Incorporating Traditional Ecological Knowledge and Cultural Information Into Wetland Protection, Management, and Restoration - Tulalip Reservation

By

Jonathan Hall, Wetland Biologist, Tulalip Tribes
Background

- 1855 Treaty of Point Elliott reserved rights to hunt, gather and fish at Usual and Accustomed Places
- The Tulalip Tribes emphasize protecting Wetland Cultural Values Both On and Off Reservation

“Following our teachings and values, it shows the importance of our environment, how we need to take care of it and protect it and honor it – so it will continue for future generations – to support us.

Inez Bill, Rediscovery Coordinator, Tulalip Tribes
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- The Tulalip Tribes emphasize protecting Wetland Cultural Values Both On and Off Reservation
- Tulalip Reservation: 22,567 acres
Background

Tulalip Tribes Wetland Program

  Update in Progress (2020 – 2026)

1. Monitoring & Assessment
   - Comprehensive and Continuously-Updated Inventory
   - Monitoring & Assessment Field Data Collection

2. Regulation
   - Revisions to Tribal Codes Related to Wetlands and Waters
   - Technical Support to Planning, Forestry, Construction, Utilities, etc. regarding wetland regulations, permits, and functions

3. Voluntary Restoration & Protection
   - Wetland Acquisition
   - Wetland and Riparian Enhancement Emphasizing Culturally Significant Species and Wildlife Food/Habitat Species

4. Water Quality Standards for Wetlands
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Tulalip Wetland Inventory Update

The database that hosts the Tulalip Wetland and Stream Inventory was Rebuilt in 2018

- Allows for easy editing and tracking of versions

- Daily updates (at midnight) of the master data layer. The update is immediately viewable by users of the inventory on Tulalip Web Portals (e.g., Tulalip Permit Application Map Portal)
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Tulalip Wetland Inventory Update
Tulalip Wetland Inventory Update

Data Sources

High-resolution, multi-year aerial imagery including leaves-off and summer acquisitions.

Spring 2014, 4 in. resolution

Summer 2017, 3 in. resolution
Tulalip Wetland Inventory Update
Data Sources

High-resolution LiDAR data and derived products

LiDAR 2013; approx. 1’ resolution

1’ contours and hill-shade products derived from LiDAR data
# Tulalip Wetland Inventory Update

## Data Fields for Each Wetland Polygon

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland ID</td>
<td>BAT0001f</td>
</tr>
<tr>
<td>Acres</td>
<td>21.96</td>
</tr>
<tr>
<td>Tulalip Class</td>
<td>Critical</td>
</tr>
<tr>
<td>Map Confidence</td>
<td>Medium/High</td>
</tr>
<tr>
<td>Watershed</td>
<td>Battle Creek</td>
</tr>
<tr>
<td>Cowardin Code</td>
<td>PSS1/EM1Eb</td>
</tr>
<tr>
<td>HGM Class</td>
<td>Slope</td>
</tr>
<tr>
<td>WA Spec. Characteristics</td>
<td>Bog/Fen</td>
</tr>
<tr>
<td>Culturally Sensitive Species</td>
<td>* non-public info *</td>
</tr>
<tr>
<td>Cultural Score</td>
<td>* non-public info *</td>
</tr>
<tr>
<td>Cultural Notes</td>
<td>* non-public info *</td>
</tr>
<tr>
<td>Fish Presence</td>
<td>resident</td>
</tr>
<tr>
<td>Existing Impact</td>
<td>High</td>
</tr>
<tr>
<td>Threat of Impact</td>
<td>High</td>
</tr>
<tr>
<td>Stream Connection</td>
<td>Yes</td>
</tr>
<tr>
<td>Nearshore Connection</td>
<td>Yes</td>
</tr>
<tr>
<td>Connected Wetland</td>
<td>Yes</td>
</tr>
<tr>
<td>Ground Delineated</td>
<td>Partial</td>
</tr>
<tr>
<td>Seeps/Springs</td>
<td>Yes</td>
</tr>
<tr>
<td>Interpretation</td>
<td>LiDAR/ortho/partial field</td>
</tr>
</tbody>
</table>

