

# Sydney harbors deadly diet for sea creatures

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Contaminated seaweeds in Sydney Harbour could be threatening the small animals that feed on them, according to a new study revealing that the harbour's seaweeds have the world's highest levels of copper and lead contamination.

Up to 75 percent of the offspring of small crustaceans that feed on a common brown seaweed, for example, are killed when they are exposed to copper at levels found in some parts of the harbour, UNSW laboratory and field experiments have shown.

The UNSW study sampled seaweed from 10 bays within the harbour, ranging from 3km to 11km from Sydney Heads. Concentrations of copper, lead and zinc in a species of brown seaweed found in Woolloomooloo Bay, Balls Head Bay and Rushcutters Bay equal or exceed levels found in the Hong Kong Islands and Brazil's Sepetiba Bay, which are among the world's most heavy metal-contaminated waterways.

Heavy metals such as copper, lead and zinc find their way into Sydney Harbour from stormwater runoff, industrial waters and motorised watercraft. These seaweeds "bioaccumulate" metals inside their tissues and scientists use them to monitor environmental pollutants.

Published in an upcoming issue of the journal *Environmental Pollution*, it is the first investigation of the geographic relationship between metal contamination in seaweeds and the crustaceans that feed on them.

The study reveals that high concentrations of copper in one seaweed

species (*Padinacrassa*) were associated with a low abundance of grazing amphipods - small shrimp-like creatures - that feed on algae. These creatures are highly abundant in all marine habitats: on average there are some 6,000 animals per square metre of algal bed in Sydney Harbour.

"The habitats that we sampled within Sydney Harbour contain among the highest concentrations of metals yet identified in brown seaweeds," says study lead author, Dr David Roberts.

"In seven of the 10 sample harbour sites, we measured copper concentrations in one seaweed species that exceeded levels known to threaten small crustaceans. These concentrations exceed all previously scientifically reported levels."

Source: University of New South Wales

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