

CHAPTER 6. FISH RENOVATION POLICY

INTRODUCTION

A total renovation of a lake's fisheries population should be done as a last resort and all other less drastic measures should be utilized first, including supplemental stocking, summer or winter drawdowns, habitat and watershed improvement, physical manipulation and regulation changes. Total renovation is a time-tested and efficient fisheries management technique. Response of fish populations in a new-lake situation is predictable and will succeed in producing excellent results within two or three years.

OUTLINE

NEED FOR LAKE RENOVATION

- Low catch rates (<0.5 fish/angler) of game fish for three years
- Large numbers of rough fish (>150 lbs. Per acre)
- Large numbers of stunted panfish

COMMUNICATIONS

- Intra-departmental
- Stakeholders
- Public meeting

PERMITS

- Permit to apply chemical—Water Quality Bureau
- Water release permit—Flood Plains Bureau
- Permit from county landfill to dispose of fish

PLANNING

- Obtain hydrographic maps and aerial photos of the lake
 - Calculate volume of lake and amount of chemical to treat at desired concentration
 - Divide lake into equal parts for treatment
 - Determine amount of chemical needed in each lake segment
- Treatment of private waters in the watershed
 - Determine if undesirable fish are present
 - Obtain permission from landowner
 - Obtain fish for restocking of private waters

PROMISCUOUS OR LIBERALIZED FISHING

- Definition of promiscuous and liberalized fishing
- Publication of liberalized or promiscuous fishing

FISH SALVAGE

- Determine number of salvageable fish
- Collect fish using suitable gear and transport to chosen lakes
 - Collect largemouth bass with electrofishing boat
 - Collect channel catfish with baited hoop nets

HABITAT IMPROVEMENTS

Draw up comprehensive plan for habitat improvement
Dewater lake, if possible for effective habitat work
Assemble and coordinate other public personnel and volunteer groups to construct habitat.

EQUIPMENT

Lake applicators

Boat and motor

- Boat bailer, sprayer or pump for deep water application
- Tank (not galvanized steel) to mix and dilute chemical
- Buckets or pumps for filling tanks and mixing chemical
- Bung wrench to open drums
- Safety gear: pfd, rubber gloves, rain gear and goggles or face mask
- Bucket of clean water (to rinse chemical from skin in case of accident)

Watershed applicators

- Backpack sprayer or drip station barrel
- Safety gear: rubber gloves, rain gear and goggles or face mask
- Waders or hip boots
- Buckets for mixing chemical and filling backpack sprayers/drip stations
- Vehicles to transport crews and chemical

DEWATERING

Dewatering should be considered because of reduced chemical cost and a better chance of success

Dewatering can be accomplished by adjusting outlet gate or by siphoning

Public and private landowners adjacent to lake should be kept informed of plans to dewater the lake

CHEMICAL RENOVATION

Partial or selective treatment

Total renovation

Time of year

Calculate amount of chemical needed

Acquire chemical well in advance of project

Carefully plan renovation of lake and watershed

FISH CLEANUP

Dead fish will be cleaned up only by necessity

Dead fish will be picked up as safety dictates or in waters with high public use

Fish will not be picked up after natural kills or small renovations in remote areas

RESTOCKING

Restocking of fish will be done according to established procedures and rates as outlined in the policy manual

Any deviation from the policy manual should be cleared with the district supervisor and Bureau chief

Hatchery branch shall be notified of the renovation well in advance to allow for additional production needs

OTHER FISH MANIPULATION TOOLS

Summer drawdown for fish population manipulation may be considered as an alternative to chemical population reduction. Summer drawdown will concentrate forage size fish, usually stunted panfish populations, and increase their vulnerability to predation. This concentration also increases the angler catch of larger individuals of the problem species, but decreases the bass catch because of the increased availability of prey. Best results occur if the drawdown occurs in June and decreases the volume of the lake to 50 percent of the full lake volume.

