



FISHERIES FACT SHEET

Sea Grant is a unique partnership between the nation's universities and its primary ocean agency, the National Oceanic and Atmospheric Administration (NOAA). Connecticut Sea Grant, based at the University of Connecticut, collaborates with maritime industries and coastal communities to identify needs, and fund research, outreach, and educational activities that have special relevance to Connecticut and Long Island Sound. Its mission is to foster the wise use and conservation of our nation's coastal and marine resources.

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Adaptive Management

A Fact Sheet for Connecticut Fishermen

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Introduction

All good fishermen learn from their success and failure. A fisherman will try a new fishing method, for example, monitor the results, and see how the results compare to what was predicted to happen. Based on the new information, the fisherman may accept the fishing method, may adapt the fishing method to improve on it, or may reject it. This learning and adaptation is the basis for adaptive management. Adaptive management goes one step further and relies on systematic feedback learning and the progressive accumulation of knowledge for improved fisheries management. Adaptive management relies on deliberate experimentation followed by systematic monitoring of the results from which the fisheries managers and fishermen can learn. Adaptive management is participatory, involving fishermen as partners with fisheries managers in the management process.

Experimentation and Learning

Adaptive management takes the view that fisheries management policies can be treated as "experiments" from which managers and fishermen can learn. Adaptive management differs from the conventional practice of fisheries management by emphasizing the importance of feedback from the fishery in shaping policy, followed by further systematic experimentation to shape subsequent policy, and so on. In other words, it is iterative, repeating a process of steps to bring the manager and fisherman closer to a desired result. Each iteration should involve making progress in reaching established goals and objectives. The important point is that effective learning occurs not only on the basis of management success but also failures. However, learning from failures presupposes that what is learned can also be remembered. Organizations and institutions can learn as individuals do, and adaptive management is based on social and institutional learning. The mechanism for institutional learning involves documenting decisions, evaluating results, and responding to evaluation. Institutional learning must be imbedded in both fisheries managers and the fishermen, and the knowledge held by each must be respected and shared.

For example, of particular importance are environmental fluctuations. Many areas are seeing decadal-scale shifts in marine ecosystems, as well as large, infrequent disturbances. How can we best respond to such changes? Some government agencies keep records or maintain disaster-response plans. But fishermen themselves maintain institutional memory of such fluctuations, along with response mechanisms. Perhaps a combination of agency institutional memory and fishermen's knowledge can help provide adaptive responses for ecosystem changes.

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The success of adaptive management will depend on fisheries managers and fishermen keeping an open mind to work together and share knowledge. Recognition that non-scientific forms of knowledge may nevertheless be valid and important can promote understanding in a genuinely participatory process.

A Framework for Learning

The adaptive management framework involves first thinking about the situation in the fishery, collecting information about the fishery, and developing a specific assumption about how a given intervention will achieve a desired outcome. The intervention is implemented and the actual results are monitored to determine how they compare to the ones predicted by the assumptions. The key is to develop an understanding of not only which interventions work and which do not, but also *why*.

Adaptation is about systematically using the results of the monitoring to improve the intervention. If the intervention did not achieve the expected results, it is because either the assumptions were wrong, the interventions were poorly executed, the conditions at the intervention site had changed, the monitoring was faulty, or some combination of these problems. Adaptation involves changing the assumptions and the interventions to respond to new information obtained through the monitoring efforts.

Finally, learning is about systematically documenting the process that was followed and the results that were achieved. This documentation will help to avoid making mistakes in the future.

