

Pacific Northwest Harmful Algal Blooms Bulletin

May 5, 2025 HAB risk =



HAB risk key:

✓ = low

⚠ = medium

✗ = high

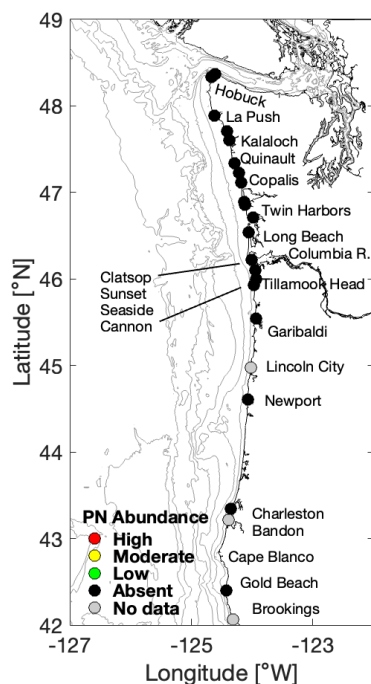
Cooperative Institute for
CLIMATE, OCEAN &
ECOSYSTEM STUDIES



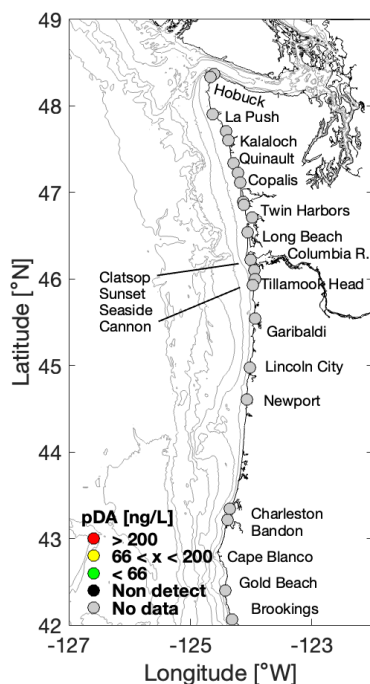
The statements, findings, conclusions, and recommendations do not necessarily reflect the views of NOAA or the Department of Commerce.

Beach Sampling

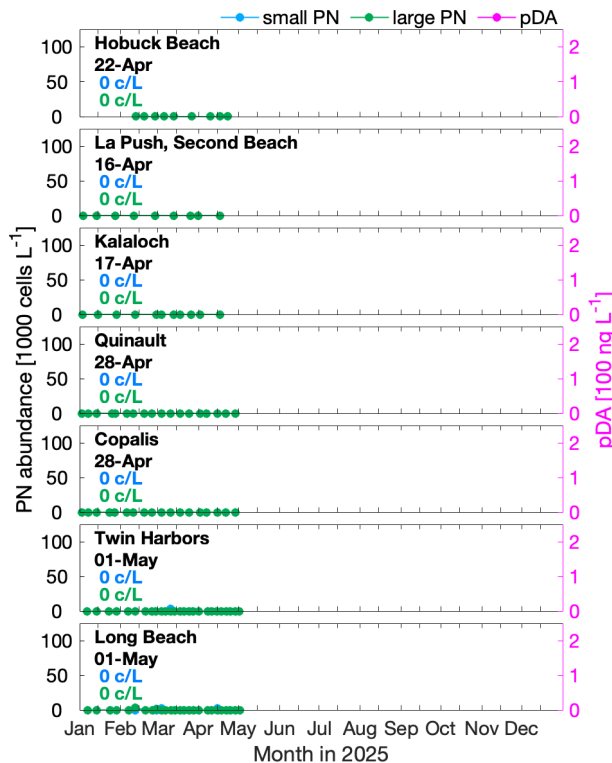
(*Pseudo-nitzschia*)



