

DEC Proposal to Address Invasive Northern Snakehead Fish in Catlin Creek, Waywayanda, Orange County

DEC Proposes to use an Aquatic Pesticide to Restore Catlin Creek Waters and protect the Wallkill and Hudson rivers from Invasive Northern Snakeheads

Summary of and response to Public Comments

July 29, 2008

Background

Shortly after verifying the reported presence of the highly invasive Northern Snakehead Fish in the Town of Waywayanda, Orange County, the Department formulated a response plan and began to reach out to affected publics. Individual letters were mailed to riparian owners, a press release was issued, and a Public Informational Meeting was convened in early July. The purpose of these efforts has been to inform the public of the Department's proposed response and, as important, to gather information from local residents so that we could provide needed information and accommodate concerns.

Those who live at or near the site of this invasion will sustain a number of losses. The fish population that now exists in Ridgebury Lake, a portion of Catlin Creek and the other waters within the treatment area will be lost, at least temporarily. The peaceful atmosphere of the lakefront will be disrupted by the treatment itself. There will be some raising and lowering of water levels and application of a piscicide (fish pesticide) from boats and from personnel on foot. Immediately after treatment, fish carcasses will be collected from waters and shorelines throughout the treatment area. Once the treatment is complete, there will be a period of monitoring both the fishery (to ensure complete effectiveness in eradicating Snakeheads) and surface water quality.

The following summarizes the comments received and provides responses for each category of concerns. It also describes how the treatment plan has been modified to minimize impacts to residents.

Comments expressing concerns regarding impact to water supplies and wells

- ✓ What will be the impact to individual wells and public water supply wells that are close to the lake and ponds?
- ✓ Sampling of water supplies (private and municipal drinking water wells) needs to be done prior to taking this action.
- ✓ More emphasis on possible drinking water/well water impacts needs to be assessed by DEC.
- ✓ Monitoring wells are needed to assess impacts to groundwater. How can it be done?
- ✓ Will dead fish in the water pose a threat to wells? Especially if they aren't all collected?
- ✓ DEC needs to look at (investigate) the particular conditions of this system (including the connection to wells) before acting.
- ✓ More sampling analysis of this water system (Ridgebury Lake and Catlin Creek) needs to be done before using Rotenone (Prenfish). Wide range of conditions in the system, including a high level of organic material.

Responses:

Well Safety

The Orange County Health Department and NYS DOH have collected data about the private and community wells around Ridgebury Lake and Catlin Creek. Generally, the wells are deep and drilled well below the shallow bedrock and sealed consistent with accepted practice. These agencies have concluded that it is highly unlikely that any connection exists between local wells and Ridgebury Lake or the other areas to be treated. Furthermore, they found no evidence in these wells of contamination that could be caused by a connection with surface waters.

Other Chemical Compounds

The Department proposes to use a different rotenone product than initially planned. For a variety of reasons, a product known as CFT Legumine will be used instead of Prenfish. Public and proprietary information about CFT Legumine has been researched and no chemicals of concern are likely to be found at concentrations that could affect well or ground water. However, some other chemical compounds have been found in CFT Legumine (and in Prenfish) at times. So, as an added precaution, the actual batch of CFT Legumine purchased for use in Ridgebury Lake and Catlin Creek will be analyzed for all other reported chemicals prior to the treatment. The Department will verify that any such chemicals are safely below drinking water standards.

Carcasses

Fish and other organisms naturally die in all the waters of the state. Decaying organisms in lake bottoms should not pose any threat to wells. Nevertheless, Department crews will be removing all dead fish they can recover over the first several days. Carcasses will be transported to a permitted composting site run by NYS Department of Transportation in Highland, New York.

