

OSSIPEE MASTER PLAN

Chapter 4: NATURAL RESOURCES

Geology

Most of the information for this section came from Surficial Geology of the Ossipee Lake Quadrangle, New Hampshire by Robert Newton, published by NHDRED. Ossipee is in the Bearcamp-Ossipee River drainage system. There are many lakes and ponds. The mountains are composed of igneous rock. The Ossipee Mountains lie in a circle called a ring dike formation.

Geologists consider the Ossipee Mountains to be one of the finest examples in the world of a ring dike complex. The outer ring is a nearly circular wall of granite nine miles (14 km) in diameter. With nearly a dozen peaks over 2,000 feet, the outer ring embraces an inner pluton, or plug, of similar granite, forming rugged lower hills that include scenic Dan Hole and Conner ponds. The ring dike formed in the Cretaceous period between 100 and 130 million years ago as granite intruded into a much older volcanic magma chamber.

Much earlier in the geologic history of the area, there were periods where the rock layers were folded and faulted, creating mountains. Lava flows and volcanoes formed on the older rocks, and the heat and pressure formed metamorphic rocks. According to James Robert Wilson in The Geology of the Ossipee Lake Quadrangle, NH Bulletin #3, this mountain building activity may have caused present day fault zones and earthquakes in the Ossipee Mountains. Mountains as large as the Himalayas rose and were later eroded away leaving the ring dike. There were several periods of mountain building and erosion.

Large ice sheets that covered the area, moving north to south, about 60,000 years ago, created most of the present land surface. By 20,000 years ago the ice sheets were receding, and disappeared about 12,000 years ago. Glaciers covered Ossipee at least two times. As they melted, the runoff formed streams and lakes in the low places. Ossipee Lake is a large glacial lake.

The large moving sheets of ice eroded the material under them and carried it along. As the ice sheets melted, the material was dropped or carried away in the melt water. As the material was carried by the water, it was sorted and layered when the water slowed down. The larger pieces dropped first, because they were heavier. This material called till averages 20 feet in thickness, varying from large boulders to fine sand grains. There are large deposits of this sand and gravel in the Ossipee area. These eskers and kames are the source of the gravel industry in Ossipee. Sand and gravel are very important for development, because they are used in concrete and asphalt in buildings and road construction. On the beaches of the lakes, wave action sorted the sand. On the deltas where the rivers and streams run into the lakes, soil dropped as the water slowed down, causing infilling of the lakes, as it still does.

Large quantities of groundwater are contained in these sand and gravel deposits. In fact, Ossipee is situated over an aquifer of significant size (an aquifer is an area that has significant potential to yield groundwater). This groundwater contains dissolved iron and manganese from the igneous and metamorphic rocks underlying the sand and gravel.

Implementation Recommendations:

Inventory so as to preserve the Ossipee Mountains ring dike as a unique geologic site and scenic resource.

Strengthen guidelines to discourage clearcutting on forested slopes.

Educate people regarding the uniqueness of the Ossipee ring dike to promote awareness and appreciation.

Minimize visibility of manmade structures by locating them below the ridgeline, below the crown line of mature trees, and in conformity to the natural character of the landform.

LAND FEATURES

Surface Waters

Surface water bodies are most important to Ossipee as a vacation and retirement community. Clean water was given a very high priority in the survey of residents. Detection and prevention of milfoil has become a major concern in Ossipee's lakes in recent years. The state used an herbicide in the spring of 2004 to take care of an infestation where Phillips Brook enters the lake, although it apparently failed to work as intended. More recently, divers have been pulling up the milfoil to eradicate it. A newly formed group called the Ossipee Lake Alliance has begun an extensive program of preventing the spread of milfoil and other invasive plants. In 2006 the Ossipee Conservation Commission supported volunteers at public boat ramps who check boats for plant contamination. This program continues, with the goal of reducing the amount of milfoil annually. Fortunately, milfoil does not grow as fast on the sandy bottom of Ossipee Lake, because milfoil prefers muck. The voters in Ossipee approved money to combat the milfoil.

