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PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

ON

HABITAT MANAGEMENT ACTIVITIES

OF THE

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DIVISION OF FISH AND WILDLIFE

Required Under: State Environmental Quality Review Act of 1975 (SEQR)

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Summary

This document is a final programmatic environmental impact statement to cover the activities of the Division of Fish and Wildlife, New York State Department of Environmental Conservation, in protecting and manipulating various elements of the physical environment to maintain or produce desirable habitats for fish and wildlife. The statement covers all habitat management activities currently implemented anywhere in New York State. For further information, contact:

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General Environmental Impacts of this program include:

Beneficial

- Improving the welfare of target fish and wildlife.
- Ensuring the diversity and continued existence of rare, unique, endangered or other fish and wildlife of special public interest.
- Improving water quality and water conservation.
- Increasing the amount, distribution, and diversity of fish and wildlife recreational opportunities.

Adverse

- Death of individuals of non-target fish or wildlife species and loss of segments or whole populations of non-target species in restricted areas.
- Temporary noise, site disturbance, unsightliness and loss of habitat and recreational opportunities from construction, cutting and burning, and water level manipulations.
- Possible losses of rare or other valuable fish or wildlife or their habitats from periodic cutting or burning, or from the flooding of large areas.

The only alternative to the current program considered was to have no program of habitat protection and management. This alternative was rejected since it would result in failure to meet established mandates of law expressing the desire of New York citizens to maintain and enhance desirable fish and wildlife and their habitats. However, consideration is given to a program of greater and lesser management activity.

The appendix includes the following tables which form a part of the statement:

I. DEC office locations in New York State.
II. Environmental Assessment Form.
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The appendix also lists appropriate exhibits and references of the statement and the exhibits are on file with the Division at its central and regional offices (listed in Table I) for public examination.

FOREWORD

This statement is one of a series of five* that describe major Division of Fish and Wildlife programs containing actions which have potential for significant environmental impacts. In effect the composite of these five statements encompass all major Division activities. It differs from most environmental impact statements in that it is generic and describes a major program rather than a specific project.

This statement was prepared in conformity with Environmental Conservation Law §8-0109 of Article 8, Rules and Regulations Parts 617, 618, and 618.14(s). of the State Environmental Quality Review Act (SEQR).

Activities of this Division, as discussed in these statements stem from Section 11-0303 of the Environmental Conservation Law (ECL). This section directs the Department to restore, maintain and improve the State's fish and wildlife resources, make these resources accessible for recreational purposes to the people of the State, and to provide for user safety and protect private premises from abuse of access privileges for hunting, fishing and trapping.

The Division's fish and wildlife management responsibilities span the entire state. Problems in meeting these responsibilities are complicated by an extremely wide range of ecological settings in which to exercise mandates. These vary from seacoast sand dunes to sub-alpine mountain tops, from intensely farmed lands to remote virgin forests, and including all forms of aquatic habitat from fresh to salt water. Topography varies from expansive flat lands through all intermediate gradients up to sheer cliffs. Temperature extremes are great and accumulated snows in some years exceed 6 feet in some areas. Reflecting this wide range in habitats flora and fauna species likewise are very diverse. These ecological settings are affected further by a wide range of human population density or use pressures.

This span of conditions and settings requires a very wide variety of options open to the manager and administrator in meeting similar goals in different habitats. Statewide these options are so numerous as to preclude any attempt to prepare individual statements for each option in each situation to describe existing programs. On the other hand, there is a great similarity among classes of these options statewide which make the programmatic approach possible and desirable. Thus, the requirements and spirit of the State Environmental Quality Review Act are best met for existing Division of Fish and Wildlife programs in programmatic statements wherein groups of varied but related actions and impacts are discussed, supported by their common background of need, justification, procedures and techniques. Further, programmatic statements will serve as standard background references for future project impact statements and impact assessments, thereby eliminating the need for frequent repetitions of generic program backgrounds.

This statement describes activities within a major program, and contains relevant and material information and facts that led to development of the program. As such this statement will serve as the environmental impact statement for all future activities of current programs that do not involve significant departures from currently established and accepted practices as later described. Should an established and accepted activity have significant site specific impacts, however, an Environmental Assessment Form (EAF-Table II) will be prepared and evaluation made as to whether or not a supplemental impact statement would be required. The criteria for site specific assessments include, but are not limited to, activities which could:

*(Listing at bottom of page iii)

- Affect threatened or endangered plants or animals or their habitat.
- Induce or accelerate significant change in land use.
- Induce significant change in ambient air, soil, or water quality.
- Conflict with established plans or policies of other state or federal agencies.
- Induce significant change in public attraction or use.
- Significantly deviate from effects of natural processes which formed or maintain area i.e., bulldozing to create openings in fire climax communities.
- Result in area of significantly different character or ecological processes.
- Affect important known historical or archeological sites.
- Involve the application of herbicides, pesticides or other such chemicals.
- Stimulate significant public controversy.

In all instances where there is question as to the advisability of a site specific assessment, the Division will opt in favor of their preparation.

Determinations of significance will be based on criteria existing in Part 618, with particular reference to those on Type II actions or classes of actions.

> "Class 4. Minor alterations in the condition of land, water vegetation, and/or fish and wildlife resources"...
>
> "....The following site specific and individual fish and wildlife activities shall be considered "minor" if they do not involve significant departures from established and accepted practices and if such actions are described in and are a part of general fish and wildlife management programs for which an EIS has been prepared: fish and wildlife habitat improvement, planting of native or naturalized fish and wildlife, harvesting or thinning of fish or wildlife surpluses, setting of hunting, trapping and fishing seasons, weeding of competing or parasitic species and species incompatible with man's interests, improvement or rehabilitation of fish or wildlife resources, fish barrier dams, small rock or log dams, fish passage structures, minor diking, cribbing, bank stabilization and stream deflectors and other structures or improvements designed solely for fishery management purposes which do not materially alter the natural character of the waterway, and (other alterations which are relatively short-lived and where followed by prompt replacement of fish or wildlife resources with the intention of providing equivalent or greater values.")
>
> "Class 5. Information collection consisting of basic data gathering for possible future actions of the Department, short

> range planning activities, research, experimental management and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource and which are not preliminary steps leading to a given action or project already identified....this expiration shall not apply solely because of an information gathering aspect of a particular action. This class includes:...the sampling of fish and wildlife populations by netting, trapping and other acceptable scientific means: and inventory surveys conducted by Department personnel in the field for game management, fish management, forestry, fire control, environmental protection, etc.

An Environmental Assessment Form will be prepared for all new programs, or new elements to existing programs, which may have significant impacts, leading to preparation of an environmental impact statement if the proposed actions are found to be significant. In general, it is the policy of the Division of Fish and Wildlife to place the perpetuation of significant, critical, unique or rare habitats before other management goals, such as benefiting a particular species or supplying recreation. Where the Division is considering diverging from this policy a site-specific EIS will be prepared.

Public notice will be given of any future impact statements, negative declarations or supplements to this programmatic statement.

The Department of Environmental Conservation is unique among agencies in that its legal mandates under Section 11-0303 of ECL direct it to impact upon the environment in the course of managing fish and wildlife resources for the benefit of the people in the State. Consequently most of the Division's activities have some degree of impact, either beneficial or adverse. As "stewards of the environment" of long standing, Division representatives have had to weigh environmental consequences of inter-related program elements as they were being initiated, prior to but in the spirit of SEQR. Program elements often are not easily understood except in the context, and with the background knowledge of the program overview. For these reasons also the programmatic statements best serve the needs of the public for SEQR.

*Programmatic Statements of the Division of Fish and Wildlife

Freshwater Wetlands Acquisition
Public Use
Habitat Management
Wildlife Species Management
Fish Species Management

PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT
HABITAT MANAGEMENT ACTIVITIES
of the
DIVISION OF FISH AND WILDLIFE

I. Description of Program and Setting

A. Authority

Articles 11 and 13 of the Environmental Conservation Law direct the Department of Environmental Conservation in management of the fish and wildlife resources of the state.

1. Mandates

General purposes and policies governing the manner in which powers are to be exercised are expressed in Title 3, Section 11-0303. Although other Sections clarify roles and recent additions have dramatically accelerated and enhanced implementation, especially regarding environmental protection, this Section basically describes overall responsibilities of the Division of Fish and Wildlife. Key portions are quoted as follows:

> "1. ..., the general purpose ..., is to vest in the Department, to the extent of the powers so granted, the efficient management of the fish and wildlife resources of the state. ... Such management shall be deemed to include both the maintenance and improvement of such resources as natural resources and the development and administration of measures for making them accessible to the people of the state."
>
> "2. ..., to develop and carry out the programs and procedures which will in its judgment (a) promote natural propagation and maintenance of desirable species in ecological balance, and (b) lead to the observance of sound management practices for such propagation and maintenance on lands and waters of the state, whether owned by the state or by a public corporation of the state or held in private ownership, having regard to (1) ecological factors, including the need for restoration and improvement of natural resources; (2) the compatability of production and harvesting of fish and wildlife crops with other necessary or desirable land uses; (3) the importance of fish and wildlife resources for recreational purposes; (4) requirements for public safety; and (5) the need for adequate protection of private premises and of the persons and property of occupants thereof against abuse of privileges of access to such premises for hunting, fishing or trapping."

More recent environmental protection laws, both State and Federal have reinforced these mandates.

Primary among laws aimed at environmental protection and requiring Division of Fish and Wildlife actions are:

State: Stream Protection Act - (Article 15, Title 5 of Environmental Conservation Law (ECL)

Tidal Wetlands Act-(Article 25 - ECL)
State Environmental Quality Review Act -(Article 8-ECL)
Freshwater Wetlands Act - (Article 24 - ECL)
Siting of Major Utility Transmission Facilities - (Article VII - Public Service Law)
Siting of Major Steam Electric Generating Facilities - (Article VIII - Public Service Law)

Federal: U.S. Fish and Wildlife Coordination Act

National Environmental Policy Act (NEPA)
U.S. Water Pollution Control Act Amendments (FWPC - PL-92-500)
Endangered Species Act of 1973 (PL 93-205)

2. Goals

The Division of Fish and Wildlife annually publishes a Fish and Wildlife Program Plan to update the programs designed to carry out mandated responsibilities for the efficient management of the fish and wildlife resources of the state. Established goals derived from these mandates are:

- to perpetuate fish and wildlife as part of the various ecosystems of the State;
- to provide maximum beneficial utilization and opportunity for enjoyment of fish and wildlife resources; and
- to manage these resources so that their numbers and occurrences are compatible with the public interest.

Research and management designed to accomplish these goals are implemented through general program areas of environmental protection, environmental management, species management, public use and extension services. Activities within these programs are developed and audited by three Bureaus-Fisheries, Wildlife and Environmental Protection; with support services provided by the Program Administration and Planning and Extension Units assigned to the Division office and other Department units such as the Division of Legal Services, Finance and Personnel. Operational implementation of programs is basically accomplished through the Department's nine regional offices.

B. Definition of Habitat Management

Habitat management is the manipulation or protection of various elements or portions of the physical environment to produce or maintain a combination of cover, food and water desirable for a particular species or group of species of fish or wildlife.

C. Goals of Habitat Management

The Division's goals have been stated. More specific to the program under consideration are the following goals:

Environmental Protection - to maintain healthy environments to provide habitat for fish and wildlife, to protect elements of habitat essential to the maintenance of fish and wildlife and to preserve unique habitats.
Environmental Management - to restore, maintain, improve or create habitat for optimum production of desired fish and wildlife.

D. Nature and Scope of the Habitat Management Program

Without adequate habitat, wildlife and fish will not thrive. Adequate habitat implies optimum quantity, quality and diversity, and this in turn will result in the greatest over-all abundance and diversity of fish and wildlife.

The activities of the Division that involve actual manipulation of physical elements of habitats are quite limited. Most cannot be applied to New York habitats on a broad scale due to fiscal constraints and to the fact that much of the work would be superfluous. Adequate habitats to maintain an abundance and diversity of fish and wildlife are generally provided through natural processes when coupled with intelligent use of land and water by society.

Accordingly, physical manipulation of habitats is limited to target management, to situations where concentrations of wildlife will make habitat management feasible, to address known limiting factors which can be effectively corrected, to maintain unique or restricted habitats or habitats of restricted or endangered species or to restore former habitats of a particularly valuable or unique character such as a historical marsh. In these situations, the work that is done can have a significant impact on the character of the local habitat and fish and wildlife, but total environmental impact is generally slight.

Greater over-all benefits to the environment of fish and wildlife are achieved through mechanisms of environmental protection, whereby inputs to planning, development and implementation of regulations, review of applications for permits and licenses, technical advice and assistance, and extension education help mitigate adverse impacts to fish and wildlife habitats, and gain the greatest benefits, from major land and water uses across the state. These activities are not

discussed further in this statement since they are inherently beneficial to the protection, maintenance and restoration of fish and wildlife habitats. They are briefly described in the Appendix as Table III.

The following activities described therefore represent only those where physical manipulation of the habitat is undertaken by the Division. Most are limited in their application and the degree of environmental impact varies according to the activity. All are judged to be beneficial to fish and wildlife and the public when applied and most have adverse effects to a limited extent. Most are applied on lands owned or leased by the state or private lands and waters under cooperative agreement for management. These areas and activities are listed in Tables IV and V of the Appendix.

E. Current Habitat Management Activities Implemented

1. Wildlife Practices

a. Upland Management

Plantings

Herbaceous plant species, including grains, are planted for the purpose of maintaining open areas and providing feeding, nesting and brood rearing areas for target wildlife. Smother crops are generally broadcast throughout an opening and include such plants as clover and trefoil. Cover and food crops, including corn, sorghum, millet and buckwheat are usually planted in plots or strips using standard farming techniques.

Shrubs, usually fruitbearers such as autumn olive, dogwood, highbush viburnum or multiflora rose, are planted in patches, strips or rows to attract wildlife or to increase their numbers by providing food and/or cover.

The planting of trees is generally limited to evergreens such as white pine, red pine, white cedar and Norway spruce. These species are planted in irregular patches or rows to provide wildlife shelter. Some deciduous species such as walnut, hickory and other mast-bearers are used in order to increase food supplies.

The target wildlife toward which such plantings are directed generally have included deer, turkeys, pheasant, quail, hare, rabbits and ruffed grouse. The current application of these practices is extremely limited and includes the planting of no more than 100,000 trees and shrubs annually, and the combined planting of no more than 100 acres of food plots utilizing herbaceous plants. Most areas of planting are on state-owned property.

Clearings

Limited clear-cuts, or removal of all overstory trees, are used to create openings or to produce a more desirable composition of plant species or age classes or both in extensive woodland areas. These cuts generally are less than one acre in size with irregular borders. When the intent is to create a permanent opening, useable wood products are removed and tops piled along the edge of the opening. The topsoil of the opening may be scarified and grasses and clovers planted. Often such openings are allowed to regenerate naturally with sun-loving species such as white pine, red maple, oak and yellow birch or desired species are planted in the opening. These practices are used to provide increased nesting, brood-rearing or feeding areas for target wildlife. Currently, no more

than 400 acres of such openings are created annually, generally on wildlife management or reforestation areas.

Similarly, openings are created in brushlands through employing mechanical or chemical means or through controlled burns. Permanent woodland and brushland openings are maintained by periodic mowing and burning every two to three years in order to prevent the invasion of woody plants.

Thinnings

Some practices commonly referred to as thinning or tree release include the removal or girdling of trees or other vegetation that are undesirable. These practices are used to encourage growth of new desirable vegetation, improve the quality of desired vegetation, or encourage growth of understory vegetation.

Miscellaneous Practices

Soil treatment is the application of fertilizer or lime to soils to foster the development of desirable vegetation.

Fencing is used to exclude domestic animals from areas where their trampling or grazing would be detrimental to desirable vegetation.

Water holes are small catch basins constructed or excavated to serve as sites for wildlife to obtain water.

Brush piles are constructed at specific locations to serve as cover for cottontail rabbits, usually in connection with a brush control or logging operation.

Grafting is the insertion of a scion or stem of a desired tree species onto the stock of another tree. The purpose is to improve wildlife food supplies through the combination of desired characteristics of the two plants.

b. Wetland Management

Impoundments and Excavations

Marshes, usually created by constructing low dikes or dams, are shallow, flooded open areas, which collect and hold natural runoff and/or the flow from small streams. Swamps are shallow flooded woodlands impounded by low dikes or small dams.

Ponds, excavated or impounded water areas generally with some depth, are of greatest value when they are large enough to contain shallow areas with emergent vegetation, or are adjacent to larger wetlands. Ponds usually are constructed to provide loafing, feeding, and breeding sites for waterfowl.

Potholes are small open water areas constructed in or adjacent to larger marshes by excavation or blasting. They provide desirable openings in monotypic habitats (such as dense cattails).

Level ditching or the excavation of channels, produces open water in dense stands of vegetation in larger marshes. This improves a marsh for loafing and feeding areas for waterfowl, can increase furbearer and other wildlife populations, and facilitates public access.

Water Level Control

Occasionally, long periods of anaerobic conditions on a marsh bottom cause a decline in overall productivity. Lowering water levels to expose shorelines or the entire marsh or swamp bottom stimulates the growth of aquatic vegetation to provide better wildlife habitat through improvement in basic soil fertility and the availability of nutrients.

In certain areas, small "paddies" are exposed via drawdown, allowed to partially dry and then planted to buckwheat or millet. Upon reflooding in late summer, these paddies produce excellent feeding areas for waterfowl.

Flooding an area can be used as a technique to kill undesired vegetation and favor the growth of macrophytes. If conditions permit, existing impoundments may be temporarily deepened to help control unwanted vegetation around their perimeters or on islands. In most wetlands, water levels are controlled to maximize the area of optimum depth for most wildlife, generally considered to be 6 to 24 inches. Management for this optimum average depth usually results in the best proportions and interspersion of emergent and submergent vegetation, particularly for waterfowl feeding and brood-rearing activities.

Plantings

Aquatic plants such as wild rice may occasionally be planted to supplement waterfowl food sources. Broadcast seeding of food-producing aquatics may be used to accelerate re-vegetation of disturbed sites.

Shrubs are sometimes planted to help shield wetland areas from human activities (e.g. highways), or to help control shoreline erosion.

Herbaceous seedings on newly-constructed dikes, dams or islands help prevent erosion and may provide areas for goose grazing and duck or goose nesting.

Cereal grain crops planted near wetlands may help alleviate waterfowl depredation of agricultural crops in the surrounding area, as well as provide food for upland wildlife.

Small areas in marshes (paddies) are often drained, planted with buckwheat or millet, and reflooded just before the seeds mature to supplement production of natural waterfowl food.

Vegetation Control

Undesired types of vegetation on islands and dikes and shorelines are sometimes controlled by chemical means through hand spraying of herbicides and algicides.

If moisture conditions are not extremely high, particularly in the upper soil horizons, burning can be used to control vegetative growth. Consecutive yearly burns on uplands adjacent to marshes can control woody plants, thus stimulating herbaceous growth and increasing waterfowl nesting cover. When appropriate, controlled burns may be employed in order to perpetuate fire climax communities.

Periodic mowing of dikes and other areas around marshes with a tractor-mounted cutter bar or large rotary mower (brush hog) helps maintain nesting cover for waterfowl and other ground-nesting birds. Problem aquatic vegetation sometimes requires mechanical removal through means varying from hand-harvest to use of sophisticated machines specifically designed for such purposes.

Nest Structures

In areas where natural nest cavities for wood ducks are lacking, nest boxes in trees or elevated on posts above the water may increase production, provided adequate brood habitat is available. Effective predator guards are usually necessary to protect the nests, principally from raccoons. Nest boxes are also commonly erected for bluebirds.

Mallards, black ducks and Canada geese often make use of artificial nesting structures such as wire baskets particularly if suitable nesting cover is scarce. Generally, these platforms are attached to dead snags or stumps protruding from the water with hay or straw added as nesting material.

Nesting islands are man-made islands constructed before impoundments are flooded and provide nesting, loafing and grazing sites for waterfowl, particularly Canada geese. A grass mixture is planted to help prevent erosion and to provide nesting cover.

Miscellaneous

Muskrats often cause considerable damage to earthen dikes and dams, necessitating control of their numbers. Stone rip-rap,

berms, screening and impervious fill will discourage burrowing along dikes. Trapping on the area helps alleviate problems.

Beaver often plug water control structures or construct unwanted dams. "Beaver pipes", electric fences and screening are employed as control measures, as well as live-trapping and transferring the animals to distant locations. Dams may be partially or completely removed.

