



SCHAGHTICOKE TRIBAL NATION CONNECTICUT

**HOUSATONIC RIVER NATURAL RESOURCES RESTORATION PROJECT
SCHAGHTICOKE INDIAN RESERVATION
KENT CONNECTICUT**

**Project Proposal:
Schaghticoke Indian Reservation Waterfowl and Migratory Bird Study for Habitat Creation**

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JUN 11 2007

INLAND FISHERIES

00016

Housatonic River Basin Natural Resources Restoration Project
Natural Resources Trustee SubCouncil for Connecticut
Request for Supplemental Information (RSI)
INSTRUCTIONS

PART A: SPONSOR AND PROJECT SUMMARY FORM

Please read "Request for Supplemental Information (RFI) OVERVIEW" and this document,
"Request for Supplemental Information (RSI) INSTRUCTIONS" before completing this
form.

Part A must be completed using this "Sponsor and Project Summary Form"

SPONSOR INFORMATION

Type of Entity Check the box that best describes the sponsor.

- | | |
|---|--|
| ☐ Private individual | ☐ Municipal government |
| ☒ Non-profit organization | ☐ Corporation or Business |
| ☐ State government | ☐ County government |
| ☐ Federal government | ☐ Academic Institution |
| ☒ Tribal government | ☐ Other (explain) |

Authorized Representative of Sponsor

CHARLES E KILSON

Name

STN ENVIRONMENTAL COMMITTEE
CHAIRMAN

Title

Address

10 CROWN VIEW DRIVE

City

State

Zip

SANDY HOOK CT 06482

Phone

203-426-0879

Email

cekent731@earthlink.net

Contact Person (if different from Authorized Representative):

JOSEPH C VELICKY

Name

STN SECRETARY / ENVIRONMENTAL
COMMITTEE

Title

Address

175 Westview RD

City

State

Zip

SOUTHBRURY CT 06488

Phone

203-262-1265

Email

mjbvelicky@juno.com

00016

Project Name Provide a brief working name:

SCHAGHTICOKE INDIAN RESERVATION WATERFOWL AND MIGRATORY
BIRD STUDY FOR HABITAT CREATION

Project Location

Attach an 8.5 x 11-inch map or copy of an aerial photograph showing project location and extent. Include pertinent topographic and geographic information, a scale, and north arrow.

State(s), Municipality/ies:

SCHAGHTICOKE INDIAN RESERVATION
WEST CONNECTICUT

Longitude for approximate center of project area:

41°-41'15.46" NORTH

Latitude for approximate center of project area:

73°-30'12.49" WEST

NOTE: If a specific location(s) has/have not been selected yet, include in Part C a narrative describing how project location(s) will be selected.

Restoration Priority Category See Appendix C of these Instructions for Restoration Priority Category Descriptions

Primary Category. Check the restoration category that is the primary goal of the project.
Check one box.

- ☐ Aquatic Natural Resources Restoration/Enhancement
☒ Riparian & Floodplain Natural Resources Restoration/Enhancement
☐ Restoration/Enhancement of Recreational Uses of Natural Resources

Secondary Categories. Check all relevant boxes.

- ☒ Aquatic Natural Resources Restoration/Enhancement
☒ Riparian & Floodplain Natural Resources Restoration/Enhancement
☐ Restoration/Enhancement of Recreational Uses of Natural Resources

List Specific Injured Natural Resources and/or Impaired Natural Resource Services to Benefit from Project

THE SCHAGHTICOKE INDIAN RESERVATION HAS LOST HABITAT FOR RUFFLED GROUSE, WOODCOCK AND WATERFOWL DUE TO FLOODS AND FIRES. HABITAT RESTORATION WOULD BENEFIT ALL NATURAL RESOURCES ON THE RESERVATION

Project Budget Summary

Complete the table below to summarize the budget information that is detailed in Part D: Project Budget Narrative and Forms. Sponsors are advised to complete Part D (Project Budget Narrative and Forms) before filling in the table below.

Housatonic River NRD Funds – Requested	Other Contributions (Committed)	Other Contributions (Not Committed)	Total Project Cost (boxes 1+2+3)
1. From Part D, Table 2, Box 5 \$1679.83	2. From Part D, Table 2, Box 6	3. From Part D, Table 2, Box 7	4. From Part D, Table 2, Box 8
Amount of Other Contributions to Be Considered as Cost-Matching to NRD Fund Request			
5.			

Authorizing Statement

I hereby declare that the information included in this project submission and all attachments is true, complete, and accurate to the best of my knowledge, and that the proposed project complies with all applicable state, local, and federal laws and regulations.

Charles E Kilson 6/1/07
Signature of Sponsor or Sponsor Representative Date
Charles E Kilson
Name of Sponsor or Sponsor Representative
(Type or print clearly)

**HOUSATONIC RIVER NATURAL RESOURCES RESTORATION PROJECT
SCHAGHTICOKE INDIAN RESERVATION
KENT CONNECTICUT**

**Project Proposal:
Schaghticoke Indian Reservation Waterfowl and Migratory Bird Study for Habitat Creation**

PART B. PROJECT ABSTRACT

The Schaghticoke Tribal Nation wishes to study the resident Ruffed Grouse, Woodcock and migratory waterfowl populations on their tribal reservation. The objective of this study will be to create a habitat for these species. Past years of Housatonic River flooding has created erosion and built up sediment along the river's banks, changing the species' environments.

Ruffed Grouse and Woodcock, at one time abundantly present on the reservation, are no longer seen there. Both birds are currently under watch by the State of Connecticut due to their decreasing population. With help from the Department of Environmental Protection's biologists and wildlife management staff, the Grouse habitat will be recreated using new tree seedlings, and they will return. Certain tree seedlings will also increase earthworm production, the main component of the Woodcock's diet. Duck houses should also be established along the river at the reservation to give shelter to Wood Ducks and Hooded Mergansers, whose natural habitat has also been affected by the river's changes. Establishing new ground cover plantings will aid all the species with a good food source.

Tribal members would provide voluntary labor. A period of time would be needed to assess whether replacement or additional seedlings would be necessary.

**HOUSATONIC RIVER NATURAL RESOURCES RESTORATION PROJECT
SCHAGHTICOKE INDIAN RESERVATION
KENT CONNECTICUT**

Project Proposal:

Schaghticoke Indian Reservation Waterfowl and Migratory Bird Study for Habitat Creation

PART C. PROJECT NARRATIVE

1.1 Project Goals and Objectives

Flooding and severe forest fires have caused major environmental changes to the flood plain of the Housatonic River bordering the Schaghticoke Indian Reservation. The primary goal and objective of this proposal is to restore and replace lost habitat conditions. Ruffed Grouse, Woodcock and waterfowl populations have dwindled in this area. Restoring the habitat conditions would benefit these species and make the area attractive for their return. Replanting lost tree saplings on which Grouse and Woodcock thrive would establish a habitat that can sustain their presence. Duck houses would attract and provide shelter to Wood Ducks and Hooded Mergansers no longer nesting in this area.

The overall approach to this project is reseeding by tribal members, using Department of Environmental Protection Wildlife Management biologists as an advisory resource. Biologists have advised the Schaghticoke Tribal Nation's Environmental Committee as to the type of tree seedlings necessary for the birds' environment. The Ruffed Grouse Society, in coordination with University of Connecticut's Extension Program, has a Landowner's Coverts Project, which allows landowners or representatives to learn about practice to help in good forest and wildlife stewardship. Tribal members have applied for this program, which would be available in 2008. Department of Environmental Protection's Forestry Division has been contacted for information on replanting tree seedlings. Another resource is the Ruffed Grouse Society, which sells a perennial ground cover designed for Grouse habitat.

The project's schedule would be times with the season to plant the new seedlings – white oak, poplar and alder – in areas where they are needed. Ground cover would be started in spring so it has time to establish itself after planting. The next phase would be setting up the new duck houses along the river. Ducks have their young in the spring; therefore it would be necessary to install the houses in the fall.

The major phase and milestone of this project will be establishing the new seedlings and ground cover in damaged areas. Tribal members would perform all labor. The Tribe's Environmental Committee, with the help of other tribal members, will perform monitoring of the seedlings' growth. The second phase will be installing the duck houses along the river. Tribal members will maintain these houses. A third phase, if needed, will be replacing any seedlings that have failed or been damaged.

One monitoring parameter of this project will be the seedlings' new growth, as observed by tribal members. The seedlings will be vulnerable to environmental conditions making this parameter an important one. Once seeded, the ground cover will also be watched for any erosion from rain runoff. A second parameter will be observation through maintenance of the duck houses. This maintenance is necessary to protect the boxes from weather damage and predators. The first parameter will eventually prove whether the contingency plan is needed. The contingency plan is to re-seed any areas negatively affected by the environment. Not all tree seedlings survive the first planting and replanting may be necessary.

Since the area is tribal land and tribal members are providing the labor, no property agreements will be necessary. The project will not require regulatory approvals or permits because no waterways are being changed. A second fiscal year may be required to replant any lost tree saplings or ground cover that did not flourish.