Approximately 3,095 acres of surface water lie in Ossipee, over 6% of the town's total area. Ossipee Lake, Dan Hole Pond, Duncan Lake and Conner Pond are the principal surface water bodies. The following description of these and other Ossipee water bodies was included in the 1983 Master Plan.

Conner Pond – An 86 acre natural pond located in North Ossipee, just north of the Tuftonboro- Moultonboro line. It has an average depth of 37 feet and a maximum depth of 58 feet. The bottom is 60% muck, 25% rock, and 15% sand. Conner Pond is at an altitude of 899 feet. The pond contains brook trout and horned pout.

Dan Hole Pond – A 508 acre natural pond which has been raised by damming. It is located in northwestern Ossipee, along the Tuftonboro border. It has a maximum depth of 126 feet, but averages closer to 50 feet. The altitude of the pond is 827 feet. Dan Hole Pond has salmon, trout, smelt, chain pickerel, yellow perch and horned pout.

Little Dan Hole Pond – Just north of Dan Hole Pond, this 77 acre pond is natural. It has a maximum depth of 27 feet and is 816 feet above sea level. The bottom is half clay, 25% sand and 25% rock. Little Dan Hole Pond contains chain pickerel, horned pout, yellow perch and salmon.

Duncan Lake – a 114 acre natural lake located north of Ossipee Village. It is 573 feet above sea level and has an average depth of 15 feet. Its bottom is 20% gravel, 10% muck, 40% rock and 30% sand.

Duncan Lake is best suited for warm water fish and provides a suitable environment for rainbow trout.

Garland Pond – a 30 acre natural pond located just north of Water Village. It has a maximum depth of 13 feet and has a 677 foot altitude. The bottom is muck. Garland Pond contains chain pickerel, horned pout, yellow perch and salmon. Pieces of property around Garland Pond are protected by the Fish and Game Department and the Ossipee Conservation Commission.

Moody Pond – a 34 acre natural pond which has been raised by a beaver dam. The bottom is muck. Located in northwestern Ossipee, Moody Pond is 998 feet above sea level. It has a maximum depth of 14 feet and contains brown trout.

Ossipee Lake – a natural lake of 3,091 acres located along the border with Freedom. It has a maximum sounded depth of 58 feet, but averages 35 feet in depth. Its bottom is 50% sand, 35 % muck, and 15% rock. There are 600 acres of shoals at the southeast end, Situated 406 feet above sea level, Ossipee Lake contains smelt, sunfish, white perch, cusk, lake trout, brown trout, shiners, small mouth bass, chain pickerel, and yellow perch.

White Pond – a 47 acre natural pond located just south of the Pine River State Forest. It has an average depth of 23 feet and a maximum depth of 36 feet. The bottom is mostly sand, with about 10% clay. White Pond is noted for its brook trout. It is spring-fed and noted for its clean water.

In New Hampshire surface waters are considered to be property of the state, and the state has jurisdiction over activities on public waters.

Implementation Recommendations:

Continue support to eradicate invasive plants; prevent new introductions through boat inspections and public education.

Prevent septic seepage that could result where vacation homes are modified for year-round use.

Provide ongoing education to the community on proper disposal of toxic materials.

Surface Water Drainage

The town is encompassed within one major drainage basin, the Saco River Basin. The Ossipee and Effingham Mountains divide the town into 13 sub-basin areas, which vary in size from 1 square mile to 50 square miles. Water quality is usually highest in undeveloped upland areas and deteriorates as the water passes through more developed downstream areas. In each basin, it is important for land use practices to respect the natural limitations of the land.

