A NATURAL AREAS INVENTORY OF LYCOMING COUNTY, PENNSYLVANIA

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PREFACE

The Lycoming County Natural Areas Inventory is a document compiled and written by the Pennsylvania Science Office of The Nature Conservancy. It contains information on the locations of rare, threatened, and endangered species and of the highest quality natural areas in the county. Accompanying each site description are general management recommendations that would help to ensure the protection and continued existence of these rare plants, animals and natural communities. The recommendations are based on the biological needs of these elements (species and communities). The recommendations are strictly those of The Nature Conservancy and do not necessarily reflect the policies of the state or the policies of the county or townships for which the report was prepared.

Implementation of the recommendations is up to the discretion of the landowners (within local and state regulations). However, cooperative efforts to protect the highest quality natural features through the development of site-specific management plans are greatly encouraged. Landowners working on management or site plans of specific areas described in this document are encouraged to contact the Pennsylvania Science Office of The Nature Conservancy for further information.

ACKNOWLEDGMENTS

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The Pennsylvania Science Office (PSO) of The Nature Conservancy thanks the members of the agencies noted above and all the individuals who have contributed time and expertise to the study. We especially thank Jerry Walls, Executive Director, and Mark Urevich, Environmental Planner, of the Lycoming County Planning Commission for their time and effort. We also thank the members of the Lycoming NAI Committee for their suggestions and review of the document. Special thanks to Charles Schwarz, Bureau of Forestry, for providing helpful information on sites within Tiadaghton State Forest, Clark Shiffer for odonate surveys, and to all the landowners who granted us permission to survey sites on their lands. Betsy Ray and Brandon Rozell, ecology interns, provided much of the graphics work.

The species information utilized in the inventory came from many sources as well as our own field surveys. Biologists from institutions and agencies such as the Academy of Natural Sciences in Philadelphia, the Morris Arboretum of the University of Pennsylvania, the Department of Environmental Resources Bureau of Forestry, the Pennsylvania Game Commission and the Pennsylvania Fish and Boat Commission were among the contributors. In addition, innumerable private citizens contributed valuable information that was incorporated into the study. The task of inventorying the natural heritage of Lycoming County would have been far more difficult without this tremendous pool of information gathered by many people over many years.

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TABLE OF CONTENTS

GLOSSARY

alluvium - sediment deposited by rivers; includes gravels, sands, silts, and clays.

ATV - all-terrain-vehicle.

barrens - areas that are naturally infertile as a consequence of nutrient-poor soils; often form on resistant rock such as quartz, sandstone or highly weathered and leached glacial material.

canopy - the layer formed by the tallest vegetation.

circumneutral - pH around seven.

colluvium - soil material, rock fragments, or both, moved by creep, slide or local water flow and deposited at the base of steep slopes.

D.E.R. - Pennsylvania Department of Environmental Resources

dominant - the species (usually plant) exerting the greatest influence on a given community either by numerical dominance or influence on microclimate, soils and other species.

drawdown - lowering of the water table due to natural causes such as a drought or human activities such as excessive pumping of well water.

effluent - waste water from septic systems or from stormwater sewers.

ericaceous - members of the heath family including blueberries, huckleberries, rhododendrons, and azaleas; these plants are adapted to living in acid soils.

Exceptional Value Waters (EV) - D.E.R. designation for a stream or watershed which constitutes an outstanding national, State, regional or local resource, such as waters of national, State or county parks or forests; or waters which are used as a source of unfiltered potable water supply, or waters of wildlife refuges or State game lands, or waters that have been characterized by the Fish and Boat Commission as "Wilderness Trout Streams", and other waters of substantial recreational or ecological significance. For purposes of this study, EV streams are mapped as High Gradient Clearwater Creek natural communities (see Appendix V for community description). For more detailed information about EV stream designations, the reader is referred to the Special Protection Water Implementation Handbook (Shertzer 1992).

exotic - non-native; used to describe plant or animal species that were introduced by humans; examples include Japanese honeysuckle and crown vetch; exotics present a problem because they may outcompete native species.

forb - non-grass herbaceous plant such as goldenrod.

graminoid - grass or grass-like plant such as a sedge or a rush.

ground cover - low shrubs, herbs and moss cover that are found at or close to the ground surface.

High-Quality Coldwater Fisheries (HQ-CWF) - D.E.R. designation for a stream or watershed which has excellent quality waters and environmental or other features that require special water quality protection. For more detailed information about HQ-CWF stream designations, the reader is referred to the Special Protection Water Implementation Handbook (Shertzer 1992).

High-Quality Trout-Stocked Fisheries (HQ-TSF) - D.E.R. designation for a stream or watershed which has excellent quality waters and environmental or other features that require special water quality protection. The stream is stocked with trout and does not support a sustainable reproducing population. For more detailed information about HQ-TSF stream designations, the reader is referred to the Special Protection Water Implementation Handbook (Shertzer 1992).

hydric - wet, saturated to the surface or flooded for all or most of the year or growing season.

hydrology - water system of an area including both surface water and ground water.

mesic - moist, not saturated.

natural area - As used in this study, a site with either an exemplary natural community or species of special concern; it is not to be confused with the State Forest Natural Areas which are specific management units designated by D.E.R. Bureau of Forestry.

non-point - refers to diffuse sources of pollution such as stormwater runoff contaminated with oil or pesticides.

potential natural area - area that may have desirable environmental characteristics to support rare species or exemplary natural communities, but needs a field survey to confirm; a preliminary category given to sites prior to field survey.

prescribed burning - burning under controlled conditions; needed to maintain communities such as limestone glades and pitch pine barrens.

raptor - birds of prey including hawks, falcons, eagles, and owls.

seeps - where water flows from the ground in a diffuse pattern and saturates the soil; lush herbaceous vegetation often grows in these wet areas.

State Forest Natural Area (SFNA) - Bureau of Forestry designation for an area of unique scenic, historic, geologic or ecological value which will be maintained in a natural condition, usually without direct human intervention.

State Forest Wild Area - Bureau of Forestry designation for an extensive area, to be retained as undeveloped, which is available to the public for passive recreation.

soil association - a group of soils that are geographically associated in a characteristic repeating pattern and defined and delineated as a single unit.

soil series - groups of soils that have vertical profiles that are almost the same, that is, with horizons (layers) that are similar in composition, thickness, and arrangement.

succession - natural process of vegetation change through time; over time, the plant species of a site will change in composition and structure as light and soil conditions change.

talus - slope formed of loose rock and gravel that accumulates at the base of mountains or cliffs.

taxa - genus, species, subspecies and varieties of plants or animals.

till - a jumbled mix of glacially-derived material of varying particle size (boulders, sand, silt, clay) laid down beneath the glacier (compact till), dropped by melting ice (ablation till), or pushed before or to the side (end or side moraine).

understory - layer of shrubs and small trees between the herbaceous layer and the canopy.

xeric - extremely dry or droughty.

INTRODUCTION

Lycoming is a county rich in history, and scenic and natural resources. Much of its economy is still based on its natural resources—logging, hunting, fishing and other forms of outdoor recreation and tourism. However, its rural character, natural resources, and farmland may be seriously threatened by the influx of people from more urban areas without a county plan for managing growth. This possibility was recognized in the 1974 Open Space Plan (Lycoming County Planning Commission, September 1974). As land and homes have become more expensive in the Poconos and other traditional eastern vacation areas, people have begun to look farther west for vacation home sites. Interstate 80 provides relatively easy access to Lycoming County from the metropolitan centers of eastern Pennsylvania, New Jersey, and New York.

The scenic and natural environments that have attracted hunters, fishermen, and vacationers to the county are in need of identification and assessment. Having an inventory and assessment of natural areas in place in advance of pressure for development can enhance the ability of local and county planning and zoning commissions to judge proposals for development and speed the planning review and permit process. Wise planning can maintain these natural environments and the plants and animals associated with them. A balance between growth and preservation of scenic and natural resources can be achieved by guiding development away from the most environmentally sensitive areas.

In order to plan development and ensure protection of critical natural areas, county and municipal governments, the public, and developers must know the location and importance of these sites. This knowledge can help prevent conflicts over land use and direct protection efforts and limited conservation dollars to the most vulnerable areas. The Pennsylvania Science Office of The Nature Conservancy, under contract to the Lycoming County Planning Commission, has undertaken to provide a document and maps that will aid in the identification of the most environmentally sensitive areas. This information can, in turn, be incorporated into the County Comprehensive Plan Update, now under preparation.

The inventory provides maps of the best known natural communities and outstanding geologic features in the county and the locations of all known animal and plant species of special concern (endangered, threatened, or rare)*. A written description and a summary table of the most important sites, including quality, degree of rarity, and last-observed date, accompany each map. Any

* Codes are used to identify these features on the maps and text in order to provide some level of protection from unauthorized collection of rare plants or animals.

potential threats and some suggestions for protection are also included in the individual site descriptions. The inventory also includes the locations of areas that are not deemed natural communities because of past disturbance but may be significant they are good examples of habitat types that are relatively rare in the county. An overall summary of the highest quality sites provides suggestions for maintaining these important sites as natural areas. The information and maps presented in the Lycoming County Natural Areas Inventory report afford a useful guide for planning development and parks, conserving natural areas, and for evaluating the protection needs of vulnerable natural areas in the county.

The Natural Areas Inventory of Lycoming County will be provided to the Lycoming County Planning Commission. The Planning Commission will provide the information to all Lycoming County municipalities, townships, development agencies and the public. The inventory is one part of the county's effort to provide an overall comprehensive land-use plan.

COUNTY OVERVIEW

The climate, geology, topography, and soils of Lycoming County have been important in the development of the forests, wetlands, and other natural features located there. The vegetation that exists and the impact of man on that vegetation provide the framework for locating and identifying natural communities within the county. A brief review of some important environmental and anthropogenic factors sets the stage for the rest of this report.

Physiography

Physiographic Provinces are a reflection of the characteristic landscapes and distinctive geologic features that comprise each province (Geyer and Bolles 1979). Much of the following overview has been taken from Marsh and Marsh (1989) and Willard (1962). The report, Lycoming County Physical Features Study (1969), also discusses the geology and physiography of the region. The reader is referred to these publications for further information.

Lycoming County is located within two distinctive physiographic provinces. Most of the county is within the Allegheny High Plateaus Section of the Appalachian Plateaus Province (a lobe of the Glaciated Low Plateaus Section of this province just touches the northeastern corner of the county). The southern third is within the Appalachian Mountain Section of the Valley and Ridge Province. Each was formed by different processes and the various bedrock layers beneath these distinctive landforms are of different ages and mineral content.

The Allegheny High Plateaus Section is characterized by rolling hills dissected by steep stream valleys. The Allegheny Front, the distinctive wall of mountains north of Williamsport,

marks the beginning of this province. The different rock layers here are stacked one upon another as they were when laid down during the Devonian, Mississippian and Pennsylvanian periods. The rock strata are still horizontal, not deformed into ridges as in the Valley and Ridge Province. The different rock strata are of differing hardnesses and creeks have cut down through them to form the steep valleys such as Pine Creek Gorge.

The Valley and Ridge Province is a series of sharp-crested ridges separated by long narrow valleys. These ridges and valleys extend in an arc from southwest to northeast across the central part of the state. Approximately the southern third of Lycoming County, including the broad valley of the West Branch of the Susquehanna River, is included within this province. The ridges are composed of hard resistant sandstones and quartzite while the valleys are underlain by softer rocks such as limestone and shale. The Nippenose Valley is one of the limestone valleys bounded by two sandstone ridges - Bald Eagle Mountain to the north and North White Deer Ridge to the south and east. The mountains are forested and provide forest products, native wildlife and plant habitat, water supply and recreational opportunities. The valleys underlain by limestone are typically the richest farmland and little of the original vegetation is to be found now.

Glaciation has also played an important role in the formation of the county's physiography and land use patterns. The northern part of the county is believed to have been covered by ice sheets three times during the Pleistocene Epoch. Soil and rock were scraped away by the ice and carried on, within and beneath the glaciers (till). Material called stratified drift was carried away from the glacier and deposited by these glacial meltwaters when flow slackened. These actions had profound effects upon the landscape. Formerly north-flowing streams were dammed to form lakes and, in turn, the lakes spilled over to take new routes to the south. Pine Creek Gorge was formed by the diversion of the Tioga River into Pine Creek near Ansonia. The subsequent increased volume of water and sediment flowing into Pine Creek caused the creek to cut down through the bedrock.

Till is often difficult to farm because of stoniness and imperfect drainage and is often left as forest. Many wetlands formed in old lake beds and stream channels as the glaciers retreated northward. The better drained lacustrine and riverine deposits may provide fertile farmland. The stratified deposits are typically better drained than till and may be good for farming or development; these deposits are also mined for sand and gravel.

Soils

Soils in Lycoming County reflect bedrock geology, topography, glaciation and hydrology. In turn, soil patterns on the landscape have given rise to the patterns of vegetation and land use. Kohler (1986) recognizes 38 soil series in ten soil associations. A soil association consists of one or more major soil types (series) and at least one minor soil series occurring in a distinctive landscape pattern. The ten associations are further grouped into three general categories based on formation processes and are described below. The following descriptions are from Kohler (1986) and the reader is referred to that soil survey for more complete soil descriptions.

1) Areas dominated by soils that formed in residuum or glacial till

Six associations are included in this group and they cover about two thirds of the county's land surface. These soils are moderately deep and well drained. They are found on ridgetops, mountainsides and in valleys in the western and southern halves of the county. The soils may be nearly level to very steep and those on slopes tend to be shallow and those at the base of slopes may be somewhat poorly drained. These soils are primarily used for woodland or cropland.

Wiekert-Berks-Hartleton Association: Gently sloping to very steep, shallow to deep, well drained soils on hills and ridges.

Dekalb-Clymer-Cookport Association: Nearly level to very steep, moderately deep and deep well drained and moderately well drained soils on broad mountaintops and in intermountain valleys.

Watson-Allenwood-Alvira Association: Nearly level to sloping, well drained to somewhat poorly drained soils mainly on hills and ridges that were glaciated during the Illinoisan glaciation.

Washington-Hagerstown-Clarksburg Association: Nearly level to sloping, deep well drained and moderately well drained soils in valleys.

Dekalb-Laidig-Buchanan Association: Nearly level to very steep, moderately deep and deep, well drained and moderately well drained soils on mountainsides and foot slopes.

Leck Kill-Klinesville-Albrights Association: Gently sloping to very steep, deep and shallow, well drained and moderately well drained soils mainly on hills and ridges, some of which were glaciated.

2) Areas dominated by soils that formed in glacial till

The soils in this group are mainly level to very steep, moderately deep and well drained to excessively drained. They are found on mountainsides and plateaus and in intermountain valleys of the northeastern third of the county. Some soils are deep and some are well drained or moderately well drained. The soils in this group are primarily in woodland but some are used for crops.

Lordstown-Oquaga-Wurtsboro Association: Nearly level to very steep, moderately deep and deep, excessively drained to moderately well drained soils on broad mountaintops and mountainsides.

Oquaga-Lackawanna-Wellsboro Association: Nearly level to very steep, moderately deep and deep, excessively drained and moderately well drained soils on broad mountaintops and mountainsides.

3) Areas dominated by soils that formed in alluvium or glacial outwash

The soils in this group are mainly level to moderately steep, deep and well drained. They are on floodplains, river terraces and glacial outwash terraces along the West Branch of the Susquehanna River and other drainageways. Some of the soils are moderately well drained and very poorly drained. Generally, these soils are used for crops but are also used for commercial, industrial and residential purposes.

Linden-Holly-Wheeling Association: Nearly level and gently sloping, deep, well drained, poorly drained and very poorly drained soils on floodplains and river terraces.

Barbour-Tunkhannock-Basher Association: Nearly level to moderately steep, deep, somewhat excessively drained to somewhat poorly drained soils on floodplains and glacial outwash terraces.

Vegetation

The vegetation of Lycoming County reflects the environmental conditions (geology, topography, soils, climate) and the disturbance history, both natural and anthropogenic. Much of Lycoming County falls within the Mixed Oak Forest Region (Oplinger and Halma 1988, Monk et al. 1990). This region ranges from southern New England to Georgia and is the most common forest type in Pennsylvania, occurring in a wide range of conditions from rolling hills to steep slopes, on mesic to dry soils. The region was formerly classified as part of the Oak-Chestnut Region (Braun 1950) but, with the introduction of the chestnut blight fungus (Endothia parasitica) in 1904, the once dominant American chestnut (Castanea dentata) met its demise, rendering the Oak-Chestnut classification inappropriate for today's forest.

The Mixed Oak Forest consists of white, red and black oaks. Although these three species (Quercus alba, Q. rubra and Q. velutina) are often found growing together, white oak thrives on the more mesic sites (valleys and lowlands) while red oak is more prevalent on the well-drained slopes. Common associates in Lycoming County are red maple (Acer rubrum), sugar maple (A. saccharum), white pine (Pinus strobus), tulip poplar (Liriodendron tulipifera), and white ash (Fraxinus americana) (Monk et al. 1990).
Black oak is less frequent, tending towards the drier slopes and ridgetops.

Variants of the Mixed Oak Forest occur as a result of differing environmental conditions. One of the most common forest types in Lycoming County is the Chestnut Oak (Quercus montana) community which is characteristic of dry ridgetops and rocky

slopes. Associates include red oak, black oak, scarlet oak (Q. coccinea), black birch (Betula lenta) and red maple. The understory may be sparse or dominated by ericaceous species such as blueberries (Vaccinium spp.), huckleberry (Gaylussacia spp.) and mountain laurel (Kalmia latifolia). Less frequent is the Pitch Pine-Scrub Oak community found on isolated dry, exposed ridgetops. Characteristic species are pitch pine (Pinus rigida) which may be frequent to dominant, chestnut oak, sweet gum (Nyssa sylvatica) and scrub oak (Q. ilicifolia) which typically forms a nearly impenetrable shrub layer and may be the dominant species in the community.

The northern half of the county is in the Allegheny Section of the Hemlock-White Pine-Northern Hardwoods Region which extends from Canada south into Pennsylvania with small isolated pockets occurring farther south. This section has been severely impacted by past logging, erosion and fires and bears little resemblance to the original vegetation (Braun 1950). Hemlock and/or white pine, once widespread in the region, are generally found on the cooler, north-facing slopes and ravines. Mixed hardwood stands co-dominated by sugar maple, red maple, yellow birch (Betula allegheniensis), hemlock, basswood (Tilia americana) and some beech (Fagus grandifolia) are also a part of this regional mosaic.

Wetlands are another important, although less extensive, vegetation type in the county. Wetlands provide essential habitat for many plant and animal species. The type of wetland depends on soil type, disturbance, and the length and duration of flooding. Most of the wetlands in the county are associated with streams or rivers and include graminoid marshes, shrub swamps, wooded swamps, and floodplain forests. Typical wetland plants of these areas include red maple, hemlock, pin oak (Q. palustris), spicebush (Lindera benzoin), blueberry, and a number of grasses and sedges. Conifer swamps with hemlock and white pine, and occasionally balsam fir and larch, are found in the glaciated portion of the county. In addition, isolated wetlands such as vernal ponds—small, seasonally flooded woodland pools—scattered throughout the county provide critical habitats for amphibians and some rare plant species.

Disturbance

The nature, scale, and frequency of disturbance are influential factors in the evolution and appearance of natural communities. Disturbance can be beneficial or destructive to the development and persistence of natural communities.

Fire, often a destructive force, can play an important role (along with frost and soils) in maintenance of scrub oak barren communities on some of the ridges along the Allegheny Front. In its absence, scrub oak may be crowded out by taller shrubs and trees. The special animals that depend on scrub oak then drop out of the area as do species that require high light regimes. Controlled fires, and possibly cutting the scrub oak and invading trees, can be used to set back natural succession processes and

maintain the desired rare plant community and rare species.

In many cases, human disturbance has been clearly destructive to natural habitats and the species associated with them. Although necessary, farming and development are disturbances that may have completely eradicated some existing natural communities. Little floodplain forest remains along the West Branch of the Susquehanna River because its floodplain soils tend to be some of the best for farming and, as colonization and commerce moved inland, the river floodplains were the areas occupied first.

Scattered old-growth stands in Lycoming County provide a sense of the stature of the original forest. Some forest communities may have recovered sufficiently to resemble the species composition of the pre-settlement state. However, some species that were part of the original landscape have not been able to maintain their populations. Disturbance in forests and along floodplains can allow some formerly minor native species to become dominants to the exclusion of other native species. Native species with specific habitat requirements may disappear entirely from an area when no pockets of that habitat are retained on the landscape.

It is important to maintain a closed canopy in some mature forests when there is a likelihood of invasion by exotic species. The introduction and spread of exotic species across the landscape is a monumental problem in the protection of biodiversity. Many of these non-native plants out-compete the desirable native species. In some highly disturbed, open scrubby woodlands in the southern part of the county, silverberry (Eleagnus umbellata) and other exotics are nuisance species. Crown vetch (Coronilla varia) can extend from roadsides, where it is planted to stabilize soils, into native grasslands and smother native plants. Japanese knotweed (Polygonum cuspidatum) invades river shorelines. Common reed (Phragmites australis) and purple loosestrife (Lythrum salicaria) are aggressive, weedy species that may creep into wetlands in the wake of disturbance and possibly overwhelm native species. Control of these weedy species is necessary for the long-term maintenance of high quality natural systems.

PENNSYLVANIA NATURAL DIVERSITY INVENTORY DATA SYSTEM

In order to plan the wise use of Lycoming County's natural features, the Pennsylvania Science Office (PSO) of The Nature Conservancy (TNC) was contracted by Lycoming County to provide ecological data for use in site evaluations throughout the county. Critical to this effort is the Pennsylvania Natural Diversity Inventory (PNDI) information system. PNDI was established in 1982 as a joint venture of PSO/TNC, the Pennsylvania Department of Environmental Resources, and the Western Pennsylvania Conservancy. In its eleven years of operation, the PNDI data base has become Pennsylvania's chief storehouse of information on outstanding natural habitat types (called natural communities in PNDI terminology), sensitive plant and animal species, heron rookeries, and several other noteworthy natural features. Over 9,000 detailed occurrence records, largely the result of field surveys, are stored in computer files and denoted on topographic maps. Additional data are stored in extensive manual files set up for over 150 natural community types, over 800 plant and animal species, about 650 managed areas, and for each of Pennsylvania's 881 7½' USGS topographic quadrangle maps.

Beginning in 1982, PSO and the other agencies began collecting primarily existing data on occurrences of elements of concern, drawing from publications, herbarium and museum specimens, and the knowledge of expert botanists, zoologists, ecologists, and naturalists. From this foundation, PSO has focused its efforts on, and begun systematic inventories for, the best occurrences of the priority elements.

The PSO has used this systematic inventory approach to identify the areas of highest natural integrity in Lycoming County. These areas, comprised of natural communities with their characteristic species, may represent an estimated 85-90 percent of the biological diversity of an area (The Nature Conservancy, 1988); the other 10-15 percent consists of sensitive plant and animal species which occur both within and outside these natural communities. Protecting the full range of biological diversity in Lycoming County starts by protecting sites with the best occurrences of the county's natural communities and by protecting populations of the county's sensitive plants and animal species. The natural community and sensitive species data are the basis for judging the biological values of sites within the county.

NATURAL AREAS INVENTORY METHODS

Methods used in the Lycoming County Natural Areas Inventory followed PNDI procedures, and those developed in Illinois (White 1978) and Indiana (Anonymous 1985). The inventory proceeds in three stages: 1) information is gathered from the PNDI data-base files, local experts, and map and air photo interpretation; 2) ground survey; and 3) reconnaissance by aircraft.

Information Gathering

A list of natural features found in Lycoming County was prepared from the PNDI data base and bolstered with information volunteered by local individuals and organizations familiar with the county. A public meeting was held in Williamsport in the spring of 1992 at the start of the Lycoming County Inventory. TNC staff solicited information about potential natural communities, endangered species, and important wildlife breeding areas from knowledgeable individuals and local conservation organizations. Over 50 potential sites were identified.

Map and Air Photo Interpretation

PSO ecologists familiarized themselves with the air photo characteristics of high quality natural communities already documented by PSO. Additional data such as vegetation maps, field surveys, and soil-survey maps were consulted to increase our understanding of the county's environment. Because vegetation in many instances must be classified at an ecosystem level, it was critical that an ecologist or person with similar training interpret the maps and air photos.

Work progressed systematically within the area encompassed by each USGS topographic map and the natural area potential of all parcels of land was assessed using aerial photographs. Areas spilling into adjacent counties were examined in their entirety. Topographic maps for use during field surveys were marked to indicate locations and types of potential natural areas based on characteristics observed on the photos. For example, maturity of forests may be reflected by the height of the canopy trees; concentric rings of conifer forest surrounding an area of low shrubs, surrounding a body of open water could indicate a glacial bog community.

Once some photo interpretation was done, field surveys were conducted to determine what was actually on the ground to improve the accuracy and consistency of interpretation. Biologists finding minimally disturbed natural vegetation or species of special concern at a site outlined the site on a field map for future reference. In the lab, the photo signatures (characteristic patterns, texture, tone of vegetation, and other features on the photos) of these sites could be used to identify similar plant communities to be checked during future surveys. Biologists consistently finding poor quality sites associated with particular photo signatures could eliminate similar areas seen on

the photos without field surveys.

Field Work

Experienced PSO biologists carried out field surveys beginning in the spring of 1992 and continuing through the summer and fall field season to evaluate the naturalness of habitats and search for sensitive species. A few field surveys in the spring of 1993 completed the study. Workers categorized the vegetation by natural community type for each Potential Natural Area visited. An evaluation of quality was made for each natural community, care being taken to give reasons for the quality rank. Boundaries of the community types were redrawn, if needed, based on new field information. The Potential Natural Area Inventory Form (Appendix III) was completed for each community with a quality rank of "C" and above. Community information recorded included the dominant, common, and other species as well as disturbances to the community. Populations of sensitive plants and animals were assessed and marked on USGS topographic quadrangle maps.

On October 20, 1992, a reconnaissance flight was taken over the entire county to look at sites that were not easily accessible on foot and to identify which of these were still in good enough condition to warrant field surveys.

Data Analysis

To organize the natural features data and set conservation priorities, each natural community or species (elements) is ranked using factors of rarity and threat on a state-wide (state element ranking) and range-wide (global element ranking) basis (see Appendix I). Each location of an element (an element occurrence) is ranked according to naturalness, its potential for future survival or recovery, its extent or population size, and any threats to it. An explanation of the four PNDI quality ranks is given in Appendix II. The element-ranking and element occurrence-ranking systems help PSO personnel to simultaneously gauge the singular importance of each occurrence of, for example, a Limestone Glade community, eastern woodrat, or a rare sedge, occurring in the county, as well as the state-wide or world-wide importance of these natural features. Obviously, sites with several highly ranked occurrences of high-ranked elements merit more immediate attention than sites with a few low-ranked occurrences of lower ranked elements.

Field data for natural communities of C-rank or better, and for all plant and animal species of concern found are synthesized with existing data and summarized on PNDI Element Occurrence Records for mapping and computerization. Mapped locations of natural features, including approximate watershed (or sub-watershed) boundaries, are then transcribed on to acetate map overlays for presentation to the county planners for their use and distribution.

Map Codes

All natural communities, species of special concern and geologic features are coded on the maps and described in the text. The codes are PNDI map codes that are unique to each element on a given USGS topographic map. Species are identified by code to prevent unauthorized collection and possible extirpation of the species at the site. Natural Communities are identified by **NC**, plants by **SP**, animals by **SA**, and geologic features by **GE**; all are followed by a three-digit code. Anyone seeking information on an individual site or species location may call or write the Pennsylvania Science Office of TNC; please provide the map code(s) and the corresponding map name(s) where applicable.

Priorities for Protection

A table with a priority listing of sites of statewide significance within Lycoming County—sites that contain exemplary natural communities and/or species of special concern—is presented in Table 1 of the Summary and Recommendations. Sites are ranked from the most important and most threatened to the least. Site name or code (in bold-faced upper case letters), topographic map, and pertinent information on importance, threats, management needs, and recommendations for protection are listed. The highest priority sites are assigned site names (in bold) while species codes suffice to define the lower priority areas (a locality name may be given in the site description to facilitate use of this information).

Some sites of local significance are also identified on the maps and briefly discussed in the text accompanying each map. These are sites that do not contain exemplary natural communities and are not known to harbor any rare species. They represent good quality habitat from a county-wide perspective and/or contain species or habitats that are relatively uncommon within the county. These secondary sites are shown in Table 2 (see Summary and Recommendations) and ranked in approximate order of importance. They have been given qualitative ranks (high, medium, or low) according to size, level of disturbance, proximity to other open-space lands, and potential for sustaining a diversity of plant and animal life. These secondary-site ranks must be viewed as very approximate.

SUMMARY AND RECOMMENDATIONS

Protection Priorities

Each year staff from The Nature Conservancy, Western Pennsylvania Conservancy and PA Department of Environmental Resources and other experts in the state meet to discuss and rank the priority sites for the protection of biological diversity in Pennsylvania. This meeting consists of a review of all sites within the state and then ranking them in terms of the rarity and abundance of the species or habitats, potential threats, and protection needs. Lycoming County sites that are regarded as being significant for the protection of natural communities and species of special concern across the Commonwealth are presented in Table 1.

Since there is only limited money and personnel time that can be devoted to the pursuit of land conservation, two tables are presented to direct protection efforts towards the most important sites first. Table 1 lists all the known sites where exemplary natural communities and species of special concern are located in approximate order of importance for the protection of biological diversity. The table also summarizes their significance, any potential threats, and some recommendations for protection. Table 2 is a list of secondary sites that may be important locally as sites for county or township parks or natural areas and passive recreation. Protection or management of the sites in Table 1 should be actively pursued in order of importance while those in the second table might be targeted once protection of the Table 1 sites has been accomplished or as opportunities arise.

The top five sites from Table 1 are described below. These are the most critical in Lycoming County for maintaining biological diversity into the future (see detailed site descriptions in Results section to follow). Locations of the ten top sites, including the five described below, is shown in Figure 1.

CRYSTAL LAKE CAMP WETLANDS - PICTURE ROCKS QUAD. (Plunketts Creek Twp. and Sullivan Co.) is a series of open peatlands, vernal ponds and beaver ponds. A total of four animal species of special concern have been found at this site. One butterfly species of special concern feeds on the cranberry (Vaccinium macrocarpon) that is abundant in the peatlands. Flooding caused by beaver has eliminated some of the habitat for this species and continues to be a threat to the remaining suitable habitat. It would be advisable to monitor the beavers and remove them if they threaten to flood the peatlands where cranberry exists. Otherwise this area is well protected at this time. There are also several natural vernal ponds which support good populations of three odonates (dragonflies/ damselflies) of special concern and provide habitat for a variety of aquatic plants and other animals, including amphibians. Care should be taken to maintain these ponds in as natural a condition as possible to avoid impacting the three rare species and the other flora and fauna of the ponds.

The ponds also can serve as an outdoor laboratory for environmental education classes at the camp.

SAND SPRING BARREN - HUNTERSVILLE QUAD. (Plunketts Creek Twp.) is a 400-450 acre Ridgetop Dwarf-Tree Forest natural community along the Allegheny Front, dominated by scrub oak (Quercus ilicifolia) with patches of pitch pine and sassafras. It supports excellent populations of four lepidoptera species of special concern, including one globally rare (G2S2) species that has not been found in any other state to date. Most of the barren is within **Tiadaghton State Forest** and is receiving active management for wildlife by maintaining scrub oak openings; this may be of benefit to the moth species of special concern as well. Some of the areas are succeeding to hardwood forest and either brush-cutting or prescribed burns are suggested to maintain the barrens habitat for the rare moths. The part of the barren not owned by the state is being laid out for development and lights from homes built here could be a problem for the moths. Gypsy moth control (spraying) could also harm the rare lepidoptera fauna at this site.

EISWERT CAVE and **EISWERT LIMESTONE GLADE** - LINDEN QUAD. (Limestone Twp.) The cave near a quarry in southern Lycoming County supports populations of two animal species of special concern, one which is listed as PA-Threatened. The PA. Game Commission (PGC) manages the cave and has placed a gate across the entrance of this cave to protect these species. The limestone glade, a grassy opening on limestone bedrock, is an example of a Calcareous Rocky Summit Community. It harbors at least two rare plant species, one which was last reported in the area in the 1940's. Unfortunately, many non-native species have become established since that time and threaten to overrun the native components of the glade. Control of the aggressive exotics such as crown vetch (Coronilla varia), silverberry (Eleagnus umbellata) and honeysuckle (Lonicera sp.) is needed to maintain this community and the rare species associated with it.

CLAY MINE SWAMP - LEE FIRE TOWER QUAD. (Brown Twp.) is a significant wetland in **Tiadaghton State Forest** and home to two odonate (dragonfly and damselfly) species of special concern, one which is rare throughout its range. The wetland had been forested at one time but now consists of open sedge and grass areas, shrub swamp, and areas with dense mats of sphagnum and cranberry (Vaccinium macrocarpon). Although apparently secure at present, succession may eventually alter the habitat and make it less suitable for these species; use of pesticides in the immediate watershed could also be detrimental to the populations. The species should be afforded as much protection as possible through habitat protection and management.

MOHN MILL PONDS - CARROLL AND WILLIAMSPORT SE QUAD. (Washington Twp.) is a good quality Ephemeral/Fluctuating Pool natural community comprised of a series of woodland ponds scattered over a mile of state forest land (Tiadaghton and Bald Eagle State Forests) in Lycoming and Union County, near a tributary of White Deer Hole Creek. The ponds range from flooded for most of the year to small, shallow depressions that are flooded for only brief periods in the growing season. Two species of special concern have been located here—a Federally Endangered bulrush and a grass that is being reviewed to determine its rarity in Pennsylvania. A hiking trail named for Merrill Linn winds its way among the ponds and is connected to the nearby Midstate Trail. The Bureau of Forestry is recommending this site as a Public Plant Sanctuary.

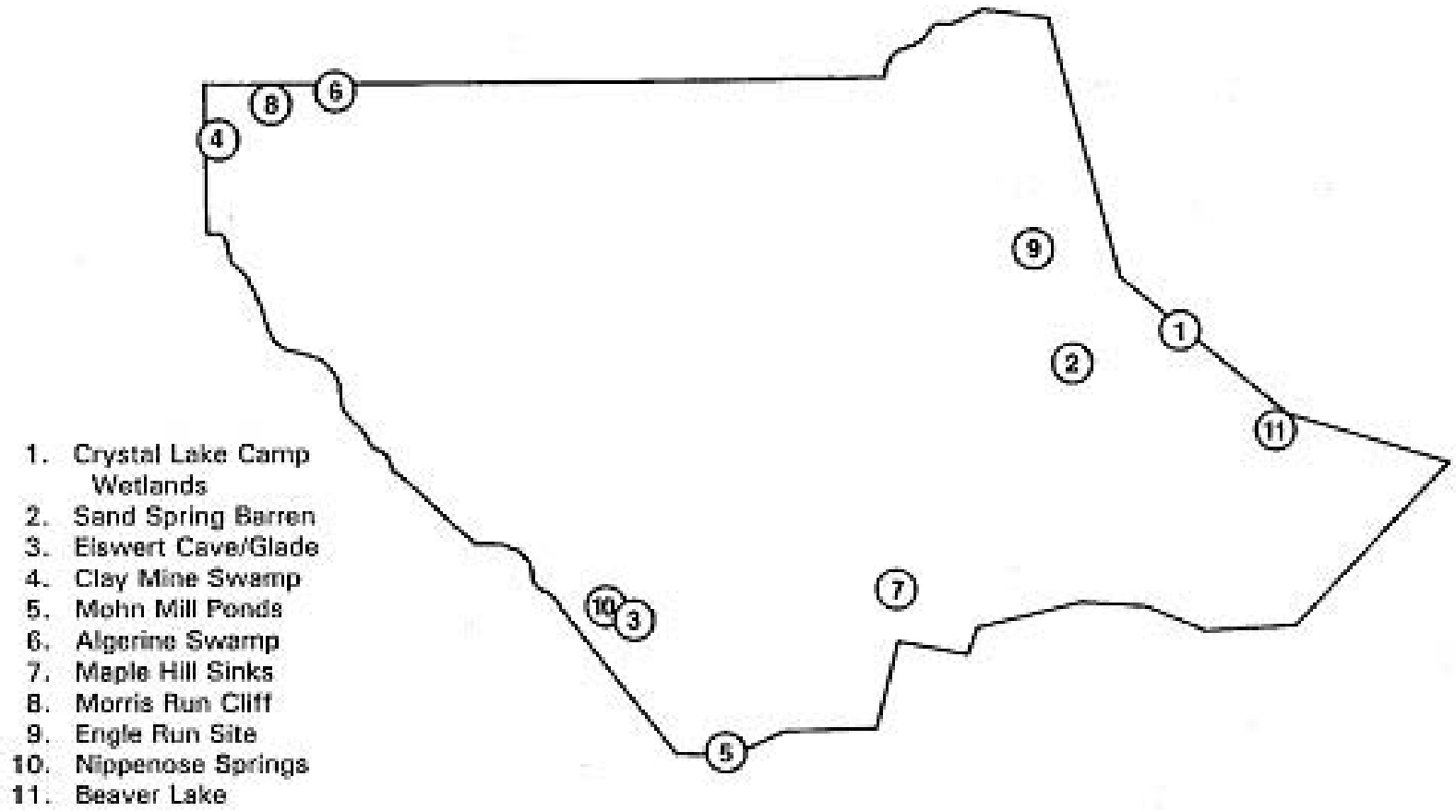


Figure 1. Locations of the top sites for the preservation of biological diversity in Lycoming County.