Raccoons frequently cause serious depredations to crops, buildings or nesting waterfowl, requiring their control. Attempts at control have included poisoning, hunting and trapping, and erection of electric fences.

Fencing helps eliminate the destruction of nesting cover by extensive grazing from domestic animals although it is generally not a problem on state-controlled wildlife management areas.

2. Fisheries Practices

a. Combined Lake and Stream Management

Spawning Marshes

Spawning areas for northern pike can be constructed or maintained by raising or lowering water levels over grassy areas at appropriate times and dyking where topography permits it. The number of sizeable lake and stream fisheries which could be enhanced by this type of water level management is probably limited to less than 25 across the state. Northern pike are abundant in many waters in New York and numerous fisheries for them exist. Often where pike are lacking, other predators provide good fishing.

Dams are built to withstand flood conditions, at a slightly higher elevation than the spawning areas to be flooded. These areas must be at least several acres in size and must in some instances be dyked to retain water. The development is costly and considerable maintenance is involved. It is expected that the technique will be used to a limited extent in the future as new fisheries are developed near centers of population.

Beaver Dam Removal

Beaver dams are removed at times to eliminate impounded areas and return them to stream conditions in order to lower water temperatures downstream. Migration of fish is also facilitated. Beaver dams are fairly frequently removed or breeched to protect fish barrier dams in their intended function. Such dams are also temporarily breeched in connection with chemical reclamation projects to reduce water areas requiring chemical treatment to eradicate undesirable species of fish. Dams are removed by hand or by use of heavy equipment and dynamite; in some instances beaver are trapped to prevent immediate reconstruction. This management tool is rarely used

because often beaver ponds are desirable, as both wildlife and fisheries habitat. In areas populated by beaver there are usually abundant trout or warm water pond and stream fisheries so that beaver control is not necessary to maintain fishing opportunity on a regional scale.

Liming

Acid precipitation from industrial air pollution has increased the acidity of the water and caused the demise of fish populations in many Adirondack lakes. Some 200 to 400 lakes will ultimately be affected and some strains of fish will be irretrievably lost. The introduction of powdered limestone or slaked lime to the lakes or their tributaries is the technique currently used to reduce acidity. Liming techniques have not been perfected but application can produce successful results; pH levels can be raised from 4+ and 5+ to 6 and above. The cost of liming is dependent in part on the accessibility of the lakes involved. Lakes are selected for liming on the basis of two criteria:

1) Does the water contain a unique fish population or support a unique fishery whose existence in Adirondack waters is threatened by acidification?

   (There are 10 strains of native brook trout unique and endemic to the Adirondacks and a number of species which are rare in the region including the round whitefish. Priority is given to the maintenance of these populations).

2) Does the water have the potential for providing a high use fishery based on historic use, accessibility or location relative to similar fishing opportunities?

It is probable that many Adirondack lakes which have been affected by acid precipitation will eventually be treated because of their uniqueness.

b. Stream Management

Stream Improvement

Stream improvement consists of the enhancement, creation and maintenance of stream conditions more favorable to the survival, growth and natural reproduction of fish. It also increases the number of fish in the angler's creel through construction of bank stabilization structures which help reduce erosion and turbidity and lower stream temperatures, and in-stream structures which mostly provide trout habitat.

Bank stabilization structures include combinations of rock filled wire and log cribbing or bank piers, rock rip-rap, brush cover devices, bank sloping and seeding, gravel bar removal or relocation and stabilization, tree and shrub planting and stream bank fencing to prevent grazing by domestic animals to encourage natural stream bank growth.

In-stream structures include low log and stone dams, bed sills, deflectors and pool diggers. Wooden in-stream structures subjected to wetting and drying disintegrate and may be expensive to replace under certain conditions within 10-15 years. Consequently, most in-stream structures constructed with rock and long-lasting cedar logs are emphasized in improvement work.

Structures are carefully designed to produce the desired effect on the stream and must be placed and built by trained supervisors and work crews. Structures are not maintenance free and may have to be frequently repaired or replaced entirely as a result of violent flooding or moderate stream meandering.

The value of various stream improvement structures is currently under study in New York State. High costs limit construction to the most effective structures and techniques. Their value affects natural reproduction and increased biomass and size as well as the greatest return to the angler's creel.

Construction is limited to the open water season. The period of construction on any one stream can vary from a day to several months. Several hundred structures are built or repaired each year. Activities are generally limited to portions of streams accessible to the public through purchase of public fishing rights easements which include the right to do such work. There are currently some 1,100 miles of easements on 325 streams.

Barriers

In-stream barriers are constructed to prevent upstream migration of lampreys and unwanted fish. Since New York's first pond reclamation project in 1950, 129 individual waters ranging in size from 2-340 acres and totaling 5,839 acres in area have been reclaimed. Most of these ponds have fish barrier dams on their outlets. These structures are composed of wood and stone with concrete or steel being used for the larger ones. Their size and height varies depending on the stream and purpose of the barrier. Barriers are sometimes created or enhanced by blasting natural rock formations on precipitous points in streams to achieve the same affect as a man-made barrier. Downstream barriers in the form of wolf traps are also constructed to monitor fish migration and obtain specific fisheries information for management application. Most fish barriers have been and will be constructed in relatively remote areas. They are costly and must be constantly maintained.

Fish Ladders

Fish ladders built of wood, concrete or metal enable fish to continue upstream migration by circumventing natural or man-made barriers. Some are circular in construction and others zig-zag or are straight and provide for ascent of fish through a series of

relatively low velocity jump pools. Ladders can economically provide ascents for fish of as much as 50 to 100 feet. Two such structures have been constructed in New York State including one on Cayuga Inlet. This ladder includes catchment pens where fish are counted, measured and marked. In some instances, jump pools have been formed by blasting in rock ledges which have previously prevented upstream migration of fish.

Gravel Bar Removal or Stabilization

Many streams containing large quantities of alluvial bed material are constantly subjected to shifting, movement and resulting deposition of gravel bars which tend to clog or divide stream channels thereby increasing stream temperatures and reducing channel depths during low water periods. The gravel and silt deposits are normally dropped as a result of lower water velocity which in some instances could form barriers to upstream and downstream fish migration. In some instances, bars form barriers at tributary mouths thereby blocking access to upstream spawning and nursery areas. Removal or relocation of these gravel bars to backsets in the stream channel as well as along the inside bends of the natural stream meander is frequently carried out. The relocated bars are kept low and relatively flat to reduce the effects of erosion. In addition, the bars are seeded with grass and blanketed with willow trees to prevent further movement and assure permanent stabilization. In many instances gravel bar removal or stabilization is on a large scale requiring use of heavy equipment.

Reservoir Releases

Flow discharges from the many reservoirs in the state usually reflect water supply or power needs, and not the interests of stream fisheries or anglers. Some water regimens have required release on too small a scale for maintenance of productive fisheries downstream or sudden heavy releases which can endanger anglers, scour streams and cause turbidity. DEC has been partially successful in developing release regimens that specify minimum flows for some New York City reservoirs and for the Salmon River which is tributary to eastern Lake Ontario. In the future, controlled flows taking fishery management into account as well as other needs will become more common.

c. Lake and Pond Management

Despite the abundance of accessible waters in the state, there are areas where man-made ponds provide important additional fishing. Headwater ponds up to 15 acres in size provide trout fishing in the central and western portion of New York where trout waters are scarce. Small ponds have been constructed utilizing both fill and concrete dams or a combination thereof. Larger bodies of water are created as part of the Small Watershed Program by the Soil Conservation Service, created under PL566, The Watershed Protection and Flood Control Act of 1954. Pond construction is a major operation, using heavy equipment and involving clearing, grubbing, excavation, dam construction and finishing. As much as two years of construction time are required for some of the larger projects.

Pond Reclamation

In a few small lakes and in portions of some large ones, carp can cause considerable turbidity and destruction of aquatic vegetation which can be reduced by their removal. Reclamation is carried out with the fish toxicant rotenone which is sprayed and pumped at pre-determined concentrations. Organisms in outlets of reclaimed lakes are protected by detoxification (at the point of exit) of the rotenone through application of potassium permanganate.

Other pond and lake reclamation using rotenone or other fish toxicants are for species management purposes and these practices and impacts are described in the Division's Programmatic Environmental Impact Statement on Fish Species Management.

Pond Structures

Artificial reef construction in the form of concrete structures, tire and brush piles is done in some instances for the purpose of concentrating catchable fish. Reefs can be built during the open water season with the aid of scuba diving. In winter the structures are placed on the ice and anchored over the desired spots, to be lowered when melting occurs or lowered through holes in the ice.

Water control structures on pond outlets can be used to manipulate water levels for the benefit of fisheries. Although that is rarely the primary function, aquatic vegetation can be temporarily reduced by this method. Some unwanted fish which spawn in shallow areas also can be reduced due to exposure of eggs along shorelines after drawdown of the water level.

Spawning structures, usually made of concentrations of gravel, are occasionally used to increase production of bass or salmonids where there is less than adequate spawning habitat.

II. The Environmental Setting and Background

A. Location

The environmental setting for which programmatic statements are being prepared is the entire land and freshwater area of the state. There are more than 70,000 miles of streams and 3.4 million acres of natural and man-made lakes, ponds and reservoirs in the state; they drain 49,459.7 square miles of land area. Fish and wildlife occur within, on or over all parts of these aquatic and terrestrial habitats. Human activities relating to fish and wildlife likewise affect all parts of their environment. Site descriptions cannot be given in a programmatic statement because of the broad scope of coverage. Specific locations will be described, however, as future actions within these programs are assessed.

B. Need for Fish and Wildlife Programs

The mandates described above required initially that programs be evolved to carry out legislative intent. The Division of Fish and Wildlife was delegated, and has retained, responsibility for formulating and carrying out those programs. Thus a need for programs to address the mandates was explicit in the law.

This programmatic statement, as well as the other four, describes programs subsequently developed, and amended over the years as new knowledge was gained. It is important to recognize that individual programs or program elements do not function at the level deemed optimum by the Division. Financial or other constraints dictate otherwise. For example, if all top priority wetlands were purchased in one year, this one program would exhaust Division funds, with required elimination of all other programs. Although high-value wetland purchases are a high priority objective of the Division, and recognizing that every delay in purchase results in higher costs, mono-operations of this type would cause chaotic, unstable management. The alternative practiced therefore is a representative intermix of those program elements that need continuity, balanced annually according to priority demands, while addressing the mandates.

There are other compelling reasons for conducting the programs. The existing and growing public demand for fish and wildlife for recreation and food is shown, in part, in the sales of hunting and fishing licenses, Table VI, and hunting and fishing days-use, Table VII. Reduced total sales in 1971-72 and 1975-76 coincide with increases in license costs.

Another segment of the population uses fish and wildlife in a solely aesthetic sense, such as in bird watching, where possession is not a part of the experience. Since there are no licensing or registration requirements for this type of activity measuring its size is very difficult although state estimates based on national studies are listed in Table VII.

A third classification of "user" of fish and wildlife is that group suffering damage from wildlife such as the orchardist suffering extensive deer, rabbit, robin or cardinal damage or the landowner whose woodlot, road or cornfield is flooded by an influx of beavers. Although a segment of this population reports depredation to the Division, especially those suffering severe commercial damages, a much larger proportion suffers silently smaller losses such as to shrubbery and gardens.

Each of the three groups has valid demands relating to their particular interest in fish and wildlife which they make known to the Division individually, as organizations or through their legislators, sometimes in the form of proposed legislation.

A great many people value fish and wildlife as a food source either from the economic saving standpoint or because each has its own distinctive taste. Most wildlife and fresh water fish species classed as game are unattainable except by sport hunting and fishing. With few exceptions protected fish and wildlife cannot be sold. Species which can be sold usually are not obtainable in large numbers and consequently are high priced. The program takes into account public demand for fish and wildlife as food.

Because of the complexities of ecological systems, including the human interactions, there is a need for continuing basic and applied research as an essential forerunner to management. There are a vast number and diversity of species which make up an infinite number of systems, with each system in constant state of change. Man-made changes often introduce an unnatural element to further compound environmental problems. Although total understanding of ecological system function will probably never be achieved, continual study is necessary to establish, verify and update critical or meaningful pieces of the ecological puzzle needed for effective management. The inter-relationships between human and fish and wildlife welfare and the fruits of good versus bad management are so involved and extensive as to require continued study.

C. Historical Changes Relating to Programs

Following settlement of New York State as a Dutch province in 1624 direct and indirect effects of the resultant human population explosion plus periods of exploitation of some plants and animals has encroached on and dramatically changed habitats and ecological relationships. Such changes accelerated rapidly as the human population increased and affected the biological, physical, and chemical characteristics of ecosystems. Vast areas have been covered with paving, buildings or some other hard surface hostile to most forms of life. Some species of plants and animals have been extirpated; and many exotic species have become established.

Water, soil and air have been subjected to heavy loads of

contaminants, products of construction, industry and farming. In effect, all habitats have been changed quantitatively and qualitatively in their capacity to support flora and fauna that did or do exist in the state today.

Natural changes are taking place concurrent with changes brought about by man's activities. Rates of death, birth, changes in weather patterns and other factors lead to gradual shifts in dominance and inter-relationships within and between ecosystem components. Flood, fire, wind, and other catastrophic forces often result in acute changes in localized ecosystems.

There are numerous references that document historical changes in the state's environmental characteristics. Smith (1954) describes changes as they influenced wildlife habitat. His major source of reference for early history was original field record books filed by land surveyors, some dating back to 1750. Included in his publication is a map and regional descriptions of the primeval forest, described by first European visitors as "an almost unbroken forest." Smith also summarizes periods of land classifications as derived from Federal and State consensus.

The historical accounts clearly show the dramatic change that has occurred to the physical environment. There are less obvious side effects from changing land use that may be of greater importance than those more visible; i.e. the increase in water temperatures resulting from timber cutting in head waters and along stream banks; scouring and sedimentation of streams and rivers by floating logs to mills; acid precipitation from smoke stacks, etc.

As history unfolded recognition of some of the negative effects being wrought led to the beginning of the conservation movement. Earliest actions were motivated by desire to maintain and manage game species for hunting purposes. This desire has remained a major motive but recognition soon came that these species are part of an intricate web of life and their welfare cannot be considered independent of the other organisms with which they co-exist.

Legislation was passed and agencies established to regulate and manage. As described above, the Department of Environmental Conservation evolved as the agency charged with responsibilities for natural resources. Through delegation the Division of Fish and Wildlife has been charged with the responsibility to "... promote natural propagation and maintenance of desirable species in ecological balance..."

While the Division historically has had responsibilities for environmental protection, only recently has legislation provided the necessary muscle for surveillance and control of environmental impacts on a statewide scale.

D. The Ecological System

Division programs are inseparably and intricately tied to ecological systems. Knowledge of how these systems function and the laws of nature are prerequisite to meeting Division goals.

Ecology is too complex and extensive a field to attempt an adequate summary in this statement. One of the more brief and lucid explanations of ecology is provided by Storer (1953). Some of his most cogent comments are:... "The most basic truth regarding our Earth home is that all living things, in some manner, are related to each other,..." and, "... The subject of ecology is so vast and complex that no human mind has ever fathomed all its secrets. Many of them can probably never be unraveled, but the basic principles of ecology are known, and on the functioning of these known principles depends the future of all human lives."

Other pertinent references (texts) on ecology principles and functions include Allee (1951), Elton (1927), Leopold (1953) and Woodbury (1953).

Although a thorough review of ecological function is not presented in these programmatic statements it is essential to recognize that the directors and executers of fish and wildlife programs are trained biologists/ecologists.

E. The Fish and Wildlife Profession

An integral element of the setting for the program described herein is the biologist who contributes to the fish and wildlife management programs and the profession represented. The profession is new enough that public recognition has not been fully achieved, but old enough to have proven its need and effectiveness through innumberable examples of salvation, restoration and management of fish and wildlife resources.

The profession is a combined art and science. As with physicians, foresters and others concerned with living organisms there is a basic background of scientifically based data and principles built through research and experience to govern decisions. There are, however, frequent gaps in knowledge which defy precise scientific description and the need to temper decisions to best meet the needs and desires of people. It is in these areas where experience and training bring "art" to bear.

Although there are isolated, centuries-old historical examples of fish or wildlife management, its practice as a profession is recent. In the United States private organizations and governmental agencies concerned with conservation first came into being in the late 1800's. The need for protection of species such as the salmon, bison and hea th hen was by then overwhelmingly evident. Although a few individuals recognized habitat deterioration as a major cause of fish and wildlife decline, most early effort went toward preserves, refuges, artificial rearing and stocking. Governmental protection and implementation of other management was followed by recognition of the need for trained fish and wildlife management specialists and by 1919 a College of Fisheries at Seattle was established as the

first school teaching fisheries sciences. Its counterpart in wildlife sciences was established at the University of Wisconsin in 1933. Cooperative Wildlife Research Units were established at several additional universities in 1934. Cooperative Fisheries Units were added in 1960. Today hundreds of colleges and universities teach fish and wildlife-science related courses.

Research and Cooperative Research Units at universities and federal and state agency programs were further stimulated by the Pittman-Robertson (1937) and Dingell-Johnson (1950) Federal Aid Acts which annually provide excise tax funds specifically for fish and wildlife restoration. Currently state and federal programs are implemented by qualified, trained professional fish and wildlife biologists in decision-making positions for management of fish and wildlife resources. They have available a vast library of references built rapidly in the short history of the profession.

This history and evolution of the fish and wildlife management professions along with highlight accomplishments is summarized by Benson (1970) and Trefethan (1975) and is recommended reading for a better understanding of the programmatic statements.

Almost the entire professional staff of the Division of Fish and Wildlife consists of either fish or wildlife biologists or ecologists with a minimum bachelor's degree in biological sciences with special course work in fish and/or wildlife management. This professional staff plans, directs, conducts, reports on and evaluates the program described herein.

F. Sources of Funds

Sources of funds have a definite bearing on the types of activities engaged in by the Division of Fish and Wildlife.

The Conservation Fund, by law, must be used exclusively for fish and wildlife programs. Its primary revenue is derived from:
(1) sale of hunting, fishing and trapping licenses and special permits;
(2) fines and penalties for violation of the Fish and Wildlife Law;
(3) reimbursement from the federal aid fish and wildlife restoration programs;
and 4. all other income from fish and wildlife programs, such as timber sales from wildlife management areas.

The federal aid programs likewise, by law, are earmarked for fish and wildlife programs. The programs are available to states that have passed laws governing wildlife conservation including a prohibition against diversion of license fees paid by hunters and fishermen.

The State General Fund, consisting of State Purposes, Capital Construction and Local Assistance Funds is also available to the Division to supplement its programs. These funds are not limited to use for particular programs or activities.

In 1977-78 about two thirds ($15+ million) of the Division budget was from the Conservation Fund.

A more comprehensive description of funding as it applies to fish and wildlife programs is included as Table VIII of the Appendix.

G. Fish and Wildlife Values

The state's fish and wildlife resources are publicly-owned and represent public wealth. Wealth is anything people value and is not to be confused with money, merely an agreed-upon means of exchanging and transferring some kinds of wealth. Public wealth is wealth that belongs to everyone. A public building is public wealth the value which can be measured in money at a given time. Moonlight is public wealth that cannot be bought, sold, given money value or for that matter, managed or preserved. Fishery and wildlife resources fall somewhere between. They can be managed, but it is a difficult and uncertain business to measure their worth on a monetary standard.

To manage public wealth means to preserve and where possible to increase its worth to the public. Management may be protective by preserving and protecting what is there, or developmental which involves attempting to increase the value. In managing recreational and commercial fisheries and wildlife resources, we are responsible to the public as a whole. But we also have a particular responsibility to work in the interests of consumptive users as long as there are no conflicts with the general public interest in the long-term maintenance and welfare of the resource.

Wealth has value if it can be used or reserved for future use. Sometimes use must be immediate, or the value is lost, as with ice cream on a hot day. Use may be non-consumptive, as with a work of art or a scenic view, or consumptive, as with food. Some forms of wealth retain their value if used consumptively at a limited rate. Fishery and wildlife resources, as renewable resources, fall in both categories. The maximum value of fisheries and wildlife resources is probably reached by blending the varied public use interests while following the guiding principles that the practice of good stewardship and wise use will assure enjoyment of these valuable resources for future generations.

Direct individual benefits and indirect collective benefits ensue from the maintenance and utilization of the fisheries and wildlife resources.

