

Status of the Northern Goshawk in the Midwest

**Proceedings of a workshop held at
the Midwest Regional Raptor Management and Peregrine Symposium**

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INTRODUCTION AND WORKSHOP OBJECTIVES

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The U. S. Fish and Wildlife Service (FWS) was asked to coordinate this workshop on the status of the northern goshawk (*Accipiter gentilia*) in the Midwest. We invited key people who are working on and concerned about goshawks in the Great Lakes region to discuss the species' status, biology, and conservation. There are several reasons why this workshop is timely:

- 1) The goshawk is on the "concern" lists of several resource agencies, including the Michigan Department of Natural Resources' (where it is designated Special Concern), the U. S. Forest Service's Eastern Region Sensitive Species List, and the FWS's List of Nongame Migratory Birds of Management Concern. It should be noted that the species is not on concern lists in Minnesota, Wisconsin, or Ontario.

The FWS list was developed two years ago and the goshawk was included on it because it was a Federal C2 candidate species at that time. However, it was proposed as a C2 mainly because of concern for it in the southwestern

U. S., although the C2 designation did apply to the entire North American population. Although the FWS no longer maintains an official C2 candidate species list, we are still concerned about these species. We now informally call the former C2 candidate species "Federal species of concern," and we continue to work actively with our partners to protect and conserve these species. These are species for which we have insufficient information to warrant listing at this time, but may in the future, pending collection of further information on their status, biological vulnerability, and threats.

- 2) The status of the goshawk in our region (and rangewide) is unclear, and we need to compile what information is available to better understand its status. It is a challenge to obtain long-term trend data on a species like the goshawk, which is secretive, probably cyclical, occurs in naturally low densities, and is at the edge of its range in this region. So, it is not surprising that our knowledge of its status is limited.
- 3) Concern has been expressed over the potential effects of forestry and falconry practices on goshawks. These issues will be addressed in the workshop. Our goal is to lay out what biological facts are known and to identify where additional research and monitoring might be needed.

- 4) Numerous goshawk monitoring and research projects are ongoing in the Great Lakes region, and we felt it would be beneficial to bring as many of the people working on these projects together as possible, to better coordinate their efforts. It should be noted, however, that several goshawk meetings have occurred in recent years at the state or subregional level, so we certainly do not mean to imply that people are not communicating with each other.
- 5) The FWS and other agencies have received goshawk research proposals in recent years but do not have clear priorities established against which to evaluate these funding requests.

What is the FWS's role in the conservation of the northern goshawk? As the lead Federal agency for migratory bird management, we, first and foremost, have a legal responsibility to ensure that viable populations of goshawks are maintained. As mentioned above, we have designated the goshawk a species of concern under both our Migratory Bird and Endangered Species programs. However, goshawks are not found in significant numbers on FWS lands (national wildlife refuges) in this region, so our emphasis in conserving the species is more directed at working with others who study and monitor goshawks and who own and manage land that provides important goshawk habitat. Also, we administer a small grants program for nongame bird conservation and, to use this money wisely, we need to know how high a priority this species should be relative to other bird species of concern and, if it is a priority, what activities and locations are most important for us to direct our limited funds toward.

To help us better understand the status of the goshawk in our region, the FWS recently funded a project that will summarize available information on the species in the Great Lakes region and identify what additional monitoring, research, and management activities might be needed to conserve the species. Ted Dick, David Plumpton, and David Andersen (Minnesota Cooperative Fish and Wildlife Research Unit) are working on this project. The results of their assessment and this workshop will guide our agency's future activities, including budget allocations and decisions on the need for a formal status survey on the goshawk.

With these points in mind, the objectives of this workshop are to:

- 1) Review the population status and biology of the northern goshawk in the Great Lakes region.
- 2) Summarize past and ongoing monitoring and research activities that relate to goshawk biology and management in the region.
- 3) Identify information gaps and future data collection needs for the goshawk in the region.

- 4) Discuss management issues (forestry and falconry) that potentially affect goshawks in the Great Lakes region.
- 5) Reach a consensus on a course of action to address the future conservation of the goshawk in the Great Lakes region, building on past and present work on the species.

We hope that this workshop will enhance communication and that, in turn, will lead to better coordination of future efforts made on behalf of the northern goshawk in our region.

REVIEW OF PREVIOUS NORTHERN GOSHAWK WORKSHOPS AND CONFERENCES

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Interest and concern about the northern goshawk have been growing, as demonstrated by the number of meetings that have occurred over the past several years in the Midwest. A variety of Federal and state agencies and private organizations have held meetings and workshops to address goshawk conservation. Although a large amount of information has been gathered, to date the information has not been pulled together. The purpose of this workshop is to update and share goshawk information and to provide a documented resource for future use.

Previous Midwest meetings either focused exclusively on the goshawk or included the species in more general raptor conferences and workshops. These meetings occurred on several national forests in Minnesota, Wisconsin, and Michigan, at Midwest Raptor Management Symposia, and at national conferences such as the annual Raptor Research Foundation meeting.

Two of the previous meetings were especially noteworthy. In 1993, a northern goshawk management workshop was held in Madison, Wisconsin. The workshop covered goshawk biology, population and land management concerns, and a panel discussion focusing on research, falconry, and management recommendations. In 1995, several papers on goshawks were presented at the annual Raptor Research Foundation meeting in Duluth, Minnesota. Dick and Martell discussed call playback surveys and habitat analyses of goshawks in Minnesota, Hall addressed what information is needed to delineate northern goshawk home ranges, Keane gave a paper on the effects of prey and weather on annual variation in northern goshawk reproduction, and Kennedy presented a paper entitled "The northern goshawk: is it the next spotted owl?"

Copies of the abstracts from these meetings may be obtained from Jane Noll West (address above).

STATUS OF FOREST DEPENDENT RAPTORS IN WISCONSIN, WITH SPECIAL EMPHASIS ON THE NORTHERN GOSHAWK: A PRELIMINARY STUDY

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During 1996 we investigated the breeding distribution, nesting density, reproductive success, and nest-site habitat of the northern goshawk (*Accipiter gentilis*) and other forest dependent raptors, on the Northern Highland/American Legion State Forest (NHALSF) and the Bois Brule River State Forest (BBRSF). We also surveyed surrounding lands and/or historically occupied breeding sites elsewhere in Wisconsin for nesting goshawks, the principal species of concern in this *preliminary* study.

Eighteen active nests (eggs laid) of five species of forest raptors (broad-winged hawk (*Buteo platypterus*), red-tailed hawk (*B. jamaicensis*), northern goshawk, cooper's hawk (*A. cooperi*), sharp-shinned hawk (*A. striatus*) were discovered in the NHALSF and BBRSF. We found one goshawk nest on each of the two state forests, and 12 additional goshawk nests were found outside the state forest study sites. For three intensively searched study sites, composite goshawk nesting density was one pair per 3807 ha. Eleven of 13 (85%) goshawk nests fledged at least one young statewide, and the mean and median number of fledged young per active nest was 1.7 and 2.0, respectively.

