



The Oceans' Buffalos?

Flaws in fisheries

regulations are leading to disaster, warns Professor Buzz Thompson.

BY DASHKA SLATER

Josh Eagle, a Law School lecturer, likes to tell the story of the time he played an ice-breaking game called “Two Truths and a Lie” with a group of volunteers who teach children about the environment. To play the game, each person writes down two true statements about themselves and one false one; the other players then cast votes for the statement they believe is a lie. So when Eagle wrote, “My favorite animal is a tuna,” every single person in the room figured he was lying. After all, what kind of environmentalist chooses chicken of the sea as his favorite animal?

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SCOTT TAYLOR

Off the coast of North Carolina, Stanford Professor Barbara Block (center) prepares to tag a bluefin tuna so she can track the fish as it swims thousands of miles.

But tunas really are Eagle's favorite creature, particularly the Atlantic bluefin. Rare among fish species in being warm-blooded, these ten-foot-long predatory fish are the Olympians of the ocean, capable of diving to a thousand feet and swimming from one side of the Atlantic to the other in less than a month. Still, it wasn't that long ago that Eagle assumed tuna were roughly the same size as the can they come in. His evolution from tuna ignoramus to tuna enthusiast came with the work he began three years ago when he helped to found the Stanford Fisheries Policy Project, an unusual collaboration between Stanford Law School and the University's Hopkins Marine Station near Monterey.

Fisheries policy isn't a subject for intensive research at other law schools, and in 2000 it was barely on environmental policy makers' radar screens. Stanford Law School Vice Dean Barton "Buzz" Thompson, Jr., JD/MBA '76 (BA '72), Robert E. Paradise Professor of Natural Resources Law, doesn't have warm fuzzy feelings about fish. But Thompson, an expert on such environmental issues as water resource policy and biodiversity protection, recalls talking with Eagle about fisheries back then and realizing that the legal challenges in regulating them were likely to create a "perfect storm" of conundrums in the coming decade. What particularly vexed Thompson was the way that regulators ignored the latest scientific research, such as the findings by marine scientists at Hopkins. He was struck by the international jurisdictional dimensions of the problem, as well as the public's lack of awareness that the oceans were in danger of being fished out. Thompson and Eagle arranged to have lunch at the Monterey Aquarium with Stanford Marine Sciences Professor Barbara A. Block, and the Fisheries Policy Project was born.

Block, the Charles & Elizabeth Prothro Professor in

Marine Sciences, studies big fish—tuna, swordfish, sharks. Thompson, a former partner at O'Melveny & Myers who was a clerk to Justice William H. Rehnquist '52 (BA '48, MA '48), heads the Environmental and Natural Resources Law & Policy Program at the Law School. [See sidebar, p. 23.] Few other U.S. universities can bring such expertise to bear on fisheries regulation—Stanford dates its study of fisheries policy back to its first president, the ichthyologist David Starr Jordan—

and the David and Lucile Packard Foundation agreed to finance Block's and Thompson's joint effort. The project's goal is to forge a more productive relationship between those who study fisheries and those who manage them, and to answer a thorny question: Why does the United States, which boasts some of the world's most sophisticated marine researchers, have such a dismal record when it comes to managing its own fisheries?

In the past few months, the crisis facing the world's oceans has gotten a fair amount of attention, thanks to a major report from the Pew Oceans Commission in June, a soon-to-be-released report from the U.S. Ocean Commission, and a report published in the May issue of *Nature* contending that fishing has wiped out 90 percent of large ocean predators like tuna, swordfish, and cod.

What hasn't gotten as much notice is the disturbing fact that the U.S. may be doing a worse job managing its fisheries than the world as a whole. Almost 40 percent of U.S. fisheries are classified as overfished, compared with 30 percent worldwide, and the status of more than half of the nation's 959 federally managed fisheries is simply unknown. True, some other countries—the member nations of the European Union, for example—are doing an even poorer job. Still, America's lackluster performance in preserving its fisheries is surprising when one considers how the nation has been on the forefront in environmental regulation and environmental research. Indeed, in a forthcoming study of the agencies that manage the nation's fisheries, Thompson and Eagle write, "Given the strengths of the scientists, one would expect that the U.S. management record would be better and certainly not worse than the worldwide record."