County Rank[1]	Site Name or Code	USGS Topo. Map	Natural Feature, TNC Global and State Ranks[2] Importance and Recommendations[3]
1	**CRYSTAL LAKE CAMP WETLANDS** (Plunketts Creek Twp.)	Picture Rocks	4 PA-listed invertebrates, wetlands and vernal ponds; land protected, but species need to be monitored; wetlands may need managing for beaver.
1	**SAND SPRING BARREN** (Plunketts Creek Twp.)	Huntersville	Fair to good quality Ridgetop Dwarf-tree Forest community containing excellent populations of 4 PA-listed lepidoptera species including one globally rare (G2S2) species; mostly within Tiadaghton S.F.; pesticide use would be detrimental to the rare species.
2	**EISWERT CAVE/GLADE** (Limestone Twp.)	Linden	Limestone glade natural community and cave complex; good-fair population of 2 PA-listed plants and 2 PA-listed animal species. Cave protected by PA Game Commiss.; glade needs management to maintain the grassy openings.
2	**CLAY MINE SWAMP** (Brown Twp.)	Lee Fire Tower	Good populations of 2 rare invertebrates in shrub swamp in Tiadaghton S.F.; maintain habitat & discourage pesticide use in immediate watershed.
2	**MOHN MILL PONDS** (Washington Twp.)	Carroll Williamsport SE	2 rare plant species and a good occurrence of a natural community within Bald Eagle & Tiadaghton State Forests; woodland buffer is essential to protect the rare elements.

County Rank[1]	Site Name or Code	USGS Topo. Map	Natural Feature, TNC Global and State Ranks[2] Importance and Recommendations[3]
3	**ALGERINE SWAMP** (Brown Twp.)	Cedar Run	Boreal conifer swamp community and good populations of 3 PA-listed plants and 1 G4G5S2 animal; most is protected within Algerine SFNA of Tiadaghton S.F.
3	**MAPLE HILL SINKS** (Washington & Brady Twps.)	Montoursville S.	Good to excellent population of a PE plant; best statewide occurrence of an Ephemeral/Fluctuating Limestone Sinkhole pond community; maintain or expand woodland buffer.
3	**MORRIS RUN CLIFF** (Brown Twp.)	Lee Fire Tower	2 PA-listed animals and potential for one other; in Tiadaghton S.F.; logging at site not recommended.
3	**ENGLE RUN SITE** (Cascade & Plunketts Twp.)	Barbours	EV Stream; High-Gradient Clearwater Creek natural community, 1 TU plant and a small population of a PE (G5S1) plant; maintain wooded buffer.
3	**NIPPENOSE SPRINGS** (Limestone Twp.)	Linden	**GE505 -** Largest 2nd-magnitude spring in PA; maintain woodland and control exotic plants; under registry between landowner and Northcentral PA Conservancy; needs further search for rare invertebrates.
3	**BEAVER LAKE** (Penn Twp.)	Sonestown	Fair population of a G4S1 PE aquatic plant; only extant site in eastern PA.; potential for other rare species; lake drawdown & herbicide use are not recommended.

County Rank[1]	Site Name or Code	USGS Topo. Map	Natural Feature, TNC Global and State Ranks[2] Importance and Recommendations[3]
4	**SA521** (Brown Twp.)	Cedar Run	**Cedar Run Outcrop** - population of a PA-Threatened animal; in Tioga S. F.; monitor population; logging not recommended.
4	**SA508** (McHenry Twp.)	Cammal	**Ross Siding** - population of a PA-Threatened animal; partly within Tiadaghton S.F.; monitor population; logging not recommended.
4	**SA504** and **NC505** (Gamble Twp.)	Montoursville N.	**Wells Mountain** - population of PA-Threatened animal and a natural community in SGL #298. Protected by PA Game Commission which restricts access to site.
5	**SP504** (Brown Twp.)	Slate Run	Small population of a PE plant in Tiadaghton S.F.; maintain wooded buffer.
5	**SA506** (McHenry Twp.)	Cammal	Good population of an PA-listed animal located in Tiadaghton S. F. along Trout Run, an HQ-CWF stream.
5	**SP520** (Brown Twp.)	Cedar Run	Fair population of a G5S3S4 aquatic plant in Pine Creek; maintain water quality.
5	**SP527** (Brown Twp.)	Cedar Run	**Woodhouse Ledges** - small population of a TU plant; maintain existing woodlands on the steep ledges and along base of slope.
5	**NC507** (Watson Twp.)	Jersey Shore	**Torbert Woods** - fair example of a Xeric Central Hardwood-Conifer Forest natural community.

County Rank[1]	Site Name or Code	USGS Topo. Map	Natural Feature, TNC Global and State Ranks[2] Importance and Recommendations[3]
5	**SP508** (Pine Twp.)	Morris	**Oregon Hill Swamp** - poor population of a PA-Rare plant and only known site for this species in the county; maintain forested remnant within wetland; registry agreement would be beneficial.
5	**NC505, NC507** (Pine Twp.)	English Center Morris	**Bear Hollow Ponds** - fair example of an Ephemeral/ Fluctuating Pool natural community within SGL #75; provides breeding habitat for amphibians; maintain wooded buffer.
5	**NC507** (McHenry & Brown Twp.)	Cammal	**Mill Run** - High-Gradient Clearwater Creek community; EV stream; maintain wooded buffer.
5	**NC506** (Plunketts & McNEtt Twps.)	Barbours	**Noon Branch** - High-Gradient Clearwater Creek community; EV stream; maintain wooded buffer.

County Rank[1]	Site Name	USGS Topo. Map	Importance
High	**Grampian Hills Woods** (Loyalsock Twp.)	Cogan Station Montoursville N.	Rich woods; diversity of wildflowers; adjacent to Williamsport; potential park or wildflower preserve.
High	**Pine Creek** (See Text)	Cammal Cedar Run Jersey Mills Slate Run Waterville	One of the premier scenic & recreation resources of the state; cooperative efforts to protect this resource are encouraged; one TU plant is known to occur in creek and other rare species occur on wooded slopes above creek.
High	**West Branch Susquehanna River** (See Text)	Linden Montoursville S. Muncy Jersey Shore	River, islands and floodplain forest provide scenic & recreation value as well as habitat for a diversity of plant & animal species; bird migration corridor.
Medium	**Nippenose Valley Woods** (Nippenose Twp.)	Linden	Diverse woodland surrounding vernal pools and sinkholes; current selective logging practices compatible with maintaining site quality.
Medium	**Little Bear Creek Ravine** (Plunketts Creek Twp.)	Huntersville	Scenic, cool, shaded hemlock-lined ravine with diversity of ferns & wildflowers; recreational value; in Tiadaghton S.F.
Low	**Cascade Falls** (Cascade Twp.)	Barbours	Scenic waterfall/plungepool community (D rank); maintain wooded buffer & limit foot travel.

County Rank[1]	Site Name	USGS Topo. Map	Importance
Low	**Aughanbaugh Run Woods** (Nippenose Twp.)	Jersey Shore	Area partly within Tiadaghton S.F. includes some older black birch, hemlock & yellow birch.
Low	**Jacoby Hollow** (Gamble Twp.)	Bodines	Diverse, mixed hardwood-conifer woodland in Tiadaghton S. F.
Low	**Montgomery Cliffs** (Clinton Twp.)	Montoursville S.	Calcareous shale cliff; excellent view of West Branch Susquehanna River; past use may preclude potential as park.
Low	**Pleasant Stream Cliff** (Mcintyre Twp.)	Bodines	Shale cliff with diverse flora; along Pleasant Stream, an HQ-CWF.
Low	**Spook Hollow Swamp** (Brown Twp.)	Cedar Run	Conifer swamp within Algerine State Forest Wild Area, Tiadaghton S.F.; some potential for rare species.
Low	**Devils Elbow State Forest Natural Area**	Grover	Wetlands with good regeneration of hemlock and species not common in county; protected as SFNA within Tiadaghton State Forest.
Low	**Branacka Lands Wetlands** (McIntyre Twp.)	Liberty Ralston	A concentration of wetlands on state and private property; no site visit but, based on air photos and overflight, has potential for rare species.

General Summary and Recommendations

Lycoming County is fortunate to have so much of the county managed as state parks, forest and game lands. In addition the Northcentral Pennsylvania Conservancy is actively pursuing protection of other sites within the county.

All sites that are ranked 1 or 2 (Table 1) should be targeted immediately for protection of the site and the surrounding lands. Privately-owned lands at these sites may be protected through a combination of acquisition and conservation easements to encourage current land use. On public lands, protection needs can be addressed by providing information to land managers and encouraging management that will ensure continued protection of the site and the associated natural elements.

All sites with good to excellent populations of species of special concern or good natural communities should receive protection too, but conservation easements or some type of tax incentive may be more appropriate until the highest priority sites have been protected. Some sites that may be high in terms of biological diversity but are relatively secure on government land may be given lower priority because the land itself is already afforded a level of protection. However, some of these sites may still be in need of management.

There are sites in the county (Table 2) that do not have good natural communities or known occurrences of rare species, but that could be excellent sites for parks or natural areas, especially those that can serve more than one purpose - recreation, wildlife habitat, flood and sediment control, water supply, etc. Species of special concern found in these areas will fit into any plan for a park or preserve. For example, creating natural areas around municipal water supply watersheds can serve the purposes of providing an additional protective buffer around the water supply and provide low-impact recreation opportunities. In addition, larger open-space areas are created for wildlife than can be achieved through either the watershed land or the natural area alone. Fee title, easements, tax incentives, and agreements with and among landowners are all tools that can be used to create these conservation lands.

Small parks and conservation lands in the county are also important. If possible, more land should be added or agreements worked out with abutting landowners to minimize encroachments that detract from the appearance of these areas.

The importance of water bodies to biodiversity is illustrated by the number of rare species in the county associated with water. Protection of the lakes and ponds, wetlands, rivers, and creeks of Lycoming County is vital, especially those that protect biodiversity, supply drinking water, and are attractive recreational resources. Protection of the critical watersheds is the only way to ensure that the water in the reservoirs, streams

and wetlands will always be good quality. A cooperative effort must be made by town, county, state, and federal agencies, developers, and residents to lessen the impact of development and other activities on the watersheds and plant communities of the county. Certainly, new housing and commercial development should be discouraged or given close scrutiny before it is allowed in the watersheds outlined in this report. To help protect water quality, the county and municipalities should require minimum setbacks from all water bodies. Landowners within any particular watershed can act on their own to protect water by forming watershed associations to voluntarily monitor and screen proposals in their localities.

County and township officials can encourage landowners whose land includes waterways to maintain vegetated buffer zones along shorelines. These buffers will help reduce erosion and sedimentation and will help to shade and cool the water which in turn also benefits the fisheries. Buffers will also provide habitat for other wildlife species and eventually create a diversity of habitats along the creek or stream.

Where development is to occur, plans should provide for creating natural buffers between the development and wetland or water body. Care should be taken to ensure that protected natural areas do not become "islands" surrounded by development. When a wetland or woodland is completely surrounded by development, even though there are no direct impacts, the site is effectively isolated and its value for wildlife is reduced.

Much of the work that needs to be done to protect land in Lycoming County can be done by state, county and township governments and groups like the Northcentral Pennsylvania Conservancy or The Nature Conservancy. However, these organizations will not be able to do all of the work because of limited resources and personnel. Other grassroots organizations like watershed associations and homeowner associations can also help with land protection. These groups can assist with the identification of landowners who wish to protect their land, provide information about easements to landowners, acquire land, and provide management and stewardship once the land is protected.

In this report, we have outlined the watersheds or sub-watersheds where the natural communities and species of special concern occur. The core areas where the species and communities occur need to be given the most attention, and fee title acquisition is encouraged if the properties are not already protected. Ideally, all of the land within the watersheds outlined in this report should receive some form of protection, but there are not sufficient financial resources to protect all of the land nor will all landowners be interested in land protection. Not all of this land can receive the same amount of protection nor do all activities need to be excluded. Current land uses that are not impacting these important sites should be encouraged to continue.

Of the many forested tracts in the county that have been logged in the past or are currently being logged, most are undistinguished except as open space. Logging provides income to the landowner while maintaining the land as open space. By encouraging proper management practices, long-term rotations and selective cutting these forest tracts can be maintained for wildlife, maintained as open space, and continue to provide income into the future.

Conservation easements are designed to allow landowners the current use of their land while protecting the owner and the resource from outside development pressure. Where easements are not possible any proposals for significant land use changes should be closely scrutinized by county and township planners. If there are any questions about the impact of the proposed development, we suggest that our office, Pennsylvania Science Office of The Nature Conservancy, be consulted.

We wish to emphasize that this Natural Areas Inventory is only a beginning, new sites with good natural communities and species of special concern wait to be discovered. Plant communities and plant and animal populations are dynamic, constantly changing with time and conditions. As information describing species of special concern and exemplary natural communities is received and updated in the PNDI data base, so too will the Lycoming County Natural Areas Inventory.

RESULTS

Site Summaries by USGS Topographic Maps

Portions of Lycoming County are found on 37 USGS topographic quadrangle maps (Figure 2). Communities, species of special concern, significant geologic features, managed open space lands such as state game lands, and some unprotected areas that may be of local importance for wildlife and open space have been located on these base maps (see sample map Figure 3).

The most important areas (Table 1) are represented on the maps in bold print. Natural communities and the most critical sites for species of concern (often an assemblage of rare species) have been given site names in upper case bold type, such as **MOHN MILL PONDS**, and are followed by natural community and species map codes (e.g., **NC501**, **SP504**, **SP508**). Lesser quality sites which support communities or species of special concern have been outlined and marked with the bold type map code number only (e.g., **SA512**). Note that the code numbers are specific to that quadrangle; e.g., SP503 on Carroll may be a different species than SP503 on Williamsport SE Quadrangle.

The area outlined represents the species' location and the watershed or sub-watershed area where the elements (species or natural communities) are located. Development activities proposed within the encircled areas should be carefully assessed to determine the impact of the project on the species or communities before approval is granted. Consultation with the biologists of the Pennsylvania Science Office of The Nature Conservancy may be necessary to assess these impacts.

Locally significant sites (Table 2) have been mapped in a similar manner, but are labeled with a site name in plain upper case type, e.g. CASCADE FALLS. These sites do not appear to have species of special concern and the vegetation has been disturbed enough that they cannot be considered natural, but they are important for county-wide biological diversity and as potential for parks or passive recreation/open space areas.

Public managed areas, such as state forests are indicated with names in bold upper and lower case type, e.g., **Tiadaghton State Forest**. The dash-dot-dash lines (── . ──) delineate the approximate boundaries of these areas on the maps.

Each topographic map is accompanied by a table that lists all of the exemplary natural communities and species of special concern located on the map. The communities and species are identified by a PNDI map code unique to each element on that map. Following each of these elements is its global and state ranks (Appendix I), federal and state protection status (Appendix I), the date last observed, and its quality rank (Appendix II). Streams designated as High Quality Coldwater Fisheries (HQ-CWF) are listed for each quadrangle. In addition, sites of local

significance, geologic features, managed lands, and natural communities and species that are located primarily on adjacent maps are listed within the "Other" category.

Key to Codes

NC - natural community
SP - plant of special concern
SA - animal of special concern
GE - significant geologic feature

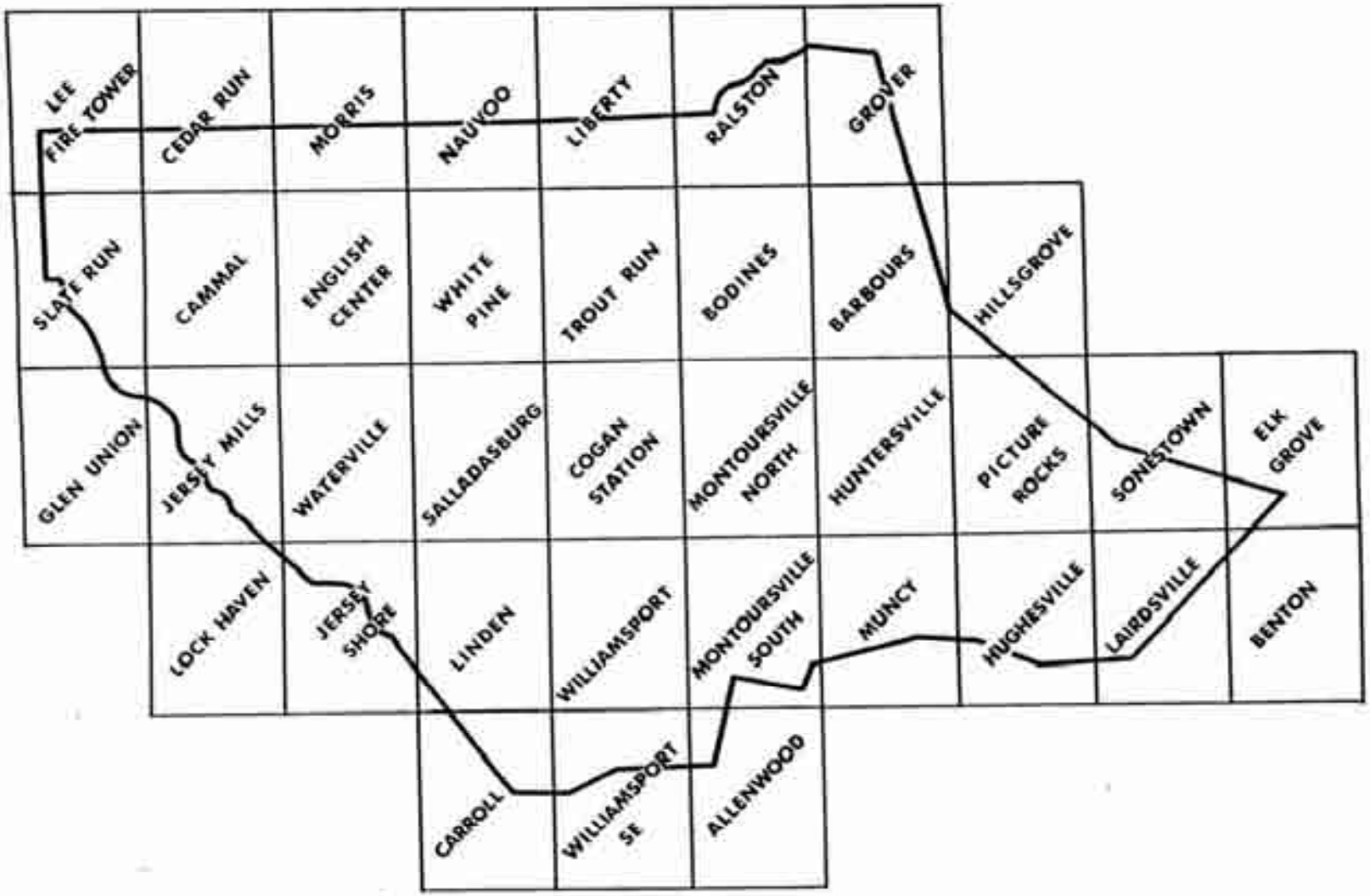


Figure 2. Lycoming County outline with names and locations of the USGS topographic quadrangle maps of the county.

photo

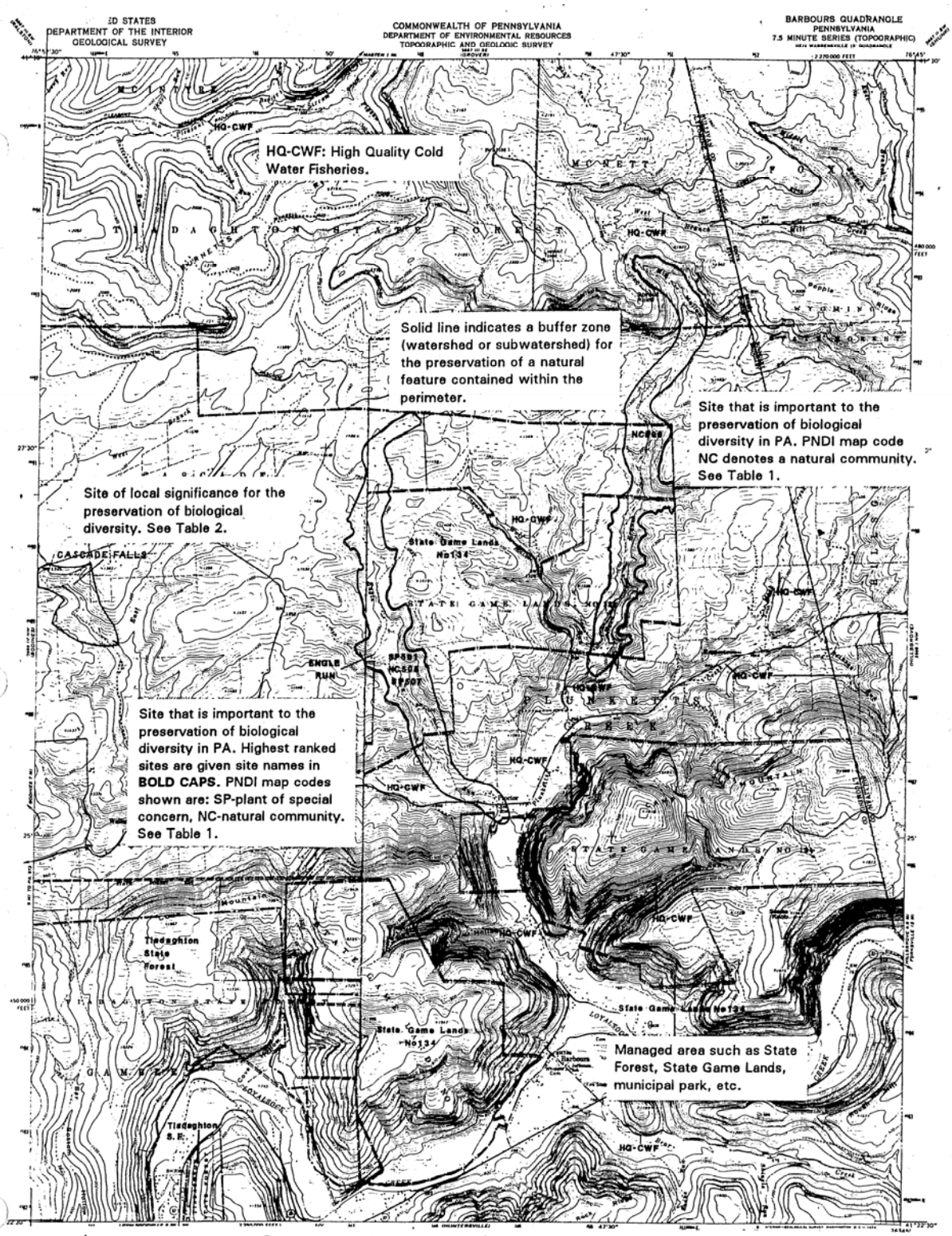


Figure 3. Sample USGS topographic map with explanations of the various types of County Natural Areas Inventory information added.

USGS QUADRANGLE MAP: Allenwood

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None					
SPECIAL PLANTS:	None					
SPECIAL ANIMALS:	None					
HIGH QUALITY-COLDWATER FISHERIES:	White Deer Hole Creek					
OTHER:	State Game Lands 252, Tiadaghton State Forest					

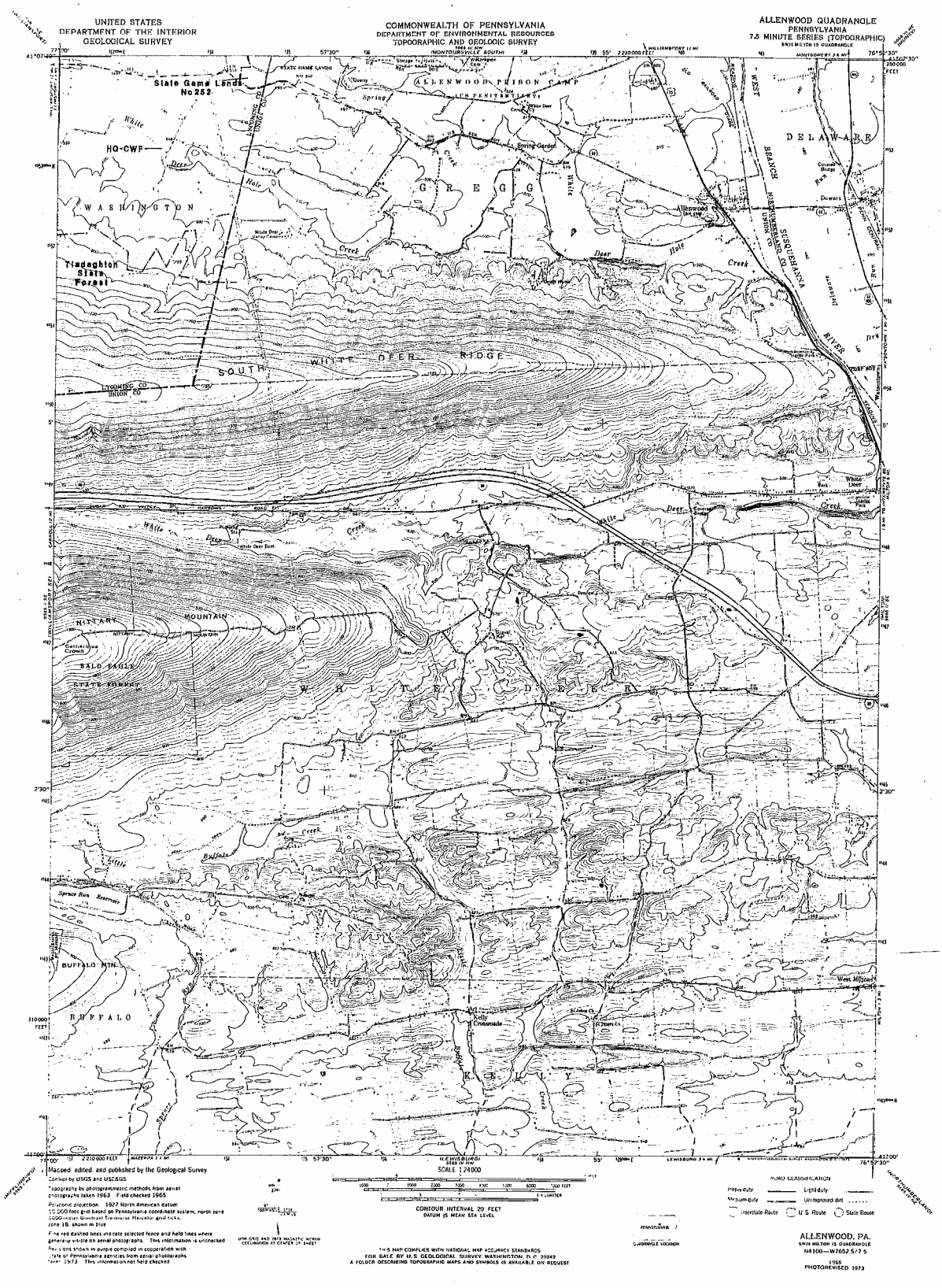
Allenwood Quadrangle

White Deer Hole Creek (Washington Twp.) is a High Quality-Coldwater Fishery throughout its basin from its source to the Lycoming/Union County line. Its main value to the county and its residents is recreation.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
ALLENWOOD QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
State Game Lands No 252
HQ-CWF
WASHINGTON
GREGG
DELAWARE
Tiadaghton State Forest
SOUTH WHITE DEER RIDGE
WHITE DEER
MOUNTAIN
BALD EAGLE STATE FOREST
BUFFALO
BUFFALO MTN.
Mapped, edited, and published by the Geological Survey
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
ROAD CLASSIFICATION
ALLENWOOD, PA.
1966
PHOTOREVISED 1973

USGS QUADRANGLE MAP: Barbours

		TNC Ranks*		Legal Status*		Last	
		Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	505	G?	S?	N	N	----	E
	506	G?	S?	N	N	----	E
SPECIAL PLANTS:	501	G5	S1	N	PE	05-27-93	D
	507	G5	S?	N	N	05-27-93	D

SPECIAL ANIMALS: None

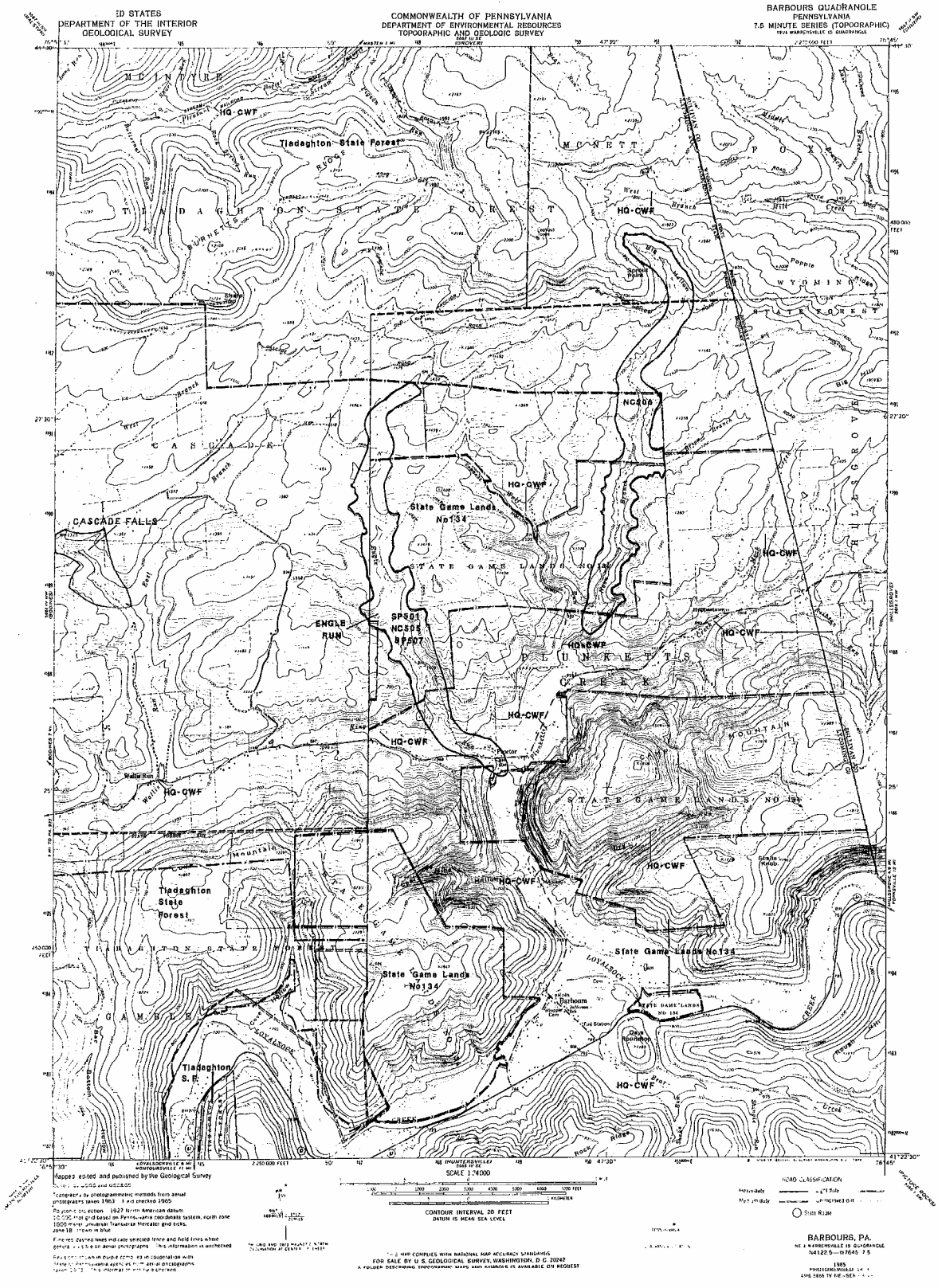
HIGH QUALITY-COLDWATER FISHERIES: Bear Creek, Dry Run, King Run, Mock Creek, Pleasant Stream, Plunketts Creek, Reibsan Run, Wallis Run, West Branch Mill Creek, Wolf Run

OTHER: Cascade Falls, Tiadaghton State Forest, State Game Lands 134

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


ED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
BARBOURS QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
M C I N T Y R E
T I A D A G H T O N S T A T E F O R E S T
M O N E T T
F O X
W Y O M I N G
S T A T E F O R E S T
C A S C A D E
D U N K E T S
C R E E K
M O U N T A I N
G A M B L E
HQ-CWF
Tiadaghton State Forest
State Game Lands No134
STATE GAME LANDS NO 134
CASCADE FALLS
ENGLE RUN
SP901
NC505
BP507
NC506
Tiadaghton State Forest
Tiadaghton S.F.
Barbours
Mapped, edited and published by the Geological Survey
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
ROAD CLASSIFICATION
BARBOURS, PA.

Barbours Quadrangle

ENGLE RUN SITE (Plunketts Creek and Cascade Twps.) - Engle Run is a High Gradient Clearwater Creek natural community (**NC505**) and a DER Exceptional Value (EV) Stream throughout its basin to its confluence with Kings Run west of Proctor. The site is the habitat for two rare plant species (**SP501** and **SP507**). One of these, **SP501** is a PA-Endangered plant found near the confluence of King Run (an HQ-CWF stream) and Engle Run. The other species, **SP507**, has only recently been added to the list of rare species and not enough is known about its status in Pennsylvania to assess its rarity.

SP501 has been known from this site since at least 1930 and is located on a steep, 50-foot, shale rock face above the stream as it cuts through the narrow ravine. The cliff is shaded by a mesic hemlock and birch woodland. The combination of shale bedrock with some calcium carbonate in it and a moist microclimate created by shade, seeps and the stream has created an environment suitable for this species. In 1993, only one patch of 1 square meter was located and, although the plants are very healthy, the small area in which the plants are found makes the population vulnerable to extirpation by a rock slide from above or erosion of the slope below. This vulnerability requires that a D rank be given but the site is still important as only one of five sites for this species in Pennsylvania. The private landowner is aware of the importance of the site and is protecting it. Permission from the landowner is required to enter the ravine.

SP507 (Plunketts Creek Twp.) is a shrub that has undergone a severe decline apparently because it is a favorite food of whitetail deer. The species only survives now at moist, shaded sites that are inaccessible to deer.

Engle Run Stream runs through **State Game Lands 134** and private land. Besides having the two known plant elements Engle Run Site is very scenic with steep rock faces and waterfalls. The natural community, the two species of special concern and the scenic qualities of the ravine can be best protected by maintaining the forest cover above the stream and cliffs.

NC506 (Plunketts Creek and McNett Twps.) - Noon Branch is a High Gradient Clearwater Creek and DER EV stream throughout its basin in Lycoming and Sullivan Counties to its confluence with Wolf Run.

CASCADE FALLS (Cascade Twp.) - This small waterfall and plungepool community is too degraded to be of statewide importance. However, the two steep waterfalls with plungepools at their bases, and the hemlock overstory bordering the stream make this spot very scenic. Species diversity is low and the area has been logged on either side to within 50 feet of the falls. A local road forms the upper edge of the falls and provides access. Given the evidence of heavy foot traffic, it is a popular spot although it is on private

land. There is little litter but use has probably eliminated most ground cover and there is some evidence of erosion. Encouraging the landowner to limit the foot traffic would allow some regeneration and prevent further soil erosion. Maintaining a wooded buffer around the falls will also help to minimize erosion, maintain stream quality and preserve this attractive area.

Bear Creek (Plunketts Creek Twp.) is a HQ-CWF throughout its basin from the Lycoming/Sullivan County line to its confluence with the Loyalsock including portions located on Hillsgrove and Picture Rocks Quadrangles.

