# CHAPTER 3 - THE AFFECTED ENVIRONMENT

This chapter describes the affected environment as it relates to the purpose and need for the project (Chapter 1) and the major issues of the project (Chapter 2). The first section in this chapter describes some of the general features and resources in the project area. The second section describes the more specific affected environment for this analysis. Each subsection identifies the measures that will be used to identify the potential impacts on the specific resource. The affected resources as described in this section each have a corresponding environmental effects section in Chapter 4.

## 3.1 Affected Environment (General)

### 3.1.1 Soils, Water, and Vegetation Composition and Structure

The Hoffman-Sailor West project area is comprised primarily of Landtype Association (LTA) Xa03. See the Landtype Association Map at the end of this document. Xa03 is composed of coarse glacial ground moraine till that has been water worked and intermixed with areas of sandy outwash. The southern portion of the project area has significant inclusions of loamy glacial ground moraine (Cary Till) that was not water worked and silt loam capped drumlins. The entire project area includes a high proportion of wetland types interspersed with uplands. The Wetlands Map at the end of this document shows the wetland/upland pattern of the area. Most of the upland soils are moderately well drained.

The project area is within the South Fork Flambeau River and the Elk River watersheds. These watersheds are within the Chippewa River drainage basin. Lake resources include Sailor Lake, Spur Lake, Gates Lake and Nichols Lake. There are two water impoundments in the project area. These are the Upper and Lower Squaw Creek Impoundments. Creeks in the project area include Dalrymple, Hogsback Springs, Sailor, Squaw and Hoffman. See the Lakes and Streams Map at the end of the document for locations.

Historic upland vegetation communities were hemlock/hardwood forest with minor inclusions of pine dominated forest on sandy outwash soils. The richer loam and silt loam soils supported a mesic northern hardwood forest that was predominately sugar maple, basswood, and white ash with minor amounts of hemlock, yellow birch and white pine. Existing upland vegetation is a mix of aspen and paper birch with scattered pine, spruce, and northern hardwood forest. Most of the pine and spruce is planted. Extensive logging and slash fires around the turn of the twentieth century have significantly changed the historic vegetation communities to a landscape that is currently dominated by early successional species. Much of the pine and hemlock seed source was eliminated by these slash fires. The rich loamy and silt loam soils, once dominated by the northern hardwood forest, were converted to paper birch and aspen with minor amounts of poor quality red maple because fire eliminated much of the sugar maple, ash, and basswood regeneration and created ground conditions that allowed aspen and paper birch to successfully regenerate. A Forest wide assessment (Landscape Analysis and Design on the Chequamegon-Nicolet National Forest - April 1999 - Draft) considers the recovery potential for northern hardwood/hemlock, interior forest in LTA Xa03 as poor. Only those areas with high, medium, and low recovery potential were ranked. Poor potential areas did not fall into any of these three rankings.

Table 3-1 shows the approximate existing vegetation percentages in the project area. Nearly half of the project area is in wetland types. Of the remaining upland types, close to 80% is early successional types such as aspen, balsam fir, and paper birch.

**Table 3-1: Percent of Area by Forest Type**

| Forest Type | % |
|---|---|
| red pine | 2.5 |
| white pine | 0.5 |
| balsam fir | 0.9 |
| black spruce -wet | 2.7 |
| white cedar | 2.1 |
| tamarack | 1.0 |
| white spruce | 3.5 |
| swamp conifer | 1.1 |
| black ash | 1.7 |
| red maple - wet | 0.1 |
| maple/basswood | 0.1 |
| red maple - dry | 0.9 |

| Forest Type | % |
|---|---|
| sugar maple | 1.2 |
| mixed hardwood | 4.7 |
| aspen | 34.8 |
| paper birch | 8.1 |
| aspen/spruce/fir | 0.9 |
| wetland brush | 31.0 |
| upland open/brush | 0.3 |
| water | 1.9 |
| TOTAL: | **100** |
| | |
| Total Upland Types | **58** |
| Total Wetland Types | **42** |

Table 3-2 shows the estimated age distribution of the aspen/balsam fir type and the paper birch type.