A total of two to three acres need tree seedlings. One acre is a large area affected by tree fall. Trees fell as a result of the forest fire of 2001. This is the last area where Grouse were seen in 2004. Ground cover and seedlings will be used on this acre. The other two areas have some tree growth but also have been damaged by flooding. Groundcover and tree seedlings will also be necessary there, but to a lesser extent.

2.0 Evaluation Criteria Narrative

2.1 Relevance and Applicability of Project

2.1.1 Location of Project

The Schaghticoke Indian Reservation is located in Kent Connecticut along the Housatonic River, above the Derby Dam and north of Bull's Bridge Dam. The project's implementation area is on tribal land along the Housatonic watershed.

2.1.2 Natural Recovery Period

The reservation environment changes with river flooding and forest fires. A natural recovery period will be lengthy for burned areas that have suffered tree and undergrowth loss. Forest fires are a major problem when they occur; the worst happened in 1935 with a loss of 5,000 acres, and the most recent in 2001 with a loss of 500 acres. New growth has a chance to reestablish what has been lost without natural recovery. Restored habitat environments for Grouse and Woodcock may need years before the birds return. Significant flooding has also occurred in 1936, 1955 and 1982. Erosion and sediment buildup has prevented the area a chance to recover naturally; however, the result of this project will be an enhancement of the land's natural healing process. The environmental aid would not interrupt the natural recovery period, but aid it in its recovery. Establishing a ground cover for Grouse, Woodcock and ducks will make the area more attractive to them, and duck houses will provide shelter that is currently missing.

2.1.3 Sustainable Benefits

Although it will be slow to realize, benefits of this restoration project will be speedier recovery of land damaged by natural events, and the resulting reestablishment of environment friendly to Ruffed Grouse, Woodcock, and waterfowl. Grouse were seen in the area in high numbers before fire and flooding. New growth will attract the birds back to their previous area.

To sustain the project's effectiveness, land management courses through University of Connecticut's Extension System Coverts Program will train tribal members to further maintain the health of their historic land. In the future reseedling and maintenance of duck houses may be necessary to assure the species' attraction to the area.

2.1.4 Magnitude of Ecological Benefits

The ecological gain from this project will be the natural return of the named bird species to their former ground along the river bordering the reservation. Department of Environmental Protection's biologists have advised that a natural recovery of Grouse and Woodcock is a better solution than simply restocking the area. The restocking approach has not done well historically, but recreating the habitat with forest and land restoration will aid in the recovery. Land management will also help other animals on the reservation. Turkeys and white tail deer currently live on the land. A new re-growth of ground cover and trees will aid them as well. Endangered Timber Rattlesnakes have a large den on the reservation that was threatened by the forest fire in 2002. The fire also destroyed ground cover that is essential for them in hunting for small prey such as mice.

Technical problems that may surface would be orienting the planting schedule with the weather. Heavy rain will not help new seedlings or ground cover. If seedling arrival were delayed, the schedule would also need to be pushed back. Scheduling the planting to the tribal members efforts will also be adjusted in case of adverse weather. Installing the duck houses would have to be done in early fall, before the ground freezes.

2.1.5 Magnitude of Recreational Benefits

A recreational benefit of this proposal is that bird watcher's groups will be able to monitor the return of the species. The Western Connecticut Bird Watchers' Society is active in the Litchfield County area. Its members often drive through the area and could utilize the opportunity to observe grouse, woodcock or ducks, serving as a source of observation help in addition to that of tribal members. Schaghticoke Tribal Nation's Environmental Committee will collect information and provide documentation regarding progress of the environment and its species.

2.2 Technical Merit

2.2.1 Technical/Technological Feasibility

The restoration will consist of three phases. The first phase will be ordering and receiving white oak and poplar tree seedlings. The proposed area will be two to three acres of tribal land. Once the seedlings have been received, tribal members will plant them according to where they are needed. A barrier of netting with wooden stakes will be erected around the plants to protect them from animals.

The second phase will be establishing the ground cover necessary for Grouse, Woodcock and waterfowl. The Ruffed Grouse Society sells a trail mix seed program designed for Grouse habitat. It is an annual seed, which will establish a ground base. Tribal members will plant ground cover seed in areas where the vegetation needs augmentation.

The third phase will be installing Wood Duck houses along the edge of the river. Tribal members will set 4-inch by 4-inch posts in the ground and mount the houses on the posts. Because of the rising cost of lumber materials, pre-built duck houses will be purchased as a cost savings. Along with the duck houses tribal members will plant more ground cover. This cover is an annual waterfowl forage, which will give waterfowl another source of feed in their migration pattern.

Department of Environmental Protection biologists from the Franklin Office recommended using timber restoration methods to encourage the Grouse and Woodcock's return. This method has been used in different areas of Connecticut with variable success. The Ruffed Grouse Society, in conjunction with the Appalachian Cooperative Grouse Research Project performed a six-year study of areas with better ground vegetation showing that establishing this growth in early spring and summer led to more successful rearing of young grouse. The young grouse feed on insects for the first month of their life, and then will eat berries and oak nuts. Once mature, the white oak seedlings will produce this food for the habitat.

The Woodcock habitat consists of trees that will produce an earthworm base in the ground. DEP biologists have advised that Woodcock survive on a diet which is 75% to 80% comprised of earthworms. Once mature, poplar trees will sustain the area with the earthworms the woodcocks need.

Once established, the duck houses will become more familiar to the ducks in the area. State of Connecticut conservation officers monitor duck houses at lakes and ponds in the state. Duck populations are aided by the presence of duck houses since flooding and fires have damaged trees along the river.

The major uncertainty of this project is whether the Grouse and Woodcock indeed return to the area even though land and environment restoration is achieved. There is, however, a natural tendency for the environment to revert to the conditions before damage occurred so that birds will return. Complications and corrections would be the need to reestablish more seedlings to replace growth that didn't survive the first year. Ground cover may also have to be reseeded due to washout or wind-blown seed. A second fiscal year may be needed to replace what didn't survive the first. Another uncertainty is weather. Coordinating the labor force with cooperative weather will be a challenge. Hopefully there will be enough time and good weather for both to be successful.

2.2.2 Adverse Environmental Impact

Reservation land has been affected by environmental changes over the years. Flooding occurrences in 1936, 1955, 1982 and 2007 has changed the habitats of birds that once lived in the area. A number of factors have led to the decline of Woodcock and Grouse populations. Habitat was lost or destroyed, and breeding and wintering grounds are lost. According to DEP biologists the hunting mortality of Woodcock in Connecticut is not to blame. Pollution and contaminants are a factor in the decline. But the biggest threat is change and loss of habitat. Flooding in the area has caused sediment to travel to areas where tree and ground cover that once gave support to these birds is now gone. Forest fires have also had an impact on the land, the history of which dates back to 1892, when Schaghticoke Mountain was the site for active coaling. Fires in coal pits for iron production were documented as having burned down the side of the mountain into the reservation, destroying gardens of the tribal members. On May 25, 1917 the New Milford Times interviewed lifelong tribal resident George Cogswell. Cogswell stated a recent fire on the mountain had burned areas where Ruffed Grouse had ground nests, and most likely their young were lost. He also noted that past floods in the area caused duck populations to lose their nests to high water. Two other major fires occurred in the area: one in 1935 in which 5000 acres burned, and one in 2001 in which 500 acres burned.

We hope the completion and maturity of this project will influence bird populations to inhabit the area once again. Environmental changes have

impacted ground cover and tree growth, which the species use for food. New growth established in the wetland area, especially poplar trees, will provide another food source for Woodcock. When mature these trees will also help with natural flood control.

Timber Rattlesnakes have a large den on the reservation. This species is also on the endangered list in Connecticut, and hikers rarely report sightings of these snakes as they pass through the reservation. Their environment has also been impacted severely by fire in 2001 and flooding in 1982 and 2007. More ground cover lost this way will further threaten the species.

It is our hope that this project will help offset the impact to the environment from floods and fires. Historically the land has recovered somewhat from these events, but never fully. Our plan can assist the land with its own recovery.

2.2.3 Human Health and Safety

Our plans will not stop the largely natural occurrences of flood or fire, but they will enhance public safety. The Schaghticoke Tribal Nation's Environmental Committee is currently conducting a survey of its members regarding fish, game and native plant species found on the reservation, and follow living patterns from tribal residents of past years. This information will be included in the Environmental Protection Agency's site file for Rest of River in Connecticut. Resulting sightings from this project will be included in that agency's file. The EPA has advised that because of the forest fires there is a chance that dioxin is present in any erosion or runoff from those sites. Dioxin is a combination of toxins formed as by-products of industrial processes which have settled on land through air pollution. This condition would have a large impact on human health. Our project can reestablish ground cover and tree root systems previously lost. Through the reservation along the river there is a town road, which has had numerous rock, and tree slides, threatening passing cars.

