

May 21, 2002

New Jellyfish Problem Means Jellyfish Are Not the Only Problem

By OTTO POHL

PORT DOUGLAS, Australia — When Robert King climbed back on the boat after snorkeling off the Great Barrier Reef here on March 31, he knew something was wrong. "I don't feel so good," he said, rubbing his chest.

He had been stung by a jellyfish, and his condition deteriorated rapidly. By the time the emergency helicopter arrived, he was screaming in agony; a few hours later he was in a coma, eyes frozen wide, bleeding into his brain. He never regained consciousness.

Mr. King, 44, from Columbus, Ohio, was the second person in Australia to die this year from the sting of a species of jellyfish, *Carukia barnesi*, found only in Australia and never before known to be fatal. More than 200 other victims went to hospitals, several times the number in a normal summer season here.

In many places around the world, jellyfish populations are sharply increasing, stinging more people and wreaking economic damage. While in some areas the increase appears to be part of a natural cycle (jellyfish populations are declining in some other areas), scientists have noticed an overall upward trend. And they suspect that human activity is to blame.

"Jellies are a pretty good group of animals to track coastal ecosystems," said Dr. Monty Graham, a jellyfish scientist at the University of South Alabama. "When you start to see jellyfish numbers grow and grow, that usually indicates a stressed system."

Those stresses include increased water temperature, a rise in nutrients in the water and depleted stocks of other fish, all of them often caused by humans.

Higher nutrient levels in the water, which tend to support larger populations of jellyfish, can result from runoff of fertilizer and sewage. Overfishing removes the jellyfish's main competitor for food.

Debate continues about the rising water temperatures worldwide and whether they result, at least partly, from global warming — the greenhouse effect caused by the burning of fossil fuel. Being mostly water, jellyfish react strongly and quickly to all of these changes. In a sense, the jellyfish is like the pigeon in today's cities, able to flourish in environments distorted by humans while other species cannot survive at all.

Distinctly unlike the pigeon, however, jellyfish release millions of microscopic harpoons when touched, shooting tiny hypodermic needles into a victim's skin. They are lined with barbs and filled with venom, and they often linger painfully in the skin for months after the toxin has worn off.

That experience is becoming more common around the world. On Waikiki Beach in Hawaii, for example, a lifeguard, Landy Blair, counted more than 900 stings on a single day this season, about 1 percent of them sending victims to hospitals. Mr. Blair has been keeping track of jellyfish populations near the beach since 1991. The problem has grown steadily worse, he said, adding, "We have seen the highest numbers ever over the past year."

On the beaches near Auckland, New Zealand, half a dozen sting victims have required hospitalization this year, Robert Ferguson of Surf Life Saving New Zealand, a lifeguard group, reported. "It's the first time I've ever heard of victims needing hospital care," Mr. Ferguson said. "This is a new type of jellyfish with stings that are much more severe, much harsher."

The situation is the same in Australia. "This year is incredibly abnormal," said Dr. Jamie Seymour, a jellyfish expert at James Cook University. He believes that strong, unusual wind patterns help blow the jellyfish toward the shore, where they flourish in unseasonably warm waters. Dr. Seymour, who has analyzed the venom from each sting that receives hospital treatment in the Barrier Reef region for years, had never seen the type of venom that killed the two tourists this year.

Dr. Seymour believes that the enormous increase of jellyfish near the shore has brought rarer, more deadly subspecies into contact with humans for the first time.

Booming jellyfish populations can also take a high economic toll. In the Gulf of Mexico, shrimp fishermen are struggling with a jellyfish boom that fills nets with slimy gelatin and financial ledgers with millions of dollars in losses.

While populations appear to be down this year, Dr. Graham, of South Alabama, sees a "statistically solid increase" in the region over the longer term.

Jellyfish first gained major scientific attention in the 1980's, when a huge jellyfish bloom devastated the Black Sea, an ecosystem already weakened by overfishing of anchovies. Scientists believe that the jellyfish, an Atlantic native named *Mnemiopsis leidyi*, hitched a ride on the bottom of a ship and then rapidly multiplied, feeding on anchovy eggs and the plankton that young fish rely on.

More recently in Hawaii, overfishing of stocks like ahi and mahi-mahi — as well as a depletion of sea turtle populations, another predator of the jellyfish — is partly responsible for the jellyfish boom there, said Dr. Angel Yanagihara, who heads a jellyfish research laboratory at the University of Hawaii. For her, jellyfish blooms are simply responses to the stresses that humans have put on the environment. "It's a wake-up call by nature," Dr. Yanagihara said.

Australia was stunned into action by the two deaths, which officials fear could hurt tourism. "No one cared until someone died," said Dr. Seymour, a member of a hastily convened commission.

At the same time, some here see the jellyfish boom as an opportunity. The Queensland Fisheries Service, intrigued that Australian waters are so hospitable to jellyfish, is considering setting up a commercial fishing operation for the edible jellyfish *Catostylus mosaicus*. That fish is popular in many Asian countries, but it is declining in Asian waters, probably because of pollution.

Dr. Seymour said people could eat the highly venomous box jellyfish if they cut the tentacles off, although he remains fairly unimpressed with jellyfish as a food source.

"They basically taste like whatever sauce they've got on them," he said.