**Table 3-2: Aspen/Balsam Fir and Paper Birch Age Class Distribution**

| Aspen/Fir Age Classes | % |
|---|---|
| 0-10 | 7 |
| 11-20 | 6 |
| 21-30 | 9 |
| 31-40 | 32 |
| 41-50 | 23 |
| 51+ | 23 |

| Birch Age Classes | % |
|---|---|
| 0-10 | 3 |
| 11-20 | 0 |
| 21-30 | 0 |
| 31-40 | 2 |
| 41-50 | 0 |
| 51-60 | 7 |
| 61-70 | 79 |
| 71-80 | 8 |
| 81+ | 2 |

The age distribution of both groups is heavier to the older age classes.

### 3.1.2 Special Management Area Consideration

There has been increasing concern and understanding about the impact of management activities on ecosystem diversity and integrity. A Forest wide process to address some of the diversity issues has begun (Landscape Analysis and Design - LAD). The final result of the LAD process is to ensure that species of plants and animals that are currently present or have the potential to be present will continue to exist on the Forest. The first phase of the process is to identify and inventory the "best" representatives of forested and non-forested communities. "Best" could mean those communities with the most diversity, that are developing old growth characteristics, that are rare, etc. These areas will be ranked and a decision will be made as to how to best manage the areas to keep their characteristics intact. This is being accomplished through the Chequamegon-Nicolet National Forest, Forest Plan revision process that is currently underway. The Hoffman-Sailor West area contains LAD inventory areas I109, I112, and I114. There are no projects being proposed in these LAD inventory areas, with the exception of some road closures. See the Special Management Areas Map for the location of the LAD areas. In the DEIS, Appendix N for the Proposed Chequamegon-Nicolet Land and Resource Management Plan (page N-3) these 3 LAD areas are being proposed for old growth management (8G management prescription) in some of the proposed Forest Plan alternatives.

Part of the ongoing Forest Plan revision process includes the identification of unique or outstanding features that are attractive to people in a recreational setting. These features can include landforms, water bodies, scenic views, stands with large trees, or structures and heritage resources. Areas identified provide a unique recreational setting and are attractive to people who are seeking a particular aesthetic experience. There is one feature within the project area that has been identified in this inventory. Hogsback esker and hiking trail is a unique glacial landform (esker) that also provides opportunities for scenic viewing. Hogsback trail (FT 124) can be found on the Main Roads and Trails Map. Hogsback Springs can be found on the Lakes and Streams Map. There are no projects proposed along this trail or esker. Some old roads that access the trail are being planned for decommissioning.

### 3.1.3 Recreation Facilities

In addition to the Hogsback Hiking Trail (FT 124), there are several other recreation facilities within the Hoffman-Sailor West project area. There is a developed day use picnic area and campground on Sailor Lake, portions of snowmobile/ATV trails (FT 102, 103, 121, and 130), hunter-walking trails (FT 128 and 130), and several boat landings. These facilities are shown on the Special Management Areas Map at the end of this document. Except for FT 124, portions of the trails in the project area are also used for access and management of the area and are considered part of the classified transportation system (Hoffman-Sailor West Roads Analysis, July 11, 2001).

## 3.2 Affected Environment (Specific)

### 3.2.1 Federally Threatened and Endangered Species (Bald Eagle) (Purpose/Need 1.4.5, Issue 2.2.1)

Within the Hoffman-Sailor West area, one federally listed species is known to occur (bald eagle). Bald eagles can be impacted by activities near their nest sites and by a change in habitat (removal of nest or perch trees) that could occur as a result of timber harvest. There is one recently established (2001) nest in the project area. Mitigation and design criteria for timber harvest activity result in maintenance of "perch" trees and future nesting trees near bald eagle feeding and nesting areas such as Sailor Lake. For potential timber harvest in areas close to the bald eagle nest site, seasonal restrictions prevent disturbance to the eagles while they are in the process of incubation and rearing young. Sailor Lake is managed primarily for fisheries. This management maintains the bald eagle feeding habitat in the project area.

