Organized 1870 to Promote the Conservation, Development and Wise Utilization of the Fisheries

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Water Docket
U.S. Environmental Protection Agency
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1200 Pennsylvania Avenue, NW.
Washington, DC 20460
Attention: Docket ID No. EPA–HQ–OW–2010–0257

The American Fisheries Society (AFS) Fish Management Chemicals Subcommittee (FMCS) is engaged with issues affecting the use of piscicides by fish and wildlife management agencies. The AFS FMCS has provided the following to the U.S. Environmental Protection Agency (EPA): (1) extensive comments during the reregistration activities for rotenone and antimycin during the past ten years; and (2) development of the Rotenone Standard Operating Procedures (SOP) Manual[1] in cooperation with the EPA. The AFS FMCS has also written articles and monographs on rotenone and antimycin use in fish management. The FMCS offers the following six comments and areas of concern related to the Aquatic Nuisance Animal Control proposed draft National Pollutant Discharge Elimination System Permit for Point Source Discharges from the Application of Pesticides (Federal Register Vol. 75(107): 31775-31785, June 4, 2010). Bold text refers to specific sections in the 2010 NPDES Pesticide General Permit Fact Sheet.

2.1.1: Use the lowest effective amount of pesticide product per application and optimum frequency of pesticide applications necessary to control the target pest, consistent with reducing the potential for development of pest resistance.

1. Comment: The draft permit requires all operators to minimize pesticide discharges into waters by using the lowest effective amount of pesticide product per application and optimum frequency of pesticide applications necessary to control the target pest. This concept of minimizing pesticide discharges using technology-based effluent limitations has been implemented for all rotenone products used for fish control; the FIFRA label and the Rotenone SOP Manual SOPs 5, 6, 7, 8, 9, 11, and 12 include control measures to minimize discharge of rotenone to the extent feasible in meeting the treatment objectives.

   However, requiring the lowest amount of pesticide, in the smallest area possible, can place the treatment objective at risk for failure because of less than prudent pest control strategies. Examples include requiring inappropriately low treatment

[1] Finlayson, B., R. Schnick, D. Skaar, J. Anderson, L. Demong, D. Duffiled, W. Horton, and J. Steinkjer. 2010. Planning and standard operating procedures for the use of rotenone in fish management – rotenone SOP manual. American Fisheries Society, Bethesda, Maryland.

dosages and inappropriately restricting the size of treatments zones. For example, Vermont issued permits for lamprey treatments on Lake Champlain and in some instances limited the lampricide (TFM) application rate to 1.0 times the minimum lethal concentration (MLC) for the target species which is an inappropriate low treatment concentration. At that concentration, natural dilution, attenuation at the beginning and end of the application, and other environmental factors can cause the realized, instream concentration for fall below the MLC. Normally, TFM is applied at 1.5 times MLC to accommodate that concern. Based on other studies, applying at too low of a dose can encourage resistance because the resistant individuals survive and reproduce but the sensitive individuals do not. It has been reported that resistance to rotenone was developed in mosquitofish where repeated sublethal dosages over time allowed survivors, naturally higher tolerance to rotenone, to survive and breed. In restricting treatment area size, the State of California permitted a rotenone application that had excluded a headwater lake and other areas that may have provided refugia for the target species. If the target fish survived and reproduced and ultimately repopulated the treatment area after treatment, then a considerable quantity of piscicide, as well as time and expense would be wasted. In both examples, justifications for the limitation on the permit were to minimize pesticide use; in both instances, the success of the treatments was inappropriately placed at risk.

Recommendation: Following references to minimizing the quantity of pesticides used, add text stating that following rotenone product labels and the Rotenone SOP Manual are consistent with this concept and the dose and treatment area should not be minimized to the point of jeopardizing the potential success of the treatment.

2.2.3.3.2: Reduce the impact on the environment and non-target organisms by evaluating site restrictions, application timing, and application method in addition to applying the pesticide only when the action threshold has been met.