A minor adverse impact could be realized in planting the seedlings. The seedlings are three to six inches in height with a root ball about one inch in diameter. A small garden trowel is all that will be needed to dig a small hole in the ground, place the seedling and replace the soil. In this process there would be minor disturbance of the sediment present. However, considering the small size of these seedlings, no harm should be caused.

2.2.4 Measurable Results

This project will aid land by replenishing environmental resources previously lost in flooding and fire. Tree seedlings transplanted to the reservation will in time provide necessary habitat conditions for native bird species. The effect of past erosion will be restored with new ground cover that will also benefit area waterfowl and create habitat-friendly areas for them.

A structural parameter for this project is the restoration of the land with new growth. It will not repair the 500 acres burned in 2001, nor will it repair flood damage from 1982 and 2007. It will, however, be a first step in returning Grouse and Woodcock to their original habitat area. A functional parameter for the project will be an increase of sightings of these birds on the reservation. The presence of duck houses will give shelter and reproductive nesting areas to Wood Ducks and Hooded Mergansers. An additional structural parameter is in creating the lost habitat for the endangered species on the reservation. Sightings of the Timber Rattlesnake are few since the 2001 fire burned through part of their

den. Therefore another functional parameter will be protecting an endangered species with habitat restoration.

A target value is establishing new plant growth in the area, the loss of which can be controlled with this project. Returning Grouse and Woodcock to the area is a natural event. Replacing destroyed trees and ground cover is a reference value. What exist now in certain locations are uprooted trees along the river and burned areas without ground cover. New growth can be compared to current conditions.

Monitoring and evaluation will be the responsibility of Schaghticoke Tribal Nation's Environmental Committee. Members of the Appalachian Trail Conference will be asked to report any sightings of Grouse or Woodcock as they hike through the reservation. This trail is heavily used and these reports will be essential. The Connecticut chapter of this organization also maintains the trail, and those who perform that work will be asked to report sightings to the Environmental Committee. The Western Connecticut Bird Watchers Society, the Connecticut Audubon Society, and the Connecticut chapter of Ducks Unlimited are all active in the area and can help by reporting sightings and observations.

Lastly, tribal members will be asked to watch for new growth and bird sightings on the reservation. Surveys being conducted for the EPA will be a resource for further evaluation of progress.

The Environmental Committee will collect the data and use it to monitor project results. The information will show if new growth has been established successfully or if replanting is necessary. Tribal members will inspect duck houses for signs of use. We will also share information with DEP's Wildlife and Waterfowl biologists, who are currently watching the state's population of Grouse and Woodcock.

A concern in this project will be maintaining the new seedlings. A contingency plan for replanting will be in place if any unexpected environmental event affects their taking root. Tribal members who attend UCONN's Coverts Program will have gained knowledge for better land management and habitat restoration. State of Connecticut biologists are following the species concerned in this project, and we would also coordinate with their efforts to evaluate birds in the Housatonic River watershed.

2.3 Project Budget

2.3.1 Relationship of Expected Costs to Expected Benefits

If this proposal is accepted, the Schaghticoke Indian Reservation would receive the largest economic, social and environmental benefit. The Schaghticoke Tribal Nation is a non-profit organization, which receives no monies to support and maintain their reservation. All work performed on the reservation, as well as the costs incurred, is voluntary. Tribal members will contribute the labor, as they have always done, but will certainly appreciate financial assistance with the dollar cost of materials. In this way, cost is reduced and economic gain realized.

The second beneficiary will be the environment itself. New tree seedlings and ground cover will repair an injured natural resource and allow bird habitats to reestablish themselves.

2.3.2 Implementation – Oriented

Implementation of this proposal will restore damaged land in preparation for new habitat for Ruffed Grouse, Woodcock and Wood Ducks. The project is designed So that tribal members can provide their own labor. Training from UCONN's Cooperative Extension System's Coverts Project will allow tribal members to restore and manage their land. DEP's Wildlife and Forest Divisions have supplied Schaghticoke Tribal Nation's Environmental Committee with resources that make it feasible to start and finish the project.

2.3.3 Budget Justification and Understanding

Components of the project's budget will be listed as each task is listed in its order in the project implementation plan: All tree seedlings listed will create habitats for Ruffed Grouse, Woodcock and Wood Ducks. These trees, which were abundant on the reservation, have been damaged in flood and fire. The trees listed will also provide a food source for the bird species.

FIRST FISCAL YEAR

10	Black Oak seedlings, 1 year	\$ 19.69	
25	Swamp White Oak seedlings, 1 year	\$ 36.00	
10	Additional, for wetlands	\$ 20.79	
25	White Oak seedlings, 1 year	\$ 44.00	
10	Black Alder seedlings, 1 year, for wetlands	\$ 18.59	
10	Poplar transplants, 1 year, for wetlands	\$ 33.99	
10	Beech seedlings, 1 year	\$ 17.49	
100	Tree fertilizer tablets, one tablet each seedling	\$ 17.54	
1	Planting bar (narrow shovel tool)	\$ 38.44	
2	Rolls deer netting, 7 foot x 100 foot roll, total	\$ 46.08	
			\$ 292.61
	(Above material supplied by a Pennsylvania nursery specializing in oak restoration)		
	Shipping	\$ 58.72	\$ 351.33
4	6 lb bags trail mix for ground cover as advised and sold by Ruffed Grouse Society	\$ 132.00	
	Shipping	\$ 28.62	\$ 160.62
2	12 lb bags ground cover seed for waterfowl as sold by Cabela's	\$ 39.98	
	Shipping	\$ 8.00	\$ 47.98
33	6-piece bundles garden stakes, 2 per tree	\$ 198.00	
	Sales tax	\$ 11.88	\$ 209.88
8	Pre-built duck houses, placement as advised by DEP	\$ 510.24	
	Shipping	\$ 149.60	\$ 659.84
4	8 foot 4 inch x 4 inch pressure treated posts to anchor duck houses	\$ 53.44	
	Sales tax	\$ 3.21	\$ 56.65
			<u>\$ 1,486.30</u>
	Total Materials First Fiscal Year		\$1,486.30

SECOND FISCAL YEAR
(All items only if necessary, for replanting)

5	Black Oak seedlings, 1 year	\$ 13.15	
10	Swamp White Oak seedlings, 1 year	\$ 20.79	
10	White Oak seedlings, 1 year	\$ 22.90	
5	Black Alder seedlings, 1 year	\$ 13.15	
5	Poplar transplants, 1 year	\$ 20.85	
25	Fertilizer tablets	<u>\$ 8.03</u>	
			\$ 98.87
	Shipping (20% of total)	<u>\$ 19.77</u>	
			\$ 118.54
1	6 lb bag trail mix for ground cover as advised and sold by Ruffed Grouse Society	\$ 33.00	
	Shipping	<u>\$ 10.00</u>	
			\$ 43.00
1	12 lb bag ground cover seed for waterfowl as sold by Cabela's	\$ 21.99	
	Shipping	<u>\$ 10.00</u>	
			<u>\$ 31.99</u>
	Total Materials Second Fiscal Year		\$ 193.53

First year total	\$1,486.30
Second year total	<u>\$ 193.53</u>

PROJECT TOTAL \$1,679.83

2.3.4 Leveraging of Additional Resources

All labor necessary for this project will be on a voluntary basis, provided by members of the Schaghticoke Tribal Nation. The Schaghticoke Tribal Nation's Environmental Committee's work is also voluntary. As the Schaghticoke Tribal Nation is a non-profit entity, there is no additional money coming into this project with which to match funds.

2.3.5 Comparative Cost-effectiveness

The entire area of tribal land that is in need of restoration is far too large to consider remedying it all at one time. It will take years to reestablish habitat that was lost with fire and flooding. Restoring smaller areas will be one step toward that goal. Department of Environmental Protection's Ruffed Grouse biologist has advised Environmental Committee members that restocking methods have been tried, and failed in Connecticut. The Environmental Committee's original proposal involved restocking, but the cost was too great. In Dutchess County, Dover Plains, New York there is an effort underway to restock grouse. This area is near to the Schaghticoke Indian Reservation, so with our effort to recreate natural habitat conditions, reservation land may benefit from Dutchess County's plan.

2.4 Socioeconomic Merit

2.4.1 Community Involvement and Diversity

Public involvement in this project will contribute toward its success. Information from public groups will be used as a monitoring parameter for results. The Connecticut chapter of the Appalachian Trail Conference and the Western Connecticut Bird Watchers Society will be asked to observe and report on the bird species concerned. The Connecticut chapter of Ducks Unlimited and the Connecticut Audubon Society will also be asked to contribute their observations. Ducks Unlimited is dedicated to watching waterfowl. The Environmental Committee's survey of tribal members and the public for reservation wildlife information will continue. Public involvement will be a necessary tool to complete this project and monitor the results in the future.

2.4.2 Adverse Socioeconomic Impacts

It is our hope the community will be influenced by our completion of this project, in such a way that they will begin to work with the Tribe toward a common goal of habitat restoration. Public input is necessary as an additional resource to monitor the success of this undertaking. Hiking and bird watching are recreational activities that can also contribute to the project's success as we collect their participants' observations. We need the public's contribution in spirit.