In trying to understand why America's fisheries are

doing so poorly, researchers at the Fisheries Policy Project focus much of their attention on the interaction between scientists and policy makers. Thompson, who in August was appointed to an Environmental Protection Agency advisory committee on assessing the economic benefits of ecosystem protection, says that the project is addressing such questions as: Are fishery managers using scientific information when setting quotas for allowable catches? Are scientists researching the questions managers need answered? And what does science tell us about the best way to manage fisheries? The project's ultimate goal is to translate scientific findings into policy recommendations while reaching a better understanding of how such findings may be distorted or even disregarded as they travel through the regulatory pipeline.

Says Block: "We biologists are very good at gathering data, and deciphering that data, and perhaps coming up with a rigorous answer to a question we're asking, but where we are challenged is when we try to move our science into the arena of policy making."

"Tunacentric" is the word that Eagle uses to describe Block. Her laboratory has big tanks filled with live bluefin, yellowfin, and bonito, which she sometimes dips into to inspect a fish. She is the author of definitive works on tuna physiology. And in the last few years she has done pathbreaking research on the migratory habits of bluefin, the most valuable fish in the world—with a single one typically fetching about \$30,000 on the open market.

Block's work has an urgency to it. The population of adult Atlantic bluefin in the west Atlantic has declined by as much as 90 percent in the past two decades. And evidence suggests that the decline is continuing on both sides of the Atlantic despite quotas limiting the catch. Currently the fish is managed as two separate stocks. The annual quota for the east Atlantic, where mainly European boats fish, is about 30,000 tons. By comparison, the quota in the west Atlantic, where most of the boats are from the U.S. and Canada, is much less, about 2,500 tons, because scientists and regulators believe these waters were overfished for 20 years. Although the European fishermen harvest essentially as many bluefin as they can catch, the North Americans do a better job enforcing their quota. Still, Block's research suggests that this management effort alone is insufficient to stop further demise of the west Atlantic bluefin population.

Using sensor tags that can follow a fish's whereabouts for years, Block and colleagues have spent the last seven years tracking bluefin migration patterns. The data suggest that while the two stocks go to their own respective breeding grounds, the stocks often intermingle freely, traveling back and forth across the Atlantic to feed. One tuna Block tagged during a recent winter off North Carolina swam to the Flemish Cap and the Mediterranean, then a year later was in

the Bahamas, and a little later was recaptured near Spain. If Block's findings are borne out with additional research, it will mean that the tremendously athletic bluefin don't respect the invisible boundaries that humans have set up for them. Many of the fish protected by the west Atlantic quotas are later caught in east Atlantic waters by European fleets. "They are fish of no one country," Block says. "That gets them into legally challenging issues."

Block brought these findings to Thompson, Eagle, Stanford Biological Sciences Professor Joan Roughgarden, and Paul Armsworth, a conservation economist. She pointed out that one of the biggest breeding areas for the Atlantic bluefin is the Gulf of Mexico. Although U.S. fishermen are barred from seeking to harvest Atlantic bluefin in the Gulf, they can keep a set amount of bluefin that they catch accidentally while going after another tuna species, yellowfin. That "bycatch" is significant.

The scholars knew the solution: they had to find a way to protect bluefin in the Gulf during their breeding season. Block and a graduate student, Steve Teo, pinpointed the breeding region and determined that breeding lasted for a two month period. Armsworth calculated the economic effect of limiting the catch of yellowfin, and thus the bluefin bycatch, during the critical eight weeks. Others examined potential legal and diplomatic repercussions. Block says that the resulting proposal, called a "time area closure," is winning support from U.S. bluefin fishermen and conservationists, though implementing such a plan is going to be complicated. And it doesn't help matters that across the Atlantic, the European fishing fleet widely disregards the area's bluefin quotas, while American fishermen generally comply with the one that governs their waters.

Yet the challenge in preserving Atlantic bluefin highlights an even broader problem that concerns Thompson and Eagle: the way that fishing quotas are set. Quotas for Atlantic bluefin are unusual in that a multinational organization (the International Commission for the Conservation of Atlantic Tunas) sets them for all but a few areas, like the Gulf. In the case of most fish caught in U.S. waters, the U.S. government sets the quotas. Still, regardless of who sets them, the quotas frequently permit too big a catch. Thompson and Eagle realized that they needed to understand why quotas are turning out to be too generous if they were going to recommend steps to save the fisheries.

