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Japanese Kelp Invades Southern California; UCSB Scientists to Develop Control and Education Campaign

An aggressive Japanese seaweed is making its way around the world, invading foreign harbors. It arrived in Southern California in 2001, including Santa Barbara's harbor. Researchers at the University of California, Santa Barbara have received a grant to study this invasive species.

"Once you've got it, all you can do is limit it," said David Chapman, biology professor at UCSB and principal investigator on the grant. "You can pull up a big one, but you leave behind seed stock." Since the seed plants are microscopic, eradication is impossible.

The golden-brown Japanese kelp, *Undaria pinnatifida*, is native to the Sea of Japan and is particularly found on the coasts of Japan, Korea and China. The kelp is cultured as a fresh and dried food called "wakame" in several countries.

The grant of

\$98,000 over two years is provided by National Sea Grant. UCSB graduate student Marla Ranelletti is the key researcher working with Chapman on this grant. Their

research aims to predict possible long-term impacts and to develop preventative measures. This work includes increasing public awareness of this alga and minimizing its spread.

The researchers are in close contact with the Department of Fish and Game and with the Santa Barbara harbor authorities. An educational program is in the works. "We want to explain what it is and what to do with it if you find it," said Chapman. "If you see it on a hull, put it in a bag and take it in -- don't just drop it overboard."

On the other hand Chapman asks, "Once we've got it do we convert it into a crop?" At this time he believes the answer is no.

He explains that a kelp called *Macrocystis* (that typically grows to 75 feet) is a commercial crop in Southern California waters as well as an important breeding ground for fish. Chapman is uncertain how much of a competitor the Japanese kelp will be. Another kelp, *Egregia* (Feather Boa kelp), and *Macrocystis* (common kelp) are both important parts of the local biota.

The research that the UCSB scientists will perform on the invader kelp will answer questions about reproduction, the likelihood of interbreeding, and how the microscopic seed stocks of the different kelps will compete with each other. These questions are not fully understood at this point. They will also study the influence of light, temperature, and nutrient status on the Japanese kelp to learn how easily the seaweed will spread. The research is expected to predict the probable long-term impact of the invasion.

The Japanese kelp has appeared in Australia, Argentina, New Zealand, Europe and Mexico in addition to California. *Undaria* has been found as far south as Ensenada, Mexico and north to Monterey Bay.

The Australian Department of Fisheries explains that the Japanese kelp is adept at attaching to the hulls of vessels and most likely was introduced to their shores on the hulls of wood chip vessels. Physical removal of the plants has been tried in Australia with limited success, due to the difficulty in removing them at the elusive microscopic phase.

An educational alert will be a key component of the work by the UCSB scientists. They will prepare a brochure illustrating *Undaria*, describing what to look for, where to look and when, with suggestions for possible containment. The brochure will be distributed to harbor masters, marina supervisors, park officials and others who can

help disseminate the message.

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