



EMERALD KEEPERS

For an Emerald Green, Ocean Blue Coronado

Sparkling beaches and bays make Coronado a special place to live, work, and play, but are our waters clean? The City of Coronado participates in multiple water quality monitoring programs locally and regionally. Today's page is the first in a three-part series about water quality. Today's page looks at turbidity, dissolved oxygen, and salinity. Our December 2 page will examine cross-border sewage, and the December 16 page will explore pH and ocean acidification. Watermen and women know to stay out of the water for 72 hours following a rain event, but what about the marine animals that inhabit the water? Human impact is affecting us all.

TURBIDITY

Turbidity refers to the number of particles floating in the water. Particles can be sediments (stirred up from wind, currents, or rainfall runoff) or plankton (due to high levels of nutrients entering the water). The cloudiness from particulate matter can affect light penetration, which may cause plants that rely on sunlight to die. Cloudy water can also reduce visibility for fish that rely on vision, clog their gills, and reduce food supplies. According to the U.S. Environmental Protection Agency, "turbidity can provide food and shelter for pathogens. If not removed, the causes of high turbidity can promote regrowth of pathogens in the water, leading to waterborne disease outbreaks, which have caused significant cases of intestinal sickness throughout the United States and the world. Although turbidity is not a direct indicator of health risk, numerous studies show a strong relationship between removal of turbidity and removal of proto-



DEREK EMGE

zoa. Microbial attachment to particulate material has been considered to aid in microbe survival."

DISOLVED OXYGEN

Scientists warn that our oceans are losing oxygen. While oxygen levels in some tropical regions have dropped 40 percent in the last 50 years, other regions' oxygen levels have dropped far less. The average dissolved oxygen loss globally is 2 percent. A warming ocean can lose oxygen because it cannot hold as much gas. An example of this is a soda that goes flat in the sun. Also, as polar sea ice melts, the less dense water forms a layer at the surface on top of the colder, saltier water. This keeps the currents from mixing surface water to deeper depths. Oxygen enters at the surface from the atmosphere and from phytoplankton through photosynthesis. Less mixing means less oxygen at depth. The phenomenon causes marine life to die, adapt, or move to areas with similar oxygen levels. This puts pressures on existing food webs, habitats, and animals. (Scientific American and Nature)

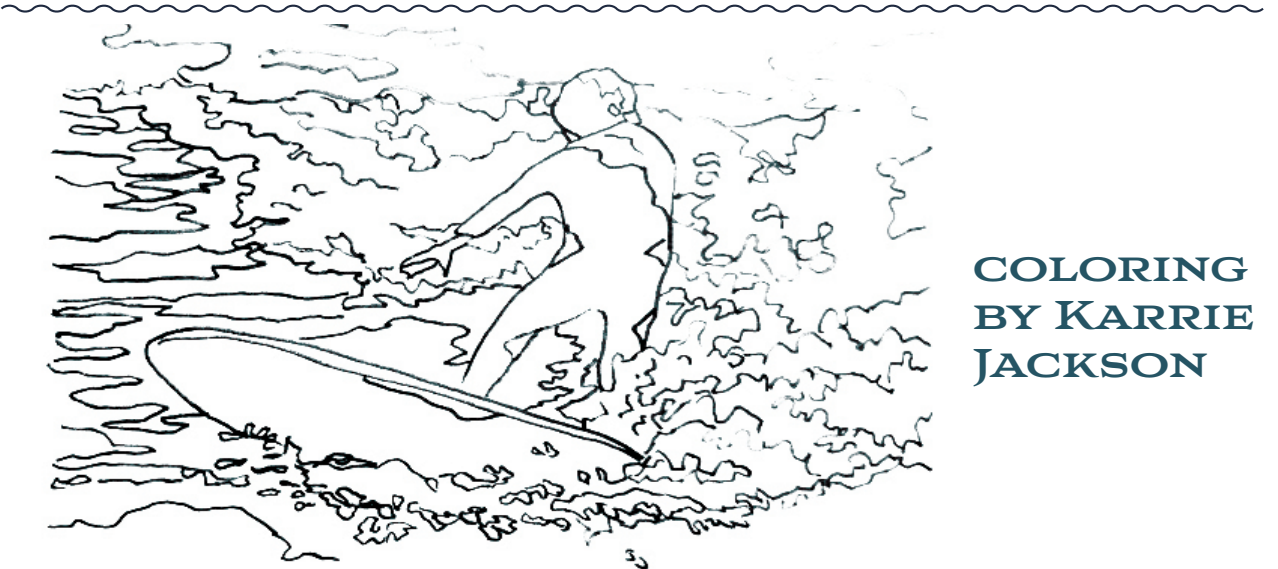


ROCIO BUNKER

affect the density of the water. The higher the salinity, the greater the density. This affects the circulation of the ocean currents, which control how heat is carried in the ocean. This is what regulates the world's climate. 2) Sea surface salinity is linked to the water cycle (how much freshwater leaves and enters the ocean through evaporation and precipitation). While only 1 percent of freshwater is being removed from the ocean, scientists agree the number is still significant. Climate change is effecting precipitation patterns on our planet. As the freshwater is removed, the ocean's salinity increases. Changes in salinity impact marine life. (NASA)

SALINITY

Salinity refers to the level of salt in liquid. Salinity is increasing ever so slightly in the oceans. Salinity is important for two reasons: 1) It can



COLORING
BY KARRIE
JACKSON



Before



After

Boris, the marine skimmer, at Coronado Yacht Club improves turbidity and raises oxygen levels through aeration. Working 24/7 for two weeks, Boris has skimmed several plastic bottles and multiple food wrappers. See the before and after photos.

For more information visit [EMERALDKEEPERS.ORG](https://www.emeraldkeepers.org)

Photo by Brian Lippe

Emerald Keepers is a 501(c)(3) non-profit corporation.