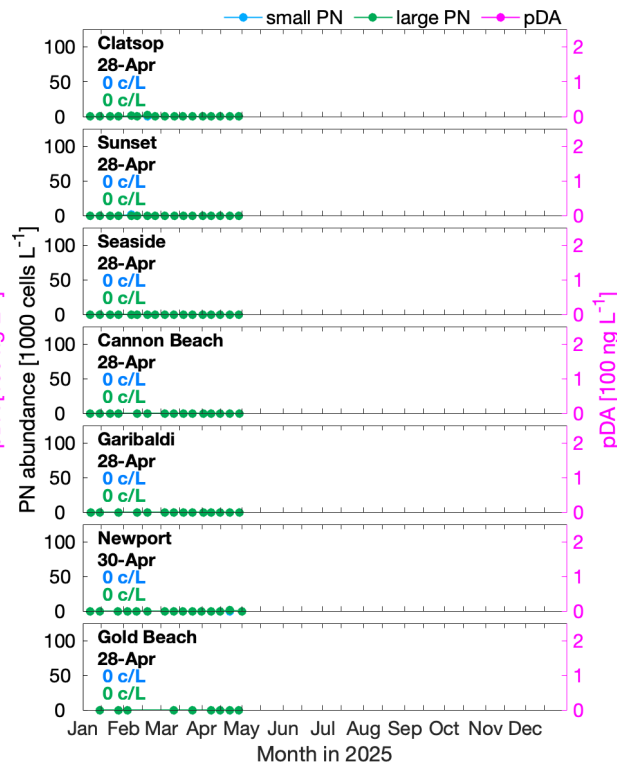
(particulate domoic acid)



WA *Pseudo-nitzschia* & Domoic Acid

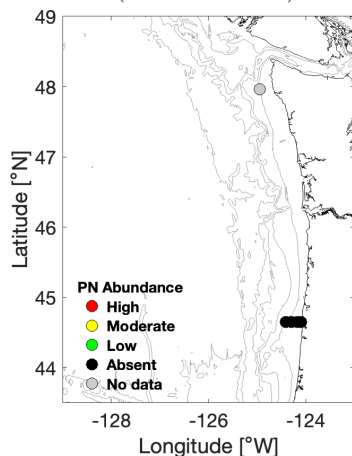


OR *Pseudo-nitzschia* & Domoic Acid

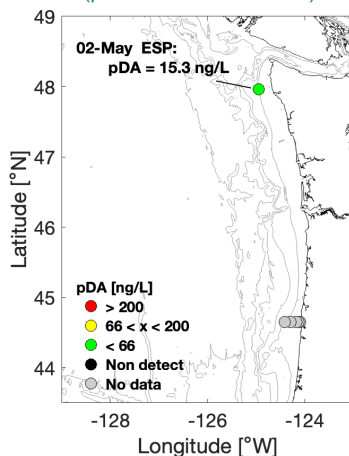


Offshore Sampling

(*Pseudo-nitzschia*)



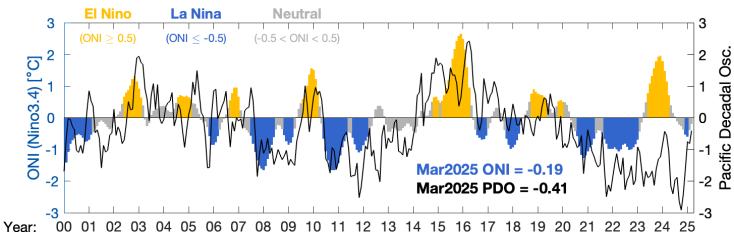
(particulate domoic acid)



Pseudo-nitzschia (PN) abundances are quantified for large and small cell morphologies using light microscopy. Threshold values: 50,000 cells/L for large PN; 1,000,000 cells/L for small PN; which trigger additional testing for seawater particulate domoic acid (pDA). Seawater pDA values >200 ng/L lead to toxin accumulation in shellfish such as razor clams. Sampling sites, colored by relative PN abundance (*high*: > threshold value for either cell morphology; *moderate*: > 1/3 threshold; *low*: < 1/3 threshold) and pDA, are shown in the upper left two panels. “No data” indicates that there were no data within the previous 15 days. Time series of PN abundance (cells per liter = c/L) and pDA at select beaches are shown in the upper right main two panels. Offshore samples (lower left) are collected and analyzed at ~2 week intervals during late summer/early fall. Additional samples are collected by a remotely operated Environmental Sample Processor (ESP) that is moored off La Push, WA, in late spring and late summer.