Dry Run (Plunketts Creek Twp.) is a HQ-CWF throughout its basin.

King Run (Cascade and Plunketts Creek Twps.)is a HQ-CWF throughout its basin from its source to Plunketts Creek (including the stretch below Engle Run, an EV stream).

Mock Creek (Plunketts Creek Twp.) is a HQ-CWF from the Lycoming/ Sullivan County line to its mouth.

Pleasant Stream (McIntyre Twp.) is a HQ-CWF throughout its basin in Lycoming and Sullivan Counties including portions on Bodines and Grover Quadrangles.

The main stem of Plunketts Creek (Plunketts Creek Twp.) is a HQ-CWF from the Sullivan/Lycoming County line to its confluence with the Loyalsock.

Reibsan Run (Plunketts Creek Twp.) is a HQ-CWF throughout its basin from the Lycoming/Sullivan County line to its mouth.

Wallis Run (Cascade Twp.) is a HQ-CWF throughout its basin. Portions are also found on the Bodines and Montoursville North Quadrangles.

West Branch Mill Creek (Fox and McNett Twp.) is a HQ-CWF throughout its basin to the Lycoming/Sullivan County line.

Wolf Run (Plunketts Creek Twp.) is a HQ-CWF throughout its basin from the source to Noon Branch, an EV stream, and from Noon Branch to its mouth.

USGS QUADRANGLE MAP: Benton

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:						
OTHER:						

Benton Quadrangle

Only a small portion of Lycoming County is found on the northwestern corner of this map. No species of concern or exemplary natural communities are known to occur in this area.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
BENTON QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
Benton
Mapped, edited, and published by the Geological Survey
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
BENTON, PA.
1953
PHOTOREVISED 1968 AND 1975

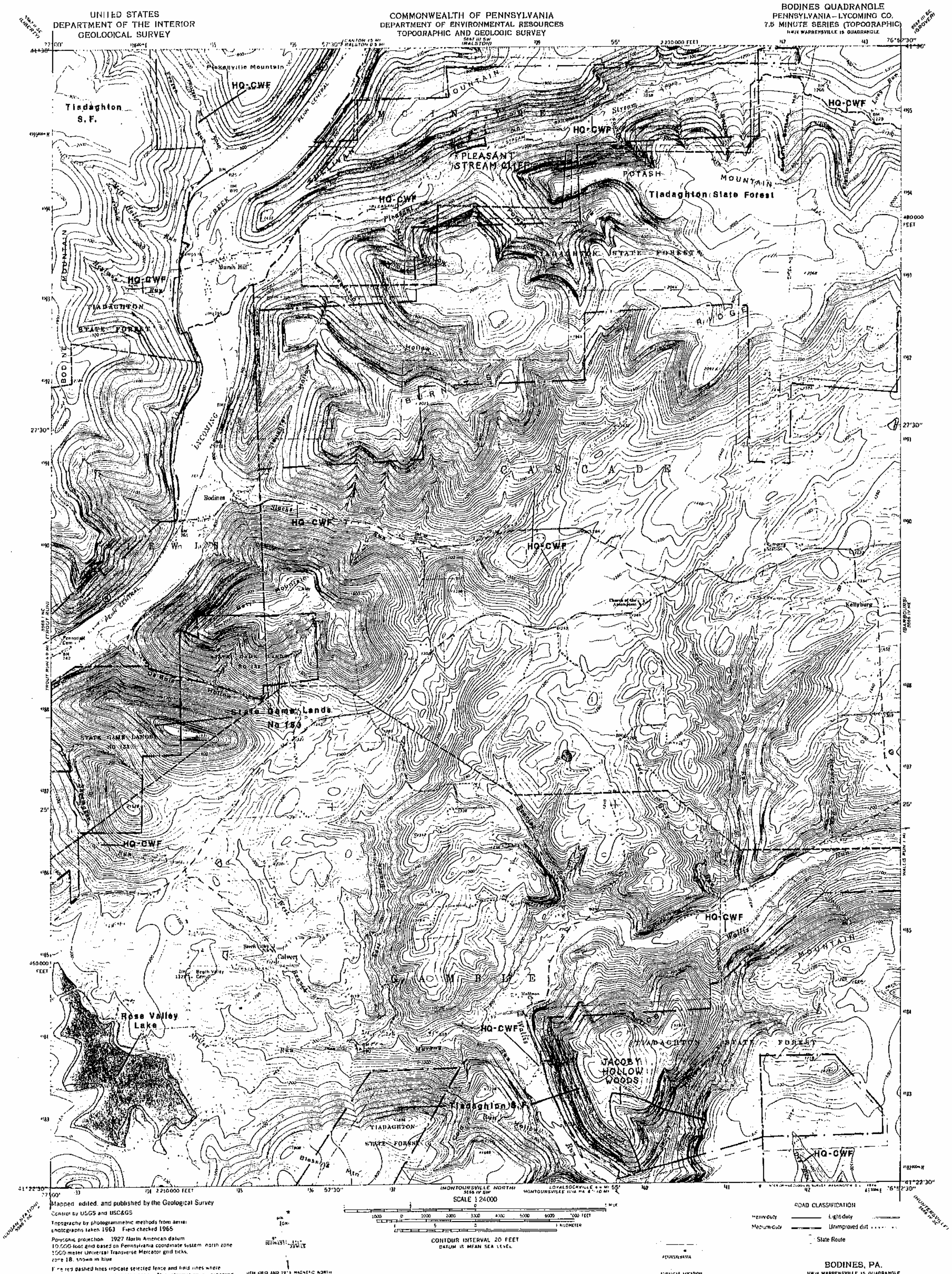
USGS QUADRANGLE MAP: Bodines

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:	Dry Run, Frozen Run, Heylmun Run, Pleasant Stream, Shoemaker Run, Slacks Run, Wallis Run					
OTHER:	Jacoby Hollow Woods, Pleasant Stream Cliff, Rose Valley Lake, State Game Lands 133, Tiadaghton State Forest					

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
BODINES QUADRANGLE
PENNSYLVANIA–LYCOMING CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
Pleasantville Mountain
Tiadaghton S.F.
HQ-CWF
PLEASANT STREAM CWF
POTASH MOUNTAIN
Tiadaghton State Forest
TIADAGHTON STATE FOREST
LYCOMING
Bodines
CASCADE
Kellyburg
State Game Lands No 133
STATE GAME LANDS
Rose Valley Lake
GAMBLE
JACOBY HOLLOW WOODS
Tiadaghton S.F.
Wallis MOUNTAIN
Mapped, edited, and published by the Geological Survey
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
ROAD CLASSIFICATION
BODINES, PA.

Bodines Quadrangle

JACOBY HOLLOW WOODS (Gamble Twp.) is a rich, mesic woodland with a high diversity of tree species of mixed ages from saplings to 1.5 feet in diameter. The upper slope is characterized by ash (Fraxinus americana) and yellow birch (Betula allegheniensis), with sugar maple (Acer saccharum), basswood (Tilia americana), beech (Fagus grandifolia) and tulip poplar (Liriodendron tulipifera) becoming more prevalent downslope. Yellow birch and hemlock (Tsuga canadensis) line the ravine. With an adequate buffer to maintain the hydrology and the aesthetics of the area and to prevent invasion by exotic species, this woodland has good potential to recover from past logging. While small in size and of low rank on a regional basis, this site represents a locally significant example of the vegetation of the Hemlock-White Pine-Northern Hardwoods Region and provides for good recreation opportunities within Tiadaghton State Forest.

PLEASANT STREAM CLIFF (McIntyre Twp.) is a shale cliff that parallels Pleasant Stream for several hundred feet. It is a south-facing cliff, mostly shaded, with varying degrees of wetness and dryness ranging from seeps to xeric rock outcrops. Species diversity is good reflecting the range of moisture conditions. An old logging railroad along the top of the cliff has allowed some weedy species to become established and has probably altered hydrology and light regime. Pleasant Stream, a HQ-CWF, at the base of the cliff appears to be circumneutral based on the aquatic life present.

Dry Run (Gamble Twp.) is a HQ-CWF throughout its entire basin, including a portion on Montoursville North Quadrangle.

Frozen Run (McIntyre Twp.) is a HQ-CWF throughout its basin including portions on Liberty and Ralston Quadrangles. The headwaters of this stream include a large area of wetlands known as the Branacka Land Wetlands (which see) on Ralston and Liberty Quadrangles.

Heylmun Run (McIntyre Twp.) is a HQ-CWF throughout its basin.

Pleasant Stream (McIntyre Twp.) is a HQ-CWF throughout its basin in both Lycoming and Sullivan Counties. Portions are also found on Grover and Barbours Quadrangles.

Shoemaker Run (Lewis and Gamble Twps.) is a HQ-CWF throughout its basin including a portion on Trout Run Quadrangle.

Slacks Run (Cascade and Lewis Twps.) is a HQ-CWF throughout its basin.

Wallis Run (Cascade and Gamble Twps.) is a HQ-CWF throughout its basin including portions on Barbours and Montoursville North Quadrangles.

USGS QUADRANGLE MAP: Cammal

		TNC Ranks*		Legal Status*		Last	
		Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	507	G?	S3	N	N	-----	E
SPECIAL PLANTS:	None found						
SPECIAL ANIMALS:	506	G5T5	S3	N	PR	10-21-85	B
	508	G5T4Q	S3	C2	PT	12-XX-92	E

HIGH QUALITY-
COLDWATER FISHERIES: Bluestone Run, Bonnell Run, Bull Run, Callahan Run, Elk Run, Hilborn Run, Jacobs Run, Love Run, Mill Run (below Bull Run), Miller Run, Ross Run, Solomon Run, Trout Run, Truman Run, Wolf Run

OTHER: Wolf Run Wild Area, Algerine Wild Area, Bark Cabin State Forest Natural Area, Miller Run State Forest Natural Area (all within Tiadaghton State Forest); State Game Lands 68; State Game Lands 75; Pine Creek (HQ-TSF)

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
CAMMAL QUADRANGLE
PENNSYLVANIA—LYCOMING CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
State Game Lands No 76
State Game Lands No 88
Algerine Wild Area
Tiadaghton State Forest
HQ-CWF
HQ-TSF
NC507
BA508
Wolf Run Wild Area
Tiadaghton State Forest
Wolf Run W. A.
Tiadaghton State Forest Bark Cabin Natural Area
Miller Run Natural Area
PINE CREEK
Cammal
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
CAMMAL, PA.

Cammal Quadrangle

NC507 (Brown and McHenry Twps.) - Within the Wolf Run Wild Area, Mill Run is a High Gradient Clearwater Creek natural community and DER Exceptional Value stream throughout its basin from its source to Bull Run.

SA506 (McHenry Twp.) is a small mammal found along Trout Run, a HQ-CWF within **Tiadaghton State Forest**. The run is rocky at this point and bedrock lines the shore. In the immediate area of the creek, the dominant overstory trees are hemlock and yellow birch. Two specimens were collected at this site in October of 1985 by a PA Game Commission biologist. This species is restricted to mountain streams with rocky bottoms where hemlock or other evergreen species are prevalent. Populations of this species are probably never large at any given site (Merritt 1987). Little is known about the population and distribution of this species in Pennsylvania and is the subject of on-going research. If the habitat remains undisturbed by logging and water quality remains high, the animal should be able to maintain itself here.

SP508 (McHenry Twp.) is a PA-Threatened animal and a candidate for federal protection. The population at this site is found on steep west-facing slopes above Pine Creek near Ross Siding partly within **Tiadaghton State Forest**. Minimizing disturbance and maintaining a wooded buffer are beneficial to this species. The population should be monitored regularly by PA Game Commission biologists.

PINE CREEK (Brown and McHenry Twps.) is a High Quality Trout-Stocked Fishery (HQ-TSF) and one of the premier scenic and recreational resources of Pennsylvania. Bald eagles, a federally endangered bird, are nesting upstream in Tioga County and are probably utilizing the Lycoming Co. section to fish. Coordination among the citizens, townships, counties and the state will be required to ensure that this creek will always be compatible for wildlife and recreational users.

Bluestone Run (McHenry Twp.) is a HQ-CWF throughout its basin. It is a short, steep run entering Pine Creek at Bluestone.

Bonnell Run (Brown Twp.) is a HQ-CWF throughout its basin including a portion on Slate Run Quadrangle.

Bull Run (McHenry Twp.) is a HQ-CWF throughout its basin to its confluence with Mill Run.

Callahan Run (McHenry Twp.) is a HQ-CWF throughout its basin including a portion on Jersey Mills Quadrangle.

Elk Run (Brown Twp.) is a HQ-CWF throughout its basin including a portion on Cedar Run Quadrangle.

Hilborn Run (Brown Twp.) is a HQ-CWF throughout its basin to Pine Creek.

Jacobs Run (Brown and McHenry Twps.) is a HQ-CWF throughout its basin including a portion on Cedar Run Quadrangle.

Love Run (Cummings Twp.) is a HQ-CWF throughout its basin to Little Pine Creek and includes portions found on English Center and Waterville Quadrangles.

Mill Run (McHenry Twp.) is a HQ-CWF below Bull Run to its mouth at Pine Creek. Above Bull Run it is an EV stream.

Miller Run (McHenry Twp.) is a HQ-CWF within the Miller Run State Forest Natural Area and includes portions on Glen Union and Jersey Mills Quadrangles.

Ross Run (McHenry Twp.) is a HQ-CWF within Wolf Run Wild Area.

Solomon Run (McHenry Twp.) is a HQ-CWF running into Pine Creek, including a section on Jersey Mills Quadrangle.

Trout Run (McHenry Twp.) is a HQ-CWF throughout its basin to Pine Creek near Cammal which includes sections on Slate Run Quadrangle.

Truman Run (McHenry Twp.) is a HQ-CWF throughout its basin from the source south to Pine Creek.

Wolf Run (McHenry Twp.) is a HQ-CWF within Wolf Run Wild Area of Tiadaghton State Forest.

USGS QUADRANGLE MAP: Carroll

		TNC Ranks*		Legal Status*		Last	
		Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	501	G?	S2	N	N	09-01-92	B
SPECIAL PLANTS:	504	G2	S2	LE	PE	09-01-92	BC
	508	G5	S?	N	TU	09-01-92	B

SPECIAL ANIMALS: None found

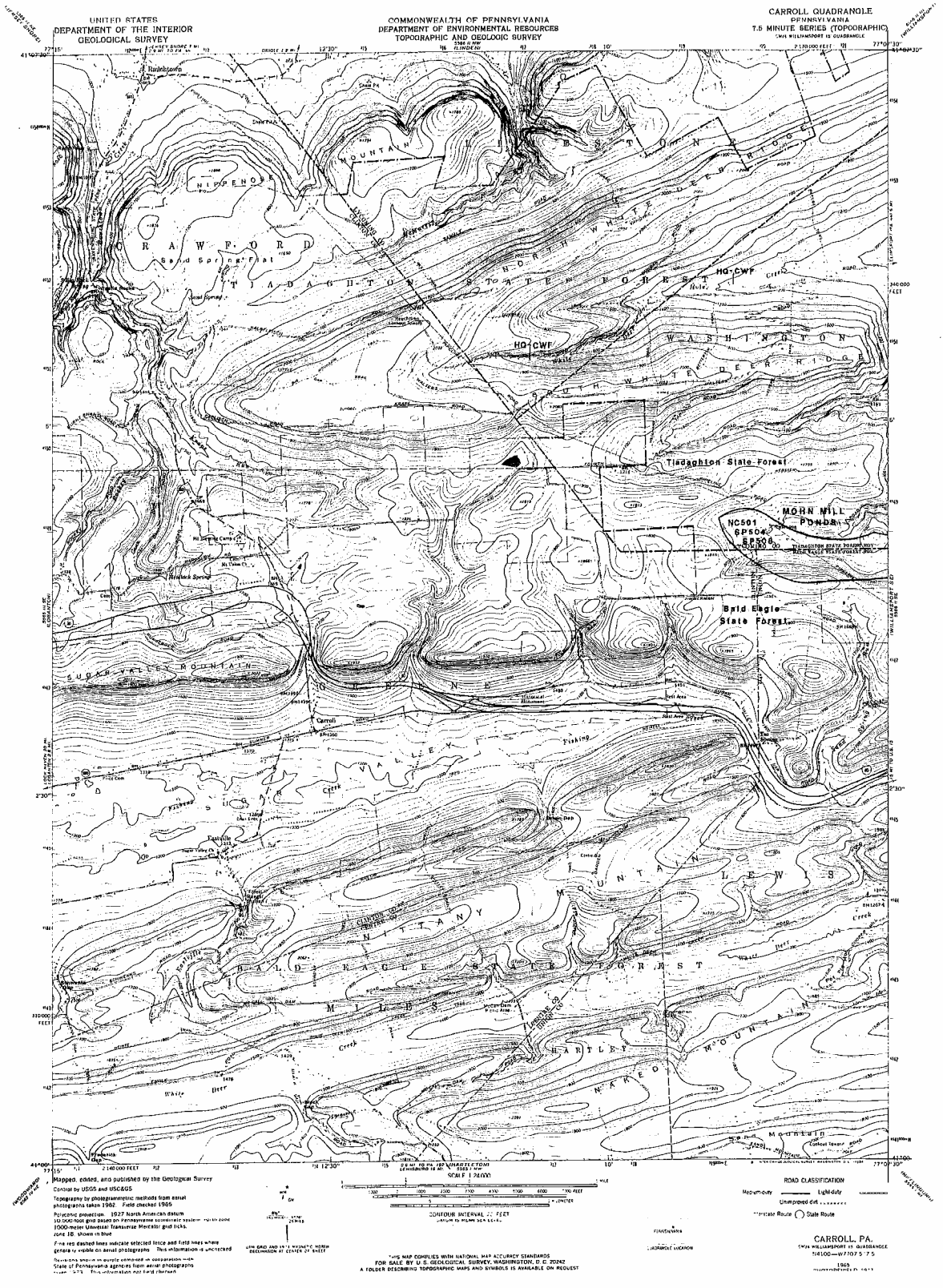
HIGH QUALITY-
COLDWATER FISHERIES: White Deer Hole Creek

OTHER: Tiadaghton State Forest, Bald Eagle State Forest (in Clinton and Union County)

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
CARROLL QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
Rainbistown
Tiadaghton State Forest
HQ-CWF
MORN MILL POND
Bald Eagle State Forest
Carroll
Fairville
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial photographs taken 1962. Field checked 1965
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, north zone
1000-meter Universal Transverse Mercator grid ticks, zone 18, shown in blue
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
ROAD CLASSIFICATION
Medium-duty
Light-duty
Unimproved dirt
CARROLL, PA.
1965

Carroll Quadrangle

NC501 (Washington Twp.) - **MOHN MILL PONDS** (see also Williamsport SE Quadrangle NC501) is a series of woodland ponds scattered over a mile of state forest land (Tiadaghton and Bald Eagle State Forests) in Lycoming and Union County. The ponds formed in depressions in colluvium near a tributary of White Deer Hole Creek. The ponds, depending on size, depth and shading, are dominated by bulrushes, grasses, ferns and mosses. The ponds range from flooded for most of the year to small, shallow depressions that are flooded for only brief periods in the growing season. Most of the ponds remain saturated even through long droughts, however, and many are interconnected at least during high-water periods. The area was logged in the early 1900's but has reverted to mixed oak and maple forest. The woodland buffer is essential to maintaining the community quality and the resident rare species described below.

Two species of special concern have been located in the ponds—a Federally Endangered bulrush (**SP504**, see also SP505 on Williamsport SE) and a grass (**SP508**, see also SP506 on Williamsport SE) that is being reviewed to determine its rarity in Pennsylvania. The bulrush appears to need at least partial shading to maintain itself against competition for space in the ponds. Research is underway at this time to determine specific needs of this plant. Only monitoring of the population at the ponds is recommended until research has yielded results on habitats requirements.

Merrill Linn first recognized the unique qualities of the ponds but it was only during the 1992 survey that these two species were found. A hiking trail named for Merrill Linn winds its way among the ponds and is connected to the nearby Midstate Trail. **MOHN MILL PONDS** has been proposed as a Public Plant Sanctuary by the Bureau of Forestry.

White Deer Hole Creek (Limestone and Washington Twps.) is a HQ-CWF running from the Clinton-Lycoming County line, continuing east onto the Williamsport SE Quadrangle. The headwaters support native brook trout and the stream is important to the county as a recreational resource.

photo

USGS QUADRANGLE MAP: Cedar Run

		TNC Ranks*		Legal Status*		Last	
		Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	504	G?	S2	N	N	06-23-93	B
SPECIAL PLANTS:	509	G5	S3	N	PR	06-23-93	A
	510	G5	S2	N	PT	06-23-93	A
	520	G5	S3S4	N	TU	08-31-93	C
	525	G5	S?	N	PE	06-23-93	B
	527	G5	S?	N	TU	08-31-93	CD
SPECIAL ANIMALS:	516	G4G5	S2	N	N	07-01-88	B
	521	G5T4Q	S3	C2	PT	03-29-90	E

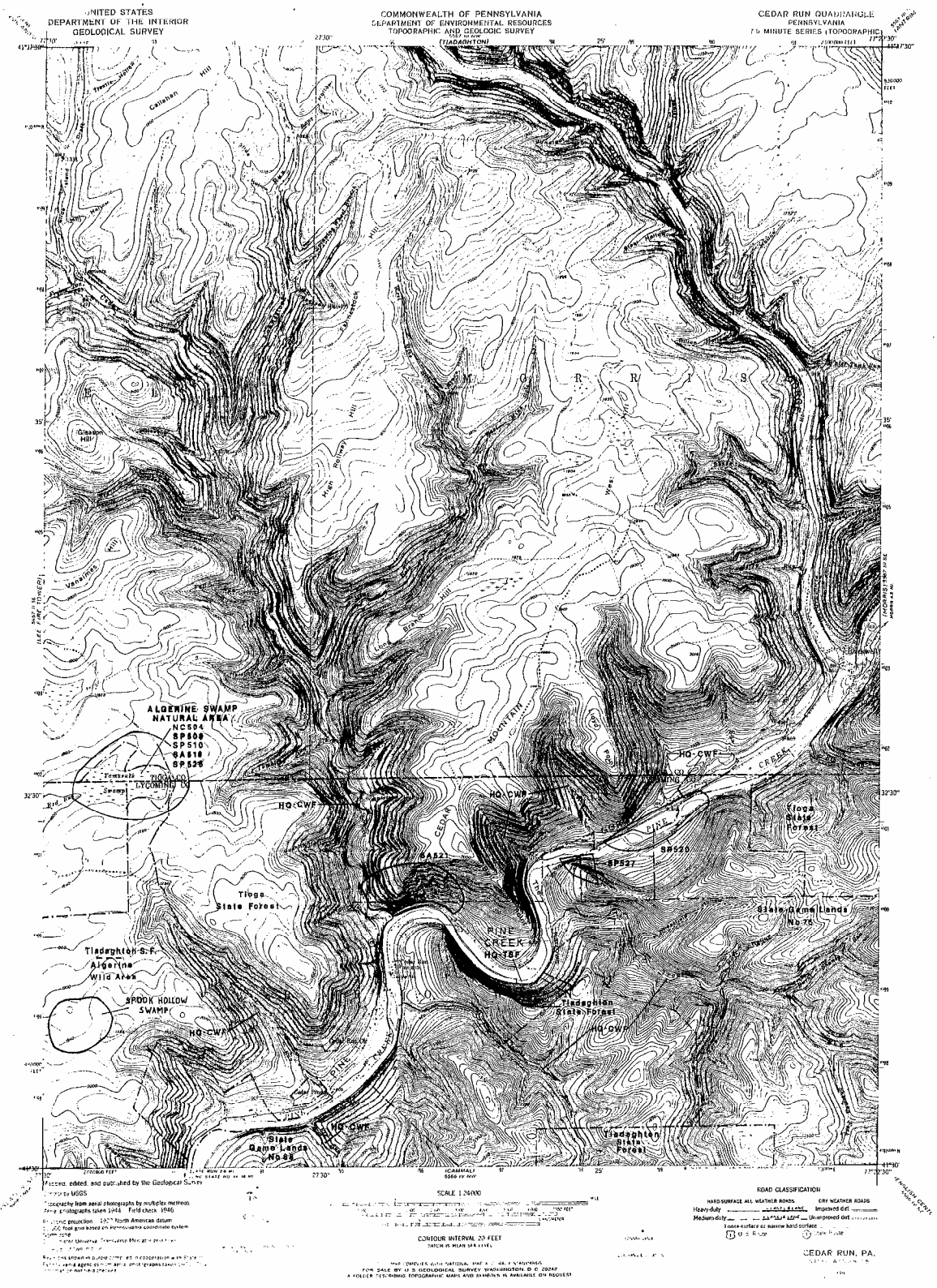
HIGH QUALITY-
COLDWATER FISHERIES: Bull Run, Cedar Run, Elk Run, Gamble Run, Jacobs Run, Lloyd Run, Schoolhouse Run, Trout Run, Woodhouse Run

OTHER: Spook Hollow Swamp, Algerine Wild Area, Algerine Swamp State Forest Natural Area, Tiadaghton State Forest, Tioga State Forest, State Game Lands 68, State Game Lands 75, Pine Creek (HQ-TSF)

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
CEDAR RUN QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
ALGERINE SWAMP
NATURAL AREA
NC504
SP508
SP510
SA518
SP526
HQ-CWF
Tioga
State Forest
Tiadaghton S.F.
Algerine
Wild Area
BROOK HOLLOW
SWAMP
PINE
CREEK
HQ-TSF
SP527
SP528
SA521
State Game Lands
No. 76
State Game
Lands
No. 88
Tiadaghton
State Forest
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
ROAD CLASSIFICATION
CEDAR RUN, PA.

Cedar Run Quadrangle

ALGERINE SWAMP - **NC504** (Brown Twp., Lycoming Co. and Elk Twp., Tioga Co.) is a 100-acre Boreal Conifer Swamp natural community ranked as a "B", or good example of the type in Pennsylvania. The swamp is located in a shallow basin on the Allegheny Plateau. Balsam fir (Abies balsamea), white pine (Pinus strobus) and eastern hemlock are the dominant tree species. The oldest white pines appear to be about 150 years old but most of the white pines and the other dominant trees are about 50 to 60 years old. Balsam fir is reproducing very well. Red spruce, red pine, pitch pine and red maple are subordinate trees. Highbush blueberry (Vaccinium corymbosum) and leatherleaf (Chamaedaphne calyculata) are the dominant shrubs in the scattered openings and the bog-like area at the west end of the swamp. The most remarkable aspect of the wetland is the carpet of sphagnum moss, sedges and other species that cover the floor of the swamp. Of these ground species, two are classified as PA-Rare (**SP509**) and PA-Threatened (**SP510**), respectively, and Algerine Swamp is the best site in the state for each of them. **SP509** forms low mats over the sphagnum and fallen trees and is found throughout the forested portion of the swamp. It appears to do best in places where it is always moist but rarely inundated. **SP510** is a sedge that is found throughout the swamp but does its best in the forested portion. **SP525**, a PA-Endangered plant was only recently located in the swamp. This species has only been found in more open areas of the swamp where mosses, leatherleaf and sedges are predominant.

One rare butterfly (**SA516**) has been found at Algerine Swamp. This species feeds on the two species of cranberries (Vaccinium oxycoccos and V. macrocarpon) that are found in the scattered open areas. One was collected (for verification) during a 1988 field survey when weather conditions were poor and few butterflies would be expected to be active. As long as the food plant is abundant, the butterfly should continue to thrive here.

Most of Algerine Swamp is protected within **Algerine State Forest Natural Area** in **Tiadaghton State Forest**. The southwest quarter belongs to a hunting club. The club has been a good steward but a protection agreement between the club and the state, county or a conservation organization is greatly encouraged.

SP520 (Brown Twp.) is an aquatic plant that occurs in slow-moving water in Pine Creek. Recreation and siltation could adversely impact this population; efforts to maintain the scenic and recreational values of Pine Creek (see PINE CREEK below) can enhance the survival of this species as well.

SP527 (Brown Twp.) is found on the steep slopes ("Woodhouse Ledges") above Pine Creek in an area inaccessible to white-tail deer. Associates include hemlock, wild hydrangea (Hydrangea arborescens), and bush-honeysuckle (Diervilla lonicera). This species is best secured by maintaining the woodlands on the ledges

and at the base of the slope in order to prevent erosion and to maintain the cool microclimate required by this species. This site is within **Tioga State Forest** and **State Game Lands 75**.

SA521 (Brown Twp.) is a Pennsylvania Threatened mammal and a candidate for federal protection. Populations have been severely declining apparently due to a parasite carried by raccoons. The population at this site is found on steep south- and west-facing slopes ("Cedar Run Outcrop") above Pine Creek in Tioga State Forest. Minimizing disturbance and maintaining a wooded buffer are beneficial to this species. The population should be monitored regularly by PA Game Commission biologists.

SPOOK HOLLOW SWAMP (Brown Twp.) is a second-growth boreal conifer swamp dominated by hemlock (Tsuga canadensis) with dense carpets of sphagnum moss, old stumps and downed logs. The swamp community is recovering fairly well from past logging, with good regeneration and trees of mixed ages, and some potential for several rare plant species (although none were found in 1992). This is part of a larger complex of wetlands within the **Algerine Wild Area** of **Tiadaghton State Forest** and contributes to the natural diversity of this area. Limiting logging within and adjacent to the conifer swamp would enable this community to improve in quality over time.

PINE CREEK (Brown Twp.) is a High Quality Trout-Stocked Fishery (HQ-TSF) and one of the premier scenic and recreational resources of Pennsylvania. Bald eagles, a federally endangered bird, are nesting upstream in Tioga County and are probably utilizing the Lycoming Co. section to fish. One rare plant (**SP520**) has also been documented here (see description above). Coordination among the citizens, townships, counties and the state will be required to ensure that this creek will always be compatible for wildlife and recreational users.

Bull Run (Brown Twp.) in northern Lycoming County, is a HQ-CWF running from Cedar Mountain to "The Narrows" of Pine Creek.

Cedar Run (Brown Twp. and Tioga Co.) is a HQ-CWF throughout its basin. It runs approximately 5 miles through Tioga County to Lycoming County for another mile to its mouth at Pine Creek.

Elk Run (Brown Twp.) - only a small portion of this HQ-CWF crosses this Quadrangle; see Cammal Quadrangle (State Game Lands No. 68).

Gamble Run (Brown Twp.) is a HQ-CWF, entering Pine Creek at Cedar Pines.

Jacobs Run (Brown Twp.) is a HQ-CWF throughout its basin from the source (see Cammal Quadrangle) approximately 5 miles to the mouth at Pine Creek below Cedar Run.

Lloyd Run (Brown Twp.) - only the lower reaches of this HQ-CWF

stream enter Lycoming County from its source in Tioga County.

Schoolhouse Run (Brown Twp.) - this HQ-CWF stream just barely crosses into Lycoming Co. at the Tioga Co. line.

Trout Run (Brown Twp.) which runs into Pine Creek is a HQ-CWF throughout its entire basin, including an extensive portion on Morris Quadrangle.

Woodhouse Run (Brown Twp.) is a HQ-CWF from Cedar Run in Tioga Co. to Pine Creek.

photo

USGS QUADRANGLE MAP: Cogan Station

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:	Daugherty Run, Hoagland Run, Wolf Run					
OTHER:	Grampian Hills Woods					

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
COGAN STATION QUADRANGLE
PENNSYLVANIA—LYCOMING CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
Scofield Mountain
OLD LYCOMING
LOYALSOCK
GRAMPIAN HILLS WOODS
Grampian Hills
Vallamont Hills
Wildwood Cemetery
Brandon Park
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial photographs taken 1962. Field checked 1965
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, north zone
1000-meter Universal Transverse Mercator grid ticks, zone 18, shown in blue
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked
Red tint indicates areas in which only landmark buildings are shown
UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, WASHINGTON, D.C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs
ROAD CLASSIFICATION
Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
U.S. Route
State Route
COGAN STATION, PA.
N4115—W7700/7.5
1965

Cogan Station Quadrangle

GRAMPIAN HILLS WOODS (Loyalsock Twp.) - A small but diverse woodland dominated by oaks (Q. montana, Q. rubra, and Q. alba) and red maple (Acer rubrum) of mixed ages with about 10% of the trees approaching 18-inch diameter. Flowering dogwood (Cornus florida), striped maple (Acer pensylvanica), maple-leaved viburnum (Viburnum acerifolium) and deerberry (Gaylussacia frondosa) comprise the sub-canopy and shrub layer which is becoming more distinct as the area recovers from past logging. Herbaceous species such as sweet cicely (Osmorhiza sp.), horsebalm (Collinsonia canadensis) and false foxglove (Gerardia laevigata) are indicative of the richer soils, which undoubtedly support a wide array of spring wildflowers as well. This site is threatened by encroaching development and logging. Recommendations for maintaining the diversity of native plants that occur here include little or no logging, monitoring dirt bike use, and discouraging plantings of non-native species. With its proximity to Williamsport, this area could provide an ideal undeveloped woodland park or wildflower preserve.

Daugherty Run (Lewis Twp.) is a HQ-CWF throughout its basin from its source (see Trout Run Quadrangle) to Pine Creek.

Hoagland Run (Cogan House and Lycoming Twps.) is a HQ-CWF throughout its basin, crossing White Pine and Salladasburg Quadrangles and continuing through to Lycoming Creek.