The most profound and rewarding benefits accrue to the individual. Through the nature, location or personal demands of the resource, mental and physical health is fostered. In contrast to the pressures and continuum of the technological and crowded environs of the majority of New Yorkers, the fisheries and wildlife resources and their environments offer diversity of pasttime and surroundings, the facilities for learning, relaxing, meditating and recreating the spirit; an emotional and mental outlet, and often, a remote setting of needed silence and solitude. Healthful outdoor recreation and exercise, and personal challenge and skill are implicit to the degree that each person is capable. Observation or study of the fisheries and wildlife resources impart a uniquely personal and aesthetic experience which transcends mere resource utilization. All of society benefits from the resulting mental and physical health of its citizens.

Fish or game harvest through sportfishing, commercial fishing, trapping or hunting provides a diverse source of food and other products. This aspect of the resource is often important to the lower-income citizen.

Collectively, there are social benefits associated with the resource. Small groups of friends, clubs, special interest groups, local civic organizations and educational groups explore the resource and its peripheral subjects. Participation carries no qualifications of age*, sex, social or financial status, intellectual or physical prowess. In the best American tradition, it is an equalizer. It can be enjoyed for a lifetime.

Economic gain to providers of goods and services is a sound secondary benefit derived from sportfishing, hunting and trapping activities, and has profited the economy of many communities. Commercial fishermen and trappers, of course, count financial benefits among their primary objectives.

The resource use experience is reinforcing and self-perpetuating. Commercial fishermen, sportfishermen, hunters, trappers, and naturalists alike, within their own activities, realize an appreciation for the resource and may opt to guard and improve it for continued use. The ultimate value of the fish and wildlife resource is that people want to maintain and use it.

Fish and wildlife are effective barometers of the quality of an ecosystem, providing an early warning system to indicate environmental degradation. For example, the condition of a fishery is the single best index of water quality, and is used to determine suitability of water for many purposes. These resources, in indicating the quality of their inherent life also broadly comment on the quality of human life.

H. Decision-Making by Resource Managers

Wildlife and fisheries are renewable products of the land and water. The kinds of animals to be found at particular terrestrial and aquatic locations, their numbers, physical condition and behavior are determined by the nature of the environment, or habitat, at that site. Changes in habitat necessarily produce changes in animal life. Both natural plant succession and vegetation changes resulting from man's activities can drastically alter aquatic and terrestrial animal populations. Changes in physical or chemical parameters can also result in an entirely different faunal composition.

It is the responsibility of the fishery or wildlife manager to determine what set of habitat conditions is the most desirable for a given location. The goals of the Division of Fish and Wildlife must be kept in mind, while study is directed toward factors which will influence or determine the type and extent of management that is undertaken.

* except hunting

The first factor to be determined is the overall needs and desires of people for management of fish and wildlife. The basic objectives for management must be "people-interest" oriented.

A second major consideration is the section of the State with which the manager is dealing. There are tremendous ecological differences in New York resulting from variability in topography, soils, water, climate and vegetation. These physical parameters impact the species of fish and wildlife present and their abundance, distribution, behavior and welfare. Each ecological zone or type has its distinct problems and thus different solutions are required.

Basic to the decision-making process must be consideration of fish and wildlife species present at a given site, species for which there is potential, and the associated habitat problems that might exist for those species.

The decision-making process must include consideration of the unavoidable fact that habitat management benefiting a particular species or group of species can be detrimental to others. The relative importance and impacts to the populations of species affected must be assessed in order to select target species for management and determine the extent of impact desired or acceptable.

The daily, seasonal and annual aquatic and terrestrial habitat requirements of each of the target species must be identified. Decisions must be made on the most favorable habitat type or combination of types. Limiting factors are given first attention so that the starting point of habitat management can be identified.

Once the desired habitat types are determined the alternative ways of producing favorable habitat conditions are reviewed. The decision on which, if any, habitat management measure to implement is greatly influenced by cost and effectiveness.

Special consideration must be given to critical aquatic and terrestrial habitats including certain habitats of rare and endangered species of animals or plants, concentrated breeding or staging areas and seasonal habitats essential to the survival of certain species.

Essential to making appropriate decisions is the planning process, whereby the development of goals, objectives, program, strategic, operational and work plans form the matrix for ordering and considering essential factors which lead to habitat management activities.

At the same time, these factors are highly dynamic and frequently there are few facts or absolutes upon which to base decisions. Consequently, the manager must often rely on established principles, experience, available data, and a large dose of public input in finally determining the objectives and means of implementation for fish and wildlife habitat management.

I. Fish and Wildlife Habitats in New York

New York State can be divided into nine distinct ecological zones (Figure 1).* A capsule summary of some of the physiographic features of each follows:

1. Coastal Lowlands

Comprised of Long Island and part of Staten Island, this zone is relatively flat, with elevations starting at sea level and for the most part not exceeding 200 feet. The area is dominated by medium to moderately coarse textured, strongly acid soils on gravel and recent alluvium. The climate, influenced by the ocean, is characterized by mild winters and relatively cool summers with comparative freedom from sudden, extreme temperature changes. The January mean is over 30°F, the growing season approximates 200 days and the area receives an average of 20 to 40 inches of snow annually. The woodlands are basically pitch pine and oak (red, white, black, chestnut, scarlet, scrub) with dogwood, sassafras and maple intermixed. Water resources include several hundred miles of marine shoreline, some 190 small lakes and several hundred small streams with both warm and coldwater fisheries.

2. Hudson River Hills

The terrain varies from rolling to steep and is rough and stony. Elevations start at sea level and extend up to 1,600 feet. Coarse to medium textured acid soils tend to be the rule. Rock outcrop and very shallow soils are found in much of the zone. The climate is relatively mild with a January mean temperature of between 25 and 30°F, a growing season of over 160 days and a range of average annual snowfall from 20 to 60 inches. The forests are oak (red, white, black, chestnut) mixed with northern hardwoods (beech, sugar maple, yellow birch) white pine, basswood, paper birch, black cherry and hemlock.

3. Taconic Hills

Hills and rounded mountains are the striking topographical features of this zone. Elevations start at about 400 feet and extend to the 2,800 foot mark near the State border. The soils are medium to moderately coarse textured and acid On steep terrain the soils are very shallow. The January mean temperature is between 20° and 25°F, the growing season approximates 140 days and the zone receives an average of from 40 to 60 inches of snow annually. The forests are oak, northern hardwood or a mixture of the two; with white pine in association.

* Zones are consolidated and simplified for general descriptive purposes. A detailed breakdown and description of New York ecological zones is currently being prepared by the Division.

4. Mohawk-Hudson River Valley

A variety of terrain is found, ranging from rolling plain with gentle slopes to hills with moderate slopes. Elevations range from near sea level on the lower Hudson to 1,700 feet in part of the Mohawk Valley. Soils vary from medium textured high lime soils to medium textured acids. The January mean temperature is between 20 and 30°F, the growing season ranges from 135 to 165 days depending on elevation and latitude and the annual snowfall is from 40 to 80 inches. Northern hardwood is the major forest type with oak and white pine in association.

The Hudson River Hills, Taconic Hills, and Mohawk-Hudson River zones generally include a combination of small and medium-sized cities, much dairy and fruit production and extensive forestlands. Water resources and habitats include over 240 miles of the Mohawk and Hudson Rivers, hundreds of small to medium-sized lakes, several large lakes and reservoirs, and several thousand miles of streams containing a diverse combination of cold and warm-water fish populations.

5. Allegheny Plateau

This zone possesses a typical plateau-like structure with horizontal rock formations, but is so elevated and dissected that it is more truly a hill country. The topography is irregular with broadly rolling and hilly sections and steep valleys. Most of the zone is situated well above 1,000 feet. January mean temperatures are between 20 and 25°F, the growing season for most of the zone is between 120 and 150 days, and the average annual snowfall ranges from 45 to 85 inches. The climate of the zone is influenced by proximity to The Erie-Ontario Lake Plains bodies of water. The soils are generally medium textured, acid, usually with and developed on glacial till. The woodlands are comprised of northern hardwood-oak forests with hemlock intermixed. Some balsam fir is found in the Catskill section. This zone is an intensive farming and recreational area with extensive forest-lands and few urban areas. Most of the 270,000 acres of state-owned land in the Catskill Park are included. Water resources include many large New York City reservoirs, major rivers such as the Delaware, Susquehanna, Genesee, and Allegany, major lakes such as Chautauqua, Cayuga, Seneca and Canandaigua, and many thousands of small lakes, ponds and streams including some of the most famous trout streams in the nation.

6. Erie-Ontario Lake Plains

Except for drumlins, this is basically a flat plain. Elevations start just below 300 feet and extend up to 1,000 feet, with most of the country well below 800 feet. The climate

is greatly influenced by Lake Ontario and Lake Erie. Near the lakes January mean temperatures are between 25 and 30°F; elsewhere 20°F. Most of the zone has a growing season of 160 days and receives 60 to 80 inches of snow annually. The predominant soil associations are limy on glacial till over undulating to rolling terrain or on glacial sediments. Elm, red maple and northern hardwoods are the major forest trees.

This zone is largely cleared and intensively farmed and contains several large urban centers and much industry. Major waters include Lakes Erie, Ontario, Oneida and Champlain and major waterways such as the Niagara, Genesee, Oswego and St. Lawrence Rivers, and the New York State Barge Canal System.

7. Tug Hill Plateau

The terrain is flat to rolling with the major portion situated at about 1,800 feet above sea level. The soils are shallow, stony and acid. The climate is severe with a mean January temperature of below 20°F, a growing season of about 135 days and an average of 100 to 140 inches of snowfall annually. The forests are typically spruce-fir-northern hardwood, and the area contains numerous streams.

8. Adirondack Foothills

The topography of this zone is rolling hills and rounded mountains with elevations in the range from 500 to over 2,000 feet. Typical of all the Pre-Cambrian Canadian Shield, the soils are sandy, acid, shallow, stony and rather infertile. The January mean temperature is below 20°F, the growing season is from 135 to 150 days and the zone experiences an average annual snowfall of 60 to 100 inches. The forests are spruce-fir-northern hardwood intermixed with white pine. Oaks and a number of the other more southerly tree species are common in some sections. The area contains several large waters including Great Sacandaga Lake and Lake George, over hundreds of smaller lakes and thousands of miles of streams.

9. Central Adirondacks

This rounded to rugged mountain country has an elevational range from about 1,500 feet above sea level to over 5,000 feet. The soils are sandy, acid, shallow, stony and quite infertile. The January mean temperature is below 20°F, the growing season is less than 135 days and average annual snowfall in different sections ranges from 80 to over 140 inches. The climate must be considered severe. The extensive forests are exclusively spruce-fir-northern hardwood. Both the Adirondack foothills and Central Adirondacks are sparsely populated with only a few smaller towns and villages. Almost 2 1/2 million acres of state-owned land are included with intensive recreational activities a dominant cultural feature. Water resources include many major lakes such as Lake Placid, The Saranac Lakes, Raquette Lake, Tupper Lake, Long Lake, Cranberry Lake, hundreds of smaller lakes and thousands of miles of small streams.

From the zone descriptions, it is apparent that New York is basically heterogeneous. Because of the differences in the land and water some species may be very common in one zone but absent from others. Snowshoe hare, pine marten, red crossbill, three-toed woodpecker, spruce grouse, Canada jay and round whitefish are found in the spruce-fir-northern hardwood country and clear cold lakes of the Central Adirondacks, but are generally absent or uncommon in Ecological Zones one through six. Some species auch as the white-tailed deer, red fox and smallmouth bass are quite versatile and are commonly found in most or all ecological zones of the State. However, as a result of basic physiographic differences habitat requirements and preferences may vary greatly from zone to zone. In the Central Adirondacks, deer spend the winter in and adjacent to low-lying mature softwood shelters, while in much of the Appalachian Plateau winter deer activity often centers around steep south and west-facing slopes.

Man's use of the land, which to a large extent is determined by basic physiographic features, further complicates fish and wildlife habitat problems and management. Much of the land of the Erie-Ontario Lake Plains is devoted to agriculture, reflecting favorable topography, soils and climate, and has a number of heavily populated areas. These human influences play a major role in determining what fish and wildlife species will thrive and what conflicts will exist. In contrast, the Adirondack Foothills, Central Adirondacks and Tug Hill Plateau are heavily forested, resulting from a combination of rugged topography, poor soils and an adverse climate. Major human influences derive from lumbering and the tourist industry. The fish and wildlife habitats of the Appalachian Plateau are in a period of transition. During the 1800's the major conflicts between land use and fish and wildlife resulted from agriculture. As a result of the marginal nature of these lands with respect to farming large-scale land abandonment took place. This zone is therefore becoming increasingly attractive for the woodland and brushland species of wildlife, and some stream and lake habitats are slowly reverting to their original coldwater conditions.

Uses of the land and water can be either beneficial or detrimental. They can destroy the habitat of one species, while vastly improving conditions for others. Large scale cutting of trees and land clearing can be harmful to species such as black bear, fisher turkey and trout; species that require fairly extensive woodlands and/or cold, clear waters. However, many open land or brushland species such as the cottontail rabbit, white-tailed deer, or bluebird only exist in quantity where such practices have occurred. Fish and wildlife resources are abundant and diversified in almost all areas of the state, although type, size, quality and abundance varies considerably as they are influenced by geography, soil types, land and water use, climate, density of population.

The Division of Fish and Wildlife is becoming increasingly active in dealing with the impacts on fish and wildlife habitats from land and water use such as industrial, commercial, residential and second home development; urban expansion; expansion and abandonment of agricultural lands; logging; construction of roads and highways; flooding and construction of flood control devices; siting of power plants and transmission lines and discharge of various effluents into environments.

Land and water in New York have benefited in a quality sense in the last two decades from a series of environmental laws that have both protected and upgraded them. Little habitat manipulation has been carried out by the Division of Fish and Wildlife but the agency is involved in managing and conserving habitats through administrative methods and in accessory or planning roles. Improvement has been achieved in the following areas as examples:

- Stream protection through review of impending actions, and issuance of permits. Adverse impacts are usually prevented and as a result stream beds, banks and water are protected.

- Stream reclassification constantly upgrades the use of streams, wherever possible and practical, into the recreational sphere of fishing. Uses which would lower the classification are prohibited.

- Water pollution in the forms of industrial effluent, non-point land use contamination and domestic sewage is being brought under better control.

- High phosphate detergents have been banned for many uses resulting in a clearing trend in many waters and reduction in the rate of eutrophication.

- The Freshwater Wetlands Act has resulted in the recognition and protection of the values of thousands of acres of marshes and swamp.

- Significant fish and wildlife habitats have been systematically identified across the state and adverse impacts to these areas may consequently be mitigated.

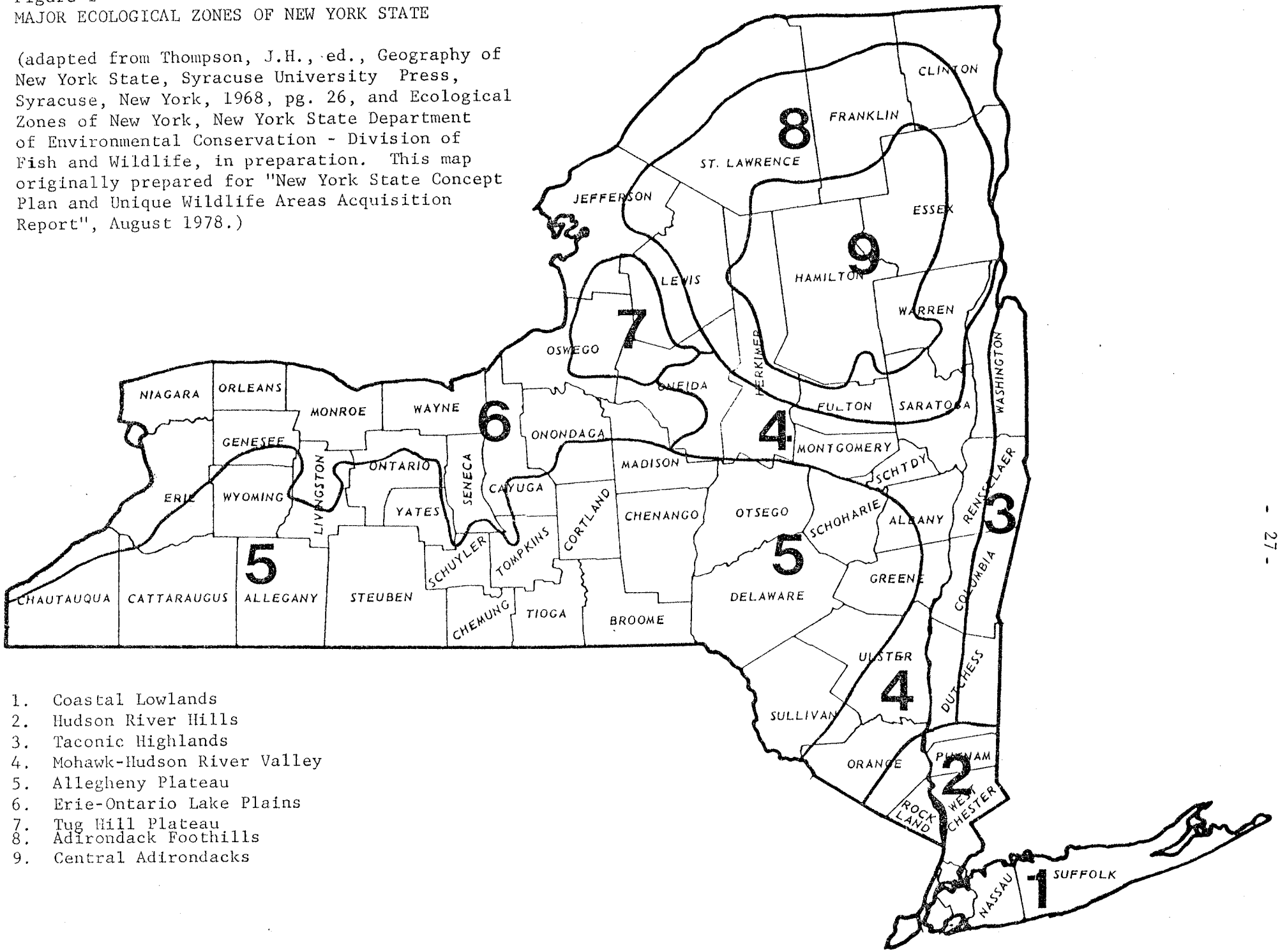
- Planning has led to coordination of activities with other federal, state and private agencies with the result that lands and waters have been protected by fencing, erosion control, better farm and forest practices, provision for several categories of wild land, prevention of development of unesthetic shore conditions, and control of reservoir releases.

The result of this massive, continuous, and uncompleted program has been the protection and maintenance of extensive amounts of fish and wildlife habitats and the enhancement of many areas that had not produced desirable fish and wildlife resources for years.

The Division of Fish and Wildlife recognizes that continued progress to maintain and restore fish and wildlife habitats will occur through greater and more efficient investments of time and funds in planning and land and water use regulation.

Figure 1
MAJOR ECOLOGICAL ZONES OF NEW YORK STATE

(adapted from Thompson, J.H., ed., Geography of New York State, Syracuse University Press, Syracuse, New York, 1968, pg. 26, and Ecological Zones of New York, New York State Department of Environmental Conservation - Division of Fish and Wildlife, in preparation. This map originally prepared for "New York State Concept Plan and Unique Wildlife Areas Acquisition Report", August 1978.)



1. Coastal Lowlands
2. Hudson River Hills
3. Taconic Highlands
4. Mohawk-Hudson River Valley
5. Allegheny Plateau
6. Erie-Ontario Lake Plains
7. Tug Hill Plateau
8. Adirondack Foothills
9. Central Adirondacks

III. Environmental Impacts of The Habitat Management Program

A. Beneficial Impacts of Fish & Wildlife Habitat Management

1. General Wildlife Impacts

The welfare of target wildlife can be improved by favorable changes in the quality and quantity of necessary habitat components. This may be reflected in improved physical condition, increased reproductive rates, higher survival rates, increased populations, or expansion of range.

Management of critical habitats will help insure perpetuation of rare, unique, endangered or other valuable wildlife.

The development or retention of certain plant species and plant communities will be favored. These species may have significant commercial value in addition to their value as a part of wildlife habitats.

More productive soils can develop either culturally or naturally as a result of vegetative changes induced by management.

Habitat management can influence water conservation, sediment filtering, flood control and minimizing erosion.

Management can result in a diversified landscape that is esthetically pleasing.

A more diversified habitat, which generally results from management practices, produces the greatest diversity of non-target wildlife.