Habitat was sampled on 0.04 ha circular plots at all raptor nest-sites discovered on the NHALSF and BBRSF, and for goshawk nests discovered elsewhere in Wisconsin in 1996, and at additional goshawk nests found in prior years. Of 28 goshawk nests, 22 (79%) were built in deciduous trees, principally trembling aspen (*Populus tremuloides*); mean nest-tree height, diameter-at-breast-height, and mean tree density was 25 m, 41 cm, and 353 stems/ha, respectively. Comparison of mean values for habitat parameters at goshawk nest-sites found by unbiased vs. potentially biased methods revealed no significant differences between these two data sets for the nest-site habitat parameters. These preliminary findings are discussed in regard to the long-term research program being developed for the goshawk in Wisconsin by the Wisconsin Department of Natural Resources.

GOSHAWK WINTER MOVEMENT STUDY IN NORTHERN WISCONSIN

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I have conducted sporadic research on northern goshawks in Wisconsin since 1979. Historic nesting areas (N=20) in Ashland, Bayfield, and Sawyer Counties, were checked annually for occupancy, even if the nest woods were altered (logged). The altered nest woods (N=10) have not been reoccupied to date. In checking these historic nesting locations, only a mean of one nest per year has been active. To date, 45 nest locations of 32 nesting territories have been recorded using a Global Positioning System unit in Ashland, Bayfield, Douglas, Sawyer, Iron, Price, Taylor, and Vilas Counties. Habitat analysis was conducted on these sites by Rosenfield et. al.

Recently, I started a Geographic Information System and radio telemetry study on the northern goshawk that focuses on winter movement patterns. All points were located using aircraft fixes or by triangulation, with approximately a UTM (100 m²) accuracy for points. Direct surveillance in winter has been difficult, since the birds have been highly mobile due to any disturbance, including the aircraft. Radio transmitters were attached to three birds. Two of the birds were tracked weekly during the winter. The third radioed bird, a female, flew to the Upper Peninsula of Michigan and the resources were not available in this study to track her any further.

Ninety-five percent of all points taken (N=35) in winter on the Stockbridge male (Ashland County, Wisconsin) were located in swamp conifer edge cover. Conifer swamps provide areas of thermal cover where most fauna resides throughout the northern Wisconsin winter. The Stockbridge male had a 32-km² territory. In contrast, a female from Taylor County had only a 4-km² home range until January. The female was always located within 3 km of game farms where a majority of her prey came from. Once the prey was gone, she disappeared and was not located until June 7, 1997. This female was relocated at a new nest site about 12 km NNE of her previous nest. She fledged two young in 1997, and was successful in 1996. The old nest site near the game farm had a new female.

The three following assumptions can be made from the preliminary data. First, an absent female or a new female at a nest does not necessarily indicate death of that particular female. Secondly, prey abundance is likely critical to home range and territory size. Lastly, areas of thermal cover are likely critical for goshawks as well as for all winter wildlife in the northern regions. Each assumption needs further qualification, but forms hypotheses that deserve further inquiry.

GOSHAWK NESTING SURVEY IN NORTHEASTERN WISCONSIN - 1996

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We surveyed 68 historic and 3 new northern goshawk territories in northeastern Wisconsin. No nest structures remain at 25 of the historic sites. Goshawk activity was documented in 20 territories and active nests (eggs laid) were found in 16 territories. Only eight nests were successful (fledged young) (50%). Three of the successful nests were the result of renesting after initial failure at egg time due to predation.

A total of 18 young fledged from the 8 successful nests. Young produced per successful nest was 2.25 with only 1.13 young produced per active nest. In addition, at least one young was taken by falconers.

Raccoon predation occurred at three nests, one at egg time and two at young time. At one nest, only one of the three young was predated. Fisher predated eight nests, seven at egg time and one at the young stage. Three pairs of goshawks successfully renested and fledged young. The remains of three adult females were found and we suspect another was preyed upon. The Spring of 1996 was very cool and wet resulting in a late May leafage for the aspen and hardwood stands. This made nests extremely visible for the entire incubation period and vulnerable to mammalian predation.

Based on our 25 years of goshawk population data, the 2.25 young produced per successful nest is encouraging and positively correlated with the 10-year snowshoe hare and ruffed grouse prey cycle. However, the poor nest success rate of 50% with only 1.13 young fledged per active nest is of concern. We feel that a 75% nest success rate with 1.7 young fledged is needed to maintain a stable population based on our population model and the recent success rate falls far short of the expected value. The documentation of adult female mortality at 3 of the 16 active sites (19%), is of great concern. Adult female mortality has the greatest impact on the population.

THE GOSHAWK IN MINNESOTA

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PAST: There is little historical information on the goshawk in Minnesota, although the noted Minnesota ornithologist, T.S. Roberts, stated that the species was always a rare breeder in the state, and occasional reports of the species have appeared in the *Loon*, the journal of the Minnesota Ornithologist's Union. The Natural Heritage Information System currently has 14 historical nesting records for the species dating back as far as 1892. In addition, two recent Minnesota studies have focused on this species. In 1975, T. Davis radio-tracked a female and her single offspring, and characterized behavior and home range. T. Dick and M. Martell of the University of Minnesota's Raptor Center studied nesting habitat characteristics during 1994 - 1996, and documented 16 nests, of which at least 13 were successful. Habitat data were recorded for 14 of these nests.

PRESENT: Known impacts to Minnesota's goshawk population include falconry and forest management. Minnesota Rules allow general and master falconry permittees to take up to two goshawks per year from the wild, but do not allow possession of goshawks or their removal from the wild by nonresidents or apprentice permittees. Permit records indicate that 25 goshawks were removed from the wild under these terms between 1992 and 1996. While little guidance exists for accommodating goshawks in forest management in Minnesota, the DNR's internal *Forestry-Wildlife Guidelines to Habitat Management* include some recommendations designed to benefit raptors, including reporting of sightings, planning for retention of habitat where nesting is confirmed, and avoiding disturbance to nests between March and July. During a 1993-1996 evaluation of the conservation status of many of the state's birds, the DNR concluded that while the literature suggests that the goshawk relies on large blocks of mature trees, and that this resource is likely to become increasingly scarce in the future, the lack of data regarding distribution, abundance, or population trend made it impossible to classify the species as endangered, threatened, or of special concern.

Distributional information remains sparse for Minnesota, with 13 or 14 known territories at present. Of these, nine are located within the boundary of the Chippewa National Forest, and seven are within areas proposed for timber management activities. A 1996 biological evaluation by the Chippewa National Forest concluded that a proposed salvage sale might contribute to a decreasing of goshawk population levels on the forest, and contribute to a loss of viability for this species in Minnesota. This biological evaluation has stimulated a series of meetings involving interested people from state and federal agencies, Indian

CURRENT MANAGEMENT AND RESEARCH ON WOODLAND RAPTORS IN MICHIGAN

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The management of forested ecosystems in relation to potential effects on breeding of woodland raptors has become a recent issue in the Lake States. The primary focus of these concerns has been on management of the northern hardwood forests and potential impacts on the northern goshawk (*Accipiter gentilis*) and the red-shouldered hawk (*Buteo lineatus*). The northern goshawk was proposed as a candidate for listing as a federal threatened species and the red-shouldered hawk is a state threatened species in Michigan. Forest management practices in the western U.S. have been identified as having a negative impact in interior forest raptor species. These arguments have been used recently to attempt to stop some forest management activities in the Upper Peninsula of Michigan. To address this issue, a number of management and research activities have been initiated in Michigan to better understand the question "What, if any, effect does forest management practices have on breeding of woodland raptors?"