Wolf Run (Lewis Twp.) is a HQ-CWF from its source (see Trout Run Quadrangle) to Pine Creek.

photo

USGS QUADRANGLE MAP: Elk Grove

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:						
OTHER:						

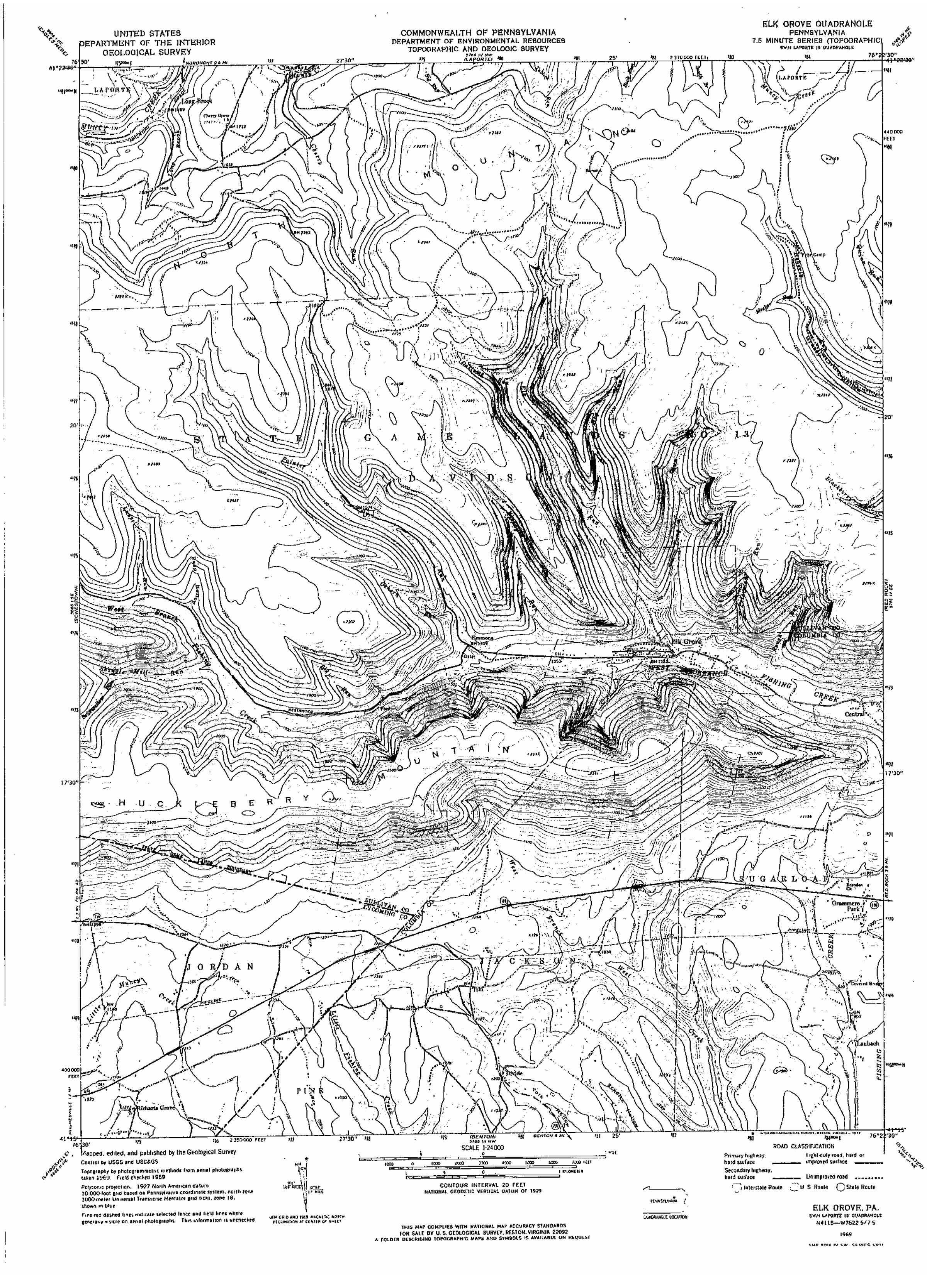
Elk Grove Quadrangle

Only a small portion of Lycoming County is found on the southwestern corner of this map. No species of concern or exemplary natural communities are known to occur in this area.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
ELK GROVE QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
LAPORTE
NORTH MOUNTAIN
STATE GAME LANDS NO. 13
DAVIDSON
Elk Grove
HUCKLEBERRY MOUNTAIN
SUGARLOAF
JORDAN
JACKSON
PINE
SULLIVAN CO
LYCOMING CO
COLUMBIA CO
FISHING CREEK
Central
Grassmere Park
Laubach
Divide
Richarts Grove
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
Mapped, edited, and published by the Geological Survey
ROAD CLASSIFICATION
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
ELK GROVE, PA.
1969

USGS QUADRANGLE MAP: English Center

		TNC Ranks*		Legal Status*		Last	
		Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	505	G?	S2	N	N	10-21-92	C

SPECIAL PLANTS: None found

SPECIAL ANIMALS: None found

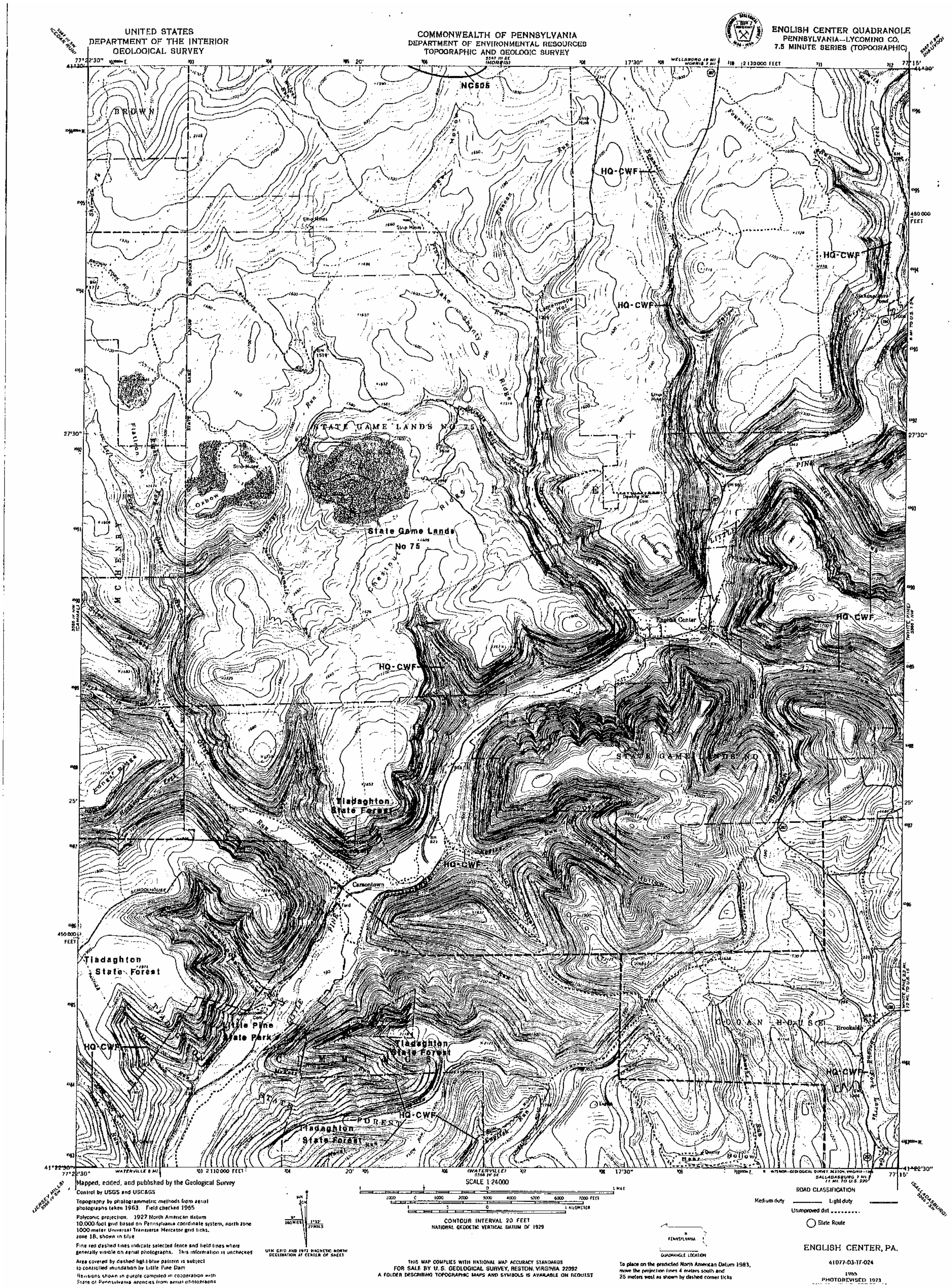
HIGH QUALITY-
COLDWATER FISHERIES: Bear Run, Bonnell Run, Coal Run, English Run, Lick Run, Love Run, McKees Run, Naval Run, Panther Run, Rogers Run, Second Fork Larrys Creek, Texas Creek

OTHER: Little Pine State Park, Tiadaghton State Forest, State Game Lands 75

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
ENGLISH CENTER QUADRANGLE
PENNSYLVANIA—LYCOMING CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NC505
BROWN
HQ-CWF
STATE GAME LANDS NO 75
State Game Lands
No 75
English Center
Tiadaghton
State Forest
Carsontown
Little Pine
State Park
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial photographs taken 1963. Field checked 1965
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, north zone
1000-meter Universal Transverse Mercator grid ticks, zone 18, shown in blue
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked
Area covered by dashed light-blue pattern is subject to controlled inundation by Little Pine Dam
Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs
UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
QUADRANGLE LOCATION
To place on the predicted North American Datum 1983, move the projection lines 4 meters south and 25 meters west as shown by dashed corner ticks
ROAD CLASSIFICATION
Medium-duty
Light-duty
Unimproved dirt
State Route
ENGLISH CENTER, PA.
41077-D3-TF-024
1965
PHOTOREVISED 1973

English Center Quadrangle

NC505 - Bear Hollow Ponds (Pine Twp.) is a fair quality Ephemeral/ Fluctuating Pools natural community made up of 10 or more seasonally flooded ponds in a mesic oak woods on **State Game Lands 75**. The ponds lie atop a saddle and drainage divide between Bear Hollow and Trout Run and provide water to both drainages. The ponds range from small leaf-lined vernal ponds that dry up early in the summer to larger (but less than 0.1 acre) vegetated marshy ponds dominated by woolgrass (Scirpus cyperinus), manna grass (Glyceria septentrionalis), and sedges (Carex spp.). The surrounding forest had been logged and burned in the past but the forest is now about 40 to 60 years old. Logging may have changed the character of the ponds but the ponds should still provide good breeding habitat for amphibians. A woodland buffer encompassing all of these ponds should allow them to continue to function as a breeding area (see also NC507 on Morris Quadrangle).

Bear Run (Pine Twp.) is a HQ-CWF throughout its basin including a portion on the White Pine Quadrangle.

Bonnell Run (Pine twp.) is a HQ-CWF throughout its basin including a portion on the Morris Quadrangle.

Coal Run (Pine Twp.) is a HQ-CWF throughout its basin.

English Run (Cummings Twp.) is a HQ-CWF throughout its basin including the downstream portion on the Waterville Quadrangle.

Lick Run (Pine Twp.) is a HQ-CWF throughout its basin including a portion on the White Pine Quadrangle.

Love Run (Cummings Twp.) is a HQ-CWF throughout its basin to the confluence with Little Pine Creek, including portions on the Waterville and Cammal Quadrangles.

McKees Run (Cummings Twp.) is a HQ-CWF throughout its basin.

Naval Run (Cummings Twp.) is a HQ-CWF throughout its basin including a portion on the Waterville Quadrangle.

Panther Run (Cummings Twp.) is a HQ-CWF throughout its basin.

Rogers Run (Pine Twp.) is a HQ-CWF throughout its basin.

Second Fork Larrys Creek (Cogan House Twp.) is a HQ-CWF throughout its basin and includes portions on White Pine, Waterville and Salladasburg Quadrangles.

Texas Creek (Pine Twp.) is a HQ-CWF throughout its basin including the area within Tioga County where this stream originates, to the confluence with Little Pine Creek. Texas Creek also falls on Nauvoo and Morris Quadrangles.

USGS QUADRANGLE MAP: Glen Union

		TNC Ranks*		Legal Status*		Last	
		Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found						
SPECIAL PLANTS:	None found						
SPECIAL ANIMALS:	None found						
HIGH QUALITY-COLDWATER FISHERIES:	Miller Run						
OTHER:	Miller Run State Forest Natural Area, Tiadaghton State Forest						

Glen Union Quadrangle

Miller Run (McHenry Twp.) is a HQ-CWF throughout its basin including portions on Cammal and Jersey Mills Quadrangles.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
GLEN UNION QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
Miller Run S.F.N.A.
HQ-CWF
Tiadaghton S. F.
WEST BRANCH SUSQUEHANNA RIVER
Glen Union
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
Heavy duty
Light duty
Unimproved dirt
State Route
GLEN UNION, PA.

USGS QUADRANGLE MAP: Grover

		TNC Ranks*		Legal Status*		Last	
		Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	504	G?	S?	N	N	------	E
SPECIAL PLANTS:	None found						
SPECIAL ANIMALS:	None found						
HIGH QUALITY-COLDWATER FISHERIES:	Pleasant Stream, Rock Run, Schrader Creek						
OTHER:	Devil's Elbow State Forest Natural Area, Tiadaghton State Forest						

Grover Quadrangle

Schrader Creek (**NC504**) is an Exceptional Value Stream as designated by D.E.R. throughout its basin in Lycoming County. It is further classified as a High Gradient Clearwater Creek natural community. Part of the watershed is within the Devil's Elbow SFNA.

Devil's Elbow State Forest Natural Area (McNett Twp.) in **Tiadaghton State Forest** contains several wetlands in various stages of succession. Past logging and flooding by beaver killed off many of the trees but at least two of the wetlands are now showing good regeneration of hemlock. One of the wetlands is an open, shrub and graminoid peatland notable for the abundance of pitcher plants (Sarracenia purpurea) growing in it. Although the site does not qualify as a high quality natural community, the area provides habitat for a diversity of plant and animal life.

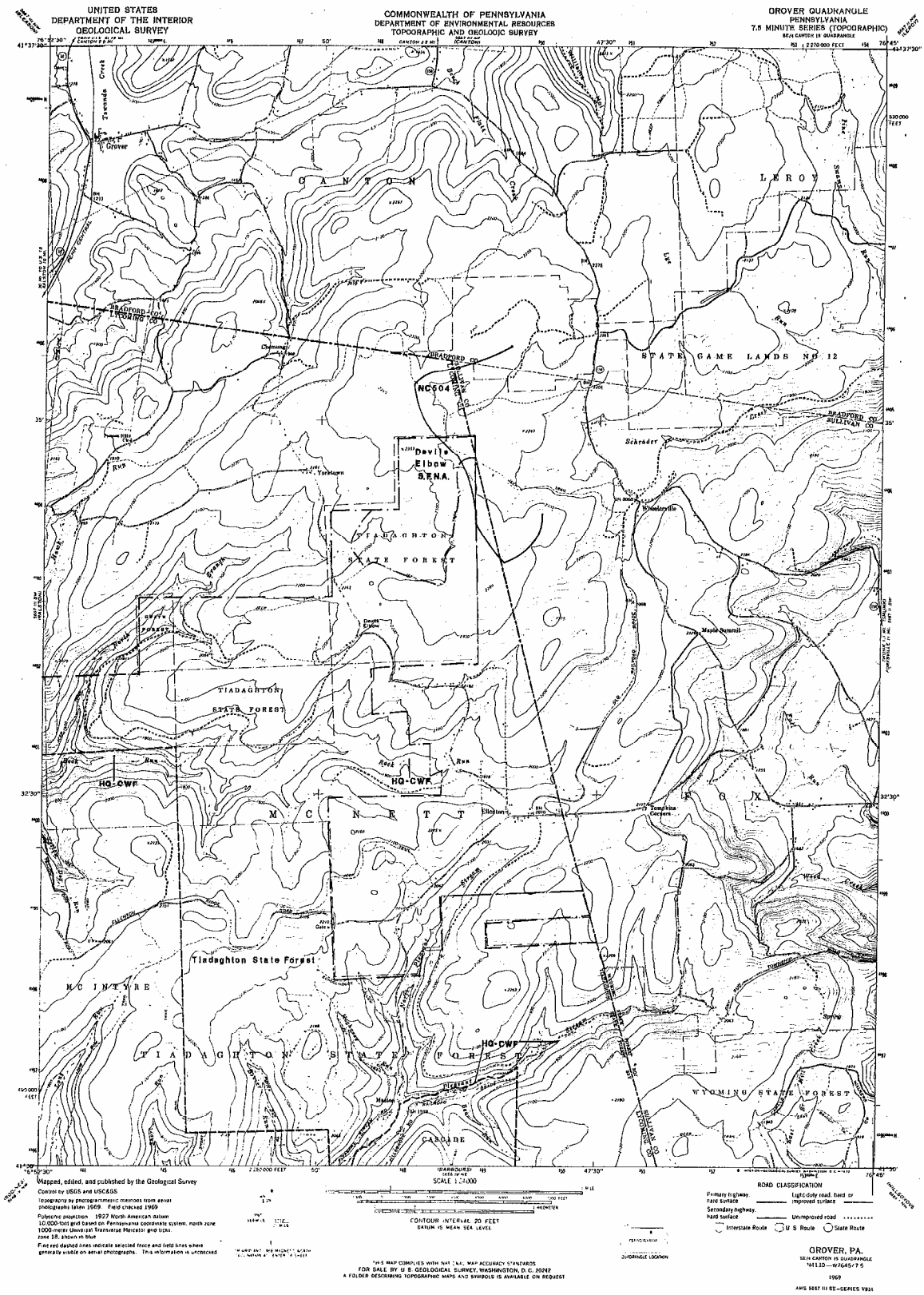
Pleasant Stream (Cascade and McNett Twps.) is a HQ-CWF throughout its basin from the Lycoming/Sullivan County line to its mouth including portions on the Barbours and Bodines Quadrangles.

Rock Run (McNett Twp.) is a HQ-CWF throughout its basin from the Lycoming/Sullivan County line to its mouth including portions on the Ralston Quadrangle.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
GROVER QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
Devils Elbow S.E.N.A.
NC-504
HQ-CWF
Tiadaghton State Forest
STATE GAME LANDS NO. 12
CANTON
LEROY
McINTYRE
WYOMING STATE FOREST
Grover
Schrader
Wheelerville
Mapped, edited, and published by the Geological Survey
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
ROAD CLASSIFICATION
GROVER, PA.
1959

USGS QUADRANGLE MAP: Hillsgrove

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:	Bear Creek (tributaries)					
OTHER:	Tiadaghton State Forest, see Picture Rocks Quadrangle for sa501					

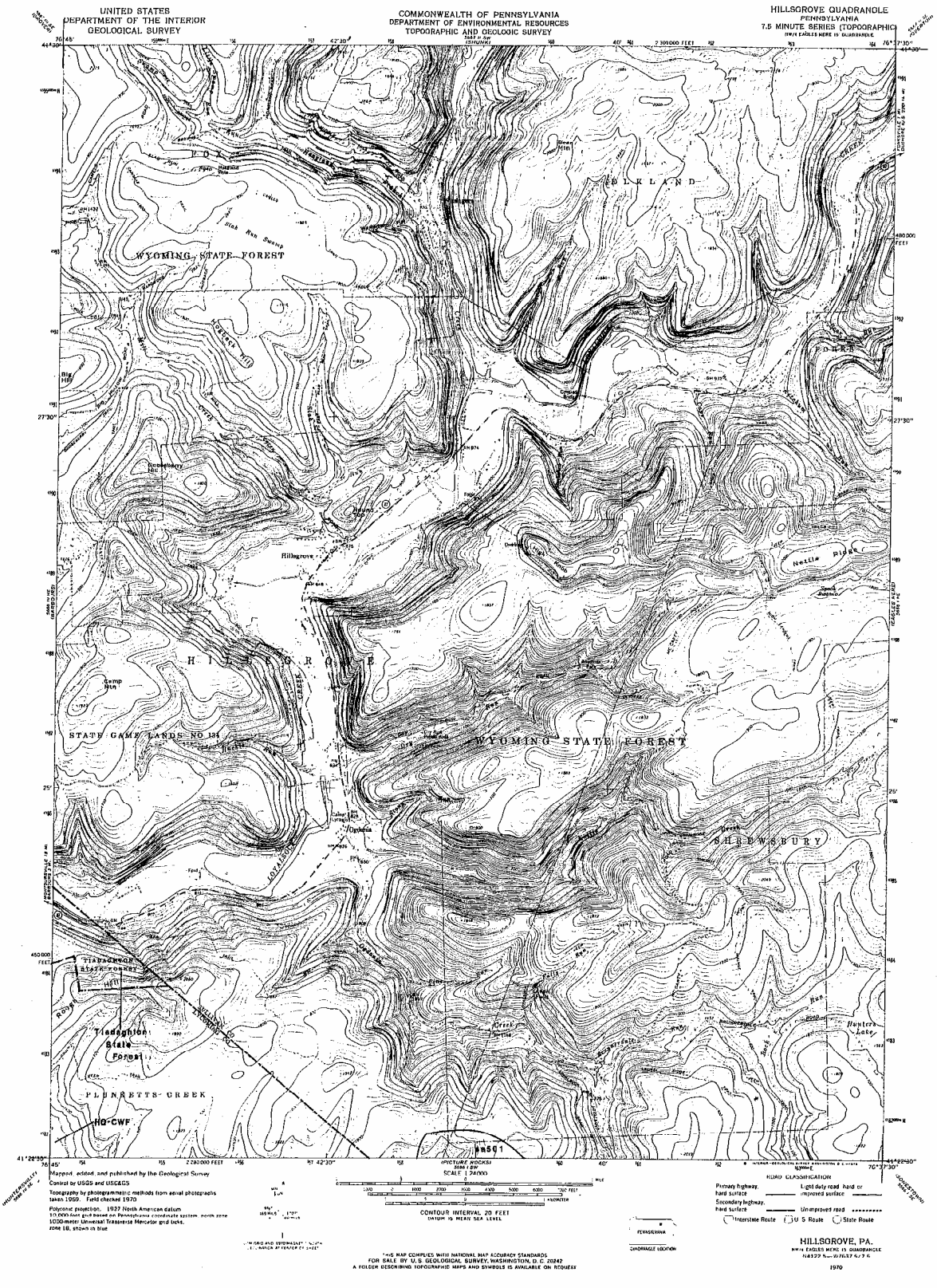
Hillsgrove Quadrangle

Bear Creek (Plunketts Creek Twp.) is a HQ-CWF throughout its basin including the tributaries noted on this map; also included are areas on Picture Rocks and Barbours Quadrangles.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
HILLSGROVE QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
WYOMING STATE FOREST
STATE GAME LANDS NO. 184
WYOMING STATE FOREST
Hillsgrove
Tiadaghton State Forest
PLUNKETTS CREEK
HQ-CWF
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial photographs taken 1959. Field checked 1970
CONTOUR INTERVAL 20 FEET
ROAD CLASSIFICATION
HILLSGROVE, PA.
1970

USGS QUADRANGLE MAP: Hughesville

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:						
OTHER:						

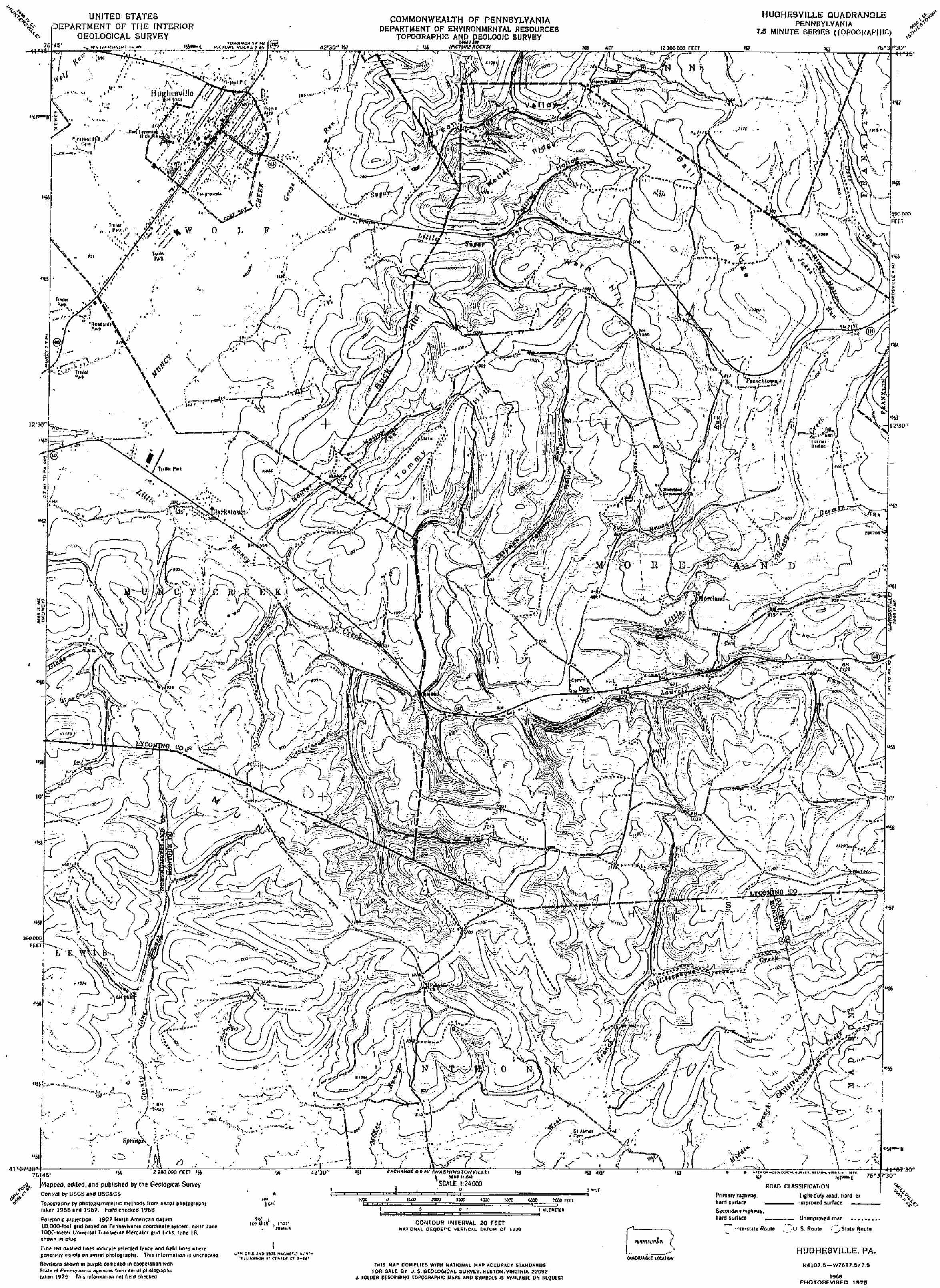
Hughesville Quadrangle

The northern three quarters of this map are within Lycoming County but most of the land is in agriculture or developed. No species of special concern or exemplary natural communities are known to occur in this area. Some floodplain forests still remain along Muncy and Little Muncy Creek. Maintaining and restoring natural vegetation along these two major waterways should be encouraged to help maintain and restore water quality in both creeks.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
HUGHESVILLE QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
Hughesville
Clarkstown
Moreland
Frenchtown
Trailer Park
W O L F
M U N C Y C R E E K
M O R E L A N D
L E W I S
LYCOMING CO
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial photographs taken 1956 and 1967. Field checked 1968
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, north zone
1000-meter Universal Transverse Mercator grid ticks, zone 18, shown in blue
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked
Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1975. This information not field checked
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
PENNSYLVANIA
QUADRANGLE LOCATION
ROAD CLASSIFICATION
Primary highway, hard surface
Light-duty road, hard or improved surface
Secondary highway, hard surface
Unimproved road
Interstate Route
U. S. Route
State Route
HUGHESVILLE, PA.
N4107.5—W7637.5/7.5
1968
PHOTOREVISED 1975

USGS QUADRANGLE MAP: Huntersville

		TNC Ranks*		Legal Status*		Last	
		Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	501	G4	S2S3	N	N	05-21-92	BC
SPECIAL PLANTS:	None found						
SPECIAL ANIMALS:	503	G4	S2	N	N	07-09-86	A
	504	G5	S3	N	N	09-24-86	A
	505	G4	S3	N	N	09-24-86	A
	506	G2	S2	N	N	09-24-86	A

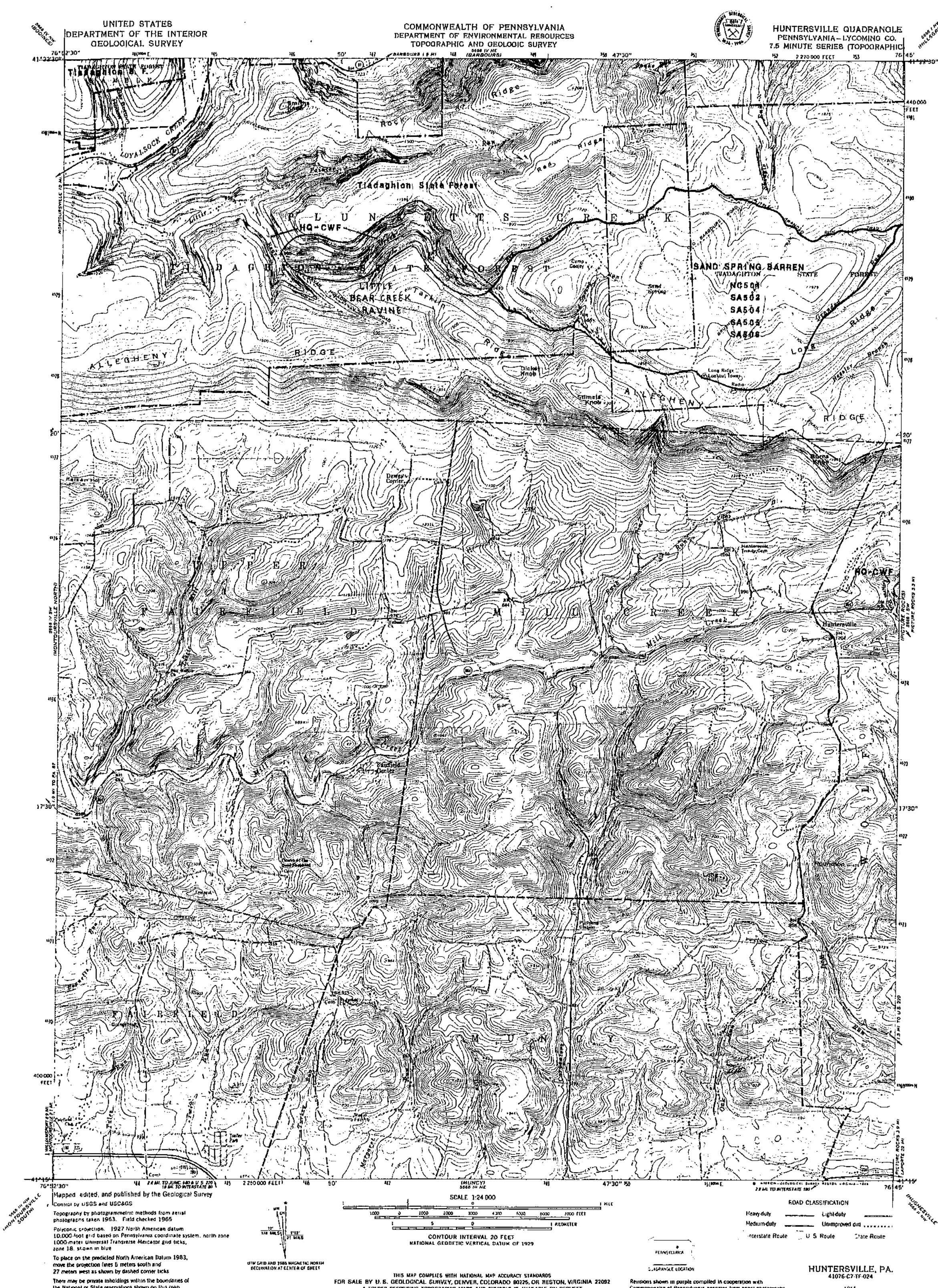
HIGH QUALITY-
COLDWATER FISHERIES: Laurel Run, Little Bear Creek

OTHER: Little Bear Creek Ravine, Tiadaghton State Forest

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
HUNTERSVILLE QUADRANGLE
PENNSYLVANIA–LYCOMING CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
Tiadaghton State Forest
PLUNKETTS CREEK
HQ-CWF
LITTLE BEAR CREEK RAVINE
SAND SPRING BARREN
NC501
SA502
SA504
SA505
SA506
ALLEGHENY RIDGE
UPPER FAIRFIELD
MILL CREEK
FAIRFIELD
MUNCY
Huntersville
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial photographs taken 1963. Field checked 1965
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, north zone
1000-meter Universal Transverse Mercator grid ticks, zone 18, shown in blue
To place on the predicted North American Datum 1983, move the projection lines 5 meters south and 27 meters west as shown by dashed corner ticks
There may be private inholdings within the boundaries of the National or State reservations shown on this map
UTM GRID AND 1986 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
Interstate Route
U. S. Route
State Route
PENNSYLVANIA
QUADRANGLE LOCATION
Revisions shown in purple compiled in cooperation with Commonwealth of Pennsylvania agencies from aerial photographs taken 1983 and other sources. This information not
HUNTERSVILLE, PA.
41076-C7-TF-024
1965
PHOTOREVISED 1986

Huntersville Quadrangle

SAND SPRING BARREN - **NC501** (Plunketts Creek Twp.) is a Ridgetop Dwarf-Tree Forest natural community. This is a patchy 400-450 acre mountaintop scrub oak barren on several low knobs along the Allegheny Front. Fire, whether of human origin or lightening caused, created this community composed of species tolerant of drought and fire and sandy, droughty soil has helped maintain it. The dominant species throughout is scrub oak (Quercus ilicifolia) with patches where pitch pine (Pinus rigida) and sassafras (Sassafras albidum) are the dominants. The barren contains areas of 2-10 acres of pure scrub oak with a few pitch pines scattered throughout, and a number of openings of primarily scrub oak and sassafras. Interspersed throughout the site are patches of more mature oak woods. Low shrub dominants include lowbush blueberry (Vaccinium angustifolium) and black huckleberry (Gaylussacia baccata). Fly-poison lily (Amianthium muscaetoxicum) and bracken fern (Pteridium aquilinum) are the most abundant herbaceous species.

Fly poison lily is extremely abundant and provides food for the larvae of a rare moth (**SA506**) that has not been found in any other state to date. The larvae of the other three rare moths located here (**SA503**, **SA504**, and **SA505**) all feed on the abundant blueberries and probably other ericaceous shrubs found on the barrens.

Most of the barren is within **Tiadaghton State Forest** and is receiving active management. Wide strips have been cut through the scrub oak at regular intervals. The cutting is removing saplings that would eventually shade out scrub oak and blueberries and encouraging new stem growth on the shrubs. This management, although for wildlife, will probably benefit all of the moth species of concern as well. The part of the barren not owned by the state is being laid out for development and will probably be eventually lost to homes, lawns and natural successional patterns. Lights from homes in the development could be a problem for the moths and sampling for moths on the barren and in the development should be performed regularly. In many areas the scrub oak forest appears to be succeeding to a xeric oak forest where other oaks, white pine, red maple and sassafras will be abundant. In order to maintain the rare species here, the area needs further management to create more scrub oak openings, either with the brush-cutting described above or through prescribed burns. Spraying for gypsy moth in this part of the state forest and the housing development could also be detrimental to the rare lepidoptera.

LITTLE BEAR CREEK RAVINE (Plunketts Creek Twp.) is a locally significant area in **Tiadaghton State Forest**. This scenic, cool, hemlock (Tsuga canadensis)-dominated ravine along Little Bear Creek hosts a diversity of woodland herbs including beech fern, oak fern, an abundance of foamflower (Tiarella cordifolia) and other species. The woods are recovering fairly well from past

cutting; regeneration is occurring and there are noticeable shrub and herb strata. Bear Creek Road runs through the ravine providing easy access for fishing, picnicking and touring. Little Bear Creek is also a HQ-CWF throughout its basin. Minimizing logging in this ravine can help to prevent erosion and to maintain the lush flora, water quality, and the scenic value of the area.

Laurel Run (Wolf Twp.) is a HQ-CWF throughout its basin located primarily on the Picture Rocks Quadrangle.

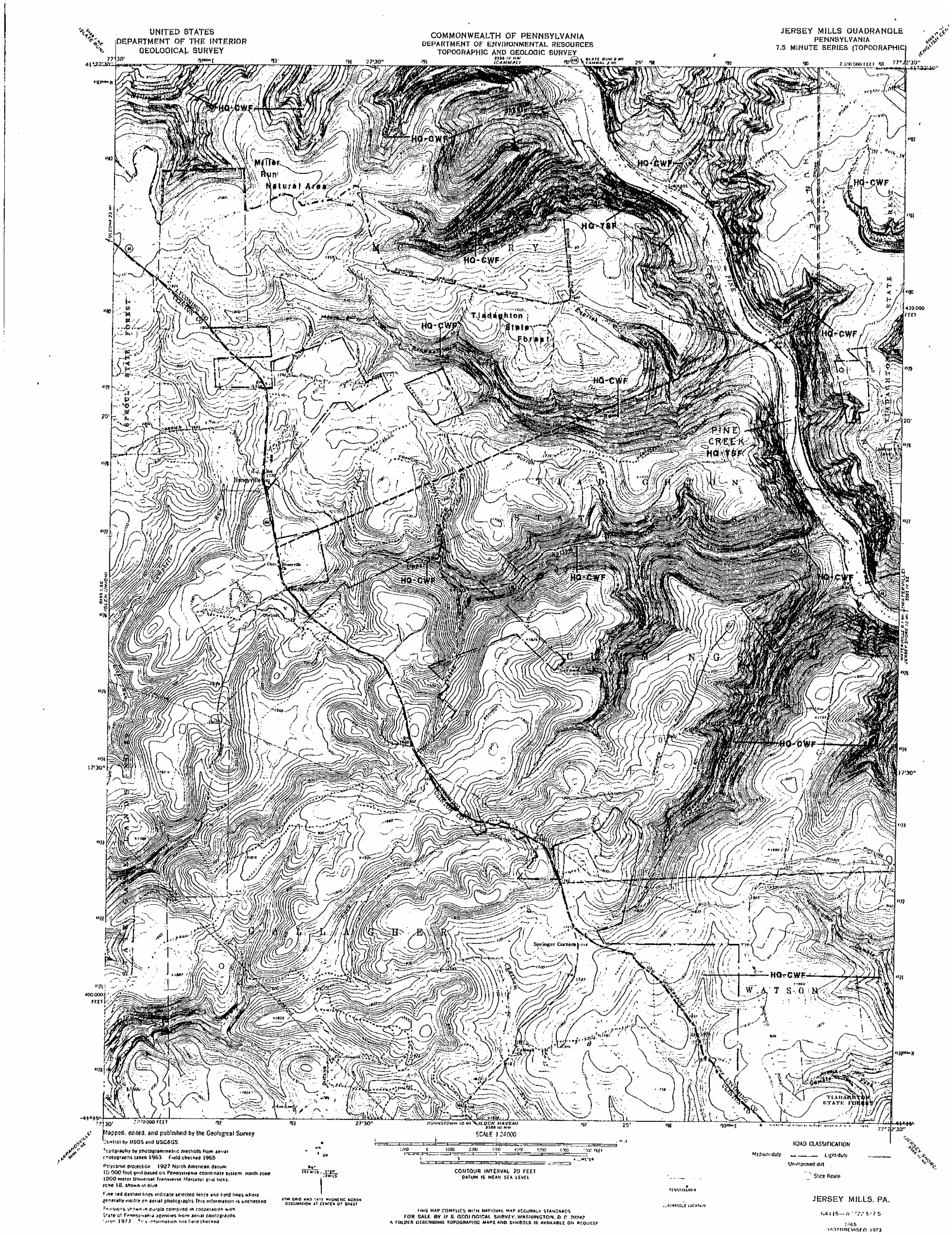
USGS QUADRANGLE MAP: Jersey Mills

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:	Boone Run, Browns Run, Bull Run, Callahan Run, Chatham Run, Dry Run, Gamble Run, Lower Pine Bottom Run, McClure Run, Miller Run, Shanty Run, Solomon Run, Upper Pine Bottom Run					
OTHER:	Miller Run State Forest Natural Area, Tiadaghton State Forest, Pine Creek (HQ-TSF)					

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
JERSEY MILLS QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
HQ-CWF
Miller Run Natural Area
HQ-TSF
Tiadaghton State Forest
PINE CREEK HQ-TSF
Springer Corners
WATSON
TIADAGHTON STATE FOREST
Mapped, edited, and published by the Geological Survey
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
ROAD CLASSIFICATION
State Route
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
JERSEY MILLS, PA.