Summer destratification has been used in the past as a tool to control unbalanced panfish populations. Axial flow pumps or pumped air aeration systems can be used to destratify the lake; this action should be initiated in April and continue for at least six months to have the desired effect. Candidate lakes should be destratified every other year to obtain positive results. This tool has been used to increase the growth and improve the size structure of both panfish and largemouth bass populations.

Netting is an expensive and time-consuming method of fish population control. There are advantages to using nets as a management tool: you can remove the target species without damaging desirable fish populations, thin stunted populations, collect fish for restocking, this activity is popular with the public, will eliminate fish cleanup and causes a minimal disturbance to public areas. The disadvantages are substantial: it takes an enormous amount of time and effort to achieve the desired effect and you will never eliminate an undesirable species. This technique may be reasonably effective in very small lakes or ponds.

NEED FOR LAKE RENOVATION

It should be obvious to the biologist which lake is in need of total renovation due to their sampling regime. Several reasons for renovation include low catch rates of game fish, an extremely high standing stock of rough fish, an unbalanced game fish population composed of a high percentage of stunted or slow-growing panfish or the introduction of exotic species such as yellow bass, white perch, common carp, or Asian carp. An intensive survey that estimates the population and biomass of the problem species may be in order. Once the management biologist has decided that a complete chemical renovation is necessary, these steps should be taken prior to and following the renovation.

COMMUNICATIONS

Informational exchange is an important part of any lake renovation. The district supervisor should be the first to be informed of the intent by the biologist to renovate a lake. The supervisor should be informed of the problem and also be aware of all of the steps taken prior to coming to the conclusion of renovation.

Knowledge of lake ownership, i.e. state, county or city is required and informing representatives of the governing body about the renovation should be made well in advance of the project.

A public meeting should be held in the vicinity of the lake at least six months prior to the actual renovation and the public given a chance to have input into the project. Some of the topics of the public meeting should be, but are not limited to: justification for the renovation, fish population parameters of the lake, scheduled work plan, restocking efforts, and liberalized or promiscuous fishing dates. Local media including newspapers, radio and television stations as

well as the I & E Bureau of the DNR should be notified of the public meeting and the pending renovation.

PERMITS

At least three months prior to the renovation, permits to apply the chemical should be obtained from the Water Supply Section of the Water Quality Bureau of the DNR (515-725-0360). If the plans include lowering the water level of the lake, a water release permit should be obtained from the flood plains section of the DNR (515-281-6930). The biologist will be asked to locate and report all wells within a designated distance of the lake to the local municipal drinking water supply managers in order to prevent contamination of the drinking water of local residents or facilities. A permit may also be needed from the county landfill or county sanitarian to deposit dead fish into the county landfill if fish pick up is required. It is presently unlawful to bury dead fish and the county landfill is the only viable option for their deposition.

PLANNING

The management biologist and his team must plan carefully for the renovation to be professional and successful. Electronic aerial photos and contour maps are available from numerous sources <Link>. Hard copies of these electronic images should be printed for use in planning and logistics. With these maps, the amount of chemical needed to treat the lake and watershed should be calculated. The lake and watershed should be divided into areas that will take similar amounts of effort to treat. Two or more person teams should be organized with clear instructions as to the assigned task(s). Lake and watershed maps with zones carefully marked along with travel instructions should be prepared for each work team. These watershed maps and directions are very important for workers treating streams and ponds to ensure areas are treated efficiently and in the proper order. If chemical application involves work on private land then landowner permission needs to be secured ahead of time. Arrangements must be made with park managers or rangers to have areas to store chemical and stage the project. For in-lake treatment barrels of chemical need to be delivered to boat ramp areas where tractors are available to load boats and aid in getting boats and trailers in and out of the water. Watershed treatment trucks need to be loaded with the proper amount of chemical and equipment needed to treat selected zones. Hatcheries should be notified by December of the year prior to the renovation in order to insure the proper fish for restocking.