Green Mountain Conservation Group has initiated a program of sampling and testing water in the region. There are numerous test sites in Ossipee including Frenchman's Brook, the Bearcamp, Beech, Lovell and Pine Rivers, plus tributaries and deep waters of Ossipee Lake. In general the water quality is very good, although some samples from Frenchman's Brook contained dissolved organic nitrogen, nitrates, sodium chloride, and potassium. This program will be continued using this base data and expanded to other sites, so that trends can be identified. It is important to have data from water both upstream and downstream from possible contamination points.

Other tests measure water temperature, pH, and turbidity. Beginning in 2003 testing was done in the deep lake waters by The Ossipee Lake Alliance. The Ossipee Conservation Commission contributed \$1,000 toward the cost of testing in Ossipee in 2004. In 2005 taxpayers approved an article for \$2000 toward the cost of testing.

One presently neglected resource is the waterpower potential represented by existing dams and multilevel water tables. At one time these were a source of mechanical energy and generation of electrical power.

Implementation Recommendations:

Ensure land use guidelines and practices respect the natural limitations of the land to avoid contamination.

Identify potential sites for micro-hydro installations to create some electricity locally that would not disturb habitat.

Aquifers

Areas that have a significant potential to yield groundwater are called aquifers. These stratified deposits of sand and gravel have large pore spaces, which permit the storage and transmission of groundwater.

About one third of Ossipee (24.5 square miles) has a high potential for yielding groundwater. Aquifers are susceptible to pollution due to the ease and speed of transmission through the soil. Septage and landfill leaching are two potential sources of pollution. Households over an aquifer area need to be sure they have an adequately functioning septic system.

Unfortunately, most of the commercially zoned land in Ossipee lies over the aquifer along Route 16, presenting possibilities for pollution. To protect the aquifer there should be no industrial discharge.

All nonresidential buildings need a surface drainage plan. Salt storage areas should be covered. Large amounts of impervious landcover reduce the productivity of the aquifer by reducing the aquifer recharge area, so the amount of land covered needs to be limited. For areas such as large parking lots, alternatives to paving using permeable surfaces should be considered.

The major high groundwater yield areas are around Ossipee Lake and along Route 16 in southeast Ossipee. The aquifer surrounding the lake is already densely developed. Care must be taken that septage does not enter the lake, especially as vacation homes are

remodeled into year round homes. For these reasons in future planning, care should be taken to control the intensity of development in these areas.

In recent years large commercial withdrawals of underground water have become controversial in view of growing needs to conserve water vs. increased public demand for natural spring water. The state enacted legislation in 2006 whereby groundwater - like surface water - must be managed in the public trust. Decisions to permit large commercial withdrawals are to be based on clear guidelines. Towns have the opportunity to take part in the appeal process.

Implementation Recommendations:

Review adequacy of Route 16 aquifer protection and plan for improvement where needed.

Limit total percentage of impervious surfaces over the aquifer as well as restricting some uses and density of development.

Identify a seasonal conversion component for the Zoning Ordinance so that conversions of second homes to year-round residences meet all codes.

Educate the community to ways of reducing contaminants that could harm the aquifer and the importance of doing so.

Step up efforts to eliminate unauthorized dumping of junk where it can release toxins into the water system and clean up areas so despoiled such as Archers Pond.

Regulate excavation to prevent “breaking through,” intruding into the aquifer.

Wetlands

Wetlands comprise 5 to 10 percent of Ossipee acreage. As part of their responsibilities the Ossipee Conservation Commission has developed an index of wetlands. The list of properties containing wetlands that were not under some sort of permanent protection as of 2005 is located in the Appendix. However, a complete inventory of wetlands is needed to identify priority areas for protection.

A critical ecosystem component, wetlands provide important wildlife habitat plus flood control protection and water quality maintenance. There are different types of wetlands. These include emergent marsh with a mix of open water plus floating and stationary plants; scrub-shrub wetland where shrub species like willow and green sedge grow in wet soil; forested wetland where trees and undergrowth often grow in standing water; streams and lake shores; and large or small vernal pools that hold water for a short period in the spring.

