



Moonstone Beach Bummer

Jen Kalt, Humboldt Baykeeper Director

Last month, Moonstone Beach ranked as the sixth most polluted beach in the state on Heal the Bay's Beach Report Card. This annual report compares water quality at recreational beaches throughout California in terms of fecal bacteria. Most concerning to swimmers and surfers are sewage spills, but these pathogens also live in the guts of livestock, pets, and wildlife, and are often flushed into streams and the ocean by rainstorms. The sources that pollute stormwater have been difficult to identify, since traditional lab methods can't distinguish bacteria from different host animals.

Many people are shocked to learn that any Humboldt County beach could be anywhere near the top ten most polluted in California. The amount of rainfall in our region has a major impact: the more it rains, the more stormwater flushes pollution off streets, parking lots, and pastures. In most counties, beach monitoring is done from April 1 to October 31, when people are more likely to be swimming. But this period also coincides with the annual dry period for most parts of the state, resulting in lower bacteria concentrations at beaches in Southern and Central California than here in Humboldt.

Humboldt County monitors bacteria levels at five beaches (Moonstone Beach at Little River, Clam Beach at Strawberry Creek, Luffenholtz Beach, Trinidad State Beach at Mill Creek, and North Mad River Mouth). All but one are impaired by bacteria pollution. The exception is North Mad River Mouth, where much higher volumes of water push polluted waters further offshore. Warning signs are posted when high levels are detected, and additional samples are collected until the levels decrease.

Last summer, a study by Dr. Jeremy Corrigan found that birds are the primary source of bacteria pollution in the surf zone at Clam Beach, while cattle are the main source in the Strawberry Creek watershed (see **Clam Beach Study Points to Birds** in the Aug. 2021 EcoNews). There's no way to know if similar results might be found at Moonstone Beach/Little River until an intensive study using genetic markers is done there. Since it is one of our region's most popular recreational beaches, we believe funding this research should be a top priority. Until the sources are identified, water quality will continue to be impacted.

Testing for Bacteria in Local Waterways

For many years, Baykeeper volunteers sampled water quality before and after "First Flush," the first major storm in the fall, to study the levels of various pollutants in



Wherever you are, it's a good general rule to avoid swimming or playing in the surf zone near creek mouths or storm drains for 72 hours after a major rainstorm. This is especially true for young children, who often swallow water while wading or playing at the beach, like these kids playing in Little River on a sunny winter day in 2014. Exposure to fecal pathogens can cause vomiting; diarrhea; rashes; and infections in open wounds, eyes, or sinuses. Image provided by Jen Kalt.

stormwater. In 2010, Humboldt Baykeeper submitted five years of data to support designating six streams (Janes Creek and Campbell Creek in Arcata, Little River and Widow White Creek in McKinleyville, and Martin Slough and Elk River in Eureka) as impaired by bacteria. In 2015, these streams were added to the Clean Water Act's Section 303(d) list of impaired waters, compelling the state to take action to restore and protect water quality.

In 2012, we shifted our focus to bacteria pollution, since our results showed consistently high levels of fecal bacteria in most streams. And in 2015, the Regional Water Board began a study of dozens of North Coast streams to identify the sources of bacteria pollution. The Humboldt and Sonoma County Public Health Labs developed methods for quantifying genetic markers for gut bacteria from human, dog, bird and ruminants such as cattle, deer, and elk.

That same year, Humboldt Baykeeper began focused studies of Little River and Janes Creek to search for hotspots of bacteria pollution. Our findings point to cattle as the primary source along Little River, with one exception: a tributary from Westhaven contained human bacteria during a major rainstorm, suggesting that at least one septic system is failing in that area. Our study was folded into the Regional Water Board study, which was completed in 2019. The draft reports have yet to be finalized and released to the public.

In February 2020, we began a study focused on Jolly Giant Creek in Arcata, hoping to pinpoint the sources of human bacteria identified in the 2019 study. This research was interrupted by the COVID-19 pandemic after just one sampling event. The Regional Water Board took over that

study in April 2020, and sampling is ongoing.

Bacteria pollution is well-known among oyster farmers, who sample North Bay (Arcata Bay) regularly during dry weather to ensure that raw oysters are safe to eat. But during rainstorms, oysters cannot be harvested due to high bacteria levels in stormwater ending up in the bay. Studies in the 1990s pointed to stormwater runoff as the source, and yet here we are, still studying the problem all these years later.

In 1972, the Clean Water Act passed with the goal of cleaning up all of the nation's waterways by the mid-1980s. Significant progress has been made to reduce point-source pollution, but cleaning up non-point sources that cause stormwater pollution has been more difficult. Until state agencies find the political will to implement solutions like fencing cattle out of riparian areas, bacteria pollution will continue to affect coastal streams like Little River as well as Humboldt Bay with every rainstorm.

For more info, visit the Water Quality Program section of the Baykeeper website (humboldtbaykeeper.org/programs/water-quality). The County's ocean monitoring results are available at humboldt.gov/1696/Water-Quality-Test-Results.

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humboldtbaykeeper.org
alerts@humboldtbaykeeper.org
IG @humboldt_baykeeper
TW @HumBaykeeper
FB /HumBaykeeper