2. Comment: The permitting conditions would require numerical density thresholds for the abundance of the target species that trigger a treatment. For certain Invasive Alien Species (IAS), any density is not tolerable and threshold densities can be very difficult to establish for “Aquatic Nuisance Animal Control” activities because of other factors unrelated to density. The proposed conditions would set expectations that would be difficult for fish and wildlife management agencies and regulators to reconcile. State and federal fish and wildlife management agencies are legally required to conserve, maintain and utilize natural resources to ensure the continued existence of all species and the maintenance of sufficient resources to support reasonable recreational fisheries; many of these agencies have specific powers to take any species which is unduly preying upon a desirable species, an introduced species, or harboring a highly contagious disease. It appears that the proposed conditions, specifically the action thresholds, interfere with these responsibilities. Immediate action must be taken

to prevent the spread of an IAS into adjacent water since the success of eradication proportionally decreases as IAS distribution and time increases.

a. Setting density thresholds for fish abundances is problematic because of the nature of the programs and difficulties inherent in sampling fish (as compared to mosquito larvae). A numerical threshold alone does not determine which areas require treatment. For example, the numerical goals for sea lamprey control on Lake Champlain are to reduce the rate of lamprey wounds on lake trout and salmon to, or below, 25 and 15 wounds per 100 fish respectively. However, Salmonid wounding targets cannot be directly translated to a density of lamprey larvae at individual treatment locations. For example, agency staff may determine that treating a tributary with low larval densities, but a large quantity of habitat, is more important than treating a different location with high larval densities but only limited habitat. Selection of treatment zones is further complicated by possible impacts to endangered species (potentially present in one location but not another), the number and nature of water users at different locations, and numerous physical and water chemistry considerations that can affect the efficacy at various locations.

b. Similar complications are involved with setting numerical targets for rotenone and antimycin treatments to eliminate IAS fishes. Determining densities on fish in a waterbody is extremely difficult, especially when abundances are low (as in a recent introduction of an IAS fish) because nets and electrofishing gear are not effective at identifying presence at low densities. Often the trigger for treating will be any number of individuals of an IAS fish because the potential for successful eradication is best while abundances and distributions are low. Beyond the actual target number the issue also becomes the physical extent of the treatment zone: How much sampling is required to extend the treatment to connected locations that the IAS fish have access to or where the IAS fish was historically present but recent netting and electrofishing cannot show their physical presence? Fish may move into and out of such areas randomly, or may be continually present in low, difficult to detect, numbers.

Recommendation: Add text acknowledging that numerical thresholds may be based on data other than simple density of the target species including the best professional judgment of the fish and wildlife management agency.

2.2.3.2: Prior to the first pesticide application covered under this permit that will result in a discharge to waters of the U.S., and at least once each year thereafter prior to the first pesticide application during that calendar year, you must select and implement, for each pest management area, efficient and effective means of pest management that minimize discharges resulting from application of pesticides to control aquatic nuisance animals. In developing these pest management strategies, you must evaluate the following management options,

considering impact to water quality, impact to non-target organisms, pest resistance, feasibility, and cost effectiveness: No action; Prevention; Mechanical/physical methods; Biological control agents; and Pesticides.

3. Comment: Requiring all fish and wildlife agencies to select and implement for each pest management area efficient and effective means of pest management that minimizes discharges will have potential unintended consequences of limiting essential treatments for removal of IAS fish, potentially leading to major, permanent alterations of native ecosystems. Although the proposed NPDES permit considers these activities as IPM, these are normally associated with an environmental assessment, and in this case, one that focuses primarily on water quality. The proposed NPDES permit conditions "trump" all other environmental considerations including the continued existence of native fish and wildlife resources. Further, the references listed for Aquatic Nuisance Animal Control are of very limited value in the use of piscicides.

   Recommendation: Add text acknowledging that these activities should be practiced to the extent feasible without seriously jeopardizing the eradication efforts for an IAS fish and protection of native ecosystems.

Aquatic Nuisance Animal IPM Practices

Pesticide Use

Conduct surveillance prior to each application to assess the pest management area and to determine when the action threshold is met that necessitates the need for pest management. Reduce the impact on the environment and non-target organisms by evaluating site restrictions, application timing, and application method in addition to applying the pesticide only when the action threshold has been met.

2.2.3.1: Prior to the first pesticide application covered under this permit that will result in a discharge to waters of the U.S., and at least once each calendar year thereafter prior to the first pesticide application for that calendar year, you must do the following for each pest management area, as defined in Appendix A. Operators must identify the pest problem at least once each calendar year prior to the first application for that calendar year Part 2.2 of this permit requires operators above the annual treatment area threshold to identify the pest problem; to evaluate and implement efficiently and effectively pest management; and to properly use pesticides. Operators are required to perform each of these permit conditions prior to the first pesticide application covered under this permit and at least once each calendar year thereafter.

