

## Appendix H: Management Indicator Species Data

Monitoring requirements for Management Indicator Species (MIS) for the Chequamegon land base of the Chequamegon-Nicolet National Forest (CNF) are addressed on pages IV-87 and 88, V-13 and 14, and Appendix B of the Land and Resource Management Plan, Chequamegon National Forest (USDA Forest Service, 1986); pages III-25-28 of the Final Environmental Impact Statement (FEIS - 1986); and pages D-16 to D-19, FEIS Appendices. Additional background information is contained in a report entitled “Process Used in Selecting Management Indicator Species”, available as part of the Planning Record in the Park Falls Supervisor’s Office.

The End of Decade Monitoring Report for the Chequamegon-Nicolet National Forest (1998 – pp. 23-24) provides an update to wildlife populations for the period from 1986 to 1996. This report includes a summary of monitoring methods and trend data for selected key MIS for alternative comparison and monitoring identified in the Chequamegon’s FEIS.

Site-specific surveys are recommended for certain MIS if suitable habitat exists within the project area. For other species, randomized plot or transect surveys are utilized for assessing area populations. Complete project area site-specific surveys are not necessary to assess populations of these species.

### Habitat by Vegetation Type

Forest Type	Chequamegon Forest Acres	Great Divide District Acres	Project Area Acres
Aspen	204,054	79,093	8,304
Balsam Fir	15,916	11,955	707
Jack Pine	24,244	1,197	169
Hemlock	4,047	803	30
Northern Hardwood	215,268	112,873	9,555
Oak	31,592	2,808	17
Paper Birch	22,851	6,216	221
Red Pine	61,867	16,738	1,046
White Pine	11,151	3,673	49
White Spruce	14,199	7,542	627
Upland Opening	18,529	4,384	231
Lowland Conifer	93,748	65,272	7,205
Lowland Hardwood	30,819	14,974	1,810
Lowland Opening	100,269	39,808	2,268
<b>Total Acres</b>	<b>848,554</b>	<b>367,336</b>	<b>32,239</b>

**MANAGEMENT INDICATOR SPECIES**

**Common Loon**

**Preferred habitat:** Open water lakes larger than 20 acres with clear or light brown water.

**Unit of measure:** Population trends.

**Frequency of measure:** A portion of district lakes are surveyed each year, by FS personnel and volunteers. Randomized lake surveys coordinated by Wisconsin Project Loon Watch are conducted every 5 years. Additional site-specific surveys are recommended for this species if suitable habitat is present in the project area.

**Management objective:** Provide habitat that will support approximately 82 breeding pairs Forest-wide. Monitor selected lakes in cooperation with Project Loon Watch. Selected lakes are surveyed by volunteer “loon rangers” and/or by district personnel that report activity on specific lakes. Lakes are surveyed mostly in July following nesting activity. Data is collected on the number of adults and young and maintained at the respective district offices as well as the Sigurd Olson Environmental Institute at Northland College in Ashland, WI.

**Habitat needed to meet management objective:** Approximately 6,786 acres.

**Current habitat availability:** 14,460 acres; 828 within project area.

**Population trend data:** Although no precise continent wide estimate of populations is available, approximately 500,000 to 600,000 adults occur in the U.S. and Canada (Southeast Pine Environmental Assessment, Appendix G – p. 103). The estimated number of adults in the lower U.S. number close to 18,000 with about 34,000 found in Alaska. Wisconsin loon numbers appeared to increase in the 1970’s and early 1980’s and leveled off in the late 1980’s and 1990’s (Daulton et al. 1997 – p. 196). Forest populations have followed these statewide trends and appear to be relatively stable. Loons use nearly all of the lakes larger than 20 acres on the Great Divide district to some extent. Loons have been observed with young at least once on 37 district lakes; regular nesting probably occurs on at least 14 of those. Adult loons have been observed on an additional 9 district lakes. District populations appear to be relatively stable. The following data was gathered through district surveys and volunteer surveys, and was compiled by Project Loon Watch (Sigurd Olson Environmental Institute, Northland College, Ashland, WI). It should be noted that much of the yearly variation in numbers is related to survey effort (number of lakes surveyed).

Year	# District Lakes surveyed	Adult Residents	Territorial Pairs	Young Hatched	Young Fledged
1986	8	10	5	2	2
1987	5	8	4	2	2
1988	5	3	1	2	2
1989	14	20	9	4	1
1990	10	17	6	5	5
1991	10	20	5	3	1
1992	10	16	7	6	4
1993	7	16	5	5	2

Year	# District Lakes surveyed	Adult Residents	Territorial Pairs	Young Hatched	Young Fledged
1994	5	14	6	3	3
1995	5	6	4	3	2
1996	8	21	8	5	4
1997	5	17	5	2	2
1998	3	8	4	0	0
1999	3	5	2	1	1
2000	No data	ND	ND	ND	ND
2001	9	5	2	2	2

Randomized 5-year Lake Survey			
Year	Number of District Lakes Surveyed	Adult Loons	Loon Chicks
1985	8	4	0
1990	9	4	0
1995	7	9	3
2000	5	8	1

The University of Minnesota, Duluth, Natural Resources Research Institute (NRRI) Breeding Bird Survey data for 1992-1999 on the Great Divide District identified 23 individuals from 10 forest stands (total of 41 stands surveyed on district). These were likely recorded either as “flyovers” or heard from nearby lakes. In addition, population estimates for the Chequamegon land base, the Great Divide District, and the project area are displayed in Table 1. They were calculated using the Nicolet National Forest Bird Information Retrieval and Display (NNFBIRD) population modeling software program (Dobiesz 1998).