Project prescriptions, design and mitigation measures 22, 37, and 38 (see Table 2-2, Chapter 2) prevent loss of potential bald eagle nesting habitat, provide future nesting habitat (white pine planting), and prevent disturbance to nest trees from Forest Service activities during critical time periods.

Yearly monitoring of known eagle territories is conducted by the Wisconsin Department of Natural Resources. For 2002, of the 41 nests sites monitored on the Chequamegon side of the Forest, 36 territories were active and 23 produced young. The Forest Plan (page IV-76) identifies a goal of 30 nesting pairs of bald eagle. The nest within the project area did not produce young in 2001 or 2002.

Appendix A of this document contains a summary of a threatened and endangered species analysis conducted for this project. Information on other federally listed species considered in this analysis is contained in that appendix.

**Effect Indicator(s):**
Nest disturbance.
Availability of bald eagle nesting habitat.

### 3.2.2 Management Indicator Species (White-Tailed Deer and Ruffed Grouse) (Purpose/Need 1.4.3)

Management Indicator Species (MIS) are those organisms whose characteristics (e.g. presence or absence, population density, dispersion, reproductive success) are used as an index of attributes to measure for other species or environmental conditions of interest.

While many MIS species have habitat and are known to occur in the project area, the proposed activities only have the potential to impact populations of white-tailed deer, ruffed grouse, brook trout, and bald eagle. Bald eagle is discussed in the previous section of this document (3.2.1). Brook trout is discussed in the subsequent section (3.2.3).

Appendix A of this document contains a summary of the MIS Report for this analysis. Information on the other MIS species considered in this analysis is contained in that appendix.

White-tailed deer and ruffed grouse both need early-successional habitat, and utilize aspen for foraging (Purpose and Need, pages 10 & 11, of Hoffman-Sailor West Project Proposed Federal Action, April 18, 2001). Grouse also utilize mature aspen for winter feeding and spring drumming habitat. In addition to game species such as white-tailed deer, ruffed grouse, and snowshoe hare, other benefiting non-game species that utilize early successional habitat would be golden-winged warbler and chestnut-sided warbler. Pioneer types of vegetation such as aspen, balsam fir, and paper birch also provide a prey base for wildlife such as woodland hawks, wolves, and bobcat to name a few.

Optimum grouse habitat is 4 different age classes of aspen at 10-15 year age intervals, within close proximity of each other (100 yards). This type of habitat would result in 13-20 grouse per 100 acres. Small patch size (10-15 acres) is the ideal. Research indicates that larger patches resulted in 5 grouse per 100 acres (personal communication, Gary Zimmer, Ruffed Grouse Society Regional Biologist, 4/6/01). Grouse use of larger clearcut patches was more closely associated with the edges of the clearcut. Larger clearcuts spread out the basic requirements for grouse, making them sub-optimum for maximum grouse production. The Squaw Creek Wildlife Management Area is managed in part for ruffed grouse. Uncut islands within larger clearcuts can help provide older aspen age classes within adequate proximity, and thus slightly increase grouse production in clearcuts over 10 acres. Grouse also utilize alder edges, of which there is a large amount of this habitat in the Hoffman-Sailor West project area. Ruffed grouse are currently on the downward side of their 10-year cycle, so the population is currently at a natural low.

Project prescription, design and mitigation measure 75 (see Table 2-2, Chapter 2) reduces potential impacts to grouse habitat by maintaining mature islands of trees within clearcut areas.

Similarly, white-tailed deer respond better to smaller clearcuts than larger ones. Clearcuts are heavily used by deer in the first few growing seasons, next the edges and borders are used, until after a few years the vegetation grows out of reach of the deer. The amount of regeneration and slash could limit deer penetration of clearcut areas, with clearcut areas larger than 20 acres being less accessible to deer (Halls, 1984, White-tailed Deer Ecology and Management, pages 637-640).