The management related activities to address this question include the formation of a Woodland Raptor Working Group, and a Technical Advisory Committee. The formation of a Woodland Raptor Working Group, consisting of foresters and biologists began in January 1996. This informal group is composed of persons from state and federal natural resources agencies, academia, forest products industries, and a number of nonprofit environmental groups. The aim of bringing this group together was to come to a consensus on what we currently know, what we need to know, and how we need to proceed to manage for woodland raptors.

The second management-related activity was the formation of a Technical Advisory Group by the Forest Management and Wildlife Divisions of the Michigan Department of Natural Resources. This advisory group will meet in September 1997 to begin to formulate a management strategy for woodland raptors in Michigan.

Research-related activities to address this question have focused on a descriptive study of known northern goshawk nesting habitat on three National Forests, and on a survey of woodland raptors breeding area occupancy and habitat relationships in the Upper Peninsula. During the fall of 1995, 43 known breeding areas of northern goshawks were visited on the Hiawatha, Huron-Manistee, and Ottawa National Forests. Habitat components important to goshawks were measured and quantified. A manuscript on this effort is being submitted for publication in the near future.

The second research-related activity to address this question was the funding of a graduate research project to survey woodland raptor breeding area occupancy and habitat relationships. A study of woodland raptor ecology with an emphasis on the northern goshawk and red-shouldered hawk, and potential limiting factors such as prey density and forest management practices were conducted during the summers of 1996 and 1997. We identified habitat used for nesting by surveying potential habitat with playback calls. We examined habitat characteristics of forest stands used by nesting raptors and will analyze these data to determine stand type characteristics of different woodland raptor species. The results of this project will be completed during the winter of 1998 and will result in a M.S. thesis and subsequent publication. The results of these research efforts are a beginning to assist forest managers plan for maintenance of habitat factors necessary for the successful reproduction of woodland raptors in the upper Midwest.

A STUDY OF BREEDING NORTHERN GOSHAWKS IN MICHIGAN

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My work with Michigan goshawks began in the early 1970s and was done incidentally to research on other raptors. In most years, I monitored between 10 and 20 occupied nests. Soon a pattern of high and low production years emerged. Although yearly sample sizes were small, especially if divided between Michigan's Upper (UP) and Lower Peninsulas (LP), combining the reproductive data for successive "high" years and for successive "low" years increased sample sizes and allowed some inferences to be drawn.

"High" years were characterized by higher totals of occupied nests found, by a higher proportion of previously identified territories again occupied by breeding pairs, and by higher overall productivity (young/occupied nest). In "low" years fewer occupied territories were located, fewer previously known territories showed evidence of the goshawks' presence and breeding activity, and overall productivity was low. Typically, the "high" years occurred in the later part of the decade, while "low" years came in the early part of a decade and coincided with the periodic winter invasion of goshawks from northern regions. This is consistent with the 10-year cycle of snowshoe hare and ruffed grouse populations in the boreal forest.

Mean brood size changed little throughout the cycle, remaining near 2.0 young/productive nest in both peninsulas. Nesting success, the proportion of occupied nests (= pairs) raising at least one young, was the principal component of reproductive success which changed between "high" and "low" years. In the UP it was 82-83% in high and 33-38% in low years. Consequently overall productivity was 1.6 - 1.90 and 0.7 - 0.8 young/occupied nest for high and low years respectively. In the northern LP nesting success was 73-85% and 45-60% respectively for high and low years, and overall productivity was 1.5 - 1.7 and 0.9 - 1.1 young/occupied nest for high and low years respectively. Goshawk productivity between the highs and lows differed by a factor of 2.4 in the UP and by a factor of 1.6 in the LP. The lower amplitude in the LP may reflect a more diverse prey base in this more southern part of Michigan. While the amplitude in Michigan is much narrower than that observed in Canada and Alaska, these cyclic fluctuations in goshawk populations must be taken into account. Assessments of goshawk status and reproductive success need to be based on long-term field studies (at least though one 10-year cycle), as shorter studies can lead to inaccurate and spurious conclusions.

In Michigan goshawks nest mainly in mature forests, but pole-size timber is also used, as long as the stand is open below. Trees used as nest sites include aspen, white and yellow birch, maple, beech, and pines. Aspens, owing to their forming multiple crotches within the crown, are preferred. Unfortunately, aspen stands old enough to support goshawk nests are also old enough for harvest. Short turn over times can therefore be detrimental to goshawks. Timber harvest, especially extensive clearcutting, can locally eliminate the goshawk as a breeding species. Over the years, I have seen numerous breeding areas abandoned following extensive timber removal within and near such territories. My sample is biased, however, as I have learned of many nests from forestry workers who found them during timber sale activities. Therefore, effects of current forest management practices on goshawks over wider areas remain poorly understood and require more rigorous study.

During the past several decades the goshawk has gradually extended its Michigan breeding range

southward. This may reflect a saturation of available breeding habitat in northern Michigan. It is not clear, however, if this hypothesized saturation is due to an increase of goshawk density or to a reduction of available breeding habitat (through timber harvest) in northern Michigan.

Predators of goshawks in Michigan include the great horned owl which takes nestlings as well as adults.

U. S. FOREST SERVICE ACTIVITIES RELATED TO GOSHAWKS

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All seven lake states National Forests (Forests) have active programs to locate and monitor goshawk nesting activity. These programs are focused around the timber sale program. All proposed cut units with possible goshawk presence are surveyed prior to the actual sale. Biologists use the tape callback method for locating birds during the nesting season.

No systematic attempts have been made to determine total populations of goshawk on any Forest although some estimates have been made. Many Forests are collaborating with colleges, universities and State DNRs on goshawk research projects.

Protection measures for active goshawk nests are in place on all Forests and several have published habitat management guidelines.

Several Forests have been active in helping to define and regulate the taking of chicks by falconers.

Ongoing Goshawk Activities of National Forests in the Lake States

Most Forest Service activities are location/monitoring efforts in response to proposed timber sales:

Areas surveyed are usually the proposed cut units.

Work is often done cooperatively with the state DNR and/or researchers.

Survey results usually are captured in an environmental document or Biological Evaluation.

Most survey work started in 1992-93.

Populations:

No attempts are made to obtain statistically valid population estimates for any Forests. However, some Forests (Ottawa, Chippewa) have made estimates of the likely nesting population within the Forest boundary. The Chippewa NF is proposing two studies to gain more information on habitat selection, population status and home range of goshawks on the Forest.

Production:

Most Forests with known nest sites conduct annual or semi-annual monitoring to determine activity and production. Many Forests are collaborating with ongoing research projects that are currently collecting production data.