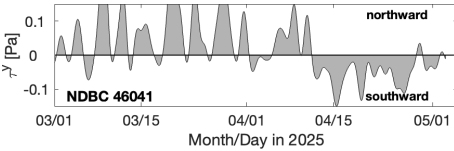
Decisions regarding shellfish harvest closures at individual beaches are made by the Washington Department of Health, the Oregon Department of Agriculture, and Coastal Treaty Tribes after measuring toxin levels in shellfish collected from each beach (WA [link](#); OR [link](#)), and not from the information 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



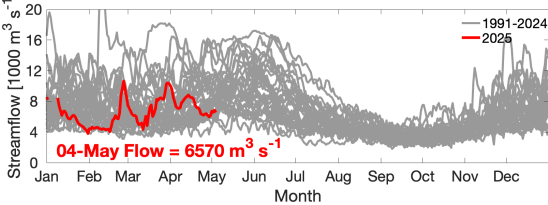
Research has shown that toxic HAB events off WA and OR tend to occur during or following periods of El Niño and/or positive phases of the PDO, when ocean temperatures are relatively warm.

North-south Wind Stress



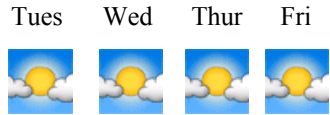
Southward wind stress drives coastal upwelling that can lead to plankton blooms. Northward wind stress tends to push any existing offshore plankton and toxins towards beaches. In addition, summer/fall toxic blooms often occur in years with a moderate cumulative upwelling index (i.e. during years with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

Columbia River Discharge



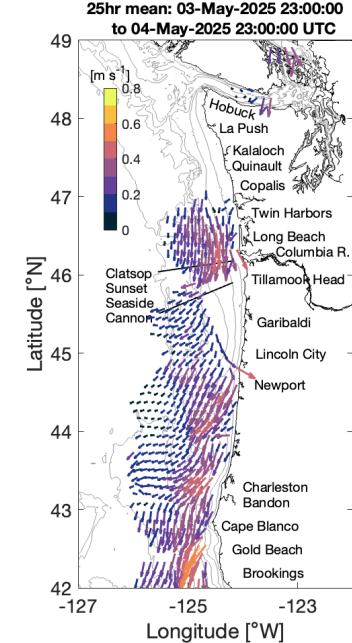
The Columbia River plume can help transport HABs and toxins from the south, northward along the WA coast. However, the plume can also serve as a protective barrier by preventing offshore toxins from reaching beaches.

Marine Weather Forecast



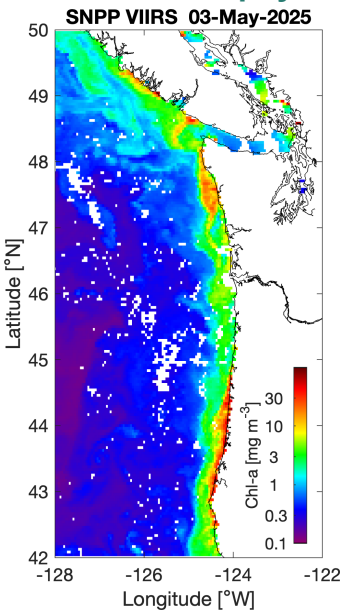
Fair weather can support plankton blooms whereas storms can concentrate any plankton and toxins on beaches.