**Effect Indicator(s) - Deer:**
Average size of temporary openings.
Acres of aspen.

**Effect Indicator(s) - Grouse:**
Average size of temporary openings.
Acres of aspen.
Aspen age class.

### 3.2.3 Management Indicator Species (Brook Trout) (Purpose/Need 1.4.4)

Hogsback springs and Dalrymple Creek are considered Class II trout waters. Class II trout waters may have some natural reproduction occurring, but not enough to utilize available food and space. Class II trout waters generally have good survival and carryover of adult trout, often producing some fish larger than average size. Having adequate canopy cover in conjunction with groundwater flow is important in maintaining the lower water temperatures necessary for trout habitat. Timber harvest activity could result in removal of vegetation (trees) that provides shade. There are no vegetation removal proposals being considered adjacent to Hogsback springs. Dalrymple Creek does have timber harvest proposals adjacent to it. Project prescription, design and mitigation measure 72 (see Table 2-2, Chapter 2) requires that a shade source be kept adjacent to Dalrymple Creek.

Beaver can negatively affect Wisconsin trout steams by creating dams and cutting down trees adjacent to streams. Both of these actions can raise water temperatures and negatively affect trout and other cold water species. It is desirable to manage against aspen, beaver's preferred food, adjacent to cold water streams (Purpose and Need, pages 12 & 13, of Hoffman-Sailor West Project Proposed Federal Action, April 18, 2001). Project prescriptions, design and mitigation measures 19, 20, 21, 32, and 33 (see Table 2-2, Chapter 2) require conversion to conifer and hardwood along Dalrymple Creek and its tributaries.

**Effect Indicator(s):**
Aspen reduction along Dalrymple Creek.

### 3.2.4 Forest Vegetation Composition (Purpose/Need 1.4.2)

Vegetation composition can be used as indicators for aspects of overall biodiversity within the area. Forested vegetation composition will change within the area as a result of project implementation. While aspen is the main focus for forest type and management emphasis in this project area, other types (such as conifer and upland openings) are also important (see Chapter 1).

**Effect Indicator(s):**
Forest type changes (acres).
Percent of area by Forest Type.

### 3.2.5 Landscape Pattern (Issue 2.2.2)

The existing landscape pattern of the project area is determined by glacial geology and ecological potential influenced by historic events. This pattern is one of small patches of upland forest and wetland. Almost 50% of the landscape is wetlands. Historical logging and fire produced an upland landscape dominated by early successional forest (primarily aspen, paper birch, and some balsam fir). Since establishment of the early successional forest, management for early successional habitat has continued. The structure of the existing forested upland landscape is predominantly a pattern of dispersed age and size classes with small patch sizes. The upland forest has a wide range of vertical structure and many areas of forest are less than 30 years old. Soft edges of this type (forested edges rather than the type of edge formed between forest and agricultural land or urban areas) do have some effect on the overall functioning of the area for some species of neotropical migrant songbirds (NTMB). Stands that have vertical structure, suitable cavity trees, large conifer, or an understory of shrub, conifer or other tree species, tend to be more productive habitat, although young forest is more important to other NTMB species. Edge effects and effects on landscape pattern (amount of interior forest habitat)

could potentially be increased or decreased by the pattern and size of the temporary openings created with clearcut and shelterwood harvest.

In the type of landscape in the project area, effects from edge and forest fragmentation due to timber harvest and other management activities on the reproductive success of NTMB's could occur.

**Effect Indicator(s):**
Average forest patch size by age classes.
Acres of forest interior and edge habitat.
Interior and edge habitat ratio.

### 3.2.6 Visual Quality (Issue 2.2.3)

Visual quality (primarily within recreation areas and along traveled corridors including lake shore) is an important aspect of managing the Chequamegon-Nicolet National Forest. Some areas of the Forest are classed as more visually sensitive than others.