Jersey Mills Quadrangle

PINE CREEK (Cummings and McHenry Twps.) is a High Quality-Trout Stocked Fishery (HQ-TSF) along the main stem to its confluence with the West Branch of the Susquehanna River. Coordination among the citizens, townships, counties and the state will be required to ensure that this creek will always be compatible for wildlife and recreational users.

Boone Run (Cummings Twp.) is a HQ-CWF throughout its basin including a portion on the Waterville Quadrangle.

Browns Run (McHenry and Cummings Twps.) is a HQ-CWF throughout its basin.

Bull Run (Cummings Twp.) is a HQ-CWF throughout its basin including a portion on the Waterville Quadrangle.

Callahan Run (McHenry Twp.) is a HQ-CWF throughout its basin including a portion on the Cammal Quadrangle.

Chatham Run (Watson Twp.) is a HQ-CWF throughout its basin (including tributaries in Lycoming Co.) to the Chatham Water Company Intake in Clinton County (Lock Haven Quadrangle).

Dry Run (McHenry and Cummings Twp.) is a HQ-CWF throughout its basin.

Gamble Run (Watson Twp.) is a HQ-CWF throughout its basin including portions on the Jersey Shore and Waterville Quadrangles.

Lower Pine Bottom Run (Cummings and Watson Twps.) is a HQ-CWF throughout its basin.

McClure Run (McHenry Twp.) is a HQ-CWF throughout its basin.

Miller Run (McHenry Twp.) is a HQ-CWF throughout its basin including portions on the Cammal and Glen Union Quadrangles and is within the Miller Run Natural Area, Tiadaghton State Forest.

Shanty Run (McHenry Twp.) is a HQ-CWF throughout its basin.

Solomon Run (McHenry Twp.) is a HQ-CWF throughout its basin including a portion on the Cammal Quadrangle.

Upper Pine Bottom Run McHenry and Cummings Twps.) is a HQ-CWF throughout its basin.

photo

USGS QUADRANGLE MAP: Jersey Shore

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	507 G?	S3	N	N	10-27-92	C

SPECIAL PLANTS: None found

SPECIAL ANIMALS: None found

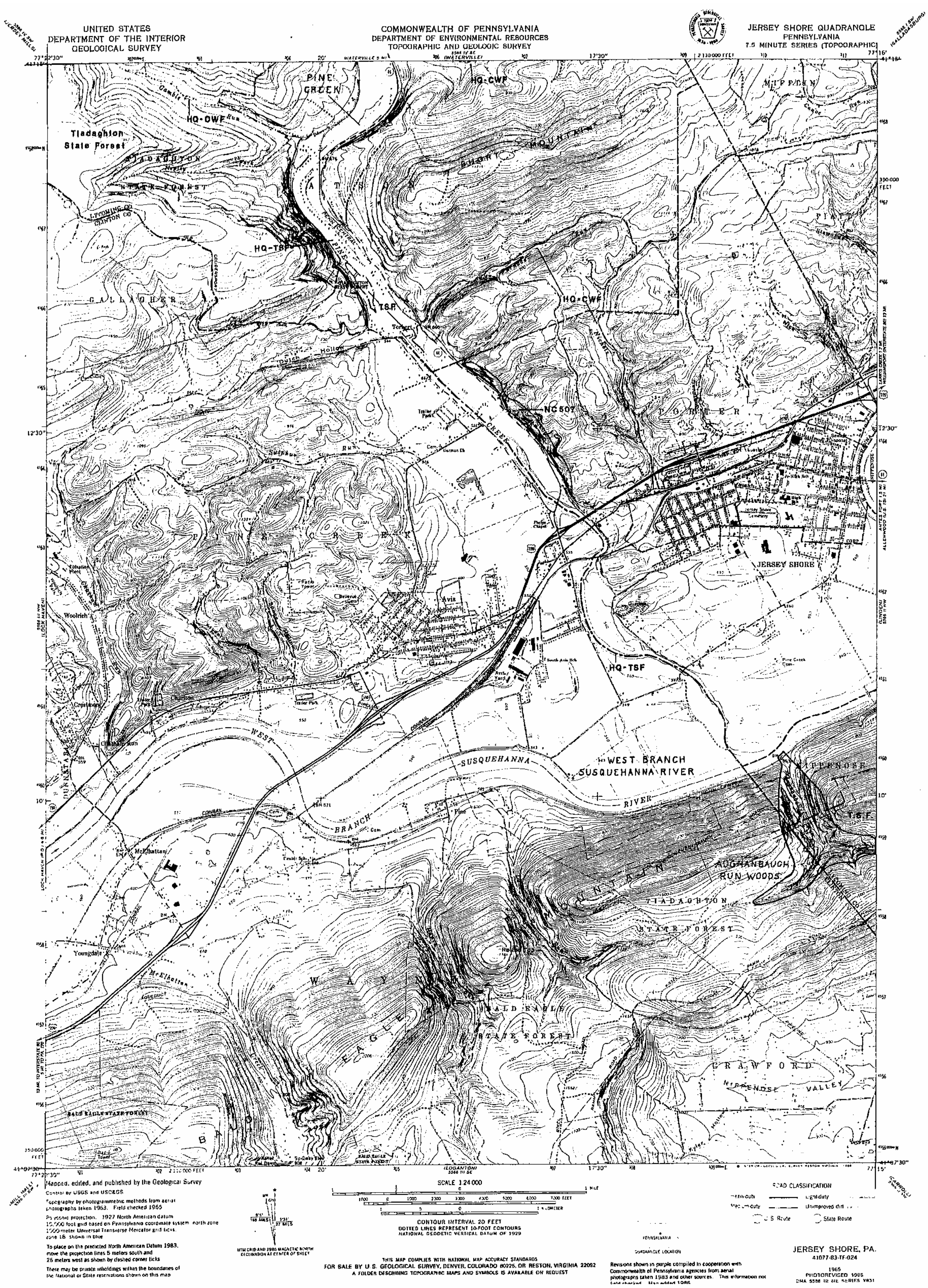
HIGH QUALITY-
COLDWATER FISHERIES: Furnace Run, Gamble Run, Nichols Run, Tombs Run

OTHER: Aughanbaugh Run Woods, Tiadaghton State Forest, Pine Creek (HQ-TSF)

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
JERSEY SHORE QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
PINE CREEK
HQ-CWF
Tiadaghton State Forest
HQ-TSF
TSF
NC507
JERSEY SHORE
WEST BRANCH SUSQUEHANNA RIVER
AUGHANBAUGH RUN WOODS
TIADAGHTON STATE FOREST
BALD EAGLE STATE FOREST
CRAWFORD
NIPPENOSE VALLEY
Woolrich
McElhattan
Youngdale
Avis
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
Mapped, edited, and published by the Geological Survey
ROAD CLASSIFICATION
JERSEY SHORE, PA.
1965
PHOTOREVISED 1985

NC507, Torbert Woods (Watson Twp.), is a Xeric Central Hardwoods-Conifer Forest above the old railway that runs northwest along Pine Creek. The area mapped is between US220 and Torbert. The natural community is on a steep west-southwest facing slope underlain by shale bedrock. The Wiekert and Klinesville soils that are located here are described as very well drained and retain very little moisture for plants to use. Chestnut oak (Quercus montana) and scrub pine (Pinus virginiana) are the dominant trees. Few species of shrubs and only a few species of grasses and sedges are scattered about due to the extreme dryness and poor soils. Although the natural community is in relatively good shape with few exotic species present, the narrowness of the steep slope and community, the relatively small area that the community covers (about 120 acres), and the amount of disturbance around it preclude ranking this fairly common community type any higher. However this may be the best example of this type in Lycoming County and does appear to be fairly rare in the county. The potential for rare plants is minimal but it has the potential to harbor rare animal species that prefer dry shaley slopes.

AUGHANBAUGH RUN WOODS (Nippenose Twp.) is a locally significant woodland on steep slopes of Aughanbaugh Run within **Tiadaghton State Forest** and on private land. The focus of this site is an area of about 10-15 acres on moist to well-drained soils that contains relatively large (2.5 to 3 ft. diameter) black birch, hemlock (Tsuga canadensis) and basswood (Tilia americana) growing on mid-slope and a lush, fairly well-developed hemlock-yellow birch (Betula allegheniensis)-great laurel (Rhododendron maximum) association at the base of the ravines. The surrounding woodlands which serve as a buffer are mixed-age oak and black birch woods (Quercus montana, Q. rubra, Q. velutina, Betula lenta) of relatively low natural quality due to the effects of past logging. Some logging continues on adjacent private and state forest land, two non-native species have come in along the dirt road and some trash has been dumped at the end of the road. Discouraging logging or expansion of state forest road access within this site would allow the woodlands to continue to recover from past disturbance. The area is used for hunting and hiking; foot trails could be improved or expanded with no adverse effects.

PINE CREEK (Porter and Watson Twps.) is a High Quality-Trout Stocked Fishery (HQ-TSF) along its main stem to the mouth. It is one of the best recreational trout fisheries in the state and one of the most scenic resources in Pennsylvania. Coordination among the citizens, townships, counties and the state will be required to ensure that this creek will always be compatible for wildlife and recreational users.

The WEST BRANCH SUSQUEHANNA RIVER (Nippenose, Pine Creek and Porter Twps.) and its associated islands and floodplain forests are well worth considering in any conservation plan for the

county. Small remnants of floodplain forest still exist on some of the islands and in narrow bands along the river edge. Although all have been disturbed, they still serve as migratory bird habitat and help stabilize banks and capture eroded soil during flood stages on the river.

Furnace Run (Watson Twp.) is a HQ-CWF throughout its basin.

Gamble Run (Gallagher Twp.) is a HQ-CWF throughout its basin including portions on the Jersey Mills and Waterville Quadrangles.

Nichols Run (Porter, Watson, Mifflin and Piatt Twps.) is a HQ-CWF throughout its basin.

Tombs Run (Watson Twp.) is a HQ-CWF throughout its basin including portions on the Waterville Quadrangle.

USGS QUADRANGLE MAP: Lairdsville

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:						
OTHER:						

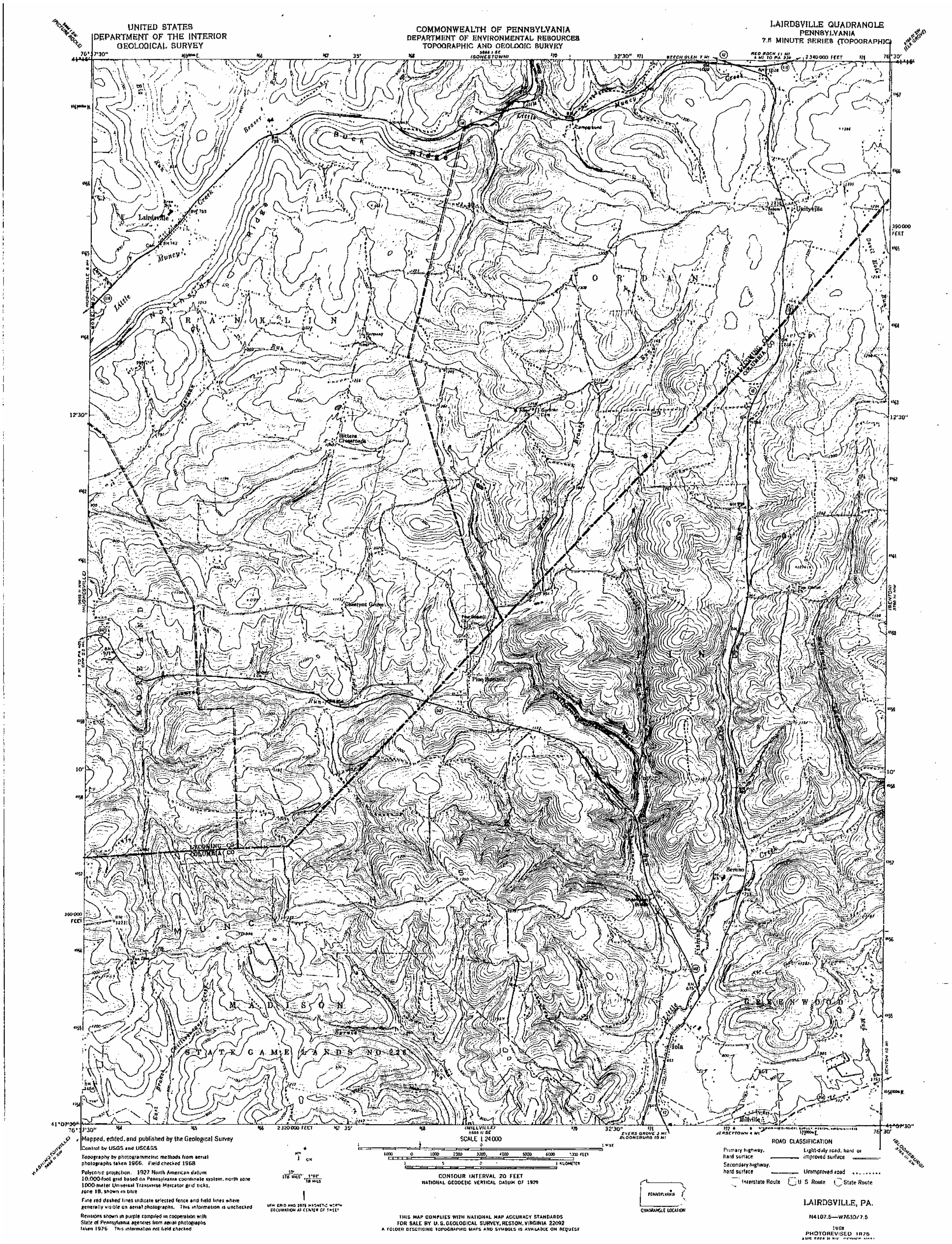
Lairdsville Quadrangle

Lycoming County covers the northwestern half of the map. Approximately half of this land has been cleared for agriculture and the remaining forest land has been cut at least once. No sites for exemplary natural communities or species of special concern are known.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
LAIRDSVILLE QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
Lairdsville
Unityville
Bitters Crossroads
Chestnut Grove
Iola
Millville
F R A N K L I N
J O R D A N
M A D I S O N
G R E E N W O O D
S T A T E G A M E L A N D S N O 226
LYCOMING CO
COLUMBIA CO
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial photographs taken 1966. Field checked 1968
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, north zone
1000-meter Universal Transverse Mercator grid ticks, zone 18, shown in blue
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked
Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1976. This information not field checked
UTM GRID AND 1976 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
PENNSYLVANIA
QUADRANGLE LOCATION
ROAD CLASSIFICATION
Primary highway, hard surface
Light-duty road, hard or improved surface
Secondary highway, hard surface
Unimproved road
Interstate Route
U S Route
State Route
LAIRDSVILLE, PA.
N4107.5—W7630/7.5
1968
PHOTOREVISED 1976

USGS QUADRANGLE MAP: Lee Fire Tower

		TNC Ranks*		Legal Status*		Last	
		Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found						
SPECIAL PLANTS:	None found						
SPECIAL ANIMALS:	506	G5T4Q	S3	C2	PT	12-XX-92	E
	507	G5	S2S3	N	N	06-16-90	E
	508	G5	S2	N	N	07-08-93	B
	509	G3	S1	N	N	07-08-93	B

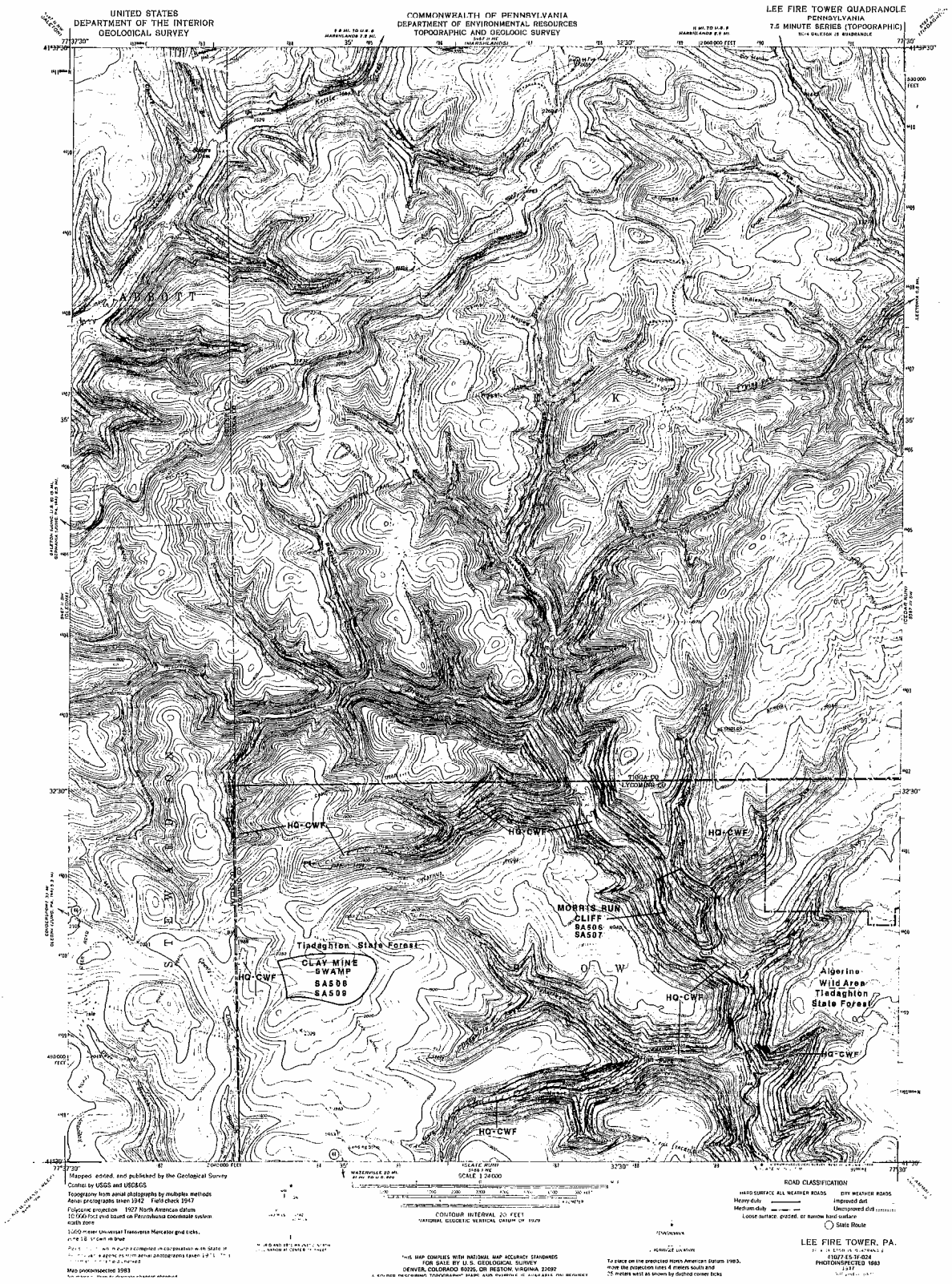
HIGH QUALITY-
COLDWATER FISHERIES: Big Dam Hollow, Francis Branch of Slate Run, Manor Fork, Morris Run, Putt Hollow, Slate Run, County Line Branch of Young Womans Creek

OTHER: Algerine Wild Area, Tiadaghton State Forest

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
LEE FIRE TOWER QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
ABBOTT
HQ-CWF
MORRIS RUN
CLIFF
SA506
SA507
Tiadaghton State Forest
CLAY MINE
SWAMP
SA508
SA509
Algerine
Wild Area
Tiadaghton
State Forest
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
ROAD CLASSIFICATION
LEE FIRE TOWER, PA.

Lee Fire Tower Quadrangle

MORRIS RUN CLIFF (Brown Twp.) is a small cliff and scree slope area within **Tiadaghton State Forest** where Morris Run enters Slate Run. Two animals of special concern (**SA506** and **SA507**) have been located here. Evidence of **SA506**, a Pennsylvania Threatened animal, was found during a field survey in the summer of 1992. However, the site was not confirmed as active for this species until a PA Game Commission survey in December of 1992. The cliffs and caves here appear to provide excellent habitat for this species and the next.

SA507 - One individual of a state-listed animal was located here in 1990. The species is known to inhabit dry rocky woods like the shaley scree and cliffs found above Morris Run. The combination of two extant rare animals and Morris Run, a HQ-CWF, make this an important site in the county. Logging should be discouraged in this area to avoid any detrimental impacts (including erosion, increased light incidence) to the rare animals and their habitat and to the fishery.

CLAY MINE SWAMP (Brown Twp.) is a significant wetland in **Tiadaghton State Forest** and home to two animals of special concern, **SA508** and **SA509**. The wetland had been forested at one time but now consists of open sedge and grass areas, shrub swamp, and areas with dense mats of sphagnum and cranberry (Vaccinium macrocarpon). The habitat supports a number of common odonates (dragonfly and damselfly species) as well as two rare species of odonates, **SA508** and **SA509**. Although apparently secure at present, succession may eventually alter the habitat and make it unsuitable for these species; use of pesticides in the immediate watershed could also be detrimental to the populations. **SA509** is an extremely rare species throughout its range (PA appears to be southernmost); Bick (1983) in a paper on the rarest dragonflies in the U.S. and Canada, classified it as Rare. The species should be afforded as much protection as possible through habitat protection and management.

Big Dam Hollow (Brown Twp.) is a HQ-CWF throughout its basin.

Francis Branch of Slate Run (Brown Twp.) is a HQ-CWF throughout its basin including portions in Tioga and Potter Counties.

Manor Fork (Brown Twp.) is a HQ-CWF throughout its basin.

Morris Run (Brown Twp.) is a HQ-CWF throughout its basin, part of which is included in the MORRIS RUN CLIFF site (see above).

Putt Hollow (Brown Twp.) is a HQ-CWF throughout its basin.

Slate Run (Brown Twp.) is a HQ-CWF along the main stem throughout Lycoming and Tioga Counties.

County Line Branch (Brown Twp.) is a HQ-CWF since it is a tributary of Young Womans Creek, a HQ-CWF throughout its basin.

USGS QUADRANGLE MAP: Liberty

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:	Frozen Run, Long Run, Red Run, Roaring Branch					
OTHER:	Tiadaghton State Forest, Branacka Lands Wetlands					

Liberty Quadrangle

BRANACKA LANDS WETLANDS (McIntyre Twp.) is a cluster of several wetlands located at the headwaters of Red and Frozen Runs, both HQ-CWF streams. Some of these are on State Forest lands but most are on private property. There could not be a site visit but review of air photos, aerial reconnaissance and the recommendations of county residents all indicate that it should be included in this report. These wetlands are relatively large for the county and, although there has been surface mining adjacent to several of the wetlands, some are still reasonably intact. The largest of the wetlands are conifer swamps containing scattered openings with shrubs and graminoid vegetation. There is some potential for rare plants in these wetlands, but a future site survey will be required to make that determination. See also Ralston Quad.

Frozen Run (McIntyre Twp.) is a HQ-CWF throughout its basin.

Long Run (Jackson and McIntyre Twps.) is a HQ-CWF throughout its basin including the portion on the Trout Run Quadrangle.

Red Run (McIntyre Twp.) is a HQ-CWF throughout its basin.

Roaring Branch (Jackson and McIntyre Twps.) is a HQ-CWF throughout its basin including a section on the Ralston Quadrangle.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
LIBERTY QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
TIOGA CO
LYCOMING CO
HQ-CWF
BRANACKA LANDS WETLANDS
Tiadaghton State Forest
JACKSON
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
LIBERTY, PA.

USGS QUADRANGLE MAP: Linden

		TNC Ranks*		Legal Status*		Last	
		Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	507	G2Q	S1	N	N	11-05-92	C
SPECIAL PLANTS:	504	G5	S3	N	TU	11-05-92	BC
	506	G5	S2	N	PT	11-05-92	C
SPECIAL ANIMALS:	502	G3	S1	C2	PT	01-22-92	B
	503	G4	S2S3	N	PR	01-22-92	C
GEOLOGICAL FEATURES:	505	G?	S?	N	N	1979	E

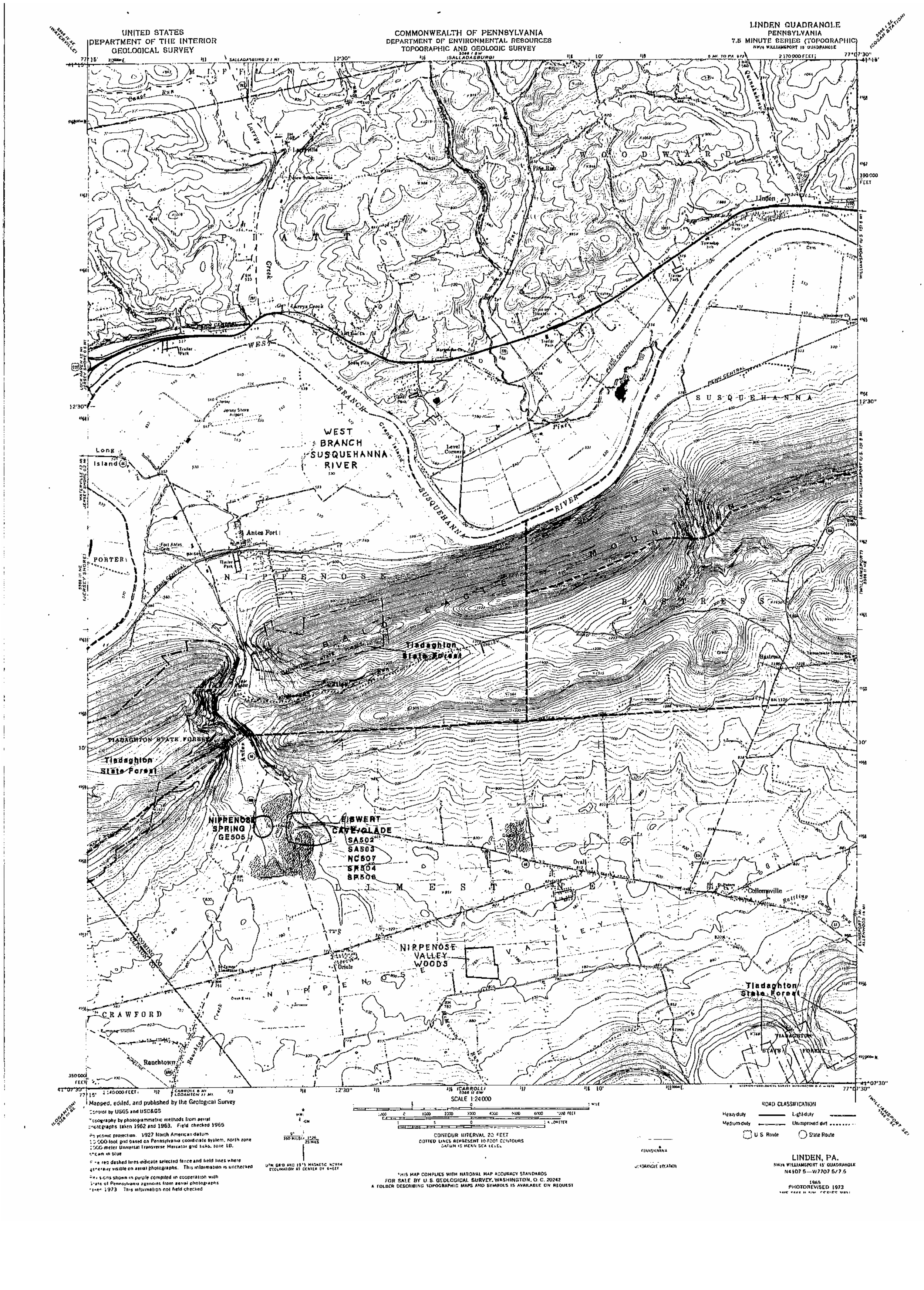
HIGH QUALITY-
COLDWATER FISHERIES:

OTHER: Nippenose Valley Woods, West Branch Susquehanna River, Tiadaghton State Forest

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
LINDEN QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
WOODWARD
Linden
WEST BRANCH SUSQUEHANNA RIVER
SUSQUEHANNA
Long Island
Antes Fort
PORTER
NIPPENOSE
BALD EAGLE MOUNTAIN
Tiadaghton State Forest
TIADAGHTON STATE FOREST
NIPPENOSE SPRING GE505
EISWERT CAVE/GLADE
SA502
SA503
NC507
SR504
SR506
LIMESTONE
Oval
Collomsville
NIPPENOSE VALLEY WOODS
NIPPENOSE VALLEY
Oriole
CRAWFORD
Ranchtown
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
ROAD CLASSIFICATION
LINDEN, PA.
PHOTOREVISED 1973

Linden Quadrangle

EISWERT CAVE (Limestone Twp.) - This cave near a quarry in southern Lycoming County is one of only 30 sites known for **SA502** in Pennsylvania during the 1980 to 1991 period. At this site, numbers of this Pennsylvania-Threatened animal have fluctuated from a high of 29 individuals on January 16, 1987 to a low of 8 on January 27, 1988. The PA. Game Commission (PGC) manages the cave, only allowing biologists into the cave during the winter to monitor the populations. The PGC has placed a gate across the entrance of this cave to protect this species and the next. **SA503**, another animal of special concern, occurs with SA502 at Eiswert Cave. Three individuals were found at the site Jan. 27, 1988. The cave also provides habitat for other more common animal species associated with **SA502** and **SA503**.

EISWERT LIMESTONE GLADE - **NC507** (Limestone Twp.), a Calcareous Rocky Summit natural community, harbors at least two rare plants (**SP504**, **SP506**) and has potential for other rare plants and rare animals. **SP504** was first located in 1940 by J.M. Fogg, apparently in what is now an abandoned orchard. The plants are still to be found in the orchard and also in the natural community. However, many exotic species have become established since that time. Crown vetch (Coronilla varia) may be one of the most aggressive of these and it is literally smothering parts of the natural community. Because it may eventually eliminate the plants of special concern, the crown vetch problem needs to be addressed soon.

A second threat is the encroachment of shrubs and trees. Most of the trees are native but some of the shrubs are exotics. These exotics include a shrub honeysuckle (Lonicera sp.) and silverberry (Eleagnus umbellata). If the natural community and the abandoned orchard are managed to prevent them from becoming overrun with woody plants and exotic species, then the rare species and natural community can probably be maintained indefinitely.

GE505 (Limestone Twp.) - **NIPPENOSE SPRING** ("Enchanted" spring) is the largest second-magnitude spring (flow 5,000 - 20,000 gallons per minute) in Pennsylvania (Geyer and Bolles 1979). The spring originates from fractures in limestones of the Nealmont and Benner formations (Ordovician Age) and is surrounded by open woods with an array of early-blooming wildflowers. English ivy has invaded the site and removal by hand is recommended to keep it from taking over the native species. The site is currently protected by a registry agreement between the landowners and Northcentral Pennsylvania Conservancy.

NIPPENOSE VALLEY WOODS (Limestone Twp.), south of Oval, is a locally significant, diverse, mesic woodland surrounding several seasonally flooded limestone sinkholes. At least twelve tree species occur here, dominated by red maple (Acer rubrum), black birch (Betula lenta), black cherry (Prunus serotina), and hemlock

(Tsuga canadensis). The herbaceous layer is characterized by an abundance of ferns (Dryopteris spp., Botrychium simplex, Polystichum acrostichoides), sweet cicely (Osmorhiza sp.), snakeroot (Sanicula sp.) and rattlesnake-plantain (Goodyera pubescens) and probably supports a diverse spring flora as well. Registry is recommended to encourage a continuation of the selective or minimal cutting regime that has allowed this habitat to remain in good quality.

The WEST BRANCH SUSQUEHANNA RIVER (Nippenose, Piatt, Susquehanna and Woodward Twps.) and its associated islands and floodplain forests are well worth considering in any conservation plan for the county. Small remnants of floodplain forest still exist on some of the islands and in narrow bands along the river edge. Although all have been disturbed, they still serve as migratory bird habitat and help stabilize banks and capture eroded soil during flood stages on the river.

USGS QUADRANGLE MAP: Lock Haven

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:						
OTHER:						

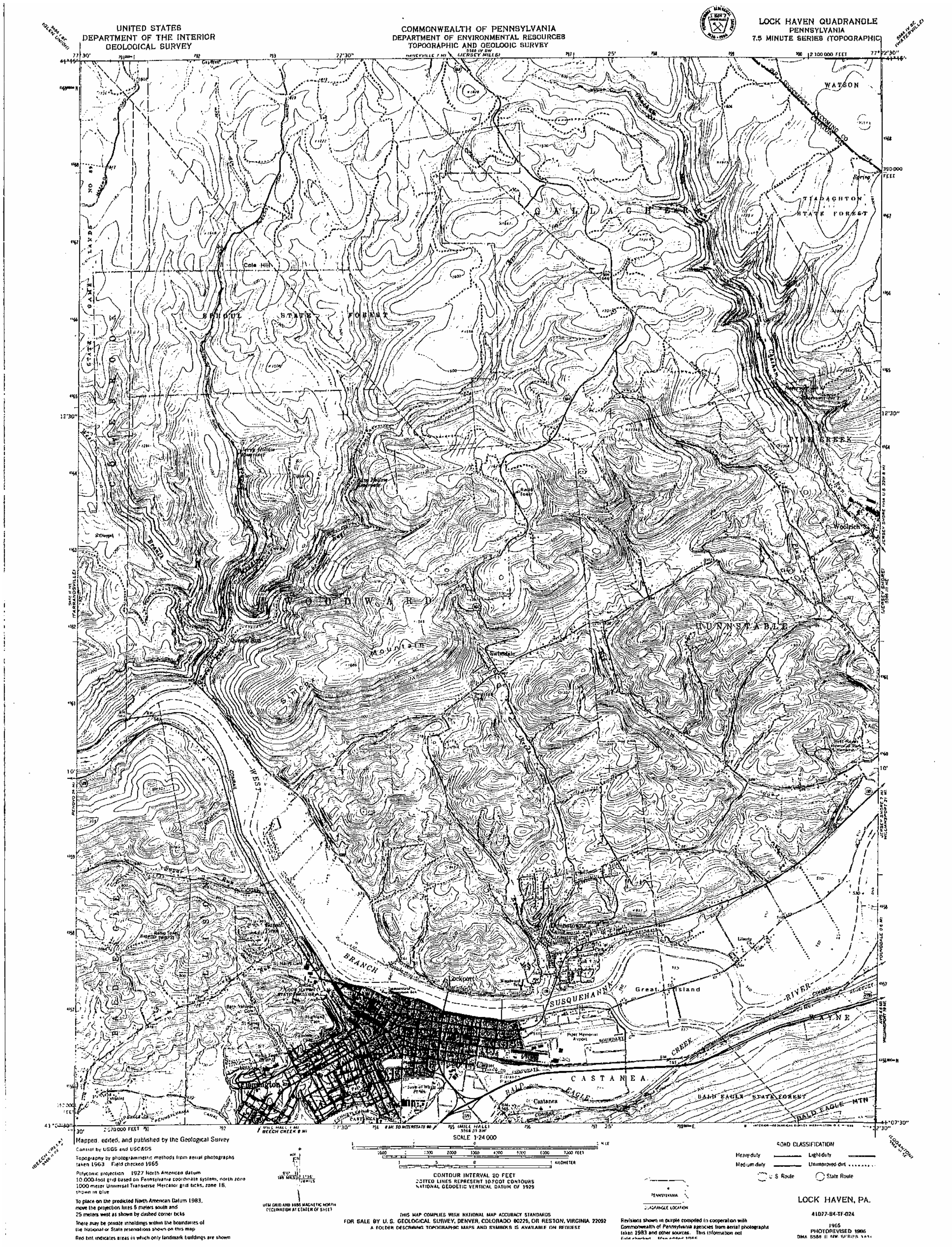
Lock Haven Quadrangle

Lycoming County covers only the very northeastern corner of this map. No exemplary natural communities or species of special concern are known to occur in this area of the county.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
LOCK HAVEN QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
WATSON
TIADAGHTON STATE FOREST
GALLAGHER
SPROUL STATE FOREST
PINE CREEK
WOODWARD
DUNNSTABLE
WEST BRANCH
SUSQUEHANNA
Great Island
RIVER
WAYNE
CASTANEA
BALD EAGLE STATE FOREST
BALD EAGLE MTN
Mapped, edited, and published by the Geological Survey
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
LOCK HAVEN, PA.
1965
PHOTOREVISED 1986

USGS QUADRANGLE MAP: Montoursville North

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	505 G?	S3S4	N	N	04-13-93	E
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	504 G3	S1	C2	PT	01-15-87	E

HIGH QUALITY-
COLDWATER FISHERIES: Butternut Grove Run, Dry Run, Wallis Run

OTHER: Tiadaghton State Forest, State Game Lands 298, Grampian Hills Woods (see Cogan Station Quad.)