### **Ring-necked Duck**

**Preferred habitat:** Sedge meadow, sphagnum bog, deep marsh, open water.

**Unit of measure:** Amount of habitat available and population trends.

**Frequency of measure:** 10 years.

**Management objective:** Provide habitat that will support 350 breeding pairs. Monitor in cooperation with Wisconsin Department of Natural Resources (WDNR). Amount of available habitat is tracked through CNF Combined Data System (CDS).

**Habitat needed to meet management objective:** 2,015 acres sedge meadow, 465 acres sphagnum bog, 310 acres deep marsh, and 310 acres open water.

**Current habitat availability:** 5,900 acres sedge meadow, 10,580 acres sphagnum bog, 5,900 acres deep marsh, and 25,000 acres open water Forest-wide; project area has 188 acres sedge meadow, 137 acres sphagnum bog, 3 acres deep marsh, and 828 acres open water.

**Population trend data:** The U.S. Fish and Wildlife Service (FWS) does not estimate regional figures for ring-necked ducks. WDNR waterfowl surveys include the ring-necked duck with “other” ducks and do not estimate a state population. In northern Wisconsin the ring-necked duck is considered common but occurs in low densities. The population is felt to be stable to slightly increasing (Delta-Drummond Environmental Assessment, Appendix E – p. 2). The Forest Service has not conducted surveys specifically for ring-necked ducks on the Forest. Population estimates for the Chequamegon land base, Great Divide District, and project area, calculated using the NNFBIIRD population modeling software program (Dobiesz 1998) are shown in Table 1.

### Common Yellowthroat

**Preferred habitat:** Shrub swamp.

**Unit of measure:** Amount of habitat available; ten-minute point count taken across all cover types.

**Frequency of measure:** Yearly counts using standardized point counts, conducted since 1992 by NRRI.

**Management objective:** Provide habitat that will support 18,390 breeding pairs on the Chequamegon. Amount of habitat is tracked through CDS. Population trends are tracked through yearly Chequamegon Breeding Bird Survey.

**Habitat needed to meet management objective:** 23,300 acres of shrub swamp.

**Current habitat availability:** 44,688 acres of shrub swamp Forest-wide; 1,676 acres in project area.

**Population trend data:** NRRI Breeding Bird Survey data for 1992-1999 on the Great Divide district identified 138 individuals from 21 forest stands (total of 41 stands surveyed on district). NRRI population trend estimates for the CNF indicated a significant decline between 1991 and 2000; a significant decline was also noted for the northern hardwood/spruce region, according to U.S. Geological Survey’s Breeding Bird Survey (BBS) records (Lind et al., 2001 – p. 9). An analysis of BBS routes nationwide indicated a significant decline of this species in eastern and central North America from 1978-1988, and a significant increase in western states from 1966-1988 (Natureserve, 2000). Another analysis of the BBS data showed a nationwide decline of about 2% over the previous 10 years (Niemi et al., 1992 – species account for common yellowthroat). Population estimates for the CNF, Great Divide District, and project area, calculated using NNFBIIRD population modeling software program (Dobiesz, 1998) are displayed in Table 1.

### Pileated Woodpecker

**Preferred habitat:** Swamp conifer and northern hardwoods.

**Unit of measure:** Amount of habitat available and population trends.

**Frequency of measure:** Yearly counts using standardized point counts, conducted since 1992 by NRRI.

**Management objective:** Provide habitat that will support 1,290 breeding pairs on the Chequamegon. Amount of habitat is tracked through CDS. Population trends are tracked through yearly Chequamegon Breeding Bird Survey.

**Habitat needed to meet management objective:** 56,115 acres swamp conifer over 70 years old with not less than 11,350 acres over 100 years old; 168,400 acres northern hardwood over 70 years old with not less than 11,350 acres over 110 years old.

**Current habitat availability:** Forest-wide: 76,976 acres swamp conifer over 70 years old, with 29,430

acres over 100 years old. 158,380 acres northern hardwood over 70 years old, with 3273 acres over 110 years old, and 10,250 typed with no age (mature uneven age condition). Project area: 5015 acres swamp conifer over 70 years old, with 2217 acres over 100 years old; 5304 acres northern hardwood over 70 years old, with 130 acres over 110 years old.

**Population trend data:** NRRI Breeding Bird Survey data for 1992-1999 on the Great Divide District identified 11 individuals from 10 forest stands (total of 41 stands surveyed on district). According to BBS data, there has been a significant increase of 33% in North America between 1966 and 1993 (NatureServe, 2000). Historic literature indicates the population can fluctuate widely over the years, but most authors report noticeable increases from the 1960's into the 1990's. Robbins (1991 – pp. 373-374) reports an increasing number in Wisconsin Christmas Bird Counts since 1973. Rolley (2000 – p. 149) reported a highly significant increase in pileated woodpeckers in Wisconsin between 1983 and 1996. Trends for the Nicolet National Forest since 1986 vary year by year but appear to be relatively stable. Population estimates for the CNF, Great Divide District, and project area calculated using NNFBIIRD population modeling software program (Dobiesz, 1998) are displayed in Table 1.

### **Pine Warbler**

**Preferred habitat:** Red and white pine and white spruce over 130 years of age.

**Unit of measure:** Amount of habitat available; ten-minute point count taken across all cover types.

**Frequency of measure:** Yearly counts using standardized point counts, conducted since 1992 by NRRI.

**Management objective:** Provide habitat that will support 1,878 breeding pairs on the Chequamegon. Amount of habitat is tracked through CDS. Population trends are tracked through yearly Chequamegon Breeding Bird Survey.