Falconry activities:

At least one Forest (Nicolet) reports considerable involvement with falconers and has instituted protection measures in cooperation with the State of Wisconsin. The Forest has also had input into State falconry regulations. (The Allegheny NF in Pennsylvania requires a Forest permit to take chicks from any goshawk nest on the Forest).

Training:

Several Forests have developed training programs for Forest field-going personnel. The Ottawa NF has made a training video to help field crews recognize and identify goshawk nests and know what to do if one is found.

Guidelines/Plans:

All Forests have instituted protection measures for known goshawk nests. Some have developed guidelines for protection measures and goshawk habitat management. The three Michigan NFs participate in a consortium with the DNR, private landowners, Federal agencies, and two universities to share information and foster protection and management of goshawk and other woodland raptor habitat.

Contacts

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THE NORTHERN GOSHAWK IN ONTARIO

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Ontario Status:

Protected under the provincial Game and Fish Act in Ontario.

No special status, i.e., not considered provincially vulnerable, threatened or rare.

Raptors cannot be taken from the wild for falconry purposes in Ontario, although falconers can possess raptors legally obtained from other jurisdictions.

Canadian Status:

Status Report was prepared for COSEWIC (Committee on the Status of Endangered Wildlife in Canada) by P. Duncan and D.A. Kirk (1994). A few key points from this report:

Populations in Canada are apparently stable overall, but trends difficult to assess.

Widespread and no indication of declining population.

The subspecies *Accipiter gentilis laingi*, which is restricted to the Queen Charlotte Islands off Canada's western coast, inhabits old growth forests, may be affected by logging, and is thought to be declining - recommended "Vulnerable" status.

The nominate form of the northern goshawk is not considered to be at risk, due to its widespread distribution in a variety of forest types - recommended "Not At Risk" status.

For more information, see: Duncan, P. and D.A. Kirk. 1994. Status Report on the Northern Goshawk *Accipiter gentilis* in Canada.

Population Monitoring:

No formal, regular monitoring program.

Ontario Ministry of Natural Resources staff and contracted tree markers in central Ontario watch for and report all stick nests observed; these are followed up for species identification and nest monitoring.

The Ontario Breeding Bird Atlas program was conducted between 1981-1985. A few key points from the atlas:

Found in 47% of the atlas blocks, with most of deficiencies of occurrence in more northern remote (inaccessible) areas.

Wide gaps in distribution in northern Ontario, at least partially due to low observer coverage, but also a suggestion of lower densities.

Scattered records on the northern Canadian Shield and Hudson Bay lowlands suggest the species breeds throughout the north.

Breeds sparingly in southern Ontario - 16% of all squares.

In southern Ontario, only one record south of 43' N in the deciduous forest zone.

Considered uncommon to rare in both southern and northern Ontario, and seems to have always been a rare breeder.

For more information, see: Cadman, M.D., P.F.J. Eagles, and F.M. Heilleiner. 1987. Atlas of the Breeding Birds of Ontario. Univ. Waterloo Press, Waterloo. 617 pp.

Records from the Ontario Nest Record Scheme also indicate that the species breeds sparingly throughout the forested regions of Ontario. For more information, see: Peck, George K. and Ross D. James. 1983. Breeding Birds of Ontario, Nidology and Distribution. Vol. 1: Nonpasserines. Royal Ontario Museum Life Sciences Misc. Publ., Toronto. 321 pp.

Habitat Management:

Identified nest sites are identified as Areas-of-Concern within Forest Management Plans, and habitat guidelines applied.

Receive 150 m Area-of-Concern designation around the nest tree; this includes a 50-m no-cut reserve, and an 100 m modified cut area.

Within the outer 100 m modified cut area, partial timber harvest is permitted that retains at least 70% crown closure in clearcut logging, there would be a 150 m no-cut reserve, in shelterwood or selection cuts, some harvesting would be permitted in the outer 100 m.

No activity is permitted within the 150m, Area-of-Concern from March 1 to July 31.

Satellite (inactive) nests are protected with tree-length reserves.

For more details, see: Naylor, B. 1994. Managing wildlife habitat in red pine and white pine in central Ontario. *Forestry Chronicle* 70(4): 411-419.

Qualitative observations suggest that these prescriptions are effective in maintaining nest occupancy and productivity.

A "Hawk Guide" to aid field staff in locating and identifying raptor nests and species has been produced.

Habitat Guidelines Effectiveness:

Master of Science project being undertaken with the University of Toronto.

Locating and monitoring goshawk nests in central Ontario (Great Lakes-St. Lawrence Forest).

Evaluating habitat, assessing the impacts of forest harvesting and the effectiveness of the habitat guidelines.

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FALCONRY REGULATIONS AND PERMIT STATISTICS RELATED TO THE NORTHERN GOSHAWK IN THE MIDWEST

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The U. S. Fish and Wildlife Service (FWS) has 7 Regional Offices. The States of Illinois, Iowa, Indiana, Michigan, Minnesota, Missouri, Ohio, and Wisconsin make up Region 3. The migratory bird permit office in Region 3 maintains over 7,000 active files covering 17 different types of permits involving migratory birds. In addition to Falconry permits, Scientific Collecting, Raptor Propagation, Depredation, Special Purpose, and Bird Banding permits can also impact goshawks and their nesting sites and/or habitat.

In 7 of our 8 States, we issue a joint Falconry permit with the State wildlife agency. Missouri is the only State that has a separate State permit. State permits can be more restrictive than Federal permits, and Federal permits are only valid if all applicable State laws are also observed. Michigan is the only State in Region 3 that does not allow the take of goshawks for falconry. The attached table provides further information on state falconry regulations for the Midwest.

Federal Falconry permit applications are reviewed, tests must be taken and passed, and facilities must be inspected before a permit is issued, and permit conditions are specific to each individual. Fees are usually required by both the State and the FWS. Apprentice falconers must have a sponsor, and for the first 2 years, they are limited to one bird and are authorized only limited species.

In 1989, the Code of Federal Regulations (50 CFR 21) was rewritten. Some major falconry regulations were changed, including elimination of Federal annual reports, banding requirements, and acquisition/disposition changes. These changes eliminated our ability to track locations where birds are trapped or removed from nest sites, eliminated the marking of most raptors in some States, and eliminated a Federal report that summarized permit activities. However, all States in Region 3 require banding of all falconry birds, and 4 States still maintain annual reports. Some even require capture, import and export permits. The Wisconsin Department of Natural Resources is currently rewriting its falconry regulations, working with the FWS and the falconry community as it proceeds. The proposed changes will allow the State and the FWS to have better statistical information available.