Among the many beautiful wetlands in Ossipee is The Heath Pond Bog, a local treasure with national recognition. This “kettle hole” bog is part of the State-owned Ossipee Natural Area and is located just south of Route 25 East not far from Route 16. It is registered as a National Natural Landmark.

As alterations of wetlands can severely damage entire ecosystems, including lakes critical to the Ossipee tourism-based economy, there are extensive state regulations

governing permits to dredge and fill wetlands. These are backed by local zoning ordinances that protect wetlands. Landowners in violation can face high restoration costs plus significant fines. These regulations help protect the over 90 percent of the wildlife species in New Hampshire that use wetlands and shore areas, of which nearly half use wetlands as their preferred habitat, according to the UNH Cooperative Extension.

Implementation Recommendations:

Inventory wetlands to identify priority protection sites.

Preserve as conservation land or with easements those wetlands within Water Resource Protection Areas that provide drinking water supplies.

Encourage community awareness of wetlands through education, viewing sites, and appropriate trail systems.

Point Sources and Non-Point Sources of Water Pollution

The Ossipee Watershed is highly susceptible to pollution, because contaminants can be transmitted quickly through the sandy soils of the stratified drift aquifer on which much of the town is situated.

Keeping our surface and ground waters clean requires diligent water quality monitoring of Point Source Pollution (contamination from specific sources such as an industrial discharge pipe) and Non-Point Source Pollution (contaminants that are carried into streams, lakes, wetlands and groundwater by rain and snowmelt as a result of daily activity). Examples include fertilizers, pesticides, construction debris, road salts, etc.

Point Source Pollution is primarily regulated and monitored by the federal Environmental Protection Agency and NH Department of Environmental Services (DES). Non-Point Source Pollution control, however, is generally overseen by local municipalities through zoning regulations and best management practices adopted in Site Plan Reviews and Subdivision Regulations.

Pollution can occur over a long time period and require many years to resolve. For example, although the old Ossipee Dump and landfill off Route 171 was closed quite a few years ago, the site is being checked for 30 years for possible contaminants. Contact the NH Department of Environmental Services for the most current information about known pollution sites in Ossipee.

As people better understand how they can minimize Non-Point Source Pollution, it becomes less likely the surface and ground waters will be despoiled. For example, animal waste, fertilizers and failing septic systems can add nitrogen and phosphorus to stormwater runoff causing algae growth, reduced water clarity and other related problems. Similarly, auto emissions, fluid leaks and waste oil add toxic metals to water and sediment that can accumulate in the food chain killing fish and posing dangers to human health.

For some years Ossipee has helped to measure the water quality of several river and lake sites as part of the Green Mountain Conservation Group's Ossipee Watershed monitoring studies. From early May through late October, water is tested every two

weeks before 9 AM for turbidity, pH levels, dissolved oxygen content and temperature. The data and samples are forwarded to the State for use in overall water quality monitoring. Over time these measures can serve as indicators of changes for better or worse in water quality.

Stormwater drainage is another pollution problem where increased surface contaminants enter into the water system as the number of new developments increase. **Onsite stormwater management is the goal so that off-site impact is zero.**

Implementation Recommendations:

Disseminate information regularly to the community on how to prevent Non-Point Source Pollution.

Use Groundwater Protection District overlays during development proposal review to mitigate potential pollution problems.

Implement stormwater drainage controls to reduce offsite impact.

SOILS

Floodplain Soils

Floodplains are periodically inundated flat lands adjacent to rivers, streams, and lakes. They serve important ecological functions by storing water during floods and providing travel corridors for wildlife. The definition of floodplains is based on soil type. Development in flood plains presents some special problems. Floodplain soils in Ossiipee comprise over 2000 acres or 5% of the town's total land area. The largest areas are found along the Bearcamp, Beech, Lovell and Pine Rivers.

Implementation Recommendations:

Ensure containment of septic systems where structures are located in floodplains.