Montoursville North Quadrangle

SA504 - This animal was located at **NC505** on Wells Mountain (Gamble Twp.) within **State Game Lands 298**. The PA Game Commission oversees the site and regulates entry. **SA504** is one of several animal species that use the natural community. The importance of this site to **SA504** is unknown since only low numbers of the globally-rare animal are reported to make intermittent use of the natural community. The site does receive human use given the amount of trash found here. Visiting this site is strongly discouraged because of the sensitivity of the Pennsylvania Threatened animal, and the other species, to human disturbance.

Butternut Grove Run (Gamble Twp.) is a HQ-CWF throughout its basin.

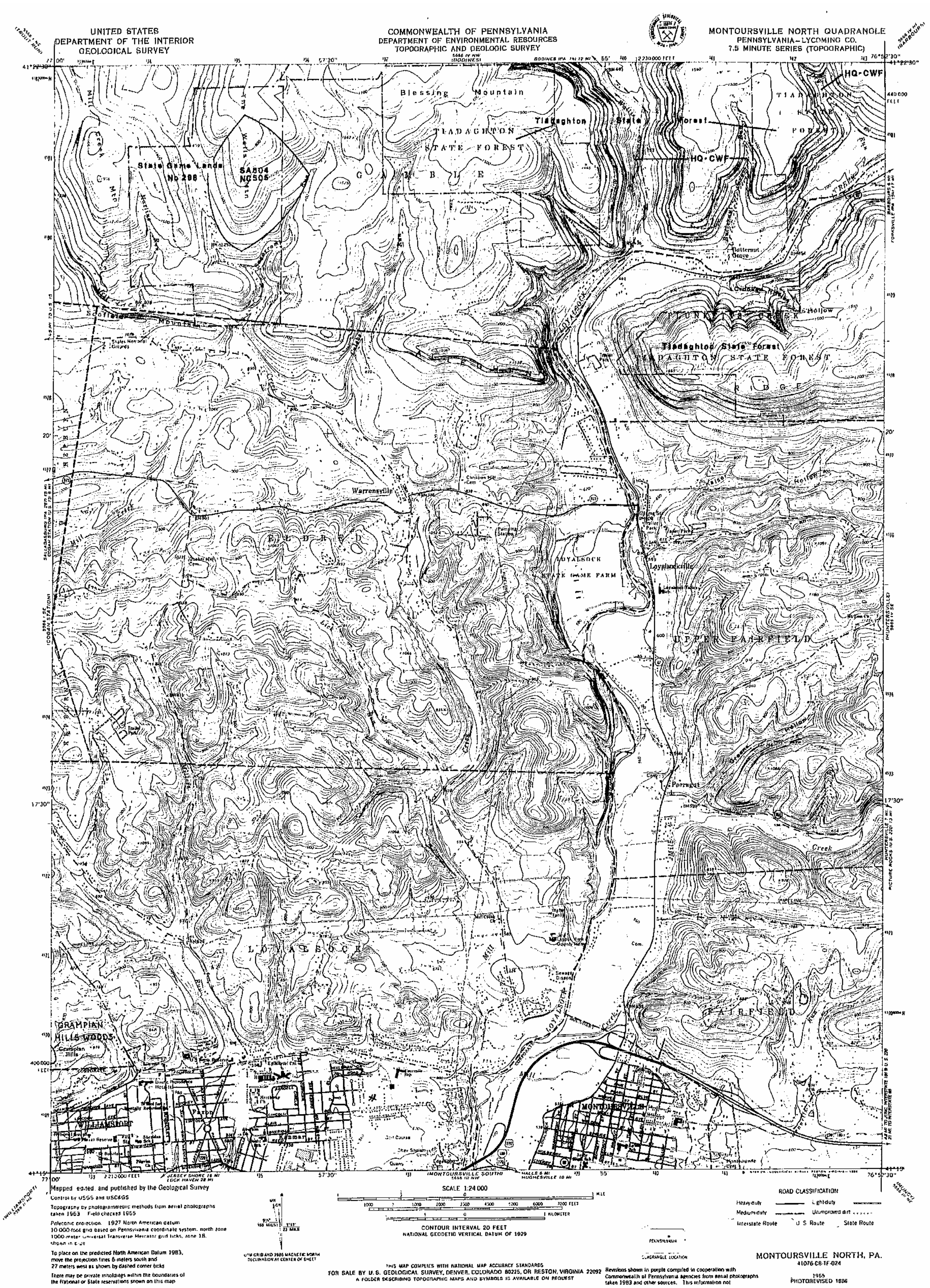
Dry Run (Gamble Twp.) is a HQ-CWF throughout its basin including a portion on the Bodines Quadrangle.

Wallis Run (Gamble Twp.) is a HQ-CWF throughout its basin including portions on the Barbours and Bodines Quadrangles.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
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DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
MONTOURSVILLE NORTH QUADRANGLE
PENNSYLVANIA–LYCOMING CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
Blessing Mountain
TIADAGHTON STATE FOREST
Tiadaghton State Forest
State Game Lands No 298
HQ-CWF
Warrensville
LOYALSOCK STATE GAME FARM
Loyalsockville
UPPER FAIRFIELD
Perrygut
LOYALSOCK
FAIRFIELD
GRAMPIAN HILLS WOODS
WILLIAMSPORT
MONTOURSVILLE
Mapped, edited, and published by the Geological Survey
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
MONTOURSVILLE NORTH, PA.
PHOTOREVISED 1986

USGS QUADRANGLE MAP: Montoursville South

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	501	G?	S1	N	N	08-07-92	AB
SPECIAL PLANTS:	505	G5	S3	N	PE	08-07-92	AB

SPECIAL ANIMALS: None found

HIGH QUALITY-
COLDWATER FISHERIES:

OTHER: Montgomery Cliffs, West Branch Susquehanna River, Tiadaghton State Forest, State Game Lands 252, Williamsport City Watershed, Black Hole Creek Nature Area

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
MONTOURSVILLE SOUTH QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
WILLIAMSPORT
MONTOURSVILLE
WEST BRANCH SUSQUEHANNA RIVER
SUSQUEHANNA RIVER
Tiadaghton State Forest
Williamsport City Watershed
MAPLE HILL SINKS
SP505
NC501
State Game Lands No 252
Black Creek Hole Nature Area
MONTGOMERY CLIFFS
WEST BRANCH SUSQUEHANNA RIVER
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
MONTOURSVILLE SOUTH, PA.
1956
PHOTOREVISED 1986

Montoursville South Quadrangle

MAPLE HILL SINKS - **NC501** (Brady and Washington Twps.) is series of five limestone sinkholes ranging in size from 0.5 to 4 acres over a distance of 1.4 miles. The sinkholes are ringed by forest and beyond the forest boundary are agricultural fields and low-density housing development. The area is fed by sand springs, seeps and runoff from the surrounding valley. A few acres have been severely disturbed by logging. During rainy periods, the sinkholes fill to a depth exceeding 10 feet and become connected by a small stream. The sinkholes are dominated by annuals such as smartweeds (Polygonum spp.) beggarticks (Bidens sp.), and by sedges (Carex spp.) including **SP505**. At the edges of the sinkholes, where inundation is briefest, willows and dogwoods are prevalent. The woods surrounding the sinkholes are dominated by pin oak (Quercus palustris) giving the woods the look and feel of a floodplain forest. Maple Hill Sinks appears to be the largest and least disturbed sinkhole pond system in Pennsylvania.

SP505 represents an excellent, vigorous population of a rare sedge. Thousands of plants are spread over 50 or more acres of the sinks and surrounding woods. The plants grow in light ranging from partial to full shade on moist soil. The area is disturbed to some degree by dirt bikes and 3-wheelers which may pose a threat to the plant population by killing individual plants and allowing weedy species to become established.

Since only one plant of special concern is known to occur here, it is difficult to judge the site's importance to biodiversity. Surveys for rare animals such as some of the dragonflies are warranted given the apparent uniqueness of the system. Protection of this site should be a priority and begin by contacts with landowners to inform them of the importance of the site. In turn, this should lead to formal agreements such as conservation easements to protect the sinkholes, water sources and the surrounding forest.

MONTGOMERY CLIFFS (Clinton Twp.) is a calcareous shale cliff along the West Branch of the Susquehanna River that has had too many disturbances (including an old landfill) to rank as an exemplary natural community. A number of weedy and non-native species have invaded the woodlands from the rail line below and adjacent fields and an old quarry above. The mesic slopes are dominated by sugar maple (Acer saccharum) while oaks (Quercus montana, Q. rubra) are more frequent on the xeric slopes, and red cedar (Juniperus virginiana) and pine (Pinus virginiana) dominate exposed cliff edges and rock outcrops. Dense stands of pale jewelweed (Impatiens pallida) are indicative of a neutral substrate. This site provides great views of the river and the valley below and is a great hawk-watching spot. This site may have potential as a park similar to Shikellamy State Park if no significant hazards or other problems are present.

The WEST BRANCH SUSQUEHANNA RIVER (Armstrong, Fairfield, and Montoursville Twps.; S. Williamsport and Williamsport) and its associated islands and floodplain forests are well worth considering in any conservation plan for the county. Small remnants of floodplain forest still exist on some of the islands and in narrow bands along the river edge. Although all have been disturbed, they still serve as migratory bird habitat and help stabilize banks and capture eroded soil during flood stages on the river.

Williamsport City Watershed serves as the water supply for the city of Williamsport but can also provide a large expanse of open space for wildlife. See also Williamsport Quadrangle.

USGS QUADRANGLE MAP: Morris

		TNC Ranks*		Legal Status*		Last	
		Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	507	G?	S2	N	N	10-21-92	C
SPECIAL PLANTS:	508	G5	S2	N	PR	10-21-92	D

SPECIAL ANIMALS: None found

HIGH QUALITY-COLDWATER FISHERIES: Big Run, Bonnell Run, Texas Creek, Trout Run

OTHER: State Game Lands 75, Tioga State Forest

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
MORRIS QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
STATE GAME LANDS
DUNCAN
STATE
FOREST
TIOGA
MORRIS
Tannery
Babb Creek
Morris
Hoytville
Plank Hill
Brooks Hill
Three Springs
TIOGA STATE FOREST
TIOGA CO
LYCOMING CO
Tioga State Forest
HQ-CWF
Oregon Hill
SP508
Texas Mountain
PINE
STATE GAME LANDS
State Game Lands No. 75
NC507
Mapped, edited, and published by the Geological Survey
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
U.S. Route
State Route
MORRIS, PA.
1946
PHOTOREVISED 1985
1210

Morris Quadrangle

Bear Hollow Ponds, **NC507**, (Pine Twp.) is a fair quality Ephemeral/ Fluctuating Pools natural community. It consists of a series of 10 or more seasonally-flooded ponds in a mesic oak woods on **State Game Lands 75**. The ponds lie atop a saddle and drainage divide between Bear Hollow and Trout Run and provide water to both drainages. The ponds range from small leaf-lined vernal ponds that dry up early in the summer to larger (but less than 0.1 acre) vegetated marshy ponds dominated by woolgrass (Scirpus cyperinus), manna grass (Glyceria septentrionalis), and sedges (Carex spp.). The surrounding forest had been logged and burned in the past but the forest is now about 40 to 60 years old. Logging may have changed the character of the ponds but the ponds should still provide good breeding habitat for amphibians. A woodland buffer encompassing all of these ponds should allow them to continue to function as a breeding area. See also NC505 on English Center Quadrangle.

SP508 (Pine Twp.) is a PA-Rare sedge. This site, known as Oregon Hill Swamp, is its only known location in Lycoming County. The population rank is currently a "D" because so few specimens were found but further survey work might locate more plants. The swamp may have been a conifer swamp at one time but the hydrology of the swamp was altered (possibly by beaver) and the trees were killed. The wetland was transformed from a forested swamp to an open wetland, possibly a marsh or wet meadow. Most of the swamp is currently dominated by alder (Alnus rugosa) but along the upper edges, balsam fir (Abies balsamea) and eastern hemlock (Tsuga canadensis) are still dominant. It is in the wet soil beneath the conifers that this sedge is still able to hold on. If succession continues uninterrupted, the alder swamp may one day become a conifer swamp dominated by balsam fir and hemlock. Should conifers come to dominate the swamp again, it is possible that the sedge population will increase. Work between a local conservation group and the owners of the wetland is encouraged to ensure the continued existence of this rare plant at this site.

Big Run (Pine and Brown Twps.) is a HQ-CWF throughout its basin to the Lycoming-Tioga County line.

Bonnell Run (Pine Twp.) is a HQ-CWF throughout its basin.

Texas Creek (Pine Twp.) is a HQ-CWF throughout its basin and includes portions Nauvoo and English Center Quadrangles.

Trout Run (Brown and Pine Twps.) is a HQ-CWF throughout its basin from its source to Pine Creek (see Cedar Run Quad).

photo 9 or expand text pg 108

USGS QUADRANGLE MAP: Muncy

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:						
OTHER:	West Branch Susquehanna River, Tiadaghton State Forest, Thomas Dam Watershed, Montgomery Public Park					

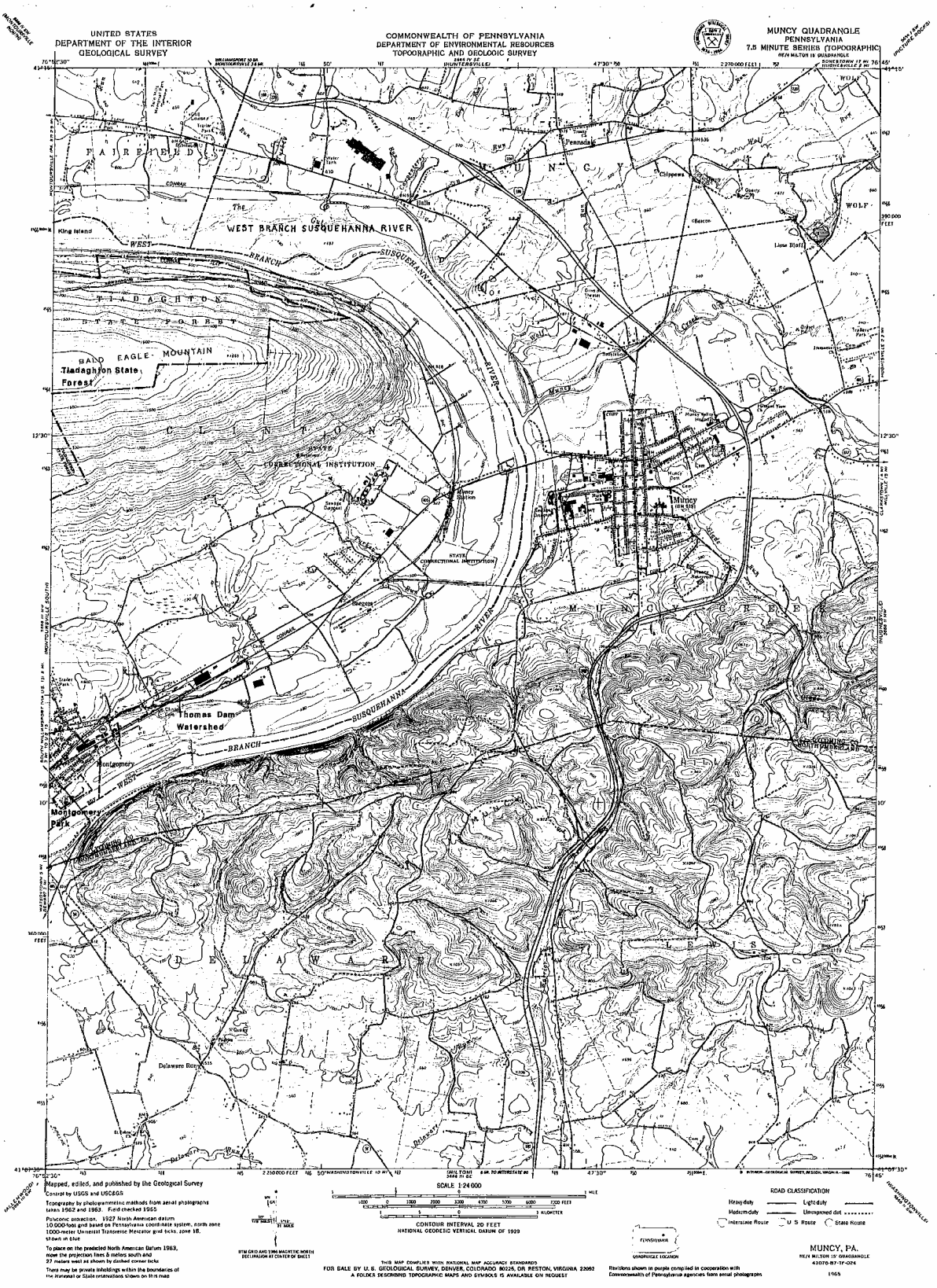
Muncy Quadrangle

No sites for exemplary natural communities or species of special concern are known to occur on this map. However, the WEST BRANCH SUSQUEHANNA RIVER (Clinton, Fairfield, Muncy, and Muncy Creek Twps. and Montgomery) and its associated islands and floodplain forests are well worth considering in any conservation plan for the county. Small remnants of floodplain forest still exist on some of the islands and in narrow bands along the river edge. Although all have been disturbed, they still serve as migratory bird habitat and help stabilize banks and capture eroded soil during flood stages on the river.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
MUNCY QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
WEST BRANCH SUSQUEHANNA RIVER
SUSQUEHANNA RIVER
Tiadaghton State Forest
BALD EAGLE MOUNTAIN
Thomas Dam Watershed
Montgomery Park
Muncy
FAIRFIELD
CLINTON
DELAWARE
MUNCY CREEK
LEWIS
WOLF
Mapped, edited, and published by the Geological Survey
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
MUNCY, PA.
1965

USGS QUADRANGLE MAP: Nauvoo

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:	Texas Creek					
OTHER:						

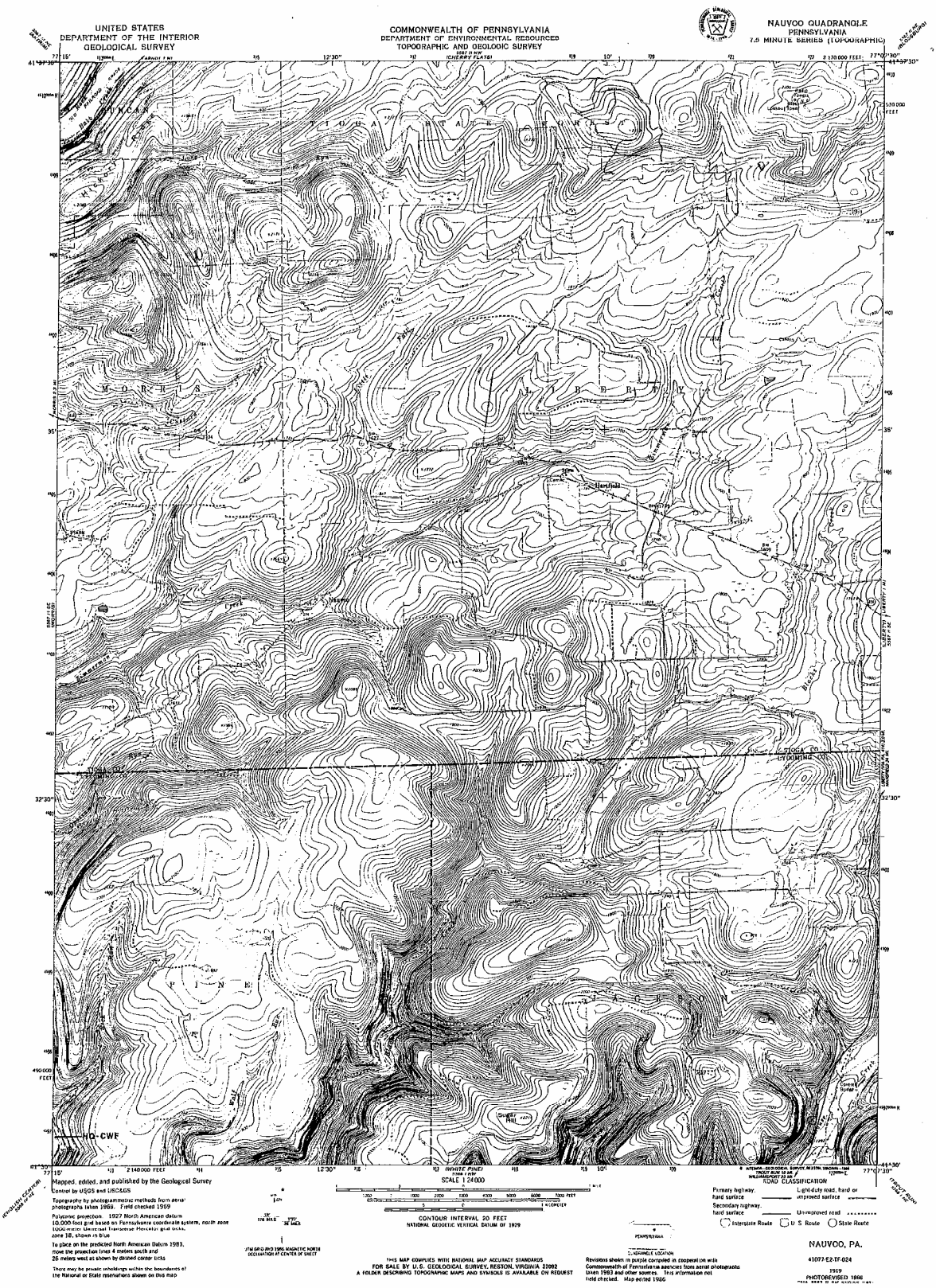
Nauvoo Quadrangle

Texas Creek, along with its tributaries Opossum Run and Rock Run (Pine Twp.), is a HQ-CWF throughout its basin including sections on Morris and English Center Quadrangles.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
NAUVOO QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
NAUVOO, PA.
41077-E2-TF-024
1969
PHOTOREVISED 1986

USGS QUADRANGLE MAP: Picture Rocks

		TNC Ranks*		Legal Status*		Last	
		Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found						
SPECIAL PLANTS:	None found						
SPECIAL ANIMALS:	501	G4G5	S2	N	N	06-29-88	B
	509	G5	S2	N	N	07-13-93	B
	510	G5	SU	N	N	07-13-93	B
	511	G3G4	S1	N	N	07-13-93	AB

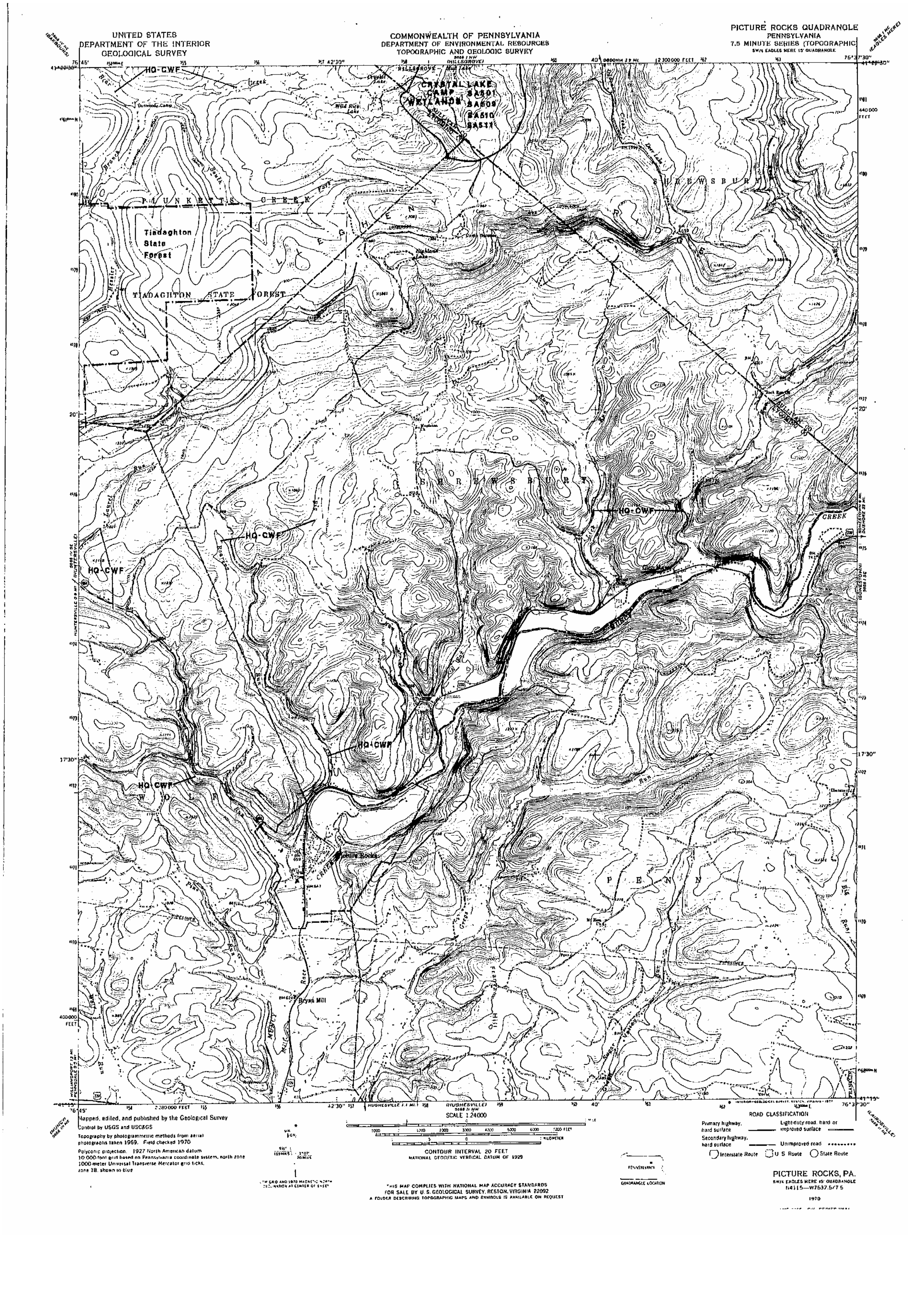
HIGH QUALITY-
COLDWATER FISHERIES: Bear Creek, Big Run, Laurel Run, Lick Run, Roaring Run, Rock Run

OTHER: Tiadaghton State Forest

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
PICTURE ROCKS QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
HQ-CWF
CRYSTAL LAKE
CAMP
WETLANDS
PLUNKETTS CREEK
Tiadaghton
State
Forest
TIADAGHTON STATE FOREST
SHREWSBURY
Picture Rocks
Bryan Mill
Mapped, edited, and published by the Geological Survey
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
PICTURE ROCKS, PA.
1970

Picture Rocks Quadrangle

CRYSTAL LAKE CAMP WETLANDS (Plunketts Creek Twp. and Sullivan Co.) is a series of open peatlands, vernal ponds and beaver ponds with an abundance of large cranberry (Vaccinium macrocarpon). There appears to be a healthy population of a butterfly (**SA501**) that feeds on the cranberry. The site probably has a long history of beaver activity but the area is well protected at this time. The largest area of habitat for the species was recently flooded by beaver; however, there is a lot of cranberry in the other nearby peatlands where the butterfly has survived. The flooding caused by beaver continues to be a threat to the remaining suitable habitat. It would be advisable to monitor the beavers here and remove them if they threaten to flood the peatlands where cranberry exists.

There are also several natural vernal ponds within Crystal Lake Camp which support good populations of three dragonflies of special concern (**SA509**, **SA510** and **SA511**). **SA511** is a globally rare species and more work needs to be done to assess the population here. The ponds also provide habitat for a variety of aquatic plants and other animals, including amphibians. Care should be taken maintain the ponds in as natural a condition as possible to avoid impacting the three rare species and the other flora and fauna of the ponds. Besides the rare dragonflies, the ponds also can serve as an outdoor laboratory for environmental education classes at the camp.
Bear Creek (Plunketts Creek Twp.) is a HQ-CWF throughout its basin including portions on the Barbours and Hillsgrove Quadrangles.

Big Run (Shrewsbury Twp.) is a HQ-CWF throughout its basin.

Laurel Run (Wolf and Picture Rocks Twps.) is a HQ-CWF throughout its basin and includes a small portion on the Huntersville Quadrangle.

Lick Run (Shrewsbury Twp.) is a HQ-CWF from the Sullivan County line to Muncy Creek.

Roaring Run (Shrewsbury and Wolf Twps.) is a HQ-CWF throughout its basin to the confluence with Muncy Creek.

Rock Run (Shrewsbury Twp.) is a HQ-CWF from Sullivan County to Muncy Creek.

photo

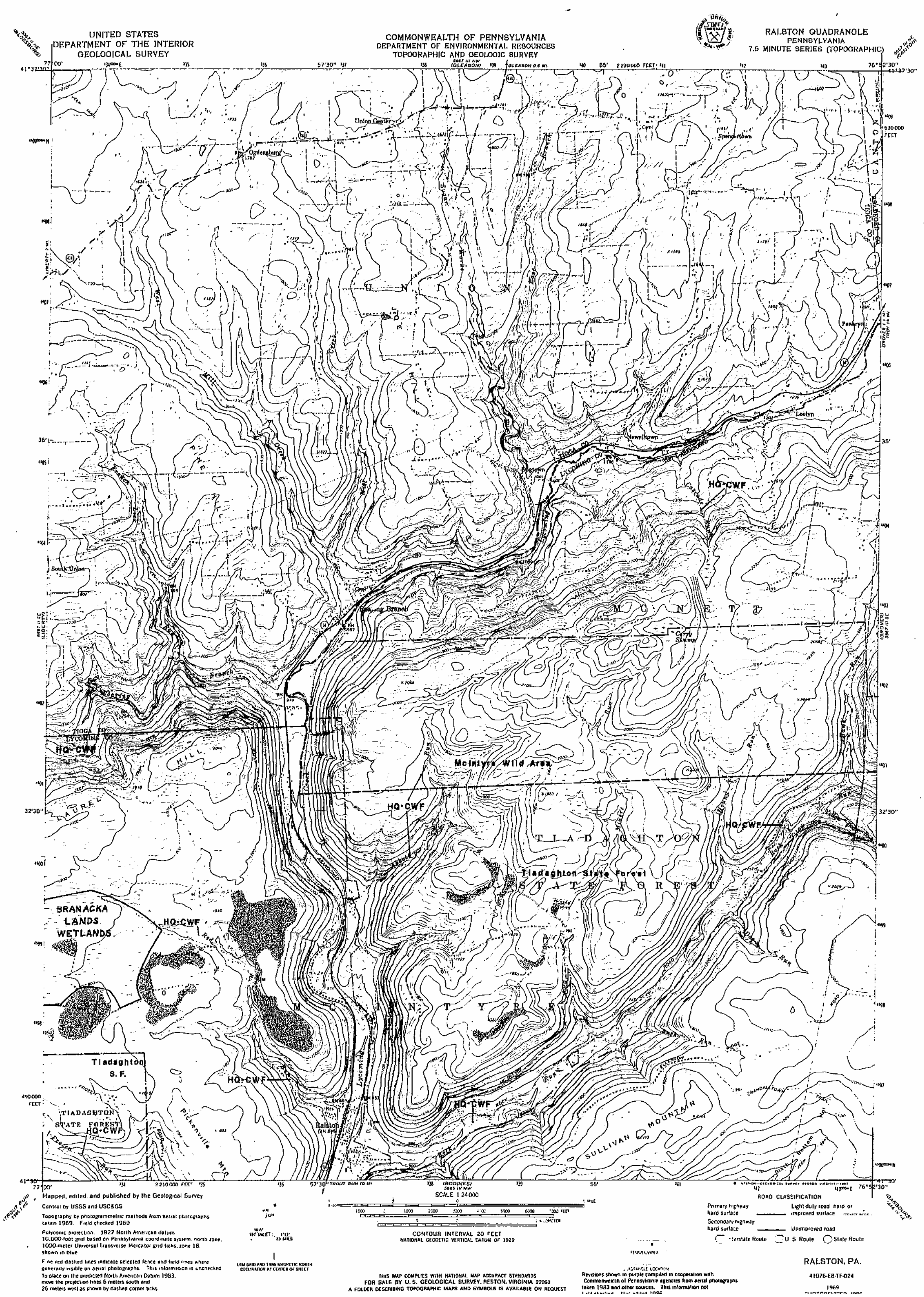
USGS QUADRANGLE MAP: Ralston

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:	Abbott Run, Cascade Run, Frozen Run, Red Run, Roaring Branch, Rock Run					
OTHER:	McIntyre Wild Area, Tiadaghton State Forest, Branacka Lands Wetlands					

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
RALSTON QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
Union Center
Ogdensburg
Spencertown
Penbryn
Leolyn
HQ-CWF
Roaring Branch
South Union
M C N E T T
TIOGA
LYCOMING
HQ-CWF
LAUREL
HILL
McIntyre Wild Area
HQ-CWF
T I A D A G H T O N
HQ-CWF
Tiadaghton State Forest
S T A T E   F O R E S T
BRANACKA
LANDS
WETLANDS
HQ-CWF
M   N T Y R E
Tiadaghton
S. F.
HQ-CWF
HQ-CWF
TIADAGHTON
STATE FOREST
HQ-CWF
Ralston
SULLIVAN MOUNTAIN
Mapped, edited, and published by the Geological Survey
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
RALSTON, PA.
1969

Ralston Quadrangle

BRANACKA LANDS WETLANDS (McIntyre Twp.) is a cluster of several wetlands located at the headwaters of Red and Frozen Runs, both HQ-CWF streams. Some of these are on state forest lands but the majority are on private property. There could not be a site visit but review of air photos, aerial reconnaissance and the recommendations of county residents all indicate that it should be included in this report. These wetlands are relatively large for the county and, although there has been surface mining adjacent to several of the wetlands, some are still reasonably intact. The largest of the wetlands are conifer swamps containing scattered openings with shrubs and graminoid vegetation. There is some potential for rare plants in these wetlands, but a future site visit will be required to make that determination. See also Liberty Quad.

Abbott Run (McIntyre and McNett Twps.) is a HQ-CWF throughout its basin from the plateau of McIntyre Wild Area down through a series of small waterfalls to Lycoming Creek.

Cascade Run (McNett Twp.) is a HQ-CWF flowing into Lycoming Creek.

Frozen Run (McIntyre Twp.) is a HQ-CWF throughout its basin and includes portions on Liberty and Bodines Quadrangles.

Red Run (McIntyre Twp.) is a HQ-CWF throughout its basin including a portion on the Liberty Quadrangle.

Roaring Branch (McIntyre Twp.) is a HQ-CWF throughout its basin in Tioga and Lycoming Counties including a section on the Liberty quadrangle.

Rock Run (McIntyre Twp.) is a HQ-CWF throughout its basin including a portion on the Grover Quadrangle.

photo

USGS QUADRANGLE MAP: Salladasburg

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:	First Fork Larrys Creek, Hoagland Run, Larrys Creek, Second Fork Larrys Creek					
OTHER:	State Game Lands 114					

Salladasburg Quadrangle

First Fork Larrys Creek (Mifflin Twp.) is a HQ-CWF throughout its basin including a portion on the Waterville Quadrangle.

