwood Island, DeBay's Slough, Fir Island, Island, Jackman Creek, Leque Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Coho salmon	<i>Onchorhynchus kisutch</i>	FSC, PHS	Bald Eagle, Camano Island, Cottonwood Island, DeBay's Slough, Fir Island, Island, Jackman Creek, Leque Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Green sturgeon	<i>Acipenser medirostris</i>	PHS	Areas adjacent to Skagit River. Green sturgeon is closed to fishing year-round. There is no known or documented sturgeon reproduction in the Skagit River. These fish are from other river systems.
Sockeye	<i>Oncorhynchus nerka</i>	PHS	DeBay's Slough
Pacific herring	<i>Clupea pallasii</i>	SC, PHS	Goat Island, Guemes Island, Lopez Island, Samish, Samish River, South Padilla Bay
Pacific lamprey	<i>Lampetra tridentata</i>	PHS	Bald Eagle, Camano Island, Cottonwood Island, DeBay's Slough, Fir Island, Island, Jackman Creek, Leque Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough

Common Name	Scientific Name	Federal/State Status/SGCN/PHS	Wildlife Area Unit
Pink salmon	<i>Oncorhynchus gorbuscha</i>	PHS	Bald Eagle, Camano Island, Cottonwood Island, DeBay's Slough, Fir Island, Island, Jackman Creek, Leque Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Resident coastal cutthroat	<i>Onchorhynchus clarki clarki</i>	PHS	Bald Eagle, Camano Island, Cottonwood Island, DeBay's Slough, Fir Island, Island, Jackman Creek, Killebrew Lake, Leque Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
White sturgeon	<i>Acipenser transmontanus</i>	PHS	Most common downstream of Sedro Woolley, limited to mainstem Skagit River areas. There is no known or documented sturgeon reproduction in the Skagit River. These fish are from other river systems.
Salish sucker	<i>Catostomus catostomus</i>	SGCN	DeBay's Slough
Sockeye	<i>Oncorhynchus nerka</i>		Bald Eagle, Cottonwood Island, DeBay's Slough, Fir Island, Island, Jackman Creek, Leque Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters
Steelhead and Rainbow	<i>Onchorhynchus mykiss</i>	FT, SC, SGCN, PHS	Bald Eagle, Camano Island, Cottonwood Island, DeBay's Slough, Fir Island, Island, Jackman Creek, Leque Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Sand lance	<i>Ammodytes hexapterus</i>	PHS	Camano Island, Goat Island, Lopez Island, South Padilla Bay, Telegraph
Surf smelt	<i>Hypomesus pretiosus</i>	PHS	Camano Island, Goat Island, Lopez Island, South Padilla Bay, Telegraph Slough
Invertebrates			
Island marble butterfly	<i>Euchloe ausonides insulanus</i>	FE, SC, SGCN, PHS	Lopez Island
Sand verbena moth	<i>Copablepharon fuscum</i>	SGCN	Lopez Island, Guemes Island, Sinclair Island
Propertius duskywing	<i>Erynnis propertius</i>	SGCN	Lopez Island, Guemes Island, Sinclair Island
Hatch's click beetle	<i>Eanus hatchii</i>	SC, SGCN, PHS	Bald Eagle, Cottonwood Island, DeBay's Slough, Fir Island, Island, Jackman Creek, Leque Island, Milltown Island, Samish,

Common Name	Scientific Name	Federal/State Status/SGCN/PHS	Wildlife Area Unit
			Samish River, Skagit Bay Estuary, Headquarters
Monarch butterfly	<i>Danaus plexippus</i>	SGCN	Bald Eagle, Camano Island, Cottonwood Island, DeBay's Slough, Fir Island, Island, Jackman Creek, Killebrew Lake, Leque Island, Milltown Island, Samish, Samish River, Skagit Bay Estuary, Headquarters, South Padilla Bay, Telegraph Slough
Taylor's checkerspot	<i>Euphydryas editha taylori</i>	FE, SE, SGCN, PHS	Lopez Island, Guemes Island, Sinclair Island, Camano Island, Leque Island, Skagit Bay Estuary, Headquarters, Milltown island, DeBay's Slough
Western bumblebee	<i>Bombus occidentalis</i>	SC, SGCN	Sammish, Sammish river, DeBay's Slough
Suckley's cuckoo bumblebee	<i>Bombus suckleyi</i>	SGCN	Sammish, Sammish river, DeBay's Slough
Plants			
Adder's tongue	<i>Ophioglossum pusillum</i>	SS	Killebrew Lake
Bluntleaf pondweed	<i>Potamogeton obtusifolius</i>	SS	Killebrew Lake
Bog twayblade	<i>Liparis loeselii</i>	SE	Killebrew Lake
Hypotrachyna lichen	<i>Hypotrachyna revoluta</i>	SE	Jackman Creek
Rush aster	<i>Symphotrichum boreale</i>	ST	Killebrew Lake

Abbreviations: State endangered (SE), State threatened (ST), State Sensitive (SS), State Candidate for listing (SC), Federal endangered (FE), Federal Threatened (FT), Federal candidate (FC), Species of Greatest Conservation Need (SGCN); Priority Habitats and Species (PHS); DNR Natural Heritage – Species of Special Concern (SSC).

Game species overview and management

Waterfowl are the most abundant and sought-after game animals using the Skagit Wildlife Area. Black-tailed deer, band-tailed pigeon, and ruffed grouse also occur and are pursued by hunters, though WDFW does not engage in active management for these species on the wildlife area. Management actions include production of enhanced winter waterfowl forage, increasing hunter opportunity and access, and the release of pheasants for upland bird hunting opportunities. Limited hunting of released pheasants on the Samish Unit is available to youth and senior hunters.

Waterfowl

The public and private lands of the greater Skagit Delta host many species of ducks, geese, and swans, especially during the winter months. Overwintering waterfowl number in the thousands, with several species also using the wildlife area during the spring and summer breeding period. Common species include mallards, pintails, widgeons, green-winged teal, trumpeter swans, lesser snow geese, and Canada geese. The Skagit Wildlife Area actively manages for winter waterfowl forage on approximately 400 acres at the Samish, and DeBay's Slough units, providing both a ready food source for waterfowl and increased hunting opportunities (Goal/objective 3A).



Northern pintails – Samish Unit. Photo by Alan L. Bauer.

Hunting is not allowed on the Fir Island Farm, DeBay's Slough, and Skagit Delta Game Reserve units. Fir Island Farm is a Game Reserve with over 200 acres of restored intertidal estuary and managed agricultural land in southwest Skagit County that is closed to hunting. The reserve attracts thousands of snow geese, swans, ducks, and shorebirds in the fall through early spring. The unit is managed to provide an undisturbed feeding and resting area for wintering waterfowl adjacent to Skagit Bay.

Waterfowl seasons are based on frameworks established by the U.S. Fish and Wildlife Service (USFWS), in conjunction with the Pacific Flyway Council. Washington ranks second among the 11 Pacific Flyway states and usually ranks in the top ten states in the U.S. based on waterfowl harvested and number of hunters. According to 10-year average data from the USFWS' annual National Migratory Bird Harvest Survey, Skagit County boasts second in Washington State and 36th out of the 3,115 surveyed U.S. counties for waterfowl harvest.

Pheasant

The ring-necked pheasant (*Phasianus colchicus*) is one of Washington's most popular upland game birds and has vast recreational and economic value. Pheasants were successfully introduced into western Washington in 1883. With a strong natural reproduction foothold, WDFW started rearing and releasing captive-raised birds in 1925 to further increase abundance. Over time, the pheasant

population has risen and fallen with the peak in the late 1970s when more than 500,000 pheasants were harvested. Since that time, pheasant harvest has steadily declined primarily due to habitat changes and modern farming practices. This trend has led to more intensive habitat management and release programs. WDFW's primary management goal for pheasants in the wildlife area is to provide hunting opportunity through the Western Washington Pheasant Release Program.

The western Washington pheasant hunting season runs 10-11 weeks during the fall months when pheasants are distributed several times a week to hunting areas across the region. Each year, the Department releases 35,000 to 40,000 pheasants on approximately 25 sites in western Washington. On the Skagit Wildlife Area, WDFW releases pheasants at the Samish Unit, providing youth and senior hunting opportunities. In 2020, the Department released about 350 pheasants on the unit.

The WDFW manages this program to provide new hunters with the basics of ethics, strategy, biology, and safety for hunting upland birds in the state of Washington. For more information about the Upland Bird Hunting Clinics [reference WDFW's website](#).

Diversity Species Overview and Management

The Skagit Wildlife Area supports a variety of diversity (non-game) species (Table 9). Diversity species that occur on the Skagit Wildlife Area include common loon, marbled murrelet, purple martin, bald eagle, peregrine falcon, short-eared owl, western toad, and Townsend's big-eared bat. Many species of shorebirds and both tundra and trumpeter swans routinely use the wildlife area and surrounding private lands.



Dunlin flock – Fir Island Farms. Photo by Alan L. Bauer.

The Skagit River Estuary (including the river delta and surrounding farm fields) is classified by the National Audubon Society as an Important Bird Biodiversity Area (IBA). Reference the [Audubon Society's](#) website for more information. Skagit Headquarters, Fir Island Farm Reserve, and Skagit Bay Estuary (Big Ditch Boat Launch) units are listed on Audubon's Great Washington State Birding Trail - Cascade Loop.

Large concentrations of migrating shorebirds forage in the abundant marshes, mudflats, and tidelands of the Skagit River Delta. Within the Skagit Wildlife Area and adjacent areas, shorebirds primarily use the intertidal marshes and mudflats of the Skagit River Delta. Agricultural habitats with saturated soils are their secondary habitat type. Shorebirds are highly mobile and routinely move within the delta. In 2012 Skagit Bay was designated as a Western Hemisphere Shorebird Reserve Network, due to the large number of migrating shorebirds that use the area.

The wildlife area also provides habitat for songbirds and raptors, including nesting ospreys and resident northern harriers. Wintering raptors, such as red-tailed hawk, bald eagle, rough-legged hawk, and short-eared owls often occur in large numbers. Gyrfalcon is an occasional visitor.

Endangered Species Act-listed Southern resident killer whales occur in the Salish Sea (Puget Sound) near the wildlife area. Many marine mammals also use the shorelines near the Skagit River Delta and Salish Sea, including seals and sea lions that use these areas to rest, moult, or breed. Other marine mammals seen near the wildlife area are California sea lion, harbor seal, and Steller sea lion.



Northern harrier flight – Skagit Bay Estuary. Photo by Alan L. Bauer.

Fish Overview and Management

The Skagit River Basin is the largest and one of the most unspoiled strongholds of fish habitat in the Puget Sound. Anadromous forms of ten salmonid species and several more stocks exist within the basin. These include six Chinook salmon stocks (spring, summer, and fall); pink salmon; chum salmon; sockeye salmon; summer and winter run steelhead trout; sea run cutthroat trout; Dolly

Varden and bull trout (Map 24, Appendix F). The Puget Sound Chinook salmon Evolutionarily Significant Unit (ESU) was listed as threatened in 1999 by the National Marine Fisheries Service (NMFS). The Puget Sound Steelhead DPS (distinct population segments) was listed as threatened in 2007 by the NMFS. The U.S. Fish & Wildlife Service (USFWS) listed the Puget Sound coastal bull trout as threatened in 1999. Coastal/Puget Sound sea-run cutthroat trout are listed as candidate species by NMFS (NMFS, 2007). Chinook salmon stocks originating from the Skagit River have been in a long-term decline, since at least 1935. Reference the Governor’s Salmon Recovery Office’s [State of Salmon report](#) for more information.

The Skagit Chinook Recovery Plan identifies six populations of Chinook salmon in the Skagit River basin and four different juvenile Chinook life history types (fry migrants, tidal delta rearing migrants, parr migrants, and yearlings). Chinook fry emerge from the gravel between late January and mid-April. Fry migrants migrate downstream to Skagit Bay within a few days to a few weeks following emergence. Delta rearing migrants migrate downstream through the Skagit River at the same time as fry migrants but reside in freshwater and estuary areas of the delta for several weeks to several months before moving to Skagit Bay. Parr migrants spend several weeks to several months rearing in the freshwater habitats. Parr migrants depend upon shallow riverine rearing habitats along the mainstem Skagit. Yearlings are juveniles that remain in freshwater habitats for over one year. After residing in stream and riverine habitats for a year, these juveniles migrate downstream to Skagit Bay from late March through June (Skagit Watershed Council, 2022). Six populations of Chinook use different parts of the river for spawning and rearing. Lower Skagit mostly spawn in October in the Skagit mainstem and tributaries below the Sauk River.



Chinook and chum salmon – Leque Island. Photo by Loren Brokaw.

Steelhead trout are distributed from the tidal delta/lower mainstem all the way up the watershed and independent tributaries to the ends of the anadromous zones. Juveniles are present throughout gradient-accessible waterways. The adults spawn in many different locations from the lower mainstem near the State Route 9 bridge upstream to smaller headwater streams. Steelhead

juveniles can use higher velocity habitats than Chinook salmon juveniles and are temporally broader in distribution than Chinook salmon (Skagit Watershed Council, 2022).

Fish monitoring has shown that Skagit Bay estuary provides habitat for juvenile rearing. Skagit estuary research methods have been specifically designed to capture and address questions about Chinook. Because of the limited scope of the research, relatively little has been learned about the roles and estuary life histories of other food and gamefish species. However, researchers have gleaned new information that has shed additional light on food fish and gamefish use of the estuary.

Bull trout research demonstrates a complex life history with individuals observed hundreds of miles from their natal streams entering estuarine and freshwater habitats to forage. The Skagit estuary provides high value foraging for juvenile bull trout originating from the Skagit as well as adult bull trout from the Skagit and other Puget Sound stocks.

Coastal cutthroat trout (searun and resident forms) are a popular fishery, but not much is known about the abundance and life history of the species in the Skagit. Estuary habitats are used by both juvenile and adult coastal cutthroat.

Coho smolts pass wildlife areas during their seaward migration and adults pass wildlife areas during their upstream spawning migration. Juvenile coho generally rear in off channel freshwater habitats and have also been found in freshwater tidal estuary habitats of the Skagit River.

Chum and pink salmon are known to occupy Skagit estuary habitats for about a week during the seaward migration and research from other river systems has suggested they may occupy estuary habitats for up to three weeks.

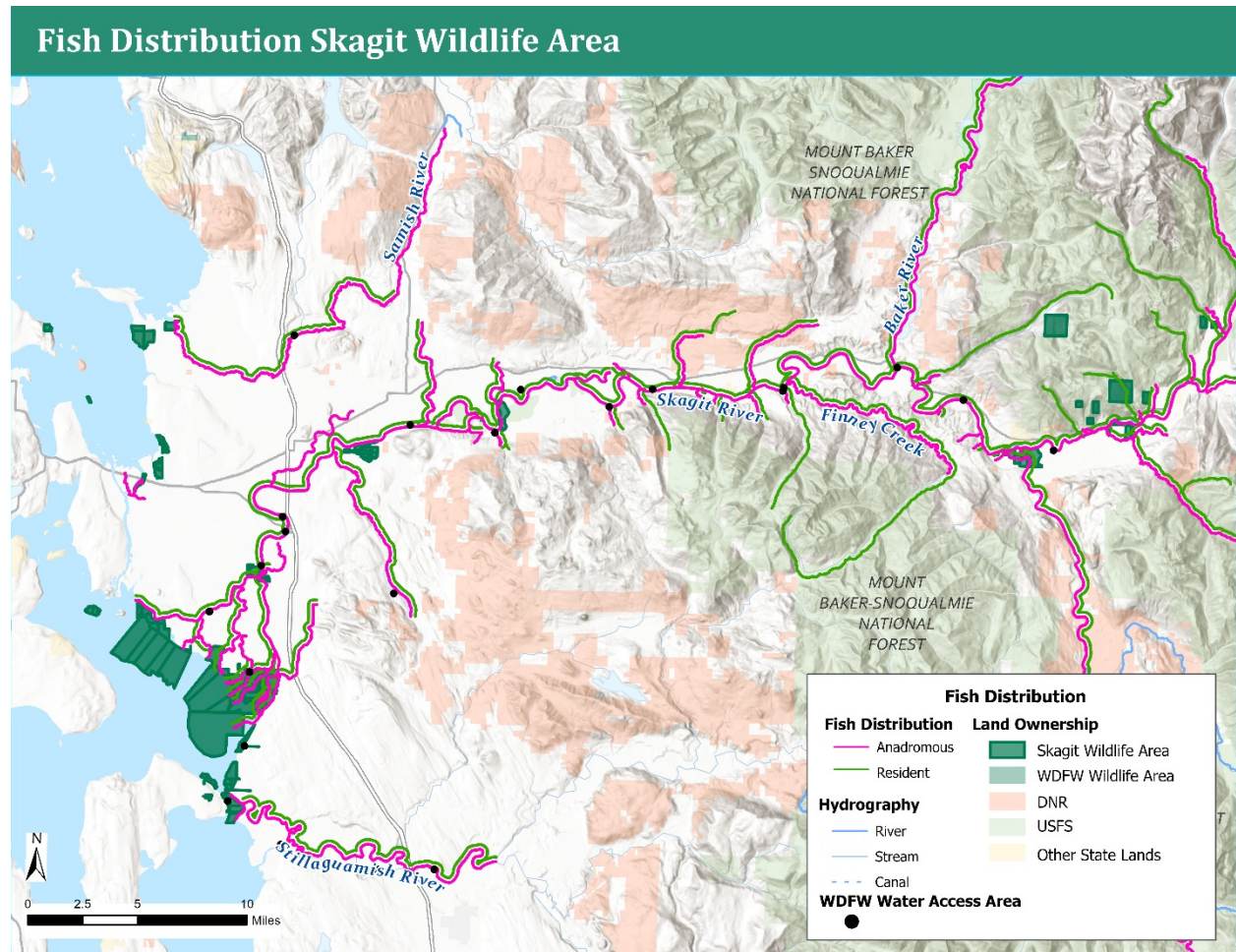
For the most up to date species distribution information please visit:

apps.wdfw.wa.gov/salmonscape/ and for detailed information about fish species reference [WDFW's website](#).