**Habitat needed to meet management objective:** 5,634 acres of red and white pine and white spruce over 130 years old.

**Current habitat availability:** 370 acres of red and white pine and white spruce over 130 years old Forest-wide; 0 acres within project area.

Note: Habitat availability according to Forest Plan guidelines would suggest a substantial shortage of age and type required to support management objectives. More recent observations from both Chequamegon and Nicolet bird surveys however have indicated territories of this species in much younger conifer stands, including plantation red pine stands originating from the late 1920's and early 1930's.

**Population trend data:** NRRI Breeding Bird Survey data for 1992-1999 on the Great Divide District identified 11 individuals from 9 forest stands (total of 41 stands surveyed on district). BBS data indicates a significant increase range wide of 65% from 1966 to 1993 and 30% from 1984 to 1993 (NatureServe, 2000). In Wisconsin, pine warblers are considered a fairly common resident in the north, reaching their greatest population concentration in the northwest part of the state (Robbins, 1991 – pp. 493-494). Rolley (2000 – p. 149) reported a highly significant increase in Wisconsin between 1983 and 1996. Trends for pine warblers on the Nicolet since 1986 vary by year but appear to be stable if not slightly increasing. NRRI population trend estimates for the region and Chequamegon indicated no significant change between first and last years of survey, but mixed significant changes exist between years (Lind et al., 2000 – pp. 10-12). Population estimates for the CNF, Great Divide District, and project area, calculated using NNFBIIRD population modeling software program (Dobiesz, 1998) are displayed in Table 1.

### **Blackburnian Warbler**

**Preferred habitat:** White spruce over 90 years old and balsam fir over 60 years old (blackburnian warblers also utilize lowland conifer habitat, hemlock stands, and hemlock inclusions within upland hardwoods).

**Unit of measure:** Amount of habitat available; ten-minute point count taken across all cover types.

**Frequency of measure:** Yearly counts using standardized point counts, conducted since 1992 by NRRI.

**Management objective:** Provide habitat that will support 2,185 breeding pairs on the Chequamegon. Amount of habitat is tracked through CDS. Population trends are tracked through yearly Chequamegon Breeding Bird Survey.

**Habitat needed to meet management objective:** 8,740 acres of white spruce (over 90 years old) and balsam fir (over 60 years old).

**Current habitat availability:** 10,423 acres of white spruce and balsam fir meeting the age guidelines Forest-wide; project area has 480 acres meeting this criteria. In addition, there are 272 acres of hemlock and mixed hardwood/hemlock over 70 years of age in the project area.

**Population trend data:** NRRI Breeding Bird Survey data for 1992-1999 on the Great Divide District identified 164 individuals from 32 forest stands (total of 41 stands surveyed on district). BBS data indicates a minor (.11) population increase in the Midwest between 1966 and 1991, and an annual increase of 7.68 between 1982 and 1991 (Thompson et al., 1992 – Appendix 1). The number recorded on BBS routes in Minnesota remained essentially the same in the previous 25 years (Neimi et al., 1992 – species account for blackburnian warbler). In Wisconsin, blackburnian warblers are considered a fairly common summer resident in the north but a casual summer resident in the south (Robbins 1991 – p. 491). Rolley (2000 – p. 158) reported a stable population in Wisconsin between 1983 and 1996. NRRI population trend estimates for the Chequamegon indicated a significant increase between first and last years of survey (Lind et al., 2000 – p. 10). Population estimates for the CNF, Great Divide District, and project area, calculated using NNFBIIRD population modeling software program (Dobiesz, 1998) are displayed in Table 1.

### **Brown Creeper**

**Preferred habitat:** Deciduous/conifer mix.

**Unit of measure:** Amount of habitat available; ten-minute point count taken across all cover types.

**Frequency of measure:** Yearly counts using standardized point counts, conducted since 1992 by NRRI.

**Management objective:** Provide habitat that will support 1,080 individuals on the Chequamegon. Amount of habitat is tracked through CDS. Population trends are tracked through yearly Chequamegon Breeding Bird Survey.

**Habitat needed to meet management objective:** 5,400 acres of mixed deciduous/conifer forest older than 60 years.

**Current habitat availability:** Forest-wide: 10,346 acres of balsam fir/aspen, 3,685 acres of aspen/white spruce/balsam fir, 516 acres of red pine/oak, and 14,037 acres of hardwood/hemlock, all 60 years and older. Project area: 388 acres of balsam fir/aspen, 1,043 acres of aspen/white spruce/balsam fir, and 328 acres of hardwood/hemlock, all 60 years and older.

**Population trend data:** NRRI Breeding Bird Survey data for 1992-1999 on the Great Divide District identified 118 individuals from 34 forest stands (total of 41 stands surveyed on district). NatureServe (2000) reports trends are difficult to assess range wide because the species shows up relatively infrequently and is easily missed during surveys due to its size, coloration, and discreet song. BBS data for the period 1966 to 1993 shows the population as basically stable in North America, with a 2% decline per year in Wisconsin. Data from Rolley however (2000 – p. 157) reports the species as increasing slightly in Wisconsin. NRRI population data for the region indicated no significant changes between any years; data for the Forest showed no significant change between first and last year, but mixed significant changes between years (Lind et al., 2000 – pp. 9, 11). Population estimates for the CNF, Great Divide District, and project area, calculated using NNFBIIRD population modeling software program (Dobiesz, 1998) are displayed in Table 1.

### **Olive-sided Flycatcher**

**Preferred habitat:** Swamp conifer.

**Unit of measure:** Amount of habitat available; ten-minute point count taken across all cover types.

**Frequency of measure:** Yearly counts using standardized point counts, conducted since 1992 by NRRI.

**Management objective:** Provide habitat that will support 14,575 breeding pairs on the Chequamegon. Amount of habitat is tracked through CDS. Population trends are tracked through yearly Chequamegon Breeding Bird Survey.