Comments regarding Rotenone and other chemicals to be used during treatment:

- ✓ Rotenone, and potassium permanganate - are they dangerous?
- ✓ What about the possible long term impacts?
- ✓ More research needed before Prenfish (rotenone) is used.
- ✓ What about the inert ingredients in Prenfish (rotenone) - possible toxicity?
- ✓ Long term degradation studies of Rotenone - has DEC looked at these (for intermediate compounds also)?
- ✓ Rotenone and possible connection to Parkinson's Disease.
- ✓ Concerned that water conditions in Catlin Creek will lead to this chemical degrading slower (lack of sunlight/weeds/turbidity/high carbon/low oxygen).
- ✓ Davis Lake treatment in California - very contentious issue, many problems experienced by local residents.

Responses:

Rotenone Safety

A study by Finlayson et al. in 2000 found the following:

“Millions of dollars have been spent on research to determine the safety of rotenone before approval of use from the U.S. Environmental Protection Agency (USEPA). Much of this research has been directed toward potential effects on public health. ... When used according to label instructions for the control of fish, rotenone poses little, if any, hazard to public health. The USEPA has concluded that the use of rotenone for fish control does not present a risk of unreasonable adverse effects to humans and the environment.”

Rotenone is the chemical toxic to fish in the pesticide product to be used in this treatment.

Rotenone breaks down very quickly and does not remain in the water long enough, or travel through sediments deeply or quickly enough, to contaminate wells. Given the water temperatures expected in August, rotenone will break down by half of its concentration within 48 hours. Therefore, after approximately two weeks time, the concentrations of rotenone will be safe for fish (the most sensitive organisms to rotenone). The concentrations toxic to fish and other gilled organisms are much lower than for all other organisms.

“The time for natural degradation (neutralization) of rotenone by hydrolysis is governed primarily by temperature” (Finlayson et al. 2000). Studies of the half life (the time it takes for the concentration to decrease by 50%) of rotenone in waters have ranged from 1.5 days to 13.9 hours at 20° to 24° C (68° - 75° F) respectively. The water in Ridgebury Lake and Catlin Creek in August is well suited for the application of CFT Legumine and its breakdown will be rapid. Dissolved oxygen was measured at 2 parts per million near the bottom of Ridgebury Lake. This is adequate oxygen for many oxygen requiring biochemical processes to occur in the sediments and is not considered an anoxic condition. The shallow nature of Ridgebury lake will allow easy mixing of the water. The turbidity (muddy appearance) of Ridgebury Lake is high, but the good mixing given the shallow waters should not hinder light penetration deep enough to significantly slow the breakdown of CFT Legumine.

Other Chemical Constituents

Various formulations of rotenone have different inert ingredients. Researchers in California also have found that most of the other compounds found associated with some liquid formulations of rotenone will disappear before rotenone. Some compounds may temporarily accumulate in sediments for less than 8 weeks. These studies were conducted at temperatures lower than what will be experienced in this application and the associated breakdown of these compounds will be much faster in the Ridgebury Lake/Catlin Creek application. Furthermore, DEC has researched the various products available containing rotenone and found that TFC Legumine has very few, if any, inert ingredients of concern that will result in negative long term human or environmental impact. This can also be said for any intermediate compounds that could be formed by the breakdown of CFT Legumine. None of these compounds persist very long or do they bio-accumulate in sediments, plants or animals.

Potassium Permanganate

Given the conditions that will exist in Ridgebury Lake and Catlin Creek in August, rotenone will degrade naturally well within a two week period. The plan for this application is to retain all the treated water within the treatment area for the time it takes for the rotenone to degrade. If the discharge of treated water can not be stopped without impacts to downstream inhabitants, neutralization will be necessary. Potassium permanganate (KMnO_4) would be used in the unlikely event that this were to occur. The concentrated form of KMnO_4 needs to be handled with care and it can be toxic to fish. When KMnO_4 concentrations are in balance with rotenone concentrations, the toxic levels of KMnO_4 are quickly reduced through oxidation of organic compounds and rotenone in the water. Potassium permanganate is a strong oxidizer that breaks

down into potassium, manganese, and water. All are common in nature and have no deleterious environmental effects at the concentrations used in the neutralizing process. (Finlayson et al. 2000).