There are currently 781 falconers in Region 3. Goshawks are not the only species sought by falconers. Other species include the American kestrel, red-tailed hawk, Cooper's hawk, sharp-shinned hawk, rough-legged hawk, ferruginous hawk, gyrfalcon, peregrine falcon, prairie falcon, merlin, Harris' hawk, various hybrids, an occasional great-horned owl, and

SOURCES OF NORTHERN GOSHAWKS TAKEN FOR FALCONRY
Upper Midwest States
1992-1996

Goshawks Taken for Falconry
From These States (1) (2)

Goshawks Taken				# (1)									
By Falconers Resident				Annual									
<u>In these States (1)</u>				<u>Falconers</u>		<u>Minnesota</u>		<u>Wisconsin</u>		<u>Illinois</u>		<u>Indiana</u>	
<u>Other</u>	<u>Total</u>	<u>Combined</u>	<u>E</u>	<u>P</u>	<u>Average</u>	<u>E</u>	<u>P</u>	<u>E</u>	<u>P</u>	<u>E</u>	<u>P</u>	<u>E</u>	<u>P</u>
Minnesota	0 0 3	21	24	133	3	21	0	0	0	0	0	0	0
				4.8									
Wisconsin	0 0 8	10	18	109	0	0	8	10	0	0	0	0	0
				3.6									
Illinois	1 1 4	13	17	168	0	0	3	2	0	10	0	0	0
				3.4									
Indiana	9 0	10	2	70	0	0	1	2	0	0	0	0	0
				12		2.4							
Missouri	9 1 9	1	10	122	0	0	0	0	0	0	0	0	0
				2.0									
Michigan	2 0 5	5	10	73	0	0	3	4	0	0	0	0	1
				2.0									
Ohio	1 0 1	0	1	62	0	0	0	0	0	0	0	0	0
				< 1									
Iowa	0 0 0	0	0	44	0	0	0	0	0	0	0	0	0
				0									

TOTAL	22 2	40	52	781	3	21	15	18	0	10	0	1	1
				92		18.4							
Annual Average	4.4 <1	8.0	10.4		<1	4.2	3.0	3.6	0	2.0	0	<1	

E - Eyass (Nestling)
 Ben G. Ohlander, President
 P - Passage (Caught on Migration)
 Minnesota Falconers Association

Source of Data: (1) U.S. Fish & Wildlife Service
 (2) State Agencies responsible for falconry

Prepared By:
 Min-

April
 22,
 1997

PANEL DISCUSSION - MONITORING ISSUES

Panel Members

David E. Andersen (Facilitator), Minnesota Fish & Wildlife Cooperative Research Unit

Thomas C. Erdman, University of Wisconsin, Green Bay

William R. Bowerman, Lake Superior State University

David Andersen's Remarks

This panel has been charged with discussion of issues related to monitoring northern goshawks in the western Great Lakes Region. The format for this discussion will be as follows:

- A brief overview of raptor population monitoring.
- An overview of long-term northern goshawk study in Wisconsin and how that relates to monitoring.
- An overview of recent efforts to develop a program to monitor woodland raptors in Michigan.
- A final open discussion period.

Over the past several years, there has been a growing interest in efforts to monitor raptor populations beyond the scale of single study areas. Interest in status and trends in raptor populations has resulted in recent efforts to bring together various individuals and organizations to review the current state of knowledge and develop a strategy to monitor raptor populations in North America.

In August, 1996, an international workshop was convened in Boise, Idaho, to begin discussing these issues, and to develop a comprehensive monitoring strategy. While such a strategy is still in the future, considerable progress was made in evaluating current knowledge and data, and in setting objectives that apply to any raptor population monitoring effort. As a background for this discussion on monitoring northern goshawk populations, I will draw from the report of that workshop¹. The goal of raptor monitoring was defined in this report as: Monitor the status and trends in continental and regional populations of Nearctic diurnal raptors in Canada, Mexico, and the U. S. A. Implicit in this goal are some specific objectives:

- 1) Minimum criteria to detect trends:
 - Detect a 50% reduction in population size over a 25-year period.
 - $\alpha = 0.10$, $\beta = 0.20$.
- 2) Identify the best combination of monitoring techniques for each species.
- 3) Recommend improvements in data collection, analysis methods, and regional coverage.

The initial and critical step in a monitoring program is clearly defining the goal of monitoring. After identifying the objectives of a monitoring program, it is next essential that the population of interest be clearly and precisely defined. In the case of most raptors, identifying the population is closely related to geographic scale. Most raptor studies have been conducted on the scale of local study areas (10's of km), and techniques for monitoring raptors at this scale are reasonably well established. At regional (100's of km) and continental (1000's of km) scales, techniques for monitoring raptor populations are not nearly as well established. At these scales, an important first step in monitoring is to assess existing knowledge and research in the light of their utility in monitoring populations. These activities are currently underway for northern goshawks in the western Great Lakes region.

There are also a number of statistical issues that must be addressed. First, the goal of monitoring is to understand the long-term trajectory of a population, including trends (an interval-specific measure of rate of change), cycles, and response to perturbations. To accomplish this requires unbiased and precise estimates of attributes of populations such as population size or population change. Several issues emerge:

- 1) The populations (both biological and statistical) must be defined.
- 2) If the population can be clearly defined, is it possible to estimate population size directly? If not, is it possible to derive an index to population size, or a population estimate adjusted for biases?
- 3) If an index to population size can be derived, is it possible to validate the index?

Once these issues are adequately addressed, there are a number of other statistical issues related to trend analysis to deal with:

- 1) Over what time interval is the population to be monitored?
- 2) What is an appropriate interval between successive estimates (sample size)?

3) What is the appropriate level of precision for individual estimates?

So, how does monitoring of northern goshawks in the western Great Lakes region fit into this framework? At the population level, there are several characteristics of goshawks that influence the development of an appropriate monitoring strategy:

- 1) The western Great Lakes region is at the southern extent of the current breeding range of northern goshawks. This has important implications for population dynamics, and in turn, monitoring populations.
- 2) Northern goshawks over much of this region likely forage on prey species whose populations are cyclic (hare and grouse). This also has important implications for population dynamics of goshawks.
- 3) Little is known about ecology of northern goshawks outside of the breeding season. Factors affecting survival and physical condition outside of the Great Lakes region may have impacts on population dynamics.
- 4) Fall/winter invasions of goshawks from populations that breed farther north in the boreal forest of Canada and Alaska may influence population dynamics of Great Lakes goshawks.

There are, then, a number of questions that need to be addressed relative to monitoring northern goshawks in the western Great Lakes region:

- 1) What is the objective of monitoring and what data are sufficient to meet this objective?
- 2) What is the appropriate population to monitor, both temporally (e. g., breeding population) and spatially (geographic area of interest)?
- 3) Is it possible to reliably estimate the size of this population?
- 4) If not, is there an index to population size that can be derived? If so, what is the relationship between the index and population size?
- 5) What characteristics of population trajectory are of interest?
 - Cycles (periodicity and magnitude).
 - Population trend.
 - Influence of habitat composition of the landscape.

6) What influences on population size are important and how do they need to be considered?

Finally, let me summarize by drawing from the summary regarding northern goshawk monitoring from the workshop report that I referenced above: “The Breeding Bird Survey and Christmas Bird Count are not useful for monitoring this species. ... Intensive breeding season surveys, nest plot surveys and/or road and foot broadcast counts are the only known methods available for monitoring this species. This type of intensive breeding-season monitoring is extremely expensive.”