Habitat management of certain sites can result in higher utilization of these areas for wildlife-related activities, thus relieving use pressures on adjoining lands and deriving greater benefits from land publicly owned or where there is substantial investment for other reasons.

2. Impacts Specific to Wildlife Management Practices

a. Upland Practices

Plantings

Irregular patches or strips of wildlife food and cover can increase target wildlife numbers, non-target wildlife numbers and diversity, and provide a more esthetically pleasing landscape.

Plantings of trees in plots and strips can improve wildlife food and cover, help control soil erosion and increase moisture retention, and help add organic matter to soils resulting in basic improvements to soil fertility and structure and the quality of surface run-off waters.

Trees planted may eventually have commercial value for wood products.

Clearings and Thinnings

Increasing the amount of diversity in habitats and the amount of borders between types of habitat can increase the numbers of target wildlife and the numbers and diversity of non-target wildlife.

The creation of woodland and brushland openings can produce a more visually appealing landscape.

Useable wood products may be realized from cutting operations.

Miscellaneous Practices

Basic soil fertility and resulting quality of vegetation can be enhanced through applications of lime and fertilizer.

Construction of water holes and brushpiles can increase the number and diversity of non-target wildlife.

b. Wetland Practices

Impoundments and Excavations

The enhancement and/or construction of wetlands, swamps, ponds and potholes provides habitat for a great number and variety of birds, animals and fish.

The stability and preservation of aquatic and terrestrial ecosystems is enhanced through the increased diversity of habitats

and flora and fauna provided through construction of water areas.

Wetlands comprise the habitat of a number of rare birds and animals in New York. Increased wetland areas can help expand the range and number of these species.

Swamps and marshes are particularly important to maintaining the abundance and distribution of migratory waterfowl, wading birds and shorebirds which concentrate at these areas in the spring and fall.

Swamps and wetlands frequently are important sources of water for groundwater recharge, help reduce potential flooding downstream through excess water storage, and may help improve downstream water quality through sediment filtering and addition of basic nutrients.

Water areas are an important focal point for fish and wildlife outdoor recreational activities such as bird-watching and photography, hunting and fishing. Construction of new areas can increase the amount, diversity, and distribution of these recreational opportunities.

Ditching

Ditching increases the amount and results in the specific location of open water in dense areas of aquatic vegetation. Beneficial impacts include increased diversity of habitat, increased nesting and loafing areas for waterfowl, and reduced intra-specific competition which can help increase breeding densities of waterfowl.

Public access into and through wetlands is improved through ditching.

Water Level Manipulation

Manipulation of water levels can result in the optimum mixture of desirable plants and open water to create the most diverse aquatic habitat for target wildlife or to produce the greatest diversity of wildlife.

Water level manipulation can be used to create optimum water depth for target wildlife or for greatest wildlife diversity, especially at appropriate times of peak wildlife use such as during fall migration of waterfowl.

Manipulation can help control undesirable aquatic vegetation, or undesirable fish through exposing eggs deposited along shorelines.

Lowering water levels to expose bottom sediments can result in oxidation of plant growth-inhibiting elements such as iron, thereby increasing the availability of elements such as calcium and increasing plant growth and fruiting capability of aquatics after re-flooding.

Lowering water levels can result in improved solidification of bottom sediments, deterioration of excessive organic matter, and allows

the planting, growth, and fruiting of desirable vegetation on exposed areas.

Plantings and Upland Vegetation Control

Herbaceous plantings along shorelines, dikes, and islands helps prevent erosion and provides cover for ground-nesting birds.

Consecutive burns or periodic mowing of dikes and areas near impoundments helps maintain cover for ground-nesting birds.

Cereal grain plantings can help improve wildlife food supplies, attract additional numbers of waterfowl and other wildlife to sites, help contain wildlife within refuges or other areas, and help prevent wildlife depredations in adjacent agricultural areas.

Nest Structures

Nest structures can ensure breeding populations of target wildlife in areas where natural nesting habitat is lacking, particularly areas of high investment such as constructed wetlands.

Nest structures can help increase numbers and the distribution of target wildlife such as woodducks and bluebirds and can make a substantial contribution to maintaining viable populations of these species.

Nest structures can provide relatively secure, predator-proof nest sites thus increasing reproductive success above natural conditions.

Miscellaneous

Control of nuisance wildlife helps to protect high investments in structures such as dams, dikes, and water control structures. This is long-term assurance against the failure of these structures and ultimately loss of swamp, pond, and wetland areas.

3. General Fisheries Impacts

Fish habitat management activities help maintain the diversity and stability of aquatic communities through maintenance of quality standards for water and the continued existence of all endemic elements of the aquatic ecosystem.

Habitat management can help to maintain and increase the number and distribution of endangered or threatened fish species.

Habitat management can increase the number, growth rate, annual biomass harvested, and distribution of target fish species.

Management activities can provide a greater fish take and amount, distribution and diversity of fishing opportunity for target fish species.

Habitat management activities can improve basic water quality through impacts on temperature, erosion control, and chemical composition.

Habitat management can result in concentrations of angling pressure which alleviate use problems in adjoining areas and provide a greater return in benefits for resources expended in gaining public access, or undertaking extensive species management activities.

Management can ensure suitable habitats are accessible for utilizatio by appropriate species, and inaccessible for those species which are undesired or detrimental.

4. Impacts Specific to Fisheries Practices

a. Lake and Stream Management Combined

Northern Pike Spawning Marshes

Pike spawning takes place on a grassy substrate in water 1 to 2 feet in depth in the early spring. The young fish utilize the relative safety of the area and leave after a number of weeks at lengths of 2 to 3 inches. In addition to development or enhancement of a pike fishery, populations of prey species such as suckers, the sunfishes and perch are somewhat reduced in number, which leads to increased growth and size of the individual fish in the panfish fishery.

Beaver Dam Removal

Removal eliminates unproductive beaver ponds (from a fishery viewpoint) and replaces them with productive streams. Since stable ponds usually have a higher temperature, removal lowers stream temperatures and provides for better trout fishing downstream. Removal also affords fish barrier dam protection where beaver have constructed their own dams on top of the man-made structure. Upstream and downstream migration of desirable fish is also enhanced by removal.

Liming

Liming of acid lakes preserves strains of fish adapted to Adirondack conditions and allows development of fisheries which would otherwise be lost. These strains are the basis of current fisheries and the building blocks of the future. Their loss is irretrievable. Both lake and brook trout and native suckers, bullheads and sunfish are among the species involved. It has been demonstrated, for example, that while stocked Adirondack lake trout produce fisheries, those strains from other areas show poor survival. While a similar phenomena has not been demonstrated for the other species mentioned it is assumed that the various strains have intrinsic value and must be preserved.

b. Stream Management

Stream Improvement

In-stream structures direct the flow of water to provide deeper channels, riffles and pools during low water and to prevent undercutting of banks and resultant turbidity. Structures provide cover for fingerlings, and concentrate adult trout to areas where the public has access. Year-round riffles created by structures provide spawning areas for fish, and a greater production of invertebrate food organisms. Out-of-stream structures reduce undercutting, meandering, turbidity, and siltation. Tree and shrub growth from plantings shade waters and help lower water temperatures. Structures can enhance stream appearance by stabilizing stream meandering and resultant raw earth areas, turbidity, and siltation.

Structures in improved areas can help increase the standing crop and catch by 50 to 100 percent, thereby increasing the return of stocked fish and the satisfaction of anglers.

Barriers

Barriers prevent upstream migration of parasitic sea lampreys to their spawning areas as well as preventing upstream migration of undesirable fish species into reclaimed waters which permits maintenance of productive and desirable fisheries in those areas restored to primarily salmonid production. A barrier could also be constructed or maintained exclusive of a reclamation project to keep undesirable fish species out of certain waters upstream where they have not yet penetrated.

Fish Ladders

Fish ladders enable trout, salmon, suckers, shad and other stream herring, eels and various minnows to move upstream to spawning or other habitat above man-made dams and some natural barriers. Fish production and catch can be greatly increased, and entire fisheries which would otherwise be lost are developed and maintained.

Removal of Gravel Bars

Removal or relocation of gravel bars from the mouths of tributaries flowing into larger trout streams permits adult trout to reach upstream spawning areas, enhances use of nursery areas by fry and fingerlings and facilitates downstream migration to more intensively fished streams. Relocation or removal with appropriate stabilization measures prevents a reduction in stream channel carrying capacity, siltation and smothering of existing productive spawning areas. The number and catch of wild trout may be increased because of natural reproduction and the need for stocking reduced.

Reservoir Releases and Water Level Manipulation

Controlled reservoir releases increase minimum flows and maintain lower temperatures of water downstream, thus maintaining fish populations and fisheries which would otherwise be greatly reduced or non-existent. Water level manipulation can enhance northern pike spawning in reservoirs and thereby increase their populations. Water level manipulation can aid in reduction of populations of undesirable species by concentrating them and increasing vulnerability to predation or destruction.

Pond Construction

Creation of headwater ponds increases fishing opportunity in deficient areas by replacing small stream fisheries (usually trout) with little or no fishing opportunity. Ponds constructed under the small watershed program of the Soil Conservation Service provide fisheries in areas where fishing opportunity is deficient. They also provide flood control and resulting preservation of fisheries and appearance of streams below.

Pond Reclamation

Removal of carp can result in reduction or elimination of turbidity with resulting reduction of shoreline siltation, increased growth of rooted aquatic plants, an increase in food production, increased shelter for the young of predatory fish and resulting improvement in both game and panfish fishing. The benefits also include an improvement in esthetics and a resultant increase in property values.

Pond Structures

Pond structures such as reefs and brush piles concentrate larger fish of certain species and allow an increase in catch and utilization of the resource. Spawning boxes provide for increased reproduction of certain fish such as the black bass and salmonids where natural spawning habitat is scarce or non-existent. Manipulation of water levels in ponds and lakes results in temporary reduction of heavy growths of aquatic plants, thereby improving boat navigation, opening areas to fishing and creating a more pleasing appearance. Fish such as carp and sunfishes which spawn in littoral areas can also be reduced to some extent thereby allowing greater growth of panfish and decreasing turbidity and destruction to desirable aquatic vegetation caused by carp.

B. Adverse Impacts of Fish and Wildlife Habitat Management

1. General Wildlife Impacts

While target wildlife will benefit from program practices, it is inevitable that some species will be adversely affected. Either their numbers may be decreased or they may be completely eliminated from a particular area. Generally, these impacts are specific to individual birds or animals or small numbers and not to populations as a whole.

Individual rare or endangered plants could be destroyed through mowing, cutting, flooding, etc. Some practices can result in the lowering of the productivity of soils. This could occur as a result of cutting, clearing, burning, flooding, etc.

Habitat management may temporarily make a site less esthetically appealing.

Restrictions on public use for the purpose of protecting habitats may result in human demands for the wildlife resource not being met. (See Exhibit 7, IVB)

Attracting numbers of people to a particular managed area can bring associated problems such as littering, damage to vegetation and noise as well as increasing use and pressure on surrounding private lands. The need for sanitary facilities could increase.

Establishing habitat management areas will take land out of production for other purposes.

Management practices may cause an increase in nuisance animal complaints and damages through increasing animal numbers or affecting their location.

Impoundments may result in changes in water flow that may be undesirable from the standpoints of other human use of the water resource and fisheries management. Undesirable fish species might be encouraged. Impoundments may adversely affect water chemistry, quality and temperature in outflows.

2. Impacts Specific to Wildlife Practices Implemented

a. Upland Practices

Plantings

Plantings of particular trees and shrubs in quantity could so alter an area as to destroy the habitat of certain wildlife or plant species, or reduce over-all diversity of an area for wildlife such as may occur through planting of a large coniferous block. This impact generally would only occur within the actual interior of the plantation.

Plantings may be situated so that they decrease the opportunity to view landscapes and some wildlife, i.e. the planting of a hedgerow along a roadside.

Clearings and Thinnings

Clear-cut and thinning operations involve a degree of noise, site disturbance, and temporary unsightliness, and can increase the potential for fire from remaining slash.

b. Wetland Practices

Impoundments and Excavations

Construction activities (and pothole blasting) to create water areas involve a degree of noise, litter, soil disturbance, temporary unsightliness, temporary displacement of wildlife and wildlife recreation, and possible increases in soil erosion and a lowering of water quality.

Areas flooded are precluded from other uses.

Flooding of areas can destroy rare or threatened fish or wildlife or valuable habitats.

Excessive flooding of woodland areas can result in their destruction, with possible loss of commercial values and replacement with a lower quality reservoir with excessive amounts of dead timber.

Impoundments can be detrimental to downstream water quality through a reduction in flow volume, increase in water temperature, increased turbidity, excessive nutrient loading, and favoring of undesirable fish species.

Water Level Manipulation

Lowering of water levels exposes shorelines and marsh and pond bottoms and can result in temporary unsightliness, odors, and losses of recreational opportunity relative to fish and wildlife.

The spawning and nursery habitats of certain fish species such as northern pike and pickerel may be temporarily destroyed.

Temporary losses of wildlife habitat will result from severe drawdowns or drainage of marshes, swamps, or ponds.

Periodic manipulation of water levels could prevent the establishment or destroy certain plants and animals, i.e. those whose habitat typically is found along shorelines.

Vegetation Control

The application of herbicides could have unknown cumulative or synergistic effects on local fauna.

Controlled burns can create air pollution problems under restricted conditions.

Periodic mowing could destroy valuable individual plants or prevent their establishment or re-establishment.

Nest Structures

Improper design and placement of nest structures can result in increased vulnerability of wildlife using them to weather, predation, human disturbance, etc.

Some nest structures are unsightly and may detract visually from a marsh or swamp setting.

Nuisance Animal Control

Control results in the death of individual animals and reduced populations or removal of some species from certain locations, subsequently reducing their distribution and the opportunity to utilize them at former locations.

3. General Fisheries Impacts

Management to improve conditions for target fish species can result in poorer habitat for other species causing individual deaths and the demise of populations or segments of populations of non-target species in ecosystems.

Construction of structures in management projects temporarily disturbs localized sites, resulting in a degree of noise, unsightliness, soil scarification and erosion, and a lowering of water quality.

Construction of ponds and small lakes excludes sites from other uses, and could result in the destruction through flooding of valuable plants or wildlife habitats or stream habitats.

Attraction of the public to managed sites can result in increased noise, litter, and general disturbance. (See Exhibit 7, IVB)

Drawdown and reclamation projects can expose shorelines and pond and lake bottoms creating a degree of unsightliness and possibly resulting in temporary water degradation and foul odors from dead fish. This practice might also result in temporary loss of stream and wetland values due to reduction of flows downstream.

4. Impacts Specific to Fisheries Practices Implemented

a. Lake and Stream Management Combined

Northern Pike Spawning Marshes

Raising of water levels to enhance northern pike spawning can cause encroachment of water on other properties. Maintenance of marshes precludes other permenent uses. Construction of low dams and dikes can cause temporary site disturbances.

Beaver Dam Removal

Removal can reduce the fur resource in the area and cause the death of individual beaver from exposure to the elements and predation. Draining of ponds can cause temporary unsightliness and could destroy valuable wildlife habitat. To assure maintenance of stream conditions continuous removal of beaver might be required.

Liming

Use of helicopters for application of lime to wilderness lakes creates considerable noise.

b. Stream Management

Stream Improvement and Removal of Gravel Bars

Construction of stream improvement structures, in-stream and out-of-stream, and removal or relocation of gravel bars presents a degree of disarray during the usually short period of work. Turbidity and siltation occurs downstream from work areas and this can temporarily affect spawning and feeding areas. Fisheries in the area and immediately downstream are sometimes temporarily suspended.

Barriers and Fish Ladders

Major structures such as barriers and fish ladders have all of the adverse construction impacts of a degree of unsightliness, disarray, noise, increased traffic to and from the area, turbidity and road destruction. Some individual plants and animals are displaced. Other uses of the sites are prevented during construction periods. The resulting man-made structures can mar the natural landscape. Non-target species may be prevented from up or downstream movement.

Reservoir Release

No significant adverse impacts are apparent.

c. Lake and Pond Management

Pond Creation

Creation of headwater ponds and small watershed impoundments present all of the adverse effects of any large construction as above. Individual resident animals and plants are temporarily evicted or destroyed. People can be subjected to relocation. Other uses of flooded sites are precluded. Valuable flora and fauna could be lost to the immediate area. Decreased flooding downstream could have an adverse effect on wetlands.

Pond Reclamation

During the period of toxicity ranging from a few days to several weeks, use of treated water for fishing, swimming or domestic purposes is suspended. Dead and dying fish can be unsightly and odoriferous for a short period following reclamation if not removed. Reclamation and the resultant reduction in turbidity may encourage the growth of rooted aquatic plants to the point of unsightliness or impeding boating, fishing, and swimming. Non-target species of fish can be eliminated.

Pond Structures

Reef construction and placing of brush piles present a construction type of impact on contiguous shore areas or on the ice if the structures are placed over the sites in winter. These structures can also interfere with fishing gear and anchor ropes.

Manipulation of water levels for vegetation control presents an unattractive rock or soil rim around the lake, can leave ramps and docks above water levels and can interfere with shore fishing because of the presence of deep mud. Dead and dying vegetation can be unsightly and odoriferous. Prevention of fish spawning through water level manipulation may result in similar unattractive conditions.

C. Mitigation Measures to Minimize or Eliminate Adverse Impacts

Mitigation measures for adverse impacts must be considered for each activity at each site where management is undertaken. However, generalized measures include:

- Advance planning, which considers the alternatives of cost, location, scheduling and methods.
- Identification of critical habitats or habitats which contain rare or other valuable fish, wildlife or plants.
- Planting, mowing and cutting of small areas and creating irregular borders so that adverse visual impact is reduced.
- Scheduling cutting, burning, foliage spraying, pothole blasting, reclamation and water level manipulation when possible so that the minimum time exists relative to the unsightliness of areas treated or their use curtailed by fish, wildlife or people.
- Timing of construction to avoid critical periods such as spawning and incubation.
- Completing construction operations as quickly as possible and providing mitigation to site disturbance through attention to topography, location of roadways, construction of settling basins to reduce silt load in outfall streams, use of natural materials where possible and immediate contouring, seeding and landscaping after the completion of construction.
- Ensuring proper disposal of any solid wastes generated from construction or vegetation control activities.
- Ensuring the size of impoundments do not exceed watershed capabilities so that outflows must be reduced in order to maintain water level.
- Providing bottom draw-off capabilities to water control structures to help maintain lower stream temperatures below impoundments.
- Ensuring water manipulation of sufficient nature so that flooded woodlands are not destroyed or that the basic fertility and plant diversity and interspersion of wetland areas is not lost.
- Use of herbicides to control vegetation only as a last measure.
- Timing and locating controlled burns so that significant additions to particulate matter in the air does not occur or does not create a problem.

- Ensuring the design of nest structures provides for them to be predator-proof.

- Constructing dikes and dams with wire mesh or rip-rap above and below water lines a sufficient distance to discourage the burrowing of muskrats or beaver.

- Removal of dead fish from reclamation or drawdown projects.

- Balanced dispersal of management activities to avoid the attraction of excessive numbers of people to specific sites.

- Conducting meetings and hearings for larger projects to gain view of public concerns and suggested mitigation measures.

- Preparation of environmental assessment and impact statements.

D. Unavoidable Adverse Impacts

A degree of adverse impact is unavoidable in implementing fish and wildlife habitat management. The nature and extent of impact depends on many factors, but generalized impacts would include:

- The death of individual fish or wildlife or the loss of portions or whole populations of particular species from some sites, or a reduction in carrying capacity for some non-target species. Such losses generally are not significant to the total range, habitat or number of such species.

- A degree of noise, unsightliness, site disturbance, and temporary loss of recreation or habitat from construction, cutting, burning, and water level manipulation practices.

- Loss of habitat for some fish and wildlife and existing land use through creating impoundments.

- Marring landscapes through introduction of man-made structures and materials.

E. Irreversible and Irretrievable Commitments of Resources

Irretrievable resources of time, energy, labor, and materials are committed when implementing habitat management practices for fish and wildlife.

Most habitat management irreversibility commits land and water areas to certain uses in the short term. Most areas would ultimately revert to original conditions or a new habitat would develop based on predominent local physical, chemical, and biological characteristics. The time required for reversion would approximate 5-25 years for most areas, but could require up to 75 years for some types of habitat such as mature forest. The loss of habitat for some non-target species and the use of land resulting from management represent irretrievable resource commitments.

