

PUGET SOUND VITAL SIGNS

VITAL Sign STREAMS AND FLOODPLAINS

Streams and their associated riparian areas and floodplains provide invaluable ecosystem services including critical habitat for many plants and animals including Pacific salmon, protection from damaging floods, and improve water quality. They also support human health and well-being through recreational opportunities and economically valuable farmlands. The Streams and Floodplains Vital Sign tells us about periods of high and low streamflows and the extent of intact, functional habitat next to streams and rivers in Puget Sound. Climate change along with population growth and the related development needs continue to modify floodplains and exacerbate seasonal anomalies in streamflows.



Related Strategies

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

Vital Sign Reporter

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| VITAL SIGN > INDICATOR | PROGRESS | STATUS |
|--|---------------------------|-----------|
| Streams and Floodplains | | |
| Floodplain function in large and small river systems | GETTING BETTER | NO TARGET |
| Summer low flow in streams and rivers | GETTING WORSE | NO TARGET |
| Extent of forest cover in freshwater riparian zones | INDICATOR TO BE DEVELOPED | NO TARGET |
| Frequency of flood events | INDICATOR TO BE DEVELOPED | NO TARGET |
| Changes in hydrologic regime in streams and rivers | INDICATOR TO BE DEVELOPED | NO TARGET |

KEY VITAL SIGN MESSAGES

- Intact, healthy floodplains protect an estimated \$18 billion dollars of residential, commercial, and industrial development and infrastructure through the storage of flood waters ([Floodplains by Design 2016](#)).
- The 17 major rivers of Puget Sound have lost or experienced a reduction in over 60% of their floodplain function in the last 100 years. The loss is predominantly in response to increased population growth and development leading to constrained river flow and non-natural land cover.
- The occurrence of below normal summer flows is increasing in unregulated streams and rivers across Puget Sound. Consecutive years with below normal summer flows have increased since 1985 and especially since 2015. In 2021, summer flows were below normal most of the time at three-quarters of the 19 indicator stream gages.

- Summer low flows in the Puget Sound basin respond to a variety of drivers including rainfall, snowfall, temperature, evapotranspiration, land-use conversion, forest practices, and human water use. The summer low flows indicator aims to describe the change pattern in summer low flow based on the net effects of all factors combined; it does not evaluate the potential impact of individual factors on a trend.
- Climate change impacts on Puget Sound streams and floodplains is expected to further stress these ecosystems and impact the multiple benefits they provide ([UW Climate Impacts Group 2016](#)).
 - Some floodplain communities are experiencing more frequent and severe winter floods and the pattern is expected to continue.
 - At the same time, summer stream flows are expected to be lower and warmer, further reducing floodplain connectivity with the river.
 - Both of these climate impacts will impede salmon use of floodplains and the viability of floodplains to continue to provide critical flood storage capacity to reduce the downstream effects of flooding.
 - Well-functioning floodplains with low levels of development are likely to be more resilient to climate change impacts.
 - Compromised floodplains in urban watersheds may need to implement adaptive measures such as relocating structures in the floodplain to reduce losses due to increased likelihood of damaging floods.

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 Targets
 - [Leadership Council Resolution 2011-13: Adopting a 2020 ecosystem recovery target for floodplains](#)
 - [Leadership Council Resolution 2011-07: Adopting a 2020 ecosystem recovery target for summer stream flow](#)
 - [Floodplain Ecosystem Condition: Recommended 2020 Target Options Briefsheet](#)
 - [Summer Low Flows 2020 Target Briefsheet](#)

OTHER RESOURCES

- *gʷəɫʷadad*, “Teaching of Our Ancestors” - Tribal Nations identified floodplains as one of five key targets in their Tribal Habitat Strategy, focusing efforts on protecting, restoring, and enhancing hydrological and geomorphic connectivity between rivers and their floodplains and deltas for a recovered, resilient future. [Tribal Habitat Strategy storymap](#).
- [Floodplains by Design Network](#) is comprised of over 700 floodplain practitioners across Washington State that offers peer assistance through connecting network members, hosting workshops, and providing resources for integrated floodplain managers. Check out their website for some great resources!
- Grant programs investing in improving floodplain function:
 - [Floodplains by Design](#)
 - [Puget Sound Acquisition and Restoration \(PSAR\) fund](#)
 - [Estuarine and Salmon Restoration Program \(ESRP\)](#)
- [State of our Watersheds](#) report by the Northwest Indian Fisheries Commission

CONTRIBUTING PARTNERS

TO LEARN MORE ABOUT THE VITAL SIGNS VISIT: vitalsigns.pugetsoundinfo.wa.gov OR CONTACT: vitalsigns@psp.wa.gov