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Headlands Environmental Remediation Education

Mussel Sampling Soldier Bay – Fact Sheet

Overview

Locations: Bruhel Point, Soldier Bay North, Soldier Bay South

Sampling Dates: October 8–9, 2025 and February 26–27, 2026

Sampling Methodology:

- Three (3) sites in Mendocino County, California were selected for mussel collection to test for dioxins, furans, and PCBs. Two (2) sites were located in Soldier Bay, near Fort Bragg, California, while the third site was located at Bruhel Point, approximately 12.5 miles (~20 km) north of Fort Bragg. Two sampling events occurred at each site: one set on October 8-9, 2025, and the second set on February 26-27, 2026. Both sampling events took place within two (2) days of the lowest low tide of each month. The habitat type targeted for sampling was the lower rocky intertidal zone in areas of high wave action, which is often inhabited by *Mytilus californianus*, a sentinel species for indication of marine contaminants. Collection was conducted under a CDFW Scientific Collecting Permit and took place outside of any state or national park, MPA, or area with other protections in place.
- Mussels collected in October, 2025 were dissected to remove the hepatopancreatic organ. The frozen dissected tissue from the three sites were sent to Enthalpy Analytical, El Dorado Hills, CA for analysis.
- Mussels collected in February, 2026 were frozen whole and sent to Cape Fear Analytical, Wilmington, NC for analysis.
- A detailed description of the sampling methodology can be found at “**Mussel Sampling Collection, Preparation and Delivery to Testing Laboratories**” (<https://tinyurl.com/33rdjh9m>)

For more information, visit; <https://www.project-here.org>

Please reach out to us with questions or concerns at
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Analytes: PCBs, dioxins, furans, and dioxin-like PCBs

- Dioxins and furans are toxic, persistent environmental pollutants, created primarily as byproducts of industrial processes and combustion, such as waste incineration or degradation of electric transformers. Dioxin-like PCBs are a subset of PCBs that share a similar planar structure and toxicological mechanism with dioxins (PCDDs/PCDFs). Dioxins, furans and dioxin-like PCBs do not break down easily in the environment and accumulate in fat, resulting in higher concentrations up the food chain.
- Polychlorinated biphenyls (PCBs) are a group of 209 man-made, toxic organic chemicals, ranging from oily liquids to waxy solids, that were widely used as coolants, lubricants, and insulation in electrical equipment between 1930 until 1979 when they were banned in the United States. PCBs were designed to be chemically stable (persistent organic pollutants or POPs), and that stability is exactly what makes them difficult to degrade (that is, they have a strong chemical structure, are resistant to natural degradation, do not readily dissolve in water, and bioaccumulate/biomagnify).

Overall Findings

Across all three sites, most individual dioxin/furan congeners were not detected (ND) or were present at very low estimated levels. However, several dioxin-like PCBs and PCBs congeners were detected, with the highest concentrations detected at Soldier Bay North and Soldier Bay South, when compared to Bruhel Point.

Links to the full data set files from both sampling dates can be found at <https://www.project-here.org/citizen-science>

Summary of Mussel Tissue Data for Dioxin/Furan and Dioxin-like PCBs used in TEQ Calculations (Toxic Equivalence Quotient)

Bruhel Point

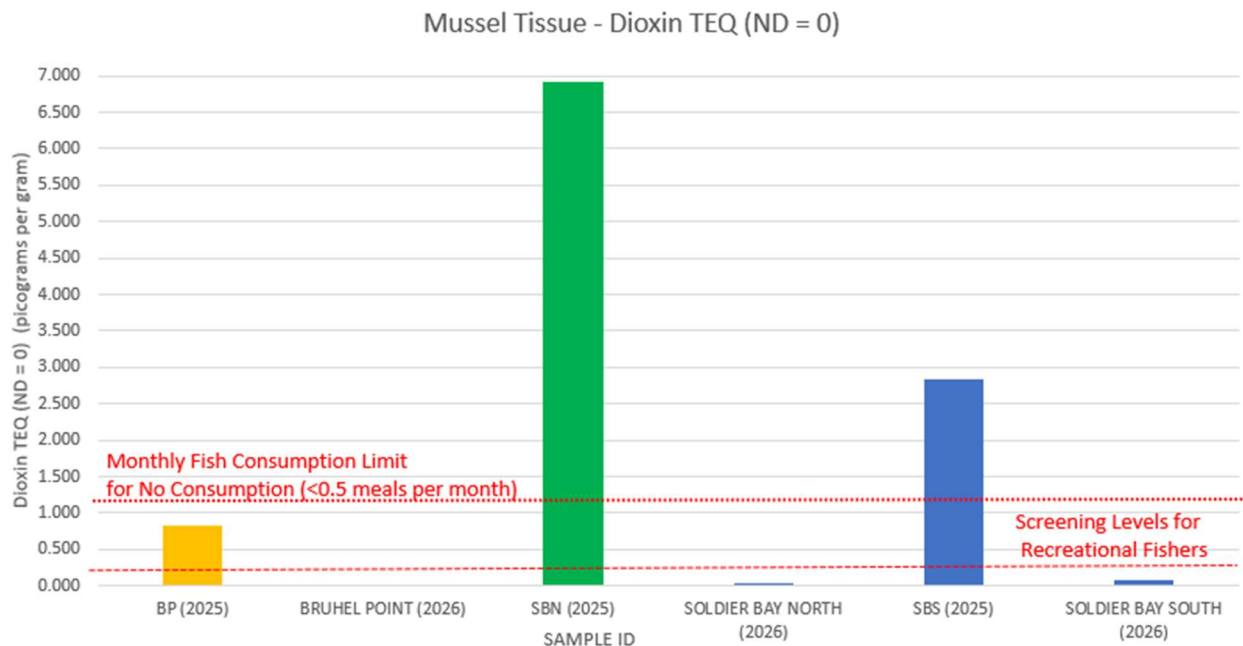
- Most dioxins and dioxin-like PCBs were non-detect or at lower concentrations when compared to Soldier Bay North and Soldier Bay South.
- Example: PCB-105 detected at **3.74 pg/g** (picogram/gram, 2025 sample) and **6.26 pg/g** (2026 sample) at Bruhel Point.