F. Short Term Use vs. Long Term Impacts

Most adverse impacts which result from undertaking habitat protection and management for fish and wildlife are limited in nature and area, are generally not of an irreversible nature except in the short term, and are usually controllable through proper planning and administrative action. The unavoidable adverse impacts of most habitat management projects would not be considered significant unless factors existed such as the potential to affect colonies or populations of rare or endangered plants, fish or wildlife; the loss of whole populations of some desirable non-target species over a broad area; significant impairments to soil, air, water or landscape quality over a broad area; or loss of a higher and better use for a large land area. These types of potential major impact would have to be carefully weighed against benefits for a particular project, and in most instances would preclude the project initiation.

Balanced against the usually minor unavoidable adverse impacts of undertaking fish and wildlife habitat management are the very substantial long-term benefits of such action, which include but are not limited to:

- Potential development and maintenance of appropriate habitat for rare or endangered species in order to help ensure their continued existence.

- Development and maintenance of optimum carrying capacity for desirable targeted species on managed areas.

- Increased public recreational opportunities resulting from higher or more diversified fish and wildlife populations on managed areas.

- Increased public contact with fish and wildlife and their habitats with resulting heightened public enjoyment and appreciation for these resources and desire to ensure their maintenance.

G. Growth-Inducing Aspects of Habitat Management

The hiring of labor and the purchase of materials to implement management activities will affect local economies. Increases in human use of managed areas will induce growth of local economies.

Neither is considered to be significant unless a major construction project was undertaken.

Statewide, the growth-inducing aspects of fish and wildlife habitat management are insignificant.

H. Effects of Habitat Management on the Use and Conservation of Energy

Use of energy will result directly from conducting habitat management operations and indirectly as a result of increase in human activity at managed sites. Involved will be the transportation of workers to and from the sites and the energy consumed by the public traveling to and from and using the facilities of a particular area.

Actual fish and wildlife habitat management projects utilize energy similarly to any field or construction work involving light and heavy vehicles and equipment; most habitat management activities fall into the light category.

Overall impacts of habitat management on the use and conservation of energy are insignificant.

I. Alternatives to the Habitat Management Program

There is no reasonable alternative to current habitat protection and management practices which will fulfill legal mandates and achieve division objectives for the maintenance of quality fish and wildlife habitats in New York.

However, an alternative to the current program is to have no program. The consequences of such an action could include:

- Failure to fulfill legal mandates
- Lack of protection and management for critical fish and wildlife habitats.
- Reduced fish and wildlife populations or diversity.
- Possible irretrievable loss of some species of fish or wildlife.
- Reduction in fish and wildlife recreational opportunities.

The current program could be modified to emphasize certain practices only, but this would have similar effects to those noted above since habitat management is now oriented to achieve specific objectives and is based on consideration of critical need, cost/benefit, equitable distribution of recreational opportunity, and minimal adverse environmental impact.

The scope and magnitude of the current program could be greatly increased if additional resources were available. Greater environmental protection could be provided, especially of critical habitats, populations of target fish and wildlife could be substantially increased, research and better evaluation of practices would be undertaken in order to achieve greater effectiveness and benefit, and increases in the amount and diversity of fish and wildlife recreational opportunities would be possible. The current program was selected to meet priority habitat management needs that have been identified throughout the State. Implementation of the program was deemed necessary to serve as one of a number of means to meet the Department of Environmental Conservation's mandate to conserve and manage the fish and wildlife resources of the State. The level and magnitude of the habitat management program is determined by the amount of funds available and priorities with respect to other activities of the Division of Fish and Wildlife. Habitat management is not independent, but rather is blended with other Division activities in an attempt to derive a balanced and effective program.

IV. APPENDIX

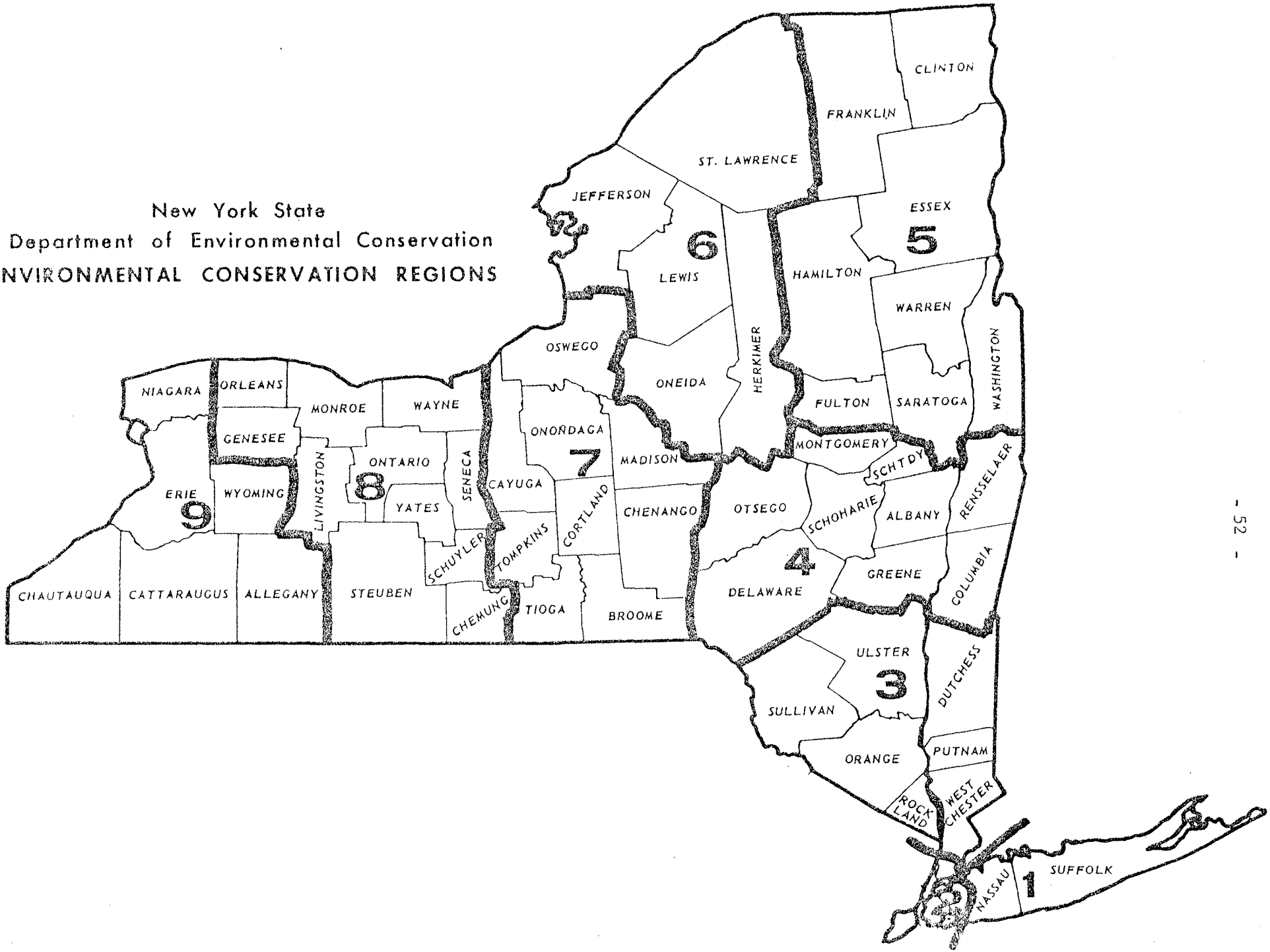
A. Attachments

TABLE I. Central & Regional Offices of The Department of Environmental Conservation

Central Office
50 Wolf Rd.
Albany, NY 12233
518-457-5690

Regional Offices	Sub-Offices
Region 1 Bldg. 40, SUNY Stony Brook, New York 11790 516-751-7900	
Region 3 21 So. Putt Corners Rd. New Paltz, NY 12561 914-255-5453	Millbrook sub-office, Rt. 44 Millbrook, NY 12545 914-677-3081
Region 4 50 Wolf Rd. Albany, NY 12233 518-457-5861	Route 10 Stamford, NY 12167 607-652-7364
Region 5 Route 86 RayBrook, NY 12977 518-891-1370	Hudson St., Box 220 Warrensburg, NY 12885 518-623-3671
Route 6 State Office Building 317 Washington St. Watertown, NY 13601 315-782-0100	Utica State Office Bldg. Reg. 6-Law Enforcement Office Utica, NY 13500 315-797-6120 (Ext. 417)
Region 7 7481 Henry Clay Blvd. Liverpool, NY 13088 315-473-8301	P.O. Box 1169 Fisher Ave., Cortland, NY 13045 607-753-3095
Region 8 P.O. Box 57-Rte. 20 Avon, NY 14414 716-226-2466	
Region 9 584 Delaware Ave. Buffalo, NY 12402 716-842-3837	128 South St. Olean, NY 14760 716-372-8676

New York State
Department of Environmental Conservation
ENVIRONMENTAL CONSERVATION REGIONS



DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF FISH AND WILDLIFE

TABLE II.

S.E.Q.R.

ENVIRONMENTAL ASSESSMENT FORM

PART I - BACKGROUND

1. Name of Proponent _____

2. Address and Phone Number of Proponent:

_____

_____

3. Date Checklist Submitted _____

4. Agency Requiring Checklist _____

5. Name of Proposal, if applicable:

_____

6. Estimated Date for Completion of the Proposal:

_____

7. List of all Permits, Licenses or Government Approvals Required for the proposal (federal, state and local -- including rezones:)

_____
_____
_____
_____
_____

8. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain:

_____
_____
_____
_____

9. Do you know of any plans by others which may affect the property covered by your proposal? If yes, explain:

_____
_____
_____
_____

10. Attach any other application form that has been completed regarding the proposal; if none has been completed, but is expected to be filed at some future date, describe the nature of such application form:

_____
_____
_____

11. Nature and Brief Description of the Proposal (including but not limited to its size, general design elements, and other factors that will give an accurate understanding of its scope and nature):

12. Location of Proposal (describe the physical setting of the proposal, as well as the extent of the land area affected by any environmental impacts, including any other information needed to give an accurate understanding of the environmental setting of the proposal):

PART II. ENVIRONMENTAL IMPACTS

(Explanations of all "yes" and "maybe" answers are required. Use reverse side for explanation of yes and maybe answers; label each answer with proper number, title and letter).

	Yes	Maybe	No
(1) Earth. Will the proposal result in:			
(a) Unstable earth conditions or in changes in geologic substructures?	_____	_____	_____
(b) Disruptions, displacements, compaction or overcovering of the soil?	_____	_____	_____
(c) Change in topography or ground surface relief features?	_____	_____	_____
(d) The destruction, covering or modification of any unique geologic or physical features?	_____	_____	_____
(e) Any increase in wind or water erosion of soils, either on or off the site?	_____	_____	_____
(f) Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?	_____	_____	_____
Explanation: Use reverse side.			
(2) Air. Will the proposal result in:			
(a) Air emissions or deterioration of ambient air quality?	_____	_____	_____
(b) The creation of objectionable odors?	_____	_____	_____
(c) Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?	_____	_____	_____
Explanation: Use reverse side.			
(3) Water. Will the proposal result in:			
(a) Changes in currents, or the course or direction of water movements, in either marine or fresh waters?	_____	_____	_____
(b) Changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff?	_____	_____	_____

	Yes	Maybe	No
(c) Alterations to the course or flow of flood waters?	_____	_____	_____
(d) Change in the amount of surface water in any water body?	_____	_____	_____
(e) Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?	_____	_____	_____
(f) Alteration of the direction or rate of flow of ground waters?	_____	_____	_____
(g) Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?	_____	_____	_____
(h) Deterioration in ground water quality, either through direct injection, or through the seepage of leachate, phosphates, detergents, waterborne virus or bacteria, or other substances into the ground waters?	_____	_____	_____
(i) Reduction in the amount of water otherwise available for public water supplies?	_____	_____	_____

Explanation: Use reverse side.

(4) Flora. Will the proposal result in:

(a) Change in the diversity of species, or numbers of any species of flora (including trees, shrubs, grass, crops, microflora and aquatic plants)?	_____	_____	_____
(b) Reduction of the numbers of any unique, rare or endangered species of flora?	_____	_____	_____
(c) Introduction of new species of flora into an area, or in a barrier to the normal replenishment of existing species?	_____	_____	_____
(d) Reduction in acreage of any agricultural crop?	_____	_____	_____

Explanation: Use reverse side.

	Yes	Maybe	No
(5) Fauna. Will the proposal result in:			
(a) Changes in the diversity of species, or numbers of any species of fauna (birds, land animals including reptiles, fish and shellfish, benthic organisms, insects or microfauna)?	_____	_____	_____
(b) Reduction of the numbers of any unique, rare or endangered species of fauna?	_____	_____	_____
(c) Introduction of new species of fauna into an area, or result in a barrier to the migration or movement of fauna?	_____	_____	_____
(d) Deterioration to existing fish or wildlife habitat?	_____	_____	_____
Explanation: Use reverse side.			
(6) Noise. Will the proposal increase existing noise levels?	_____	_____	_____
Explanation: Use reverse side.			
(7) Light, Glare, Vibration, Electrical Disturbance: Will the proposal produce new light, glare, vibration or electrical disturbance?	_____	_____	_____
Explanation: Use reverse side.			
(8) Land Use. Will the proposal result in the alteration of the present or planned land use of an area?	_____	_____	_____
Explanation: Use reverse side.			
(9) Natural Resources: Will the proposal result in:			
(a) Increase in the rate of use of any natural resources?	_____	_____	_____
(b) Depletion of any nonrenewable natural resource?	_____	_____	_____
Explanation: Use reverse side.			
(10) Risk of Upset. Does the proposal involve a risk of an explosion or the release of hazardous substances (including, but not limited to oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions?	_____	_____	_____
Explanation: Use reverse side.			

(11) Population. Will the proposal alter the location,

	Yes	Maybe	No
distribution, density, or growth rate of the human population of an area of over 5 percent over a 1 year period or have a major negative effect on the community?	____	_____	_____
Explanation: Use reverse side.			
(12) Housing. Will the proposal affect existing housing, or create a demand for additional housing?	____	_____	_____
Explanation: Use reverse side.			
(13) Transportation/Circulation. Will the proposal result in:			
(a) Generation of additional vehicular movement?	____	_____	_____
(b) Effects on existing parking facilities, or demand for new parking?	____	_____	_____
(c) Impact upon existing transportation systems?	____	_____	_____
(d) Alterations to present patterns of circulation or movement of people and/or goods?	____	_____	_____
(e) Alterations to waterborne, rail or air traffic?	____	_____	_____
(f) Increase in traffic hazards to motor vehicles bicyclists or pedestrians?	____	_____	_____
Explanation: Use reverse side.			
(14) Public Services. Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas?	____	_____	_____
(a) Fire protection?	____	_____	_____
(b) Police protection?	____	_____	_____
(c) Schools?	____	_____	_____
(d) Parks or other recreational facilities?	____	_____	_____
(e) Maintenance of public facilities, including roads?	____	_____	_____
(f) Other governmental services?	____	_____	_____
Explanation: Use reverse side.			

	Yes	Maybe	No
(15) Energy. Will the proposal result in:			
(a) Use of substantial amounts of fuel or energy?	_____	_____	_____
(b) Demand upon existing sources of energy, or require the development of new sources of energy?	_____	_____	_____
Explanation: Use reverse side.			
(16) Utilities. Will the proposal result in a need for new systems, or alterations to the following utilities:			
(a) Power or natural gas?	_____	_____	_____
(b) Communications systems?	_____	_____	_____
(c) Water?	_____	_____	_____
(d) Sewer or septic tanks?	_____	_____	_____
(e) Storm water drainage?	_____	_____	_____
(f) Solid waste and disposal?	_____	_____	_____
Explanation: Use reverse side.			
(17) Human Health. Will the proposal result in the creation of any health hazard or potential health hazard (excluding mental health)?	_____	_____	_____
Explanation: Use reverse side.			
(18) Aesthetics. Will the proposal result in the obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view?	_____	_____	_____
Explanation: Use reverse side.			
(19) Recreation. Will the proposal result in an impact upon the quality or quantity of existing recreational opportunities?	_____	_____	_____
Explanation: Use reverse side.			

	Yes	Maybe	No
(20) Archeological/Historical. Will the proposal result in an alteration of a significant archeological or historical site, structure, object or building?	____	____	____
Explanation: Use reverse side.			
(21) Is there serious public controversy concerning the project?	____	____	____

SIGNATURE

I, the undersigned, state that to the best of my knowledge the above information is true and complete. It is understood that the lead agency may withdraw any declaration of non-significance that it might issue in reliance upon this checklist should there by any willful misrepresentation or willful lack of full disclosure on my part.

Proponent: _____

TABLE III. Environmental Protection Activities of the Division of Fish and Wildlife

Environmental Inventory and Monitoring

1. Inventories to identify critical habitats and to provide population data on streams, lakes and upland habitats subject to alteration.

Activities are:

a. Survey of streams and lakes to provide biological, chemical, physical and morphological parameters. Identify harmful and potential changes, permit upgrading, measure increases or declines of aquatic species, provide data for planning purposes and formulation of alternatives, prevent extirpation or extinction of aquatic organisms, permit assessment of project impacts, and identify changing trends.

2. Monitoring current levels and trends of contaminants, and diseases affecting fish and wildlife. Activities are:

a. Taking samples of fish, wildlife, water and soils for analysis, examination of stock in State, Federal and private hatcheries, and examination of pesticide formulations.

3. Monitoring of projects for compliance with permits and to determine effectiveness of protective measures. Activities are:

a. Examination, in the field, of any activity which may alter the environment including construction, agricultural, forest, wildlife activities, for which permits have been issued and protective measures formulated.

Toxic Substances Control Program

1. Collection of fish from 140 sampling stations and analyses for presence of 15 or more toxic substances over a three-year period.

Activities are:

a. Collection, storage, analysis, reporting of results, and institution of necessary changes.

Environmental Standards and Criteria

1. Bioassay under natural and laboratory conditions. Activities include:

a. Testing of pesticides and herbicides to establish safe levels of use.

2. Application of revised water quality standards and criteria to the State's waters. Activities are:

a. Examination of streams to determine conditions in relation to the most recent classification, establishment of new classifications (based on several criteria) if necessary to protect aquatic life and if needed to develop the potential of the water where practical.

3. Field investigations to establish standards for acceptable reservoir releases in problem areas. Activities are:

a. Monitoring of temperature-flow characteristics in the Upper Delaware River Basin and elsewhere, and determination of plans needed for maintenance of conditions suitable for aquatic life and fishing.

Environmental Impact Analyses

1. Review and analysis of proposals for major action likely to alter natural habitats in order to develop recommendations to minimize adverse effects and maximize benefits to fish and wildlife and their use.

Activities are:

a. Annual review of 5,000+ project notices, comment on the fish and wildlife resources involved and the impact of the project, recommendations for mitigation of adverse impacts or changes necessary to enhance the resource and its use.

Investigation of Environmental Disturbances:

1. Investigation of unanticipated destruction of habitat and mass mortalities of fish and wildlife. Activities include:

a. Field investigation and analysis, and reporting as a basis for legal action and as a basis for recommendations to avoid future occurrences.

Comprehensive Area Planning:

1. Planning for enhancement of fish and wildlife resources. Activities include:

a. Intensive analyses and plan formulation for some two dozen studies.

Statutory Protection:

1. Review of permits issued by the Division of Fish and Wildlife and other agencies in the DEC or in other departments. Activities include review of the proposed action, and refusal or issuance of permits, and recommendations for needed changes.

Administrative Control of Lands and Waters:

1. Preservation and protection of unique or critical habitats. Activities include acquisition, easement, or lease or by regulating land use practices.

TABLE IV. PRIMARY WILDLIFE MANAGEMENT LANDS IN NEW YORK

The bulk of the work conducted under the wildlife management program is on Wildlife Management Areas which are under the jurisdiction of the Division of Fish and Wildlife, Multiple Use Areas administered jointly by the Divisions of Land Resources and Forest Management and Fish and Wildlife, and Reforestation Areas managed by Land Resources and Forest Management. Some projects are undertaken on private lands under Fish and Wildlife Management Act cooperative agreements. In addition some small marshes constructed under this Act are maintained periodically.