PROMISCUOUS OR LIBERALIZED FISHING

Lakes scheduled for renovation are commonly opened up for promiscuous or liberalized fishing. Promiscuous fishing involves any technique or gear, other than explosives, chemical or stupefying substances that can be used to harvest fish that would otherwise be wasted. Commonly, promiscuous fishing entails the use of nets and seines to capture fish. Liberalized fishing is the relaxing of angling laws including bag and length limits, method of take and the number of rods that can be used at one time. A positive public relations image and a reduction in fish cleanup are advantages of promiscuous and liberalized fishing. Relaxed fishing laws prior to the renovation are to be coordinated with the local DNR conservation officers, pertinent resource managers and the central office. Promiscuous fishing is typically opened two to three months before scheduled renovation whereas liberalized fishing is opened after April 1st. Both liberalized and promiscuous fishing requires the individual to have a valid fishing license in their possession. Publication of promiscuous or liberalized fishing activities should be accomplished through local public media sources and the I & E Bureau of the DNR.

FISH SALVAGE

The fisheries biologist should determine the value of any portion of the fish population in the lake to be renovated. In most situations there are very low numbers of large bass or other predator fish that can be moved to nearby lakes in which they can provide a valuable function. These fish can usually be effectively collected with an electrofishing boat and hauled to the stocking sites. Sometimes high numbers of channel catfish can be hoop netted and hauled to lakes where they can provide fishing opportunities. In addition to the biological value, this activity does provide valuable positive public relations for the Department of Natural Resources. In the past, fish salvage and fish rescue was a far more important part of the fish renovation process but because of the large amount of time and effort expended for the number of fish actually moved it was decided that the cost benefit ratio was too high.

HABITAT IMPROVEMENTS

A comprehensive habitat improvement program should be initiated at all lakes that are totally renovated, especially if the lake has been lowered or dewatered. A detailed plan should be drawn up and cost estimates be obtained a year before the actual project takes place. Habitat placement procedures are usually easier and more effective when a lake is dewatered. Special attention should be given to shoreline rejuvenation, jetty construction, reef and island construction and riprap placement work in dewatered lakes. The biologist should coordinate with park managers, construction services engineers, and local DNR personnel that have access to heavy equipment for assistance in placing rock and other structure types in the dewatered lakes. Local fishing clubs, boy scout troops and other service organizations will often be eager to assist in assembling and placing habitat structures.

EQUIPMENT

All fish toxicant applicators should possess a commercial pesticide applicator permit for aquatic pest control. All label warnings and procedures listed on the toxicant containers should be read and followed. Equipment required for application of rotenone would include:

Lakes (maps)

- 1) boat and motor, 2) boat bailer or sprayer or gas pump for deep water application, 3) tank (to dilute chemical), 4) buckets or pump for mixing chemical and water, 5) bung opener, 6) rubber gloves, rain gear, life jackets and goggles or face mask, 7) bucket of clean water (to rinse chemical from face or skin in case of an accident).

Watershed (maps)

- 1) backpack sprayer (with spare tips and screens) and/or drip station barrel 2) rubber gloves, rain gear and goggles or face mask. 3) waders or hip boots 4) buckets for mixing chemical and water, 5) Careful planning is necessary to provide workers with enough trucks to get to their work areas.

DEWATERING

Dewatering prior to renovation is desirable, if possible, because of reduced chemical costs and increased probability of success. Dewatering in many lakes can be done by manipulating the lake's gated structure or planning the kill to coincide with spillway maintenance. The DNR

Construction Services Engineer for the area should be consulted of any attempt to adjust the gated structure or drawdown. In some situations, a siphon pipe can be used to draw off water to the desired levels; six to ten inch diameter flexible tile can be used to form the siphon. This procedure can be used to successfully remove two to three feet of water from the lake. When possible, completely dewatering a lake will significantly reduce chemical cost and help assure complete fish renovation. When lowering lake levels, downstream adjacent public and private landowners must be kept informed of plans in order to minimize negative effects.

