PACIFIC FISHING

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Profiles

by Brad Warren

From crab populations to warm water, Gordon Kruse tackles the hard questions

GORDON KRUSE has been knocking around Alaska fisheries since 1978, when he volunteered as a fisheries graduate student on Southeast's first rockfish survey. He later returned to work as an observer aboard a Japanese mothership.

By 1985, he had finished his post-doctoral studies and signed on to help Fish and Game dig out of the great crab crash. The young Dr. Kruse never imagined that two decades later he would still be trying to sort out why the crabs haven't returned. Nor did he expect to become one of the leading investigators in the greatest ecological and climatic "whodunit" in the North Pacific.

That mystery today encompasses far more than crabs, and so does Kruse's research. Many scientists view the enduring collapse of Alaska's major crab stocks as one of many consequences of a climate-driven reorganization of North Pacific marine ecosystems. This ocean transformation, dubbed a regime shift, brought warmer waters after 1977. The warmth and associated environmental changes fueled a surge of pollock, cod, flatfish, and some rockfish. Many of those fish devour crab. Whether climate change clobbered the crabs at first is still being debated, but it surely hurts them now.

Gordon Kruse

"It seems to be shaping up that long-term warming and associated changes in the ecosystem (e.g., increases in predators and competitors of crabs) are the biggest obstacles for the recovery of crab populations in Alaska," Kruse told me in a recent e-mail.

Now a University of Alaska Fairbanks fisheries professor in Juneau, Kruse recently chaired an Alaska Sea Grant symposium on the effects of climate variability and fishing on gadids — a family that includes cod, pollock, hake, and similar groundfish.

Some participants hoped the symposium would produce a consensus on how global warming could alter the major fisheries in Alaska. That was never in the cards. Like most gatherings of marine scientists, the meeting highlighted the need to learn more. But presenters shed plenty of light on the entwined effects of climate and fishing pressure on the biggest fisheries in the Northern Hemisphere. A few highlights:

Conservative catch limits help. Alaska is far better prepared than northern Europe to maintain the strongest possible groundfish fisheries — whether or not we face profound climate change.

"In this part of the world, you have been much more conservative than we are in the North Atlantic side, as far as fishing is concerned," remarked keynote speaker Odd Nakken of the Norwegian Institute of Marine Research.

The North Pacific Fishery Management Council has never set groundfish catch limits above the levels recommended by scientists. Nakken observed that catch limits for cod around Norway are consistently set far above scientific advice, and real catches are higher still. In the Barents Sea, the illegal and unreported catch of cod is now estimated at about 160,000 metric tons per year.

Climate drives major changes in fisheries all over the world. Whether this is due to global warming or to cyclical change is a harder question. West Coast whiting have shifted hundreds of miles north; so have some Bering Sea groundfish, crab, and salmon. In the Barents Sea, warmer water and intense fishing pressure on older fish have apparently sped up the lifecycle of cod: Instead of spawning at ages 9 to 12 years, the diminished population now spawns around age 6. In the Baltic Sea, over-fished cod stocks also face climate-driven failures — largely because young fish starve without regular influxes of North Atlantic salt water to sustain the plankton they eat.

Faster growth isn't always good for groundfish. Warm water accelerates growth in cod and many other fish, but it may make them less successful reproductively. Like the tortoise and the hare, slow-growing cod in the cool Bering Sea are better survivors and reproducers than their cousins in the warmer waters off British Columbia.

We know less than we might imagine — and even the science that sustains major fisheries is now threatened by federal budget cuts. "There's still so much basic biology that we really need to learn," says Kruse. "Additional cuts may compromise whole surveys that form the basis for management decisions — the science that goes into the success of management of fisheries in Alaska." ■

Brad Warren edited Pacific Fishing *magazine from 1996 to 2004. He writes a monthly column about people who are making a difference in the seafood industry.*