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Are Current Efforts Sufficient to Ensure Healthy Fish Populations?

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The maintenance and conservation of fish and wildlife populations in landscapes managed for timber production is a contemporary stewardship requirement and a challenge for forest managers. Best management practices (BMPs) have been developed to meet these challenges. Most BMPs were developed starting in the 1970s so the full impact and the success of those BMPs are not fully understood. In the aquatic realm, BMPs have focused on harvest restrictions in riparian zones and on techniques for minimizing sediment from roads and road-stream crossings.

At the American Fisheries Society (AFS) meeting in St. Louis, Missouri, in 2001, a symposium entitled "Reflections on Forest Management: Can Fish and Fiber Coexist?" was convened to address the efficacy of contemporary BMPs. Since 2001, there not only has been considerably more research, but the actions taken in the 1970s have had more time to demonstrate benefits to fish and habitat. To evaluate those developments, another symposium was convened at the 2011 annual meeting of the AFS in Seattle, Wash.

PHOTO COURTESY OF BOB DANEHY

A river flowing through a second-growth forest. Note there is little instream structure and buffers are dominated by hardwoods.

As with the first symposium, the 2011 version was well attended and had speakers from across North America to address the responses of fish populations to contemporary timber harvest practices. The symposium provided updates and new information to assist in ongoing discussions on the effectiveness of existing forest practices regulations. Though debate rages over the role of forest practices in the observed declines of anadromous fish in the PNW and Northeast, there also are concerns in the species-rich waters of the southeast United States and elsewhere in North America. Speakers focused on fundamental issues such as the influence of physical factors on aquatic organisms in managed landscapes, applied issues such as the effectiveness of BMPs in various settings across North America, and specific fish responses to management actions.

In this issue a set of short review papers summarizes the symposium. These papers present a broad overview to allow an understanding of how we arrived at the current condition and what challenges remain, and close with

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Healthy Fish Populations

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a question on whether current efforts are sufficient to ensure that fish persist and thrive on managed landscapes. A more comprehensive effort is in development as a book based on the symposium, which will be published by the American Fisheries Society.

Historical context

Human settlement throughout North America depended on forest resources for the development of communities. Exploitation accelerated in the mid- to late-1800s so that by the mid-1900s little of the primary forest remained. The technologies and the mindset of early harvesting are considered crude and destructive when compared to contemporary notions of stewardship, multiple use, and sustainability.

Logging typically occurred to the edges of streams and streams themselves were primary conveyances for bucked logs from those watersheds. While these practices did not occur everywhere, they have been well documented and those historic practices to a large extent underlay many of the problems we face today. Riparian forests are not able to fully shade streams, and particularly in larger rivers, material removed to allow movement of logs is centuries away from being naturally recruited and large enough to create instream habitat. In addition, roads were constructed both directly in the channels of streams and on or near the floodplains of adjacent rivers to serve as mainline haul roads.

Criticism of these misguided logging practices may seem justified, but early loggers operated under very different circumstances. There were few of the anthropogenic pressures on aquatic systems at the time, so the survival or conservation of fish populations wasn't considered an issue. With history behind us, the challenge that confronts planners, foresters, and biologists today is, given all those past actions, can fish and fiber coexist?

The symposium addressed that. One central theme in the symposium was development, implementation, and evaluation of BMPs. In most jurisdictions in North America BMPs have been in place for about 30-40 years, long enough to have had a significant impact on stream habitats and biota. In commercial landscapes of western Oregon, for example, that means that

PHOTO COURTESY OF BOB DANEHY

A managed forest in the Oregon Cascade mountains with a range of stand ages across the landscape.

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trees along streams with riparian buffers are between 30 and 80-100 years (50- to 70-year stand at the advent of riparian protection). Therefore, in those landscapes shade levels and water temperatures are improving every year.

Is it possible that the broad-scale conservation efforts of federal agencies, the improvements in mainstem water quality for all land uses, and the forest practices rules with their associated BMPs have provided threatened fish populations some hope for improvement? Or does the legacy of past practices and the continued pressures of expanding human populations render such hopes moot? The symposium explored those possibilities and in the following articles we provide a brief overview of the factors that fish need and the management practices developed to sustain them. ◆

PHOTO COURTESY OF BOB DANEHY

This river shows the effects of earlier harvest practices. The riparian buffer offers little shade and has a large hardwood component. The stream channel lacks complexity because of lack of large wood or other structure.

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