Most people would be hard pressed to name the federal agency charged with keeping the nation's fisheries healthy. Buried deep within the Department of Commerce, the eight Regional Fishery Management Councils that set annual quotas for most of the country's various commercial and recreational fishing stocks are virtually unknown outside of the fishing industry, despite managing a geographic region

roughly the size of the continental U.S. Their very obscurity underscores a big problem with their effectiveness—these institutions see themselves as representing the fishing industry more than the general public. “I could make a good argument that if we’d had no management we’d be better off than we are right now,” Eagle insists. The fishing industry, he contends, has won regulations aimed at growing the industry, starting a cycle that runs counter to conservation. As Eagle sees it, more fishing boats lead to more fishermen losing money, which, in turn, leads to more opposition to short-term sacrifice. He adds, “If conservation is the goal, you wouldn’t put fishermen in charge of regulation.”

But the 1976 Magnuson-Stevens Fishery Conservation and Management Act did just that. Each of the Regional Councils has anywhere from seven to twenty-one voting members, most of whom are chosen by the Secretary of Commerce from candidates nominated by the governors of each council’s constituent states. In an upcoming study of the Regional Councils’ decision-making process, Thompson and Eagle find that more than 90 percent of the Regional Council’s appointed members describe themselves as representing a particular sector of the commercial or recreational fishing industry. “These are organizations which are dominated by the very industry they’re supposed to be regulating, and potential conflicts of interest are quite rampant,” Thompson says. “At the same time, they are exempt from the major conflict-of-interest rules that apply to nearly every federal agency.” Not only can that lead to decisions that aren’t necessarily in the public interest, it also undermines the credibility of the process.

The make-up of the Regional Councils is predicated on the assumption that fishermen are ideal stewards for the nation’s fisheries, since they have a vested interest in making sure that there are still fish left to catch. But Thompson has found that the incentives work differently in the real world. For one thing, fishing is no longer a career handed down from father to son. “I don’t think that many fishermen see themselves as benefiting from efforts to preserve the fisheries for the long run,” Thompson says. “They don’t want to see the fisheries collapse tomorrow, but most of these guys don’t see themselves as being around in 25 years.”

Like most of us, fishermen also engage in a lot of wishful thinking. Faced with the choice between a certain loss today and a potentially greater loss a few years hence, fishermen tend to take the gamble that the loss down the line isn’t going to be as bad as scientists predict. Thompson points to studies that show that people in risky professions—and fishing is one of the riskiest professions around—tend to make riskier decisions. But he notes that all of us have a tendency to think that uncertain outcomes are more likely to come out in our favor. That’s why the people who own casinos are

richer than the ones who play in them. But when you’re asking fishermen to interpret scientific probabilities, that bit of human nature has potentially disastrous implications.

“People engage in wishful thinking if there’s scientific uncertainty,” Thompson explains. “And scientists play into this, because they’re very conservative about stating what they know. You don’t want scientists to overstate what they’re certain of, but they need to understand that other people will use those uncertainties to reject what they don’t want to hear.”

A big reason members of the Regional Councils tend to choose higher quotas, Thompson and Eagle believe, is that the councils are responsible both for the conservation decision (how many fish can be caught?) and the allocation decision (who gets to catch them?). Since most of the council members come from either the commercial or the recreational fishing industries, these are not abstract decisions. The best way to make certain that each of the competing fishing interests gets a big enough slice of the pie is to increase the size of the pie by setting a higher quota. “The members of the councils are always thinking down the road: ‘How are we going to meet the demands of our constituents?’” Thompson says. “That’s a very difficult issue for anyone to ignore in setting a quota, but it becomes far more difficult if the people who are making the decision are from the industry itself.”

The Fisheries Policy Project’s study of the king mackerel fishery in the Gulf of Mexico provides a good example of the way these factors combine to perpetuate overfishing. In 1985, commercial and sport fishing in the Gulf had left the king mackerel fishery so depleted as to be on the verge of collapse. Still, scientists thought the fishery could recover within a few years if the Regional Council limited the number of fish caught. Thompson and Eagle looked at the quotas set for the fishery over the ensuing 15 year period and compared them with the scientific recommendations. They found that the council consistently chose quotas that were at the high end of the range scientists said was acceptable—quotas that were not likely to help the fishery recover.