Parkinson's Disease

Rotenone has no connection with Parkinson's Disease. The connection has mistakenly been made by those unfamiliar with the details of an experiment where rats were treated by infusing rotenone directly into their brains to create "Parkinson's Disease-like" symptoms. This was a predicted and reversible reaction, and it did not result in causing the disease.

The Davis Lake Experience

DEC is very familiar with the literature that has resulted from the numerous studies of Davis Lake regarding the treatments made there to control Northern Pike. There are many lessons that have been learned from their experience. This has been a great benefit to us in our planning. One of the primary investigators at Davis Lake, Brian J. Finlayson, has been consulted with on some aspects of our research involve with this treatment. Brian Finlayson was the lead author in a document cited at the end of this document, which included's DEC Fisheries Biologist Leo Demong as a co-author. Mr. Demong will be the lead certified applicator of CFT Legumine at Ridgebury Lake and Catlin Creek. Davis Lake was treated a second time in 2007. California also decided to use CFT Legumine for this recent treatment. California's experience and the public's view of this treatment has been very good and most of the issues associated with the earlier treatment were not a problem in 2007.

Comments regarding impact to wildlife, biodiversity and pets:

- ✓ Seems like a drastic measure for the number of snakeheads found.
- ✓ What about impacts on other wildlife (i.e., turtles), other fish and pets?
- ✓ Why use rotenone to kill just a few fish and impact an ecosystem that may take up to eight years to recover?
- ✓ Will macroinvertebrate studies be done - before and after?
- ✓ Why are there restrictions for uses such as watering livestock if they are not supposed to be affected by drinking treated water?

Response:

Non-Target Fish

The choice to treat with a pesticide that will result in the eradication of all fish species within a

waterbody is a drastic measure. Unfortunately, there are no piscicides (fish pesticides) that are specific to northern snakeheads. The existing aquatic communities in the treatment area will be lost or disrupted for a period of time. These communities include common fish species and can be fully restored within a few years. Restoration of the fish community is described more fully below.

Other Organisms

In addition to fish, invertebrates such as zooplankton, crayfish, some gilled amphibians and the larvae of some aquatic insects will also suffer some mortality. These organisms generally will recolonize waters quickly due to their relatively short generation time, good dispersal mechanisms and the fact that not all life stages of insect and amphibians will be effected by rotenone. Rotenone does not accumulate in macroinvertebrates or other living organisms. Observations regarding macroinvertebrates will be recorded in field notes by DEC biologists.

Finlayson et al.(2000) described the effects of rotenone on other forms of animal life:

“All animals including fish, insects, birds, and mammals have natural enzymes in the digestive tract that neutralize rotenone, and the gastrointestinal absorption of rotenone is inefficient. However, fish (and some forms of amphibians and aquatic invertebrates) are more susceptible because rotenone is readily absorbed directly into their blood through their gills (non-oral route) and thus, digestive enzymes cannot neutralize it.”

Just as in water, rotenone residues in dead fish are generally very low and breakdown very quickly, and they are not readily absorbed through the gut of an animal eating fish. For these same reasons birds, reptiles and mammals that eat dead fish or drink treated water will not be affected.

Finlayson et al.(2000) also address the question of whether wildlife species are affected by the loss of their food supply following a rotenone:

“During recent treatments in California, fish-eating birds (i.e. herons and sea gulls) and mammals (i.e. racoons) were found foraging on dying and recently dead fish for several days following treatment. Following this abundance of dead fish, a temporary reduction in food supplies for fish- or invertebrate- eating birds and mammals will result until the fish and invertebrates are restored. There is no indication that this temporary reduction results in any significant impacts to most bird or animal populations because most animals can utilize other water bodies and sources of food.”

Even though there is very low risks associated with the use of rotenone-treated water for irrigation or for watering livestock, as a precaution, a very conservative restricted period for these uses is being used and posted around the lake.