Leque Island restoration fish monitoring. Photo by Loren Brokaw.

Map 24. Fish distribution for the Skagit River



Habitat Management

This section describes habitat management activities that occur on the Skagit Wildlife Area, including forest management, weed management, and estuary restoration.

Forest Management Overview

Approximately 20% (~3,100 acres) of the Skagit Wildlife Area is in forest and woodland habitats. One third of these acres are riparian or wetland forests, primarily in the Bald Eagle, DeBay's Slough, and Cottonwood Island units. The Jackman Creek Unit comprises more than half of the total forested upland acres, though smaller wildlife area units such as Killebrew Lake, Goat Island, and Guemes Island, are also largely forested.



Killebrew Lake Unit.

The Skagit Wildlife Area Units contain several ecological systems. Most forested acres fall within the North Pacific Lowland Riparian Forest and Shrubland, North Pacific Maritime Dry-Mesic Douglas-fir Western Hemlock Forest, North Pacific Dry-Mesic Silver Fir-Western Hemlock-Douglas-fir Forest, North Pacific Maritime Mesic-Wet Douglas-fir Western Hemlock Forest, North Pacific Mountain Hemlock Forest, and North Pacific Dry Douglas-fir Forest and Woodland.

The Jackman Creek Unit consists of a mix of Douglas-fir, hemlock, and silver fir forests varying in species composition by elevation. Some of the Jackman Creek Unit was harvested prior to WDFW ownership and is regenerating with an early successional mix of trees and shrubs. The Bald Eagle, DeBay's Slough, and Cottonwood Island units are largely comprised of lowland riparian forests

historically influenced by Skagit River flooding and channel migration. These forests typically include bigleaf maple, black cottonwood, red alder, willow, and ash. San Juan Island forests in the Skagit Wildlife Area are dominated by mature dry Douglas-fir forests with components of madrone, lodgepole pine, bigleaf maple, and grand fir, more mesic mature Douglas-fir and western hemlock forests, or lowland riparian forests described above.

Disturbance Processes

Riverine flooding and channel migration sustain and regulate *North Pacific Lowland Riparian Forest and Shrubland* systems. *North Pacific Dry Douglas-fir Forest and Woodland* systems historically experienced moderately frequent low to mixed-severity fires. All other upland forest types on the Skagit Wildlife Area Units experienced infrequent high or mixed severity wildfires and would often grow into old-growth forests. In these systems, root rot pathogens, bark beetles, and windstorms create patchy disturbance pockets.

Prior to WDFW ownership, human disturbance, including timber harvest and road construction, also occurred on Skagit Wildlife Area forests. At least one 1950s timber sale was documented on the Killebrew Lake Unit, and Jackman Creek experienced more recent clearcut timber harvest prior to WDFW ownership. The Bald Eagle Unit was partially logged and converted into Douglas-fir plantations.

Threats to Ecological Integrity

Prior to WDFW ownership, the greatest threats to ecological integrity of Skagit Wildlife Area forests were development, timber harvesting, and conversion to plantation forests. Fire exclusion also has impacted the *North Pacific Dry Douglas-fir Forest and Woodlands* on the San Jan Island units by allowing them to become overstocked with late successional species. Climate change will likely impact forests susceptible to changes in precipitation patterns. Increased summer drought may increase the chance of insect and disease outbreak by weakening trees and create drier conditions capable of spreading stand replacing wildfire.

Forest Management

Most Skagit Wildlife Area riparian areas, high quality conifer forests, and forests are on a path of becoming climax forests (trees representing the last stage of natural succession) and need little active management. WDFW can largely rely on natural processes to maintain or restore forests to desired wildlife habitat conditions. Young dense forests on Jackman Creek Unit may benefit from commercial thinning to accelerate succession into a climax forest. Selective thinning also may be needed where prescribed fire is not feasible in *North Pacific Dry Douglas-fir Forest and Woodland* systems like on the Killebrew Lake Unit (Goal/objective 1B).

Weed Management

WDFW manages weeds to establish and maintain diverse native plant communities that support native fish and wildlife. Invasive plants and noxious weeds can infest high quality native plant communities and convert them to low quality monocultures, which reduce wildlife value and increases wildfire risk. The weed management plan (Appendix B) identifies weed species and management practices to control those species of primary concern on the wildlife area (Table 10).

The goal of the weed control plan is to meet legal obligations, reduce the spread of weeds to adjacent private lands, and maintain or improve habitat for fish and wildlife (Goal/objective 1C).

Table 10. Weeds of primary concern on the Skagit Wildlife Area

State designation	Weed Species
Class A	<i>Spartina anglica</i>
Class B	Knotweed, poison hemlock, purple loosestrife
Class C	Blackberry, cattail, bull thistle, Canada thistle, reed canary grass, yellow flag

Habitat Restoration

In the past 150 years, the region has lost 73% of tidal delta habitat, 98% of non-tidal delta areas, 86% of pocket estuaries, and 37% of the large river floodplain (NMFS 2007). Estuary habitat continues to be impacted by development and other activities that further limit the amount of wetland habitat that would have been historically present across the landscape (Brophy et al. 2019).

Upper Skagit River hydroelectric dams also diminish habitat function and processes within the estuary. Dams in the upper Skagit River alter flow as well as the frequency and magnitude of flood events on the Skagit River affecting wetland processes and estuary habitat. WDFW is working with tribes and other government and resource entities to restore or improve natural hydrological processes where possible and manage habitat in the estuary to benefit salmon, waterfowl, shorebirds, and other aquatic species.



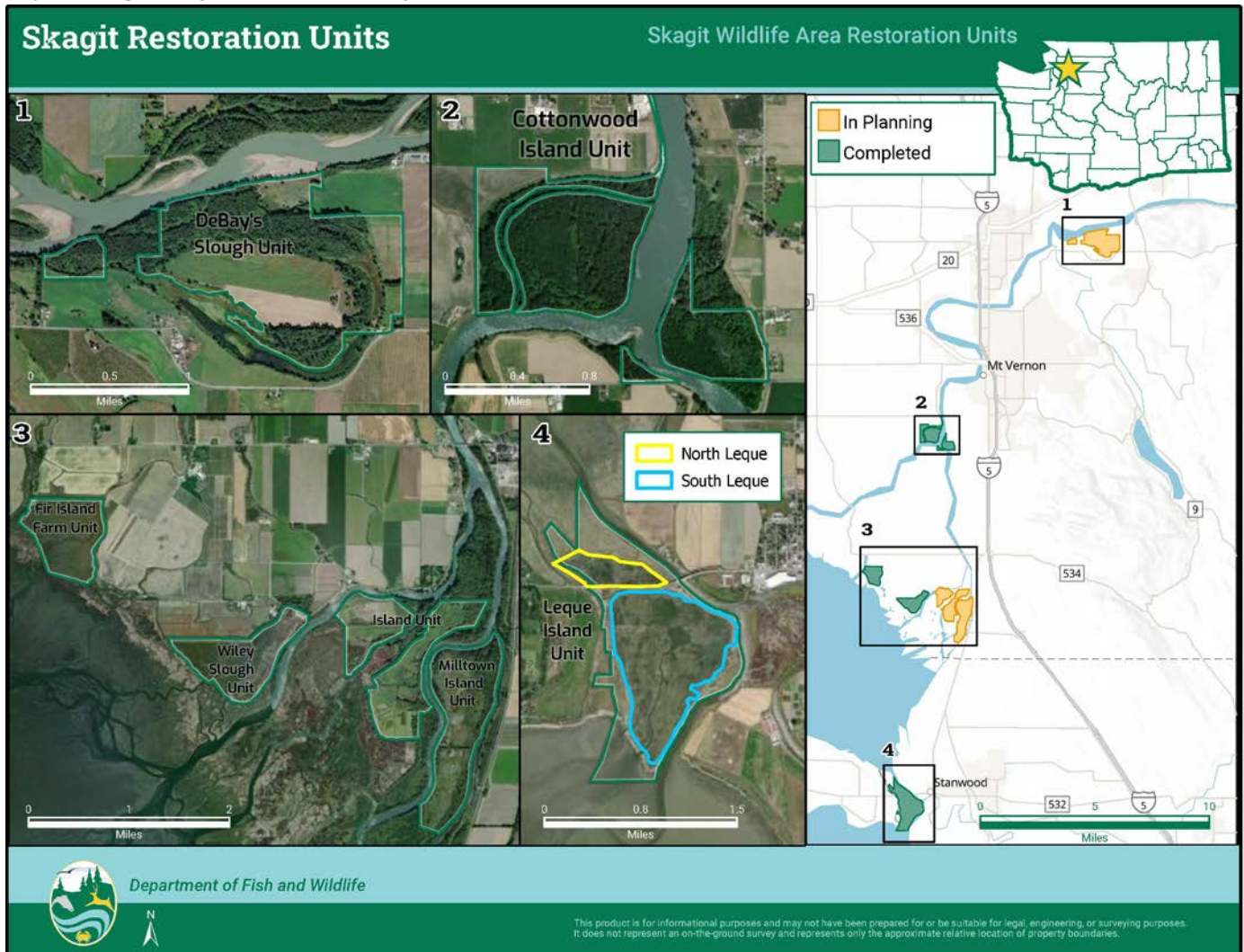
Samish River Unit restoration.

WDFW strives to provide valuable habitat for fish and wildlife in the Skagit Wildlife Area. Projects are sometimes needed to restore habitat values and address limiting factors that impact fish and wildlife. Appendix C provides detailed information about restoration projects that have been

completed, are currently underway, or may be undertaken within the 10-year timeframe of the plan. Examples of successful estuary restoration projects on the Skagit Wildlife Area are listed in Table 11. Map 25 illustrates the Skagit Wildlife Area restoration units.

Table 11. Overview of Skagit Wildlife Area estuary restoration project achievements

Project	Achievements	Benefits
Leque Island	<p>In 2019 - restored tidal influence on 250-acres of historic estuary.</p> <p>Removed over 2.4 miles of levee, excavated over 5 miles of new tidal channels, and created several lower depressions called tidal headwaters.</p> <p>Wave protection berm developed for the City of Stanwood creating a 0.7-mile walking trail.</p>	<p>Since restoration, 15 fish species have been documented using the site at densities similar to adjacent reference marshes. A higher quantity and diversity of birds are using the site post restoration.</p>
Wiley Slough (Skagit Headquarters)	<p>In 2009 - 156 acres restored to estuary.</p> <p>Constructed approximately 1.08 miles of setback dike and removed 0.62 miles of river and bay-front dike to reconnect the site and historic channels to the tides and river flows.</p>	<p>Improved habitat for 23 fish species, including Chinook, chum, coho, and pink salmon. Chinook salmon were found at densities similar to native marshes and the site can hold up to 367,617 juvenile Chinook per year, which is almost 10 times more than predicted.</p>
Fir Island Farm	<p>In 2016, 131 acres of tidal marsh and mudflat restored.</p> <p>Constructed 5,800 feet of marine dike, tide gates, a 7-acre drainage storage pond, and a pump station.</p> <p>Constructed and reconnected approximately 2.3 miles of channel to Skagit Bay.</p>	<p>Improved public access by expanding the area accessible to the public, improving ADA accessibility, and adding interpretive signs and benches.</p> <p>Infrastructure protections reduce flooding and maintain drainage on neighboring farmland.</p> <p>Habitat restored for 21 fish species, including Chinook, coho, chum and pink salmon. Juvenile Chinook salmon were found at densities similar to those in native marshes.</p>
Island/Deepwater Slough	<p>Restored 200 acres of the site to estuary, completed in 2000.</p>	<p>Habitat restored for Chinook salmon.</p>



Climate Change Approach

Purpose

The primary purpose of this section is to evaluate the impacts of projected changes in climate on the Skagit Wildlife Area and highlight opportunities to mitigate or prepare for those impacts.

This work is consistent with the directives of a 2017 WDFW policy titled “Addressing the Risks of Climate Change,” which states that WDFW will “manage its operations and assets to better understand, mitigate, and adapt to impacts of climate change.”

Warming air temperatures

Over the past century, average annual temperature in the Pacific Northwest has increased by about 1.3°F. All greenhouse gas (GHG) scenarios project continued warming during this century, and most scenarios project future warming will be outside the range of historical variation by midcentury (Mote and Salate 2010). Average summer and winter temperatures in western Washington are projected to increase throughout the 21st century. Continued increases in average annual and seasonal Pacific Northwest temperatures are projected because of global warming, as well as increases in extreme heat. Warming is projected to continue throughout the 21st century.

- **Warming is projected to be greatest during summer in western Washington** (Snover et al. 2013). By mid-century average summer temperature is expected to increase 3.3°F under a low GHG scenario (RCP 4.5) and 3.5°F under a high GHG scenario (RCP 8.5⁴), relative to the 1950-1999 average. For the 2050s relative to 1950-1999, temperature is projected to rise +5.8°F (range: +3.1 to +8.5°F) for a high greenhouse gas scenario (RCP 8.5). Much higher warming is possible after mid-century. Lower emissions of greenhouse gases will result in less warming. Warming is projected for all seasons. The warming projected for summer is slightly larger than for other seasons (Snover, et al. 2013) (Appendix D Table 16).
- **Winters are projected to warm across western Washington** (Snover et al. 2013). By mid-century, average winter temperature is expected to increase 2.5°F under a low GHG scenario and 3.0°F for a high GHG scenario, relative to the 1950-1999 average. All models project warming in winter.

⁴ RCP 8.5: To make projections of future climate, scientists use ‘what if’ scenarios of plausible future greenhouse gas (GHG) emissions to drive computer model simulations of the earth’s climate. GHG scenarios affect how much and how fast the earth warms. A “high” GHG scenario (RCP 8.5), which assumes continued increases in GHG until the end of the century, will cause faster and more warming than a “moderate” (A1B) or “low” (RCP 4.5) GHG scenario. For each GHG scenario, there is a range of future climate based on different climate models that use unique assumptions to simulate the climate.

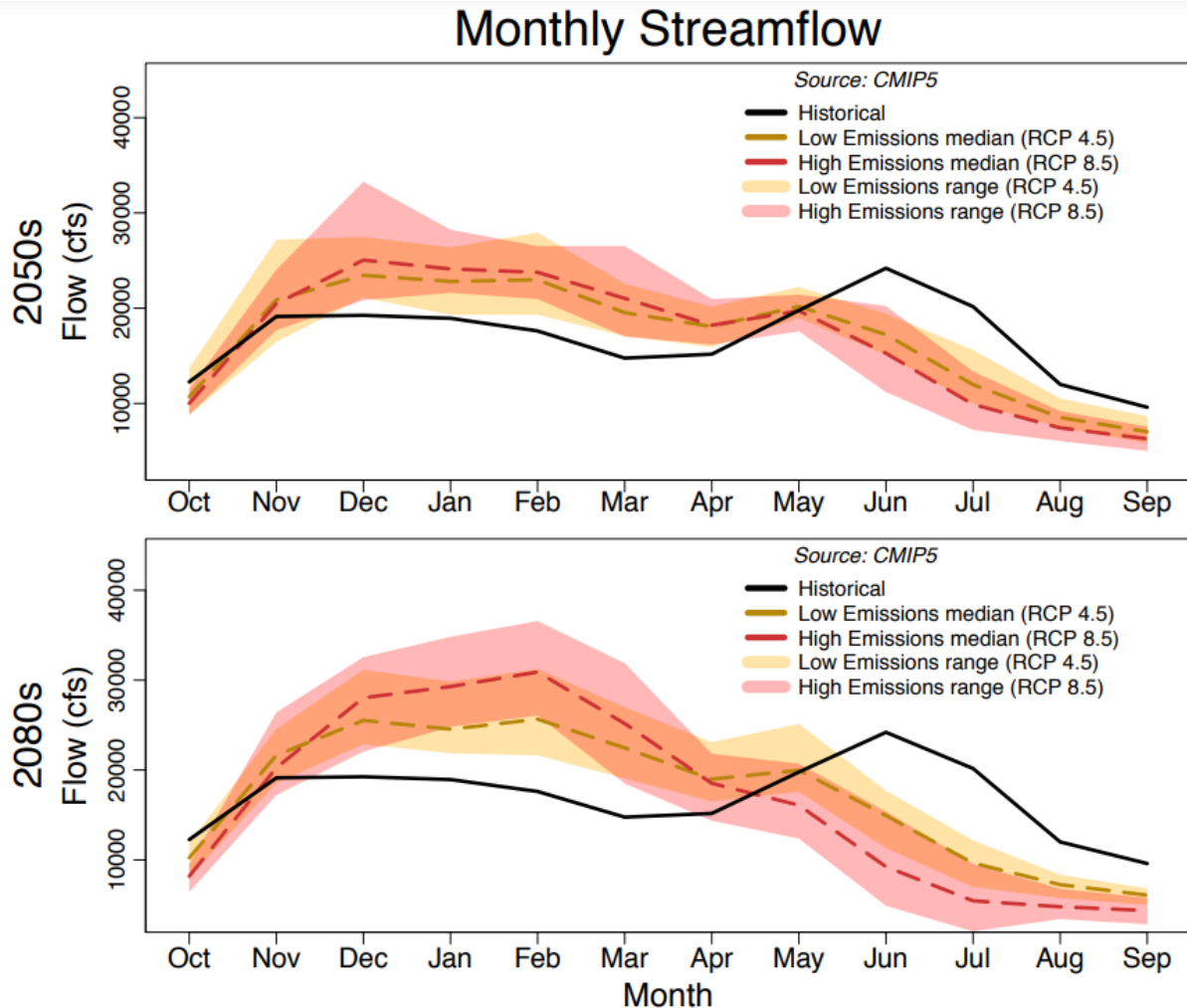
Skagit River impacts

Low elevations near the Skagit delta and in the valleys receive precipitation as rain, mostly in late autumn and winter, which readily contributes to streamflow. In contrast, high elevations receive more total precipitation and more of this precipitation falls as snow in winter and is stored in the snowpack. Snow melt contributes substantially to streamflow in spring. At the highest elevations, glacier melt water contributes some additional volume in late summer after the snow melts. Surface melt from glaciers in the Skagit basin provides 6–12% of the river's total summer flow, and roughly twice that fraction during August and September (Yoder et al. 2021).