¹ Report of a workshop to develop a North American raptor monitoring strategy. 13 February 1997. (<http://www/im/nbs/gov> or <ftp://ftp/im/nbs/gov>)

Tom Erdman's Remarks

Based on our 25 years of research on northern goshawks in northeastern Wisconsin, we have formulated the following observations:

- 1) Wisconsin goshawk population is similar to Canadian populations in that they are prey density dependent and hence cyclic in nature. Principal prey components of the 10-year cycle are snowshoe hare and ruffed grouse.
- 2) Wisconsin goshawk population fluctuates roughly 50% between the high and low phases of the 10-year cycle, compared to 90% for some of the more hare dependent northern populations. This may reflect the presence of more “buffer” prey species at our latitude.
- 3) Wisconsin goshawks average smaller than their Canadian relatives and there is no evidence of the northern birds staying to breed in Wisconsin after the goshawk “flight” years which occur after their prey crash in Canada.
- 4) Average territory longevity in Wisconsin is 3.9 years with a range of 1 to 26 years. Longevity varies with forest ownership and management. It has been significantly greater on state-owned lands, 10.2 years, and shortest on county forest lands, 2.4 years.
- 5) Usurpation of goshawk territories by great horned owls is greatest on county forest lands and others where large (over 40 acres) clearcuts are used in management. Goshawk nesting habitat management varies widely across Wisconsin.

- 6) Fisher populations in northern Wisconsin have now reached densities on one animal per square mile. We documented increased adult female goshawk mortality and nest failure since 1986. Turnover rates for adult females have now reached 40% annually. The fisher problem is compounded by a record white-tailed deer population which ensures fisher overwinter food resources and forest management which through fragmentation concentrates fisher and goshawks in the same habitat.

It is very difficult to assess the population status of goshawks in Wisconsin in terms of density and abundance. Territories are widely dispersed, nonrandomly, and undergo fluctuations of up to 50% through the 10-year prey cycle. Current forestry often produces rapid habitat changes. Territory longevity averages only 3.9 years. Population status must be based on nest success, productivity and adult survivorship in particular adult females. Prey populations and predator populations must also be monitored along with forest management of nesting habitat.

PANEL DISCUSSION - RESEARCH ISSUES

Panel Members

LeRoy Peterson (Facilitator), Wisconsin Department of Natural Resources

Ted Dick, Minnesota Cooperative Fish and Wildlife Research Unit

Tom Doolittle, Bad River Natural Resources Department, Wisconsin

LeRoy Peterson's Remarks

I think that most of us would agree that our overall goal is to manage for a sustaining population of northern goshawks in the Midwest. With that said, we already know that the existing information database necessary to accomplish this goal is woefully lacking and this is where the role of research comes into play. Therefore, our objectives must somewhere, sometime, include the formation of a Midwest Goshawk Research Plan. Such a plan by definition would include an Information Needs Assessment that would identify what we currently know regarding goshawks in the Great Lakes Region, secondly, what information needs we must acquire in order to become effective in our management program, and finally and most difficult of all, a prioritization of these identified needs.

Now, we know that there are inherent problems associated with this approach. For example, what is “priority” research is in the eye of the beholder. If I am talking to my Endangered Resources colleagues in the Wisconsin DNR, their focus has been on the goshawk as a species of special concern, perhaps one that even merits threatened status. Other parties will have different research priorities. Another problem is that funding often dictates research priority; let’s say for example, that someone representing the Wisconsin Paper Council walks into my office offering to fund research to examine the impacts of forestry practices on breeding goshawks (a necessary first step toward any mitigation strategy), then we either agree to conduct the research or this person will walk over to Bob Rosenfield at the University of Wisconsin at Stevens Point or some other university professor, and offers the same deal.

A Midwest Goshawk Research Plan is necessary because resource agencies and foundations have already created goshawk research priorities. For example, Steve Lewis (U. S. Fish and Wildlife Service) annually establishes research priorities by just deciding which proposals will receive grants from the Nongame Bird Conservation Fund and which proposals get a “Dear John” letter. Either we use the best knowledge and judgment we have available, bite the bullet and begin the development of a Midwest Goshawk Research Plan, or someone will do it for us.

We also need to establish an ad hoc committee in the Great Lakes Region to oversee the development of a Research Plan. The important factor here is to make sure this committee has adequate representation from all goshawk stakeholders. No plan will gain acceptance unless everyone interested in goshawks in the Midwest has a role in developing the plan.

Such a plan will evolve as new information becomes available; it must be a working document subject to periodic changes. Anything less will lead to dire consequences. We also know that this plan will not be easy to formulate, but today, in this room, hopefully we can begin to take the first steps towards this plan.

DRAFT LIST OF RESEARCH INFORMATION NEEDS FOR GOSHAWK MANAGEMENT

[This questionnaire, compiled by a working group in Wisconsin, was handed out at the workshop.]

IMPACTS OF FORESTRY MANAGEMENT PRACTICES

What impacts are forestry management practices having on goshawks? Both on overall habitat (nesting and foraging habitat) and specifically on nest sites. Possibly study 20,000 acre “wilderness area” (unmanaged) and compare to managed sites, or to sites set aside for goshawks.

HABITAT REQUIREMENTS IN LAKE STATES

What habitat are goshawks using for nesting and foraging during the nesting season, and during the rest of the year?

DIFFERENCES BETWEEN PRIME VS. MARGINAL HABITAT

What is “prime” habitat and what is “marginal” habitat for goshawks?

PREDATION AT NEST SITES

Determine the predation rate and predators responsible for destruction of goshawk eggs, young, and adults.

DENSITY AND DISTRIBUTION OF BREEDING POPULATION

This base information can be collected by annual surveys but will need to be collected over a long period of time because of the cyclic nature of the species. Use intensive searches on designated sites for density estimates.

RELATIONSHIP BETWEEN PREY DENSITY, GOSHAWK AND PREDATOR POPULATION NUMBERS, AND REPRODUCTIVE SUCCESS

Need to know the relationship between the abundance of prey, the number of goshawks present, the number of other predators present (e.g., Fishers), and the corresponding nest success.

USE ALL KINDS OF HISTORICAL DATA

Utilize all historical data to try and answer questions before collecting new information.

CHANGES IN LANDSCAPE AROUND NEST SITES

What impact is there if the surrounding landscape is modified around the nest?

REPRODUCTIVE SUCCESS

Can likely be collected by annual surveys but will need to be collected over a long period of time because of the cyclic nature of the species.

SATELLITE DATA TO IDENTIFY COVER TYPES/POTENTIAL HABITATS

Use satellite imagery to identify potential goshawk habitat.

SITE FIDELITY OR RE-OCCUPANCY OF BREEDING TERRITORIES

Need to determine if the same birds are returning to the same nest sites year after year. If the same nest site is not used, where do the birds go to nest? Important to know if known breeding territories are re-occupied regardless of breeding status.

RELATIONSHIP BETWEEN MIDWESTERN POPULATION AND NORTHERN POPULATIONS

Is the Midwest population a distinct population from more northerly populations? Is the Midwest a “sink” for more northerly populations?

JUVENILE SURVIVAL

Little is known of juvenile survival after they fledge from the nest, yet before fall and winter months.

IMPACT OF MANAGEMENT FOR GOSHAWK ON OTHER SPECIES

If we manage specifically for the goshawk, what impact will that management have on other species?