Clean up unauthorized junk from floodplains to prevent toxins from entering the water system.

Prime Agricultural Soils

Prime agricultural soils are an important natural resource in limited quantity. Using the criteria of soil quality, moisture supply and availability for agriculture (land not presently in another use), the 1983 Master Plan identified 1786 acres or 4% of the total land area as Prime Agricultural Land. Relatively small areas of Prime Agricultural Soils are found in Ossiipee: around Leighton's Corner, Circuit Road, Garland Pond, along Route 16B and around Ossiipee Lake. The information used to map the town in 1992 identified 929 acres or 1.93% of prime agricultural land compared to the total land area. While there may be differences in the way these figures were determined, it seems safe to say that the amount of Prime Agricultural Land now being farmed is rapidly decreasing. Since the other factors have not changed, reforestation and development of land previously available for agriculture are responsible for the decrease.

Implementation Recommendations:

Support a tax reduction for land in use as a working farm, especially where it is not under Current Use.

Encourage local farming as a source of locally grown foods; this reduces food transport costs and saves fuel.

Consider scenic farm easements to retain open farmland to preserve scenic landscapes and open space.

Forests

Maps from Complex Systems at UNH show that 83% or 40,330 acres of Ossipee is forested, making forestry a major industry in Ossipee. Trees found in these forests include mostly white pine, red oak, beech, red maple, sugar maple, white birch, yellow birch, white oak, hemlock, spruce, fir balsam and poplar.

Some areas of good forest soils are found in Water Village, on Foggs Ridge Road, near Archers Pond and across Route 16 and in the Knox Mountain-Moody Pond area. Forest soils are very sensitive to development, so regulatory language should be adopted to preserve their integrity.

The major benefits of forests are that they:

Stabilize the soil,

Absorb carbon dioxide and provide oxygen,

Filter out dust,

Stabilize the water table,

Provide shade and wind protection,

Provide scenic beauty, and support and protect wildlife.

Changes in land ownership are changing the forests. Many large pieces of land are being bought and cut too extensively, so that there will be no further cutting for many years. This is referred to as “terminal harvesting” in the 2000 report by the Society for the Protection of NH Forests. Many big lots are being subdivided into smaller ones, which are then developed. Thus there is a trend to younger forests with smaller trees.

Forests should be managed so as to sustain future wood harvests, retain healthy habitat and food sources for wildlife, and minimize disturbance to the scenic landscape. While good for the forest, these results are also good for Ossipee. Clearcutting should be discouraged because it causes soil erosion that despoils land and water resources, eliminates wildlife habitat, mars the landscape and often disturbs abutters. If after timber cutting the land is to be developed, a clearcut lowers its value because it is bereft of natural vegetation and landscape buffers which builders may have to replace to meet planning approval.

The existing prime forest stands suggest that the location of future cutting could negatively influence water quality, erosion, drainage and scenic resources. Many of the best remaining forests are on steep slopes. For many years these lots were considered inaccessible, but that has changed. Long-term harvesting is influenced by road accessibility, topography, market demand, drainage patterns, competing land uses and ownership characteristics. From one third to one half of Ossipee contains forest stands that have sufficient market potential to warrant large-scale operations.

Much of the timber cut in Ossipee is transported from the area without secondary processing, so there is no local value added. Poor quality wood, converted into chips, goes to the paper mills and the power plants - an uncertain market, which may be discontinued. Timberland owned by the town and managed by the Conservation Commission now has a Forest Stewardship Plan. People involved with forestry should continue to explore ways to increase their bottom line profit and protect the forests, such as through regional cooperative efforts. Long-range benefits to the town, the landowners and logging industry will increase by supporting legislation that encourages best forest management practices.