In the Skagit River higher temperatures will cause less winter precipitation to fall as snow, resulting in less snowpack and earlier melt. Less snow but more rain will increase streamflow in winter and decrease streamflow in spring and summer. Changes in seasonal surface water will differ for sub-basins throughout the Skagit depending on how much winter precipitation they typically get as rain vs. snow (Yoder et al. 2021).

Not only is the average monthly river flow expected to change but projections for extreme events (i.e., flooding and low flows) become more intense in the future for the Skagit River. The increase in winter runoff, resulting from more precipitation falling as rain rather than being stored as snow, is projected to increase the frequency of the 100-year flood under natural conditions (~200,000 cubic feet per second at Mount Vernon for the current climate) by about 30%. These changes imply that the historical 100-year flood event would become more frequent. On the other end of the extreme flow spectrum, the loss of snowpack and drier summers will boost the severity of summertime low flows. The projected loss of melt water from glaciers in the late summer is expected to exacerbate low flow impacts (Skagit Climate Science Consortium 2015).

Figure 4. Monthly average streamflow at the Skagit River Watershed for the water year, comparing historical (black) to the range among future projections (colored shading)



Results for mid-century (2050s) are shown in the top plot (2050s), and for end of the century (2080s) on the bottom. Thick colored lines show the average among 10 climate models, and different colors are used to either distinguish between high and low greenhouse gas scenarios. Figure source: Mauger et al. 2015.

Sea level rise

Washington state is a tectonically and geologically dynamic region with vertical land movement causing both subsidence and uplift along the coasts. This land movement influences the relative amount of sea level in a specific location (Raymond, et al. 2018). Rising sea levels in the Skagit region have critical implications for the low-lying Skagit delta where much of the land is below sea level. Rising sea levels place pressure on dikes, reduce gravity fed drainage of agricultural lands, increase flood risk for Mount Vernon and the other small cities, affect groundwater, increase damages from storms, and affect other infrastructure and homes (Skagit Climate Science Consortium 2015). Rising sea levels are expected to inundate farther inland and increase the frequency and severity of coastal flooding associated with high tides, storm surge, and episodic

flooding associated with the waves (Hamman, 2012; Hamman et al. 2016). Tidal marshes are elevation dependent habitats so as sea levels rise, they may drown, especially where dikes, seawalls, or natural topography prevent inland migration. In addition, higher winter storm waves may also increase the rate of erosion for both marshes and eelgrass meadows and lead to habitat loss (Skagit Climate Science Consortium 2015).

Reference the [Climate Impact Group's website](#) for more information about incorporating sea level rise into planning and decision-making processes specific to Washington state.

Reference Appendix D for climate change projections for the Skagit Wildlife Area.



Skagit Bay Estuary. Photo by Alan L. Bauer.

Species of concern with high vulnerability to climate change

Table 12 shows the Species of Greatest Conservation Need (SGCN) on the Skagit Wildlife Area that were found by the WDFW Climate Change Vulnerability Assessment (WDFW 2015) to have moderate-high vulnerability to climate change, and with high confidence in the data. Note that only SGCN were considered in this assessment, and it does not include climate sensitivities for other species that may be associated with the wildlife area.

Table 12. Species on Skagit Wildlife Area with moderate-high overall vulnerability* and high confidence (WDFW 2015)

Species of Greatest Conservation Need	Vulnerability Rank	Comments	Climatic factors of concern
Barrows golden eye	Moderate - high	Barrow's goldeneye dependence on specific nesting, breeding, and wintering sites significantly increases this species' sensitivity to climate change. Disturbances such as fire could result in nesting tree loss, and changes in water chemistry (e.g., dissolved oxygen, pH) or temperature may lead to declines in food availability (e.g., mussels, aquatic insects, crustaceans, clams, etc.). Diminished snowpack that leads to wetland drying could also impact this species.	<ul style="list-style-type: none"> - Altered fire regimes - Declines in pH and dissolved oxygen - Reduced snowpack
Harlequin duck	Moderate – high	The overall sensitivity of this species is likely moderate-high due to habitat (i.e., inland freshwater areas for breeding and coastal areas for wintering) and forage (i.e., aquatic invertebrates, herring spawn) specialization. Breeding habitats and success as well as forage could be altered by flood events, while changes in temperature and pH could affect availability of key forage species. Additionally, earlier snowmelt can result in phenological mismatch with harlequin duck breeding ecology.	<ul style="list-style-type: none"> - Changes in precipitation - Earlier snowmelt - Increase flood events - Increased water temperatures - Declines in pH
Red knot	Moderate – high	Red knots are unlikely to have direct physiological sensitivity to changes in climate during their migration through Washington. However, their overall sensitivity will be higher due to their habitat and foraging requirements. Prime foraging areas, like mudflats, may decline due to sea level rise and coastal flooding of these habitats. Additionally bivalve populations, a major source of prey, may experience declines due to ocean acidification as well as changes in period of tide flat exposure and area of tide flat exposure. Preferred roosting sites, like sand islands and marshes, may also become more limited due to rising sea level and/or increased storminess. In particular, changes in temperature leading to migration timing mismatches (i.e., timing of departure and arrival to coincide with favorable food, habitat and weather conditions) may negatively affect this species.	<ul style="list-style-type: none"> - Timing mismatches in favorable food, habitat, and weather conditions - Sea level rise - Declines in pH - Increased storminess
Surf scoter	Moderate - high	Duckling surf scoters may exhibit some physiological sensitivity to climate	<ul style="list-style-type: none"> - Increased ocean temperature

Species of Greatest Conservation Need	Vulnerability Rank	Comments	Climatic factors of concern
		change as local weather conditions can affect survival. However, the overall sensitivity of surfscoters is primarily due to dependencies on specific breeding and foraging habitats that could be affected by climate change. Increases in temperature or sea level as well as changes in water chemistry may alter prey species composition and herring spawning as well as alter subtidal foraging habitats.	<ul style="list-style-type: none"> - Sea level rise - Declines in dissolved oxygen and pH
Western grebe	Moderate-high	Western Grebes will likely be affected by disturbances to nesting habitats and declines in prey availability. Fluctuating water level (high or low), which could lead to declines in nesting habitats. Declines in preferred forage fish prey (primarily Pacific herring) during the non-breeding season have led to a southern shift of the species to California, and further decreases in herring (e.g., due to warmer ocean temperatures) could result in additional grebe population declines. Increases in air temperature could also prompt shifts in grebe migration timing.	<ul style="list-style-type: none"> - Changes in water level (e.g., due to increased water drawdowns or changes in precipitation) - Increased temperatures (air and ocean).
Bull trout	Moderate – high	Bull Trout are the southern-most species of Western North American Char and have lower thermal tolerance than other salmonids they co-occur with. Indeed, the geographic distribution of Bull Trout, and the persistence of populations during contemporary warming has been most strongly related to maximum water temperature. The ability of Bull Trout to persist in sub-optimally warm temperatures likely depends on food abundance. As temperature increases metabolic costs, the extent to which Bull Trout can maintain positive energy balance depends on its ability to find food. Bull Trout historically relied heavily salmon as a food resource and may be less resilient to temperatures in areas where foraging opportunities of salmon eggs and juveniles have declined. Invasive chars (Brook and Lake Trout) now reside in many headwater streams and lakes and may exclude Bull Trout	<ul style="list-style-type: none"> - Increased water temperatures - Altered runoff timing increased - Increased winter/ spring flood events - Lower summer flows

Species of Greatest Conservation Need	Vulnerability Rank	Comments	Climatic factors of concern
		from these potential cold-water refuges, increasing their sensitivity to warming.	
Puget Sound Chinook	Moderate - high	<p>In general, Chinook salmon appear sensitive to warmer water temperatures, low flows, and high flows. Puget Sound Chinook salmon may be more sensitive to warmer summer temperatures and lower flows, as their spawning migration encounters the warmest part of the watershed in the later summer and early fall. Because Puget Sound Chinook salmon rear in streams for up to one year, they may be vulnerable to heat stress during low flow periods of late summer and fall.</p>	<ul style="list-style-type: none"> - Increased freshwater temperatures - Lower summer flows - Increased winter/spring flood events
Puget Sound steelhead	Moderate - high	<p>In general, steelhead appear sensitive to warmer water temperatures, low flows, and high flows. Warmer water temperatures can affect physiological performance and energy budgets, as well as developmental rates and the timing of key life-cycle transitions (i.e., phenology). Lower stream flows (particularly summer and early fall) can reduce the probability of survival in rearing juveniles. Extreme high flows can reduce the likelihood of egg survival during incubation, and both low and high flows can affect adult migration. Winter-run steelhead migrate during winter or early spring and spawn immediately. Because they spend more time in freshwater, summer-run populations of steelhead may be more sensitive to changes in flow and temperature regimes across river networks. The survival of steelhead embryos or recently emerged fry may be sensitive to the timing and magnitude of spring runoff rather than the fall and winter aspects of flow regimes.</p>	<ul style="list-style-type: none"> - Altered spring runoff timing and amount/magnitude - Increased water temperatures - Increased flood events and associated sedimentation and scour - Lower summer flows
Pacific herring	Moderate - high	Pacific herring will be sensitive to climate change through change in their prey availability and the distribution of appropriate spawning habitat. In Washington, herring populations have	<ul style="list-style-type: none"> - Increased ocean temperatures - Altered upwelling patterns - Changes in salinity

Species of Greatest Conservation Need	Vulnerability Rank	Comments	Climatic factors of concern
		<p>already shown northward movement for spawning, and these patterns could increase with predicted increases in sea surface temperature. Herring will also be sensitive to potential changes in nearshore and estuarine spawning habitat, such as increased salinity due to sea level rise and saltwater intrusion in estuaries, which could create suboptimal conditions for spawning and larval growth. Additionally, vegetation used by herring as spawning substrate could change with long-term variation in water temperature and acidity.</p>	<ul style="list-style-type: none"> - Saltwater intrusion in estuarine habitat
Pacific sand lance	Moderate - high	<p>Though there is limited information regarding the sensitivity of Pacific sand lance to climate change, their sensitivity likely stems from climate-induced changes in their intertidal spawning habitat and changes in prey distribution and abundance. Increasing air and sea surface temperatures could lead to suboptimal sediment temperature and lower oxygen conditions in sediments where sand lance prefer to burrow, forcing sand lance to emerge from the sediment and making them more susceptible to predation. Sand lance tend to return to the same burrowing sediment habitat interannually, so changes in nearshore habitat could limit burrowing and spawning habitat availability. Increasing sea surface temperature could also lead to declines and changes in distribution in zooplankton, limited prey availability for sand lance, and decreased recruitment.</p>	<ul style="list-style-type: none"> - Increased air and ocean temperatures - Decreased oxygen - Sea level rise - Increased coastal erosion
Surf smelt	Moderate - high	<p>The primary presumed threat to surf smelt because of climate change is a reduction in spawning habitat due to sea level and shoreline armoring. Surf smelt may also experience some physiological sensitivity to climate change since warmer and drier beach conditions have been shown to lead to higher levels of smelt egg mortality.</p> <p>Surf smelt sensitivity will be increased by potential changes in zooplankton prey</p>	<ul style="list-style-type: none"> - Increased air temperatures - Altered upwelling patterns - Sea level rise - Increased storminess

Species of Greatest Conservation Need	Vulnerability Rank	Comments	Climatic factors of concern
		availability. Additionally, changes in beach habitat due to sea level rise and stronger and increased storms could lead to declines in available spawning area.	

*Vulnerability to climate change was determined by an evaluation of inherent sensitivity to climatic variables, as well as an assessment of the likelihood of change in key climate variables important for each species. Confidence in each ranking was also assessed, based on the extent and quality of reference material and information.

Making the goals and objectives of the wildlife area plan climate resilient

Skagit Wildlife Area goals and objectives potentially affected by climate change, or those with a “climate nexus,” are listed below (Table 13). Opportunities to build resilience to climate change are summarized for each objective and are also integrated into the final list of objectives available on page 102.

Table 13. Skagit Wildlife Area objectives with climate nexus

Objectives with a climate nexus	Opportunities to build resilience
Goal 4. Restore and improve habitat processes that are limiting the recovery of Chinook and other salmonids.	
Monitor and manage 131 acres estuary restoration at Fir Island Farm annually.	- Consider potential impacts from sea level rise and increased winter streamflow as part of this discussion.
Restore 270 acres on the Island Unit to intertidal estuary by 2030.	- Consider mid and late-century sea level rise projections and streamflow projections in the development of design.
Repair Wiley Slough setback dike and transfer operations to Dike, Drainage and Irrigation Improvement District #22 by 2026.	- Consider mid and late-century sea level rise projections and streamflow projections in the development of design.
Monitor and manage 276 acres estuary restoration at Leque Unit annually.	- Consider potential impacts from sea level rise and increased winter streamflow as part of this discussion.

Part 4. References

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Appendices

- A. Species information
- B. Weed management plan
- C. Habitat restoration summary
- D. Climate change projections for the Skagit Wildlife Area
- E. Fish distribution maps
- F. Research and other studies
- G. Fire response information
- H. Public response summary

APPENDIX A. SPECIES INFORMATION

Table 14. Species of Greatest Conservation Need (SGCN) relationship with Ecological Systems of Concern for Skagit Wildlife Area

x Bold indicates SGCN species that are closely associated with the ecological system. Small “x” for SGCN generally associated with the ecological system.

SGCN Relationship with Ecological Systems Concern for the Skagit WLA	North Pacific Bog and Fen	North Pacific Dry Douglas-fir Forest and Woodland	North Pacific Hardwood-Conifer Swamp	North Pacific Intertidal Freshwater Wetland	North Pacific Lowland Riparian Forest and Shrubland	Temperate Pacific Freshwater Emergent Marsh	Temperate Pacific Tidal Salt and Brackish Marsh
American white pelican							
Bald eagle		x	x	x	x	x	x
Band-tailed pigeon							
Barrow’s goldeneye			x	x		x	x
Brant							
Brown pelican							x
Cinnamon teal						X	
Common loon							x
Harlequin duck			x			x	x
Lewis’ woodpecker							
Loggerhead shrike							
Long-tailed duck							
Marbled godwit							x
Marbled murrelet		x	x		x		
Northern spotted owl							
Oregon vesper sparrow							
Peregrine falcon		x		X	x	X	x
Purple martin						x	x
Red knot							
Red-necked grebe				x			x
Short-eared owl						x	
Surf scoter							
Tufted puffin							
Western bluebird		x			x		
Western grebe							
Western screech owl		x	x				
White-winged scoter							
American pika							
Fisher		x	x		x		
Gray wolf	x	x	x		x		
Gray whale							
Hoary bat	x	x	x	x	x	x	
Shaw Island Townsend’s vole		x				x	
Silver-haired bat	x	x	x	x	x	x	
Townsend’s big-eared bat	x	x	x	x	x	x	
Western spotted skunk	x	x	x		x		
Wolverine							
Sharp-tailed snake							
Western toad	x	x	x		x	x	
Island marble butterfly							X
Sand verbena moth							
Propertius duskywing							
Hatch’s click beetle	X						

SGCN Relationship with Ecological Systems Concern for the Skagit WLA	North Pacific Bog and Fen	North Pacific Dry Douglas-fir Forest and Woodland	North Pacific Hardwood-Conifer Swamp	North Pacific Intertidal Freshwater Wetland	North Pacific Lowland Riparian Forest and Shrubland	Temperate Pacific Freshwater Emergent Marsh	Temperate Pacific Tidal Salt and Brackish Marsh
Monarch butterfly							
Taylor's checkerspot butterfly		X		X	x		x
Western bumblebee							
Suckley's cuckoo bumblebee							

APPENDIX B. SKAGIT WILDLIFE AREA WEED MANAGEMENT PLAN

Weed Control Goals at the Skagit Wildlife Area

The goals of weed control on the Skagit Wildlife Area are to maintain or improve the habitat for fish and wildlife, meet legal obligations, and protect adjacent private lands.

WDFW uses integrated pest (i.e., weed) management (IPM), which is defined in RCW 17.15.010 as “a coordinated decision-making and action process that uses the most appropriate pest control methods and strategy in an environmentally and economically sound manner to meet agency programmatic pest management objectives.”

At the Skagit Wildlife Area, weed management objectives are:

- a) Check and monitor all agricultural lands for location and distribution of noxious weeds. Use funding to prepare and plant approximately 330 acres (DeBay’s Slough, Island, and Samish units) in a variety of crops for waterfowl forage and noxious weed control measures. Use agricultural lease agreements to provide a variety of crops harvests and if possible, provide for waterfowl forage and noxious weed control measures that total approximately 550 acres (Fir Island Farm, DeBay’s Slough Unit, and South Padilla Bay units). Wildlife Area staff mow fallow fields, seasonal wetland areas and ponds (some areas multiple times throughout the year) which totals approximately 173 areas (Samish, Samish River, Headquarters, and DeBay’s Slough units) to reset plant succession, increase grass vigor and control noxious weeds. Wildlife Area staff also treat approximately 19 acres of weeds on agriculture field edges, as required, to reduce weed seed production.
- b) Parking areas and roads - monitor all unit parking areas and roads and treat annually for maintenance needs. Besides general weeds, problematic species such as poison hemlock and Canada thistle pose a risk of spreading to new areas if not treated and controlled. Approximately 10 acres require annual maintenance at each of these units and/or sites multiple times per year.
- c) Riparian and wetland - monitor salmon restoration sites, estuaries, wetlands, and riparian areas annually for cattail, knotweed, yellow flag iris, purple loosestrife and Spartina. It is currently believed that reducing weeds in the Skagit Delta is essential to maintaining and improving critical salmon habitat.

Weed Species of Concern on Skagit Wildlife Area

Weeds occurring on the Skagit Wildlife Area and associated units are listed in Table 15.

Detailed descriptions and natural history information for state-listed weed species can be found at the [Washington State Noxious Weed Control Board website](#). Information on other species contained in the list can be found at the [University of California’s IPM Online website](#).

Reference the PNW Weed Management Handbook for more information about weed management information for individual weed species pnwhandbooks.org/weed/control-problem-weeds.