Comments Regarding the Risks/Details of Treatment Plan:

- ✓ A better plan needs to be presented on how this will be handled (i.e., collection of dead fish and how much money is needed for the treatment and restocking).
- ✓ Why does DEC need to act now? Can this treatment wait until more research on area can be done?
- ✓ Can treatment be done after the summer months, maybe even over the winter?
- ✓ Staging area - especially for picking up dead fish. Where? How will increased DEC equipment and truck traffic be addressed?
- ✓ What will it be like for residents during the treatment? Smell?
- ✓ Quality of life will be seriously impacted if this treatment is done.
- ✓ Why are two nearby ponds not to be treated, the Tetz Pond and pond near the Town Hall? Possible flood event connection to Catlin Creek with these two ponds
- ✓ A DEC contact phone number needs to be made available to residents before treatment for complaints/information (during treatment and after to report dead fish and need for dead fish pickup).
- ✓ What if the Snakehead can't be eradicated - then what?
- ✓ Will this treatment be done again, if deemed ineffective or only partially effective?
- ✓ There may be fertilized and developing Northern Snakehead eggs present at the time of treatment, what if they hatch after treatment?
- ✓ Since snakeheads can breath air, can they avoid rotenone treatments

Responses:

Timing

The attached updated plan for treatment will answer some of the questions and concerns listed above. For this plan to be effective, DEC believes that treatment this summer is essential. Photographs and volunteered information from local anglers leads DEC to believe that northern snakeheads may have been present in Ridgbury Lake for at least two years. Successful spawning may not have occurred immediately following the initial introduction, but reports from residents

suggests that smaller northern snakeheads have dispersed downstream into Catlin Creek as far as 1 mile below Ridgebury Lake. If successful spawning has occurred over the last two years, it is very important that these fish are eradicated before they mature and spawn themselves. The longer it takes for these fish to be removed, the greater the likelihood that their population will grow and continue to disperse downstream. Downstream dispersal would result in the spread of this species into new waters that connect to many other waters throughout New York State and beyond. The most assured method of snakehead eradication in a system such as the Ridgebury Lake / Catlin Creek complex is through the use of rotenone. The most effective time to treat with rotenone in this system is during the driest, warmest months. These conditions will aid in the greatest likelihood for success and the quickest breakdown of the rotenone product.

In most cases, invasive species are first discovered only after they have expanded beyond a manageable level, and plans for eradication are impossible. This is a rare case where we believe we have discovered this population before it has had a chance to disperse. A typical pattern for many invasive species, is that they start with a very low number of individuals. This very low number of individuals may exist for some period of time until a minimum viable population is reached that results in reproduction. At this point there is some lag time before explosive population growth occurs. We believe that we are right now at that critical lag time period, and any delay in a rapid response to eradicate the population may result in explosive population growth and massive dispersal beyond a manageable level.

Effectiveness of Rotenone on Snakeheads and Their Eggs

Rotenone has been successfully used on Northern Snakeheads and they have not demonstrated behaviors that would allow their air breathing ability to avoid the toxic effects of rotenone treatment. The Northern Snakeheads uptake enough of the rotenone through their gills to prevent proper use of oxygen in their body. By the time this occurs, air breathing is not able to supply them with oxygen either.

Eggs are not as sensitive to rotenone as are larvae, juvenile and adult fish. Northern Snakeheads do have the ability to spawn multiple times through the summer. Their typical spawning period for the north temperate zone is during June and July. There is a chance that some spawning may still be occurring in late July or August. Northern Snakehead eggs, however, do develop within a matter of a couple days at warm temperatures. DEC anticipates that any developing eggs at the time of treatment will likely hatch during the time that rotenone concentrations will still be high enough to kill larval snakeheads.