**Habitat needed to meet management objective:** 72,875 acres of swamp conifer.

**Current habitat availability:** Forest-wide: 38,272 acres of lowland black spruce, 12,987 acres of northern white cedar, 9,980 acres of tamarack, and 32,357 acres of mixed swamp conifer. Project area: 1,469 acres of lowland black spruce, 923 acres of northern white cedar, 773 acres of tamarack, and 4,028 acres of mixed swamp conifer.

**Population trend data:** NRRI Breeding Bird Survey data for 1992-1999 on the Great Divide District identified 13 individuals from 9 forest stands (total of 41 stands surveyed on district). BBS data indicates a significant decline for this species in much of its range, including the lake states, with an overall population decline of 49% between 1966 and 1993 (NatureServe, 2000). BBS data for the eastern United States shows a significant decline of 2.6% per year (Neimi et al., 1992 – species account for olive-sided flycatcher). Data from Rolley (2000 – p. 155) indicates a stable population in Wisconsin, however the amount of data reported for that species is very low. The relative abundance of this species is too low to assess trends locally. Population estimates for the CNF, Great Divide District, and project area, calculated using NNFBIIRD population modeling software program (Dobiesz, 1998) are displayed in Table 1.

### **Barred Owl**

**Preferred habitat:** Mature mixed northern hardwoods.

**Unit of measure:** Amount of habitat available and population trends.

**Frequency of measure:** Yearly counts using standardized point counts, conducted since 1992 by NRRI.

**Management objective:** Provide habitat that will support 298 breeding pairs on the Chequamegon. Amount of habitat is tracked through CDS. Population trends are tracked through yearly Chequamegon Breeding Bird Survey.

**Habitat needed to meet management objective:** 168,370 acres of northern hardwood types over 70 years old.

**Current habitat availability:** 158,380 acres of northern hardwood type, and 21,890 acres of red oak type, over 70 years old, Forest-wide. Project area has 5,304 acres of northern hardwood type over 70 years old.

**Population trend data:** NRRI Breeding Bird Survey data for 1992-1999 on the Great Divide District identified 6 individuals from 3 forest stands (total of 41 stands surveyed on district). BBS data indicates a significant population decline in eastern North America between 1978 and 1988, and a significant increase in the west between 1966 and 1988, with the range expanding into the Pacific Northwest states (NatureServe, 2000). Trends are difficult to assess locally because of relatively low population numbers. Population estimates for the CNF, Great Divide District, and project area, calculated using NNFBIIRD population modeling software program (Dobiesz, 1998) are displayed in Table 1.

### **Thirteen-lined Ground Squirrel**

**Preferred habitat:** Upland openings.

**Unit of measure:** Amount of habitat available.

**Frequency of measure:** Surveys are not currently being conducted for this species on the Forest. This species is primarily managed by providing suitable habitat. Habitat data is available in CDS as necessary.

**Management objective:** Provide habitat that will support 62,200 animals. Amount of habitat is tracked through CDS.

**Habitat needed to meet management objective:** 28,835 acres of permanent upland openings.

**Current habitat availability:** 18,529 acres Forest-wide; 231 acres in project area.

**Population trend data:** National figures are not available for the thirteen-lined squirrel. The state of Wisconsin does not collect population data on this species. The Forest Service has not conducted surveys for this species. Generally, the population of thirteen-lined squirrels likely fluctuates with vegetation and climate conditions, such that in years of mild weather, populations increase, while declines are expected following severe winters. This species is considered common in Wisconsin with a population estimated at approximately 10 million animals (Jackson, 1961 – p. 133). Its range has expanded northward but is less plentiful in the forested portions of the state, including the Chequamegon.

### **Bald Eagle**

**Preferred habitat:** Supracanopy red and white pine within ½ mile of fish producing waters.

**Unit of measure:** Number of breeding pairs.

**Frequency of measure:** The Wisconsin DNR annually surveys all known and historic eagle territories in the state, including those on the Forest. Two flights are conducted, an early spring survey to determine the number of active territories, and a summer survey to assess nest productivity and count young. New or suspected territories are checked during these flights as well. Survey results are maintained at both Forest and DNR offices. Additional site-specific surveys are recommended for this species if suitable habitat is present within a project area.

**Management objective:** The Chequamegon was assigned a goal of 30 breeding pairs in accordance with the National Recovery Plan (Forest Plan, Appendix B – p. B-2).

**Current number of breeding pairs:** There were 34 active pairs on the Forest in 2000; young were successfully raised in 25 of those territories. There were 20 active pairs on the Great Divide district in 2000, however none were in the project area.

**Habitat needed to meet management objective:** There was not a precise figure of habitat needed for the management objective determined at the time of the Forest Plan preparation. It is generally felt that eagles require relatively undisturbed areas containing supracanopy nest trees, within several miles of large lake or river systems. When the Forest Plan was signed in 1986 there were 21 active eagle pairs on the Chequamegon, as well as a number of areas that were considered potential habitat. Fulfilling the recovery goal of 30 active pairs on the Forest would have required the use of a number of these potential habitat areas.

**Current habitat availability:** The fact that the recovery goal has been met on the Forest every year since 1997 would suggest that adequate habitat is available. The recent success of many nests in areas heavily used for recreation would also suggest that eagles are becoming more adapted to development and recreational use. There are approximately 75,000 acres identified on the Great Divide district as suitable eagle habitat. Much of that is currently occupied, although there are some areas that are unoccupied, or occupied unsuccessfully from year to year. This would suggest that there is still some additional habitat available on the district.