4. Comment: The draft permit expects less than one-year-old data on densities of the target organisms. When IAS fishes establish populations sustained by natural reproduction, it would be extremely unusual for them to disappear. Therefore reclamations using piscicides are often justifiable based on data that is many years old. For sea lamprey treatments, collections are made in summer to

plan treatments for the fall of the following year. The logistics of planning treatments may preclude same year responses; the biology of the target species (about 4 years in the larval stage) is such that 1+ year old data is pertinent to directing treatments. In contrast, the mosquito larval stage may last days, not years, with multiple generations (and large swings in populations) within a short period of time.

For fisheries management agencies, action thresholds for target species will vary with the situation and are difficult to generalize. Even in similar situations, the action thresholds may be different. For example, when the target organism is a fish that hybridizes with a non-target species, the action level might be some combination of degree of hybridization and densities of target organisms. In another situation the target organism may be a predator on non-target organisms, but setting an action threshold based on density of target organisms is unrealistic because other management actions (e.g. angler harvest) may act to mitigate high densities of target organisms or ecosystem dynamics (habitat overlap, species interactions, alternate prey species, etc.) may render a density appropriate in one circumstance but not another.

Concerning rotenone and antimycin treatments, streams are normally treated until a subsequent treatment yields no fish. Two treatments are the minimum necessary to remove all fish from a stream, and three or four treatments are sometimes required. Each treatment is normally separated by a season, if not a year; doing so increases the likelihood that fish surviving one treatment will move into habitat that is more susceptible to treatment. However, it is likely that the stream may appear fishless following the first treatment since visual surveys, traps, and electrofishing do not provide definitive proof of complete elimination. Thus, the requirement of exceeding an density threshold for fish will likely result in streams that still require subsequent treatments going untreated with resultant eradication failures.

Recommendation: This one size fits all draft NPDES permit will not work for all aquatic uses of pesticides. Individual permits should be developed for each of the four pesticide use profiles identified in the PGP (see below). Professional judgment of the fish and wildlife management agency should dictate control strategies, not vector biology principles.

1.1. Eligibility: Only operators meeting the eligibility requirements outlined in the permit may be covered under this permit. The activities covered by this permit include the use patterns and types of pest control activities described in the vacated 2006 rule. Specifically, this permit covers the discharge of pesticides (biological pesticides and chemical pesticides which leave a residue) to waters of the U.S. resulting from the following use patterns: (1) Mosquito and Other Flying Insect Pest Control; (2) Aquatic Weed and Algae Control; (3) Aquatic Nuisance Animal Control; and (4) Forest Canopy Pest Control.

5. Comment: This is likely too broad of a set of categories to be covered by one permit. The recent reregistration of rotenone and antimycin by the EPA now requires all applicants to follow standard operating procedures on the labels and in manuals to minimize nontarget (including human) exposure. The new procedures in these manuals and on the product labels are technology-based effluent limitations considered best management practices that act as control measures to significantly reduce the discharge of rotenone and antimycin into surface water. The application of both rotenone and antimycin now requires the deactivation of the active ingredient with potassium permanganate at the end of the treatment area, the selection of dosage using a bioassay with target fish in site water, public notification and treatment area restrictions, safety training and hazard communication, and monitoring.

   Recommendation: The manuals for rotenone and antimycin should suffice as technology-based effluent limitations for PGP issued for these materials.

5. Pesticide Discharge Management Plan (PDMP): Part 5 of this permit requires any operator who is subject to Part 2.2 of this permit (i.e., one who is required to submit an NOI) to develop a Pesticide Discharge Management Plan (PDMP).

5.1. Contents of Your PDMP: The PDMP prepared under this permit must meet specific requirements under Part 5.1 of the permit. Generally, operators must document the following: (1) a pesticide discharge description of control measures; (4) schedules and procedures for application rate and frequency, pest surveillance, assessment of environmental conditions, spill prevention and response, equipment maintenance, adverse incident response, and pesticide monitoring; and (5) any eligibility considerations under other federal laws.

6. Comment: In the case of fish management agencies, much if not all of the information required in a PDMP is routinely presented in Environmental Assessments and/or treatment planning documents. Having to repackage this information does not seem like an efficient use of government resources.

   Recommendation: Flexibility should be allowed in the General Permit to allow agencies to submit these documents in lieu of, or as functionally equivalent documents to a PDMP. This further necessitates the need for specific NPDES permits for each of the four pesticide use categories.

The AFS FMCS appreciates the opportunity to submit comments on this issue and requests that we be included in any future correspondence regarding our comments and the outcome of the NPDES PGP permit. If you need further information, please contact Brian Finlayson at briankarefinlayson@att.net or Don Skaar at dskaar@mt.gov .