

Bycatch Mitigation: Tales Of Success And Failure Across Ecosystems, Technologies And Cultures

Ed Melvin, Washington Sea Grant, University of Washington

Minimizing fisheries bycatch, defined here as unwanted and discarded catch, is a primary tenet of ecosystem-based fisheries management. Bycatch can include animals (fish, invertebrates, seabirds, turtles or marine mammals) that are biologically vulnerable, culturally taboo, allocated to other sectors of the fishing industry, or of no commercial value. Once considered a nuisance at sea, the issue of fisheries bycatch exploded into public awareness in early 1970's with the revelation that hundreds of thousands of porpoise were being killed in purse seine fisheries targeting tuna in the Eastern Tropical Pacific. Reports of tens of thousands of endangered sea turtles and large quantities of fishes dying in shrimp trawls, and huge numbers of fish, seabirds and marine mammals dying in high seas drift gillnets soon followed. Bycatch quickly became synonymous with "waste", and by early 1990's reduction of that waste through gear modification and effort control became a central objective of fishery management.

Case studies are presented of successful bycatch mitigation programs. Common to these successes were strong incentives to modify fisher behavior, solid research done collaboratively with industry, strong industry organizations, education and outreach programs, and data rich environments (accounting systems to determine catch rates before and after implementation). Unfortunately, bycatch reduction success stories are exceedingly rare. Usually mitigation strategies are implemented without specific goals and the extent to which bycatch was reduced in the commercial fishery is unknown. These cases where success is unknown are associated with data poor environments (no observer programs, little enforcement or compliance), weak industry associations coupled with strong industry inertia, and prescriptive top-down regulations. Typically a gear modification is assumed to be a successful endpoint by stakeholders, despite the reality that regulations are complex, poorly enforced, and in many cases easily circumvented.

The challenge for bycatch reduction now is to engage the innovation and resourcefulness of individual fishers by moving toward replacing top-down, prescriptive management with a bottom-up, output-driven model that gives industry ownership of both the problem and the solution. Providing individual fishers with a certain future in the fishery can create a strong incentive for stewardship and allow their innovative energy to be applied in real time. In data rich fisheries, less prescriptive institutional structures (resource ownership in the form of cooperatives and community or individual quotas, the choice of when and how to fish), coupled with vessel-level accountability, could potentially create a bottom-up bycatch management system superior (in terms of its likelihood of implementation and successful bycatch reduction) to gear or effort prescriptions alone. Collaborative efforts between fishers and gear technologists to develop and refine bycatch mitigation technologies that are safe, reliable, and tamper proof remain critical to achieving bycatch reduction, especially in data poor fisheries.