CHEMICAL RENOVATION

Partial or Selective Treatments

In the past, partial and selective chemical renovation techniques have been used to decrease the fish density in order to provide additional food and space for slow growing fish populations. This technique has proven to be ineffective and has not been used for years by the Department. A partial kill may be used in investigative work, such as cove sampling, to obtain more complete samples of the fish community.

In the past two chemicals have been used for chemical renovations of lakes in Iowa: antimycin and rotenone. The use of antimycin has been discontinued because of safety reasons and the decision that rotenone was a more effective toxicant.

Total Renovation

Traditionally, rotenone treatments have been made in September, after Labor Day, to decrease conflicts with other water recreation and insure sufficiently high water temperatures to achieve total kills. The lake will detoxify and be safe for stocking fish in two to four weeks; the warmer the water, the sooner the lake will detoxify. Lowering a cage with live fish into the lake and checking them after several hours can determine if the lake is still toxic.

In recent years, total renovations using rotenone have been planned for late fall/early winter application to reduce the need for cleanup of dead fish and to reduce the amount of chemical needed. When water temperatures are below 40 degrees Fahrenheit, three parts per million of chemical is sufficient to totally eliminate all fish life. The ideal situation is to apply the chemical within a day or two of ice up. Rotenone under these conditions will stay toxic for up to three months and will assure a complete kill.

Concentrations of rotenone are based on an estimate of the volume (acre feet) of the body of water to be treated. These parameters can be easily calculated from electronic data that was acquired when the lake to be treated was mapped. With modern techniques it is a simple task to obtain accurate measurements of the lake volume at each one foot contour level.

After the volume of water to be treated is determined, the amount of chemical can be calculated. One gallon of liquid rotenone will treat one acre-foot of water at three parts per million. Rotenone should be acquired early and kept in an area where it will not freeze. Since the chemical usually comes in 30-gallon drums, which are heavy and awkward to move, arrangements should be made to store the chemical as close as possible to the lake. Follow label instructions in all phases of transporting, storing and handling the containers of rotenone, as well as the actual application.

Total lake renovations also involve the streams and ponds in the watershed. All streams and ponds located in the watershed of the target lake will be renovated. Streams with a continuous flow can be treated effectively with drip stations. The apertures should be adjusted to deliver the chemical at a measured rate and each drip station should be started at the proper time in order to drive the fish downstream and kill them efficiently. This should be done prior to treating the main lake. It is also important to treat all connected marshes and the shallow water areas in the target lake to eliminate unwanted fish and freshwater sources. Recent aerial photos are necessary to locate ponds and tributaries in areas in the middle of the section or some distance from roads or streets. All pond outflows (plunge pools) need to be checked regardless of water flows downstream from ponds. The plunge pools immediately downstream of ponds should be checked and treated with rotenone in order to remove areas of possible escapement of stream fishes.

Most lake applications of chemical should be made with boat bailers for shallow water and pumps to apply the toxicant to deep water (>10 ft). Marshy areas remaining in the lake basin should be treated with hand sprayers or high-pressure pumps. In ideal situations aerial application could be used from helicopters or small planes. All renovations should have sufficient manpower available to apply the total toxicant in less than 8 hours.

FISH CLEANUP

Because cleanup of dead fish is labor intensive and unpleasant, fish should be cleaned up only when necessary. Small fish kills in remote areas need not be picked up, but renovations in waters with high public use will require cleanup. In the past, fish were disposed of by giving them to any willing member of the public and were used as fertilizer in gardens, spread on crop fields or sent to rendering. New regulations require more careful disposal. All permits required for fish disposal should be acquired well in advance of the renovation.

RESTOCKING

Restocking following total renovations will be done according to established procedures and rates as outlined in the fish stocking chapter of the policy manual. Any deviations will be cleared through the branch supervisor. Advance planning and stocking requests are mandatory to allow hatcheries to anticipate production needs.