

## COLUMN: GUEST DIRECTOR'S LINE

### Fish Management Chemicals Subcommittee

Following the recent affirmative reregistration decisions for rotenone and antimycin, the Fish Management Chemicals Subcommittee reflects on previous accomplishments and future challenges.

# Stewarding Piscicides as Tools in Fish Management: AFS's Role in Assuring Future Availability in a Changing World

Product stewardship is a concept where environmental protection centers on the prudent use of the product, and everyone involved in the use of the product, is asked to take responsibility for reducing its environmental impact. This concept is a natural fit for the piscicides rotenone and antimycin, since their use is often controversial because of environmental and public health concerns. Those not practicing stewardship often end up dealing with time-consuming public relations and environmental regulatory problems (see *Fisheries* 25(5):22-23; 27(6):10-18; 30(4):29-31; 30(5):10-19; 35(2):61-71). Since the 1980s, their use has been challenged, halted, and discouraged in many areas of North America. In 1993, following AFS symposia on fishery chemicals, the need to respond to these concerns and issues and develop stewardship programs was recognized, and the Fish Management Chemicals Subcommittee (FMCS) was organized under the Task Force on Fishery Chemicals. The goals of the FMCS are to provide (1) leadership in the learning and training of practicing fishery professionals on the safe, effective and prudent use of piscicides and (2) stewardship of piscicides in attaining overall ecosystem balance. These goals are complementary to those of the AFS Strategic Plan of becoming a leader in the conservation of fisheries resources and facilitating learning and training for practicing professionals.

Rotenone and antimycin have been used by fishery managers to remove "undesirable" fish from lakes and streams for more than 50 years, although the definition of "undesirable" has changed considerably with shifting conservation

values and understanding of ecosystem function. Previously, piscicides were used almost exclusively for creating and maintaining fisheries comprised of game species, sometimes at the expense of native species. Now the focus has begun to reverse, and more common objectives today are restoring native species, eliminating invasive alien species, and maintaining natural biodiversity in native ecosystems. Nobody would have thought of the idea of using rotenone to remove nonnative game fish for the restoration of native amphibians 40 years ago, although the Lawrence Livermore National Laboratory in California did just that in 2006.

In 1997, the FMCS obtained the first of several grants for rotenone stewardship from the U.S. Fish and Wildlife Service (FWS), Division of Federal Aid to determine current

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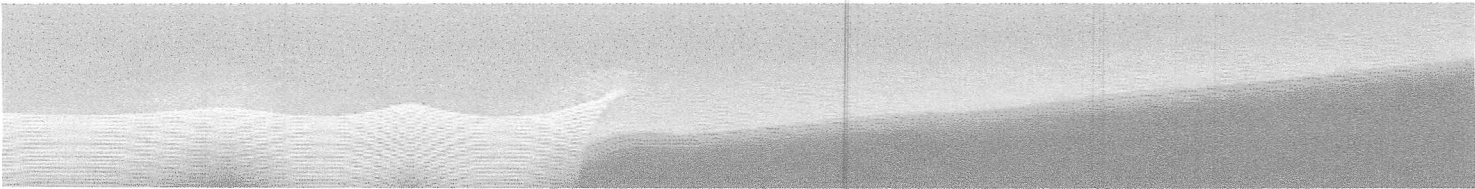
use patterns, issues and restrictions, and to use this information in the development of a technical and administrative guidelines manual, the *Rotenone Use Manual*. Following the symposium entitled "Rotenone in fisheries management: are the rewards worth the risk?" at the 2000 annual AFS meeting, the "Rotenone Stewardship Program" was established. The objectives of the Rotenone Stewardship Program

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are to assure the safe, effective and prudent use of rotenone by fishery professionals, inform the public of rotenone's benefits and risks, provide up-to-date information to fishery professionals on all aspects of rotenone use, and develop proactive strategies for rotenone's continued use. Over the years, the FMCS has been involved in many aspects of rotenone use from native fish restoration, including the development of piscicide information for the general public, addressing public health and environmental concerns, and most recently providing input to the development of water quality discharge permits. Much of this information has been published in professional journals and magazines and is available on the Rotenone Stewardship Program website at [www.fisheries.org/units/rotenone](http://www.fisheries.org/units/rotenone).

