Ecosystem-Based Angling
7 Tips for Recreational Fishermen

The current marine fisheries management system is only partially successful because it concentrates on single-species rather than considering the entire system in which the fish are found. To address this, a new approach in fisheries management called Ecosystem-Based Management (EBM) has emerged that places special emphasis on how variables within the ecosystem, including human activity and habitat, influence fish populations. The goal of EBM is to maintain ecosystem health, integrity, and sustainability by managing aspects of fisheries beyond simply estimating the effect of fishing pressure on a single population.

Inspired by recommendations recently released for fishery professionals, (Francis et al. 2007 Fisheries magazine), this document aims to provide recreational anglers with some tips to achieve the goals of EBM. These tips are by no means exhaustive—some may even be intuitive to many—however, they can at least serve as a reminder of how marine ecosystems operate and what recreational anglers can do to help ensure that we all have fish for the future.

1 Keep a Holistic Perspective

Recognize that human activity such as fishing, land, and marine use affects biological productivity. If your goal is to catch one specific type of fish, whether that fish is available for catch relies on many other factors (abundance of forage fish, predators, nutrient cycling, etc.). In short, everything that goes into and comes out of the water affects how the ecosystem functions. Keep this in mind and let it guide your actions when you are on the water.

2 Prevent the Spread of Aquatic Hitchhikers

By following a few simple procedures each time you leave any lake, stream, or coastal area, you can stop the unwanted spread of harmful aquatic hitchhikers (such as invasive species or diseases). Remove any visible mud, plant, or animal life and eliminate water from equipment before transporting your fishing equipment. Be sure to clean and dry everything that came into contact with water (boats, trailers, equipment, clothing, dogs, etc.) when you move from one fishing spot to another.

3 Maintain Older Fish within the Population

Scientific evidence indicates that larger and older fish are important for sustaining the population because fecundity (how many eggs a fish can lay) is proportional to body weight and age. Everyone wants to catch the biggest fish possible, but taking larger females out of the population may have negative impacts on future generations of fish. For example, a 12lb. female striped bass may produce about 850,000 eggs whereas a 55lb. female produces almost 5 times that amount!

4 Be Aware of Spawning Seasons

Different fish species spawn at different times of the year, usually triggered by water temperature (which is affected by the season and air temperature). Plan your fishing trips accordingly as not to disrupt the spawning behaviors of the fish you are looking for. Know when and where spawning occurs so that you interfere as little as possible. If you fish during a spawning period, make an effort to release your catch unharmed. Visit nmfs.noaa.gov/fishwatch for spawning information.

5 Understand the Relationship between Size and Age

Fishing regulations are often calculated based on information about how many fish of a certain age are in the population. Population demographics help fisheries scientists understand how many adults can be estimated to have already replaced themselves through reproduction. Many fish are not sexually mature until age class 2 or 3, and some species, like spiny dogfish, are not mature until they are age class 11 (males) or 20 (females). The best way to estimate fish age without laboratory tests is by length. Even though yearly length restrictions may change, these limitations are carefully established based on biologists' understanding of how many fish of what age need to remain in the water to make sure that the population remains stable.

6 Reduce Post-Release Mortality

Reducing the stress on a fish after capture could be the difference between returning a fish into the water that will live and one that will die. There are many studies that indicate that stress caused by harsh handling of fish can result in severe harm and death post-release (due to soft flesh tears; removal of protective skin coating; fatigue leading to easier predation). Remember: fish are subject to a variety of injuries when caught.

A. Choose fishing gear wisely

Fish swallow hooks and lures in many ways and removing a hook is not always easy. Have a net on board to reduce the pressure put on the fish in case the fish was gut- or eye-hooked. Also, use circle hooks when appropriate—they reduce post-release mortality and are easier to remove because they are designed to snag the jaw.

B. Know how to handle a fish

If a fish is too small to be kept, avoid lifting it into the air and try to leave it laterally in the water while releasing it. Handle the fish as little as possible to reduce the amount of stress placed on the fish after its capture. Most fish rely on "slime" on their skin to help them resist disease. Excessive handling removes this protective layer, making them more vulnerable to infection.

7 Participate and Share Knowledge in Science and Management

If fishing is important to you, then share what you know with those involved in making decisions about it. Marine fisheries are managed by regional multi-state councils that hold public meetings where plans are formulated for how to manage fisheries (e.g. setting bag and size limits). It is also important to provide your expertise and skills to helping scientists understand more about how marine ecosystems work so that regulations can be fair and informed.

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