Table 15. Skagit Wildlife Area weed table including weed class and unit location

Weed Species	Noxious Weed Region 2 Class	2023 Estimated Affected Acres	2023 Treated Acres	Annual Trend	Control Objective/Strategy	Wildlife Area Unit Weed Distribution
Blackberry	C	30	12	No Change	Control	DeBay's Slough, Fir Island Farm, Skagit Headquarters, Samish River, Jensen, North Fork
Cattail (invasive)	C	1,273.25	62.3	Increasing	Control	Fir Island Farm, Skagit Headquarters, Island, Skagit Bay Estuary, Milltown Island
General Weeds	NA	18.5	18.5	No Change	Control	DeBay's Slough, Fir Island Farm, Skagit Headquarters, Samish
Knotweed (Japanese, Bohemian, etc.)	B	3.06	1.2	Increasing	Control	Skagit Headquarters, Island, Skagit Bay Estuary Unit
Mustard	NA	65	36	decreasing	Control	Skagit Headquarters, Samish, Samish River, South Padilla Bay
Poison hemlock	B	7	4	No Change	Control	Skagit Headquarters, South Padilla, Samish, Big Ditch Boat Launch, Leque Island
Purple loosestrife	B	5	0	No Change	Control	Skagit Headquarters, Skagit Bay Estuary, Samish River, Samish
Bull thistle	C	25	7.5	Decreasing	Control	Fir Island Farm, Samish, Samish River, Skagit Headquarters
Canada thistle	C	30	15	Decreasing	Control	Skagit Headquarters, Samish, DeBay's Slough, South Padilla Bay, Samish River, Jensen, North Fork
Reed canary grass	C	150	45	No Change	Control	DeBay's Slough, Jensen, Skagit Headquarters, Samish, Samish River, Skagit Bay Estuary, Telegraph Slough, Milltown Island, Island Unit
Spartina anglica	A	764	2.8	Decreasing	Eradication	Leque Island, Skagit Bay Estuary
Yellow flag iris	C	30	.1	Increasing	Control	Island, Skagit Headquarters, Skagit Bay Estuary

APPENDIX C. SKAGIT WILDLIFE AREA HABITAT RESTORATION SUMMARY

Introduction Estuary Restoration

The following information provides details about projects that are located within the historic Skagit and Stillaguamish River deltas in what the agency defines as “estuary.” For the purpose of this plan, estuary is defined as the area of the river and broader delta that is influenced by the tides. A large portion of the historic Skagit and Stillaguamish deltas (approximately 70%) is currently disconnected from the tides due to diking and drainage, resulting in decreased estuary habitat area available to fish and wildlife. The following projects involve reconnecting historic habitat to the tides.

Estuary restoration projects on WDFW lands are contemplated with the full mission of WDFW in mind, which means preserving, protecting, and perpetuating the state’s fish, wildlife, and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities. Projects are often initiated to restore habitats needed by species that are listed under the Endangered Species Act (e.g. Chinook salmon, skagitcoop.org/wp-content/uploads/Appendix-D-Estuary1.pdf) (Goal/objective 4A). Addressing the impacts of climate change has also become an important consideration (e.g., removing infrastructure that is increasingly at risk due to sea level rise and more severe storms). Projects must also protect neighboring properties from adverse impacts and be consistent with land acquisition agreements.

Project funding for each project is provided from numerous sources with the majority of funding coming from state and federal grants.

Leque Island

Background

In the late 1800s, early settlers-built dikes around the perimeter of the island to convert the area to farmland and homesteads. WDFW began acquiring properties on Leque Island in 1974 and now owns the entire island.

The perimeter dikes on the island repeatedly failed during high tide and storm events, most recently in 2016. Each breached section of dike was temporarily repaired until a long-term solution could be found. Removing the dikes to restore the area to salt marsh habitat was determined to be the best solution.

To help with decision making on project design moving forward, beginning in 2013, WDFW and partners engaged stakeholders and formed a committee of recreationists, local jurisdictions, tribal representatives, and farmers to guide the process. The committee ranked the full restoration design higher than the partial and no restoration alternatives. WDFW selected that design alternative to move forward for engineering and construction.

Project Detail

Between July and October 2019, WDFW along with Ducks Unlimited and local contractor Strider Construction implemented the final phase of the project. The team removed over 2.4 miles of levee, excavated over 5 miles of new tidal channels, and created several lower depressions called tidal headwaters. These actions restored tidal influence on 250-acres of historic estuary on the portion of Leque Island south of Highway 532.

In addition to habitat restoration benefits, the team constructed a wave protection berm that protects the City of Stanwood. This berm also serves as a 0.7-mile elevated walking trail that allows people to continue to enjoy the property. Visitors can use a hand-carried boat launch on the west side of the project area for paddling access in the new tidal channels.

Monitoring and Adaptive Management

The construction phase of the project has been completed since October 2019 and WDFW and partners are now **monitoring and adaptively managing** the project area.

- Skagit River System Cooperative (SRSC) is leading fish, vegetation, and channel monitoring. SRSC has documented Chinook and chum salmon, bull trout, and other fish species using the restoration area as well as rapid colonization of the site by native marsh plants.
- Ecostudies Institute is leading bird monitoring. Ecostudies Institute is observing an increase in quantity and diversity of birds compared with pre-restoration results.
- WDFW's Noxious Weed Program is monitoring and treating invasive plants while new marsh vegetation is establishing. Invasive *Spartina* has been found on the site and is actively treated.
- WDFW is collecting water depth, salinity, and temperature data in wells to the west of the project area.
- WDFW is working with an economics company to estimate the socioeconomic value of the project.
- WDFW Wildlife and Habitat Program staff are giving presentations and generating materials to communicate monitoring results to the broader community. WDFW worked with a film company to produce a short film highlighting the restoration project and results called: [To the Tides](#).
- WDFW paved the driveway and parking lot on the east side/Eide Road entrance in October 2022. Potholes were a problem with the gravel surface originally installed for the project.

WDFW will seek funding to continue implementing the Leque Island Monitoring and Adaptive Management Plan (Goal/Objective 4E). This plan outlines timeframes and methods for monitoring fish, channels, vegetation, sediment, birds, and water quality along with a basic framework for addressing any elements that are not meeting desired outcomes. The monitoring plan extends through 2023, however the site will be monitored and adaptively managed as needed in perpetuity, along with a basic framework for addressing any elements that are not meeting desired outcomes.

Next Steps (Goal/objective 4E)

- Continue monitoring and treating invasive weeds on the site, focusing on Spartina.
- Work with the City of Stanwood to add a motorized boat launch on a nearby property and Hamilton Landing Park.

More information

[Leque Island Restoration Project | Washington Department of Fish & Wildlife](#)

[To the Tides short film](#)

[Leque Island Restoration - Salish Sea Wiki \(salishsearestoration.org\)](#)

North Leque

Background

North Leque Unit was farmed until 2004 when the tide gate at the west end failed and the area was subject to regular tidal inundation. Functionally it then became a salt marsh, however it was crippled by the remnant dike along three sides and State Route 532. This resulted in a simplified tidal channel network with reduced benefits for fish. In addition, the single channel outlet forced Davis Slough north of the unit to resize, eroding a privately owned dike to the west.

Project Detail

The single outlet at North Leque created a very simplified channel network. The proposed project design had seven outlets that connect directly to established tidal channels that drain to West Pass and northwest into Skagit Bay.

In addition, the design lowered 0.65 miles of the existing dike to the elevation of the exterior marsh aside from the West dike. In areas with the dike fully removed there is sheet flow over the marsh surface into the restored area at the highest tides. The sheet flow is common to unaltered marshes and often represents a high percentage of the total tidal exchange as well as facilitating the distribution of particulate matter and small organisms throughout the marsh. Earthen spoils excavated from removing the dike and creating new channel connections were used to plug the relict ditch network in strategic locations to encourage flow into sinuous tidal channels that are more beneficial for fish and other aquatic organisms.

Current Status

North Leque Island was constructed over the summer of 2022 and at the time of publication of this plan is a brand-new restoration project that is rapidly evolving.

WDFW is completing reporting for the two grants that paid for the project (RCO's Estuary and Salmon Restoration Program and Department of Ecology's Floodplains by Design Program). Skagit

River System Cooperative is monitoring the site post-construction with particular interest in fish, vegetation, and channel elements.

Next steps

WDFW will extend one of the project grants through June 2024 to allow WDFW's Noxious Weed Crew to continue to work on the site treating Spartina. WDFW will continue to seek weed management funds following expiration of grant funds in July 2024.

More Information

[PRISM Project Snapshot - Washington State Recreation and Conservation Office](#)

Wiley Slough (Skagit Headquarters)

Background

Wiley Slough was once entirely tidal marsh. In the late 1800s, early settlers-built dikes around the perimeter of Fir Island up to the north edge of the project site. In the 1950s the site was acquired by WDFW and in the 1960s WDFW built dikes further out into the marsh isolating approximately 160 acres from tidal and riverine influence. The site was drained and farmed for enhanced winter waterfowl forage.

In the early 2000s, WDFW partnered with Skagit River System Cooperative to explore possible estuary restoration at the site. SRSC led an alternatives analysis, which ultimately led to a WDFW-decision to restore approximately 150 acres to estuary. Design and permitting was completed and the project was constructed in 2009.

Following construction, SRSC monitored the site to document project outcomes. Monitoring showed that the site is being used by 23 fish species, including chum, coho, and pink salmon. Chinook salmon were found at densities similar to native marshes and the site can hold up to 367,617 juvenile Chinook per year, which is almost 10 times more than predicted. Additionally, vegetation is establishing from seeds brought in on the tides, the number of plant species is equivalent to native marshes, and channels are developing as expected.

However, also immediately following construction, infrastructure began to fail. Tidegates were replaced and a pump station was added to offset project impacts. In 2016 the setback dike was overtopped during a storm event, causing damage to the dike and flooding WDFW recreational and operational facilities and neighboring properties. Immediately WDFW began seeking funding to assess the dike and develop a design to repair the dike in partnership with Skagit County Consolidated Diking, Drainage, and Irrigation Improvement District #22 (DD22). Additional overtopping events have occurred multiple times since 2016 (six times total as of December 31, 2022).

Current Status

- Final design for dike repair has been completed and construction began in March 2023. The problematic sections of dike are being raised and widened to address overtopping. Funds needed to complete the project are secured from grants and WDFW's capital budget.
- WDFW and DD22 are finalizing an agreement regarding the performance specifications that need to be met for DD22 to take ownership of the dike.
- Performance of the new dike infrastructure will be monitored according to the agreement with DD22.

More Information

[Wiley Slough Restoration Project | Washington Department of Fish & Wildlife](#)

Fir Island Farm

Background

The Fir Island Farm Unit was historical tidal marsh that was converted to farmland by early settlers who built dikes and drainage infrastructure in the late 1800's to keep tides and river flows off the land.

In 2009, WDFW began assessing opportunities to restore all or a portion of the Fir Island Farm Unit to tidal marsh for Chinook and other estuary-dependent species. In partnership with DD22 and a technical advisory group, WDFW first led an alternatives analysis and then the design and permitting of a 131-acre restoration project. Construction was completed in 2016.

The project set back an existing dike and restored 131 acres of tidal marsh. WDFW incorporated protections to reduce flooding, maintain drainage, and prevent saltwater intrusion on surrounding farmland. The project design also considered climate change and resulted in a more resilient ecosystem and drainage system. Flood protection and drainage features built as part of the project includes 5,800 feet of marine dike, tide gates, a 7-acre drainage storage pond, and a pump station. WDFW also improved public access by expanding the area accessible to the public, improving ADA accessibility, and adding interpretive signs and benches.

Monitoring and Adaptive Management (Goal/objective 4B)

Following construction, Skagit River System Cooperative (SRSC) and WDFW staff monitored the site to document project outcomes. Monitoring showed that the site is being used by 21 fish species, including chinook, coho, chum and pink salmon. Juvenile Chinook salmon were found at densities similar to those in native marshes, and monitoring data indicates that up to 65,000 Chinook per year use the site. Weeds are well controlled but native vegetation is establishing more slowly than anticipated, possibly due to the low number of channel outlets. Pilot channels remain open and additional shallow channels are developing, but a hardpan layer just below the surface is limiting new channel depth. Sediment is depositing fast enough to outpace predicted sea level rise.

Additional monitoring documented performance of the flood and drainage features. Groundwater levels and salinities in neighboring farm fields were not changed by the project. The ground under the dike settled slightly after construction, so additional gravel was added to bring it back up to the appropriate height.

Monitoring results related to vegetation establishment and channel development indicate adaptive management actions may be beneficial. Additional assessment is needed to determine what actions are needed.

Current Status

The restored tidal marsh provides seeds, shoots, bugs, and worms that feed juvenile salmon, forage fish, waterfowl, and shorebirds. A parking lot and short trail provide access for wildlife viewing. WDFW maintains 100 acres of the site for winter forage crops and continues to maintain the farmed and restored portions of the site as a non-hunted reserve for snow geese. Local birders have reported seeing over 120 different species during spring migration.

More Information

[10 years of partnership: Working together to help salmon and people | by The Washington Department of Fish and Wildlife | Medium](#)

[Fir Island Farms Restoration Project | Washington Department of Fish & Wildlife](#)

Island

Background

The Island Unit is located on two mid-channel islands near the mouth of the South Fork Skagit River. Historically the site was estuary that was subject to daily tides and periodic river flows. Similar to many of the previously described restoration sites, early settlers-built dikes and tide gates to keep tides and river flows off the site and make way for farming. WDFW purchased 470-acres in the 1950s and managed the site to provide high-calorie food resources for wintering waterfowl.

In the 1990s as the decline in salmon and need for estuary restoration became clear, WDFW, Skagit River System Cooperative and the US Army Corps of Engineers pursued restoration of the southern portion of the site with a project called **Deepwater Slough**. This project restored approximately 200 acres of the site to estuary, leaving the remaining 270 acres to be managed as it had been, primarily for enhanced winter waterfowl forage. The Island Unit is a popular and productive waterfowl hunting destination that is valued by local and regional waterfowl hunters.

Through the years, the maintenance and management of dike and drainage infrastructure on this remote site proved to be challenging. WDFW capital, operation, and maintenance funding for infrastructure as well as needed staff for these projects were often limited. Since initial acquisition, there were several dike failure, maintenance, and repair projects plus many that were not able to be

completed. Dike and drainage infrastructure are exposed to daily water flows which create wear requiring repair but when combined with large flood events on the Skagit River large breach events can occur. Maintenance and repair in recent years has become more difficult to fund and permit due more stringent requirements from county, state and federal agencies tasked with balancing the needs of a growing population and the species and systems that could be impacted.

More recently changes at the site and on the broader landscape, including aging tide gates and dikes, anticipated sea level rise, and shifting habitat needs prompted the department to evaluate alternative land management options, such as removing dikes and tide gates, and restoring the site back to estuary.

WDFW assessed four land management alternatives for the Island Unit, ranging from no restoration to restoring all 270 acres. The department evaluated alternatives based on state requirements and policies, fish and wildlife needs, community values, and climate resilience. A project advisory group provided input throughout the alternatives analysis process and in late 2020 the public had an opportunity to comment on the Draft Alternatives Analysis Report.

After considering all the issues and input, WDFW selected the option to restore all 270 acres of the Island Unit to estuary because it has the clearest path to implementation, supports threatened species, and has the broadest suite of benefits. However, full restoration means there is a tradeoff of impacts to waterfowl hunting and the loss of enhanced waterfowl forage at the site.

Current Status

- WDFW has begun preliminary design for the project using a Salmon Recovery Funding Board award allocated in late 2021. Work includes: Hiring a design consultant to assess project actions.
- Working with a technical team and recreational users to vet results and refine the design.
- Developing a preliminary design.
- Scoping next steps for final design and permitting.
- Additional funding has been awarded by the National Atmospheric and Oceanic Administration for final design and permitting, which will begin after the preliminary design is completed in late 2023, and towards construction.

Next Steps

- Obtain funding for all subsequent project phases.
- Complete final design and obtain permits.
- Construct the 270-acre estuary restoration project (Goal/objective 4C)
- Monitor pre- and post-project conditions to understand outcomes.
- Manage weeds on the restoration site.
- Seek opportunities to add and/or improve waterfowl hunting on the landscape.

More Information

[Reference the WDFW website for more information.](#)

Milltown Island

Background

Milltown Island, located in the South Fork Skagit River and bounded by Tom Moore Slough on the east and Steamboat Slough on the west, was once entirely tidal marsh. Starting in the late 1800s, early settlers-built dikes around the perimeter of the project site and a cross dike across the middle. The site was acquired by WDFW between 1951 and 1973 when flood events caused a bridge from the mainland to wash out and dikes to be breached. After dikes no longer protected the site from river flows and tides and access via the bridge was lost, farming on the site was not possible. In the early 2000s, WDFW partnered with Skagit River System Cooperative (SRSC) to plan and implement habitat improvements for salmonids on the site. Between 2007 and 2014, SRSC created additional dike breaches and starter channels. Monitoring since then indicates that these actions did restore partial tidal processes on the site, but more restoration was needed to establish more complex tidal channels and address non-native weeds that dominate the site. In 2017, WDFW initiated an alternatives analysis and preliminary design work to address the remaining site deficiencies. Through monitoring and modeling we know that the flow of river floods and tides onto and off the site is limited by remaining dikes, a lack of channels and channel outlets keeps juvenile salmon from accessing the site, and vegetation communities are dominated by weeds.

Project Detail

The preliminary design work actions included removing a portion of the perimeter and cross-dike, excavating channels, creating topographic relief through construction of mounds, constructing access features such as low angle landings for boats and weed treatment equipment, removing farm debris (fencing and culverts), managing weeds, and establishing native vegetation. These actions are proposed to fully restore tidal processes on the site that will ultimately allow a more complex tidal channel network to establish and maintain over time to benefit fish. Vegetation management actions are intended to re-establish the site as an intertidal scrub-shrub marsh while also focusing management on four herbaceous vegetation management zones strategically placed to provide benefits for waterfowl and waterfowl hunting.