IDENTIFY FORAGING HABITAT

What is foraging habitat for goshawks in the Midwest? Document changes in foraging habitat by forest ecosystem type.

SURVEY TECHNIQUES

Need to identify appropriate survey techniques to use for monitoring goshawk populations and habitat.

WINTER SURVIVAL AND MOVEMENTS

Little is known on the winter survival and movements of Midwestern goshawks (both adults and juveniles).

MOVEMENTS

Determine the movements of goshawks during all times of the year and the corresponding habitat used.

SURVEY OF PREDATORS (E.G., FISHER POPULATION)

Monitor the abundance of potential goshawk predator populations.

NEST SITE STRUCTURE

What is the habitat structure immediately surrounding nest sites?

POST-FLEDGLING HABITAT

What habitats are post-fledgling young using?

ADULT MORTALITY FACTORS

Seasonal and annual mortality factors of resident, adult birds for use in population models or life table analysis.

PANEL DISCUSSION - FOREST MANAGEMENT ISSUES

Panel Members

Al Boss, (Facilitator) U. S. Forest Service

Gary Roloff, Boise Cascade Corporation

Darrell Zastrow, Wisconsin Department of Natural Resources

Betsy Daub, Minnesota Audubon Council

Gary Roloff's Remarks

1) Why industrial forest landowners are involved in goshawk management?

Concerns over goshawk population viability across the United States have focused attention towards forest practices that effect habitat quality and quantity. In the context of forest management and planning, historical conservation strategies (e.g., northern spotted owl, red-cockaded woodpecker) have focused on “protecting” as opposed to “managing” habitat, a strategy that obviously contradicts the land ownership objectives of forest products companies. Most landowners support the conservation of wildlife species if the population concerns are warranted, however, mechanisms for achieving species conservation may differ according to land ownership objectives. For example, the National Park Service has little land management flexibility and will conserve goshawks using a habitat protection strategy. In contrast, industrial forest landowners may chose to conserve goshawks by actively managing their forests while providing certain habitat structures. Of importance is not that the two landowners differ in their approaches, but that the overall goal of goshawk conservation is achieved. Industrial forest landowners want to ensure that if goshawk conservation strategies or guidelines are deemed appropriate, it is an open, well-structured process based on sound science that considers all land ownership objectives. Realistically, these types of strategies are most likely to succeed.

2) What issues drove industrial forest landowners into action on goshawk management?

Across the United States, discussions regarding goshawk conservation strategies and management guidelines are becoming increasingly common. Also, site specific land management prescriptions in proximity to active and historical goshawk territories are coming under intense scrutiny. Industrial forest landowners want to avoid the spotted owl scenario that established mini-reserves across that landscape. Rather, industrial forest landowners want to know the habitat conditions they can provide through active land

management that are conducive to goshawks. Under the “reserve strategy” used for spotted owls, few forest managers can be convinced to grow owl habitat for fear that it will become occupied and removed from their managed land base. Thus, no new habitat is being created and species recovery is hindered as a result. Development of a similar scenario for goshawks would be counter-productive. It is imperative to goshawk conservation that innovative strategies be developed that focus on habitat structure and spatial arrangement in a context that permits land management flexibility.

3) What are industrial forest landowners doing to address goshawk issues?

Several industrial forest landowners have been actively involved in developing goshawk conservation strategies, participating in goshawk advisory meetings and workshops, and developing habitat assessment tools. For example, Potlatch Corporation assisted in developing and documenting a goshawk habitat conservation strategy for Idaho, Boise Cascade Corporation and Potlatch Corporation has actively been involved in the Lake States region on several goshawk panels and meetings, and Boise Cascade Corporation is currently developing an ecologically based goshawk habitat assessment tool that can be used in forest planning and resource management. Industrial forest landowners support the use of sound science in developing habitat assessments, conservation strategies, and management prescriptions and will continue to support goshawk efforts that recognize different landowner objectives.

Darrell Zastrow's Remarks

The northern goshawk is a rare species in Wisconsin, breeding primarily in the northern 1/4 of the state, and southward into the central forested portions of Wisconsin. In 1995, the Wisconsin Department of Natural Resources (WDNR) tentatively proposed listing the goshawk as a state threatened species based on research information in northeast Wisconsin suggesting a population decline. This listing proposal, however, was withdrawn in order to obtain more population information. The WDNR has invested in the collection of goshawk breeding density data for additional, objectively delineated sites and the study of larger samples of goshawk nest-site habitat from several parts of the state to confirm the breadth of habitat use.

The WDNR works with a great variety of forest landowners, both public and private, encouraging the stewardship of forest resources. The WDNR generally encourages management to focus on the community rather than on individual species. Where concerns exist with individual species due to uniqueness or rarity, considerations for the rare species are incorporated into management guidance. These considerations are based on best available population/habitat information within the local area, the landscapes, and ecological regions. Wherever possible the WDNR develops this information through partnerships with landowners, agencies, and interest groups.

The WDNR is considering the development of a team charged with gathering information on a variety of forest raptors, including rare species such as the northern goshawk, to assist in the determination of population status, to plan research, and when appropriate, develop management guidance. Possible work products may include:

- a) Develop procedures for WDNR field staff to identify and confirm forest raptor stick nests.
- b) Develop statewide forest raptor management guidelines and associated procedures for the integration into the state-owned forest lands and possibly other public/private forest lands.
- c) Continue the WDNR's northern goshawk study through the year 2000; coordinate evaluation of these results and integrate information into management guidance for the northern goshawk.

Betsy Daub's Remarks

The National Audubon Society is committed to the conservation and restoration of natural ecosystems for the benefit of humanity and the earth's biological diversity. Audubon's focus is the conservation of birds, other wildlife, and their habitats through the protection and sustainable management of ecosystems. The Minnesota Audubon Council is particularly concerned about protection of forested ecosystems and the bird populations within them. For many of the northern forest raptors in Minnesota, including the northern goshawk, information about population status, breeding distribution, and foraging and nesting habitats is not available. Because of this lack of information, it is also not known what impacts forest management may have on the species' habitat. Audubon is interested in increased efforts to understand the status of goshawks in the Midwest to better inform forest management practices.

The lack of information about population trends and breeding distribution for Minnesota's goshawks presently confounds attempts to manage for the species at an ecosystem level and to develop a comprehensive management plan. Much more data are needed to better understand population distribution and fluctuations, differences between occupied and unoccupied nesting habitats, and foraging habitat requirements.

Transformations that are occurring in northern forested landscapes give an urgency to the collection of this kind of information. Land management activities in northern Minnesota emphasize converting old forests into younger aged forests over the majority of the landscape. The current Forest Plans for both the Superior and Chippewa National Forests call for the management for the majority of their forests as young-aged aspen-birch. Exactly how these changes in the landscape are affecting goshawks is not understood.

However, given that much of this species prey base generally relies on old forest conditions, and that goshawks prefer nesting in older forests, concern for the goshawk's status in this region is well placed.