Department Presence

Residents will see a lot of DEC staff present leading up to and after treatment. Dead fish will be observed and DEC staff will be patrolling the area as needed to collect dead fish and transport them away from the area for composting. DEC plans to have a dump truck staged near the dam of Ridgebury Lake during the peak period of fish removal. There will also be activity at the boat ramp where trucks may be coming back and forth with fish, boats and equipment. Stops will

be made along crossings of Catlin Creek to remove dead fish. Blocking nets may also be set up at locations along the creek to collect and remove dead fish. The DEC Fisheries office can be contacted at 845-256-3161 regarding any concerns.

Odors

The Department is replacing the rotenone product originally proposed with a product that has significantly less odor. The initial treatment proposal planned for the use of a rotenone product called Prenfish. Some of its secondary ingredients and incidental chemicals found in Prenfish can have an odor and take longer to completely break down than the rotenone itself. These odor-causing and more persistent chemicals are not found in an alternative rotenone compound called CFT Legumine. CFT Legumine has the same concentration of rotenone as Prenfish. As a result, CFT Legumine has been chosen as the rotenone product for use in Ridgebury Lake and Catlin Creek.

Also, as described above, Department crews will be removing all dead fish they can recover over the first several days. Carcasses will be transported to a permitted composting site run by NYS Department of Transportation in Highland, New York.

Other Waters

The several ponds including Tetz Pond and the pond across from the Town Hall were investigated for their likelihood of containing snakeheads. In each of these instances it is believed that fish from Catlin Creek are not likely to get into these ponds. A small pond off Guinea Hill Road, and just below Ridgebury Lake, will be treated at the same time as Catlin Creek.

Contingency Plan

DEC will follow up this treatment with sampling to determine the effectiveness of the application. If snakeheads are identified from this water in the future, another full assessment of options given the conditions at that time will need to be considered before any future plans can realistically be discussed.

Comments regarding alternatives:

- ✓ Need more information on other alternatives (i.e., draining the system and/or Ridgebury Lake; other mechanical options; blocking off the system.

Response:

Alternative Responses

The alternative responses to the presence of northern snakehead include: containment, draining and no action.

Containment actions were taken by the Department shortly after the presence of snakeheads was established. Wire mesh weirs were installed at outlets to Ridgebury Lake and Catlin Creek. While these provide some measure of containment for larger fish, they cannot guarantee long-term containment because young fish can pass through and the structural integrity of the barriers is highly vulnerable to storm events.

Draining of the waters known or suspected of containing northern snakeheads is both practically difficult and would have a major quality-of-life impact on the residents of the area. The topography would preclude complete drainage, i.e., pockets of water suitable for the survival of snakeheads would remain. Snakeheads breath air and can survive as long as they stay moist. Maintaining such a drawdown throughout the winter months could be needed to ensure complete snakehead mortality. Finally, draining the lake, stream and wetlands would affect much more aquatic life than the target and non target species killed by rotenone.

Taking no action would enable the snakehead to expand its range. It could travel down the Wallkill to the Hudson River. Once there, it could potentially expand across much of New York and throughout the "Lower 48" and southern Canada.

Comments regarding a Restocking or restoration Plan:

- ✓ What is the restocking plan?
- ✓ Why not reintroduce Carp? A valuable local fish.
- ✓ Try to save as many non-snakehead fish as possible.
- ✓ Take fish out of the lake (non-snakeheads) and save them to be restocked later or put them in another nearby lake (carp for example).
- ✓ Property owners don't want to wait 5+ years for the creek system to come back.
- ✓ The sooner the fish are back in the lake and creek, the better for the local citizens.
- ✓ Could lake be restocked with trout?
- ✓ Weeds may come back if carp are not restocked.

Responses:

Fish Salvage

Concerns about how fish populations in the treated area will be restored are understandable. The DEC will selectively remove and hold some fish collected from Ridgebury Lake prior to treatment and return them when water conditions warrant. New York State DEC and the Town of Wawayanda have been working together to set up fish holding tanks on Town property to help accomplish this. The reintroduction of salvaged fish will help accelerate the natural restoration processes.