Current Status

An alternatives analysis and final design has been completed and permits are currently being sought. Construction is planned for 2024 (Goal/objective 4F).

- All funds needed to complete the design and permitting are secured.
- Permit applications are currently being submitted and tracked.
- Final plans and specifications have been completed.
- Funding for monitoring and construction is partially secured.
- WDFW and SRSC worked together to complete a Vegetation Management Plan and are currently working on a Monitoring and Adaptive Management Plan.

Next Steps

- Upon receipt of permits, WDFW will put the project out to bid, to be expected in fall 2023.

- WDFW will hire a contractor for the construction phase of the project, which is expected to occur between July and October 2024.

More Information

[Milltown Island Restoration Project | Washington Department of Fish & Wildlife](#)

Britt Slough

Background

The Britt Slough property known as “Skagit Forks” was purchased in 2008 to add to two other WDFW properties in the area, Cottonwood Island and the Skagit Schoolhouse. An historic open water wetland existed on the property that was formally connected to the South Fork Skagit River conveying the flow of Britt Slough. The rerouting of Britt Slough several decades ago and the development of other infrastructure resulted in the isolation of the wetland.

Skagit Conservation District (SCD) partnered with WDFW to complete a feasibility study to investigate restoration opportunities of off channel habitats used by juvenile salmon in the Cottonwood/Skagit Forks area. The “Britt Slough” project was selected for feasibility and a conceptual design was completed in October 2016. In 2017 Skagit Fisheries Enhancement Group (SFEG) & SCD partnered with WDFW to fund the final design & permitting which was completed in November of 2019. Finally, that same partnership, led by the SFEG, was awarded construction funding in December of 2019.

Current Status

Construction was completed during the summer of 2021, though some ongoing work by SFEG continues including:

- Removal of invasive species
- Planting the site with native species with the help of community volunteers and educational groups

Monitoring and Adaptive Management

Project construction was completed during the summer of 2021, managed by SFEG with help from the SCD. Pre-project monitoring was conducted by SFEG and Skagit River System Cooperative.

Next Steps

- Project will continue to be monitored as part of the Skagit Intensively Monitored Watershed
- WDFW will continue to partner with SFEG to maintain native plants and reduce invasive species

More Information

[PRISM Project Snapshot - Washington State Recreation and Conservation Office](#)

DeBay's Slough

Background

The DeBay's Slough Unit is comprised of agricultural fields, riparian forest, and freshwater wetlands. The unit was purchased in the late 1990s to provide an undisturbed game reserve for trumpeter swans as well as to provide a waterfowl hunting area. During a study conducted by Skagit County to determine the feasibility of reconnecting Hart's Slough, which lies directly across the Skagit River from DeBay's Slough, the concept of a DeBay's Slough reconnection was identified. The DeBay's concept coupled with Hart's Slough project was identified as a Chinook recovery project in the Skagit River Chinook Recovery plan (WDFW & SRSC 2005)

Access to the DeBay's Slough property is by a Skagit County road that crosses the slough from the east. Skagit County road maintenance has identified the need to replace the crossing and to do so the County would have to build the crossing to WDFW standards. The nature of the crossing has made the project complicated. Considering the similar data needs and the amount of effort it would take to complete the design, it was determined that combining the road project with an overall feasibility including alternatives for the salmon recovery project would make sense.

Current Status

WDFW in partnership with Skagit County is conducting an alternatives analysis to determine the feasibility of a complete or partial surface water reconnection to the Skagit River. The project has been funded by the Salmon Recovery Funding Board and Skagit County began work on the project in fall of 2021. Since that time the project has been transferred to WDFW, and fish use surveys will begin in winter of 2024. If it is determined that there is a feasible alternative that may prove beneficial to salmon recovery while retaining current site conditions, the project will proceed through design, permitting, and construction.

More Information

Reference the [Debays Slough Site Assessment Report](#).

Wetland Restoration Projects

Samish River

Background

The 100-acre Samish River Unit is located along the Samish River near its confluence with Samish Bay. The site is hydrologically disconnected from the river and tidal processes by a dike and tidegates. The Natural Resource Conservation Service (NRCS) owns an underlying easement through the Wetland Reserve Program. The NRCS easement required WDFW to implement a 100-acre project on the property to enhance wetland values. NRCS and WDFW worked together to implement a wetland enhancement project in 2015. The major elements of this project were removing drain tiles, excavate depressions, and build mounds, and installing woody debris piles. These actions created better habitat for wetland-dependent wildlife by reintroducing wetter

hydrology and diversifying wetland habitat by manipulating the topography and creating more edges. Post-project, the site remains extremely popular with wildlife viewers (particularly owl watching and photography) along with waterfowl hunting in a designated area.

Next Steps (Goal/objective 3E)

- Implement a planting project that will establish native woody vegetation in higher areas of the site.
- Permit and design a parking area. Construct a parking area that will provide a safe access to site for recreators.
- Continue to manage recreation use on the site and consider continuing the pilot project implemented in late 2022/early 2023 that designated a “waterfowl hunting only” area during hunting season to improve safety and enjoyment for wildlife viewers and waterfowl hunters.

More Information

[Samish River Unit Parking Project](#)

APPENDIX D. CLIMATE CHANGE PROJECTIONS FOR THE SKAGIT WILDLIFE AREA

Climate change projections for the Skagit Wildlife Area. Metrics are summarized at the county scale (Skagit County) (Table 16) with the exception of the streamflow metrics which apply to either Puget Sound or the Skagit River watershed. Mid-century refers to either 2040-2069 (temperature, wildfire, precipitation metrics), 2050 (sea level rise metrics), or 2030-2059 (streamflow metrics). Similarly, late-century refers to either 2070-2099 (all metrics except sea level rise) or 2100 (sea level rise). The median modeled value is provided for each metric, followed by the modeled 10th and 90th percentile values in parentheses. The lower scenario refers to the RCP 4.5 greenhouse gas emissions scenario, and the higher scenario to RCP 8.5 unless otherwise specified. Future projections are compared to the historical baseline of 1980-2009 unless otherwise specified. NA indicates values that are either not applicable or not available.

Table 16. Climate change projections for the Skagit Wildlife Area

Metric	Description	Historical Baseline	Scenario	Mid-Century	Late-Century
Temperature¹					
Summer Maximum Temperature	Change in average daily summer (June-August) maximum temperature	69°F (69 to 70)	Lower	4.5°F (2.4 to 6.7)	5.5°F (3.9 to 8.0)
			Higher	6.5°F (4.4 to 8.3)	10.7°F (7.0 to 13.1)
Hot Days	Change in the number of days per year with maximum daily temperature greater than 100 °F	0 days (0 to 0)	Lower	0.0 days (0.0 to 0.1)	0.0 days (0.0 to 0.2)
			Higher	0.1 days (0.0 to 0.4)	0.6 days (0.1 to 2.1)
90 °F Max Humidex Days	Change in the number of days per year with a maximum humidex value over 90 °F. Humidex is a measure of “experienced” temperature and includes both temperature and humidity	2 days (2 to 3)	Lower	8.2 days (2.9 to 13.3)	12.4 days (6.1 to 19.0)
			Higher	14.9 days (6.2 to 22.7)	34.0 days (16.3 to 51.7)
65 °F Min Humidex Days	Change in the number of days per year with a minimum humidex value over 65 °F	2 days (1 to 2)	Lower	8.3 days (2.4 to 15.8)	13.1 days (3.7 to 23.7)
			Higher	14.9 days (4.9 to 28.8)	39.3 days (15.8 to 65.2)
Wildfire¹					
Wildfire Danger	Change in the number of days per year, relative to 1971-2000, with high fire potential based on dry fuels, fuel moisture below the 20 th percentile	48 days (48 to 48)	Lower	9 days (2 to 20)	NA
			Higher	11 days (4 to 22)	NA
Wildfire Likelihood	Likelihood of having the climate and vegetation conditions each year that could support a wildfire, assuming ignitions are present and fire suppression is implemented	0 (0 to 0)	Lower	0.03 (0.01 to 0.09)	0.06 (0.01 to 0.13)
			Higher	0.07 (0.02 to 0.13)	0.17 (0.06 to 0.37)
Precipitation¹					
Total Annual Precipitation	Percent change in average total accumulated annual precipitation in inches	80 in (63 to 88)	Lower	NA	NA
			Higher	6.6% (-3.0 to 11.3)	10.0% (-1.4 to 19.4)

Metric	Description	Historical Baseline	Scenario	Mid-Century	Late-Century
Late Summer Precipitation	Percent change in average July 15-September 15 precipitation	3 in (1 to 7)	Lower	NA	NA
			Higher	-14.3% (-38.0 to 19.2)	-11.9% (-53.6 to -1.2)
Precipitation Drought	Likelihood that summer (June-August) precipitation in any given year is below 75% of average historical precipitation	NA	Lower	NA	NA
			Higher	0.24 (0.20 to 0.48)	0.39 (0.21 to 0.57)
Heavy Precipitation Magnitude	Percent change in the maximum amount of water from the 24-hr rainstorm that occurs on average once every 2 years	NA	Lower	NA	NA
			Higher	15% (3 to 23)	21% (11 to 27)
Extreme Precipitation Magnitude	Percent change in the maximum amount of water from the 24-hr rainstorm that occurs on average once every 25 years	NA	Lower	NA	NA
			Higher	17% (-3 to 30%)	30% (6 to 39%)
1-inch Precipitation Days	Change in days with more than 1 inch total precipitation	19 days (13 to 25)	Lower	NA	NA
			Higher	1.6 days (-0.8 to 3.9)	3.5 days (0.2 to 5.3)
2-inch Precipitation Days	Change in days with more than 2 inches total precipitation	5 days (2 to 5)	Lower	NA	NA
			Higher	0.8 days (0.1 to 1.4)	1.5 days (0.7 to 2.1)
3-inch Precipitation Days	Change in days with more than 3 inches total precipitation	1 day (0 to 2)	Lower	NA	NA
			Higher	0.3 days (0 to 0.8)	0.7 days (0.2 to 1.0)
Snowpack	Percent change in the amount of water contained in the snowpack (snow water equivalent) on April 1	22 in (17 to 27)	Lower	-51% (-60 to -36)	-60% (-69 to -41)
			Higher	-59% (-68 to -47)	-79% (-85 to -68)
Snowpack Drought	Likelihood that any year has April 1 snowpack below 75% of the 1981-2010 average	NA	Lower	0.33 (0.28 to 0.40)	0.39 (0.31 to 0.47)
			Higher	0.39 (0.32 to 0.46)	0.60 (0.48 to 0.67)
Sea Level Rise¹					
Likely Sea Level Rise	Amount of sea level rise expected with a 50% likelihood relative to the 1991-2009 average sea level	NA	Lower	0.6 ft (0.6 to 0.7)	1.6 ft (1.6 to 1.7)
			Higher	0.7 ft (0.7 to 0.8)	2.1 ft (2.0 to 2.2)
High Sea Level Rise	Amount of sea level rise expected with a 1% likelihood relative to the 1991 to 2009 average sea level	NA	Lower	1.3 ft (1.3 to 1.4)	4.2 ft (4.2 to 4.3)
			Higher	1.4 ft (1.3 to 1.5)	4.9 ft (4.8 to 5.0)
Streamflow²					
Winter Streamflow	Percent change in winter (October-March) streamflow, on average for Puget Sound, relative to 1970-1999	NA	Low (B1)	15% (-11 to 37)	28% (13 to 58)
			Moderate (A1B)	22% (8 to 48)	34% (12 to 64)
Summer Streamflow	Percent change in summer (April-September) streamflow, on average for Puget Sound, relative to 1970-1999	NA	Low (B1)	-16% (-24 to -8)	-24% (-37 to 11)
			Moderate (A1B)	-19% (-33 to -11)	-31% (-46 to -13)

Metric	Description	Historical Baseline	Scenario	Mid-Century	Late-Century
Streamflow Timing	Change in the timing of peak streamflow for the Skagit River watershed relative to 1970-1999	NA	Moderate (A1B)	NA	-22 days (-36 to -13)
Flooding	Percent change in streamflow associated with the 100-year (1% annual probability) flood event for the Skagit River watershed relative to 1970-1999	NA	Moderate (A1B)	NA	42% (4 to 86)
Flood Area	Percent change in area flooded in a 100-year event due to the combined effect of high river flows and sea level rise for the Skagit River watershed relative to 1970-1999	NA	Moderate (A1B)	NA	74% (NA)
Minimum Flows	Percent change in summer minimum streamflow (7Q10, the lowest 7-day average flow that occurs on average once every 10 years) for the Skagit River watershed relative to 1970-1999	NA	Moderate (A1B)	NA	-51% (-65 to -38)
Stream Temperature > 54°F	Increase in river miles in excess of 54°F (thermal tolerance for char) average August stream temperature for the Skagit River watershed relative to 1970-1999	NA	Moderate (A1B)	NA	566 miles (NA)
Stream Temperature >64°F	Increase in river miles in excess of 64°F (thermal tolerance for salmon) average August stream temperature for the Skagit River watershed relative to 1970-1999	NA	Moderate (A1B)	NA	121 miles (NA)

¹University of Washington Climate Impacts Group. Climate Mapping for a Resilient Washington. <https://cig-wa-climate.nkn.uidaho.edu/>. Accessed 7 February 2023.

²Hamlet, A.F. et al., 2013. An overview of the Columbia Basin Climate Change Scenarios Project: Approach, methods, and summary of key results. *Atmosphere-Ocean*, 51(4), 392-415, DOI: 10.1080/07055900.2013.819555.

APPENDIX E. RESEARCH AND OTHER STUDIES

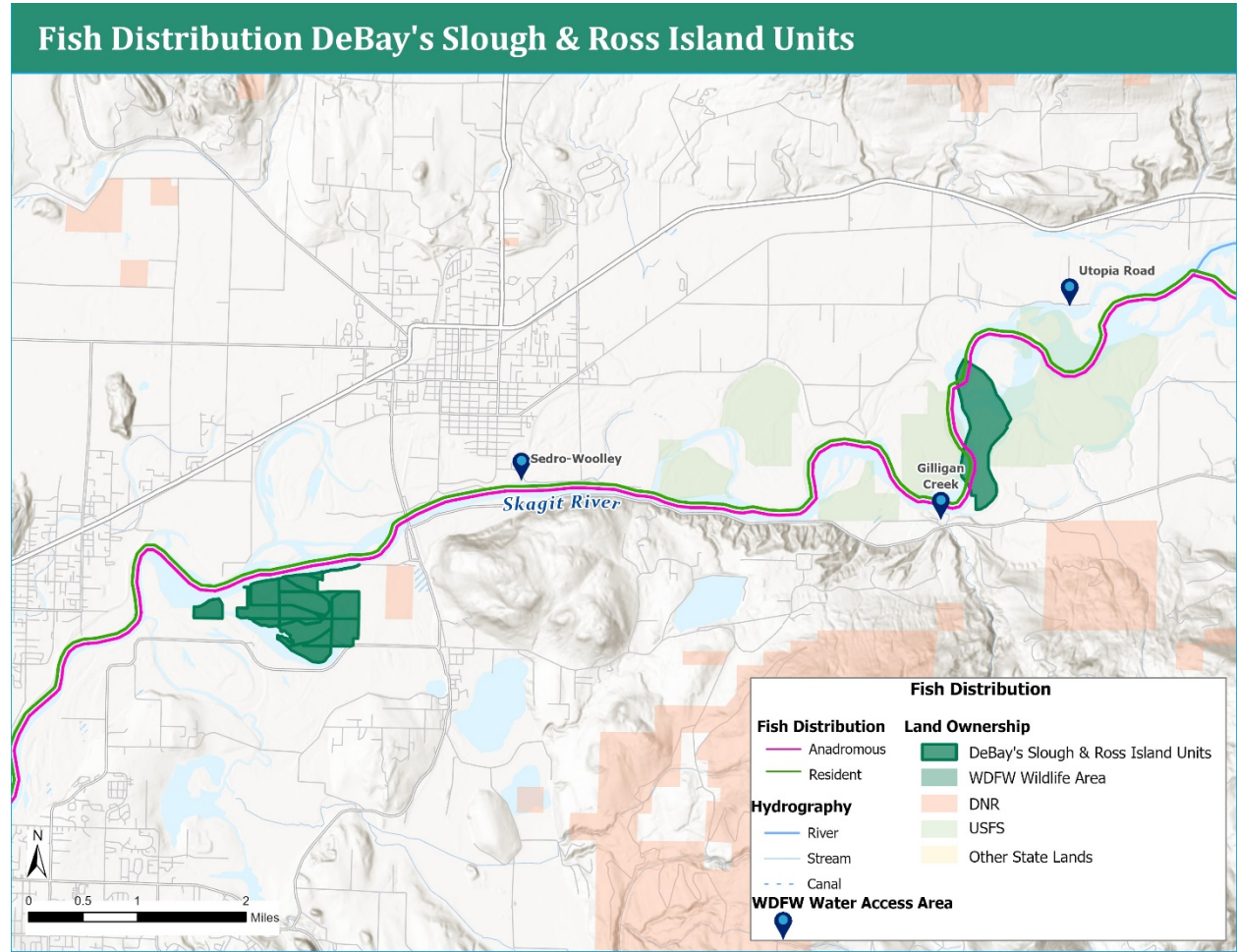
Table 17. Research and other studies

Researcher	Year	Title	Description
Bird monitoring			
Slater, G. L.	2004	Waterbird abundance and habitat use in estuarine and agricultural habitats of Skagit and Stillaguamish River Deltas.	This study investigated the abundance and habitat use of waterfowl and shorebirds in estuarine and agricultural habitats of the Greater Skagit Delta during the period from the end of the hunting season through spring migration. ecoinst.org/wp-content/uploads/2014/01/Slater_2004_Waterbird_final.pdf
Slater, G. L. and J. D. Lloyd.	2010	Farming for wildlife: effects of flooding, forage harvest, and grazing on shorebirds, soil invertebrates, and vegetation on agriculture fields in the Skagit River Delta.	The study examined the response of shorebirds, soil macroinvertebrates, the primary food source for shorebirds, and vegetation on fields at 3-privately owned farms in the Skagit River delta of Washington. ecoinst.org/wp-content/uploads/2014/01/Slater_Lloyd_2010_FFW_Shorebird_FINAL.pdf
Slater, G. L. and J. D. Lloyd	2010	Farming for wildlife: effects of flooding, forage harvest, and grazing on soil properties and weed abundance on agriculture fields in the Skagit River Delta.	This report details the results of a 3-year experimental study investigating the effects of flooding to create temporary wetlands on agricultural fields in comparison to two traditional crop-rotation practices, forage harvest and grazing. ecoinst.org/wp-content/uploads/2014/01/Slater_Lloyd_FFW_Soils_FINAL.pdf
Slater, G. L., R. Milner, and R. Borkhateria	2011	Space use and habitat selection by wintering dunlin in the Skagit River Delta.	This study will provide data on how shorebirds use habitats in the Skagit and Stillaguamish River deltas similarly to adjacent estuaries. This information gap presents a significant challenge to land managers and conservation organizations developing conservation strategies for shorebirds in the absence of information on habitat use patterns. ecoinst.org/wp-content/uploads/2014/01/Slater_etal_2011_DunlinHabitatUse_FinalReport.pdf
Virzi, T., L. Rensel, R. Milner, and G. Slater.	2017	Assessing restoration effects on bird populations following tidal restoration at Fir Island and other sites in the Skagit-Stillaguamish River Delta, WA	The goal of this project is to quantify the response of bird populations to restoration actions. ecoinst.org/wp-content/uploads/2014/01/Virzi-et-al_2017_ERP-Interim-Progress-Report.pdf
Salmon restoration and monitoring			
Beamer, E.M., R. Henderson, K. Wolf	2006	Effectiveness monitoring of the Deepwater Slough restoration project for wild juvenile Chinook salmon presence, timing, and abundance	skagitcoop.org/wp-content/uploads/DeepwaterSloughMonitoring.pdf

