

# PUGET SOUND VITAL SIGNS

## VITAL Sign ESTUARIES

Estuaries occur where freshwater from streams and rivers mixes with salt water from the ocean. These unique, tidal environments are some of the most productive ecosystems on earth and provide important feeding and resting habitat for young salmon, migratory birds, and many other species. The Estuaries Vital Sign tells us about the extent of intact estuary habitat in Puget Sound.

Estuaries also have important commercial, recreational, and environmental value for people. Historically, these areas have been heavily developed for agricultural and industrial needs. Throughout Puget Sound, people are working to implement strategic restoration actions to restore the natural processes that create and maintain these valuable nearshore habitats.



Skokomish River Delta

### Related Strategies

- Awareness of Effects of Climate Change
- Climate Adaptation & Resilience
- Education Partnerships
- Floodplains & Estuaries
- Funding
- Healthy Shorelines
- Research & Monitoring
- Riparian Areas
- Smart Growth
- Stewardship & Motivating Action
- Stormwater Runoff & Legacy Contamination
- Strategic Leadership & Collaboration
- Working Lands

### Vital Sign Reporter

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### Last Updated

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VITAL SIGN > INDICATOR	PROGRESS	STATUS
Estuaries		
Estuary area in functional condition	GETTING BETTER	NO TARGET
Number of accessible pocket estuaries and embayments	INDICATOR TO BE DEVELOPED	NO TARGET

## KEY VITAL SIGN MESSAGES

- There has been extensive historic loss of tidal wetland habitat in Puget Sound. While much of this loss has been in the large river deltas, smaller estuaries are also currently a fraction of their historic extent.
- Estuarine habitat is shaped by the influences of tides, freshwater, sediment transport and sediment deposition. Restoration efforts that target these ecological processes maximize resilience and help to sustain continued ecosystem function in the face of change.
- The estuaries of North Puget Sound (Nooksack, Samish, Skagit, Stillaguamish and Snohomish) historically made up over 80 percent of the tidal wetland habitat in Puget Sound. However, these large river deltas have experienced the greatest absolute loss of tidal wetlands and recovery at the Puget Sound scale is not possible without substantial restoration in this region. A number of watershed-based local teams, in collaboration with tribal and agency partners, are working to accelerate the pace of estuary restoration while maintaining landscape-scale benefits for agriculture, waterfowl and shellfish management, flood hazard reduction, and recreational use of these large deltas.
- Since 2006, approximately 3,420 acres of estuarine wetland have been restored to tidal flooding in the 16 largest river deltas in Puget Sound. Large gains have been made in the Nisqually, Snohomish, Skagit and Skokomish deltas in this time period, with the Nisqually and Skokomish being notable because they represent large proportions of the historic tidal extent for these deltas. Early restoration progress often represents the least expensive and challenging projects in the region comparatively, with future actions increasing in cost and complexity.
- The number of large-scale estuary restoration projects implemented depends on a successful combination of funding, available land, community support, knowledge, project development, and permitting.

## BACKGROUND DOCUMENTS

### Implementation Strategy

The Partnership and its affiliated network of researchers works with the three Strategic Initiative Lead Teams on Implementation Strategy development and operationalization. Please read more about these teams and our shared work at <https://pugetsoundestuary.wa.gov/recovering-puget-sound/>

- Habitat Strategic Initiative
  - Floodplains and Estuaries Implementation Strategy

### Indicator Targets

- 2020 Ecosystem Recovery Target
  - Leadership Council Resolution 2011-12, Adopting a 2020 ecosystem recovery target for estuaries (PDF)
  - Estuary Restoration Target briefsheet (PDF)

## OTHER RESOURCES

- Articles related to estuarine habitat in the Encyclopedia Of Puget Sound
- State of our Watersheds Report by the Northwest Indian Fisheries Commission
- State of Salmon
- Estuary Common Indicator: protocol, results, and maps
- Estuary Vital Sign Indicator Report: Tracking Estuarine Wetland Restoration in Puget Sound (March 2019)
- Publication on mapping maximum extent of tidal wetlands (Brophy et al. 2019)
- Puget Sound Nearshore Ecosystem Restoration Project Technical Reports

## CONTRIBUTING PARTNERS



Washington  
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