At present the landowner who wants to cut and sell timber must complete a NH "Intent to Cut" form and get Selectmen approval. Approval is routinely granted if taxes are paid and there is no cemetery on the property. There is no provision for the town to encourage best forestry management practices to avoid clearcutting, prevent erosion, etc. It may help preserve scenic landscapes and reduce clearcutting (and possible erosion that taxpayers ultimately pay to solve) if a letter goes with the signed Intent to Cut to the landowner encouraging good forestry management be observed. It is important to retain a town forester as soon as possible to help safeguard healthy forests.

Implementation Recommendations:

Retain a town forester as soon as possible to ensure Ossipee forests remain healthy.

Require larger lot sizes where necessary to protect forest soils sensitive to development.

Discourage clearcutting by giving landowners incentives to keep either a certain percentage of a lot treed or require trees of certain minimum size per land area to be planted if the land is to be developed.

Prohibit clearcutting in required setbacks to minimize loss of scenic landscape and effect on abutters.

Work with interested landowners to get permanent easements on forestland granted to public or private groups, so that lands remain forested, but continue to provide **income and industry**.

Topography and Slope

Topography information can be obtained from maps prepared by the United States Geographical Survey and other maps, including those in the appendix. On a topographic map, lines are drawn to connect land at the same elevation. If the lines are close together, it is because the land has a steep slope and changes elevation rapidly. If the lines are farther apart, the land is level. The elevation is indicated on the maps, so that the height of the land can be determined and compared to that around it or to other

standards. At the present time Ossipee boards are exploring the idea of using elevation to establish an overlay or district to limit development and enlarge lot size to protect ridgelines and slopes.

Slope, as explained in the Land Use chapter under Development Constraints, is the change in elevation over horizontal distance. Steep slopes present development issues that are not present with gentler slopes.

The Ossipee Zoning Ordinance deals with soil type and slope together in determining how much land is needed for a septic system, which affects the required lot size. Slopes of 8-15% require larger lot sizes than those of 0-8% on the same soil types. Slopes of 15-25% require even larger lots for the same soil type. The state will not issue permits for septic systems planned for land with over 25% slope.

Steep slopes and mountainsides were long thought unsuitable for building. However, in some communities today structures dot the mountains and hillsides in growing numbers, thus changing a scenic landscape into polka-dot sprawl. To preserve the rural character of Ossipee and conserve the mountain vistas, design concepts should **be incorporated into the planning approval process to ensure development on mountains and hillsides does not mar the scenic vista.**

Implementation Recommendations:

Create design guidelines to cover ridgelines and mountain and hillside structures to minimize impact on the scenic vista.

Locate structures below the ridgelines and below the crown lines of mature trees, utilizing the natural grade.

Minimize visual impact of overall size, height and location of structures to preserve the natural character of the landform.

Maintain natural landforms when building new roads with minimal grading where possible.

Scenic Vistas and Viewsheds

Ossipee is fortunate to have many scenic vistas and their preservation is an important goal for Ossipee.

The Ossipee Mountains, Green Mountain, Mt. Chocorua, and even Mt. Washington are visible from Route 16. Beautiful views of water include all of the lakes, ponds, rivers and streams in Ossipee. The dam at the Mill Pond is a unique scene. In reality, every part of Ossipee contains scenic views worthy of preserving.

Special vistas contribute significantly to positive quality of life in the town, add to property value and enhance the enjoyment of being in Ossipee. Development located in or near a scenic area that negatively impacts the viewshed, or identified view area, can be detrimental to the entire community.

Telecommunications towers can also mar the scenic vista and should be sited so as to be least intrusive to the skyline.

Fortunately, innovative land use measures called Visual Resources Protection Techniques are available today to assist in preservation of scenic resources and special views. They offer good opportunities for the town to protect its scenic vistas. They include careful location and spacing of buildings and close attention to their bulk and height to limit intrusion above the sightline. These can be addressed by the Planning Board during Site Plan Review and in Subdivision Regulations. These concepts can be integrated into the Ossipee Zoning Ordinance as slope or ridgeline regulations, so the Zoning Enforcement Officer has the authority to oversee adherence to preserving Ossipee's scenic views.