Hoagland Run (Cogan House, Lewis and Lycoming Twps.) is a HQ-CWF throughout its basin including portions on White Pine and Cogan Station Quadrangles.

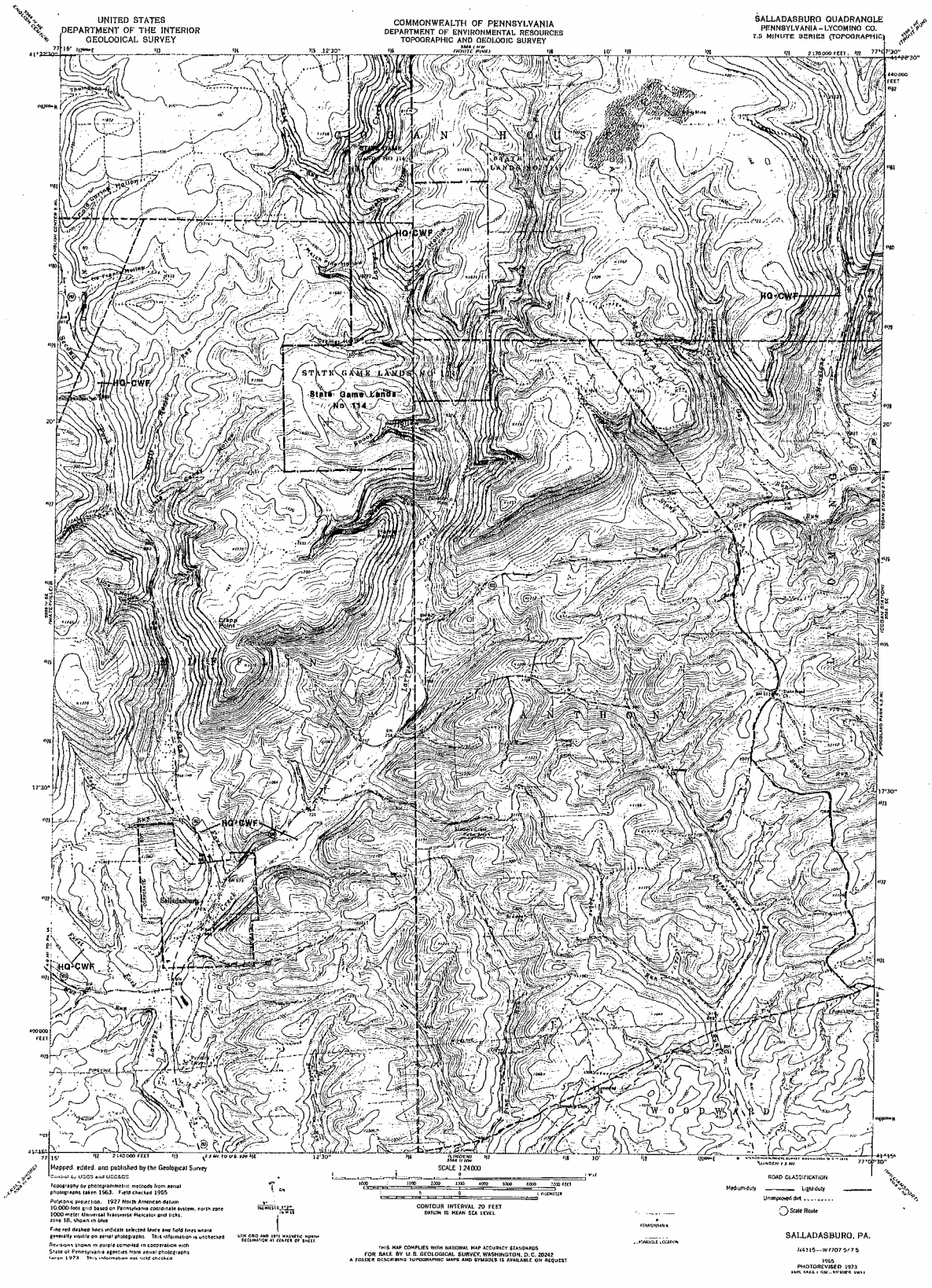
Larrys Creek (Anthony, Cogan House, and Mifflin Twps. and Salladasburg) is a HQ-CWF throughout its basin from its source to the Second Fork including portions on White Pine and Trout Run Quadrangles. South of White Pine and Cogan House the creek runs through a narrow steep-sided ravine for 5-6 miles, much of which is within **State Game Lands 114**, with few roads or other intrusions.

Second Fork Larrys Creek (Cummings and Mifflin Twps. and Salladasburg) is a HQ-CWF throughout its basin including portions on White Pine, Waterville and English Center Quadrangles.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
SALLADASBURG QUADRANGLE
PENNSYLVANIA—LYCOMING CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
HQ-CWF
STATE GAME LANDS NO. 134
State Game Lands No. 134
Salladasburg
Mapped, edited, and published by the Geological Survey
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
ROAD CLASSIFICATION
Medium-duty
Light-duty
Unimproved dirt
State Route
SALLADASBURG, PA.
N4115—W7707.5/7.5
1965
PHOTOREVISED 1973

USGS QUADRANGLE MAP: Slate Run

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	504	G5	S1	N	PE	06-23-93	CD
SPECIAL ANIMALS:	None found					

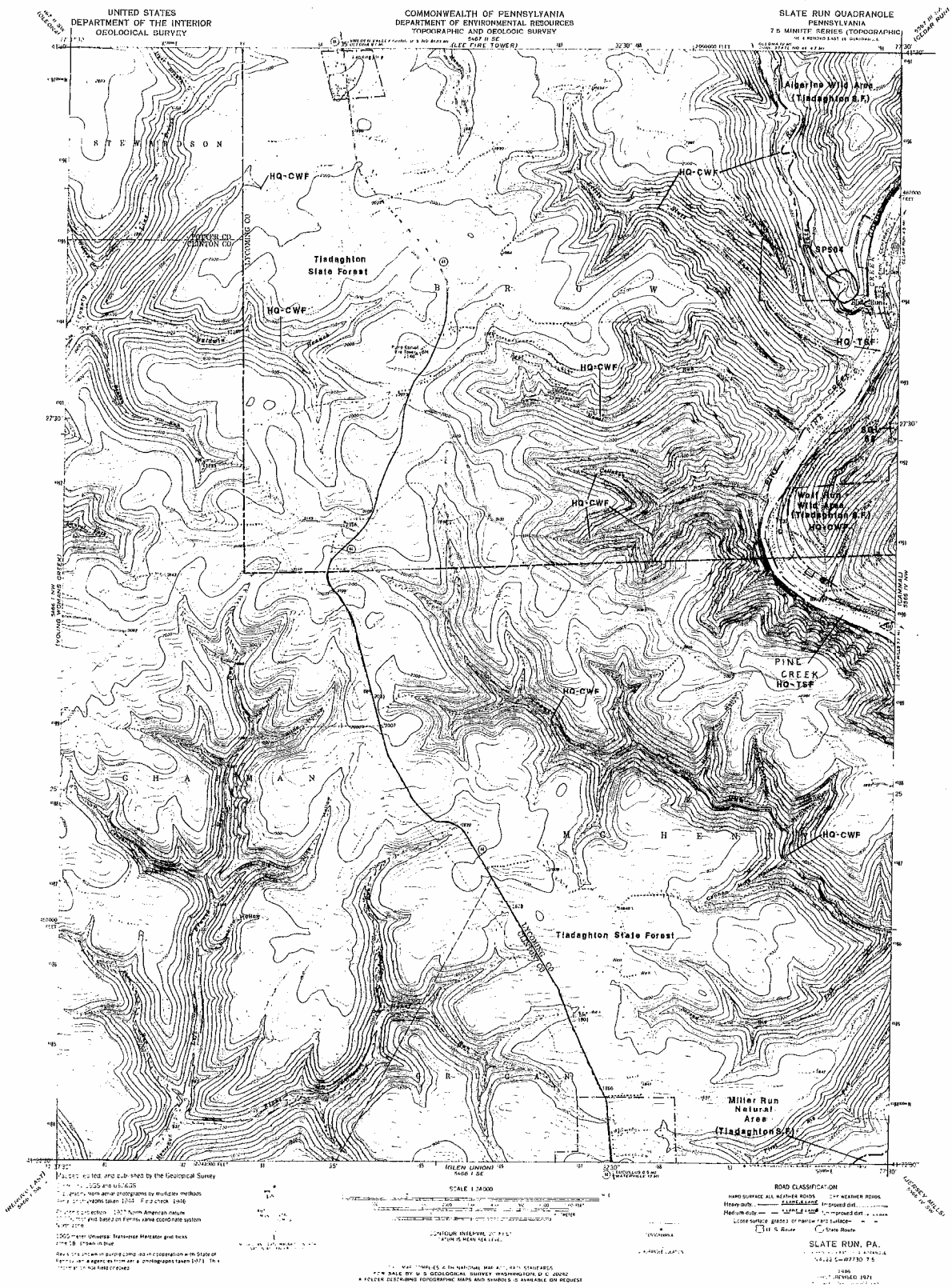
HIGH QUALITY-
COLDWATER FISHERIES: Baldwin Branch of Young Womans Creek, Bonnell Run, Callahan Run, Little Slate Run, Naval Run, Slate Run, Trout Run

OTHER: Algerine Wild Area, Miller Run State Forest Natural Area, Wolf Run Wild Area, Tiadaghton State Forest, State Game Lands 68, Pine Creek (HQ-TSF)

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
SLATE RUN QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
STEWARDSON
CHAPMAN
Tiadaghton State Forest
Tiadaghton
State Forest
HQ-CWF
HQ-TSF
Albarine Wild Area
(Tiadaghton S.F.)
Wolf Run
Wild Area
(Tiadaghton S.F.)
PINE
CREEK
Miller Run
Natural
Area
(Tiadaghton S.F.)
LYCOMING CO
CLINTON CO
SLATE RUN, PA.

Slate Run Quadrangle

SP504, at Slate Run (Brown Twp.) in **Tiadaghton State Forest**, is one of only five known locations for this plant in Pennsylvania and only one of two in Lycoming County. Although more common farther north in Canada, the plant is at the southern edge of its range in northern Pennsylvania. The habitat the species requires is cool, shaded calcareous rock slopes and cliffs. The deep ravines draining the Allegheny Plateau appear to provide both the shade and the cool conditions needed but the lack of exposures of calcium-rich rock may limit the potential habitat to just a few locations. This species has been known at this site since at least 1936, but the colony appears to be declining for unknown reasons in recent years. Twenty-four plants were counted here in 1993. Local land managers should be aware of the species location and work to ensure that the site remains shaded and undisturbed. The species needs to be monitored yearly to determine its long-term viability at Slate Run.

PINE CREEK (Brown and McHenry Twps.) is a High Quality Trout-Stocked Fishery (HQ-TSF) and one of the premier scenic and recreational resources of Pennsylvania. Bald eagles, a federally endangered bird, are nesting upstream in Tioga County and are probably utilizing the Lycoming Co. section to fish. Coordination among the citizens, townships, counties and the state will be required to ensure that this creek will always be compatible for wildlife and recreational users.

Baldwin Branch of Young Womans Creek (Brown Twp.) is a HQ-CWF as a tributary of Young Womans Creek, a HQ-CWF throughout its basin in Clinton Co.).

Bonnell Run (Brown and McHenry Twps.) is a HQ-CWF throughout its basin including a portion on the Cammal Quadrangle.

Callahan Run (Brown and McHenry Twps.) is a HQ-CWF throughout its basin.

Little Slate Run (Brown Twp.) is a HQ-CWF throughout its basin.

Naval Run (Brown Twp.) is a HQ-CWF throughout its basin.

Slate Run (Brown Twp.) is a HQ-CWF along the main stem from the Tioga/Lycoming County line to its mouth at Pine Creek.

Trout Run (McHenry Twp.) is a HQ-CWF throughout its basin including a portion on the Cammal Quadrangle.

photo

USGS QUADRANGLE MAP: Sonestown

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	503	G4	S1	N	PE	09-03-92	CD
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:	Spring Run					
OTHER:						

Sonestown Quadrangle

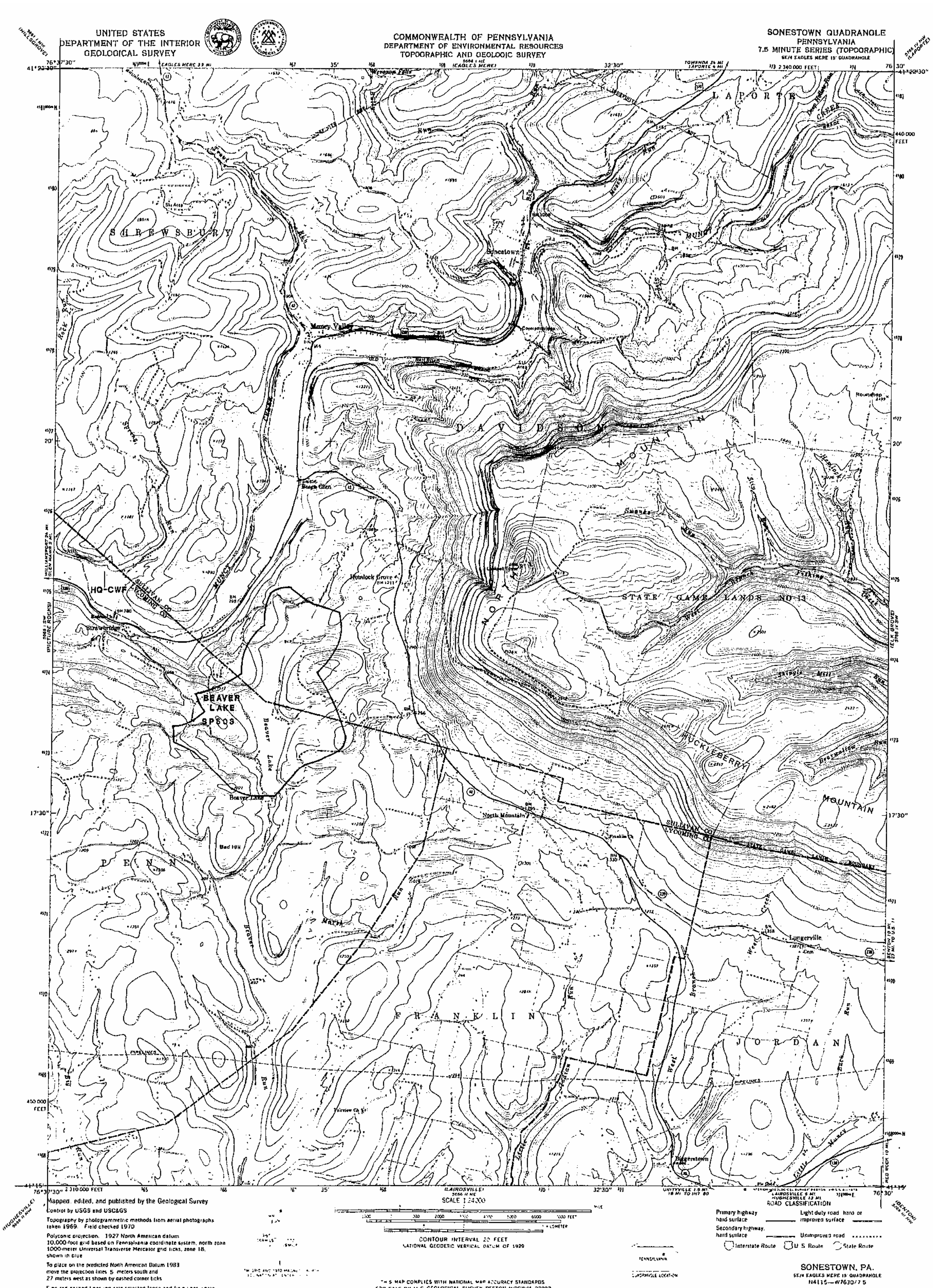
SP503 (Penn Twp.) - A healthy population of a PA-Endangered aquatic plant was found in Beaver Lake, a shallow, eutrophic lake created behind a small stone and earth dam. The lake supports a rich bed of aquatic plants including Brasenia schreberi, Elodea sp., Myriophyllum sp. and many others. A high nutrient load in combination with shallow water has allowed aquatic plants to thrive in this lake. Lake drawdown and herbicide application to control aquatic plants are potential threats to the persistence of **SP503**.

Spring Run (Penn Twp.) is a HQ-CWF from the Sullivan/Lycoming County line to its confluence with Muncy Creek.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
SONESTOWN QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
LAPORTE
SHREWSBURY
Sonestown
Muncy Valley
DAVIDSON
STATE GAME LANDS NO 13
HQ-CWF
SULLIVAN CO
LYCOMING CO
Strawbridge
BEAVER LAKE SP603
Beaver Lake
HUCKLEBERRY
MOUNTAIN
North Mountain
PENN
FRANKLIN
JORDAN
Lungerville
Beaver
17'30"
20'
32'30"
35'
Mapped, edited, and published by the Geological Survey
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
SONESTOWN, PA.
1970

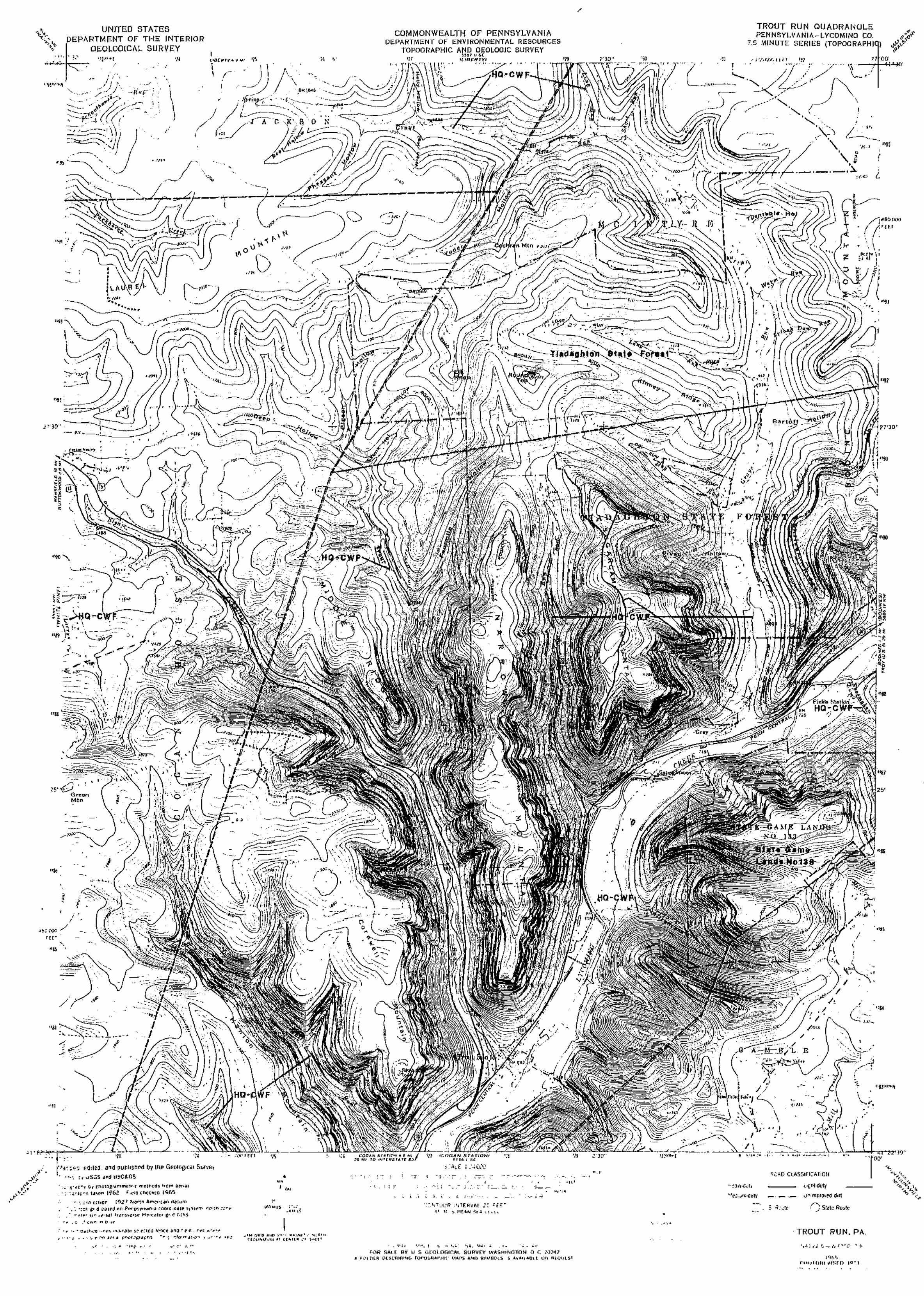
USGS QUADRANGLE MAP: Trout Run

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:	Daugherty Run, Glendenen Run, Grays Run, Hagermans Run, Larrys Creek, Long Run, Shoemakers Run, Trout Run, Wolf Run					
OTHER:	Tiadaghton State Forest, State Game Land 133					

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
TROUT RUN QUADRANGLE
PENNSYLVANIA–LYCOMING CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
HQ-CWF
JACKSON
MOUNTAIN
LAUREL
MCINTYRE
Cochran Mtn
Tiadaghton State Forest
TIADAGHTON STATE FOREST
Bartoff Hollow
Deep Hollow
Green Mtn
Fields Station
PENN CENTRAL
STATE GAME LANDS NO 133
State Game Lands No133
GAMBLE
CONTOUR INTERVAL 20 FEET
ROAD CLASSIFICATION
TROUT RUN, PA.

Trout Run Quadrangle

Daugherty Run (Lewis Twp.) is a HQ-CWF throughout its basin including a portion on the Cogan Station Quadrangle.

Glendenen Run (Lewis and Gamble Twps.) is a HQ-CWF throughout its basin.

Grays Run (Jackson, McIntyre and Lewis Twps.) is a HQ-CWF throughout its basin.

Hagermans Run (Lewis Twp.) is a HQ-CWF throughout its basin.

Larrys Creek (Cogan House Twp.) is a HQ-CWF throughout its basin to Second Fork (see also White Pine and Salladasburg Quadrangles).

Long Run (McIntyre Twp.) is a HQ-CWF throughout its basin including a portion on Liberty Quadrangle.

Shoemakers Run (Lewis Twp.) is a HQ-CWF throughout its basin including a portion on the Bodines Quadrangle.

Trout Run (Lewis Twp.) is a HQ-CWF throughout its basin and includes tributaries in Cogan House and McIntyre Twps.

Wolf Run (Lewis and Cogan House Twps.) is a HQ-CWF throughout its basin including a portion on the Cogan Station Quadrangle.

photo

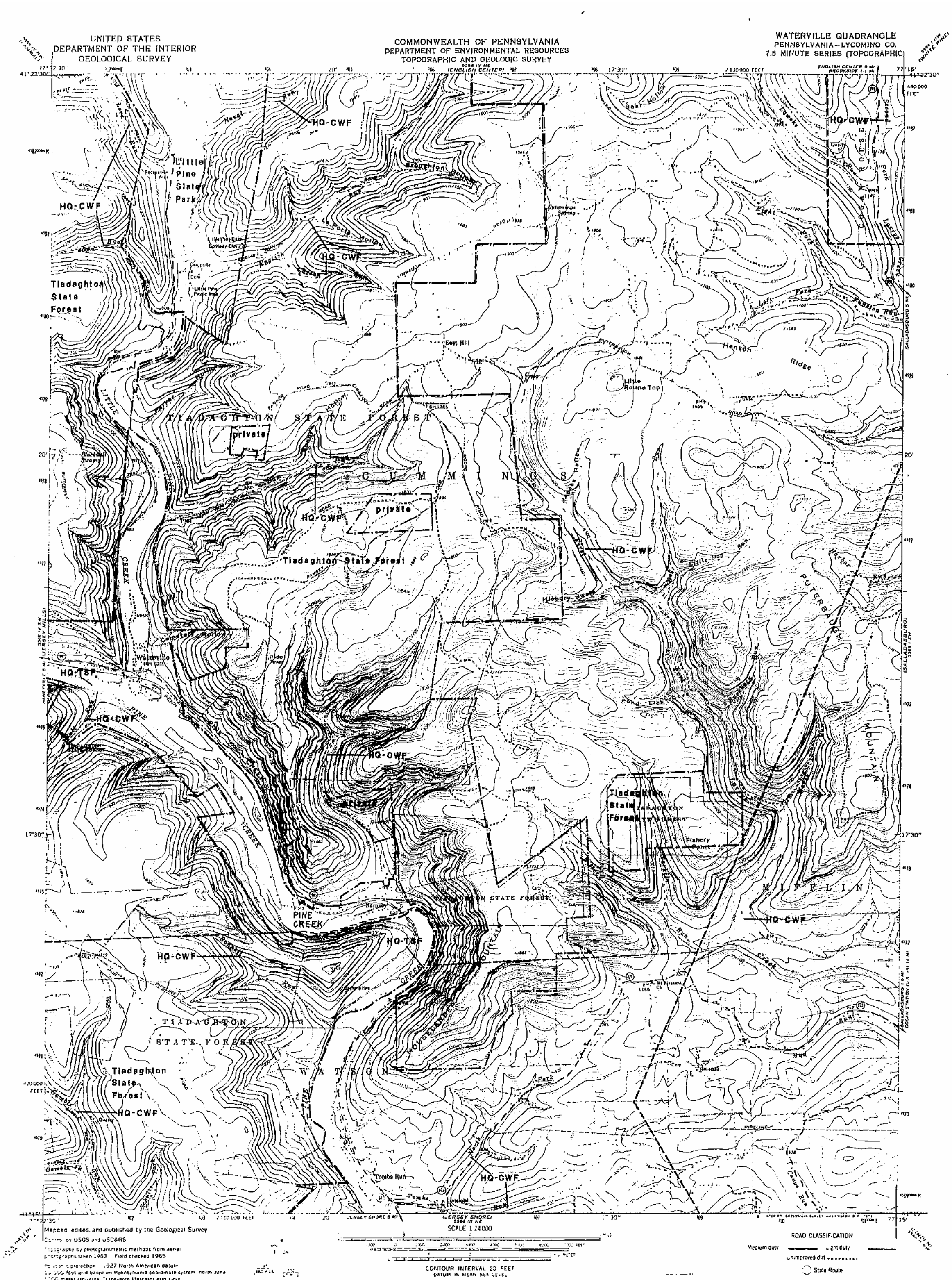
USGS QUADRANGLE MAP: Waterville

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:	Bonnell Run, Boone Run, Bull Run, Carson Run, Dam Run, English Run, First Fork Larrys Creek, Gamble Run, Love Run, Naval Run, Ramsey Run, Second Fork Larrys Creek, Tombs Run					
OTHER:	Tiadaghton State Forest, Little Pine State Park, Pine Creek (HQ-TSF)					

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
WATERVILLE QUADRANGLE
PENNSYLVANIA--LYCOMING CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
HQ-CWF
Little Pine State Park
Tiadaghton State Forest
TIADAGHTON STATE FOREST
private
CUMMINGS
East Hill
Little Round Top
Henson Ridge
PUTERBAUGH
Waterville
HQ-TSF
PINE CREEK
MOUNTAIN
MIFFLIN
WATSON
Tombs Run
Mapped, edited, and published by the Geological Survey
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, WASHINGTON, D.C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
State Route
WATERVILLE, PA.
1965

Waterville Quadrangle

PINE CREEK (Cummings and Watson Twps.) is a High Quality-Trout Stocked Fishery (HQ-TSF) and is one of the best scenic and recreational resources of Pennsylvania.

Bonnell Run (Cummings and Watson Twps.) is a HQ-CWF throughout its basin.

Boone Run (Cummings Twp.) is a HQ-CWF throughout its basin including a portion on the Jersey Mills Quadrangle.

Bull Run (Watson Twp.) is a HQ-CWF throughout its basin including a portion on the Jersey Mills Quadrangle.

Carsons Run (Cummings Twp.) is a HQ-CWF throughout its basin.

Dam Run (Cummings Twp.) is a HQ-CWF throughout its basin.

English Run (Cummings Twp.) is a HQ-CWF throughout its basin including a portion on the English Center Quadrangle.

First Fork Larrys Creek (Cogan House and Cummings Twps.) is a HQ-CWF throughout its basin including a portion on the Salladasburg Quadrangle.

Gamble Run (Watson Twp.) is a HQ-CWF throughout its basin including portions on the Jersey Mills and Jersey Shore Quadrangles.

Love Run (Cummings Twp.) is a HQ-CWF throughout its basin including portions on the Cammal and English Center Quadrangles.

Naval Run (Cummings Twp.) is a HQ-CWF throughout its basin including a portion on the English Center Quadrangle.

Ramsey Run (Cummings Twp.) is a HQ-CWF throughout its basin.

Second Fork Larrys Creek (Cogan House and Cummings Twps.) is a HQ-CWF throughout its basin including portions on English Center, Salladasburg and White Pine Quadrangles.

Tombs Run (Watson Twp.) is a HQ-CWF throughout its basin including a portion on the Jersey Shore Quadrangle.

photo 14

USGS QUADRANGLE MAP: White Pine

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:	Bear Run, Hoagland Run, Larrys Creek, Lick Run, Second Fork Larrys Creek					
OTHER:	State Game Lands 75, State Game Lands 114					

White Pine Quadrangle

Bear Run (Pine Twp.) is a HQ-CWF throughout its basin including a portion on the English Center Quadrangle.

Hoagland Run (Cogan House Twp.) is a HQ-CWF throughout its basin including portions on the Cogan Station and Salladasburg Quadrangles.

Larrys Creek (Cogan House Twp.) is a HQ-CWF throughout its basin from its source to Second Fork including portions on the Salladasburg and Trout Run Quadrangles. South of White Pine and Cogan House the creek runs through a narrow steep-sided ravine for 5-6 miles, much of which is within **State Game Lands 114**; see also Salladasburg Quadrangle.

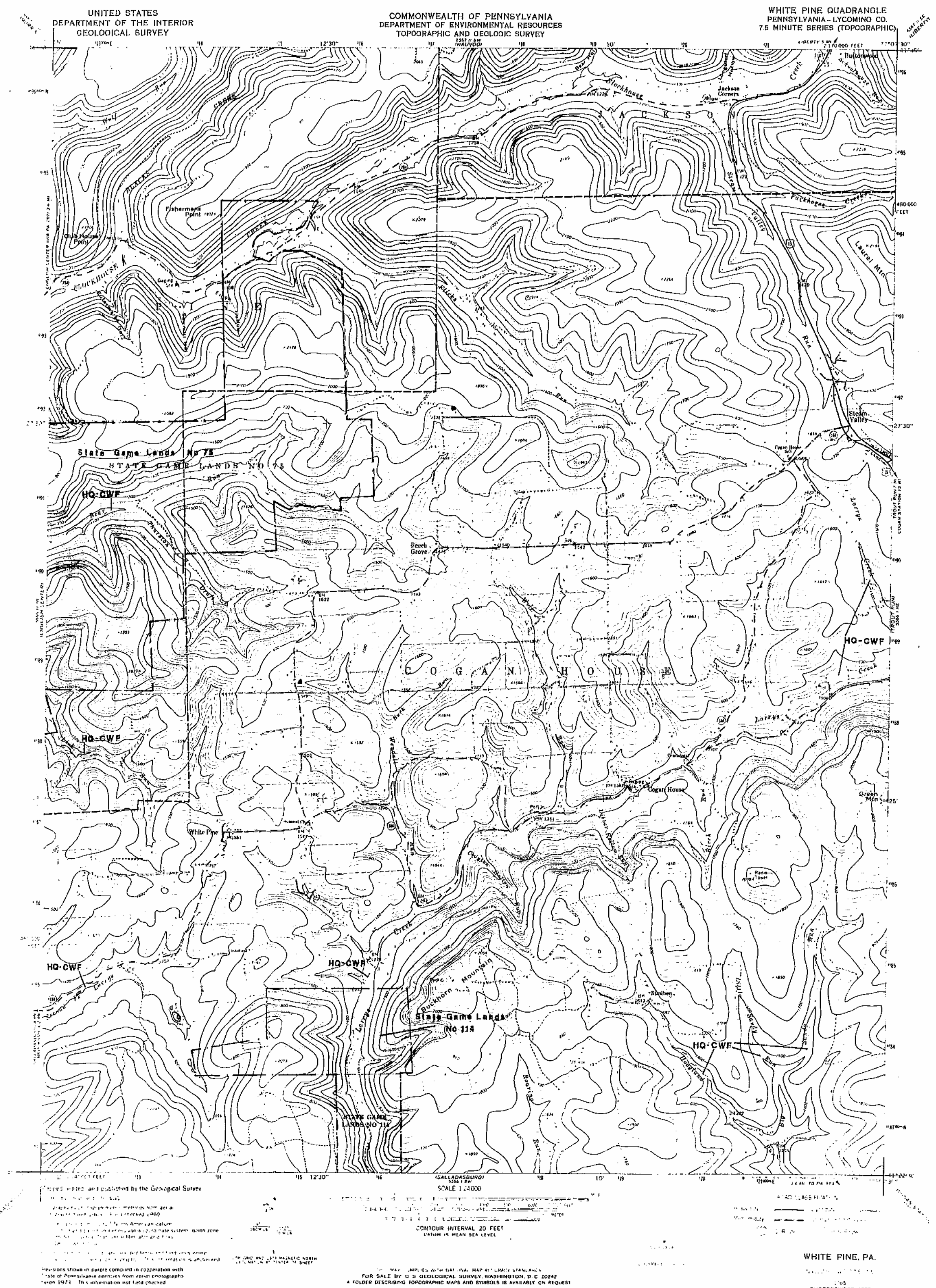
Lick Run (Pine and Cogan House Twps.) is a HQ-CWF throughout its basin including a portion on the English Center Quadrangle.

Second Fork Larrys Creek (Cogan House Twp.) is a HQ-CWF throughout its basin including portions on the English Center, Salladasburg and Waterville Quadrangles.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
WHITE PINE QUADRANGLE
PENNSYLVANIA – LYCOMING CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
Buttonwood
Jackson Corners
Blockhouse
JACKSON
Fishermans Point
Blockhouse
PINE
State Game Lands No 75
STATE GAME LANDS NO 75
HQ-CWF
Steam Valley
Beech Grove
COGAN HOUSE
Cogan House
White Pine
Buckhorn Mountain
State Game Lands No 114
STATE GAME LANDS NO 114
Larrys Creek
Steam Valley Run
Laurel Mtn
Green Mtn
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
SCALE 1:24000
FOR SALE BY U S GEOLOGICAL SURVEY, WASHINGTON, D C 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
WHITE PINE, PA.
PHOTOREVISED 1973

USGS QUADRANGLE MAP: Williamsport

	TNC Ranks*		Legal Status*		Last	
	Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	None found					
SPECIAL PLANTS:	None found					
SPECIAL ANIMALS:	None found					
HIGH QUALITY-COLDWATER FISHERIES:	White Deer Hole Creek					
OTHER:	West Branch Susquehanna River, Tiadaghton State Forest, State Game Lands 126, Williamsport City Watershed					

Williamsport Quadrangle

The WEST BRANCH SUSQUEHANNA RIVER (Armstrong, Susquehanna, and Woodward Twps.; Williamsport and S. Williamsport) and its associated islands and floodplain forests are well worth considering in any conservation plan for the county. Although all of the remaining sections of floodplain forest have been disturbed, they still serve as migratory bird habitat and help stabilize banks and capture eroded soil during flood stages on the river.

Williamsport City Watershed (Armstrong, Bastress and Limestone Twps.) in the Mosquito Valley area serves as the water supply for the city of Williamsport but can also provide a large expanse of open space for wildlife and has potential for one or two rare plant species although none have been confirmed at the site to date.

White Deer Hole Creek (Washington Twp.) is a HQ-CWF from its source to the Lycoming/Union County line including portions on Allenwood, Carroll and Williamsport SE Quadrangles.

