

43

42

Low

-128

Absent

No data

-126

Longitude [°W]

-124

43

42

< 66

-128

No data

Non detect

-126

Longitude [°W]

-124

Decisions regarding shellfish harvest closures at individual beaches are made by the Washington Department of Health, the Oregon Department of Agriculture, and Coastal Treaty Tribes after measuring toxin levels in shellfish collected from each beach (WA link; OR link), and not from the information presented here. However, the information presented here aids coastal managers in better understanding and predicting the onset, duration, and magnitude of toxin outbreaks as well as their impacts.

Pacific Ocean Indices



Research has shown that toxic HAB events off WA and OR tend to occur during or following periods of El Niño and/or positive phases of the PDO, when ocean temperatures are relatively warm. **Cumulative Wind**

Stress

Cumulative

6

Λ

200

1991-2023

NDBC 46041

Model

surface

particles

points.

400

Day starting 2024

2024/25

North-south Wind Stress



Southward wind stress drives coastal upwelling that can lead to plankton blooms. Northward wind stress tends to push any existing offshore plankton and toxins towards beaches. In addition, summer/fall toxic blooms often occur in years with a moderate cummulative upwelling index (i.e. during years with fluctuating winds) rather than in years with sustained upwelling or downwelling winds.

Columbia River Discharge



The Columbia River plume can help transport HABs and toxins from the south, northward along the WA coast. However, the plume can also serve as a protective barrier by preventing offshore toxins from reaching beaches.

Marine Weather Forecast



Sat - W wind, 5 kt Sun - S wind, 10 kt Mon - SW wind, 10 kt Tues - SW wind, 10 kt

Fair weather can support plankton blooms whereas storms can concentrate any plankton and toxins on beaches.



Primary currents flow north and south in winter and summer, respectively, except within ~10 km of shore, where fluctuations follow changes in wind direction. 600

LiveOcean Forecast Model



winds have become more typical for the region: weaker and with ample northward fluctuations. As a result, southward currents over the shelf also generally appear weaker in the HF radar data. According to the LiveOcean model, tendrils of Columbia River water have been penetrating north along the WA coast during northward wind events. Cloudy skies have also been more frequent. The available recent satellite imagery suggests highest chlorophyll-a concentrations off southern OR, with moderate values elsewhere along the coast. Pseudo-nitzschia (PN) cells, while now present at more beaches, have remained at relatively low concentrations from Neah Bay, WA, to Newport, 30 OR. Highest values were 22,000 cells/L of large 10 morphology PN at Long Beach, WA, on 12-May. 3 All other reports have indicated <13,000 cells/L, and a mix of both large and small size cells. Particulate domoic acid (pDA) tests conducted at 0.1 the four southern WA sites confirmed relatively -124 -122 low pDA concentrations, with a maximum of ~37 Longitude [°W] ng/L at Long Beach, WA, on 12-May, similar to Clouds often obstruct satellite views, but the extent of phytoplankton

concentrations reported by the ESP mooring (32.5 ng/L) off northern WA, on 21-May. Scientists aboard the NOAA Ship Bell M. Shimada also reported low concentrations of large size PN (<5,000 cells/L) from IFCB-collected offshore samples over the last 10 days between Crescent City, CA, the WA/OR border. Razor clam DA concentrations remained low throughout WA as of 20-May, with highest concentrations of 2 ppm at Quinault Beach, WA. In OR, DA in razor clams continued to decrease as of 16-May with samples from Newport Agate Beach falling to 16 ppm, and Coos Bay North Jetty clams down to 9.4 ppm DA.

Summary - During the last few weeks, along-shelf

Forecast - Current conditions are ENSO neutral and are expected to remain so through summer. The PDO index is relatively weak, but remains negative. Relatively weak northward winds are forecast at the coast through Tuesday. Longer-term forecasts point to a return to primarily upwelling-favorable conditions beginning Thursday. Given the relatively low PN and pDA concentrations at beaches, and the low PN concentrations offshore, near-term risk appears low. The retention of coastal water will increase with the northward and fluctuating winds, potentially increasing the risk of toxin production in the longer term. Thus, some caution is advised if the fluctuating pattern persists instead of the forecast return to predominantly upwelling-favorable conditions.



SNPP VIIRS 22-May-2025

-126

blooms can at times be seen from

space. Blooms do not necessarily

reflect the presence of toxins.