**Population trend data:** Bald eagle populations have been increasing locally, regionally, and nationally. Nationally bald eagle territories have increased from 1,480 in 1982 to 5,748 in 1998. Population trends on the Forest have followed the national trends as the number of occupied territories has more than doubled between 1975 and 2000. In addition, the number of young on the Forest has increased steadily to a total of 37 in 2000. In 2000, the 25 successful nests produced 37 young, for a ratio of 1.5 young per successful nest and a ratio of 1.1 young per occupied nest. These data compare favorably with the overall regional trend and exceed the Northern States Bald Eagle Recovery Plan goal of an average annual productivity rate of at least 1.0 young per occupied nest. Similar trends have been observed on the Great Divide district with the number of both occupied territories and young produced increasing from 7 in 1978 to 20 in 2000. The following table lists population data statewide, on the Chequamegon, and on the Great Divide district from 1973 to 2000 (district data was not available from 1973 to 1977):

**Bald Eagle Population Trend Data**

Year	Wisconsin Breeding Pairs	Forest: Occupied Territories	Forest: Successful Territories	District: Occupied Territories	District: Successful Territories	District: Young Produced
1973	108	11	6			
1974	107	10	4			
1975	111	12	6			
1976	149	13	10			
1977	151	15	11			
1978	140	13	7	7	5	7
1979	151	16	13	6	5	8
1980	175	17	11	8	6	12
1981	188	19	13	11	7	10
1982	207	17	9	11	6	11
1983	198	15	8	8	4	5
1984	239	16	14	9	7	12
1985	214	17	11	8	5	6
1986	244	21	13	8	5	8
1987	295	22	15	11	8	12
1988	326	16	14	8	8	12
1989	336	21	12	10	6	9
1990	358	23	16	12	8	13
1991	414	26	19	13	10	14
1992	424	24	18	13	8	13
1993	464	26	17	12	7	8
1994	533	26	17	14	9	15
1995	583	26	25	16	15	20
1996	626	27	23	17	15	20

Year	Wisconsin Breeding Pairs	Forest: Occupied Territories	Forest: Successful Territories	District: Occupied Territories	District: Successful Territories	District: Young Produced
1997	645	30	24	13	12	19
1998	689	33	24	18	12	21
1999	751	33	21	17	10	18
2000	770	34	25	20	14	20
2001	No data	32	17	18	11	13

### **Grey Wolf**

**Preferred habitat:** Remote habitat for denning and rendezvous sites; ungulate prey base.

**Unit of measure:** Number of packs and individuals.

**Frequency of measure:** Annually.

**Management objective:** The Forest was assigned two packs of wolves or about 20 animals, in accordance with the National Recovery Plan (Forest Plan, Appendix B – p. B-2). Tracking surveys are conducted throughout the winter months when conditions are suitable, i.e. 1” or so of fresh snow. Existing and potential habitat is surveyed by a combination of trained volunteers, district staff, and DNR personnel. Additionally, wolf howling surveys are conducted, utilizing a standardized format, where pack activity is suspected. Also, in known pack territories, the DNR attempts to maintain at least one radio collared individual per pack. Once radio collared, these individuals provide data on pack territory, as well as size of pack from follow-up howling surveys.

**Habitat needed to meet management objective:** The 1986 Plan Forest-wide standards restrict the miles of road open to public vehicle use on approximately 300 square miles of suitable wolf habitat.

**Current habitat availability:** According to current knowledge of wolf habitat needs, the vast majority of the Chequamegon, and virtually all of Great Divide district, is considered probable wolf range (Dhuey, August 2000 – p. 135). According to a GIS analysis by Mladenoff, et al. (1995 – pp. 286-289), most of the district could be considered “favorable wolf habitat” (those areas with a 50% or greater chance of supporting a wolf pack), however some larger portions of the Forest were excluded, such as the majority of Washburn Ranger District. All of the project area can be considered suitable wolf habitat, and most of it, outside of the Clam Lake/Day Lake area, is occupied by active packs.

**Current number of packs:** As of spring 2001, 18 different packs, composed of 72 animals, had at least a portion of their territory on Chequamegon Forest land. There were 10 packs, composed of 41 animals, on or partially on the Great Divide district (Wydeven et al., 2001 – pp. 5-9, 31).

**Population trend data:** The gray wolf first returned to Wisconsin around 1975, and was listed that year as state endangered. Populations expanded across the state to the east and south, and now their range includes much of northern Wisconsin as well as some central counties. Since 1985, the population has grown statewide at approximately 20% per year, and continues to grow at a high rate. The lack of expansion in 2001 is probably due to the outbreak of sacroptic mange. This growth has been mirrored in northern Michigan and Minnesota, and in many western states where the wolf has become established. The wolf was downlisted in Wisconsin in 1999 to state threatened, and efforts may begin in the near future to delist it to a non-game species. The U.S. Fish and Wildlife Service started the federal reclassification process for Michigan and Wisconsin in July 2000; it was downlisted to threatened in these states in March, 2003.