In 2000, FMCS obtained administrative funds from the FWS Wallop-Breaux Sports Fish Restoration Program to assess the current and potential use of antimycin in fisheries and its potential for reregistration (see *Fisheries* 27(6):10-18). Although not used as extensively as rotenone,



it was used by the catfish farmers for scaled fish control and by some fish and wildlife management agencies for the restoration of native species. During the assessment, several issues were identified including the lack of adequate instructions on the product labeling. To correct this void, the FMCS wrote the *Fintrol® Stream and River Use Monograph* and the *Fintrol® Pond, Lake and Reservoir Use Monograph*; both can be downloaded from the AFS website at [www.fisheries.org](http://www.fisheries.org).

In 1988, the U.S. Environmental Protection Agency (EPA) placed all pesticides including rotenone and antimycin registered prior to 1984 into a reregistration process. The process required acute and chronic toxicity and environmental fate and behavior data to support the generation of assessments to estimate risks on human health and the environment. Fortunately, the FWS had funded many of the needed studies for rotenone in the 1980s so these data were available. However, similar data were not available for antimycin, but the FMCS 2000 assessment of antimycin use (see *Fisheries* 27(6):10-18) convinced the EPA that some of these studies were not necessary at the present time for the reregistration to proceed. FMCS kept fisheries professionals informed on the progress of the reregistrations in several updates published in *Fisheries* in 2007 and 2008. After the EPA issued the Reregistration Eligibility Decision (RED) in March 2007 (EPA-738-R-07-005) authorizing the reregistration of rotenone, FMCS provided written comments to the EPA on proposed risk mitigation measures and labeling changes, and many state and federal fish and wildlife agencies followed suit by providing similar comments to the EPA. Significant concerns included enforceability and content of operation manuals versus labels, need for additional safety gear, allowable treatment rates and sites, chemical deactivation, and restrictive application procedures. FMCS proposed alternative

risk measures to the EPA at an August 2008 meeting that were practical, and limited rotenone exposure; these were ultimately accepted by the EPA. There were similar issues with antimycin, and the FMCS provided similar comments to the EPA after they issued the antimycin RED in May 2007 (EPA-738-R-07-007). As a requirement for the reregistration for rotenone, FMCS developed the *AFS Rotenone Standard Operating Procedures (SOP) Manual*. This was written in conjunction with the EPA and rotenone registrants using FWS funding.

In 2001, FMCS began discussing the need for training professionals in piscicide use, and in 2003, in cooperation with FWS, developed a training course with the intent that the training would standardize techniques for the application of piscicides using the *Rotenone Use Manual*, and more recently, the *Rotenone SOP Manual* as guides. FMCS, in conjunction with Utah State University (USU) and AFS USU Student Subunit of the Bonneville Chapter, offer a week-long training course on piscicides entitled "Planning and Executing Successful Rotenone and Antimycin Projects." The course focuses on soliciting public involvement, project planning, environmental and applicator safety, and application and deactivation techniques. The course has also been given in other locations including Arizona, and the course is also planned for New York in 2011. The tenth class was given in 2010, and over 150 fishery professionals have been trained to date. EPA's REDs for rotenone and antimycin recommend that applicators receive training on the use of piscicides. A schedule of current AFS classes can be viewed at [www.fisheries.org/units/rotenone](http://www.fisheries.org/units/rotenone).

A number of issues have developed over the years including adequate training and guidance for applicators, public education in an era of public concern, unscientific assessment of impacts, indiscriminate acceptance of non-chemical alternatives, duplicative

and often counterproductive environmental regulations, and difficult acceptance of environmental tradeoffs. To facilitate better communication among fishery professionals on these issues, FMCS sponsored three symposia at AFS national meetings: (1) The Role of Environmental Stewardship in Shaping the Use of Fishery Management Chemicals (2002); (2) National and International Challenges and Lessons Learned on Fish Management Chemicals (2005); and (3) Global Issues and Policies Affecting Ecosystem Restoration Projects using Rotenone and Antimycin (2007).

In 2009, the Sixth Circuit Court mandated that the EPA develop wastewater discharge (National Pollution Discharge Elimination System (NPDES)) permits for the application of pesticides in and around water. The proposed permit conditions were distributed this year, and NPDES permit conditions will be finalized in 2011. This may prove to be the most challenging task yet for the use of piscicides: crafting NPDES permit conditions that do not require inappropriately low treatment dosages nor restrict the size of the treatment zone areas in an attempt to "minimize pesticide discharges into waters. If target fish survive and reproduce and ultimately repopulate the treatment area after treatment, then a considerable quantity of piscicide as well as time and expense would be wasted. Such potentially counterproductive restrictions have already been permitted in Vermont and California by water quality agencies. There were also significant process, legal, and jurisdiction issues associated with the proposed NPDES permits, too extensive to discuss here.

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