Tribal members and the public will gain in education as they learn more about the birds of the area, and will have a better understanding of habitat needs. The area's forestry will benefit as reseeding the land with trees has conservation value.

2.4.3 Coordination and Integration

Our project data will be available to coordinate with the Department of Environmental Protection's biologists, who are doing work on behalf of Ruffed Grouse and Woodcock. Biologists have been tagging Woodcock to study their habits for five years at this writing. Springtime is when the birds are the most active and are trapped and tagged. If this proposal is accepted and the project implemented, the reservation's portion of the Housatonic River watershed could be another site for tracking. Presently the nearest site is in Sharon, Connecticut, at the Audubon Society.

Replanting and replenishing trees and ground cover will help recreate lost habitat areas for wild birds. Once established, this new growth will also benefit other wild animals. All of the tree seedlings listed are of a nut and seed variety on which other birds also feed. Wild Turkey and Deer eat acorns in the fall to build up their reserves for winter life. The ground cover will produce a habitat for insect life on which young Grouse rely. Overall, the proposal will benefit many varieties of wild life, while also restoring tribal land to its native condition.

2.4.4 Public Outreach

Public outreach will be achieved by using various groups to aid in observing the changes in number of species to their new habitats. The Connecticut Chapter of the Appalachian Trail Conference will be asked to observe wildlife changes on the reservation, and hikers will be made aware of the Tribe's goals for reservation land. Education about native species of wildlife and plants will benefit both the public and the reservation. Public input will also bring more thorough data to the tribal surveys about native species. Bird Watcher groups have already helped the Environmental Committee with research. The Western Connecticut Bird Watchers Society held a lecture on American Woodcock given by DEP's biologist. The Environmental Committee was present at this talk and gained from it in resource on its concerned species. In addition, contact has been established with this group for help with observational monitoring.

2.5 Applicant Implementation Capacity

2.5.1 Technical Capacity of Applicant and Project Team

Schaghticoke Tribal Nation is a non-profit organization. This application for environmental assistance for the reservation is the Tribe's first. The Environmental Committee is made up of volunteer members who are the applicant's contacts for the proposal. Research and time and time for writing the specifications of the grant application have been a voluntary effort by two members of the Committee. This group researched material and pricing. By becoming involved with the Ruffed Grouse Society and the University of Connecticut Cooperative Extension System Coverts Project Cooperator, tribal members will become better land managers. One Environmental Committee member has volunteered to help with the actual tagging of Woodcock through DEP's Wildlife Management Office. Maintaining the Wood Duck houses every year is a type of field training. Tribal members will learn more about the species while maintaining their habitat.

In 1980 the Schaghticoke Indian Reservation hosted a native plant study. Barrie Kavasch, an ethnobotanist on native plants and foods, held a plant study with tribal member to identify native plants that were found on the reservation. Tribal

members working with her helped identify at least 100 plants and trees on tribal land. Identification included plants that were used for native food consumption. Information gained from this study has also been used in the surveys of tribal members on the subject. Tribal members have studied habitat on the reservation as an environmental issue.

2.5.2 Administrative Capacity of Applicant and Project Team

The Schaghticoke Tribal Nation's Environmental Committee is made up of various work backgrounds. Tribal members who had observed wild birds through the years and saw the numbers decline brought the idea for this proposal to the Environmental Committee's attention. All training and resources the Environmental Committee have come from outside sources. The Department of Environmental Protection's Wildlife Management Office on Grouse, Woodcock and Waterfowl provided key information on habitat restoration. Connecticut Department of Environmental Protection's Forestry Division was used as a source on information for timber restoration. If the proposal for this project is accepted, all these agencies will further lend their resources to it. The Coverts Program will help tribal members learn to maintain their land.

2.5.3 Project Commitments

Tribal members have always worked to maintain reservation land. There never was an outside source working for the tribe for its care. All Native Americans have a commitment to maintain and respect their land. The Environmental Committee has committed its own time in working to secure this project. Other tribal members will also commit their time to see the project through with their own labor. Once the project is completed, Environmental Committee members will monitor results for grant obligations as well as for EPA's file on the Tribe.

TABLE 1. HOUSATONIC RIVER NRD FUNDING ALLOCATION BY FISCAL YEARS ¹

PROJECT TITLE:	SCHAGHTICOKE INDIAN RESERVATION WATER FOWL AND MIGRATORY BIRD STUDY FOR HABITAT CREATION			
SPONSOR NAME:	SCHAGHTICOKE TRIBAL NATION			
EXPENSE CATEGORY (See App. A)	FISCAL YEAR 1	FISCAL YEAR 2	FISCAL YEAR 3	FISCAL YEAR 4
	Housatonic River NRD Funds	Housatonic River NRD Funds	Housatonic River NRD Funds	Housatonic River NRD Funds
A. SALARIES				
B. OVERHEAD AND BENEFITS				
C. CONTRACTED SERVICES				
D. SUPPLIES, MATERIALS AND EQUIPMENT	\$1486.30	\$193.53		
E. TRAVEL				
F. OTHER (LIST)				
G. OTHER (LIST)				
TOTAL BY FISCAL YEAR	1	2	3	4
GRAND TOTAL (sum of boxes 1+2+3+4) [This sum is the total NRD fund request and should match Part A, Budget Summary, Box 1]				
\$1679.83				

¹ The fiscal year is July 1 – June 30. If the proposed project will be completed in one year, fill in only the column titled "Fiscal Year 1."

(1)

First Fiscal Year

TABLE 2. PROJECT BUDGET SUMMARY BY TASK AND FUNDING SOURCE

PROJECT TITLE:	SCHWARTZ COCKE INDIAN RESERVATION WATERFOWL AND MIGRATORY BIRD STUDY FOR HABITAT CREATION						
SPONSOR NAME:	SCHWARTZ COCKE INDIAN NATION						
TASK ²	HOUSATONIC RIVER NRD FUNDS	OTHER CONTRIBUTIONS		TOTAL COST BY TASK			
		COMMITTED	NOT COMMITTED				
First Fiscal Year							
BLACK OAK (10) SEEDLINGS	\$ 19.69						
SWAMP WHITE OAK (35) SEEDLINGS	\$ 56.79						
WHITE OAK (25) SEEDLINGS	\$ 44.00						
BLACK ALDER (10) SEEDLINGS	\$ 18.39						
POPLAR TRANSPARENT (10)	\$ 33.99						
BEECH SEEDLING (10)	\$ 17.49						
TREE FERTILIZER TABLETS (100)	\$ 17.54						
TOTAL BY FUNDING SOURCE	5	6	7	8	GRAND TOTAL		

NOTES: Box 5 should be the same as the Grand Total indicated in Part D Table 1. Box 6 above should match Part A, Budget Summary, Box 2. Box 7 above should match Part A, Budget Summary, Box 3. Box 8 should match Part A, Budget Summary, Box 4

² The listed tasks should correspond with information provided in the Project Implementation Plan.

First Fiscal Year

TABLE 2. PROJECT BUDGET SUMMARY BY TASK AND FUNDING SOURCE

PROJECT TITLE:	SCHAEFFER'S INDIAN RESERVATION WATERSHED AND MIGRATORY BIRD STUDY FOR HABITAT CREATION						
SPONSOR NAME:	SCHAGHTICOKE TRIBAL NATION						
TASK	HOUSATONIC RIVER NRD FUNDS	OTHER CONTRIBUTIONS		TOTAL COST BY TASK			
		COMMITTED	NOT COMMITTED				
FIRST FISCAL YEAR PLANTING BAR - A. NARROW SHOULDER TOTAL ①	\$ 38.44						
DEER NETTING ROWS B. (2 ROWS)	\$ 46.08						
SHIPPING FOR TREE SEEDLINGS	\$ 58.72						
RUFFED GROUSE SOCIETY ④ - 616 BAGS	\$ 132.00						
TRAIL MIX FOR BROWN COVER							
SHIPPING FOR TRAIL MIX	\$ 28.62						
CAGE LAY GROUND COVER SEED FOR WATERSHED	② - 1215 BAGS \$ 39.98						
SHIPPING FOR GROUND COVER SEED	\$ 8.00						
TOTAL BY FUNDING SOURCE	5	6	7	8	GRAND TOTAL		
	CONTINUED NEXT PAGE						

NOTES: Box 5 should be the same as the Grand Total indicated in Part D Table 1. Box 6 above should match Part A, Budget Summary, Box 2. Box 7 above should match Part A, Budget Summary, Box 3. Box 8 should match Part A, Budget Summary, Box 4

² The listed tasks should correspond with information provided in the Project Implementation Plan.