1. Wildlife Management Areas

County	Name of Area	Acreage
Albany	Black Creek	87.80
	Knox	246.00
	Partridge Run	4,526.30
Allegany	Hanging Bog	4,519.80
	Rattlesnake Hill	1,454.00
Cayuga	Cross Lake Islands	28.00
	Howland Island	3,598.50
Chautauqua	Canadaway Creek	2,014.00
Chenango	Pharsalia	4,453.70
Clinton	Ausable	576.30
	Kings Bay	398.60
	Lake Alice	1,486.40
	Montys Bay	35.60
Columbia	Rodgers Island	271.20
Delaware	Bear Spring Mountain	7,141.33
	Delaware W.M.A. #1	67.88
Essex	Wickham	683.30
Genesee	Oak Orchard	2,406.80
	Tonawanda	2,437.10
Jefferson	Ashland Flats	1,892.70
	Brownville	231.00
	Cassler Marsh	110.60
	Collin Landing	47.80
	Cranberry Creek	13.40
	Dexter Marsh	1,300.00
	French Creek	2,265.00
	Honeyville	110.70
	Indian River	750.00
	Lakeview Marsh	3,421.40
	Little John	1,973.40
	Perch River	6,513.50
	Wilson's Bay	400.00
Lewis	Tug Hill	4,985.00
Livingston	Conesus	1,037.00
	Rattlesnake Hill	3,694.10
Madison	Tioughnioga	3,603.70
Niagara	Tonawanda	2,737.10
Onondaga	Cicero Swamp	3,724.30
	Mud Lake	325.60
	Three Rivers	3,500.00

TABLE IV. PRIMARY WILDLIFE MANAGEMENT LANDS IN NEW YORK (continued)

County	Name of Area	Acreage
Ontario	Harriet Hollister Spencer	398.70
	High Tor	1,258.40
Orleans	Oak Orchard	50.00
	Tonawanda	334.30
Oswego	Big Bay	120.00
	Happy Valley	8,624.40
	Little John	6,048.10
Otsego	Three Mile Bay	3,031.20
	Crumhorn Mountain	60.00
	Hooker Mountain	83.25
Rensselaer	Capital District	3,760.80
Schuyler	Connecticut Hill	5,575.00
Seneca	Willard	158.40
St. Lawrence	Fish Creek	4,437.80
	Upper & Lower Lakes	8,781.70
	Wilson Hill	3,415.00
Steuben	Erwin	2,489.00
Sullivan	Basha Kill	331.63
Tompkins	Connecticut Hill	6,035.00
	Dryden Lake	196.50
Washington	Carter Pond	445.91
Wayne	Lake Shore Marshes	3,868.70
Yates	High Tor	3,872.80
	State Totals (56 separate areas)	142,445.50

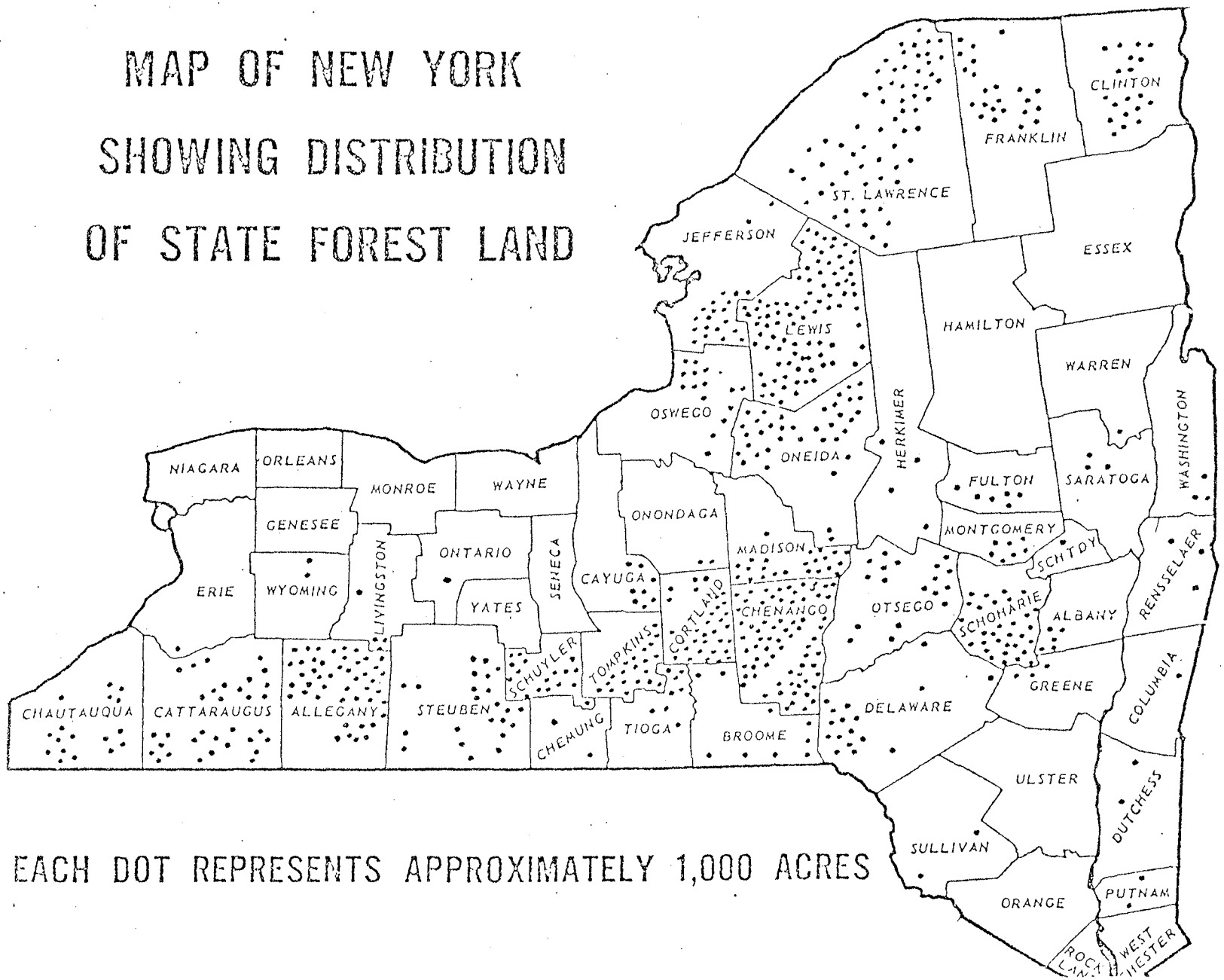
2. Multiple Use and Reforestation Areas

STATEWIDE FOREST ACREAGE

BY REGION

REGION	ACREAGE REFOR-ESTATION	MULTIPLE USE	ENVIRON. BOND	TOTALS
Region 3 (13 areas)		6,521.75	100.00	6,621.75
Region 4 (70 areas)	74,380.34	8,976.32	1,681.43	85,038.09
Region 5 (30 areas)	31,240.05	22,530.38	208.86	53,979.29
Region 6 (123 areas)	184,386.69	22,357.47	261.03	207,005.19
Region 7 (114 areas)	171,084.98	19,162.44	98.26	190,345.68
Region 8 (34 areas)	40,348.00	7,618.52		47,966.52
Region 9 (60 areas)	84,900.99	13,150.59	156.80	98,208.38
TOTALS (444 areas)	586,341.05	100,317.47	2,506.38	689,164.90

MAP OF NEW YORK SHOWING DISTRIBUTION OF STATE FOREST LAND



EACH DOT REPRESENTS APPROXIMATELY 1,000 ACRES

3. FWMA Cooperative Areas

Region	County	Name of Area	Acreage
1	Suffolk	Ridge-Middle Island	5,836
	Suffolk	Fire Island National Seashore	1,640
	Nassau	Hempstead Lake	167
	Suffolk	Whites Pool	3
	Suffolk	United States Navy	4,777
		Sub-total	12,423
3	Putnam	Putnam County	9,000
	Dutchess	Dutchess County	5,000
	Ulster	Ellenville	6,900
	Sullivan	Lower Mongaup River	2 1/2 mi. river
	Sullivan	Orange & Rockland	13,000
	Sullivan	Ten Mile River	15,000
	Sullivan	Rio Reservoir	460
	Orange	MTA	7,500
		Sub-total	56,460
4	Columbia-Dutchess	Ancram-Millerton	4,162
	Delaware-Schoharie	Bald Hill	10,478
	Columbia-Rensselaer	Chatham Nassau	6,477
	Albany-Schoharie	Crystal Lake	16,279
	Otsego	Edmeston	12,194
	Rensselaer	Hoosick	11,201
	Columbia	Kinderhook-Stuyvesant	9,566
	Otsego	Milford	30,980
	Otsego	Oneonta Watershed	1,400
	Delaware-Otsego	Otsdawa	15,366
	Richfield Springs	Otsego	14,560
	Roseboom	Otsego	13,518
	Tomhannock	Rensselaer	3,100
	Windham	Greene	1,622
	Cannonsville	Delaware	9,500
		Sub-total	160,403
5	Saratoga	Vischer Ferry	5,169
	Hamilton	Cedar River	3,000
	Hamilton	Speculator Tree Farm	29,400
	Saratoga	Palmer Lake	1,276
	Saratoga	Village of Corinth Water Works	403
	Warren	Jabe Pond	840
	Washington	Dead Pond	10
	Fulton	Marble Vly	1,158
	Essex	Huntington Forest	10,500
	Essex	Nichols Pond	6,750
	Franklin	Santa Clara Flow	260
	Clinton	Point au Fer	118
	Franklin	West Pine Pond	5,000
		Sub-total	63,884

3. FWMA Cooperative Areas (continued)

Region	County	Name of Area	Acreage
6	Jefferson	Camp Drum	105,000
	St. Lawrence	Camp Portaferry	450
	St. Lawrence	Twin Lakes	37
	St. Lawrence	Tupper Lake Tree Farm	11,000
	St. Lawrence	Massawepie Camp	3,600
	Lewis	Long Pond	149
	Herkimer	Stillwater Tree Farm	7,500
	Lewis	Moose River	3,700
		Sub-total	131,436
7	Cayuga-Tompkins	King Ferry	11,000
		Sub-total	11,000
8	Genesee	Batavia Cooperative	7,348
	Livingston	Genesee Valley Cooperative	3,394
	Orleans-Monroe	Garendon	4,100
		Sub-total	14,482
9	Allegany	Allen Lake Cooperative	6,100
	Niagara	Niagara County Cooperative	4,800
	Erie-Wyoming	Erie	4,700
	Allegany, Cattaraugus Chautauqua	Hammermill	18,997
		Sub-total	34,597
		TOTAL ACRES	485,045

LOCATION OF FWMA COOPERATIVE AREAS
IN NEW YORK STATE

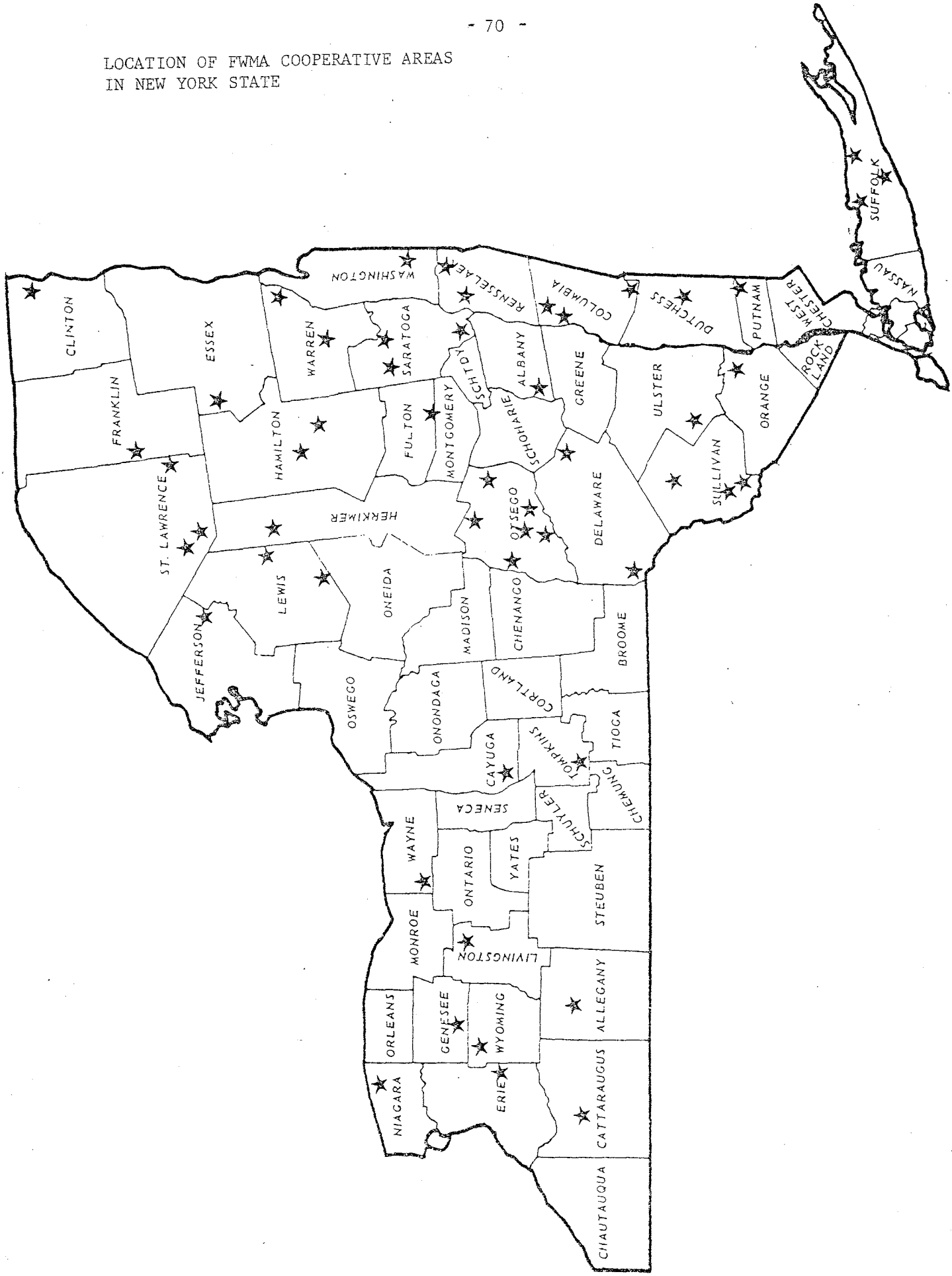


TABLE V. STATISTICS REGARDING FISHERIES RESOURCES IN NEW YORK STATE

A. WATERS

Designation	Surface Acreage	Shoreline in Miles	Length in Miles
Lake Erie in N.Y.S.	373,760	83	
Lake Ontario in N.Y.S.	2,270,000	356	
Lake Champlain in N.Y.S.	97,024	190	
4000 Inland Lakes & Reservoirs	747,600	-	
Total	3,488,384		
Streams in 24 Watersheds			70,000
Streams with Trout			15,000
Streams Stocked with Trout			4,400
Warmwater Streams			55,000

Inland lakes over 10,000 acres:

Chautauqua Lake	13,427
Canandaigua Lake	10,604
Keuka Lake	11,712
Seneca Lake	42,630
Cayuga Lake	42,796
Oneida Lake	51,072
Sacandaga Lake	26,656
Lake George	28,160
Total	227,057

Largest rivers:

Hudson River	320
Mohawk River	
St. Lawrence River	128
Oswego River	28
Genesee River	144
Allegheny River	56
Susquehanna River	64
Delaware River	80

B. PUBLIC ACCESS

FWMA areas:	6
Public fishing rights:	2200 streambank miles
Fishing access sites:	
Acquired:	85
Developed:	56
Fisherman parking areas:	
Acquired:	372
Developed:	222

C. APPROXIMATE FREQUENCY OF FISH HABITAT MANAGEMENT ACTIVITIES

Lake and pond reclamation: Over 135 to date; currently 10 to 12 annually.

Lake liming: 52 to date; currently several per year; 25 or more annually in the future.

C. APPROXIMATE FREQUENCY OF FISH HABITAT MANAGEMENT ACTIVITIES

Stream improvement: Between 1000 and 2000 structures to date; currently at rate of several dozen new structures per year. Fifty to one hundred maintained each year.

Barriers: Approximately 75 to date; currently at a maximum of several per year.

Reservoir releases: 30 current in formulation stage; over 100 within next five years.

Fish ladders: 2 to date: 1 planned.

Gravel bar removal: 10 to 15 currently per year and immediate future.

Pond construction: 8 to date; 2 in immediate future.

Pond structures: Sporadic to date; 2 to 4 annually in future.

Beaver dam removal: Less than 1 per year.

Spawning marshes: None planned.

STATEWIDE LICENSE ISSUANCE, RESIDENT AND NONRESIDENT

1940/1976-77

TABLE VI.

Year	Total Licenses	Combination Hunting and Fishing	Hunting 1/	Fishing 1/	Non-Resident 6 or 7 Day Fishing 3/	Non-Resident 3 Day Fishing	Big Game 1/	Trapping 4/	Archery	Nonresident Hunting Big Game Combination
1940	776,187	254,134	159,334	196,090	-	-	158,226	8,403	-	-
1945	801,576	221,164	160,748	204,923	-	-	202,746	11,995	-	-
1950	1,273,035	231,101	219,315	458,673	-	-	348,131	14,729	1,136	-
1955	1,509,684	265,464	268,072	524,369	-	-	419,700	12,771	19,308	-
1959-60	1,456,634	204,576	280,450	511,391	11,736	-	418,953	9,152	20,376	-
1960-61	1,491,011	225,661	296,734	498,294	11,524	-	431,697	8,526	18,575	-
1961-62	1,477,883	211,344	290,132	504,837	11,488	-	437,213	7,877	14,992	-
1962-63	1,521,732	212,845	303,414	503,243	11,828	-	467,084	8,065	15,253	-
1963-64	1,521,118	206,917	291,843	507,393	11,250	-	480,369	8,835	14,511	-
1964-65	1,527,916	210,268	299,173	501,410	11,926	-	482,950	8,349	13,840	-
1965-66	1,582,963	213,931	306,534	519,451	12,978	-	502,992	8,650	18,497	-
1966-67	1,643,566	223,997	311,387	539,785	14,403	-	522,335	8,239	23,420	-
1967-68	1,737,961	232,318	314,576	590,676	15,064	-	545,207	6,764	33,356	-
1968-69	1,786,898	246,980	311,659	599,592	15,859	-	564,400	8,343	40,065	-
1969-70	1,819,323	252,860	309,992	585,276	15,686	-	599,683	9,533	46,293	-
1970-71	1,799,694	251,306	295,647	541,504	20,812	-	604,591	8,867	52,758	24,620
1971-72	1,690,662	223,581	287,910	551,152	20,573	-	529,280	9,050	51,781	17,355
1972-73	1,766,733	219,503	279,404	626,558	23,443	-	529,774	11,699	58,417	17,935
1973-74	1,945,447	242,925	315,264	637,154	24,144	-	635,716	15,399	74,845	
1974-75	2,069,931	247,045	326,166	677,431	26,568	-	682,212	16,600	93,709	
1975-76*	1,955,642	214,716	292,533	621,521	24,954	-	692,247	15,504	94,147	
1976-77*	1,908,607	195,644	273,886	591,895	12,848	19,448	694,346	17,545	102,995 5/	

*Small game license not required of nonresident purchasing a big game license.

Note: 1940 to 1955 are on a calendar year basis; all other years are by license years ended September 30.

- Represents Zero.

1/ Includes free and non-resident licenses; excludes big game-hunting combination and 3, 6, or 7 day fishing licenses

2/ Not included in Big Game

3/ Non-resident fishing six day prior to 1973-74; seven days from 1973-74 to date.

4/ Non-resident trapping excluded.

5/ Includes Junior Archery

TABLE VII. RECREATIONAL USE OF FISH AND WILDLIFE RESOURCES IN NEW YORK IN 1975*

Activity	Days Use
Big Game Hunting	7,185,000
Small Game Hunting	7,736,000
Migratory Bird Hunting	1,536,000
Other - crow, woodchuck, etc.	8,060,000
Total	24,517,000
Coldwater Fishing	11,049,000
Warmwater Fishing	31,711,000
Sea-run Fishing	410,000
Total	43,170,000
Wildlife Observation	127,500,000
Wildlife Photography	12,153,000
Recreational Shooting	27,881,000

* Adapted from 1975 National Survey of Hunting, Fishing, and Wildlife-Associated Recreation. U.S. Fish and Wildlife Service.