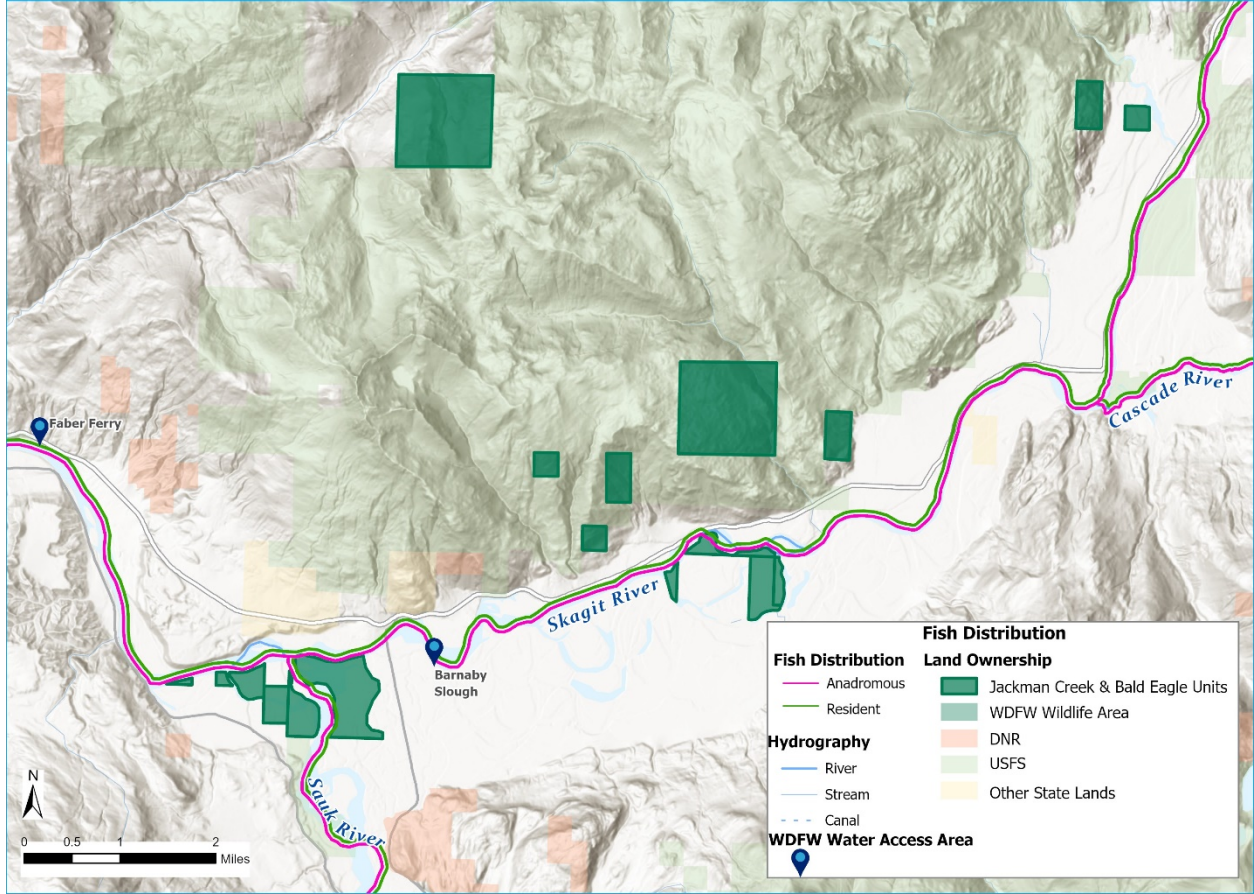
Researcher	Year	Title	Description
Beamer, E.M., J. Haug, C. Rice, K. Wolf	2009	Nearshore fish assemblages in reference and Spartina removal sites located in south Skagit Bay	The objective of this study is to evaluate the effect of Spartina removal treatment on the fish assemblage, including juvenile salmon, in the southern Skagit Bay near the town of Stanwood. skagitcoop.org/wp-content/uploads/FinalReport_NearshoreFishUse_SouthSkagitBay_5-26-09.pdf
Beamer, E., R. Henderson, B. Brown	2015	Juvenile Chinook salmon utilization of habitat associated with Wiley Slough restoration project, 2012-2013	skagitcoop.org/wp-content/uploads/Wiley-Slough-2012-2013-Final.p
Beamer, E.,	2015	Fir Island Farms technical memo before restoration fish monitoring	skagitcoop.org/wp-content/uploads/SRSC-Memo-FIF-2015.pdf
Beamer, E., G. Hood, K. Wolf	2016	Habitat and juvenile Chinook benefit predictions of candidate restoration projects within the Skagit tidal delta	skagitcoop.org/wp-content/uploads/HabitatandJuvenileChinookBenefitPredictionsofCandidateRestorationProjectswithintheSkagitTidalDelta.pdf
Beamer, E. M., R. Henderson, K. Wolf, J. Demma, W. G Hood	2018	Juvenile Chinook salmon response to dike setback restoration at Fir Island Farms in the Skagit River tidal delta, 2015-2018	skagitcoop.org/wp-content/uploads/JuvenileChinookSalmonResponsetoDikeSetbackRestorationatFirIslandFarmsintheSkagitRiverTidalDelta.pdf
Beamer, E., C. Greene, M. LeMoine	2019	Skagit River Estuary intensively monitored watershed annual report for 2019.	skagitcoop.org/wp-content/uploads/SkagitRiverEstuaryIntensivelyMonitoredWatershedAnnualReportfor2019.pdf
Clifton, B.C., W.G. Hood, S.R. Hinton	2018	Floristic development in three oligohaline tidal wetlands after dike removal.	Please contact Brenda Clifton for a copy of this document. Brenda Clifton (360) 391-7405
Collins, B.D.	1998	Preliminary assessment of historic conditions of the Skagit River in the Fir Island area: implications for salmonid habitat restoration	This investigation describes current and historic conditions of distributary and blind-tidal channels of the lower Skagit River, downstream from where it branches into the North and South forks and forms Fir Island before entering Skagit Bay. skagitcoop.org/wp-content/uploads/EB70_Collins1998.pdf
Hood, W.G.	2004	Deepwater Slough restoration monitoring report: 2000-2003	skagitcoop.org/wp-content/uploads/DeepwaterSloughRestorationMonitoringReport_20002003.pdf
Hood, W.G.	2004	Indirect environmental effects of dikes on	Historical photos of the Skagit River delta marshes were analyzed and compared to changes in estuarine marsh and tidal channel

Researcher	Year	Title	Description
		estuarine tidal channels: thinking outside of the dike for habitat restoration and monitoring	surface area from 1956–2000 in the Wiley Slough area of the South Fork Skagit delta, and from 1937–2000 in the North Fork delta. skagitcoop.org/wp-content/uploads/EB2065_Hood_2004.pdf
Hood, W.G.	2006	Deepwater Slough restoration monitoring: channel cross section comparison: 2000-2006	skagitcoop.org/wp-content/uploads/DeepwaterSloughRestorationMonitoringChannelCrossSectionComparisons20002006.pdf
Hood, W.G.	2009	Habitat monitoring strategy for the tidal Skagit delta	skagitcoop.org/wp-content/uploads/Monitoring-Strategy-for-the-Skagit-Delta-Ecosystem-FINAL.pdf
Climate change			
Kauffman, J.B., L. Giovanonni, J. Kelly, N. Dunstan, A. Borde, H. Diefenderfer, C. Cornu, C. Janousek, J. Apple, L. Brophy	2019	Total ecosystem carbon stocks at the marine-terrestrial interface: Blue carbon of the Pacific Northwest Coast, U.S.	The coastal ecosystems of temperate North America provide a variety of ecosystem services including high rates of carbon sequestration. Yet, little data exist for the carbon stocks of major tidal wetland types in the Pacific Northwest, United States. The total ecosystem carbon stocks in seagrass, emergent marshes, and forested tidal wetlands, occurring along increasing elevation and decreasing salinity gradients were quantified in this study. pnwbluecarbon.org/files/ugd/43d666_2cb7e71b5c9c46ae8d0c3d3992fd598a.pdf

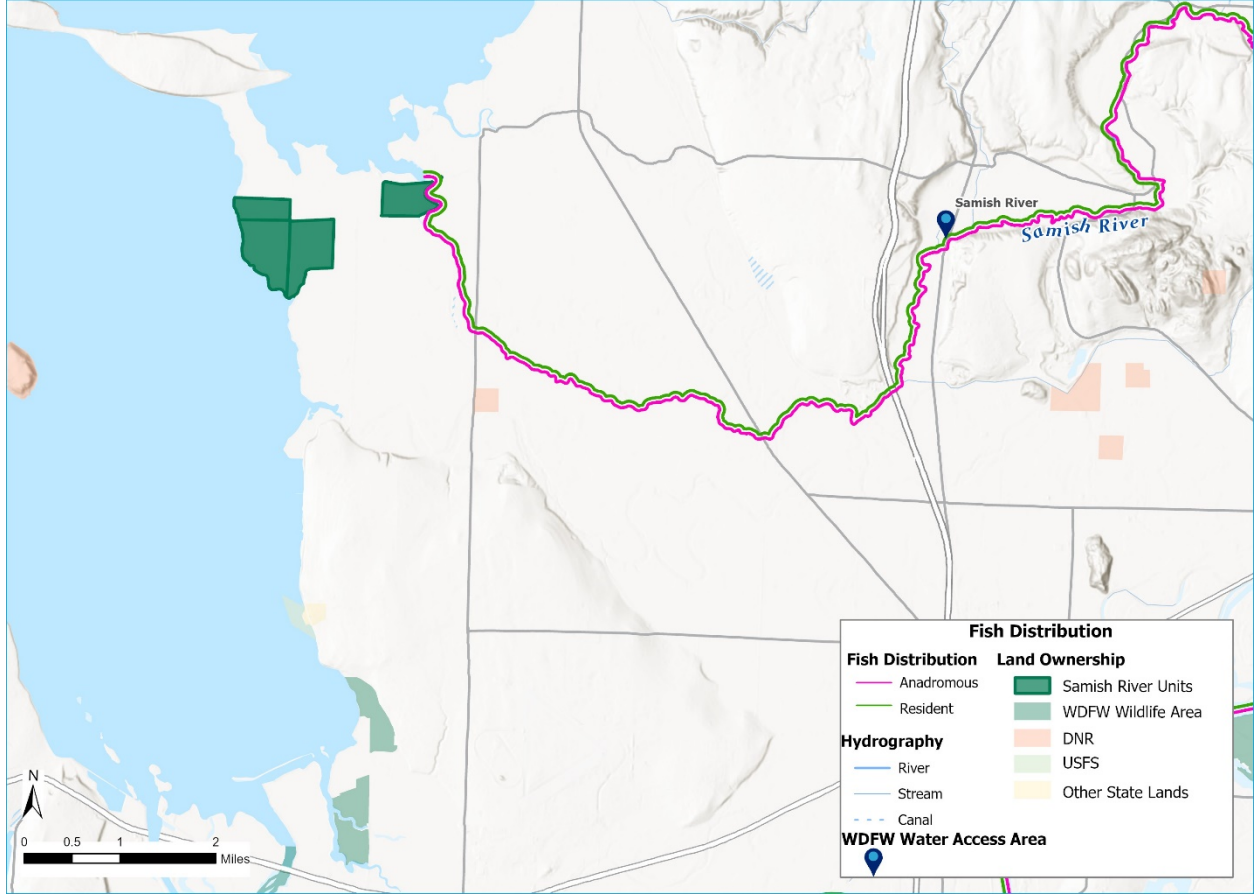
APPENDIX F. FISH DISTRIBUTION MAPS



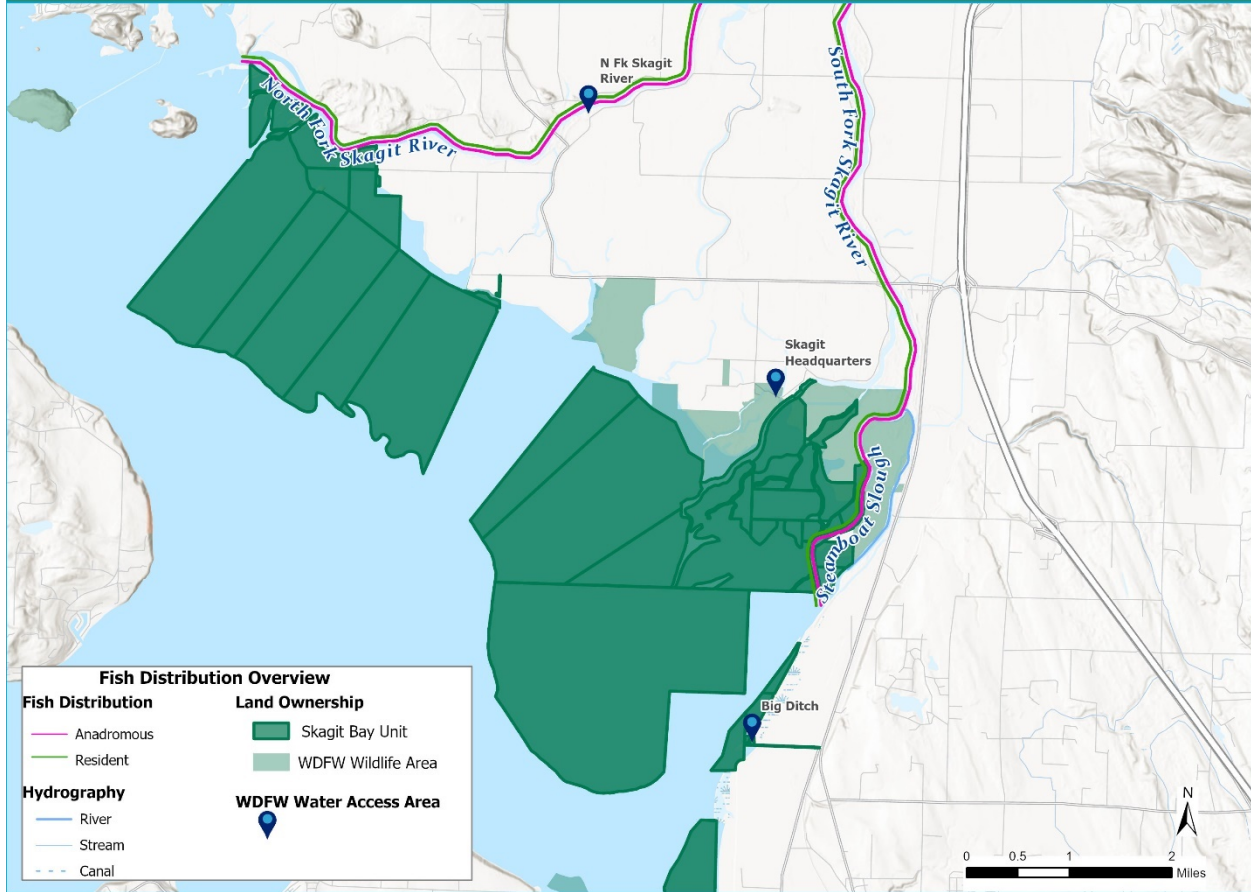
Fish Distribution Jackman Creek and Bald Eagle Units