3

FIRST FISCAL YEAR

TABLE 2. PROJECT BUDGET SUMMARY BY TASK AND FUNDING SOURCE

PROJECT TITLE:	SCHAGHTICOKE INDIAN RESERVATION WATERFOWL AND MIGRATORY BIRD STUDY FOR HABITAT CREATION						
SPONSOR NAME:	SCHAGHTICOKE TRIBAL NATION						
TASK ³	HOUSATONIC RIVER NRD FUNDS	OTHER CONTRIBUTIONS		TOTAL COST BY TASK			
		COMMITTED	NOT COMMITTED				
FIRST FISCAL YEAR							
A. 6 piece bundles GARDEN STAKES (33)	\$198.00						
B. SACS TAX ON GARDEN STAKES	\$11.88						
C. PRE-BUILT WOOD DUCK HOUSES - (8)	\$510.24						
D. SHIPPING for WOOD DUCK HOUSES	\$149.60						
E. 4 inch x 4 inch x 8 foot POSTS for duck HOUSES (4)	\$53.44						
F. SALES TAX ON POSTS	\$3.21						
G.							
TOTAL BY FUNDING SOURCE	5	\$1,486.30	6	7	8	GRAND TOTAL FIRST Fiscal Year \$1,486.30	

NOTES: Box 5 should be the same as the Grand Total indicated in Part D Table 1. Box 6 above should match Part A, Budget Summary, Box 2. Box 7 above should match Part A, Budget Summary, Box 3. Box 8 should match Part A, Budget Summary, Box 4.

³ The listed tasks should correspond with information provided in the Project Implementation Plan.

SECOND FISCAL YEAR

TABLE 2. PROJECT BUDGET SUMMARY BY TASK AND FUNDING SOURCE

SCHAGHTICOKE INDIAN RESERVATION WATERFOWL AND MIGRATORY BIRD STUDY FOR HABITAT CREATION							
SCHAGHTICOKE TRIBAL NATION							
TASK ¹		HOUSATONIC RIVER NRD FUNDS	OTHER CONTRIBUTIONS		TOTAL COST BY TASK		
SECOND FISCAL YEAR			COMMITTED	NOT COMMITTED			
BLACK OAK SEEDLINGS (5)		\$ 13.15					
SWAMP WHITE OAK SEEDLINGS (10)		\$ 20.79					
WHITE OAK SEEDLINGS (10)		\$ 22.90					
BLACK ALDER SEEDLINGS (5)		\$ 13.15					
POPULAR TRANSPLANTS (5)		\$ 20.85					
FERTILIZER TABLETS (25)		\$ 8.03					
SHIPPING FOR TREE SEEDLINGS		\$ 19.77					
TOTAL BY FUNDING SOURCE		5	6	7	8	GRAND TOTAL	

NOTES: Box 5 should be the same as the Grand Total indicated in Part D Table 1. Box 6 above should match Part A, Budget Summary, Box 2. Box 7 above should match Part A, Budget Summary, Box 3. Box 8 should match Part A, Budget Summary, Box 4

² The listed tasks should correspond with information provided in the Project Implementation Plan.

2

Second Fiscal Year

TABLE 2. PROJECT BUDGET SUMMARY BY TASK AND FUNDING SOURCE

SCHAGHTICOKE INDIAN RESERVATION WATERFOWL AND MIGRATORY BIRD STUDY FOR HABITAT CREATION						
SCHAGHTICOKE TRIBAL NATION						
TASK ² Second Fiscal Year	HOUSATONIC RIVER NRD FUNDS	OTHER CONTRIBUTIONS		TOTAL COST BY TASK		
		COMMITTED	NOT COMMITTED			
RUFFLED GROUSE (1) SOCIETY A. TRAIN MIT GROUND COVER	615 - \$33.00					
SHIPPING FOR B. GROUND COVER MIX	\$10.00					
CASSELL'S GROUND COVER SEED-WATERFOWL	126 - \$21.99					
SHIPPING FOR D. GROUND COVER SEED	\$10.00					
E.						
F.						
G.						
TOTAL BY FUNDING SOURCE	5 \$193.53	6	7	8	GRAND TOTAL - \$1,679.83	

1st & 2nd
Fiscal
Year

NOTES: Box 5 should be the same as the Grand Total indicated in Part D Table 1. Box 6 above should match Part A, Budget Summary, Box 2. Box 7 above should match Part A, Budget Summary, Box 3. Box 8 should match Part A, Budget Summary, Box 4

² The listed tasks should correspond with information provided in the Project Implementation Plan.



Schaghticoke Indian Reservation

Schaghticoke Rd

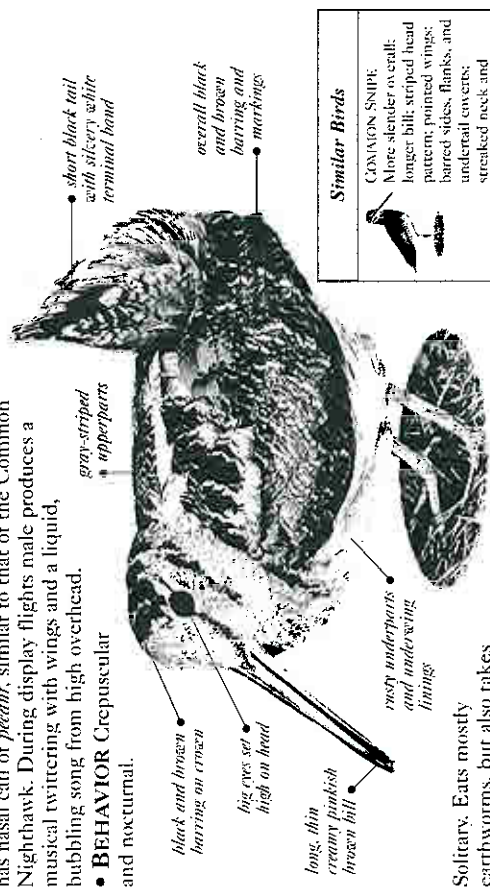
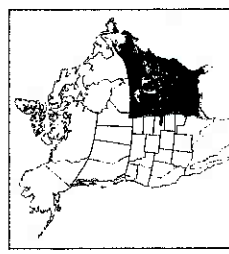
7

Image © 2006 New York GIS
© 2006 Europa Technologies
© 2006 Navteq

Pointer 41°41'41.98" N 73°30'40.37" W elev 352 m Streaming 100% Eye alt 1.42 km



- SCHAGHTILOKE INDIAN
RESERVATION -

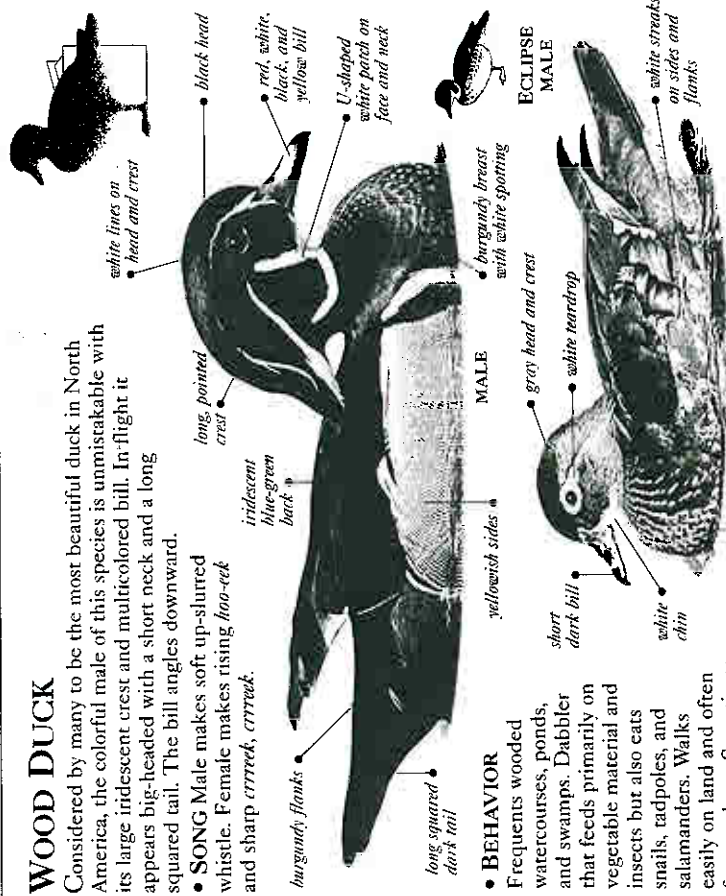
Family SCOTOPACIDAE	Species <i>Scotopax minor</i>	Length 10.5–11 inches	Wingspan 18 inches
AMERICAN WOODCOCK The long bill of this upland shorebird is sensitive and flexible, allowing it to feel for worms in deep soil. Woodcocks are rarely seen during the day unless flushed and escaping straightaway in flight on twittering rounded wings. Chunky, short-necked, and short-legged, its plumage matches the dead leaves of the forest floor and old fields where it roosts by day. • SONG Generally silent. In spring, male on display ground has nasal call of <i>peant</i>, similar to that of the Common Nighthawk. During display flights male produces a musical twittering with wings and a liquid, bubbling song from high overhead. • BEHAVIOR Crepuscular and nocturnal.			
			