Ocean Surface Currents



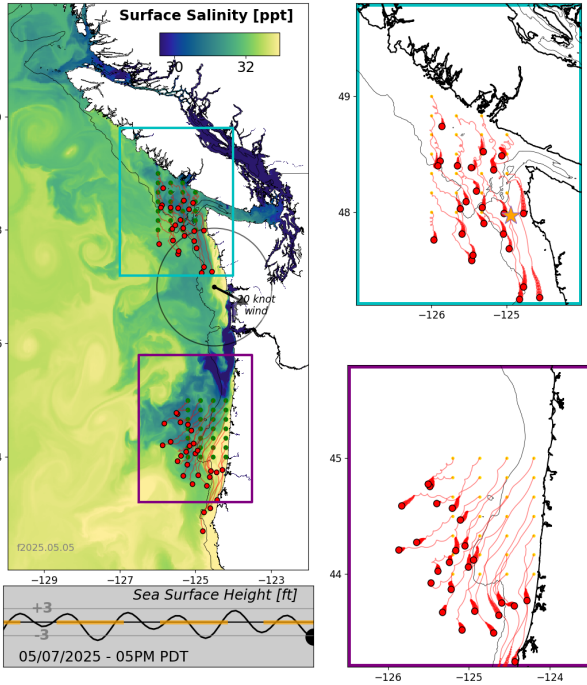
Primary currents flow north and south in winter and summer, respectively, except within ~10 km of shore, where fluctuations follow changes in wind direction.

Satellite Chlorophyll-a



Clouds often obstruct satellite views, but the extent of phytoplankton blooms can at times be seen from space. Blooms do not necessarily reflect the presence of toxins.

LiveOcean Forecast Model



Summary - After a rather abrupt spring transition, southward (upwelling-favorable) winds have been especially persistent for the past three weeks. A wind relaxation did occur a week ago, but it was brief and weaker than expected. Strong upwelling thus remains, and this is evident in both the LiveOcean model (note high salinity nearshore) and the HF radar data (strong southward currents over the shelf and slope). As a result, the bulk of Columbia River water flows southward off OR. Satellite imagery shows elevated chlorophyll-a concentrations all along the coast, with highest values off northern WA, and central OR. As a result of the strong upwelling, *Pseudo-nitzschia* (*PN*) cells have continued to be extremely sparse at area beaches. Highest recent concentrations were limited to <1,000 cells/L of large morphology *PN* from net tow samples at Long Beach, WA, and Clatsop, OR, on 28-Apr. Samples collected up to 15 nm offshore of Newport, OR, during the night of 29-Apr, were dominated by *Chaetoceros* spp., with no *PN* observed. However, the ESP mooring, deployed off northern WA on 21-Apr, did record relatively low particulate domoic acid (pDA) concentrations of 15.3 ng/L on 2-May. Razor clam DA concentrations remained low throughout WA as of 17-Apr, with highest values of 2 ppm at Long Beach, WA, and 1 ppm in clams from all other WA sites. In OR, DA in razor clams had decreased on 2-May: to 30 ppm in Newport Agate Beach samples, and to 250 ppm in Gold Beach samples (from 480 ppm on 20-Sep). Notably, crab viscera samples collected in late April from landings between Cape Foulweather (near Lincoln City) and the OR/CA border, contained DA up to 13 ppm.

Forecast - Current conditions are ENSO neutral and are expected to remain so through summer. The PDO index is relatively weak, but remains negative. Predominantly upwelling-favorable winds are expected to continue through Friday. A large low-pressure system is forecast to emerge late in the week that may result in northward coastal winds next weekend. Depending on whether and where the low tracks, northward winds could last long enough to force offshore plankton and any toxins to the coast. These longer-term predictions have been changing considerably, but managers should be aware of the potential for impacts, especially since the recent crab viscera data from OR and the ESP data from WA both confirm that DA is present in the environment, in at least low concentrations. Risk thus appears moderate.