Bringing Together Diverse Constituencies

To Restore Titlow Lagoon

An Estuary In Tacoma, Washington

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About Titlow Park

Titlow Park is a popular community recreation area located at the southern end of the Tacoma Narrows Passage within Tacoma, Washington.• The park is part of the Metro Parks Tacoma inventory and offers playground, sports, and picnic facilities and extensive walking trails. It also has great restoration potential, with some of the last remaining undeveloped shoreline along a critical migration corridor for juvenile salmon.

Historically, Titlow lagoon served as a large tidal embayment (>5.5 acres) surrounded by marsh and forested wetlands (>25 acres). Today, these habitats have been reduced in size by human impacts. The outlet to the lagoon is impounded by a tide gate beneath railroad tracks that limits fish passage, sediment transport, and tidal flow. Most of the wetlands have been filled, and much of the shoreline vegetation has either been removed or is degraded by invasive species. Despite its poor condition, the site is home to abundant wildlife, including Bald Eagles, Great Blue Herons, seabirds, and waterfowl.

• *Location of Titlow Park within the greater Puget Sound region. The entire park encompasses more than 75 acres, including a coastal wetland with 4,500 ft of undeveloped (but degraded) shoreline.*

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Washington Department of Ecology aerial photo of Titlow lagoon showing the riprap armoring and tide gate beneath the railroad tracks. Restoration plans include replacement of the tide gate to restore habitat connectivity and tidal flow. Water quality within the lagoon is expected to improve, reducing likelihood of summer algal blooms like the one shown.

Artist's rendering of a restored Titlow lagoon; note the bridge that has replaced the culvert/tide gate. Illustration by S. Bower.

Estuary Restoration Plans

Since 2007, project partners have been working to develop plans to restore fish passage and estuarine processes at Titlow Park. The goal is to reconnect former linkages between upland, freshwater, and marine systems at the site through: 1) replacement of the existing tide gate/culvert, 2) dredging and expansion of the lagoon to better reflect its historic depth and extent, and 3) riparian vegetation management. These actions will provide long-term benefits for fish and wildlife, especially juvenile Chinook salmon that depend heavily upon small, protected estuaries for osmoregulation, foraging, and refuge. Titlow Park's stakeholders include park users, businesses, environmentalists, tribes, sportfishers, divers, scientists, elected officials, city/park managers, and neighborhood associations. Through surveys of park users, participation in the Titlow Park Master Planning process with managing agency Metro Parks Tacoma, development of interpretive signage, and involvement of community volunteers in site stewardship and monitoring, the project has proceeded successfully beyond preliminary designs.

Baseline Monitoring

Since March 2010, People For Puget Sound has conducted monthly waterbird surveys of Titlow lagoon and the adjacent beach. We used a modified version of the Bird Studies Canada BC Coastal Waterbird Survey protocol. Volunteers were invited to participate and received training in the use of binoculars, a spotting scope, field guides, and other tools for viewing/identifying waterfowl and seabirds. The purpose of these surveys is to collect baseline data on the current waterbird community so that we can assess changes following large scale restoration of fish passage, lagoon extent, and riparian vegetation. A secondary goal is to engage the public in learning about waterbirds and why restoring their habitat is important.

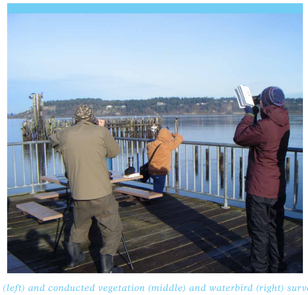
Waterbirds detected from March-July included: •**Common Loon,** •**Horned Grebe,** •**Brandt's Cormorant,** •**Double-crested Cormorant,** •**Pelagic Cormorant,** •**Canada Goose,** •**Eurasian Wigeon,** •**American Wigeon,** •**Mallard,** •**Surf Scoter,** •**Bufflehead,** •**Common Goldeneye,** •**Hooded Merganser,** •**Common Merganser,** •**Red-breasted Merganser,** •**Mew Gull,** •**Western Gull,** •**Glaucous-winged Gull,** •**Caspian Tern,** •**Pigeon Guillemot, and** •**Great Blue Heron.** Other species of interest were: •**Bald Eagle,** •**Belted Kingfisher,** •**Yellow-rumped Warbler,** •**Red-winged Blackbird,** •**Northern Flicker,** •**Barn Swallow,** •**Tree Swallow,** •**Purple Martin, and** •**American Goldfinch.**

In addition, in February 2010, we deployed three temperature loggers (*TidBit v2, Onset, Bourne, MA*) in the lagoon to monitor temperature fluctuations and tidal heights. Loggers were programmed to collect data at 15 min intervals, 24 hours-a-day and will provide another means to assess changes to the lagoon pre- and post- large scale restoration.

Moving Beyond The Feasibility Study

South Puget Sound Salmon Enhancement Group and People For Puget Sound hired the engineering firm Parametrix in August 2009 to conduct the fish passage and lagoon restoration feasibility study. This study was completed in June 2010. Among its recommendations was replacement of the existing tide gate with a 40' span bridge encompassing the railroad tracks (preferred ecological option for fish passage). Future efforts will focus on collaborating with BNSF Railway Company and Metro Parks Tacoma on project design, securing funding for design development and construction, and identifying a local sponsor willing to commit to bridge ownership/maintenance (a BNSF requirement for bridge consideration). If a bridge sponsor cannot be secured, other fish passage alternatives will need to be investigated in greater detail.

Developing A Volunteer Program



Trained community volunteers installed native plants along the northern lagoon shoreline (left) and conducted vegetation (middle) and waterbird (right) surveys in 2010 at Titlow Park. To date, the public has been supportive of restoration efforts.

On February 20, 2010, People For Puget Sound conducted a stewardship training session for volunteers at the Titlow Lodge. Training involved a combination of classroom and in-the-field activities and covered a range of topics, including the natural history of Puget Sound, principles of restoration ecology, an introduction to plant and waterbird identification/survey methods, and invasive vegetation management techniques. The purpose of the training was to begin to develop a local corps of restoration volunteers dedicated to site monitoring and maintenance.

In conjunction with Metro Parks Tacoma, People For Puget Sound developed a planting plan in March 2010. This was followed by several volunteer work days to control habitat-modifying invasive species (e.g., Himalayan blackberry, English ivy) and to replant cleared areas with suitable native vegetation. These small-scale revegetation efforts will continue indefinitely in areas outside of the proposed construction footprint, where dirt-moving will be required to achieve restoration goals.