Solitary. Eats mostly earthworms, but also takes slugs, insects, and some seeds and berries. Before probing into soil with bill, often stamps foot on ground, causing earthworms to move. During feeding, walks slowly with a back and forth rocking motion. • BREEDING Polygamous; loose colonies. Male has complex courtship flight: he flies from ground, circling as high as 300 feet, hovers, chirps, and glides earthward in a series of zigzags. • NESTING Incubation 20–21 days by female. Precocial young leave nest 1–2 days after hatching to feed themselves, tended by female. First flight at 14 days; independent at 42–56 days, 1 brood per year.			
Flight Pattern 		• POPULATION Fairly common. Casual to eastern Colorado and eastern New Mexico; accidental to southeastern California. • CONSERVATION Hunted and managed as a game bird.	
Nest Identification Most often has swift flight; when flushed, flies low for short distance before dropping back into cover.			
Similar Birds COMMON SNIPER More slender overall; longer bill; striped head pattern; pointed wings; barred sides, flanks, and underparts; streaked neck and upper breast; buffy white stripes on back; reddish tail with white terminal band; longer greenish legs and feet. EURASIAN WOODCOCK Accidental — no recent records • much larger; brown- and pale buff; barred underparts; more pointed, longer wings.		Lined with twigs and dried leaves • on ground, hidden in tall grasses, weeds, or near stump of tree • built by female • 4 buff or cinnamon eggs, with gray, purple, and brown spots; oval, 1.5 x 1.1 inches.	
Shape 	Location 	Habitat  	Migration  
Plumage Sexes similar		Weight 6.2 ounces	

Family ANATIDAE	Species <i>Aix sponsa</i>	Length 17-20 inches	Wingspan 28-30 inches
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WOOD DUCK

Considered by many to be the most beautiful duck in North America, the colorful male of this species is unmistakable with its large iridescent crest and multicolored bill. In flight it appears big-headed with a short neck and a long squared tail. The bill angles downward.

- **SONG** Male makes soft up-slurred whistle. Female makes rising *hoo-tek* and sharp *crreek, crreek*.



• BEHAVIOR

Frequents wooded watercourses, ponds, and swamps. Dabbler that feeds primarily on vegetable material and insects but also eats snails, tadpoles, and salamanders. Walks easily on land and often forages there. Sometimes several females "dump" eggs in single nest box, which may hold 20-40 eggs. Often perches in trees.

- **BREEDING** Monogamous. Solitary nester.
- **NESTING** Incubation 25-37 days by female. First flight in 56-70 days. Tended by female. 1 brood per year in North; sometimes 2 in South.
- **POPULATION** Possible increase due to reduced hunting pressures and placement of nest boxes in habitat.

Flight Pattern



Swift direct flight with rapid wing beats.

Nest Identification

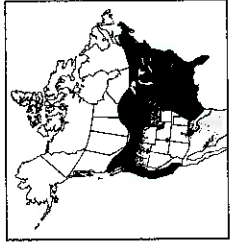


Lined with down • rarely nests in hollow fallen logs or barn lofts • built by female • 9-15 creamy white, dull white, or pale buff eggs; elliptical to subelliptical, 2 inches long.

Similar Birds

Male unmistakable.

- BLUE-WINGED TEAL ♀
 - GREEN-WINGED TEAL ♀
- Females smaller; dark bill; lack crest; lack white rear-drop eye patch.



- **BIRDHOUSES** Will use nest boxes.
- **CONSERVATION** Habitat being lost to timbering and drainage.

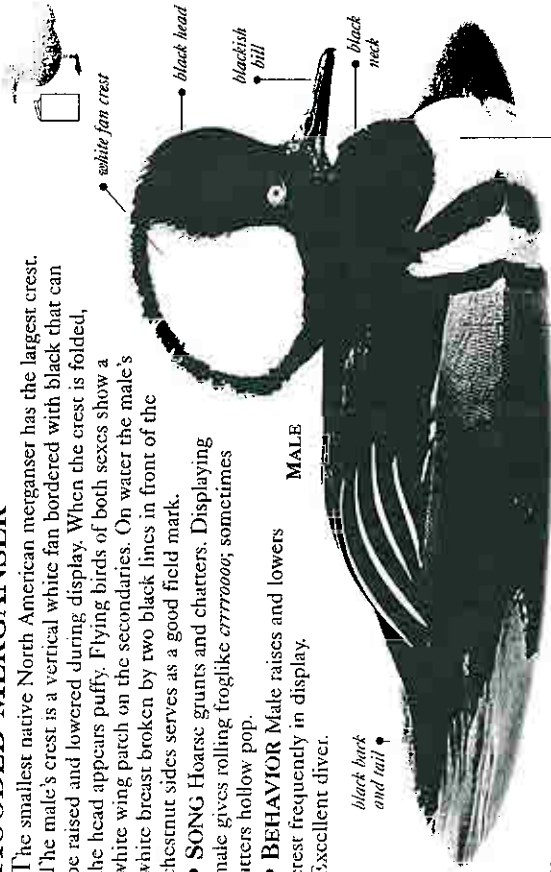
Plumage Sexes differ	Habitat	Migration Migratory	Weight 1.5 pounds
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Family ANATIDAE	Species <i>Lophodytes cucullatus</i>	Length 10-19 inches	Wingspan 24-26 inches
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HOODED Merganser

The smallest native North American merganser has the largest crest. The male's crest is a vertical white fan bordered with black that can be raised and lowered during display. When the crest is folded, the head appears puffy. Flying birds of both sexes show a white wing patch on the secondaries. On water the male's chestnut sides serve as a good field mark.

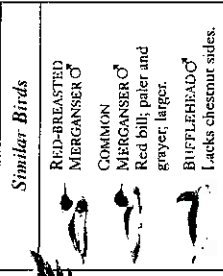
- **SONG** Hoarse grunts and chatters. Displaying male gives rolling froglike *arrrrooo*; sometimes utters hollow pop.
- **BEHAVIOR** Male raises and lowers crest frequently in display. Excellent diver.



Uses both wings and feet to swim swiftly underwater. Thin, serrated bill is adapted for taking fish, but also feeds on crustaceans, aquatic insects, other animals, and into the air off water.

- **BREEDING** Monogamous. Solitary nester.
- **NESTING** Incubation 26-41 days by female. Young leave nest within 24 hours of hatching. First flight at about 71 days.

- Young tended by female but find own food. 1 brood per year.
- **POPULATION** After past decline, now increasing because of nest boxes, including those intended for Wood Ducks.
- **BIRDHOUSES** Will nest in artificial boxes.



Similar Birds
 RED-BREASTED MERGANSER ♂
 COMMON MERGANSER ♂
 Red bill; paler and grayer; larger.
 BUFFLEHEAD ♂
 Lacks chestnut sides.

Flight Pattern
 Rapid direct flight with fast wing beats. Flies silently and swiftly.

Nest Identification
Shape Location

Wood chips with debris in bottom • 15-20 feet off ground • built by female
 • 6-18 white eggs, almost spherical; 2.1 inches long.

Plumage	Sexes differ	Habitat	Migration	Migratory	Weight	1.5 pounds
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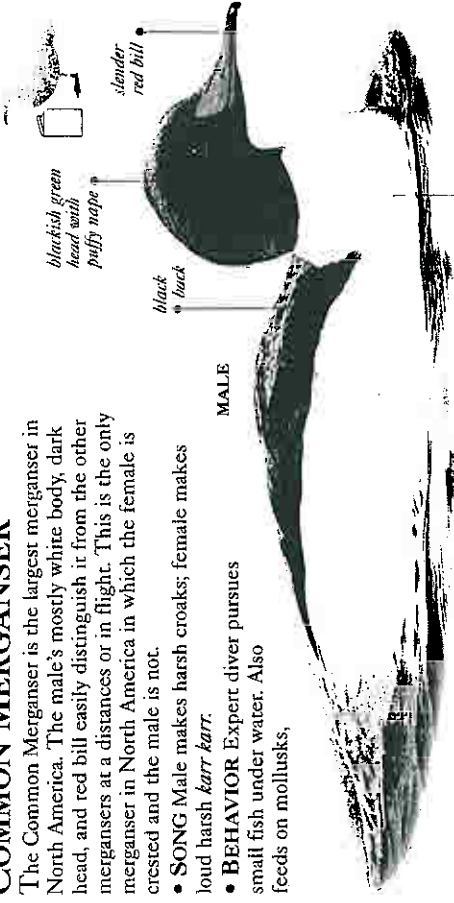
DATE _____ TIME _____ LOCATION _____

Family ANATIDAE	Species <i>Mergus merganser</i>	Length 22-27 inches	Wingspan 31-37 inches
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COMMON Merganser

The Common Merganser is the largest merganser in North America. The male's mostly white body, dark head, and red bill easily distinguish it from the other mergansers at a distance or in flight. This is the only merganser in North America in which the female is crested and the male is not.