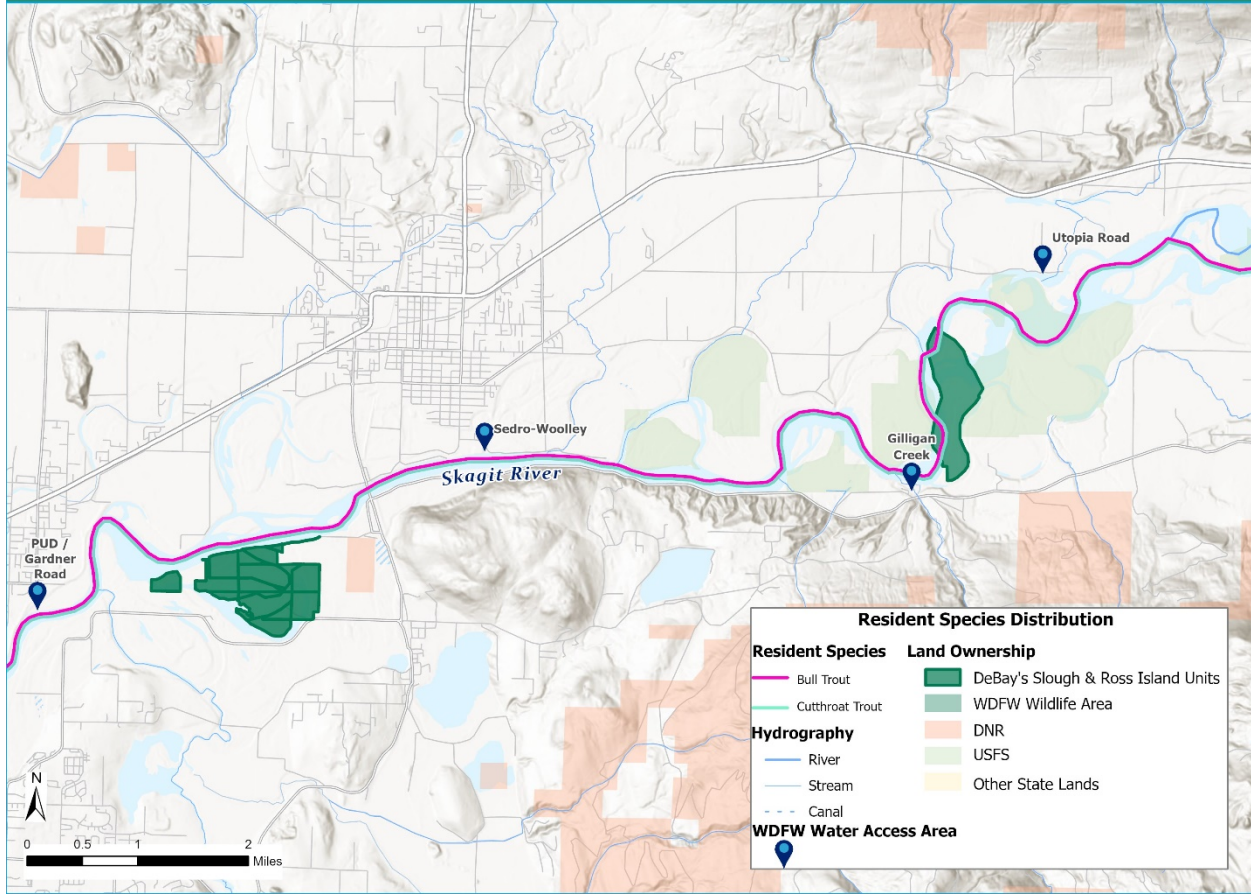
Fish Distribution Samish River Units



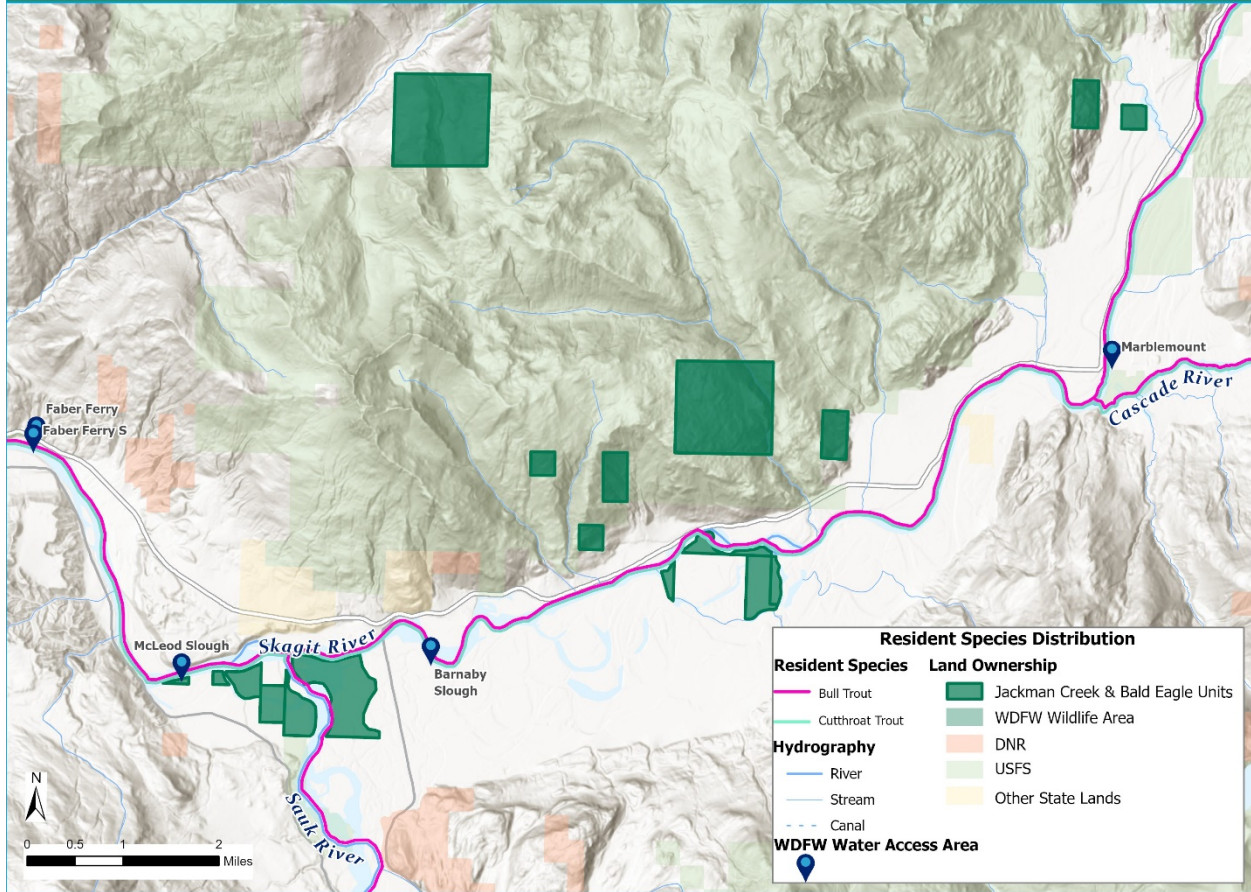
Fish Distribution Skagit Bay Estuary Unit



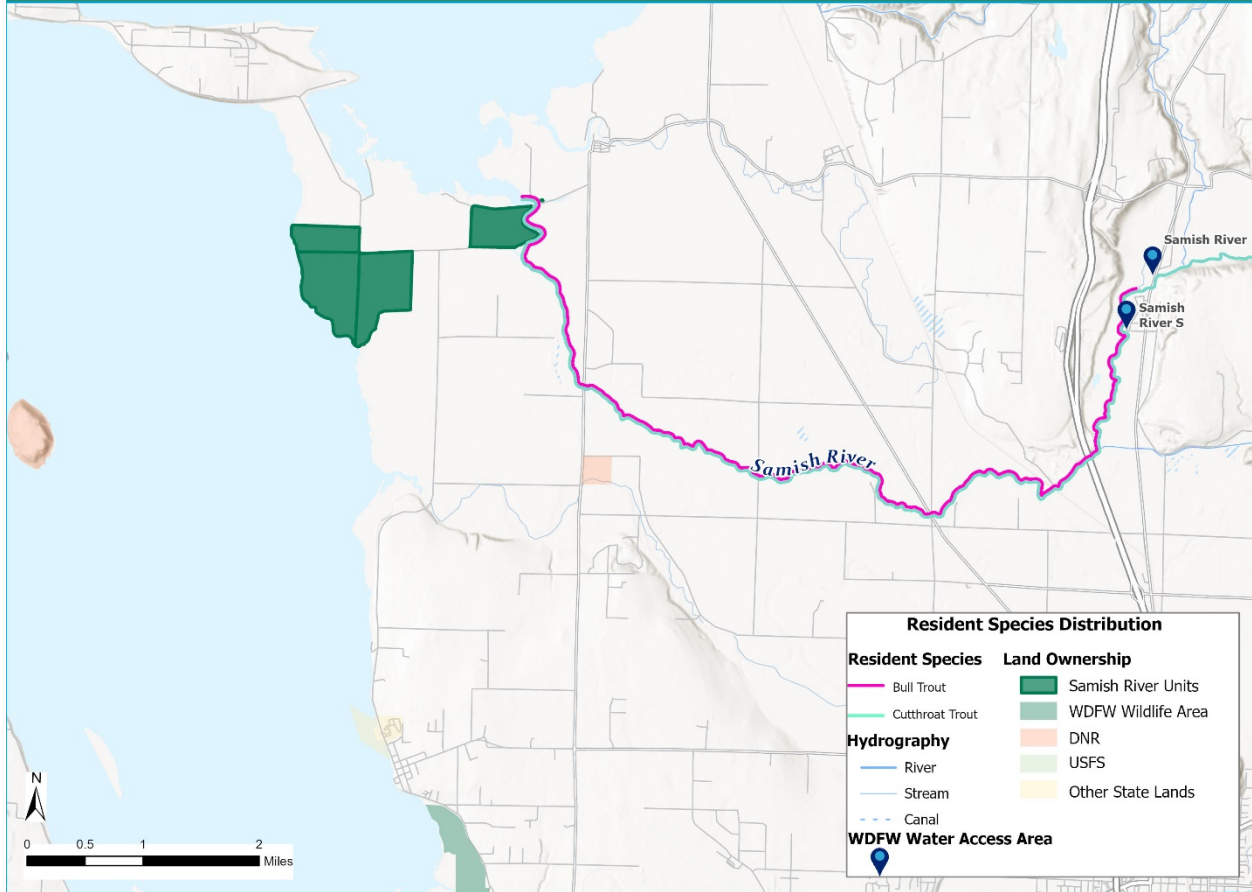
Resident Species Distribution DeBay's Slough & Ross Island Units



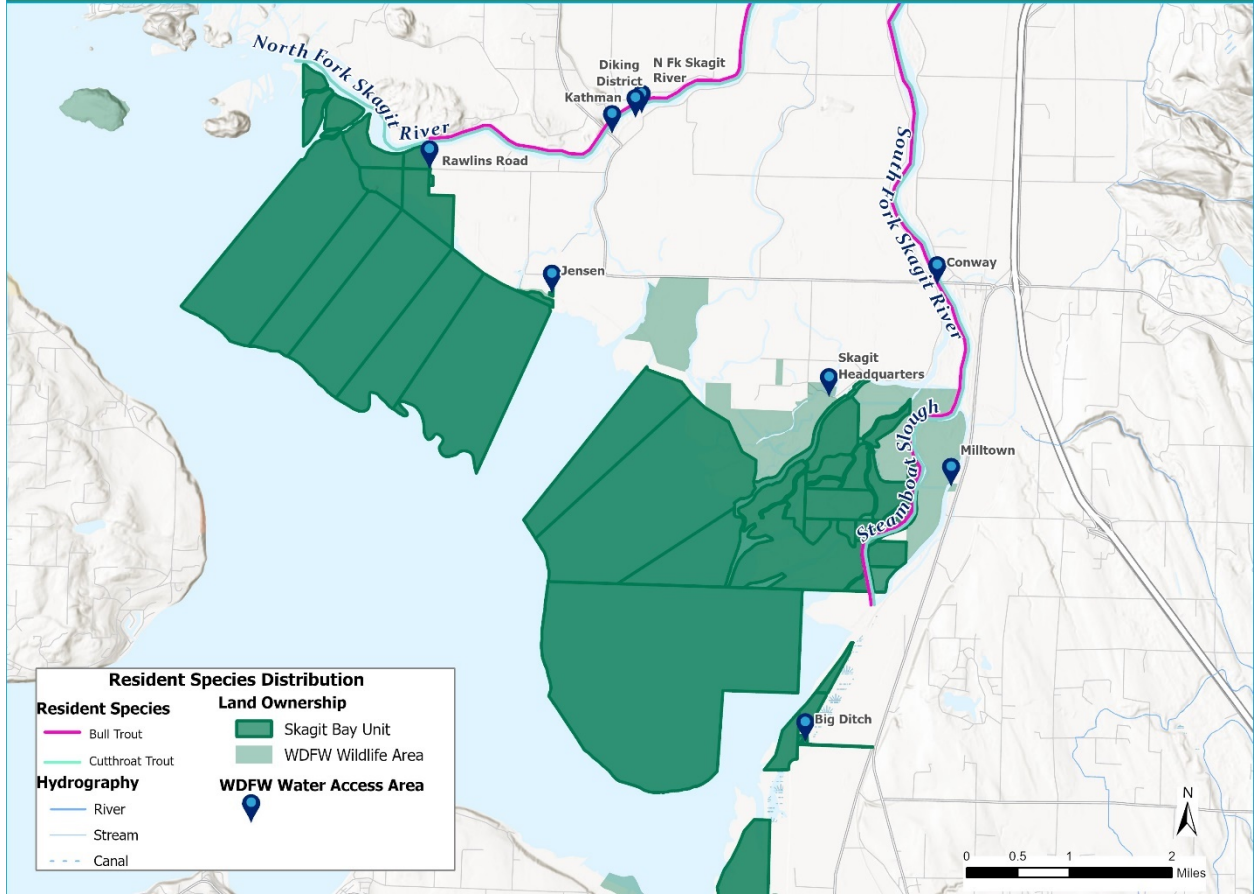
Resident Species Distribution Jackman Creek and Bald Eagle Units



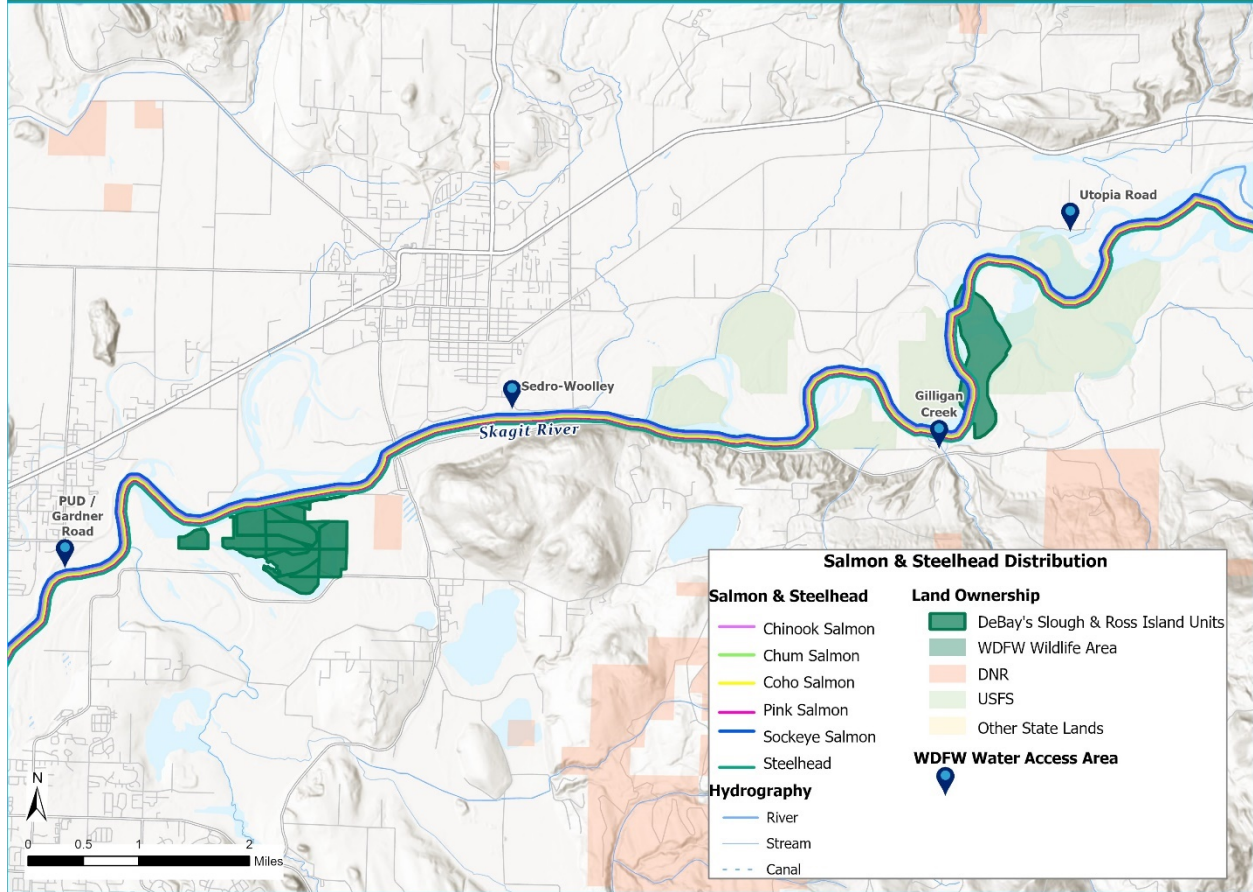
Resident Species Distribution Samish River Units