Soldier Bay North

- Higher concentrations of dioxins and dioxin-like PCBs when compared to Bruhel Point.
- Example: PCB-105 at **21.4 pg/g** (2025) and **45.6 pg/g** (2026)

Soldier Bay South

- Highest concentrations of dioxins and dioxin-like PCBs among all three sites.
- Example: PCB-105 at **12.5 pg/g** (2025) and **59.2 pg/g** (2026)



Summary of Mussel Tissue Analytical Data for PCB Congeners

Bruhel Point

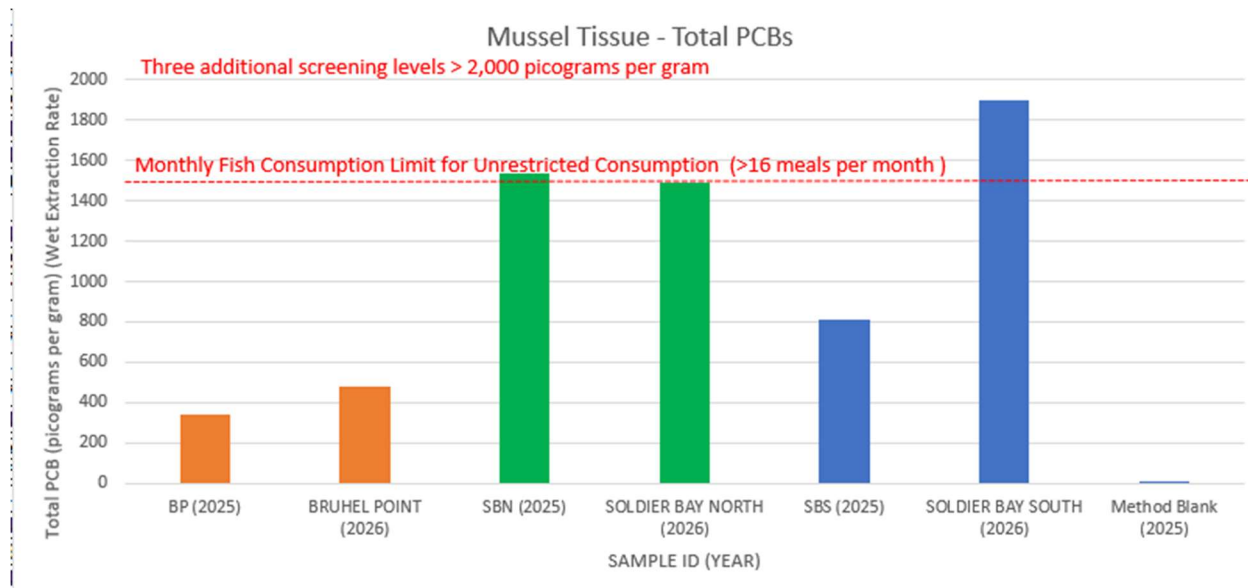
- Bruhel Point shows lower PCB concentrations, when compared to Soldier Bay North and Soldier Bay South.
- Total PCBs: **343 pg/g** (2025 sample) and **476 pg/g** (2026 sample).

Soldier Bay North

- Soldier Bay North had the highest PCB concentrations overall in 2025. Total PCB concentrations were four times greater when compared to Bruhel Point.
- Total PCBs: **1540 pg/g** (2025) and **1490 pg/g** (2026).

Soldier Bay South

- Soldier Bay South had the highest PCB concentrations overall in 2026. Total PCB concentrations were four times greater when compared to Bruhel Point.
- Total PCBs: **810 pg/g** (2025) and **1900 pg/g** (2026).



Links to the full data set files from both sampling dates can be found at <https://www.project-here.org/citizen-science>

DISCLAIMER: This report provides preliminary data that should prompt discussion of what further sampling or research, if any, might be needed. There is not sufficient information to draw any definitive conclusions.