- **SONG** Male makes harsh croaks; female makes loud harsh *karr karr*.
- **BEHAVIOR** Expert diver pursues small fish under water. Also feeds on mollusks,



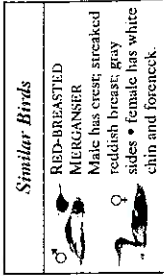
crustaceans, aquatic insects, and some plants. In winter often stays as far north as open water will allow. Patterns across water or land to build up speed for takeoff. Often flies low following stream courses.

- **BREEDING** Monogamous. Solitary nester.
- **NESTING** Incubation 28-35 days by female. Young remain in nest 1 day or more. First flight at 65-70 days. Young tended by female but find own food. 1 brood per year.
- **POPULATION** Fairly common. Stable in US; may be increasing in Europe.

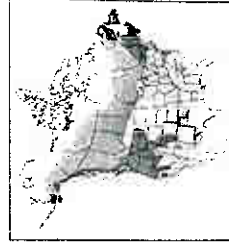
Flight Pattern
 Direct flight with rapid wing beats and bill, head, body, and tail in straight line.

Nest Identification
Shape Location

Wood chips or debris • lined with down, weeds, grasses, and rootlets
 • near water, in large tree cavity or in rock crevices or holes • built by female
 • 6-17 light buff or ivory-yellow eggs, 2.6 inches in diameter.



Similar Birds
 RED-BREASTED MERGANSER ♂
 Male has crest; streaked reddish breast; gray sides • female has white chin and foreneck.
 COMMON MERGANSER ♂
 Red bill; paler and grayer; larger.



Plumage	Sexes differ	Habitat	Migration	Migratory	Weight	3.8 pounds
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DATE _____ TIME _____ LOCATION _____

Family ANATIDAE Species *Bucephala albeola* Length 13-16 inches Wingspan 20-24 inches

BUFFLEHEAD

The name of this large-headed duck, which means buffalo-headed or ox-headed, belies the Bufflehead's agility in flying, swimming, and diving. It is the smallest diving duck, but it is one of the best divers. In flight the male's pink legs and feet are bright against white underparts, and a white patch crosses the entire inner wing; female shows white in the secondaries only. These birds nest only in North America.

- SONG Squeaky whistle and low squealing or growling call.



MALE

In courtship makes loud grating or chattering noise.

Female has a harsh quack, *ac-er-er* and buzzy *cuc-cuc-cuc*.

- **BEHAVIOR** Can take off directly from water unlike other diving ducks. Uses feet to swim underwater. Dives in groups for safety, leaving "lookouts" on surface.

Eats aquatic insects, larvae, snails, small fish, and aquatic plant seeds. On saltwater eats shrimp and other crustaceans, shellfish, and snails. Male performs head-bobbing display in courtship.

- **BREEDING** Monogamous. Solitary nester.

- **NESTING** Incubation 28-33 days by female. Young leave nest by jumping out of tree cavity within 1 day of hatching. Tended by female. First flight at 50-55 days. 1 brood per year.

- **POPULATION** Common but has declined.

- **BIRDHOUSES** Will use nest boxes located near water.
- **CONSERVATION** Much less numerous now due to unrestricted shooting in the 20th century and loss of habitat.

Flight Pattern



Swift direct flight with rapid wing beats.

Nest Identification

Shape Location

No material added to nest • will use wooden box placed in tree • 8-10 ivory-yellow, light olive-buff, or cream to pale buff eggs; elliptical to oval in shape, 2 x 1.5 inches.

Plumage Sexes differ Habitat Migration Migratory Weight 1.0 pound

DATE

TIME

LOCATION

Family ANATIDAE

Species *Bucephala clangula*

Length 16-20 inches

Wingspan 25-32 inches

COMMON GOLDENEYE

In flight, on its whirling wings, the male shows more white plumage than any other North American duck except for the Common Merganser. Both sexes exhibit large white wing patches in flight. The small tight flocks often fly high.

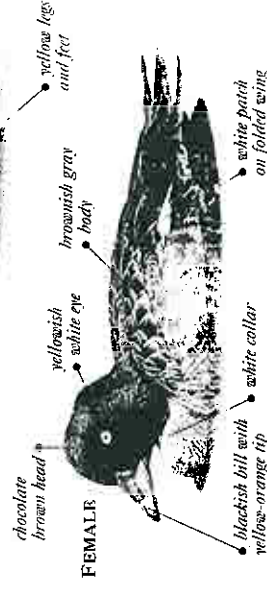
- **SONG** During courtship male has grating *see-see* or *see-see-ut*, resembling call of Common Nighthawk. Female has abrasive low quack.



MALE



JUVENILE



FEMALE

Similar Birds

BARRON'S GOLDENEYE

Male has white crescent in front of eye; black head with purplish gloss; black of back extends farther down on sides; smaller white wing patch in flight • female has more triangular head with more sloping forehead; longer bill with yellow only at tip.

- **BEHAVIOR** Male makes spectacular courtship display, throwing its head so that its neck contours back to rump. Dives to 20 feet to forage for mollusks, crustaceans, insects, and aquatic plants.
- **BREEDING** Monogamous. Solitary nester.
- **NESTING** Incubation 28-32 days by female. Young may stay in nest 1-2 days. First flight at 56-62 days. Young tended by female but feed themselves. 1 brood per year.
- **POPULATION** Common. Presently stable.
- **BIRDHOUSES** Will utilize nest boxes.

Flight Pattern



Swift direct flight with fast wing beats.

Nest Identification

Shape Location

Lined with down • built by female • 5-19 clear pale green or gray-green eggs; elliptical to oval, 1 inch long.

Plumage Sexes differ Habitat Migration Migratory Weight 2.5 pounds

DATE

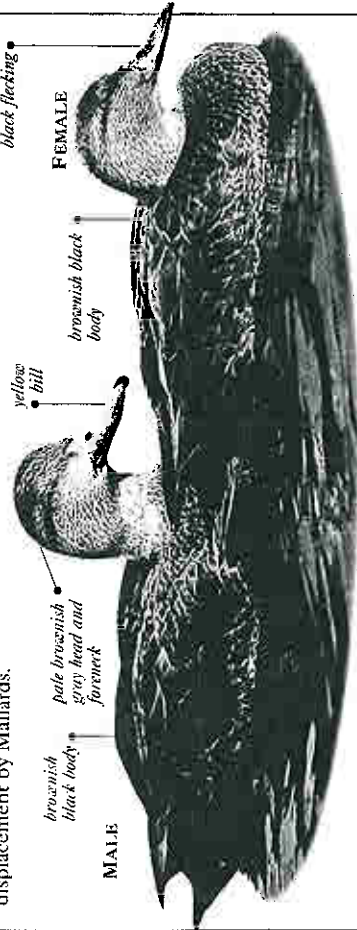
TIME

LOCATION

Family ANATIDAE	Species <i>Anas rubripes</i>	Length 19–24 inches	Wingspan 33–36 inches
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AMERICAN BLACK DUCK

The darkest dabbling duck on the water looks almost black at a distance, with a paler head and foreneck. In flight the white wing linings contrast boldly with the dark body and wings. The purplish blue speculum is bordered with black, and the posterior border often has a narrow white edge. It is as large as a Mallard. Into the 1940s this was the most abundant duck in eastern and central North America and was the most heavily hunted without notable decline in numbers. Today it seems to be losing steadily to years of heavy hunting pressure and increasing displacement by Mallards.



• **SONG** Typical female gives loud duck quack; male makes lower croak.

• **BEHAVIOR** Dabbler. Very alert and wary; one of the quickest ducks into the air when disturbed, thrusting upward energetically off water or land. Feeds in shallow water, taking mostly plant materials in winter and a variety of aquatic insects in summer.

• **BREEDING** Monogamous. Solitary nester. Sometimes hybridizes with Mallard.

• **NESTING** Incubation 23–33 days by female. Young stay in nest 58–63 days. Fed by female. 1 brood per year.

• **POPULATION** Fairly common.

• **CONSERVATION** Management warranted due to decline in numbers, which may be caused by changes to its habitat and deforestation. Both of these circumstances seem to favor Mallards, which tend to replace Black Ducks where the two species coexist.

Flight Pattern
Swift direct flight with strong wing beats.

Nest Identification
Shape
Location

Shallow depression with plant material added • lined with down • on ground among clumps of dense vegetation • sometimes in raised situation, as on top of stump • built by female • 6–12 creamy white to greenish buff eggs.

Plumage Sexes differ	Habitat	Migration Migratory	Weight 3.1 pounds
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DATE _____

TIME _____

LOCATION _____

Family ANATIDAE	Species <i>Anas platyrhynchos</i>	Length 23 inches	Wingspan 30–40 inches
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MALLARD

One of the best-known waterfowl in the world, the Mallard can be found almost anywhere shallow freshwater occurs. Some even reside in salt marshes and bays. The male is larger than the female. Many domesticated forms are entirely white with an orange bill, legs, and feet.