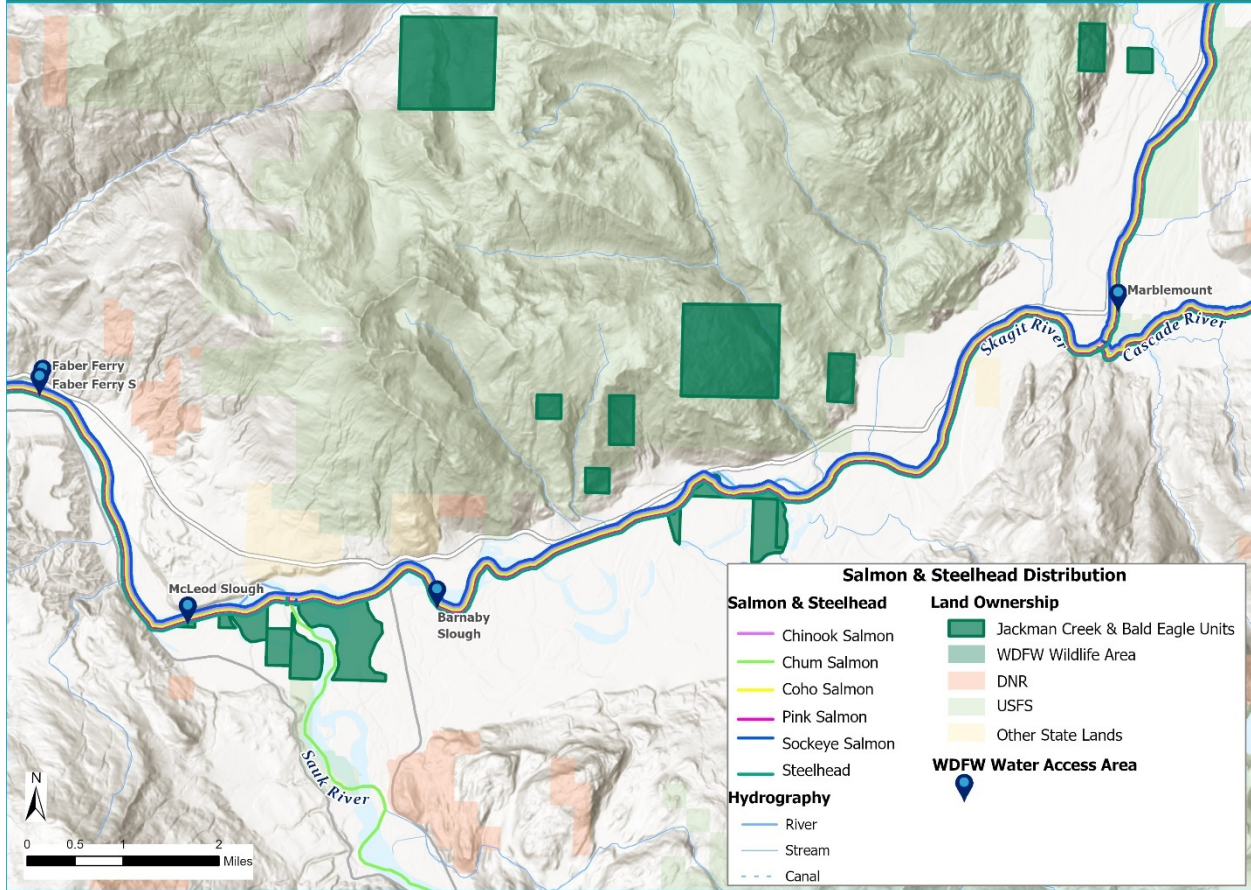
Resident Species Distribution Skagit Bay Estuary



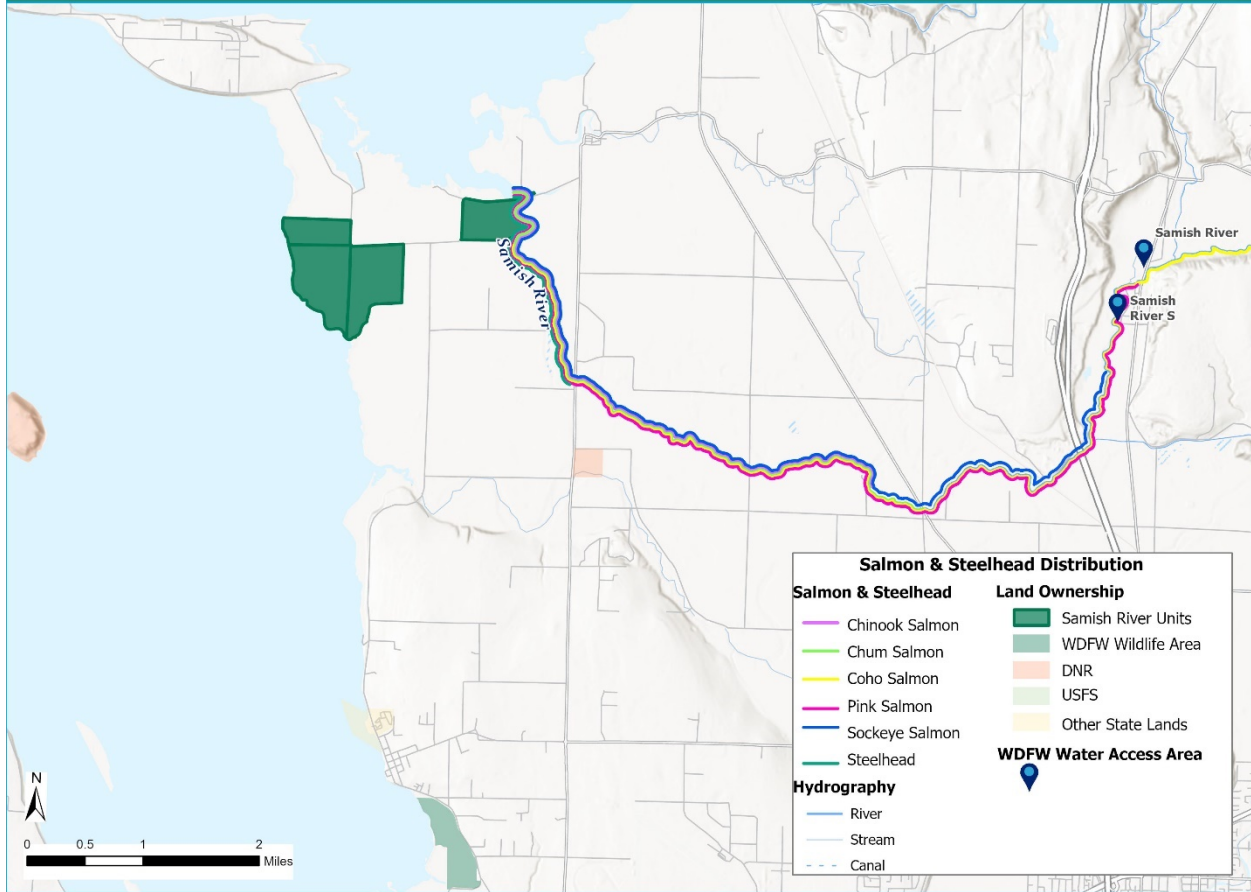
Salmon & Steelhead Distribution DeBay's Slough & Ross Island Units



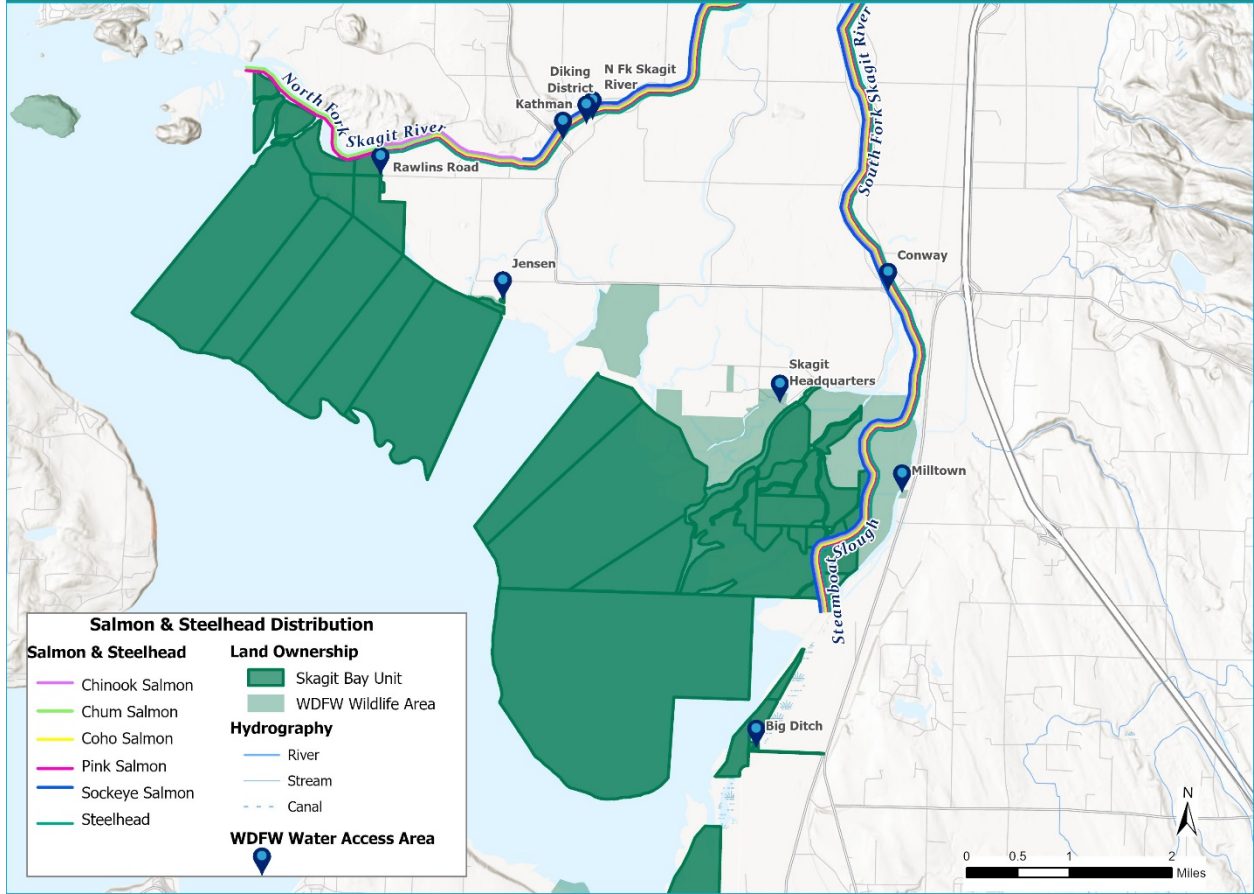
Salmon & Steelhead Distribution Jackman Creek and Bald Eagle Units



Salmon & Steelhead Distribution Samish River Units



Salmon & Steelhead Distribution Skagit Bay Estuary



APPENDIX G. FIRE RESPONSE INFORMATION

Responsible Fire-Suppression Agencies

The Skagit Wildlife Area and its satellite units fall under the jurisdiction of many local fire districts, mainly in Skagit County, but also in Island, San Juan, and Snohomish Counties. A small portion of some units in Skagit County fall within the State Fire Protection Boundary, under the jurisdiction of the Department of Natural Resources (DNR) (Map 26). DNR is the state's largest on-call fire department with 1,200 temporary and permanent employees who fight fires on about 12.7 million acres of private and state-owned lands. It also offers local fire districts support with fire protection and safety equipment requirements.

Fires that occur within the local fire districts (non-timbered areas of the wildlife area) are the responsibility of the local fire districts, but in case of fire, dial 911 first. Fires that occur within the State Fire Protection Boundary are the responsibility of DNR and they need to be contacted first. Therefore, depending upon where the fire occurs, the appropriate agency must be contacted first, followed by an immediate call to other jurisdictions adjacent to the fire. In some cases, where there are multiple landowners or fire responders, fire suppression activities may involve two or more firefighting agencies.

WDFW pays an annual fee to Skagit County Fire District #3-Conway to maintain an existing fire protection services contract. This fee is in addition to Payment In Lieu of Taxes (PILT) paid to Skagit County and is based on the assessed value of the wildlife area within their district.

Fire suppression on WDFW forestlands within the State Fire Protection Boundary is performed by DNR. WDFW pays an assessment fee for each acre within the fire protection boundary for these services. In western Washington, a parcel up to 50 acres pays the minimum assessment of \$14.40. For parcels over 50 acres, the minimum assessment is charged plus \$0.29 per acre for each acre over 50 (2004 rates). The Forest Fire Protection Assessment is levied on all forest and unimproved land. If a wildfire starts, DNR will suppress that fire at no additional cost to the landowner if negligence is not involved.

Department Fire Management Policy

It is the Department's policy that wildlife area staff are not firefighters and should not fight fires. Wildlife area staff provide logistical support and information regarding critical habitat values to the Incident Commander of the responding fire agency.

Aerial Support

The Department recommends that firefighting entities suppress fires on the Skagit Wildlife Area as rapidly as possible. WDFW requests the Incident Commander to seek aerial support if needed to extinguish a fire on its land promptly. If, in the professional judgment of the Incident Commander, a fire on lands adjacent to the Skagit Wildlife Area causes and immediate threat to the area, WDFW requests that he/she seeks aerial support if possible.

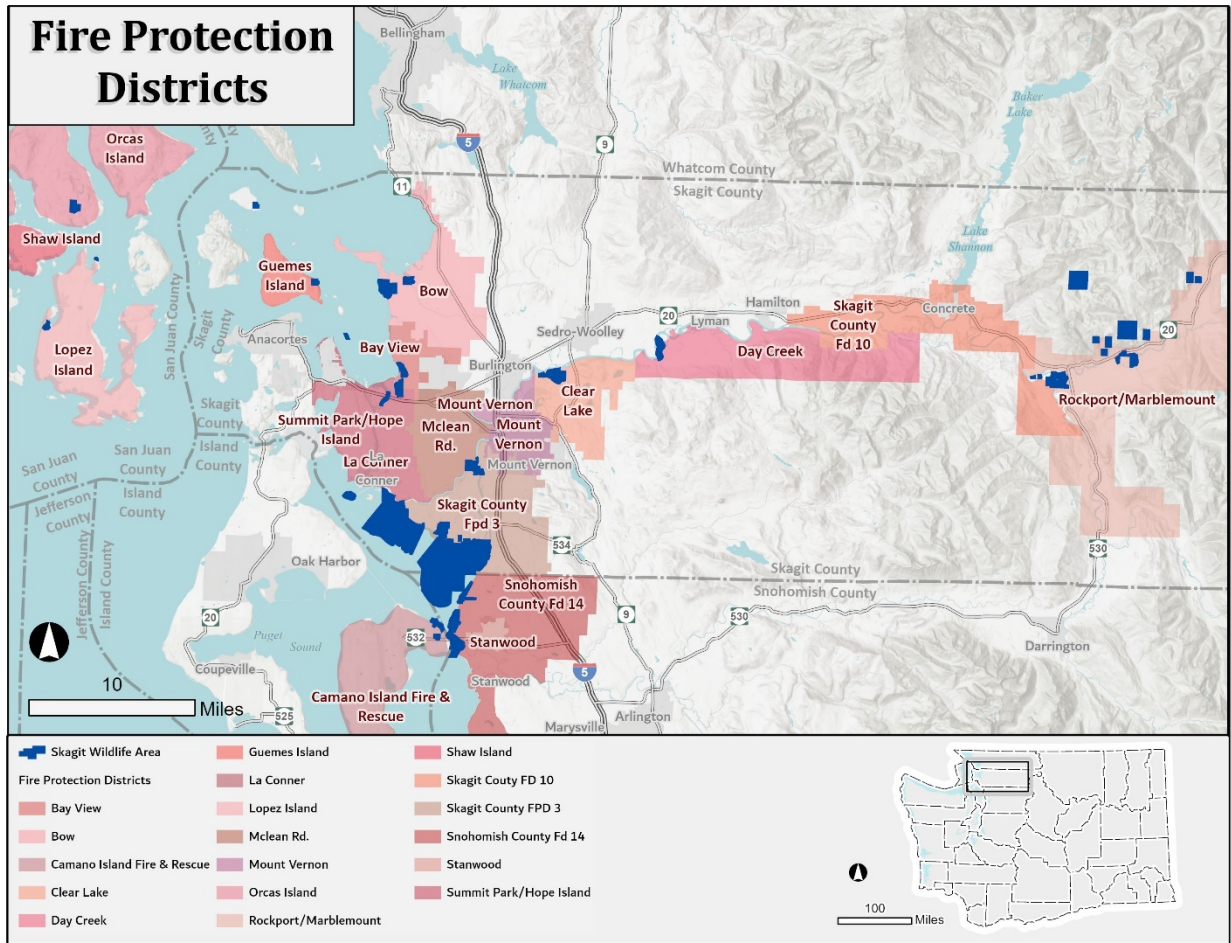
Reporting

Report any fire on or adjacent to all units of the Skagit Wildlife Area by contacting the local fire district and the Department of Natural Resources Dispatch Office in Sedro Woolley. Contact numbers listed above IN THE ORDER listed and request the Operations or Staff Coordinator. It is absolutely critical that any fire on the Skagit Wildlife Area is fought as aggressively as possible during the initial attack. The importance of aerial support cannot be overstated.

Name	Phone
DNR Dispatch	(360) 428-3293
DNR NW Region Field Office- Sedro Woolley	(360) 856-3500
WDFW Skagit Wildlife Area Manager-Greg Meis	(360) 333-8125
WDFW Regional Wildlife Assistant Program Manager-Loren Brokaw	(360) 697-0687

Wildlife Area Unit	Fire District	Phone Number
Bald Eagle	Concrete (west of Sauk River) Rockport/Marblemount (east of Sauk River)	(360) 853-8361 (360) 873-2501
Camano Island (Heron and English Boom)	Camano Island Fire and Rescue	(360) 629-2224
Cottonwood Island	Mclean Road	(360) 424-7296
Fir Island Farms	Skagit Co. #3	(360) 424-1661
Goat Island	--no coverage--	
Guemes Island	Guemes Island	(360) 293-8681
Headquarters	Skagit Co. #3	(360) 424-1661
Island	Skagit Co. #3	(360) 424-1661
Jackman Creek	Rockport/Marblemount	(360) 873-2504
Killebrew Lake	Orcas Island	(360) 376-2331
DeBay's Slough	Clear Lake	(360) 856-6283
Leque Island	Snohomish Co. #14	(360) 629-2184
Lopez Island	Lopez Island	(360) 468-2991
Milltown	Skagit Co. #3	(360) 424-1661
Pheasant Plot- Best Rd.	Mclean Road	(360) 424-7296
Pheasant Plot- Josh Wilson Rd.	Bayview	(360) 707-5513
Ross Island	Day Creek	(360) 826-6060
Samish	Bow	(360) 766-6325
Samish River	Bow	(360) 766-6325
Sinclair Island	--no coverage--	
Skagit Bay Estuary	Skagit Co. #3	(360) 424-1661
Skagit Forks	Skagit Co. #3	(360) 424-1661
South Padilla Bay	Bayview	(360) 707-5513
Telegraph Slough	La Conner	(360) 466-1224

Map 26. Fire District Map for the Skagit Wildlife Area



APPENDIX H. PUBLIC RESPONSE SUMMARY

Table 18. WDFW Response to public comments received during the public review of the Skagit Wildlife Area Management Plan draft under the State Environmental Policy Act (SEPA) from