For example, to protect an eye-level or ground level view, such as a view of a lake, it is important that building bulk and spacing, as well as the placement and height of landscaping and fencing, not obstruct the scenic vista. Where a hillside lies within a scenic viewshed and its slope permits development, the visual impact should be minimized. Rather than site on top of the ridge lines, structures should be located below the ridge top and below the crown line of mature trees, so that overall size, height and location complement rather than interrupt the scenic vista.

It is important to retain screening on slopes with natural vegetation, trees and shrubs, if their removal will negatively impact the scenic vista. These green areas help create an impression of uninterrupted natural landscape.

Similarly, new roads should maintain natural landforms with minimal grading where possible. Building projects should utilize the natural grade, while ensuring that erosion controls are in place.

It is unlikely that there will be no development in Ossipee viewsheds, given the pressures of increasing population and judging by the common experience of surrounding Lakes Region towns. Where outright purchase of key lands or obtaining conservation easements is not possible to preserve important viewsheds, smart land use techniques allow for overseeing development in a way that protects viewsheds for the good of the community

Significant Ossipee Viewsheds on Route 16 include

Green Mountain to Mt. Washington from Sunny Villa knoll

Archers Pond to the Ossipee Mountain ring dike from Thissell-Smith Memorial Forest

White Mountains array from Boulder Hill Farm.

Implementation Recommendations:

Inventory scenic viewsheds.

Adopt design guidelines using Visual Resources Protection Techniques to preserve Ossipee scenic viewsheds.

Develop slope and ridgeline regulations and work with Selectmen to revise town road regulations in the viewshed so that minimal grading avoids erosion and visual interruptions.

Site telecommunications towers to minimize disruption of viewshed and skyline.

Dark Skies

Ossipee enjoys exceptionally dark and starry skies – a quality largely lost along the Eastern seaboard.

This important natural asset is both easy to lose as development accelerates and easy to save with a few basic measures governing lighting fixtures. “Light pollution” is prevented by minimizing the amount of light and glare cast onto the night sky. Appropriate outdoor lighting and illumination technology is available today to light areas safely and efficiently without polluting the night sky.

To maintain the historic and rural character of the town and to prevent reduction of visibility of the night sky, outside lighting should be fully shielded, so no light rays are emitted above the horizon from the lamp, its lens structure or reflector (exceptions are temporary emergency lighting, hazard warning lights, etc.). Light sources should also incorporate new technologies that offer better light control and use less energy.

The NH Office of State Energy and Planning advises that dark sky preservation is a regional issue that every town must address if current and future generations are to enjoy the night sky, and notes that this experience is virtually gone in many urbanized states and localities.

Implementation Recommendations:

Adopt regulations requiring new outdoor lighting and replacement lights be fully shielded so no light rays are emitted above the horizontal (except for temporary emergency lighting, hazard warning lights, etc.).

Encourage dark sky policies in region through Lakes Region Planning Commission.

Wildlife Habitats and Corridors

Ossipee retains significant large unsegmented lands that provide critical habitat for its extensive and diverse wildlife populations. Corridors within and between these lands, especially along streambeds, provide travel routes necessary for wildlife survival. As development proceeds, planning should ensure preservation of these natural corridors that connect unsegmented lands for wildlife survival and protection. Preservation of 300-foot riparian corridors along significant streams will serve this goal.

Forests, fields, wetlands and water bodies are important habitats for many species of wildlife.

Forestlands provide habitat for a variety of mammals including whitetail deer, moose, bears, raccoons, skunks, fisher, snowshoe hare and squirrels. Year-round birds that live in the forests include ruffed grouse, crows, woodpeckers, blue jays, nuthatches, chickadees, purple finches, goldfinches and juncos. Warblers can often be heard, if not seen, in the trees.