The following tables display wolf population data for the state and for the Chequamegon Forest, as of spring 2001:

**Wisconsin**

<b>Year</b>	<b>No. of packs</b>	<b>No. of wolves</b>
1980	5	25
1981	5	21
1982	4	27
1983	5	19
1984	4	17
1985	4	15
1986	5	16
1987	5	18
1988	6	28
1989	7	31
1990	11	34
1991	12	40
1992	13	45
1993	12	40
1994	14	57
1995	18	83
1996	28	99
1997	35	148
1998	47	178
1999	54	197
2000	66	260
2001	66	251-253

**Chequamegon National Forest**

<b>District</b>	<b>Pack</b>	<b>No. of wolves</b>
Washburn	Flag River	5
	Rainbow Lake	2
	Bearsdale	5
Great Divide	Ghost Lake	4
	Hungry Run	2
	Hellhole Creek	6
	Brush Creek	7
	Augustine Lake	5
	Torch River	5
	Shanagolden	3
	Black Lake	4
	Brunet River	2
	Log Creek	3
Medford/Park Falls	Kidrick Swamp	5
	Wilson Flowage	3
	Bootjack Lake	2
	Wintergreen Lake	3
	Hoffman Lake	5

**Brook Trout**

**Preferred habitat:** Cold water lakes and streams.

**Unit of measure:** Amount of habitat available.

**Frequency of measure:** Every five years.

**Management objective:** Cooperate with WDNR in identification of lake and stream habitat improvement work. The WDNR classifies trout streams into three categories: Class I – populations are completely self-sustaining, no stocking is needed; Class II – there is some natural reproduction but supplemental stocking is required to maintain populations; Class III – trout populations can be maintained only through artificial stocking. At the beginning of the Plan period, the Chequamegon had approximately 222.5 miles of classified trout streams including 59.8 miles of Class I, 107.9 miles of Class II, and 54.8 miles of Class III. Periodic surveys are done, primarily by the WDNR, to monitor populations and evaluate habitat conditions.

**Habitat needed to meet management objective:** Population goals and habitat needs for brook trout were not established as part of the Planning process.

**Current habitat availability:** Approximately the same as listed above under Management Objective. The project area contains approximately 9.8 miles of Class II trout water.

**Population trend data:** The quality of habitat has been improving as a result of several management activities. Current Forest Plan direction calls for no aspen regeneration within 300 feet of all Class I and selected Class II trout streams to discourage beaver activity. Since 1994 the Forest has had an active beaver management program that targets the higher quality streams for reduction of beaver numbers and removal of dams, to maintain free-flowing conditions. There have been a number of projects completed, aimed at improving instream habitat, restoring riparian areas, and reducing sedimentation and erosion into streams.

### Muskellunge

**Preferred habitat:** Warm water lakes and larger rivers.

**Unit of measure:** Amount of habitat available.

**Frequency of measure:** Every five years.

**Management objective:** Cooperate with WDNR in identification of lake habitat improvement projects. Maintain suitable habitat on approximately 31,873 acres of lakes containing muskellunge. Periodic surveys are done, primarily by the WDNR, to monitor populations and evaluate habitat conditions.

**Habitat needed to meet management objective:** Population goals and habitat needs for muskellunge were not established as part of the planning process.

**Current habitat availability:** Figures are not available for acres of habitat Forest-wide. Within the project area, musky are considered “common” in Day, East Twin, and Spillerberg Lakes.

**Population trend data:** Overall musky populations have remained stable on the Forest over the last decade. This can be attributed to a variety of management activities. The musky is the “state fish” of Wisconsin, therefore the WDNR expends considerable efforts on research and stocking of the species. The Forest adopted Wisconsin Forestry Best Management Practices (BMP’s) in 1995 to help protect and restore riparian areas. There has been considerable education among anglers regarding catch and release of this species, therefore few musky are harvested as compared to other game fish. The WDNR Northern Initiative has identified shoreline development as a key issue and has been working with private landowners in the north to educate them on the effects of development on the lacustrine ecosystem. The Forest has an active fish survey and monitoring program, as well as a habitat improvement program; as a result the Forest has focused its fish management activities on trying to restore fish communities in lakes to what historically may have been there or to fit with the habitat/water quality (productivity) of the lake. In the previous decade 9314 acres of lake improvement was accomplished, together with 750 lake structures.

### White-tailed deer

**Preferred habitat:** Forest edges, areas interspersed with fields and openings, conifer swamps (seasonally).

**Unit of measure:** Deer population figures are based on the Department of Natural Resources SEX-AGE-KILL (SAK) formula. Population figures shown in the table below are estimated over-winter numbers (post-hunting season), and are given for the management units that include portions of the Great Divide district (the units also include areas outside the Forest). The Winter Severity Index (WSI), also shown, is used to determine weather effects on deer in relation to deep snow and cold temperatures. The WSI is calculated by adding the number of days with 18” or more of snow with the days when the minimum temperature is 0 degrees F or lower between December 1 and April 30. Generally, a WSI <50 is considered mild, 50-80 is moderate, and >80 is considered severe.

**Frequency of measure:** Annual. The WDNR coordinates population assessments utilizing harvest records, summer deer observations, and WSI. Numbers of deer are tracked statewide as well as by individual Deer Management Units, each with a designated over-winter population goal. The WDNR manages the

population by utilizing a variety of deer hunter harvest methods.

**Management objective:** Provide habitat that will support about 32,000 animals on the Chequamegon. WDNR population goals have been established for all of the Deer Management Units and range from 10 to 20 deer per square mile of deer range (over-winter numbers). Amount of habitat is tracked through CDS. Population trends are tracked through yearly WDNR population estimates.

**Habitat needed to meet management objective:** 268,400 acres aspen, 13,460 acres upland openings, 67,080 acres swamp conifer, and 67,080 acres oak.

**Current habitat availability:** Forest-wide: 204,054 acres aspen, 18,529 acres upland openings, 93,748 acres swamp conifer, and 31,592 acres oak. Project area: 8,304 acres aspen, 231 acres upland openings, 7,193 acres swamp conifer, and 17 acres oak. Note: Total forested acres (29,724) could also be considered as project area habitat available.