![Map of Tulalip Wetland Inventory Update](image)
Cultural Assessment: Landscape Scale

INDICATORS Used to Develop Cultural Scores

(GIS Analysis)

ECOLOGICAL FACTORS:
- Presence of open water
- Presence of lacustrine habitats
- Presence of estuarine habitats
- Presence of stream flow
- Presence of mature forest
- Presence of bog and fen habitats

ACCESS and QUALITY:
- Tribal ownership
- Distance to nearest road, and type of road
- Distance to nearest development, distance to nearest building
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Wetland Monitoring and Assessment (M&A)

Level 2 Rapid M&A Procedure
- Ecological Integrity Assessment Form
- Wetland Ecosystem Services Protocol (WESPUS)
- NatureServe Stressor Checklist
- **Wetland Cultural Values Checklist**
- Plant Species Inventory and Floristic Quality Assessment

Level 3 Intensive M&A Procedure
- In addition to Level 2 information (above), Level 3 includes:
  - Measurements of Organic Matter Accumulation, CWD, and Vertical Biotic Structure
  - Recording canopy cover for all species in quadrats
  - Soil Characteristics
  - Water Quality Measurements
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Cultural Assessment: Site Specific - Checklist

Wetland Monitoring and Assessment

Natural Resources Department, Tulalip Tribes of Washington

Wetland Cultural Values Checklist

<table>
<thead>
<tr>
<th>Value</th>
<th>Subset</th>
<th>Indicator/Metric</th>
<th>Presence/Absence</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tribal Heritage</td>
<td>Plant Use (1 &amp; 2) (wetland supports plants used in cultural activities)</td>
<td>Food (1&amp;2)</td>
<td>P</td>
<td>wapato</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Textile (1&amp;2)</td>
<td>P</td>
<td>marsh plants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medicine (1&amp;2)</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ceremonial (1&amp;2)</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prayer (1&amp;2)</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Uncommon on Reservation (1)</td>
<td>P</td>
<td>lake, marsh</td>
</tr>
<tr>
<td>Fish/Wildlife Use (1&amp;2)</td>
<td>(wetland supports fish and/or wildlife used in cultural activities)</td>
<td>Food</td>
<td>P</td>
<td>trout, deer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Textile</td>
<td>P</td>
<td>furbearers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medicine</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ceremonial</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prayer</td>
<td>P</td>
<td>abun. wildlife</td>
</tr>
<tr>
<td>Historical Use (1&amp;2)</td>
<td>Identified Cultural Significance</td>
<td>P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water (1)</td>
<td>Open</td>
<td>P</td>
<td></td>
<td>lacustrine</td>
</tr>
<tr>
<td></td>
<td>Running</td>
<td>P</td>
<td></td>
<td>inlet/outlet</td>
</tr>
<tr>
<td>Quality (1)</td>
<td>Remote (1)</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Noise</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-Typical on (1) Reservation</td>
<td>Marsh, etc</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Slated for Restoration/Enhancement/Protector (1)</td>
<td>Comp Plan</td>
<td>P</td>
<td>possible lease termination</td>
</tr>
<tr>
<td>Other</td>
<td>Research and Education (1)</td>
<td>Water Quality Monitoring Stations</td>
<td>P</td>
<td>annual, Tribe</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Current known usage</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Natural Heritage</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

Notes: All Indicators/Metrics will be assigned a Boolean value (0 or 1) based upon presence/absence.