TABLE VIII. DIVISION OF FISH AND WILDLIFE INCOME AND ALLOCATIONS 1976-77

A. INCOME

SOURCE	AMOUNT
Hunting Licenses	$ 7,515,931
Fishing Licenses	$ 5,062,982
Trapping Licenses	$ 101,556
Fines/Permits/Misc. Fees	$ 217,782
P-R Reimbursement 1/	$ 1,711,193
D-J Reimbursement 1/	$ 457,140
Anadromous Fish Reimbursement 1/	$ 111,636
Endangered Species Reimbursement	$ 93,424
Capital Construction	$ 1,284,500
Local Assistance (Rabies)	$ 12,000
Title X	$ 1,324,470
FDDA Emergency Funds	$ 38,235
Coastal Zone Management	$ 45,000
Corps of Engineers (Water Chestnut)	$ 36,190
Division of Quality Services	$ 18,800
USFWS Contracts	$ 213,700
Educational Institutes (FA projects)	$ 139,100
Division of Pure Waters	$ 170,312
SCS (Section 216)	$ 108,700
SCS (PL 566)	$ 452,510
CETA	$ 300,750
Hudson River Level B	$ 33,500
Bass Research Foundation	$ --------
Env. Cons. Research Foundation	$ --------
Env. Laboratory Services	$ --------
N.Y. Fisheries Coop. Unit	$ --------
DEC "Support Services"	$ 1,108,289
TOTAL	$ 20,557,700

1/ These figures represent reimbursement only back to the Conservation Fund and First Instance Fund for the respective years. Actual allocations were:

1976-77: P-R $2,184,000; D-J $608,000;
Anad. $789,040

B. 1976-77 ALLOCATIONS - ALL FISH AND WILDLIFE PROGRAMS

	CONSERVATION FUND	GENERAL FUND	DEC SUPPORT SERVICES	TOTAL
DIVISION OF FISH AND WILDLIFE	$ 7,131,284	$ 3,823,253	$ 1,108,289	$
ADMINISTRATION	1,211,513	179,900		1,391,413
BUREAU OF WILDLIFE	2,668,713	2,567,253		5,235,966
BUREAU OF FISHERIES	2,964,926	1,001,100		3,966,026
BUREAU OF ENVIRONMENTAL PROTECTION	286,132	75,000		361,132
ENFORCEMENT	2,612,939			2,612,939
LEGAL AFFAIRS			250,193	250,193
OPERATIONS	1,677,077		254,286	1,931,363
MANAGEMENT	770,600			770,600
AVIATION	58,100		5,000	63,100
ENVIRONMENTAL ANALYSIS			254,637	254,637
EXECUTIVE			194,286	194,286
PURE WATERS			109,069	109,069
AUDIO-VISUAL			40,818	40,818
FRINGE BENEFITS	3,500,000			3,500,000
TOTAL	$ 15,750,000	$ 3,823,253	$ 1,108,289	$ 20,681,542

C. 1976-77 ALLOCATION OF FUNDS

To Division of Fish and Wildlife

	CONSERVATION FUND	GENERAL FUND	TOTAL
ADMINISTRATION	$ 1,211,513	$ 179,900	$ 1,391,413
CENTRAL OFFICE	1,011,443	179,900	1,191,343
Direction	141,301	-	141,301
Planning & Extension	78,747	-	78,747
Program Administration	597,468	-	597,468
FWMA	28,500	-	28,500
Hunter Training	--	179,900	179,900
Special Licensing	165,427	-	165,427
Field (Regional Direction)	200,070	-	200,070
BUREAU OF WILDLIFE	2,668,713	2,567,253	5,235,966
CENTRAL OFFICE	1,024,450	535,704	1,560,154
Direction	155,824	44,244	200,068
Species (Delmar)	394,572	227,590	622,162
Habitat (Delmar)	248,188	226,470	474,658
Biometrics (Delmar)	101,261	46,400	147,661
Pathology (Delmar)	124,605	-	124,605
PROPAGATION	161,849	32,620	194,469
FWMA (FIELD)	145,542	-	145,542
Field (Regional Programs)	1,336,872	1,998,929	3,335,801
BUREAU OF FISHERIES	2,964,926	1,001,100	3,966,026
CENTRAL OFFICE	547,224	333,866	881,090
Direction	41,591	-	41,591
Inland Fisheries	305,248	232,928	538,176
Great Lakes	200,385	100,938	301,323
PROPAGATION	1,461,645	105,340	1,566,985
FWMA (FIELD)	41,050	-	41,050
Field (Regional Programs)	915,007	566,894	1,476,901
BUREAU OF ENVIRONMENTAL PROTECTION	286,132	75,000	361,132
TOTALS	$ 7,131,284	$ 3,823,253	$ 10,954,537

1976-77 CAPITAL CONSTRUCTION PROJECTS

FISHERIES PROJECTS.....$1,020,500

1. Great Lakes Fish Hatchery..... $728,000
   Final design completion and initial site preparation.

2. Fish Hatchery Modernization..... 85,140
   -Adirondack (R. 5): repair parking area, modify water supply dam, reconstruction of rearing pond walls, construction of spawn taking facilities, modify floor drains.

   -Caledonia (R.8): renovate existing storage building

   -Catskill (R.3): replace electrical system

   -Chateaugay (R.5): modify garage - workshop building

   -Chautauqua (R.9): insulate residence, replace electric circuit and water lines, winterize hatchery building

   -Crown Point (R.5): replace furnace in workshop, replace electric circuits, winterize buildings

   -Lake George (R.5): winterize residence

   -Oneida (R.7): repair foundation, replace heating system

   -Randolph (R.8) replace pond screens and gravel

   -Rome (R.6): install water pipe for lake water supply, modify rearing units, modify residence kitchen, repair fencing, residence repairs, replace electric circuit, repair rearing ponds, replace main building roof.

   -South Otselic (R.7): insulate residence, replace electric circuits

   -Van Hornesville (R.6): replace two rearing ponds, replace residence furnace

-Warrensburg (R. 5): winterize residence, replace electric circuits, install security lights

3. Facilities Improvement..... $12,500
-Cape Vincent Station (R.6): repair garage, modify main building, improve sidewalk

-DeBruce Laboratory (R.3): renovate water supply facility

4. Fishing Access Sites..... 9,790
-Region 9: Chautauqua Lake Prendergast) improve site

5. Special Facilities..... 39,600
-Fisheries Parking areas developments: 16 total (Regions 3, 6, 7)

-Norris Reservoir Dam repairs (R.4)

-South Bay (L. Champlain) Fishing pier improvements (R. 5)

-Salmon Creek spawning channel repairs (R.7)

-Cayuga Inlet Fishway repairs (R. 7)

-Salmon River Weir modification (R.7)

6. Stream Improvement..... 145,470
-Region 3: Beaverkill, Willowemoc, Amawalk, Ramapo

-Region 4: West Branch Delaware, Ten Mile Creek, Catskill Creek, West Brook, East Creek, Kinderhook Creek, Westkill, Panther Creek, Schenevus Creek, Little Delaware, Clopper Hollow, Betty and Cole Hollow Brooks

-Region 5: Bouquet River

-Region 7: Butternut Creek, Dresserville Creek, Factory Brook, Chittenango Creek

-Region 8: Catherine Creek, Naples Creek, Keuka Lake Inlet

	Table 4	continued
WILDLIFE PROJECTS.....	$19,500	
1. Facilities Improvement.....		$ 19,500
-Delmar Wildlife Resources Center repairs		
-John White Game Farm (R.1): replace furnace in residence, replace holding yard, winterize residence		
-Reynolds Game Farm (R.7): modify holding yard		
-FWMA coop. area and WMA parking lot repairs (R.3)		
-Lake Alice WMA residence repairs (R.5)		
-Holecomb Pond water control structure repairs (R. 9)		
-Hanging Bog WMA road repairs (R.9)		
-Ruth Brown Marsh dike repairs (R.9)		

B. Exhibits

The following documents and publications form a part of this statement and may be examined by the public at any of the offices of the Department, listed in Table II of the Attachments Section of this Appendix:

1. New York State Environmental Conservation Law
2. State Environmental Quality Review Act Rules & Regulations
3. Fish and Wildlife Program Plan, 1977-78
4. Hunting, Trapping and Fishing Guides, 1977-78
5. Programmatic Environmental Impact Statement on Wildlife Species Management (available May 1979)
6. Programmatic Environmental Impact Statement on Fish Species Management (available June 1979)
7. Programmatic Environmental Impact Statement on Public Use Activities of the Division of Fish and Wildlife
8. Draft Environmental Impact Statement on Proposed Part 072 Reservoir Releases Regulations.

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D. Summary of Changes to Draft Statement

1. The general purpose of the statement has been clarified and the conditions under which site-specific environmental assessments will be undertaken has been detailed in the Foreword, pages i - iii.

2. A general policy statement has been added that states in general the Division will place the perpetuation of significant, critical, unique or rare habitats before other management goals. Foreword, page iii.

3. Controlled burning has been endorsed as the appropriate tool to be employed in order to perpetuate fire-climax communities where desired. Page 8, Vegetation Control.

E. Public Comment

STATE OF NEW YORK
EXECUTIVE DEPARTMENT
ADIRONDACK PARK AGENCY
P.O. BOX 99
RAY BROOK, NEW YORK 12977
(518) 891-4050

May 3, 1979

Mr. Kenneth Wich
Acting Director
Division of Fish and Wildlife
N.Y.S.Dept. of Env. Conservation
50 Wolf Road
Albany, New York 12202

RE: Draft Programmatic Environmental Impact Statement on Habitat Management Activities

Dear Ken:

Thank you for the opportunity to review the Draft Environmental Impact Statement on Habitat Management Activities.

We appreciate the amount of work put into the document and commend the effort.

By way of comment, we feel the Draft should be strengthened by detailing the adverse impacts of activities on non-target fish and wildlife species. Additionally, we feel that increasing emphasis should be given those habitat management activities which facilitate and enhance natural processes which maintain characteristic habitats. This is particularly important in the Adirondacks with its sensitive ecological balance; natural processes here promote openings, multiple aged stands and both species and structural diversity within the limits of the system's ability to accept disturbance. 1

An evaluation of the use of prescribed burning to maintain certain fire-determined Adirondack habitats is needed in the Environmental Impact Statement. Fire suppression, while not an activity of the Division of Fish and Wildlife, because it affects fish and wildlife habitat and is thus a management activity should be the subject of a discussion. 2

I hope these comments can be addressed in the Final Environmental Impact Statement.

Sincerely,

Vincent J. Moore
Executive Director

RECEIVED
MAY 9 1979
DIRECTOR, DIVISION OF
FISH AND WILDLIFE

VJM:jm

RESPONSE TO ADIRONDACK PARK AGENCY

1) In a programmatic statement adverse impacts to non-target species cannot be detailed since they will be specific to activity and site. The potential adverse impacts have been listed under both general and activity specific descriptions, pages 36-41.

2) This statement was intended to cover only those activities in which the Division engages in order to manipulate habitats. This point is further discussed on pages 3 and 4 of the statement under Section D.

COUNTY OF SUFFOLK

COUNCIL ON ENVIRONMENTAL QUALITY

David F. Newton
Chairman
Barry Andres
Vice-Chairman
Robert H. Brewster
Hon. Ferdinand Giese
Robert Kalin
Barbara Van Liew
J. R. Welker

H. LEE DENNISON BUILDING • VETERANS MEMORIAL HIGHWAY • HAUPPAUGE, NEW YORK 11787 • (516) 979-7534

May 5, 1979

Kenneth Wich, Acting Director
Division of Fish and Wildlife
50 Wolf Road
Albany, New York 12233

Dear Mr. Wich:

Our office has received the draft Programmatic Environmental Impact Statement on Habitat Management Activities of the Department of Environmental Conservation, Division of Fish and Wildlife and supports the basic concepts of maintaining or producing desirable fish and wildlife habitats. However, we do not agree with the State's premise made in the draft EIS that just because it may be desirable to maintain and produce fish and wildlife habitats, all site specific projects should be considered of minor environmental impact not needing further SEQRA review. As pointed out in the EIS itself, many of the adverse impacts discussed could be considered major, depending upon the specific site characteristics involved. Therefore, they should require an environmental impact assessment, and possibly a full EIS. 1

In order to illustrate this point, two projects undertaken by your Department in the past come to mind. One occurred at Grassy Pond, in the headwaters of the Peconic River, within the Town of Riverhead, Suffolk County. The project involved the removal of the natural vegetation from an area adjacent to the pond with a bulldozer. The open area was then fertilized with duck manure and planted with sorghum grain to attract ducks. As a result of this project, increased nutrient runoff from this area into the pond has caused eutrophication problems within the pond with subsequent reduced oxygen levels, effecting the entire biological cycle within adjacent water areas. The other instance was upstate involving a cooperative effort between the Department of Environmental Conservation and the Soil Conservation Service. It appears that at Lyle Pond in Broome County, a marsh area was bulldozed and bermed in order to create additional pond habitat for water fowl. In the process, thousands of orchids were destroyed.

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1979
DIRECTOR DIVISION OF
FISH AND WILDLIFE

Judging from these two past events, it is evident that the impacts of habitat management activities can be significant and thus should be subject to SEQRA review on an individual basis. This cannot be done in a programmatic impact statement of this type.

Sincerely,

James Bagg

James F. Bagg, Jr.
Senior Environmental Planner

JFB:kg

RESPONSE TO JAMES BAGG, SUFFOLK COUNTY COUNCIL ON ENVIRONMENTAL QUALITY

1) The programmatic statement on habitat management was never intended to serve as a blanket EIS for all habitat management work of the Division of Fish and Wildlife. It is recognized that accepted practices can have significant adverse impact depending on any number of factors specific to a site. The purpose of the statement and some delineation of criteria which will trigger site-specific assessments are further explained in the Foreword, pages i - iii, which was partially rewritten in order to clarify intent.

COUNTY OF SUFFOLK

COUNCIL ON ENVIRONMENTAL QUALITY

David F. Newton
Chairman
Barry Andres
Vice-Chairman
Robert H. Brewster
Hon. Ferdinand Giese
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J. R. Welker

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May 24, 1979

Mr. Kenneth Wich
New York State Department of
Environmental Conservation
Division of Fish and Wildlife
50 Wolf Road
Albany, New York 12233

Dear Mr. Wich:

I trust that you received the letter of May 5th from James Bagg, Jr., the Council's Senior Environmental Planner, containing comments on the Programmatic Environmental Impact Statement on Habitat Management Activities of your department. (See attached copy).

As a follow up to this, the Council requests that public hearings be held on the EIS in compliance with the provisions of the State Environmental Quality Review Act. We urge that one of the hearings be held on Long Island for the convenience of local agencies and residents. 1

As pointed out in Mr. Bagg's letter, the blanket approval of all site specific activities via this programmatic EIS would set an undesirable precedent since some projects may cause significant negative impacts which would warrent detailed environmental analysis and public hearings.

Your response to this letter will be greatly appreciated.

Sincerely,

David F. Newton
gc

David F. Newton
Chairman

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2 5 1979
DIRECTOR, DIVISION OF
FISH AND WILDLIFE

DFN:gc
attachment

cc: Honorable John V. N. Klein
Suffolk County Executive
Robert F. Flacke, Commissioner
New York State Department of Environmental Conservation
Donald Middleton, Regional Director
New York State Department of Environmental Conservation
Honorable James Lack
New York State Senator, First District

Honorable Kenneth LaValle
New York State Senator, Second District
Honorable Caesar Trunzo
New York State Senator, Third District
Honorable Owen H. Johnson
New York State Senator, Fourth District
Honorable John Behan
New York State Assemblyman, First District
Honorable George Hochbrueckner
New York State Assemblyman, Second District
Honorable Icilio W. Bianchi, Jr.
New York State Assemblyman, Third District
Honorable Robert C. Wertz
New York State Assemblyman, Fourth District
Honorable Paul E. Harenberg
New York State Assemblyman, Fifth District
Honorable John C. Cochrane
New York State Assemblyman, Sixth District
Honorable John J. Flanagan
New York State Assemblyman, Seventh District
Honorable Antonia Retalliata
New York State Assemblywoman, Eighth District
Honorable Louis Howard
New York State Assemblyman, Ninth District
Honorable Lewis J. Yevoli
New York State Assemblyman, Tenth District

RESPONSE TO DAVID NEWTON, CHAIRMAN, SUFFOLK COUNTY COUNCIL ON ENVIRONMENTAL QUALITY

1) The Division voluntarily prepared the programmatic statement on habitat management work which commenced prior to the effective date of S.E.Q.R.A. We intended that the statement would serve as an umbrella for accepted established practices which did not involve significant site-specific impacts. Accordingly, we adopted the position that public hearings would not be held on the generic statement. Subsequent supplemental assessments and statements will be subject to public comment and may be subject to public hearing.

(NOTE: In response to the expressed desire of several individuals and organizations on Long Island that public hearings on this statement take place, representatives of the Division of Fish and Wildlife met with representatives of the Friends of the Earth, Sierra Club, and others to discuss the statement and habitats and habitat management on Long Island in general.)

FRIENDS OF THE EARTH 72 JANE STREET • NEW YORK, NEW YORK 10014 • (21

May 30, 1979

Robert F. Flacke, Commissioner,
NYS Dept. of Environmental Conservation
50 Wolf Road
Albany, New York 12233

Dear Commissioner Flacke:

After requesting a copy of the recent DEC draft programmatic environmental im statement on wildlife habitat management, I today received it with a cover no from Mr. Joseph Dell, stating that no public hearings on the draft were plann

To my knowledge no public hearings preceded the statement either. We at Frien of the Earth are somewhat surprised that DEC would not afford the public a ch to have input to the draft or an opportunity to make public comments on the d before the plan is put in final form.

According to the draft plan, it was prepared in conformity with SEQRA. We bel that a broad, general blanket environmental statement - presumably drawn up i order to give DEC a "blank check" for habitat management - cannot possibly de with all the possible adverse or possibly contradictory effects that could re in habitat management in different areas of the state. Not only must regional differences be considered, but habitat is often quite restricted and therefor very local habitats may require special analysis and treatment. This is espec true with rare, endangered or protected animals and their natural environment that might be proposed for manipulation.

Friends of the Earth therefore requests DEC to hold public hearings on this d that the draft or a notice of its availability be send to leading state conse and environmental groups (apparently no such notice was sent out; I learned o draftthrough a friend on Long Island), and that public hearings be set for se regions of the state, at a very minimum Long Island, New York City, lower and Hudson, and western and northern New York State. The cut-off date for written was May 7th, but since no public notice of the report's existence was given, obviously impossible for groups to file such comments in time. We therefore r an extension of time for written comments until at least the time of public h We would also like to request that notice be given of the availability of the plan to all groups, with similar public hearings scheduled at that time.

Sincerely,

Lorna Salzman

Lorna Salzman
Mid-Atlantic Representative
Friends of the Earth

RECEIVED
JUN 8 1979
DIRECTOR, DIVISION OF
FISH AND WILDLIFE

RESPONSE TO LORNA SALZMAN, FRIENDS OF EARTH

1) It is recognized that accepted, established habitat management practices can have significant adverse impact depending on any number of factors specific to a site. The purpose of the statement and some delineation of criteria which will trigger site-specific assessments are further explained in the Foreword, pages i - iii.

2) The Division adopted the position that public hearings would not be held on the voluntary, generic statement. Subsequent supplemental assessments and statements will be subject to public comment and may be subject to public hearing.

3) Formal notice of the availability of the draft statement was included in the State Bulletin and the Department's Environmental Notice Bulletin. In addition, review copies were mailed directly to 29 public and private organizations. Friends of Earth were added to that list. The final statement will be publicized and distributed in a similar manner.

RECEIVED
JUN 1 1979
COMMISSIONER OF ENVIRONMENTAL CONSERVATION

RECEIVED
JUN 5 1979
DIRECTOR, DIVISION OF FISH AND WILDLIFE

RECEIVED
MAY 1979
FOR NATURAL RESOURCES

H. D. (FYI)

Kenneth Wich, Acting Director
Division of Fish and Wildlife
50 Wolf Road
Albany, N.Y. 12233

Re: Draft Programmatic Environmental Impact Statement on Habitat Management Activities of the Department of Environmental Conservation Division of Fish and Wildlife.

Dear Mr. Wich,

After carefully reading over the Programmatic Environmental Impact Statement (hereafter abbreviated PEIS) for the Division of Fish and Wildlife I have come to better understand the important function and intent of your divisions' many management activities. I am concerned, however, about certain statements, assumptions, and conclusions that I found in the document and I have herein attempted to convey these concerns to you.

I am most concerned by those aspects of the program which might encourage it to be isolated from public scrutiny and participation. The obvious lack of modern ecological theory apparent in the PEIS and the lack of scientific method inherent in many of the program activities described in it suggests that much of the program is an anachronism relative to most of the other, scientific, programs conducted by the DEC. The sixth paragraph on page 17 of the PEIS illustrates an alchemy-like approach to habitat management which infuses the entire document: 1

> " The profession is a combined art and science...frequent gaps in knowledge...defy precise scientific description and the need to temper decisions to best meet the needs and desires of people. It is in these areas where experience and training bring 'art' to bear."