Fish Restoration

The fish species currently present in these waters will be used to guide restoration. Environmental conditions known to exist in these waters will also be considered. For instance, the water quality in Ridgebury is too warm for year round survival of trout and this water is probably best suited for largemouth bass. Species known to be ecologically damaging to native species of fish will not be removed prior to treatment. The exception to this will be that any Northern Snakeheads collected at anytime will be saved as study specimens.

It is illegal in New York State to transfer fish from one waterbody to another without those fish first being certified as free of certain diseases of concern. We therefore will not be able to transfer these fish to other water bodies without first testing these fish. The disease testing takes roughly one month. We will only have enough space in our holding tanks to support the fish that will be removed for restocking back into their original waters.

Common Carp

Common Carp (also known as Koi in their fancy form) are known to be ecologically damaging to the waters of New York. They are not native to North America, and they are a prime example of how a exotic invasive species can become very common throughout the continent and result in irreparable harm. Common Carp are likely to be a major cause of the perpetually turbid (muddy) looking water in Ridgebury Lake. The feeding behavior of Common Carp involves the rooting through the sediment in search of food. When enough carp are present, the physical disruption of the bottom can result in a high level of suspended sediments in the water column and hence the dirty looking water. This reduces light penetration and can limit plant growth. The combination of decreased light penetration and the physical disruption of the bottom have undoubtedly changed the entire ecology of countless waters. From DEC fish collections made over the last couple of months, it appears that the Common Carp make up the bulk of the fish biomass in Ridgebury Lake. The biomass that is currently present in Common Carp will at least be partially available for other organisms, including fish. This may result in a more productive and balanced fish population for species like largemouth bass and sunfish.

Without Common Carp in Ridgebury Lake there may be the potential for increased aquatic vegetation growth. Healthy lake ecosystems usually contain some aquatic vegetation. The establishment of some aquatic vegetation would be good for the ecology of Ridgebury Lake and could improve conditions for certain species, such as largemouth bass and bluegill. There are long term and short term management actions that can help curtail aquatic vegetation growth

before or after it reaches nuisance levels. DEC is willing and committed to helping provide the technical support needed to develop and monitor the restoration of this fishery, including restocking as appropriate and necessary.

Comments Regarding Public Participation, Notification and Access to Water:

- ✓ Riparian rights - can DEC do anything without of the permission of waterfront land owners?
- ✓ Some people were not notified - this is a problem.
- ✓ Is this a done deal? Do the citizens have any say in this decision?
- ✓ Consider hand delivery of treatment notice - some residents never got notified.

Responses:

Public Notice

DEC worked with the Town of Wawayanda to obtain a list of all riparian owners for the first mailing. We have continued to work with the Town to contact any people who indicated they didn't receive the information. DEC also have included people in a follow-up mailing who have come to our attention during the process. Prior to treatment, notification of the exact dates of treatment will be provided by posting of shorelines.

Public Participation

An essential part of the decision making process has included public comment. DEC has taken all comments into consideration. Many aspects of the original proposed plan have been changed accordingly.

Access

DEC has legal rights to public waters and regulatory authority and right to access certain waters and lands in accordance with NYS Environmental Conservation Law. DEC anticipates working with landowners who are willing to provide permission and in most cases working from the water and/or banks of the target waters.

Comments Regarding Northern Snakehead Information:

- ✓ Why are these fish particularly problematic?

- ✓ Non-snakehead populations in Massachusetts and New Hampshire - what are those states doing to combat the problem? (If populations exist in these areas, it may already be out of control.)
- ✓ Where else in NY are they
- ✓ Is there a plan in place in NYS to deal with snakeheads?
- ✓ Has an investigation been done, or being done, re: the initial source of the non-snakeheads in Ridgebury Lake/Catlin Creek?

Responses:

Risks

Exotic species like Northern Snakeheads, are extremely likely to cause significance irreversible impacts, including harming native fish populations and ecosystems by predation and competition for food and habitat. Both recreational fisheries and natural systems are at risk. An endangered amphibian and two species of rare aquatic insects exist in the vicinity of this invasion, but not within the treatment area. It is very likely that if left unchecked, the snakehead could establish itself throughout the contiguous United States and southern Canada. Disruptions to recreational fisheries could have consequential effects on local economies.