• **SONG** Female makes loud quack-quack-quack, quack, quack-quack, descending in scale. Male sounds double note and low reedy kwee-kwee-kwee.

• **BEHAVIOR** Generally found in shallow freshwater, where it dabbles primarily for plant food, also taking insects, mollusks, and crustaceans. Sometimes dives underwater. Walks well and often forages on shore in fields and woodlots. Leaps directly into flight from water. Frequently hybridizes.

• **BREEDING** Monogamous. Solitary nester.

• **NESTING** Incubation 26–30 days by female. Young leave nest soon after hatching. 1 brood per year.

• **POPULATION** Common to abundant.

• **FEEDERS** Corn or grains. In city parks some are tame enough to be hand-fed by humans.

• **CONSERVATION** One of the ducks harvested in greatest numbers by waterfowl hunters. Prone to lead poisoning from ingesting spent lead shot with food from bottom ooze.

Flight Pattern
Swift direct flight with strong wing beats.

Nest Identification
Shape
Location

Shallow pool of plant material gathered at the site, lined with down • may be more than 1 mile from water, usually on ground among concealing vegetation • built by female • 5–14 greenish buff or grayish buff eggs. 2.3 inches long.

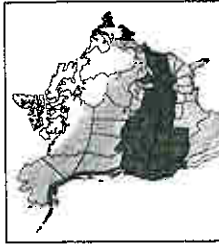
Plumage Sexes differ	Habitat	Migration Migratory	Weight 2.4 pounds
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DATE _____

TIME _____

LOCATION _____

Similar Birds
Female resembles many other female ducks, but blue speculum bordered white is unique.
NORTHERN SHOVELER ♂ Long dark bill; white breast; chestnut sides.
COMMON MERGANSER ♂ Narrow red bill; puffy or crested head.
RED-BREASTED MERGANSER ♂ Narrow red bill; puffy or crested head.

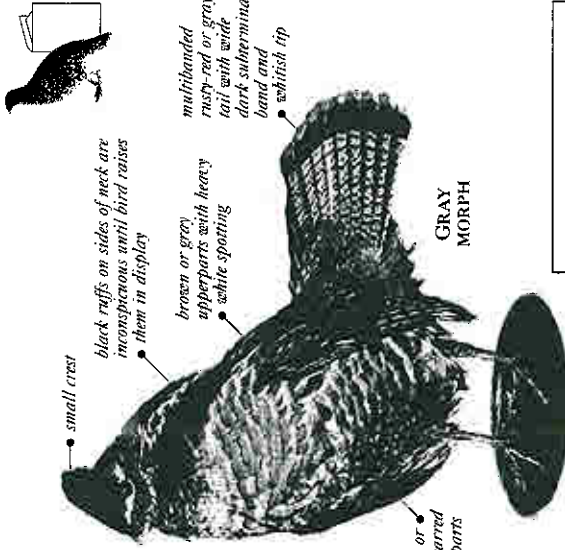


Family PHASIANIDAE	Species <i>Bonasa umbellus</i>	Length 17 inches	Wingspan 22-25 inches
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RUFFED GROUSE

Both the male and female Ruffed Grouse are dramatic, not only in appearance but in action. In spring the drumming of the male can be heard from half a mile away. The sound is so low-pitched that one might feel as if it is coming from within, and it can take a moment to realize that its source is a distant bird. The female is known for its crippled-bird act that distracts intruders from the nest. This grouse has two morphs: The gray morph is more widespread, while the red morph is plentiful only in the Appalachians and Pacific Northwest.

- **SONG** Short *quit-quit* noises when alarmed.
- **BEHAVIOR** Eats insects, berries, fruits, nuts, seeds of weeds and trees, tree leaf buds, and small reptiles and amphibians. Makes short flights.
- **BREEDING** Promiscuous. Solitary nester. Male exhibits display called drumming; he raises his crest, ruffs, and fan-shaped tail and makes whirring sounds by compressing air between his body and rapidly beating wings. This is done to claim territory and attract females. Normally shy and retiring but can be aggressive and has been known to run at humans in its territory.
- **NESTING** Incubation 21-28 days by female. Precocial young leave nest within hours of hatching and in 10-12 days roost in trees with tending female. Young independent about 84 days after fledging. 1 brood per year.
- **POPULATION** Common. Local populations fluctuate, with disruptive dispersals into areas that are not normally occupied by grouse.
- **CONSERVATION** Managed as a game bird over much of its range; more killed annually than any other grouse species (3.5-3.7 million).



GRAY MORPH

black ruffs on sides of neck are inconspicuous until bird raises them in display

small crest

brown or gray upperparts with heavy white spotting

multibanded rusty-red or gray tail with wide dark subterminal band and whitish tip

brown or gray-banded underparts

Similar Birds

SPRUCE GROUSE
Narrow chestnut band on tail tip • male has red eye comb, sharply defined black breast with white spots or bars on sides • female is dark rusty or grayish brown with white spotting and black barring on underparts.

BULLY GROUSE
Dark tail with gray terminal band; mottled gray underparts • male has yellow-orange eye combs.



Flight Pattern		Nest Identification	
		Shape 	Location 
Strong rapid flight with rapid wing beats.		Lined with small sticks, pine needles, leaves, and feathers • usually near tree trunk or sheltered by shrub, log, boulder, or tree stump • built by female • 8-14 buff eggs, sometimes lightly spotted with browns, 1.5 inches long.	

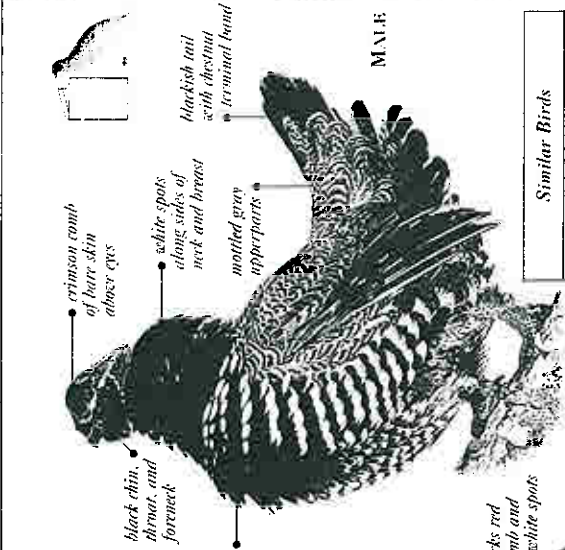
Plumage	Sexes similar	Habitat	Migration	Nonmigratory	Weight	1.4 pounds
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Family PHASIANIDAE	Species <i>Falcipecten canadensis</i>	Length 16 inches	Wingspan 23 inches
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SPRUCE GROUSE

Also known as the Black Grouse, this bird is mainly a tree dweller. Sometimes called a "fool hen" because it seems fearless of man, it is an easy target for hunters. Franklin's Grouse, a subspecies in the northern Rockies and Cascades, lacks the chestnut band on the tail tip, and the upper tail coverts forms the tail has a dark tip and chestnut band. When flying over his territory, the male Franklin's Grouse makes a "wind cracking" sound with his wings to mark his claim.

- **SONG** Usually silent. Males make low hooting sounds. Makes clucking noise around intruders.
- **BEHAVIOR** Arboreal. Tame. Eats buds and needles of conifers, seeds of weeds and grasses, berries, mushrooms, fern fronds, some insects. Forages along wooded roadsides, and white spotting on underparts
- **BREEDING** Promiscuous. Solitary nester.
- **NESTING** Incubation 17-24 days by female. Precocial young abandon nest upon hatching and can take short weak flights at 7-10 days. Young tended by female. 1 brood per year.
- **POPULATION** Common. Local populations fluctuate. Southern edge of range may have seen slight decline, but still common in far north.
- **CONSERVATION** Managed as a game bird.



MALE

black chin, throat, and foreneck

black breast

crimson comb of bare skin above eyes

white spots along sides of neck and breast

mottled gray upperparts

blackish tail with chestnut band

lacks red comb and white spots

mottled brownish or grayish

FEMALE

dark barring and white spotting on underparts

Similar Birds

RUFLIED GROUT SE
Slightly larger, slight crest, dark subterminal tail band, dark patch on side of neck • male lacks red eye comb; slight crest, pale thin; barred pale breast; finely barred gray or reddish brown tail with dark subterminal band.

BLU E GROUT SE
Ducks or sooty in color; broad pale band at tip of blackish tail; mottled gray underparts • male has yellow or orange comb above eyes • western range.



Flight Pattern		Nest Identification	
		Shape 	Location 
Strong rapid flight with series of rapid stiff wing beats alternating with short glides on downward-pointed wings.		Lined with dry grasses, leaves, twigs, and a few feathers • under low branch of spruce or bushes • built by female • 5-10 beautiful cinnamon to pink-buff or cream-buff eggs, usually marked with large rich brown spots and blotches, some thickly and evenly covered with small spots or dots, male to short oval, 1.7 inches long.	

Plumage	Sexes differ	Habitat	Migration	Migratory	Weight	1.1 pounds
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