All habitat management and, especially, alteration decisions should be founded in fact and demonstrated ecological need. The public should not be confronted with the explanation: "we know better than you because we're 'experienced'" by a state agency of any kind.Regrettably, this appears to be the official posture of the DEC Division of Fish and Wildlife:

> " Although a thorough review of ecological function is not presented in these programmatic statements it is essential to recognize that the directors and executers of fish and wildlife programs are trained biologists/ecologists." (see pp. 17, p. 4).

Academic training is, of course important. But training should be viewed as an ongoing process rather than the terminal one that this paragraph suggests. In fact most wildlife biologists are narrowly trained and find themselfs stationed in an unfamiliar ecological setting of the state. Some local citizens may know a great deal more about the local ecology than they do. Region I is a good example: not one Region I wildlife biologist was trained in wildlife management of the fire-climax Pine Barrens ecosystem which dominates the remaining terrestrial parts of Long Island. Some management decisions that they have made have been without ecological foundation or a data base. Yet, because they are "experts" within the DEC and can operate without accountability to the public in any ongoing fashion, they are often threatened by knowledgable members of the public and sometimes even react with hostility toward them. This has been the experience of myself and over a dozen of my associates here on Long Island and elsewhere in the state.

For the sake of the habitat management programs' integrity, the state of mind of the generally well meaning but often embattled wildlife biologist managers, and the habitats being managed, something must be done at the administrative level. Such action should be reflected in the PEIS. Public input in the planning and decision making process should be facilitated and the formal mechanism for working together between citizen-expert and DEC-expert should be spelled out in the PEIS.

All habitat management decisions (see pp. 20-21) are guided not only by legal mandate but also by the system of values inherent in the programmatic decision-maker. His or her subjective predisposition toward one management alternative or another should not be viewed as an "art". In the absence of a data-base it is the personal prejudices and desires of the habitat manager which determines how a habitat will be managed. Sometimes this works out well and sometimes it doesn't. When it doesn't it is clearly resultant from the programmatic lack of proceedural objectivity.

To objectify the process I suggest that in the PEIS habitat management activities be divided into two categories: passive and intensive. When a manager contemplates an activity that is listed on the "passive" list he or she would generally be able to act without any kind of formal proceedure. Activities listed on the "intensive" list would require one or more various forms of public participation. **2**

Passive activities would include actions which will not unballance or adversely alter the ecology of a management area. Closing a trail, maintaining a dike, erecting a nesting platform, or removing overly numerous habitat alteration-inducing animals (eg: beavers, racoons, muskrats, deer via hunting or trapping) are examples of passive activities. Passive activities should be catagorically listed and then excused from formal project-specific public examination.

Intensive-effect management projects, however, should be subjected to rigorous internal (agency) and external (public) examination before they are carried out: an environmental impact statement for each specific project should be prepared and the public should be actively involved in the planning process. In this context it may be useful to use the local Conservation Advisory Council as a vehicle for public participation.

Intensive activities should be defined as those actions which will or are likely to alter the ecology, gene pool, or productivity of a management area. Any of the general wildlife impacts listed on page 36 of the PEIS should be considered to be the result of intensive activities and a wildlife manager who is contemplating any project which might produce these generic adverse results should be protected from adverse after-the-fact criticism by being required to follow a public information/participation proceedure.

Unfortunately, page 36 does not specifically address certain activities that are extreemly "intensive". The following is a partial list of specific activities which should be subject to pre-activity public scrutiny or, eliminated entirely:

> Removal of vegetation by fire (see pp. 8, p. 4) should be carried out only in natural fire-climax communities and only then after carefully researching the anticipated ecological impact of the specific burn so as to properly choose the ecologically proper season and moisture condition of the soil.

Natural vegetational continua around wetlands (see pp.8,p.5) should not be disrupted by the use of brush hogs.

Land scarification (see pp.7, p.1 ; pp.6, p.6) should not be initiated on any state-managed land without first conducting a site-specific archaeological survey and preparing an environmental impact statement for public review.

The use of herbicides and pesticides (see pp.6, p.2 ; pp.8, p.3) should not be used at all in New York State-sponsored wildlife management programs. The logic behind this absolute statement is, in fact, present on page 38 of the PEIS: " The application of herbicides could have unknown cumulative or synergistic effects on local fauna."

Any proposed use of fertilizers should be subject to a thorough, public, review process (I have personally witnessed and documented DEC management activities which have, through fertilizer application, profoundly negatively altered the ecology of what once was one of the most pristine natural wetlands on Long Island).

Clearings (see pp.5, p.5) should be carried out only after preparation of an environmental impact statement and the involvement of the public in the planning and decision making process. This activity is highly disruptive to natural vegetational continua and, correspondingly, the animal populations which are ecologically dependant upon them.

The disposition of wood (worth about $ 120./cord on the Long Island market) is an ancillary consequence of some of these habitat management activities. It is not elaborated on in the PEIS. It should be. The potential for private gain for DEC wildlife managers either directly by wood harvesting, or indirectly by favoring certain citizens known to them with special wood harvest permits, is real and a potentially corrupting influence on their management motivation. In the absence of a highly visible, and accountable, wood disposition process it is possible that the objective of obtaining wood for consumptive purposes could become a significant initiative for the program activity itself. I suggest that the PEIS clarify the wood disposition proceedures and circumstances. 3

Another problem caused by clearings that is not addressed in the PEIS is the fact that roads are often cut into the forest to reach the clearing site. I have observed numbers of these clearings linked to one another with roads cut for that purpose. Although it is possible that some of these clearings may be allowed to recover (see pp.5, p.5) it is unlikely that the violation of habitat seclusion represented by the roads will similarly be allowed to revert. Roads tend to become permanent points of access and serve to open up formerly restricted (due to inaccesibility, rather than land use classification per se) woodland areas to such vehicles as trailbikes and campers. This in turn can create an expensive and troublesome management problem where one previously did not exist. The construction of roads linking clearings could also destroy historical or aboriginal archaeological sites either through the uprooting of trees or the subsequent erosion of the road bed. None of these effects are mentioned in the PEIS. 4

I believe that the multiple effects of clearings are so far reaching that each should be preceeded with a site-specific environmental impact statement, with citizen participation in the planning process, and with the ecological need for the project justified in quantitative terms, should preceed any clear-cut clearing project. Chemicals (pp.6, p.2) should <u>never</u> be used to clear

these areas because their long term ecological effects cannot be measured.

Also, the PEIS states (pp.6, p.1) that "currently no more than 400 acres of such openings are created annually." In programmatic terms this figure is quite meaningless becaues the number is not explained in terms of ecological justification or statistical significance. Is the number 400 significant as a planned, purposeful, and ecologically justifyable percentage of total statewide management acerage or, is it an artifact of a random process of land scarrification which is occuring in public-trust lands managed by the DEC ? I am concerned that the PEIS does not state what percentage of the 400 acres are purposely allowed to revert each year. Is there a proportional steady-state in the clearing program (measured in acres) or does the program expand relative to the total number of cleared acres each year? What is the upper limit? Not only is this program activity not defined in ecological or quantitative terms in the PEIS, it is not apparent that it is mandated by any of the statutes referred to in the foreword (pp. i-iii). In short, the need for this aspect of the habitat management program is not clearly demonstrated. Why, for example, is the money spent to manipulate approximately 400 acres of land each year not instead invested in acquisition of additional top priority state holdings? As the statement " adequate habitats to maintain an abundance and diversity of fish and wildlife are generally provided through natural processes when coupled with intelligent use of land and water by society" (pp. 3, p.5) implies, this would seem to be a more demonstratably effective means by which to fulfill the legal mandate to protect the fish and wildlife values of New York State. 5

One of the most important habitat management alternatives, that of simply leaving the land alone, is only obliquely addressed in the PEIS. To leave the land unmanipulated does, in fact, require a decision and is, therefore, a management option. It is also the most cost-effective management option. 6

The non-manipulation wildlife habitat management option should be discussed in detail in the PEIS and the criteria which define when this management alternative as the appropriate one to use should be spelled out.

One thing that is not clear to me is wether or not this PEIS is intended to be a once-only justification for all of the activities described in the document. If it is, I must strongly protest because I do not believe such a document best serves the people of the State of New York. As I have already indicated (see above) I believe that all habitat-intensive managemaent activities should be subject to seperate environmental impact statements. Contrary to the drift of fourth and fifth paragraphs of the forward, the diversity of ecological settings in New York demands that individual statements be prepared and public hearings be held. The preparation of only this one impact statement would serve the intent of the law and the interests of the people of the state only if the state was ecologically homogeneous. It is not and each habitat-intensive activity should be seperately considered in full view of the public before it is executed. The process of preparing environmental impact statements should not be viewed by the same agency (DEC) that requires them from the public as being too troublesome, monotonous, or logistically difficult to deal with for itself. In this context the PEIS is valuable as a prelude to individual environmental impact statements that the Division of Fish and Wildlife might prepare for site-specific projects. Part of it should, where appropriate, be included in the environmental impact statements but it should not be allowed to serve as a substitute for them. 7

I appreciate this opportunity to comment on the Draft PEIS for the Division of Fish and Wildlife. I would also like to have an opportunity to speak at a public hearing on this document and hereby request that if such a hearing is not already scheduled, that one be held and that I be informed of it as early as possible.

I would be happy to clarify or elaborate on any of the perspectives, opinions, and suggestions contained in this letter and would welcome any opportunity to discuss this PEIS with the appropriate members of your division.

Thank you for any attention you might give to the content of this communication.

Sincerely,

Steven Englebright

Steven Englebright
34 Lake Street
Setauket, L.I.,N.Y. 11733

516-246-8373 (work)
516-751-1309 (home)

cc: Mr. Donald Scheirbaum
Mr. Donald Middleton
Commissoner Robert Flacke

RESPONSE TO STEVEN ENGLEBRIGHT

1) It is not the intent of the Division of Fish and Wildlife to screen its activities from public scrutiny and participation. On the contrary, the Division is highly desirous of public input at all levels and steps of program planning and development.

While we would not agree that there is an "obvious lack of modern ecological theory apparent in the PEIS and lack of scientific method inherent in many of the program activities described", we can agree that some habitat management work done for the sake of fish and wildlife (past and present, here and elsewhere) has been superfluous, and could be viewed as an anachronism. This point was briefly discussed on page 3 of the statement under Section D, Nature and Scope of the Habitat Management Program.

Sections of the PEIS which attempted to provide some background relevant to the current habitat management program, such as noting there was an "art" involved in such management or that Division staff were trained biologists/ecologists, were not justifications of the program per se. We felt they were relevant because in fact many persons do desire to see the Division engage in habitat management work, and there are certainly instances where work will be undertaken in the absence of total ecological justification and/or a complete data base. Whether these elements are present or absent the decisions on courses of action may still follow the prejudices and desires of the manager, a special interest, or the majority opinion of the public. However, decisions must be made, and our contention is that they are best guided by persons with training and experience in the sciences of biology and ecology. This does not excuse the manager or decision process from public scrutiny, participation or accountability.

2) It is recognized that accepted, established habitat management practices can have significant adverse impacts depending on any number of factors specific to a site. Some delineation of criteria which will trigger site-specific assessments are further explained in the foreword, pages i - iii.

3) There are established procedures for the disposition of wood products from state-owned lands. We do not agree that the potential for private gain from wood products is a motivational force affecting the habitat management decisions of our managers.

4) Increasing accessibility to woodland areas is not necessarily an adverse impact. It is a stated goal of the Division to enhance public access to the state's lands and waters for recreational purposes. We agree such action could have significant site-specific adverse impacts, and the criteria which will trigger site-specific assessments are delineated in the foreword, pages i - iii.

5) The figure of 400 acres of new clearings annually on state wildlife management areas was intended to provide some scope of the activity, considering that we own as noted in Table IV some 150,000 acres. Most of these acres are allowed to regenerate naturally, and over-all on wildlife management areas the percentage of open lands is declining and this trend will probably continue in the foreseeable future. The beneficial and adverse impacts of this activity are generally outlined in the statement, and the need and objectives for engaging in the activity are included in management plans developed for specific management areas.

6) The basic policy of the Division is that we would not engage in actual manipulation of lands and waters unless there is a demonstrable need and benefit to the work which followed our established goals and objectives. A corollary to this statement is that there would be no significant adverse impacts involved in the work. This is the basic management option which the Division employs and it was discussed in Section D, page 3 under Nature and Scope of the Habitat Management Program. The EIS basically is intended to address those instances where physical manipulation is undertaken.

It should be understood that the vast majority of instances where physical manipulation is undertaken, it is on state owned or leased lands and waters which were bought or leased with funds derived from hunters and fishermen. They desire to see habitat manipulation undertaken on these areas to benefit game species of fish and wildlife. This is in line with one mission and goals as long as we are not creating significant adverse environmental impacts in the process.

7) The purposes of this EIS and the criteria which will trigger site-specific assessments are better defined in the Foreword, pages i - iii.

STATE OF NEW YORK
DEPARTMENT OF AGRICULTURE AND MARKETS
J. ROGER BARBER, COMMISSIONER
ALBANY, NEW YORK 12235

June 7, 1979

Mr. Kenneth Wich, Acting Director
Division of Fish & Wildlife
NYS DEC
50 Wolf Road
Albany, NY 12233

Dear Mr. Wich:

The DEIS on "Habitat Management Activities of the DEC-Division of Fish and Wildlife" has been reviewed.

It is the declared policy of New York State "to conserve and protect and to encourage the development and improvement of its agricultural lands for the production of food and other agricultural products" and "to conserve and protect agricultural lands as valued natural and ecological resources which provide needed open spaces for clean air sheds, as well as for aesthetic purposes." (Agr. + Markets Law, Article 25AA, § 300) Also, Article XIV, § 4 of the New York State Constitution directs the legislature to provide for "the protection of agricultural lands." (See attachments)

We in the Department are concerned with the loss of viable agricultural lands in New York State which constitute an important natural resource and a valuable base for our State's economic climate. Once viable farm units are disrupted by land acquisition the trend toward other non-agricultural development becomes more and more irreversible and this important environmental, economic resource is depleted. This issue needs to be strongly recognized under adverse impacts. 1

Often, proposals for impoundments and excavations are located on productive agricultural land. Valley and low land areas contained much of our state's best agricultural land and it is usually more suitable for inundation due to its topography and other factors. For example, the creation of Great Sacandaga Lake is an extreme case-in-point. Further State actions must maintain our important agricultural lands for the production of food and fiber.

RECEIVED
JUN 8 1979
DIRECTOR, DIVISION OF
FISH AND WILDLIFE

We feel State agencies which acquire lands for their program activities should seek, wherever possible, marginal lands, no longer in agricultural production for such uses. They must do this in an effort to mitigate the encroachment pressures already felt heavily by New York State's important agricultural industry. With regard to habitat management, we believe agricultural activity is the economic land use which is most compatible with adjacent habitat management activities. Aside from its own economic benefits, agricultural activity provides open space and food supplies which supplement wildlife habitats throughout New York State. If it is deemed necessary to take agricultural land out of production for a proposed habitat management area, only marginal lands should be considered. If viable agricultural land is considered, i.e. active farmland in an agricultural district and/or active farmland meeting USDA-SCS criteria for prime, unique, or of statewide importance, a separate EIS should be required.

Our last comment deals with the statement: "Water, soil and air have been subjected to heavy loads of contaminants, products of ... farming" (pages 15-16 in the DEIS). This statement directly contradicts the findings of your department as put forth on the draft New York State Water Quality Management Plan. At this point in time, more research and water quality monitoring is required before any statement along these lines could be considered valid. It is unknown to what extent agricultural activity contributes to non-point source pollution. In any event, your agency agrees that agricultural activity is not a major contributor of non-point source contaminants in New York State. Questions and unknowns are to be investigated and studied as part of the ongoing 208 process and this type of implication should not be cited in any EIS until valid answers are found and documented. 2

Sincerely,

Louise A. Inglis

Louise A. Inglis
Agricultural Development Assist.

LAI/elr
Enc.

cc: ~~Jon Newkirk~~
Joe Dell

RESPONSE TO LOUISE INGLIS, N.Y.S. DEPARTMENT OF AGRICULTURE AND MARKETS

1) The acquisition of lands and waters is addressed in two separate programmatic statements,* and therefore was not discussed in the habitat management statement. We have indicated we would prepare site-specific assessments where habitat management activities would conflict with the policies of other state or federal agencies or where they would induce or accelerate significant changes in land use.

2) In its context, the statement refers to historical changes which adversely affected many species of fish and wildlife. As such we do not agree that it is inaccurate.

*Public Use and Wetlands Acquisition

Long Island Regional Planning Board

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Seth A. Hubbard, Esq.
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RECEIVED
MAY 2 1979
DIRECTOR, DIVISION OF
FISH AND WILDLIFE

April 30, 1979

Kenneth Wich, Acting Director
Division of Fish & Wildlife
50 Wolf Road
Albany, NY 12233

Dear Mr. Wich:

There is a need to minimize the time and costs of writing environmental impact statements. A programmatic environmental impact statement has advantages, however, I feel there are problems with a programmatic environmental impact statement.

The management activities are conducted on different sites. Each site has a variety of environmental characteristics and potential impacts. For instance, an activity in itself may appear to be a Type II action - Class 4, "a minor alteration in the condition of land, water vegetation, and/or fish and wildlife resources", such as clearing natural vegetation to plant a food source suitable for a game species. The impact of this type depends where this activity occurs. In Long Island, an activity similar to this did occur in a high water table area in the immediate watershed (adjacent to) of a pond. If the planting was fertilized, stormwater runoff and subsurface flow could carry nutrients to the pond. An algae bloom could result. It is assumed that reduced oxygen levels can occur, and turbidity may be increased. In any case, this type of activity has a potential severe environmental impact. The clearing of this field due to its location, may have resulted in a severe environmental impact. 1

I think that the ecological value of sites recommended for new wildlife management activities may require that an impact statement be filed.

The department should have an inventory of sensitive or significant environmental areas. If a management activity is to occur there, an impact statement should be written. Areas with endangered species or protected species may not be totally known. Areas impacted may be under state ownership, but a management activity may impact the surface water belonging to other owners, including public owners. 2

There are many questions that are not addressed in this statement. If a management activity is to occur in a sensitive area or if the activity has the potential to affect other systems beyond the management area under other ownerships, I believe this type of impact statement is not sufficient.

Very truly yours,

Carol Swick

Carol Swick
Senior Environmental Planner

CS:dat

RESPONSE TO CAROL SWICK, LONG ISLAND REGIONAL PLANNING BOARD

1) We agree that site-specific habitat management activities can have significant adverse environmental impacts. The Foreword, pages i - iii, outline the criteria under which site-specific assessments will be undertaken.

2) The Division of Fish and Wildlife does have an inventory of significant habitats. This inventory has been developed in the past several years with input from many individuals and organizations both in and out of government. At present, the inventory includes over 2,000 areas, and the Division is in the stage of developing strategies to protect these important natural sites. Certainly if habitat management activity involves one of these areas, site-specific assessments would be completed.

Statement of Finding
for the Programmatic Environmental Impact Statement
on the Division of Fish and Wildlife's Habitat
Management Activities

Date: MAY 22 1981

I find that the Division of Fish and Wildlife's program of habitat management meets the requirements of Article 8 of the Environmental Conservation Law and its appurtenant rules and regulations, 6 NYCRR Part 617.

This finding is made as a conclusory statement as documented below, that:

1. Consistent with social, economic and other essential considerations, from among the reasonable alternatives thereto, this program is one which minimizes or avoids adverse environmental effects to the maximum extent practicable, including the effects disclosed in the relevant environmental impact statement, and

2. Consistent with social, economic and other essential considerations, to the maximum extent practicable the adverse environmental effects revealed in the environmental impact statement will be minimized or avoided by incorporating into the decision those mitigative measures which were identified as practicable.

These conclusions are drawn from pages i, 42 and 49 of the Final Environmental Impact Statement which states that "There is no reasonable alternative to current habitat and management practices which will fulfill legal mandates and achieve division objectives for the maintenance of quality fish and wildlife habitats in New York" (p 49). Mitigation measures for adverse impacts must be considered for each activity at each site when management is undertaken (p 42.) An Environmental Assessment Form will be prepared and an evaluation will be made as to whether or not a supplemental impact statement would be required (p.i).

Commissioner
Department of Environmental Conservation