Management Plans

NYS and other states and Federal agencies are working to follow the National Emergency Response plan for the Northern Snakehead, including Massachusetts and New Hampshire. Where possible, populations are being eliminated. In other situations where containment is the most appropriate strategy, that is what is being done.

Northern Snakeheads have been found in Flushing Meadow Park (Meadow Lake and Willow Lake) in Queens. These lakes discharge to salt water. Northern Snakeheads cannot tolerate salt water. One single snakehead was found in Central Park's Harlem Meer.

New York DEC does have an Invasive Species Council, a new office in DEC for invasive species, and policy as set by state Environmental Conservation Law. A detailed report with recommendations for how New York state should respond to the challenges of Invasive Species was completed and with regard to an infestation such as this the plan suggests a rapid response consistent with best management practices and national management plans as being appropriate. In addition, within DEC there is a fisheries staff person on the team who has prepared a draft National Management Plan for the Northern Snakehead.

There is an ongoing investigation and anyone who believes they may be able to provide useful information should contact the NYS DEC at 845-256-3013 or 256-3161.

Comments Regarding State Environmental Quality Review Act (SEQR) Procedures:

- ✓ Have all SEQR requirements been met?

The Department has determined that actions associated with the plan to apply CFT Legumine in Ridgebury Lake, Catlin Creek and within State-designated Freshwater Wetland MD-26 as exempt from the requirements of the State Environmental Quality Review Act (SEQR) as a Type II, emergency action (6 NYCRR Part 617.5 (c) (33)). The basis for this determination is as follows:

1. That this infestation of Northern snakehead within Ridgebury Lake and nearby affected water bodies is an immediate threat to the natural resources of New York State;
2. Failure to respond to this new infestation would result in the inevitable spread of this species downstream to the Wallkill and Hudson Rivers and their tributaries with no possibility to control the species in the future and with widespread, irreversible impacts to native fisheries.
3. Immediate action is necessary to protect the natural resources of New York State by eradicating Northern snakehead within the affected water bodies;
4. That alternative methods of Northern snakehead control have been ineffective elsewhere and do not result in the necessary control. These methods include physical capture through containment and capture with nets and electrofishing;
5. That the proposed use of the piscicide rotenone is the only effective alternative to eradicate Northern snakehead within the affected area; and
6. That the proposed action will be carried out in a manner that will cause the least adverse impact to life, health, property and natural resources. In this regard, the action will limit fisheries damage that would be caused by the spread of this fish species elsewhere and the Department will be undertaking a re-stocking effort to restore the fishery within the affected area.

This SEQR classification has been applied to the Department's activities regarding this action, including the action itself, emergency rulemaking and permitting activities. An emergency rule has been filed with the New York State Department of State to allow implementation of the Department's emergency action plan. The Department has also prepared permit applications and issued permits pursuant to Article 24, Freshwater Wetlands Act and Article 15, Part 328 Aquatic Pesticides Permit for the Control or Extermination of Undesirable Fish.

Other/General and Positive, Supportive Comments

- ✓ Numerous comments were received supporting the plan to eradicate Northern Snakeheads from this drainage using rotenone to restore this natural area and to protect the natural biodiversity of the Wallkill and Hudson Rivers and other sensitive landscapes in New York.

- ✓ How does the Army Corps Of Engineers feel about this option?
- ✓ What about the greater good of the waters of the state? Concern expressed about what the impacts will be if DEC does not take action to eradicate this invasive species quickly.

These comments are noted.

For additional information see:

Finlayson, B.J., R.A. Schnick, R.L. Cailteux, L. DeMong, W.D. Horton, W. McClay, C.W. Thompson, and G.J. Tichacek. 2000. Rotenone use in fisheries management: administrative and technical guidelines manual. American Fisheries Society, Bethesda, Maryland.