(1) NRD to complete this
(2) Cultural to complete this

Wildlife Observed 7/14/17: beaver, bald eagle, osprey, kingfisher, passerines common, hummingbird, trout, deer, Canada geese, mallard
Wetland Monitoring and Assessment

**Plant Species: Accessibility to Tribal Members**

<table>
<thead>
<tr>
<th>Sci Name</th>
<th>Common Name</th>
<th>Abundance</th>
<th>Accessibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Rubus spectabilis</em></td>
<td>salmonberry</td>
<td>high, fruit</td>
<td>1</td>
</tr>
<tr>
<td><em>Rumex obtusifolius</em></td>
<td>bitter dock</td>
<td>low</td>
<td>5</td>
</tr>
<tr>
<td><em>Sagittaria latifolia</em></td>
<td>Wapato</td>
<td>low</td>
<td>3-4</td>
</tr>
<tr>
<td><em>Salix sitchensis</em></td>
<td>Sitka willow</td>
<td>low</td>
<td>4</td>
</tr>
<tr>
<td><em>Sambucus racemosa</em></td>
<td>red elderberry</td>
<td>low</td>
<td>2</td>
</tr>
<tr>
<td><em>Scutellaria galericulata</em></td>
<td>marsh skullcap</td>
<td>low</td>
<td>3</td>
</tr>
<tr>
<td><em>Solanum dulcamara</em></td>
<td>bittersweet nightshade</td>
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**Accessibility Scale 1 to 5**

**Example:** 1 = “Accessible to elders; <0.25 mile from nearest open road, flat to gentle slope, and walking shoes okay.”
Incorporation of Cultural Values and Traditional Knowledge in Other Tulalip Programs

Acquisition

Tribal Lands
Incorporation of Cultural Values and Traditional Knowledge in Other Tulalip Programs

Acquisition

Restoration

Wapato plant with leaf, roots, and corm

Tulalip Wapato Re-introduction Sites

- 2014
- 2015
- 2016
Incorporation of Cultural Values and Traditional Knowledge in Other Tulalip Programs

**Tulalip Tribal Codes**: Excerpt from Section 7.110.050 Wetlands

(2) Wetland Categories. The following wetland categories shall be established:

(a) Critical Value Wetlands (Category I). Those lands which meet any one of the following 6 criteria:

(i) The presence of species (plant, animal, or fish) listed by the Tulalip Tribes or other resource management agencies as threatened or endangered, or the presence of critical habitat documented by the Tulalip Tribes for those species.

(ii) Regionally rare and unique native wetland communities, including sphagnum bogs and fens, and estuarine wetlands.

(iii) Wetlands having direct impact on the protection and production of Tribal fisheries enhancement projects as identified by the Tulalip Department of Environment.

(iv) **Wetlands having cultural and/or spiritual significance to Tulalip Tribal members.**

(v) Irreplaceable wetland systems performing critical ecological functions.

(vi) Wetlands having exceptional habitat value and diversity as defined by the following characteristics: (A) those wetlands equal to or greater than five acres in size and having three or more wetland classes, one of which is open water; or (B) wetlands having 40 to 60 percent permanent open water in dispersed patches with two or more wetland classes and connected to another habitat area, either upland or aquatic, via a stream or vegetated corridor.
Incorporation of Cultural Values and Traditional Knowledge in Other Tulalip Programs

**Education**

**Rediscovery Program**

Mission is to revive, restore, protect, interpret, collect and enhance the history, traditional cultural values and spiritual beliefs of the Tulalip Tribes

**Examples:** Classes, film series, field trips and educational materials on gathering and preparing plants for food, medicine, and weaving

*Classroom Instruction: Traditional Uses of Plant Material*
Incorporation of Cultural Values and Traditional Knowledge in Other Tulalip Programs

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“Marsh tea grows in peat bogs, a special environment; we have to safeguard that tea and places where it grows”

Inez Bill, Rediscovery Coordinator
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“Nettle was a staple for our people for hundreds of years; it has tremendous health benefits.”

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2018 – 2019 Activities

- Update Tulalip Wetland Program Plan
- Continue comprehensive update of Tulalip Wetland Inventory
- Additional Sites: Wetland Monitoring & Assessment Program
- Produce Reservation–specific Planting Guides (e.g., brochures) for landowners: riparian and wetland sites
- Tribal Codes Updates including Environmentally Sensitive Lands (e.g., Wetlands)