BREN SCHOOL ENVIRONMENTAL SCIENCE & MANAGEMENT

SUCCESS stories

INNOVATION ON THE CALIFORNIA COAST

HOW CATCH SHARES HELPED TO REVITALIZE A VALUABLE FISHERY

In 1967 the journal *Science* published the seminal paper by UCSB economics professor Garrett Hardin titled "The Tragedy of the Commons." In that groundbreaking work, Hardin introduced the idea that any unregulated shared resource is at risk of being overexploited to the point of collapse. Forty years later, it applied perfectly to Central California's depleted groundfish fishery.

As recently as 2010, fishing along California's central coast was dominated by bottom trawling, a process that involved dragging heavy nets along the ocean floor. The method was extremely effective but resulted in unsustainably large catches and substantial wasted bycatch while causing significant damage to the sea bed. Regulations were enacted, and seasons were shortened. Fishermen responded by fishing harder and in more dangerous conditions. Prices dropped as boats returned all at once, saturating the market. As a result of the incessant fishing pressure, the Pacific groundfish catch fell by 70 percent over two decades. Many fishermen had to sell their boats, and port facilities closed. Just as Hardin had predicted, an overexploited shared resource was collapsing.

In 2011 the Pacific Fisheries Management Council and NOAA Fisheries stepped in, replacing the free-for-all style of fishing with a catch-shares program for 74 bottom-dwelling species. Bren School Dean Steve Gaines and Professor Christopher Costello played key roles in designing the program, working in partnership with The Nature Conservancy (TNC), the Environmental Defense Fund (EDF), and Central Coast fishing communities.

Costello analyzed the economic value of trawling vessels and related permits to develop a novel approach in which TNC would buy trawlers and permits from fishermen, with the goal of ending trawling without putting fishermen out of work. TNC purchased the licenses and the equipment and created a no-trawl zone. Costello and Gaines then collaborated with their partners to design the catch-share program, which gave each fisherman an ownership right to a specific percentage of the stipulated overall catch. A fisherman who caught too many fish could purchase credits for the overage from another fisherman who had not yet met his quota.

The success of the program is evident in many ways. Fishermen no longer have to race to fish, but can spread their effort over time to coincide with high market demand and better prices. The program unleashed a wave of innovation as fishermen refined their gear to be more effective and more environmentally sound. Fish stocks are stable; the fishery is being managed sustainably. Crucially, new relationships have formed. Many fishermen used to see scientists and environmental NGOs as an enemy whose work often led to regulations that negatively affected fishermen. Now, those same fishermen see TNC, EDF, and researchers like Gaines and Costello as partners who have helped them to improve their lives while sustaining the long-term health of their livelihood.

It doesn't end there. The research Gaines and Costello have done with multiple partners has informed the design and implementation of other catch-share programs around the world. That work is leading to revitalization of small-scale fisheries in places like Indonesia and the Philippines, and to Peru's anchoveta fishery, the largest fishery in the world.