Ossipee's wetlands are prime habitats for beaver, muskrat, mink and otter, as well as frogs, toads, turtles, salamanders and insects. Herons, ducks and loons use the wetlands for nesting.

Open grasslands provide cover for mice, moles, chipmunks and shrews. Foxes and woodchucks live in holes. Robins, sparrows, swallows, wild turkeys and mourning doves frequent open areas. Ruby-throated hummingbirds visit summer flower gardens and hummingbird feeders. Transitional areas between habitats are among the busiest wildlife areas.

Many colorful birds migrate through this area, such as scarlet tanagers, grosbeaks, redwing blackbirds and cardinals. Many times cardinals will stay around a bird feeder all winter. The large number of bird feeders available for birds in the winter has raised the bird population in this area, both in numbers and species. Chickadees and blue jays are among the most common birds here year-round.

Wildlife do not use property on a random basis but for the food, water, cover and space they require to survive. As noted, they often travel between feeding, breeding, watering and resting areas along established corridors. As more people move to Ossipee existing wildlife habitat and corridors will be reduced, especially for the larger animals that require more space than smaller ones. It is important that any major change of land use be planned in a way that prevents destruction or long term disruption of established wildlife habitat and corridors.

Implementation Recommendations:

Preserve riparian corridors along significant streams between large unsegmented lands to protect wildlife.

Survey wildlife habitat and corridors prior to any major land use change and designate viable set-sides that minimize disturbance to wildlife under the proposed change of use.

Encourage community participation in wildlife observation and population counts to raise awareness.

Ossipee Natural Resource Inventory, by Tax Map & lot, Of Areas Lacking Permanent Protection as of 2000 To aid in good stewardship of the land the Ossipee Conservation Commission has compiled by tax map and lot number a list of key properties unprotected as of 2000 where important natural resources are located, found in the Appendix. The list does not contain public lands nor does it contain private lands in Ossipee already protected through ownership or conservation easement which in 2004 comprised some 15-20 percent of the town's 45,263 acres, according to the Society for the Protection of NH Forests (SPNHF). This organization recommends at least 25 percent of a town be protected to support essential ecosystems and quality of life.

The property list was derived from a series of maps in the Ossipee Town Hall that were published in January 2000 by the SPNHF for the Green Mountain Conservation Group. These maps are the town's Natural Resource Inventory and they are based on data from the New Hampshire Geographically Referenced Analysis and Information Transfer System (NH GRANIT), with assistance from the UNH Cooperative Extension and USDA Forest Service. Together with the Ossipee Master Plan and Zoning Ordinance, the maps and supplemental property list by tax map and lot number can assist in land use planning and preservation.

Besides properties mapped as containing wetlands and prime agricultural soils unprotected as of 2000 the list includes key properties where, in some spots, as many as 4 or more natural resource factors co-occur or overlap. These key natural resources vary by location but could be any one of 8 naturally occurring resources within the town -- from Source Water Protection Areas that feed local or regional water supplies, Stratified drift aquifers, hydric soils, lands unfragmented by major roads, etc. Locations of key forest and forest soils will be added to the list later.

The properties are grouped by Fire Precinct -- West Ossipee, Center Ossipee and Ossipee Corner -- and are described by proximity to river, road or railroad boundary. Where a natural resource spans several properties -- such as an expanse of wetland -- every lot so mapped is listed. Conditions of the properties vary from residential to commercial use to completely undeveloped. Some of the properties greater than 10 acres in size are in Current Use status that affords tax advantages but no permanent protection. What they all have in common are key resources that occur naturally within Ossipee.

It is noteworthy that many "important" properties on the list, though lacking formal protection status, have long been managed by their owners so as to preserve the town's outstanding mountain and lake vistas, rural character and unrestricted habitats for wildlife -- attributes valued by the overwhelming percentage of Ossipee property owners. Such stewardship benefits all.

Implementation Recommendations:

Complete Natural Resource Inventory of unprotected forest lands and high quality forest soils.