In Minnesota, approximately 10 active goshawk nests have been identified. Most of these are presently planned to be subjected to land management activities of varying impacts, with loss of the nesting territory a possible outcome. Given that existing data suggest that goshawks in Minnesota are uncommon and sparsely distributed, the loss of any of these nests represents a lost opportunity to better understand the species. Studying the activities and habitat use of these known individuals, provides information for managing for the goshawk's population as a whole, across the landscape. Audubon would like to see land managers taking measures to protect known nesting sites for now, in an effort to build a comprehensive management plan for the species for the long-term.

The National Audubon Society in Minnesota is exploring a partnership with the Chippewa National Forest and the Raptor Center at the University of Minnesota to use trained Audubon volunteers to survey the forest for goshawks and to search for active nests. Audubon is also actively involved in the public participation process in the Forest Plan revision for both the Superior and Chippewa National Forests.

PANEL DISCUSSION - FALCONRY ISSUES

Panel Members

Mark Martell (Facilitator), The Raptor Center, University of Minnesota

Marlys Bulander, U. S. Fish and Wildlife Service

Pat Manthey, Wisconsin Department of Natural Resources

Ben Ohlander, Minnesota Falconers Association

Ben Ohlander's Remarks

HISTORY AND DESCRIPTION OF FALCONRY

Sport and art of training and working in partnership with a raptor to hunt wild game.

At least 4,000 years old. Started in central Asia, migrated to the Middle East and then to Europe as a result of the Crusades. Highly popular during the Middle Ages in Europe, initially as a way to obtain food, then as a sport or tradition. Different "classes" of people allowed to possess and hunt with different species of hawks and falcons, i.e., Emperors-Golden Eagles, Kings-Gyrfalcons, Dukes-Peregrines. The goshawk was considered the yeoman's "cooks" hawk since it was so effective at catching quarry as food for the table. Ladies were actively engaged in the sport (e. g., Mary, Queen of Scots, Elizabeth I).

CURRENT STATUS IN NORTH AMERICA

Gained popularity in the United States and is now world-wide in scope.

Highly regulated sport in the United States. Regulations promulgated by falconers themselves and their national organization, the North American Falconers Association, who want to continue improving the standards of those practicing falconry.

3,500-4,000 licensed falconers in North America currently.

The goshawk is considered to be one of the "best" birds utilized in falconry because of its outstanding flying and hunting abilities and its beauty.

A survey of falconers in the United States was presented at the 60th North American Wildlife and National Resources Conference in 1995 and showed that the:

majority of falconers are actively engaged in non-consumptive wildlife recreation.

majority of falconers contributed to at least one raptor-related rehabilitation, reintroduction, management or education effort.

harvest of wild raptors by falconers is well below total "allowable take" annually. 1986 survey of falconers indicates a net "take" (wild raptors taken for falconry less those released back into the wild) at 7% of "allowable take" by falconers.

FALCONRY AND GOSHAWKS

Falconry has a minimal impact of raptor populations.

A 1982-89 University of Wyoming study (published in 1995 in *J. Wildl. Manage.* 59: 311-316) on the impact of "harvesting" by falconers on nestling raptors simulated nestling harvest on prairie falcon populations and concluded that:

for all 7 years, nesting success and productivity did not differ.

harvest probably did not affect population size.

Data on goshawks taken for falconry in the Midwest, 1992-96, show:

781 licensed falconers in the 8 Midwest states.

Only 92 goshawks (18.4/year) were taken in total (40 nestlings and 52 trapped on migration). Of these, 68 goshawks were taken from the Midwest states (13.6/year) and 24 taken from outside the region (primarily Wyoming). Only 18 nestling goshawks were taken from the Midwest states (3.6/year). These all originated from Minnesota (3 nestlings or <1/year) and Wisconsin (15 or 3/year).

Discussions with falconers on the east and west coasts and the southwestern United States indicate no interest in falconers traveling to the Midwest from those areas to take goshawks for falconry.

These data indicate that the annual take of goshawks from the Midwest states is small and does not present a negative impact to the population.

EPILOGUE

Most of the goshawk research and monitoring projects mentioned in the previous pages are continuing. In addition, a number of other developments have occurred since the workshop was held (March 1997) that bear on the future of northern goshawk conservation in the Midwest:

- 1) An extensive literature review on the biology, habitat requirements, population status, management, and research needs of the goshawk in the western Great Lakes states and Ontario, conducted by Ted Dick, David Plumpton, and David Andersen (Minnesota Cooperative Fish and Wildlife Research Unit) under contract with the U. S. Fish and Wildlife Service, is nearing completion and should be available by April 1998.
- 2) Patricia Kennedy (Colorado State University), David Andersen (Minnesota Cooperative Fish and Wildlife Research Unit), and others will be developing a regional research and monitoring plan for the goshawk in the western Great Lakes region. This should be available in mid-1998.
- 3) Several recent publications provide good information on the goshawk:
 - a) The American Ornithologist's Union "Birds of North America" species account on the northern goshawk was published in 1997. Copies may be obtained from the author, John R. Squires, Rocky Mountain Forest and Range Experiment Station, 222 South 22nd Street, Laramie, WY 82070.
 - b) Patricia Kennedy (Colorado State University) published a paper in 1997, entitled "The northern goshawk: is there enough evidence of a population decline?" (J. Raptor Research 31: 96-106), which offers much food for thought on what kinds of information will be needed to determine the status of the species.
 - c) Tom Erdman (University of Wisconsin at Green Bay) has a publication in press at the Canadian Field-Naturalist on his long-term study of the status of the goshawk in northeastern Wisconsin.
- 4) In September 1997, in response to a petition filed by the Southwest Center for Biological Diversity, the U. S. Fish and Wildlife Service initiated a status review of the northern goshawk west of the 100th meridian (which passes through central North Dakota). This review is a pre-cursor to making a listing decision under the Endangered Species Act. A listing decision is expected by late-1998. The petition and review do **not** include the Midwest.

- 5) In the last year, the effects of a proposed timber harvest operation on goshawks in the Chippewa National Forest have been the subject of debate and legal proceedings involving the Forest Service, timber industry, environmental organizations, and Leech Lake Tribal Council. Related to this issue, research and monitoring have been initiated to better understand goshawk populations and habitat utilization in Minnesota.

It is clear that we will soon have much more information available to help in determining the status of the northern goshawk in the Midwest, how it is impacted by forest management, and what needs to be done to ensure its conservation. It is especially encouraging that partnerships have formed to study and monitor the goshawk in a regional context.

Stephen J. Lewis
U. S. Fish and Wildlife Service
January 1998

APPENDIX - VIDEOTAPES ON THE NORTHERN GOSHAWK

The Washington Department of Fish and Wildlife has produced two videotapes on the northern goshawk. The first is a 7-minute tape meant for the general public and other non-ornithologists who might encounter goshawks in the field. It covers identification and life history. A limited number of copies are available free of charge from Dave Hayes, Washington Department of Fish and Wildlife, 600 Capitol Way North, Olympia, WA 98501 (360-902-2366). The second tape is 50 minutes long and focuses on survey methods for monitoring goshawk populations through taped-playback response. It is available for \$10 (make check payable to Ad Image Video) from Chuck Boland, Washington Department of Fish and Wildlife, 600 Capitol Way North, Olympia, WA 98501 (360-902-2255).