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
WILLIAMSPORT QUADRANGLE
PENNSYLVANIA–LYCOMING CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
WEST BRANCH SUSQUEHANNA RIVER
WILLIAMSPORT
SOUTH WILLIAMSPORT
BALD EAGLE MOUNTAIN
State Game Lands No 126
Williamsport City Watershed
ARMSTRONG
BASTRESS
LIMESTONE
WASHINGTON
Tiadaghton State Forest
TIADAGHTON STATE FOREST
NORTH WHITE DEER RIDGE
Mosquito Valley Reservoir
Elimsport
HQ-CWF
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
WILLIAMSPORT, PA.
PHOTOREVISED 1985

USGS QUADRANGLE MAP: Williamsport SE

		TNC Ranks*		Legal Status*		Last	
		Global	State	Fed.	State	Seen	Quality**
NATURAL COMMUNITIES:	501	G?	S2	N	N	09-01-92	B
SPECIAL PLANTS:	505	G2	S2	LE	PE	09-01-92	BC
	506	G5	S?	N	TU	09-01-92	B

SPECIAL ANIMALS: None found

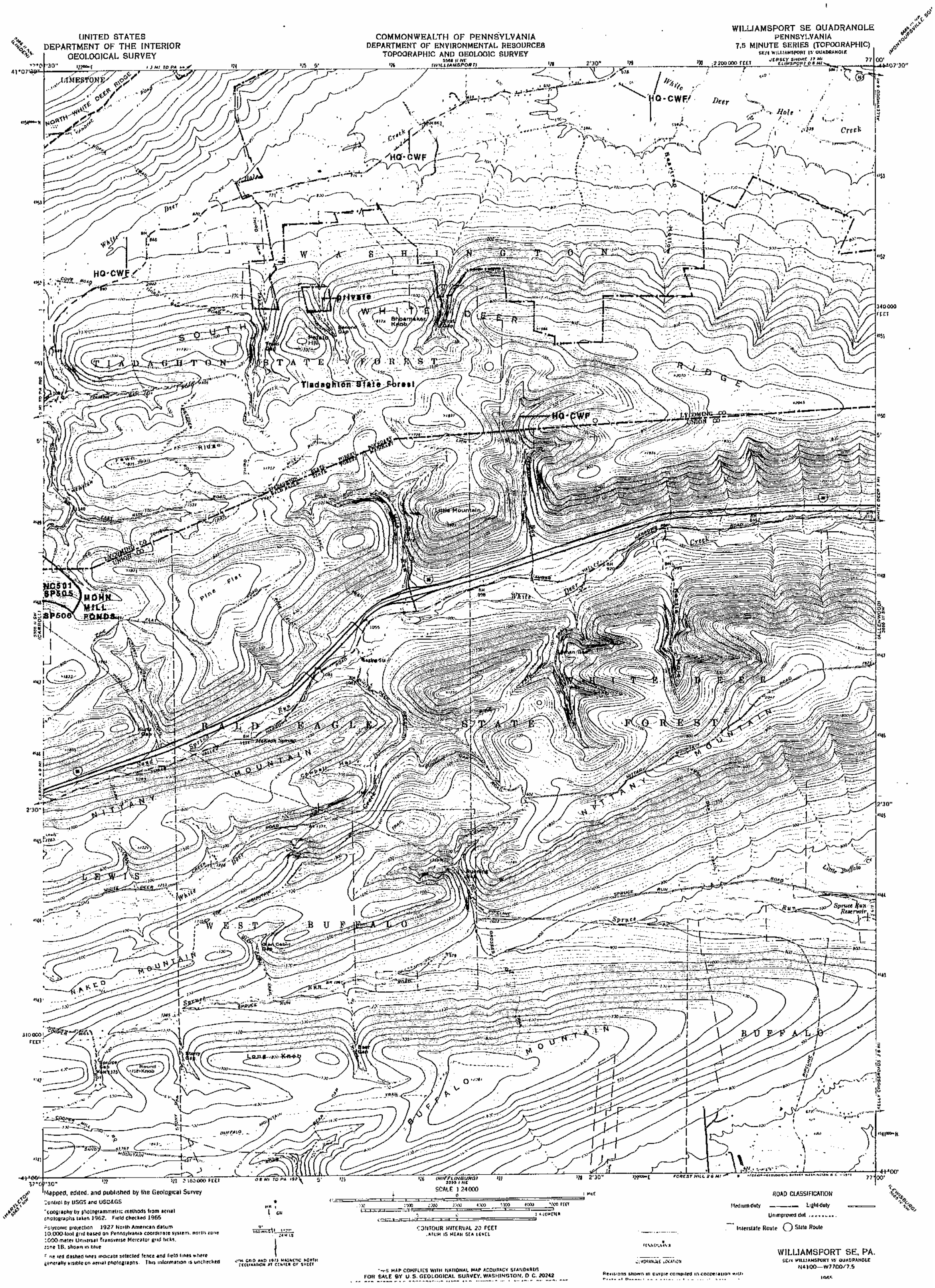
HIGH QUALITY-COLDWATER FISHERIES: White Deer Creek (see Lick Run), White Deer Hole Creek

OTHER: Tiadaghton State Forest

* Please refer to Appendix I for an explanation of Ranks and Legal Status.

** Please refer to Appendix II for Quality ranks.

(FULL SIZE MAPS ARE AVAILABLE AT LYCOMING CO. PLANNING COMMISS.)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
WILLIAMSPORT SE QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
LIMESTONE
NORTH WHITE DEER RIDGE
HQ-CWF
W A S H I N G T O N
WHITE DEER
SOUTH
TIADAGHTON STATE FOREST
RIDGE
Tiadaghton State Forest
LYCOMING CO
UNION CO
Little Mountain
Pine Flat
MOHN MILL PONDS
WHITE DEER
BALD EAGLE STATE FOREST
NITTANY MOUNTAIN
LEWIS
WEST BUFFALO
NAKED MOUNTAIN
Long Knob
BUFFALO MOUNTAIN
BUFFALO
Spruce Run Reservoir
Mapped, edited, and published by the Geological Survey
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
ROAD CLASSIFICATION
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, WASHINGTON, D.C. 20242
WILLIAMSPORT SE, PA.

Williamsport SE Quadrangle

NC501 (Washington Twp) - **MOHN MILL PONDS** (see also Carroll Quadrangle NC501) is a 1.2-mile linear series of 28 woodland ponds that formed in depressions in colluvium on the north side of the ridge at the Union and Lycoming county boundary. The ponds are dominated by bulrushes, grasses, ferns and mosses. The ponds range from flooded for most of the year to shallow depressions that are flooded for only brief periods in the growing season. Most of the ponds remain saturated even through long droughts, however, and many are interconnected at least during high water periods. The surrounding land is forested with a mix of oak and maple. The area was logged in the early 1900's but has reverted to mixed oak and maple forest. The woodland buffer is essential to maintaining the community quality and the resident rare species described below.

Two species of special concern have been located in the ponds--a Federally Endangered bulrush (**SP505**) and a grass (**SP506**) that is being reviewed to determine its state status (see also Carroll Quadrangle SP504 and SP508). This site, contained within **Bald Eagle** and **Tiadaghton State Forests** has been proposed as a Public Plant Sanctuary by the Bureau of Forestry.

Lick Run (Washington Twp.) is a tributary of White Deer Creek, a HQ-CWF throughout its basin in Union, Centre and Lycoming Counties.
White Deer Hole Creek (Washington Twp.) is a HQ-CWF throughout its basin from its source to the Lycoming/Union County line including portions on the Allenwood, Carroll and Williamsport Quadrangles. Its primary value is recreational.

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APPENDIX I.
FEDERAL AND STATE STATUS, AND THE NATURE CONSERVANCY (TNC) RANKS

FEDERAL STATUS

U.S. FISH AND WILDLIFE SERVICE CATEGORIES OF ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following definitions are extracted from the September 27, 1985 U.S. Fish and Wildlife Service notice in the Federal Register:

LE--Taxa formally listed as endangered.

LT--Taxa formally listed as threatened.

PE--Taxa proposed to be formally listed as endangered.

PT--Taxa proposed to be formally listed as threatened.

S--Synonyms.

C1--Taxa for which the Service currently has on file substantial information on biological vulnerability and threat(s) to support the appropriateness of proposing to list them as endangered or threatened species.

C2--Taxa for which information now in possession of the Service indicates that proposing to list them as endangered or threatened species is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on file to support the immediate preparation of rules.

C3--Taxa that are no longer being considered for listing as threatened or endangered species. Such taxa are further coded to indicate three categories, depending on the reason(s) for removal from consideration.

3A--Taxa for which the Service has persuasive evidence of extinction.

3B--Names that, on the basis of current taxonomic understanding, usually as represented in published revisions and monographs, do not represent taxa meeting the Act's definition of "species".

3C--Taxa that have proven to be more abundant or widespread than was previously believed and/or those that are not subject to any identifiable threat.

STATE STATUS-PLANTS

PX - Pennsylvania Extirpated - A classification of plant species believed by the Department to be extinct within this Commonwealth. These plant species may or may not be in existence outside this Commonwealth. If plant species classified as Pennsylvania Extirpated are found to exist, the species automatically will be considered to be classified as Pennsylvania Endangered.

PE - Pennsylvania Endangered - A classification of plant species which are in danger of extinction throughout most or all of their natural range within this Commonwealth, if critical habitat is not maintained or if the species is greatly exploited by man. This classification shall also include any populations of plant species that have been classified as Pennsylvania Extirpated, but which subsequently are found to exist in this Commonwealth.

Appendix I (Continued.)

PT - Pennsylvania Threatened - A classification of plant species which may become endangered throughout most or all of their natural range within this Commonwealth, if critical habitat is not maintained to prevent further decline in this Commonwealth, or if the species is greatly exploited by man.

PR - Pennsylvania Rare - A classification of plant species which are uncommon within this Commonwealth. All species of native wild plants classified as Disjunct, Endemic, Limit of Range and Restricted are included within the Pennsylvania Rare classification.

PV - Pennsylvania Vulnerable - A classification of plant species which are in danger of population decline within Pennsylvania because of their beauty, economic value, use as a cultivar, or other factors which indicate that persons may seek to remove these species from their native habitats.

TU - Tentatively Undetermined - A classification of plant species which are believed to be in danger of population decline, but which cannot presently be included within another classification due to taxonomic uncertainties, limited evidence within historical records, or insufficient data.

N - None - A classification of plant species which are believed to be endangered, rare, or threatened, but which have not yet been included within another classification due to delays created by required regulatory review processes.

STATE STATUS-ANIMALS

The following state statuses are used by the Pennsylvania Game Commission and the Pennsylvania Fish and Boat Commission for animal species:

LE - Listed Endangered

Game Commission - Species in imminent danger of extinction or extirpation throughout their range in Pennsylvania if the deleterious factors affecting them continue to operate. These are: 1) species whose numbers have already been reduced to a critically low level or whose habitat has been so drastically reduced or degraded that immediate action is required to prevent their extirpation from the Commonwealth; or 2) species whose extreme rarity or peripherality places them in potential danger of precipitous declines or sudden extirpation throughout their range in Pennsylania; or 3) species that have been classified as "Pennsylvania Extirpated", but which are subsequently found to exist in Pennsylvania as long as the above conditions 1 or 2 are met; or 4) species determined to be "Endangered" pursuant to the Endangered Species Act of 1973, Public law 93-205 (87 Stat. 884), as amended.

Fish and Boat Commission - Endangered Species are all species and subspecies of fish[1] which: (1) have been declared by the Secretary of the United States Department of the Interior to be threatened with extinction and appear on the Endangered Species List or the Native Endangered Species list published in the Federal Register; or, (2) have been declared by the executive director (PaFC) to be threatened with extinction and appear on the Pennsylvania Endangered Species List published in the Pennsylvania Bulletin.

LT - Listed Threatened

Game Commission - Species that may become endangered within the foreseeable future throughout their range in Pennsylvania unless the causal factors affecting the organism are abated. These are: 1) species whose populations within the Commonwealth are decreasing or have been heavily

depleted by adverse factors and while not actually endangered, are still in critical Appendix I (Continued.)

condition; or 2) species whose populations may be relatively abundant in the Commonwealth but are under severe threat from serious adverse factors that have been identified and documented; or 3) species whose populations are rare or peripheral and in possible danger of severe decline throughout their range in Pennsylvania; or 4) species determined to be "Threatened" pursuant to the Endangered Species Act of 1973, Public law 93-205 (87-Stat. 884), as amended, that are not listed as "Pennsylvania Endangered".
Appendix I (Continued.)

Fish and Boat Commission - Threatened Species are all species and subspecies of fish[1] which: (1) have been declared by the Secretary of the United States Department of the Interior to be in such small numbers throughout their range that they may become endangered if their environment worsens and appear on a Threatened Species List published in the Federal Register; or, (2) have been declared by the executive director (PaFC) to be in such small numbers throughout their range that they may become endangered if their environment worsens and appear on the Pennsylvania Threatened Species List published in the Pennsylvania Bulletin.

[1] The word "fish" when used as a noun under Fish and Boat Commission definitions includes all game fish, fish bait, bait fish, amphibians, reptiles, and aquatic organisms.

TNC GLOBAL ELEMENT RANKS

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.

G2 = Imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.

G3 = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range or because of other factors making it vulnerable to extinction throughout its range; in terms of occurrences, in the range of 21 to 100.

G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.

G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

GH = Of historical occurrence throughout its range, i.e., formerly part of the established biota, with the expectation that it may be rediscovered (e.g., Bachman's Warbler).

GU = Possibly in peril range wide but status uncertain; need more information.

GX = Believed to be extinct throughout its range (e.g., Passenger Pigeon) with virtually no likelihood that it will be rediscovered.

TNC STATE ELEMENT RANKS

S1 = Critically imperiled in state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation from the state.

S2 = Imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state.

S3 = Rare or uncommon in state (on the order of 21 to 100 occurrences).

S4 = Apparently secure in state, with many occurrences.

S5 = Demonstrably secure in state and essentially ineradicable under present conditions.

SA = Accidental in state, including species which only sporadically breed in the state.

SE = An exotic established in state; may be native elsewhere in North America (e.g., house finch).

SH = Of historical occurrence in the state with the expectation that it may be rediscovered.

SN = Regularly occurring, usually migratory and typically nonbreeding species for which no significant or effective habitat conservation measures can be taken in the state.

SR = Reported from the state, but without persuasive documentation which would provide a basis for either accepting or rejecting (e.g., misidentified specimen) the report.

SRF = Reported falsely (in error) from the state but this error persisting in the literature.

SU = Possibly in peril in state but status uncertain; need more information.

SX = Apparently extirpated from the state.

Note: A "T" appearing in either the G Rank or S Rank, indicates that the infraspecific taxa is being ranked differently than the species. A "Q" in the rank indicates that there is taxonomic uncertainty about a taxa being ranked (i.e., taxa is being accepted as a full species or natural community in this list but may be treated as a variety or form by others). A "?" after a "G" or "S" indicates that the rank is uncertain at this time.

APPENDIX II
PENNSYLVANIA NATURAL DIVERSITY
ELEMENT OCCURRENCE QUALITY-RANKS

Quality Rank*	Explanation
A	Excellent occurrence: all A-rank occurrences of an element merit quick, strong protection. An A-rank community is nearly undisturbed by humans, or has nearly recovered from early human disturbance; further distinguished by being an extensive, well-buffered occurrence. An A-rank population of a sensitive species is large in area and number of individuals, stable, if not growing, shows good reproduction, and exists in natural habitat.
B	Good occurrence: protection of the occurrence is important to the survival of the element in Pennsylvania, especially if very few or no A-rank occurrences exist. A B-rank community is still recovering from early disturbance or recent light disturbance, or is nearly undisturbed but is less than A-rank because of significantly smaller size, poorer buffer, etc. A B-rank population of a sensitive species is at least stable, in a minimally disturbed habitat, and of moderate size and number.
C	Fair occurrence: protection of the occurrence helps conserve the diversity of a region's or county's biota and is important to state-wide conservation if no higher-ranked occurrences exist. A C-rank community is in an early stage of recovery from disturbance, or its structure and composition have been altered such that the original vegetation of the site will never rejuvenate, yet with management and time partial restoration of the community is possible. A C-rank population of a sensitive species is in a clearly disturbed habitat, small in size and/or number, and possibly declining.
D	Poor occurrence: protection of the occurrence may be worthwhile for historical reasons or only if no higher ranked occurrences exist. A D-rank community is severely disturbed, its structure and composition been greatly altered, and recovery to original conditions, despite management and time, essentially will not take place. A D-rank population of a sensitive species is very small with a high likelihood of dying out or being destroyed, and exists in a highly disturbed and vulnerable habitat.
E	Verified as extant, but has not been given a rank; additional information needed to evaluate quality.

---

* Intermediate ranks may also be assigned.

APPENDIX III

THE NATURE CONSERVANCY
POTENTIAL NATURAL AREA SURVEY FORM

COUNTY_____ NO.

QUAD NAME/CODE:

Site Name:_____ PHOTO NO./DATE:

Location:_____ Township:

Air Survey Surveyors:_____ Date:

	FOREST AGE			CUTTING			GRAZING			RECVRY POT			PRIORITY*		
	yng	mat	old	lt	hvy	clr	lt	mod	hvy	gd	fr	pr	hi	med	lo
Wetland															
Marsh															
Meadow															
Shrub															
Seep															
Fen															
Bog															
Pond Shore															
Conifer															
Hdw-Cnfr															
Hardwood															
Floodpln															
Upland															
Ser Barr															
Gras Land															
Lim Barr															
Rck Glade															
Pine Sav															
Oak Sav															
Pine For															
Oak For															
Hdw For															
Hdw-Cnfr															
Cliff															

*E=Eliminate

Ground Survey Surveyors:_____ Date:

Community Type	Eliminate	Notable	Natural	Quality-Rank

Comment:

Appendix III (Concluded.)

THE NATURE CONSERVANCY
POTENTIAL NATURAL AREAS SURVEY FORM--NATURAL COMMUNITY

NATURAL COMMUNITY (C rank or better)
Map the exact boundary around ranked portions of natural community.
EO-RANK:_____WHY?

COMMON PLANTS (or attach species list):

OTHER PLANTS:

DOMINANTS OF THE PLANT COMMUNITIES (PC) IN THE NATURAL COMMUNITY:
1.
2.
3.
4.
SIGNS OF DISTURBANCE:

SPECIAL PLANT (map) FREQUENCY/HOW MANY? IN HOW MUCH AREA PC#

ANIMALS:

APPENDIX IV
RECOMMENDED NATURAL AREA FIELD SURVEY FORM

Surveyor:_____Address & Phone

Date of Observation_____Site Name

Quadrangle Name_____ Exact Location of Site (please be specific & include a map or sketch)

Owner:

Owners Attitude Toward Conservation:

Site Elevation:_____ Size of Site (acres):

Source of Lead:

Current Land Use:

Type of Area: ____Old Growth Forest; _____Marsh; _____Shrub Swamp;
___Forested Swamp; ____Bog; ____Natural Pond.
Written Description: Try to convey a mental image of the site features (including vegetation, significant animals & plants, aquatic features, land forms, geologic substrata, scenic qualities, etc.):

Evidence of Disturbance:

Site Condition Compared to Your Last Visit:

Please attach any additional information, species list, etc.
Please send completed report forms to Pennsylvania Science Office
of The Nature Conservancy, 34 Airport Drive, Middletown, PA 17057
(717)948-3962. Additional forms may be obtained from this office. Thank you for your contribution.

APPENDIX V.
CLASSIFICATION OF NATURAL COMMUNITIES
IN PENNSYLVANIA
(DRAFT-1992)

COMMUNITY NAME	MAP CODE	GLOBAL RANK*	STATE RANK*
ESTUARINE COMMUNITIES			
DEEPWATER SUBTIDAL COMMUNITY	EAA	G?	S1
SHALLOW-WATER SUBTIDAL COMMUNITY	EAB	G?	S1
FRESHWATER INTERTIDAL MUDFLAT	EBA	G3G4	S1
FRESHWATER INTERTIDAL MARSH	ECA	G3G4	S1
RIVERINE COMMUNITIES			
LOW-GRADIENT EPHEMERAL/INTERMITTENT CREEK	RAA	G?	S5
LOW-GRADIENT CLEARWATER CREEK	RAB	G?	S3S4
LOW-GRADIENT CLEARWATER RIVER	RAC	G?	S2S3
LOW-GRADIENT BROWNWATER CREEK	RAD	G?	S2S3
MEDIUM-GRADIENT EPHEMERAL/INTERMITTENT CREEK	RBA	G?	S5
MEDIUM-GRADIENT CLEARWATER CREEK	RBB	G?	S3
MEDIUM-GRADIENT CLEARWATER RIVER	RBC	G?	S?
MEDIUM-GRADIENT BROWNWATER CREEK	RBD	G?	S3
HIGH-GRADIENT EPHEMERAL/INTERMITTENT CREEK	RCA	G?	S5
HIGH-GRADIENT CLEARWATER CREEK	RCB	G?	S3
HIGH-GRADIENT CLEARWATER RIVER	RCC	G?	S?
HIGH-GRADIENT BROWNWATER CREEK	RCD	G?	S?
WATERFALL AND PLUNGEPOOL	RDA	G?	S3S4
SPRING COMMUNITY	REA	G?	S1S2
SPRING RUN COMMUNITY	REB	G?	S1S2
LACUSTRINE			
GLACIAL LAKE	LAA	G?	S1
NONGLACIAL LAKE	LAB	G?	S2
ARTIFICIAL LAKE	LAC	--	--
NATURAL POND	LBA	G?	S2S3
ARTIFICIAL POND	LBB	--	--
STABLE NATURAL POOL	LCA	G?	S?
EPHEMERAL/FLUCTUATING NATURAL POOL	LCB	G?	S2
ARTIFICIAL POOL	LCC	--	--
EPHEMERAL/FLUCTUATING LIMESTONE SINKHOLE	LCD	G?	S1

Appendix V (Continued.)

COMMUNITY NAME	MAP CODE	GLOBAL RANK*	STATE RANK*
PALUSTRINE COMMUNITIES			
ACIDIC BROADLEAF SWAMP	PAA	G5	S1S2
CIRCUMNEUTRAL BROADLEAF SWAMP	PAB	G?	S2S3
BOREAL CONIFER SWAMP	PAC	G?	S2
NORTHERN CONIFER SWAMP	PAD	G?	S3S4
BROADLEAF-CONIFER SWAMP	PAE	G?	S3S4
FLOODPLAIN SWAMP	PAF	G?	S1
CALCAREOUS SEEPAGE SWAMP	PAG	G?	S1
ACIDIC SHRUB SWAMP	PAH	G5	S3
CIRCUMNEUTRAL SHRUB SWAMP	PAJ	G?	S3
GRAMINOID MARSH	PBA	G?	S3
ROBUST EMERGENT MARSH	PBB	G?	S2
MIXED GRAMINOID-ROBUST EMERGENT MARSH	PBC	G?	S2S3
CALCAREOUS MARSH	PBD	G?	S1
GLACIAL BOG	PCA	G?	S2S3
NONGLACIAL BOG	PCB	G?	S3
RECONSTITUTED BOG	PCC	--	--
POOR FEN	PCD	G?	S?
SHRUB FEN	PDA	G2G3	S1
BASIN GRAMINOID-FORB FEN	PDB	G?	S1
HILLSIDE GRAMINOID-FORB FEN	PDC	G?	S1
CIRCUMNEUTRAL SEEP COMMUNITY	PEA	G?	S3?
CALCAREOUS SEEP COMMUNITY	PEB	G?	S1
ACIDIC SEEP COMMUNITY	PEC	G?	S3?
RIVERSIDE SEEP COMMUNITY	PED	G?	S2?
TERRESTRIAL COMMUNITIES			
BOREAL FOREST	TAA	G?	S?
NORTHERN CONIFER FOREST	TBA	G5	S3S4
NORTHERN HARDWOOD FOREST	TBB	G?	S3S4
NORTHERN HARDWOOD-CONIFER FOREST	TBC	G?	S3
XERIC CENTRAL HARDWOOD FOREST	TCA	G?	S5
XERIC CENTRAL CONIFER FOREST	TCB	G?	S3S4
XERIC CENTRAL HARDWOOD-CONIFER FOREST	TCC	G?	S3
PITCH PINE-SCRUB OAK BARRENS	TCD	G2G3	S1S2
DRY-MESIC ACIDIC CENTRAL FOREST	TCE	G?	S5
DRY-MESIC CALCAREOUS CENTRAL FOREST	TCF	G?	S2S3
MESIC CENTRAL FOREST	TCG	G?	S2
TALUS SLOPE FOREST	TCH	G?	S2?
COASTAL PLAIN FOREST	TEA	G?	S1
FLOODPLAIN FOREST	TFA	G?	S2
RIVER GRAVEL COMMUNITY	TGA	G?	S4S5
EASTERN SERPENTINE BARRENS	THA	G2	S1
APPALACHIAN SHALE BARREN	THB	G?	S1

Appendix V (Continued.)

COMMUNITY NAME	MAP CODE	GLOBAL RANK*	STATE RANK*
APPALACHIAN SAND BARREN	THC	G?	S?
BOULDER FIELD	THD	G?	S5
CALCAREOUS CLIFF COMMUNITY	THE	G?	S2
ACIDIC CLIFF COMMUNITY	THF	G?	S5
SHALE CLIFF COMMUNITY	THG	G?	S2
RIVERSIDE OUTCROP COMMUNITY	THJ	G?	S1S2
CALCAREOUS RIVERSIDE OUTCROP COMMUNITY	THJA	G?	S1
ACIDIC ROCKY SUMMIT COMMUNITY	THK	G?	S1S2
CALCAREOUS ROCKY SUMMIT COMMUNITY	THM	G2?	S1
SUBTERRANEAN COMMUNITIES			
SOLUTION CAVE TERRESTRIAL COMMUNITY	SAA	G?	S3
SOLUTION CAVE AQUATIC COMMUNITY	SAB	G?	S3
TECTONIC CAVE COMMUNITY	SAC	G?	S3S4
TALUS CAVE COMMUNITY	SAD	G?	S2S4
DISTURBED COMMUNITIES			
BARE SOIL	DAA	--	--
MEADOW/PASTURELAND	DAB	--	--
CULTIVATED LAND	DAC	--	--
SUCCESSIONAL FIELD	DAD	--	--
YOUNG MICELLANEOUS FOREST	DAE	--	--
CONIFER PLANTATION	DAF	--	--

* Not all natural communities have been assigned a global or state rank; disturbed or artificial communities are not assigned ranks.

Appendix V (Continued.)

The following is a brief description and list of species typically found in the natural communities of Lycoming County, Pennsylvania.

Boreal Conifer Swamp (PAC): A forest community dominated by northern conifers such as black spruce, larch, and balsam fir on a permanently saturated substrate of shallow to deep peat. Acidic waters influence the community. Small open bog areas are frequently associated with this type.

Black spruce (Picea mariana)
Larch or tamarack (Larix laricina)
Balsam fir (Abies balsamea)
Sheep laurel (Kalmia angustifolia)
Highbush blueberry (Vaccinium corymbosum)
Cinnamon fern (Osmunda cinnamomea)
Sphagnum moss (Sphagnum spp.)

Ephemeral/Fluctuating Limestone Sinkholes (LCD): A community inhabiting limestone sinkholes where water levels fluctuate dramatically, filling and draining in relatively short periods. Water comes from runoff, direct precipitation and from springs/ underground streams. Because of the steep sides to these sinkholes and possibly because of the dramatic changes in water levels, vegetation is sparse.

Willow (Salix spp.)
Dogwood (Cornus spp.)
Sedge (Carex spp.)
Fairy shrimp (Amphipoda)

Ephemeral/Fluctuating Natural Pool (LCB): A community consisting of several to many small pools each inhabiting a basin of less than 0.5 acres, with a naturally fluctuating water level. Water levels fluctuate seasonally or semi-annually from dry or nearly dry to inundated. Water comes from runoff and direct precipitation. Vegetation ranges from none (dead-leaf ponds) to completely vegetated, species often are segregated into zones representing length of inundation. These woodland ponds are breeding areas for amphibians, aquatic insects and other invertebrates. A notable lack of fish is indicative of this type of community.

Broad-leaved cattail (Typha latifolia)
Sedge (Carex spp.)
Spike rush (Eleocharis spp.)
Bulrush (Scirpus spp.)
Rush (Juncus spp.)
Odonates (dragonflies and damselflies)
fairy shrimp (Amphipoda)

Appendix V (Continued.)

High-gradient Clearwater Creek (RCC): This stream community drains a watershed of less than 200 square miles, is less than 50 feet wide, and has a drop of more than 10 feet per mile. The substrate is composed of bedrock, boulders, and alluvial deposits of sand and gravel; riffles and pools are common. The water is generally highly oxygenated and relatively cold.

Brook trout (Salvelinus fontinalis)
Mayflies (order Ephemeroptera)

Northern Appalachian Calcareous Rocky Summit (THM): aka Limestone Glade, this community inhabits xeric ridgetops and upper, south-facing slopes where the soil is thin and composed of gravel and rocks derived from calcareous bedrock, typically limestone. Openings in the tree and shrub canopy are common and the openings may be dominated by bare soil or herbaceous vegetation.

Shadbush (Amelanchier spp.)
Red cedar (Juniperus virginiana)
Horse gentian (Triosteum aurantiacum)
Northern prickly ash (Xanthoxylum americanum)
Side-oats grama (Bouteloua curtipendula)
Thimbleweed (Anemone virginiana)
Oak (Quercus spp.)

Northern Hardwood Forest (TBB): This forest community occurs on moderately well drained soils and is dominated by northern hardwood trees with an mixture of northern conifers. The herbaceous flora tends to be low in diversity.

Beech (Fagus grandifolia)
Sugar maple (Acer saccharum)
Yellow birch (Betula allegheniensis)
Red maple (Acer rubrum)
Canada hemlock (Tsuga canadensis)
Black cherry (Prunus serotina)

Ridgetop Dwarf-tree Forest (TCD): A forest community on the tops of high ridges where thin, infertile soils, extreme temperatures, and high wind velocities create harsh growing conditions. The forest is characterized by stunted oaks (less than 15 feet) and shrubs. Adverse growing conditions, successive fires, and, in some cases, cutting have acted to arrest succession in these areas. On the Appalachian Plateau, this community type refers to the "pitch pine/scrub oak barrens".

Scrub oak (Quercus ilicifolia)
Chestnut oak (Q. montana)
Pitch pine (Pinus rigida)
Sassafras (Sassafras albidum)
Pin cherry (Prunus pensylvanica)
Lowbush blueberry (Vaccinium angustifolium)
Black huckleberry (Gaylussacia baccata)
Black chokeberry (Aronia melanocarpa)
Common hairgrass (Deschampsia flexuosa)
Poverty grass (Danthonia spicata)
Pennsylvania sedge (Carex pensylvanica)

Xeric Central Hardwood-Conifer Forest (TCC): This forest community occurs on excessively drained, infertile, thin, sandy, gravelly or rocky soils of steep or upper slopes, south-facing ridges and flats. It is characterized by relatively equal amounts of oaks and pine.

Scrub oak (Quercus ilicifolia)
Black oak (Q. velutina)
Chestnut oak (Q. montana)
Pitch pine (Pinus rigida)
Table-mountain pine (P. pungens)
Virginia pine (P. virginiana)
Black huckleberry (Gaylussacia baccata)
Low sweet blueberry (Vaccinium angustifolium)
Three-awn grass (Aristida spp.)
Pennsylvania sedge (Carex pensylvanica)

APPENDIX VI
SPECIAL PLANTS AND ANIMALS OF LYCOMING COUNTY

PLANTS

SCIENTIFIC NAME	COMMON NAME
Aster nemoralis	bog aster
Bouteloua curtipendula	tall gramma grass
Carex paupercula	bog sedge
Carex typhina	cattail sedge
Cryptogramma stelleri	slender rock-brake (a fern)
Gaultheria hispidula	creeping snowberry
Potamogeton perfoliatus	clasping-stem pondweed
Potamogeton vaseyi	Vasey's pondweed
Scirpus ancistrochaetus	northeastern bullrush
Solidago rigida	hard-leaved goldenrod
Taxus canadensis	Canada yew

ANIMALS

SCIENTIFIC NAME	COMMON NAME
Apharetra purpurea	a noctuid moth
Aeshna mutata	spring blue darner
Anax longipes	long-legged green darner
Dorocordulia lepida	elegant skimmer
Epiglaea apiata	pointed sallow
Lycaena epixanthe	bog copper
Neotoma floridana magister	eastern woodrat
Myotis leibii	eastern small-footed bat
Myotis septentrionalis	northern long-eared bat
Papaipema sp. #1	Amianthemum bulb borer
Sorex palustris albibarbis	water shrew
Xylotype capax	barrens xylotype

Vertebrate Characterization Abstracts

Myotis leibii eastern small-footed bat

The eastern small-footed bat is apparently rare throughout its range from southern Ontario, Quebec and Maine to northern Georgia and west to Arkansas and Oklahoma. Distribution is quite spotty except in parts of Appalachia. Its habitat is in hilly or mountainous terrain, in or near forests and in the vicinity of streams or ponds which serve as foraging areas. Summer roosts include a variety of sites from caves to buildings. During the winter, the species hibernates only in caves and mine tunnels where temperatures are near freezing and humidity is relatively low. Although occasionally found deep in the caves, more often the bats occur near the entrance, usually in small colonies (less than 50), making it susceptible to disturbance. The bats breed in the fall but fertilization is delayed until spring. Gestation is about 2 months and litter size is one young born in early July.

Gating hibernacula (wintering sites) from November through March can prevent disturbance and maintaining a wooded buffer above and around the cave entrance can help to prevent changes in the temperature, air flow and humidity of the cave. In addition, it has been suggested that known foraging areas (usually streams and ponds) be protected from pesticide use which could adversely affect the bat's food supply (i.e., insects).

Myotis septentrionalis northern long-eared bat

The northern long-eared bat is widely distributed in eastern North America ranging from Hudson Bay south to Alabama and Georgia. Western populations extend to British Columbia and the Northwest Territories. In Pennsylvania, the bats occur in a handful of caves during the winter months. During the summer months, the bat is probably present in suitable habitat statewide, but is only known to occur in about one dozen scattered counties.

The northern long-eared bat is closely associated with deciduous/ coniferous forests. It may occur singly or in small colonies during the year. In the summer, it occurs under loose tree bark or in buildings; small nursery colonies typically occur in manmade structures or tree cavities. The species becomes most gregarious in the winter with congregations of 300-350 individuals. It hibernates in caves and mines which have a high relative humidity, calm air flow, and temperatures near 40^{o} F. The bats breed during September and October but fertilization is delayed until spring. Gestation ranges from 50 to 60 days. Litter size is usually one young born within the period mid-June to early July.

This species preys on flying insects, foraging in upland forests above and below the canopy. The foraging activities begin just before dusk and prior to dawn. Unlike other Myotis species, it is not dependent upon water bodies as foraging areas.
Appendix VI (Concluded.)

Neotoma floridana magister eastern woodrat

The eastern woodrat is distributed over much of the eastern U.S. from southern New York and northern New Jersey south through the Appalachians to northern Alabama. In Pennsylvania its habitat is primarily rocky cliffs and talus slopes where it builds nests in rocky crevices and caves. The nests are commonly used in successive years and may become quite large. The woodrat stores food in its nest; food consists of seeds, nuts, fruits, fungi and occasionally invertebrates. Woodrats are solitary and where found, densities are usually less than one per acre. They are primarily nocturnal, are active all year round and rarely range over more than an acre. Gestation is 33 to 35 days with a litter size of between one and six young. Woodrats may have up to three litters per year and become sexually active at 5 to 6 months. In Pennsylvania the first litter is usually born in late April or early May.

Eastern woodrats have been declining in recent years, possibly due to several factors including: loss of acorns because of gypsy moth defoliation, human disturbance, and a disease transmitted by raccoons. The Pennsylvania Game Commission has set forth provisional protection guidelines that include restricting access to public areas that are known to be inhabited by woodrats, maintaining contiguous habitat including no tree cutting within 200 meters of an active colony, and maintaining 100m-wide corridors of habitat between stream bottoms and colonies.

Sorex palustris albibarbis water shrew

The water shrew ranges from southern Alaska to California, the Rockies, the northern Great Lakes region, and New England with a disjunct population occurring in the middle Appalachians. In Pennsylvania, the species occurs in small pockets of optimal habitat primarily in the northeastern part of the state.

The water shrew is most abundant along small cold stream with thick overhanging riparian growth. Den sites are near water in underground burrows, rafted logs, beaver lodges, and other areas providing shelter. The surrounding forests are most often characterized by hemlock, spruce, and rhododendron. The water shrew depends primarily on aquatic insects and may take other small invertebrates when available. It hunts under and on top of the Appendix VI (Concluded.)

water. Reportedly, it has been seen running across the water surface. Generally, it is active throughout the day and in every season.

This species breeds from February to August. Gestation probably takes 3 weeks. Litter size ranges from 4 to 8 and averages 6. Two to three litters may be produced each year. The water shrew is sexually mature in 9 months and usually does not survive past the second summer.