**Population trend data:** Since habitat is not a limiting factor for deer populations in Wisconsin, population trends are primarily dependent on weather and hunter harvest. Deer numbers in the Northern Forest area increased substantially during the 1980's. This was reduced somewhat in the early 90's due to aggressive hunting harvests. Populations recovered but were reduced again following the consecutive severe winters of 1995-96 and 1996-97. Currently all areas of Wisconsin have deer numbers above goal. The 1999 posthunt population was more than 20% above goal in 98 management units; the 2000 posthunt population was more than 20% above goal in 91 deer management units. The statewide 2000 posthunt population was the second highest on record (Dhuey, 2000 – pp. 12-16; April 2001 – pp. 21-25).

**Estimated annual deer populations for Deer Management Units that include Great Divide Ranger District (units also include land outside of the Forest); the WSI is the mean calculated for the Northern Forest area (note: project area is within Unit 6)**

Unit	Deer Range (sq.mi.)	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
06	404	6868	6060	6464	9696	12928	8888	5656	8484	9696	9500
13	717	17925	10038	11472	16491	24378	15774	11472	15774	19359	21900
14	333	6993	4662	4995	6660	9657	7326	5661	6327	9657	9900
28	615	9225	8610	9225	13530	19065	14145	7995	11070	13530	14400
<b>WSI</b>		50	43	48	32	126	116	16	44	37	83

**Ruffed Grouse**

**Preferred habitat:** Mixed forest types and age classes, particularly aspen in the Great Lakes Region.

**Unit of measure:** Population trends.

**Frequency of measure:** Annual standardized spring drumming route transects conducted by Forest Service and Wisconsin DNR personnel.

**Management objective:** Provide habitat that will support approximately 67,178 birds on the Chequamegon. Most districts have one or more grouse transects that are surveyed each spring. Survey routes consist of 10 survey sites spread along a road at one mile intervals; grouse drumming is counted at each site for four minutes. The same routes and sites are surveyed each year. In addition, population trends are tracked through yearly NRRI Breeding Bird surveys. Amount of habitat is tracked through CNF Combined Data System (CDS).

**Habitat needed to meet management objective:** 36,280 acres aspen 0-20 years old; 145,130 acres aspen 21-40 years old; 108,850 acres aspen over 40 years old; 65,380 acres jack pine and balsam fir; 7185 acres upland openings.

**Current habitat availability:** Forest-wide: 66,600 acres of aspen 0-20 years old; 53,010 acres aspen 21-40 years old; 84,351 acres aspen over 40 years old; 40,160 acres jack pine and balsam fir; 18,529 acres upland openings. Project area: 2,818 acres of aspen 1-20 years old; 1,269 acres of aspen 21-40 years old; 4,217 acres of aspen over 40 years old; 876 acres jack pine and balsam fir; 231 acres upland openings.

**Population trend data:** Statewide drumming counts for 2000 were down 14% over 1999 levels, however data for northern Wisconsin showed little change. Statewide populations decreased 23% between 2000 and 2001, based on roadside drumming counts (Dhuey, August 2001 – pp. 6-9). Yearly changes are to be expected as ruffed grouse typically follow cyclic population changes, however these results demonstrate that state birds are on the declining end of the cycle. Two drumming routes have been surveyed in recent years on the Great Divide district, one run by district personnel and one run by a DNR biologist. The following table displays the drums per stop statewide, for the northern region, and for the two routes on the district (route 2-2 is located within the project area). NRRRI Breeding Bird Survey data for 1992-1999 on the Great Divide District identified 97 individuals from 29 forest stands (total of 41 stands surveyed on district). Population estimates for the CNF, Great Divide District, and project area, calculated using NNFBIIRD population modeling software program (Dobiesz, 1998) are displayed in Table 1.

Year	Wisconsin	Northern WI	District - Route # 2-2	District – Route # 58-2
1994	0.58	0.67	0.40	0.50
1995	0.84	0.98	3.20	1.60
1996	0.86	1.10	1.50	1.60
1997	0.91	1.46	4.50	1.90
1998	1.24	2.12	3.80	4.30
1999	1.37	2.00	1.70	3.00
2000	1.20	1.93	2.60	3.80
2001	0.94	1.55	1.80	2.90

**Spring Peeper**

**Preferred habitat:** Wetlands within most forest types.

**Unit of measure:** Population trends.

**Frequency of measure:** Annually.

**Management objective:** Monitor as a bioindicator of environmental stress.

**Habitat needed to meet management objective:** NA

**Current habitat availability:** Approximately 95,435 acres of suitable wetland types Forest-wide.

**Population trend data:** Population has been relatively stable statewide. The WDNR has coordinated a statewide volunteer frog and toad survey since 1984 and has verified spring peepers in 55 of the states 72

counties. State and regional trends (mean annual % change in population estimates) are  $-0.2$  and  $-1.4$  respectively (Mossman et al., 1998). A survey has been conducted on the Great Divide district since 1992; the following table displays the number of sites out of a total of 10 that spring peepers were recorded on each year. Each survey is conducted three times during the year; since the spring peeper is an early breeder it is seldom recorded on the last survey, which is generally run in early summer.

**Display of the number of sites out of a total of 10 that spring peepers were recorded on each year**

Year	Census #1	Census #2	Census #3
1992	8	4	1
1993	10	10	0
1994	8	8	0
1995	7	9	0
1996	4	6	0
1997	9	9	0
1998	9	7	0
1999	8	10	Not run
2000	9	1	2
2001	10	10	0

**Sharp-tailed Grouse**

The sharp-tailed grouse is not found on the Great Divide district due to lack of suitable habitat (large grasslands/barrens/pine savannahs) and will not be covered in this document. It will not be analyzed in any Environmental Analysis on the Great Divide district for the same reason.