Retention areas are areas that are considered to be very sensitive. Along these areas the desired condition is a natural forested appearance with the landscape showing little evidence of management activities. Recreation areas and corridors classified as retention within the project area are Highway 70 and Sailor Lake Campground and picnic area. Visual impacts could include visibility of slash from logging activity and the appearance of openings that appear unnatural. Other potential visual impacts could be timber harvest activities such as log decking and loading.

Main roads, recreation trails, and some water bodies are also visually sensitive areas with a visual quality objective of partial retention. These areas have a moderate sensitivity level where management activity is somewhat more apparent than in retention areas. Roads and trails in this category that could be visually impacted by the proposed activities include Forest Road (FR) 136, FR 139, FR 138, Forest Trail (FT), 102 (motorized trail), and FT 121 (motorized trail). Sailor Lake also falls in this visual sensitivity category.

The remaining travel corridors in the project area still have some visual sensitivity, even though it is not as critical as the retention and partial retention visual quality objectives. The visual quality in these remaining areas is one of modification where management activity is evident. Management activities are more noticeable in a modification setting, but still have visual guidelines.

Project prescriptions, design and mitigation measures 53, 54, 55, 56, 57, 58, 59, 60, 61, and 62 (see Table 2-2, Chapter 2) limit the impacts to visual quality within the project area. These measures call for design of harvest units that will blend them into the landscape. Logging debris (slash) would be removed from visually sensitive areas. However, even with these measures in place, management activities (primarily temporary openings resulting from timber harvest) could be more noticeable in Alternatives C and D which contain harvest activity that will create temporary openings that are larger than 40 acres in size. Areas with visual quality objectives of retention and partial retention would be the areas of primary concern since these are areas where management activities should be less noticeable.

Another aspect of visual quality is the amount of temporary openings within areas with a recreation opportunity spectrum of semi-primitive, motorized. Most of the project area has a recreation opportunity spectrum of roaded, natural. In a roaded, natural setting management activities are more evident than in a semi-primitive, motorized setting. There are 2 sections of the project area that are considered semi-primitive, motorized. By varying the size and amount of temporary openings that would be created in each alternative, management activities could be more or less noticeable.

**Effect Indicator(s):**
Amount of temporary openings in visually sensitive areas.

### 3.2.7 Pulpwood Production (Purpose/Need 1.4.1 and 1.4.6)

One of the primary aspects of management of the project area is to provide an even flow of aspen pulpwood and other types of forest products (see Chapter 1). Alternatives vary in the amount of wood that will be harvested.

**Effect Indicator(s):**
Timber harvest volume.
Aspen/fir age class distribution.

### 3.2.8 Economics (Issue 2.2.4)

Overall, the economic effects of the proposed action or alternatives for this analysis do not result in substantial changes to the economic conditions of the community such as added or subtracted jobs or population supported by Forest activities. This is because the Forest Plan goals are broad in nature and meant to be accomplished over a period of decades. Implementation or non-implementation of any one project would not affect the economic conditions of the area. While economic effects discussed in the 1986 Forest Plan Final Environmental Impact Statement (pages IV-87 through IV-96) will not substantially change as a result of this analysis, there are still some potential economic impacts that are a concern at the project level.

The Forest Service and the public are concerned that timber harvest projects can be done in a cost effective manner and that the alternatives considered clearly identify the direct implementation costs and revenues associated with them.

**Effect Indicator(s):**
Direct costs of timber harvest.
Direct revenue of timber harvest.
Revenue/cost ratio.

### 3.2.9 Transportation System (Purpose/Need 1.4.7)

One of the purposes of the proposal is to develop and maintain a transportation system that is suitable for administration of the project area as well as one that reduces potential impacts to resources and provides adequate recreation access (see Chapter 1). Alternatives differ in the type and amount of access provided in each alternative.

**Effect Indicator(s):**
Miles of road projects.
Road density.