PUGET SOUND
VITAL SIGNS

INDICATOR
FLOATING KELP BED AREA

This indicator assesses long-term trends in the extent of canopy-forming kelp forests at sampling locations throughout Washington State by tracking the area of kelp beds on the water surface. Results at each location are synthesized with other information into an overall assessment of floating kelp status within 11 sub-basins defined by oceanography.

Indicator Progress

Target Status

Target

No targets are currently set for this indicator.

Data Source

The Kelp Forest Monitoring Alliance of Washington State (KelpForestsWA)

Samish Indian Nation

Northwest Straits Commission

Washington Department of Natural Resources

Indicator Lead

Danielle Claar
danielle.claar@dnr.wa.gov
Washington State Department of Natural Resources

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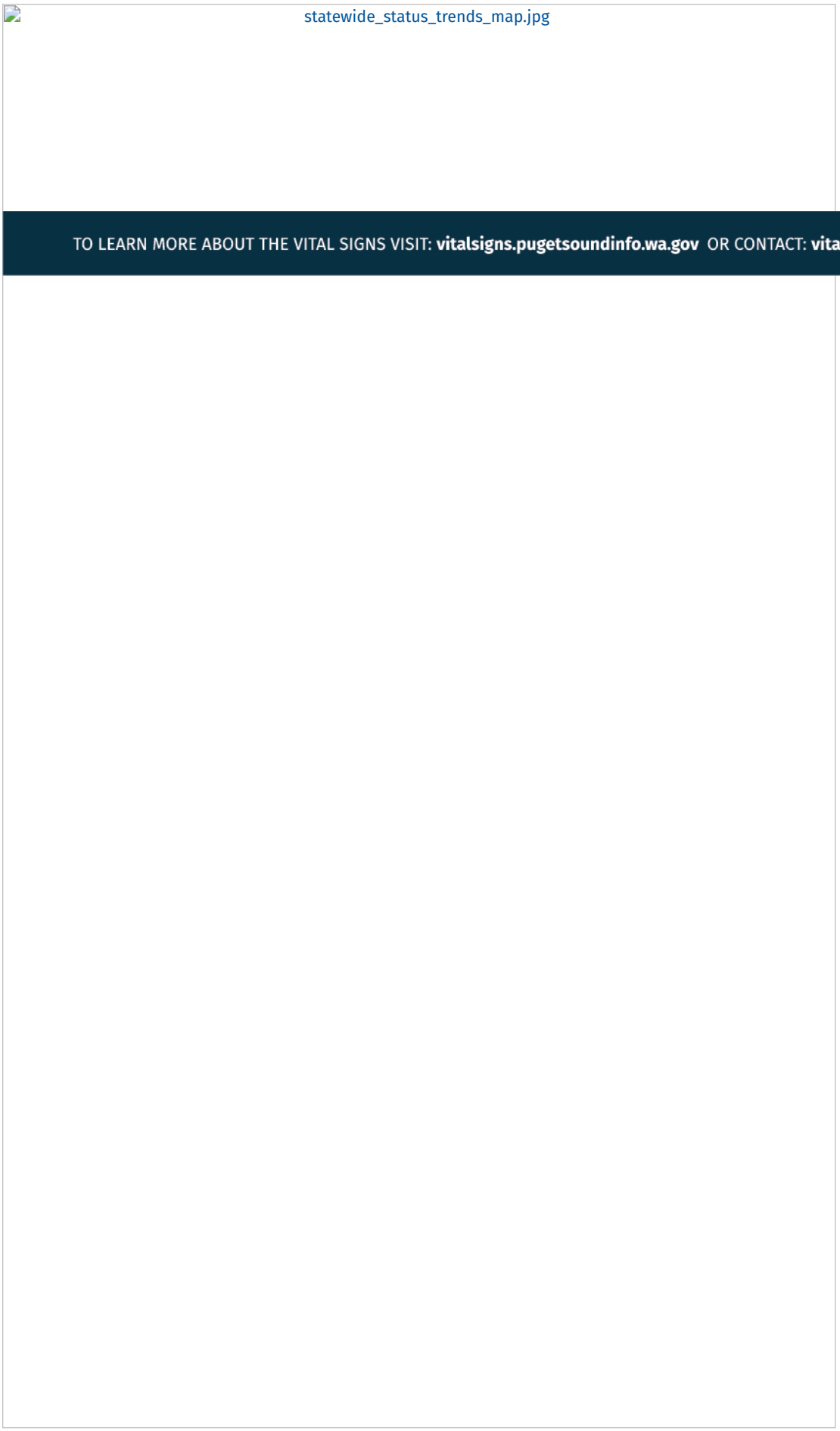

Long-term trends in floating kelp bed area at locations are denoted by points, categorized as: increasing, decreasing, no trend, total loss, no floating kelp, or limited data. The sub-basin status assessment integrates

results at locations and other information sources into an overall classification. The time span varies by dataset, with 2022 the most recent year for all datasets.

Key Vital Sign Indicator Results

- This is the second report for this indicator, and it was made possible by a unique collaboration among a diverse group of organizations and individuals, including state agencies, Tribes, community science, and NGOs. The results of this indicator will inform kelp management and restoration across Washington State.
- Along the northern outer coast and Strait of Juan de Fuca, floating kelp populations are stable in the long-term, with high interannual variability. The majority of locations show no long-term trend or increases over decades. One exception is the eastern Strait of Juan de Fuca near Protection Island, where substantial losses have occurred along some shorelines.
- Declines have been documented in Central and South Puget Sound, with total loss at a number of sites. Over a century time scale and longer, historical ecology studies indicate that floating kelp has disappeared from approximately 80% of the shorelines where it was observed.
- There is concern that floating kelp has declined in the San Juan Islands, based on indigenous scientific knowledge and other reports. However, data limitations and a short temporal record limit our understanding.
- Total loss of floating kelp has been observed along some shorelines at the entrance to Possession Sound, which leads to concern about the state of floating kelp in Saratoga and Whidbey sub-basin. However, data gaps prevent sub-basin assessment.
- In Admiralty Inlet and North Puget Sound, spatial and temporal data gaps preclude assessment. Monitoring results at a limited number of locations did not raise major concerns.
- Although approximately one-half to one-third of floating kelp locations in Washington are classified as stable, the impact of multiple stressors such as climate change, heatwaves, nutrient imbalances, and urbanization warrant caution and prompt additional research.
- The integrated sub-basin status assessment can inform scientific and management priorities for sub-basins. Where floating kelp is stable, conservation is a priority. Where substantial declines are documented, stressor abatement and restoration are priorities. In areas with insufficient data, more monitoring is needed.

CONTRIBUTING PARTNERS

Kelp Forest Monitoring Alliance of Washington State

Washington State Department of Natural Resources
Hilary S. Franz | Commissioner of Public Lands

Samish Indian Nation

Northwest Straits Commission
partners in marine conservation

University of Washington

Sea Grant Washington

Marine Agronomics