**Literature Cited**

- Chequamegon National Forest Land and Resource Management Plan; Final Environmental Impact Statement. 1986. Park Falls, WI.
- Chequamegon-Nicolet National Forest. 1998. End of Decade Monitoring Report 1986-1996. Chequamegon-Nicolet National Forest, Implementing the National Forest Plans.
- Daulton, T., M.W. Meyer, and P.W. Rasmussen. 1997. The 1995 status of the Common Loon in Wisconsin. *Passenger Pigeon* 59(3): 195-205.
- Dobiesz, Norine. 1998. Nicolet National Forest Bird Information Retrieval and Display program, V3.04. Corel Paradox Version 7.0. Paradox Runtime.
- Dhuey, B. 2001. Wisconsin Wildlife Surveys, April 2001 report. WDNR, Bureau of Integrated Science Services, Ecological Inventory and Monitoring Section, Madison, WI.
- Dhuey, B. 2001. Wisconsin Wildlife Surveys, August 2001 report. WDNR, Bureau of Integrated Science Services, Ecological Inventory and Monitoring Section, Madison, WI.

- Dhuey, B. 2000. Wisconsin Wildlife Surveys, April 2000 report. WDNR, Bureau of Integrated Science Services, Ecological Inventory and Monitoring Section, Madison, WI.
- Jackson, H.H.T. 1961. Mammals of Wisconsin. University of Wisconsin Press. Madison, WI. 504pp.
- Lind, J., N. Danz, M.T. Jones, J.M. Hanowski, and G.J. Niemi. 2000. 1999 Annual Report: Breeding bird monitoring in Great Lakes National Forests: 1991-1999. Natural Resources Research Institute Technical Report: NRRI/TR-2000/04. Duluth, MN.
- Lind, J., N. Danz, M.T. Jones, J.M. Hanowski, and G.J. Niemi. 2001. 2000 Annual Update Report: Breeding bird monitoring in Great Lakes National Forests: 1991-2000. Natural Resources Research Institute Technical Report: NRRI/TR-2001/04. Duluth, MN.
- Mladenoff, D.J., T.A. Sickley, R.G. Haight, and A.P. Wydeven. 1995. A regional landscape analysis and prediction of favorable gray wolf habitat in the Northern Great Lakes Region. *Conservation Biology* 9:279-294.
- Mossman, M.J., J.R. Sauer, G.A. Gough, L.M. Hartman, and R. Hay. 1998. The Wisconsin frog and toad survey home page (<http://www.mbr-pwrc.usgs.gov/wifrog/frog.htm>). Wisconsin Department of Natural Resources (Madison) and USGS Patuxent Wildlife Research Center, Laurel, MD.
- NatureServe: An online encyclopedia of life. 2000. Version 1.0. Arlington, VA: Association for Biodiversity Information (<http://natureserve.org>). Accessed: November 24, 2000.
- Niemi, G.J., and J.M. Hanowski. 1992. Forest Wildlife, Forest Birds Section. Technical paper for Generic Environmental Impact Statement on timber harvesting and forest management in Minnesota. Prepared by Jaakko Poyry, consulting for Minn. Environmental Quality Board. Species accounts available online at: <http://www.nrri.umn.edu/mnbirds/newaccounts/>
- Robbins, S.D. 1991. Wisconsin Birdlife. The University of Wisconsin Press. Madison, WI. 702 pp.
- Rolley, R. 2000. Wisconsin Checklist Project 1999. In Wisconsin Wildlife Surveys, August 2000 Volume 10, Issue 5, pp. 148-160.
- Thompson, F.R., S.J. Lewis, J.Green, and D. Ewert. 1992. Status of neotropical migrant landbirds in the Midwest: Identifying species of management concern. From proceedings: Status and management of neotropical migratory birds, Estes Park, CO. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. GRT RM-229, pp. 145-158.
- USDA Forest Service. Delta-Drummond Environmental Assessment, Appendix E. Washburn Ranger District, Chequamegon-Nicolet National Forest.
- USDA Forest Service. Southeast Pine Environmental Assessment, Appendix G. Lakewood/Laona Ranger District, Chequamegon-Nicolet National Forest.
- Wydeven, A.P., J.E. Wiedenhoft, R.P. Thiel, R.N. Schultz, B. Kohn, and S.R. Boles. 2001. Progress report of wolf monitoring in Wisconsin for the period October 2000 – March 2001. WDNR, Park Falls, WI.

**Table 1. Existing condition population estimates for bird MIS (excluding bald eagle) recommended (FEIS 1986) for alternative comparison and monitoring on the Chequamegon National Forest. Estimates calculated based on habitat availability, using NNFBIIRD program (Dobiesz 1998). Numbers represent breeding pairs.**

Species	Chequamegon Forest	Great Divide District	Cayuga Project Area
Common loon	144	53	6
Ring-necked duck	91	28	8
Common yellowthroat	11581	5124	509
Ruffed grouse	2671	1082	111
Pileated woodpecker	1854	777	68
Pine warbler	4564	1092	71
Blackburnian warbler	10435	5036	404
Brown creeper	8662	3882	353
Olive-sided flycatcher	2082	740	71
Barred owl	131	73	6

**Note:** Existing project area bird population estimates are based on survey and research data from the Nicolet National Forest, and habitat information from the project area. The numbers involve some limitations in terms of sample sizes and stand age information, as well as limitations inherent to any population modeling. Species that are not often recorded on the Nicolet bird survey, such as ruffed grouse, and easily be underestimated using this program. These numbers are only used as one source of information, in combination with other information such as national breeding bird survey trends, Chequamegon bird survey data, and WDNR survey data.