In the 1992–93 season for example, the council chose to allow 9.8 million pounds of mackerel to be caught, even though the scientists had told them that this quota had a mere 20 percent chance of meeting the fishery’s rebuilding goals. A lower quota would have required the council to limit the recreational bag limit to one fish per fisherman. So to avoid angering sport fishermen and charter boat owners, the council set the bag limit at two, which in turn meant that the council had to raise the commercial quota to maintain the traditional ratio between the two sectors. Faced with scientific uncertainty and a series of difficult allocation deci-

sions, a council composed largely of fishing interests found it preferable to risk the health of the fishery rather than risk the health of the lucrative sport fishing industry.

“We’re substituting the risk preferences of fishermen for those of the nation as a whole,” says Eagle. “We know fishermen are going to err on the side of protecting the interests of themselves and their friends.”

Thompson’s and Eagle’s study, initiated and supported by The Pew Charitable Trusts is scheduled to be released this fall. They will recommend a major restructuring of the way fisheries are managed in the U.S. Mustering the political momentum for this change won’t be easy, particularly because the problem of overfishing hasn’t made it onto the public radar screen the way the plight of whales and dolphins has. After all, it’s hard to think of an animal as an endangered species when it’s being served with mango salsa at your local eatery.

“We need a sea change in the way the public thinks

about the oceans and the degree to which they care about fisheries,” Thompson says. “Because the demand for change is not going to come from the fishing industry, it’s got to come from the public.” He points to the campaign for dolphin-safe tuna as an example of the obstacles ahead. The new dolphin-safe approach to tuna fishing has limited the number of dolphins that are killed, but at the same time increased the amount of other bycatch—fish that are being caught and killed even though they’re not the fish that will be taken to market. So far there hasn’t been a public demand for bycatch-free tuna. Fish simply do not capture the public’s attention like dolphins and other marine mammals do.

An even greater problem is that most people don’t realize a problem exists. “We could see with our eyes what happened to the buffalo, but we can’t see when a fishery goes into decline,” Thompson observes. “And the oceans look so big—it’s hard to imagine that anything we do can have that much consequence for them.”

ENVIRONMENTAL LAW AT STANFORD

ONE REASON that Vice Dean Barton H. “Buzz” Thompson, Jr., JD/MBA ’76 (BA ’72) jumped at the chance to pursue fisheries research is that it requires the type of interdisciplinary approach at which Stanford Law School excels. To master fisheries policy, students and faculty must not only understand environmental, administrative, and international law but also grasp recent scientific research about tuna breeding habits,

bridge diverse interests and approach problems creatively and effectively,” says Thompson, the program’s head. “That requires an understanding of law, science, technology, economics, politics, and psychology.” Law students examine all these fields in their environmental courses, which cover topics ranging from pollution to toxic torts to water resources to biodiversity. Law School faculty also are involved in interdisciplinary research with faculty throughout Stanford on such diverse issues as international watershed preservation, climate change, and managing biodiversity on working landscapes.

Integrated with the program’s interdisciplinary approach is a focus on teaching more effective problem solving. Coursework features case studies, clinical education, training in both negotiation and mediation skills, and rigorous analysis. Says Program Director Meg Caldwell ’85, “Our goal is to make sure that students leave the Law School already running.”

A key difference between Stanford’s environmental law classes and those at other law schools is that Stanford relies on situational case studies and simulations, written by Law School staff for Law School students. Students assume

the role of protagonist—such as a private attorney counseling a biotechnology company facing hazardous waste issues, or a federal official seeking to develop an effective fishery management plan. Students then formulate a strategy and defend it to classmates.

The Law School also offers an environmental clinic under the auspices of lawyers from Earthjustice, a nonprofit law firm. From an Earthjustice office at the School, Clinic Director Deborah Sivas ’87 works with students on administrative cases and litigation involving such subjects as marine and coastal resource protection, public land management, and water quality.

To supplement its teaching, the program brings leading environmental lawyers and scholars to campus. The Robert Minge Brown Lecture, for instance, has been delivered by Bruce Babbitt, former U.S. Secretary of the Interior, and Dr. Sylvia Earle, former Chief Scientist for the National Oceanic and Atmospheric Administration, among others. The program’s Environmental Workshop seminar, which draws leading academics, policy makers, and scientists to Stanford to discuss their work, is the oldest of its kind in the country.

—Nina Nowak

STEVE GLADFELTER



Vice Dean Barton H. “Buzz” Thompson, Jr., JD/MBA ’76 (BA ’72) heads the environmental program.

the politics underlying disputes between American and European fishermen, and the economics of the fishing industry.

Interdisciplinary analysis is a trademark of the Law School’s Environmental and Natural Resources Law & Policy Program. “Environmental lawyers must