Conservation Strategy and Agreement for the Management of Northern Goshawk Habitat in Utah

Utah National Forests
Bureau of Land Management
Utah Division of Wildlife Resources
United States Department of Interior, Fish and Wildlife Service

Purpose of this habitat management strategy and agreement
To provide a management strategy for the Utah National Forests, Bureau of Land Management and the Utah Division of Wildlife Resources that will maintain adequate nesting and foraging goshawk habitat that is well connected throughout the State of Utah in order to sustain a viable population of goshawks. Also to provide habitat for a large variety of avian and mammalian species associated with goshawks.

Introduction
Over the past two years a Habitat Assessment and Management Recommendations for the Northern Goshawk has been developed for the State of Utah (Graham et al. 1998, in press). This document was prepared in response to suspected downward trends in goshawk habitat and/or populations, possibly as a result of land management practices such as fire suppression, grazing and timber management. This assessment, the first part of a two part process, describes habitat needs of the goshawk, its prey and other forest-dwelling species. It defines the current quality, quantity, distribution and connectivity of habitat. It demonstrates that forested lands in Utah are currently dominated by late seral tree species, which is an unstable condition and has some negative connotations for goshawks. The assessment concludes with a series of management recommendations to be considered by state and federal agencies when implementing actions that may affect goshawk habitat.

The Graham et al. assessment and recommendations provide a detailed description of current habitat conditions and capabilities and found them adequate to support nesting goshawks at the current time and at the scale analyzed. However, it was not able to predict future habitat conditions because of the great latitude in management allowed by current land management plans/policies on state and federal lands. Current management plans/policies are flexible enough to both permit activities that address habitat needs for the goshawk as well as allow those that do not. This Habitat Conservation Strategy (HCS) suggests additional site specific measures that, if implemented, will ensure that habitat for the goshawk is managed consistently across federal and state lands in Utah. Consistency in management of habitat is key to providing a reasonable probability of goshawk persistence.

This document is the second part of the process. It presents a HCS for the National Forests, Bureau of Land Management and the Utah Division of Wildlife Resources in Utah. This HCS uses the management recommendations contained within the first document and defines actions that should be taken by Utah National Forests and the Bureau of Land Management. By implementing prescribed actions these agencies will contribute to sustaining short and long term habitat for goshawks which is important to their overall viability across the state.

Subsequent to this HCS an Interagency Habitat Conservation Agreement (HCA) will be developed between the USDA Forest Service (National Forests in Utah), USDI Fish and Wildlife Service, Utah

Division of Wildlife Resources, and USDI Bureau of Land Management. The HCA will state signatory agencies agree that the strategy represents the best available scientific information on the northern goshawk and its use of habitat in Utah, and recommend that field offices apply the strategy through their own processes with NEPA compliance where appropriate. Use of the HCS provides the best assurance for sustaining viable populations of goshawks in the state of Utah. It represents the most recent scientific literature in providing for site specific management of goshawk habitat.

Summary of recently completed habitat assessment and management recommendations for the State of Utah

The "Habitat Assessment and Management Recommendations for the Northern Goshawk for the State of Utah" was recently completed (Graham et al. 1998, in press). It can be used in both regional and sub-regional level planning. At these levels this assessment provides information on the location and connectivity of habitat that can be used to make more informed decisions for managing both private and public lands. This assessment compliments other regional assessments such as the Interior Columbia River Basin Project (Quigley et al. 1996) and the USDA Forest Service Intermountain Region's Proper Functioning Condition assessment (USDA Forest Service 1997).

The assessment shows that the USDA Forest Service manages the greatest proportion of all goshawk habitat in Utah. The Forest Service is responsible for the greatest proportion of high and medium valued nesting habitat; 84% (Table 1). As such, the Forest Service is responsible for 81% of the optimum and high value habitat (Table 2). Therefore, National Forests System lands are essential in providing habitat for viable populations to exist in Utah.

The assessment found that most of the 421 nests located during project level surveys occurred in mid-elevation (6,000 feet) to high-elevation (10,000 feet) sites which are currently occupied by mature aspen or coniferous forest. Goshawks use these forest types even when there is substantial insect-related mortality in the overstory. In the Uinta Mountains, many nests occur in lodgepole pine forests where up to 80% of the overstory trees are dead as a result of mountain pine beetle outbreaks in the early 1980s (Ashley National Forest 1998, Dewey 1996, White 1992). Similarly, on the Dixie National Forest, nesting territories located on areas with high mortality caused by spruce bark beetles remain active.

The assessment found that there are some regional differences in goshawk use of certain forest cover types in Utah. In southern Utah, Engelmann spruce and subalpine fir cover types are used frequently for nesting, while in northeastern Utah these types are only rarely used, except where Engelmann spruce is mixed with lodgepole pine (Table 3). It found that goshawks only moderately use ponderosa pine for nesting in Utah (Table 3), even though it is used extensively by goshawks in northern Arizona (Reynolds et al. 1994). Limited use of this type in Utah may be due to the current conditions. Many ponderosa pine forests in Utah lack large trees due to mountain pine beetle outbreaks in the late 1970s, and the subsequent salvage logging.

At the local level (forest level and lower or Bureau of Land Management field office level) this assessment outlines a process that can be used to describe goshawk habitat, its proper functioning condition, as well as other forest and woodland characteristics of interest. However, at the local level the best available data should be used when applying the assessment process. The coarse scale assessment completed in this document for the State of Utah can be used to provide context for local level assessments, but is too coarse for making site specific prescriptions. When developing site specific prescriptions for projects the ecological principals and assessment process found within the management recommendations for the northern goshawk in the southwestern United States (Reynolds et al. 1992) should be used.

Discussion of state scale versus forest and project scale; what is appropriate to address at each scale.

Population viability and NFMA

Federal regulations (36 C.F.R. S 219.19) applying to National Forest System lands state that "wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area." This section further specifies that "habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area."

Implementation of this regulation has proven to be a significant challenge for the Forest Service. As part of recent attempts to rewrite the NFMA regulations (federal Register, Vol. 60 No. 71, Thursday, April 13, 1995), the agency noted that "viability" had only been a general concept when the NFMA regulations had been finalized in 1982. Specific interpretations of viability analysis had not been published in the scientific literature, and there is no indication that the Committee of Scientists who drafted the regulations foresaw the need for extensive viability analysis. The Forest Service has argued that the evolution of the paradigm for viability analysis caused the NFMA regulations to become increasingly burdensome. However, the agency acknowledged (60 FR 18896, April 13, 1995) that the courts had upheld agency contentions that the regulation could be satisfied without complex analyses.

Managers rarely have all information needed to conduct a fully quantitative population viability analysis (PVA); this is true in the case of the northern goshawk. In the face of missing information, one practical alternative is to use inventories of the quality and quantity of suitable habitat as a surrogate for PVA. For the goshawk, this surrogate analysis for PVA is documented in the "Habitat Assessment and Management Recommendations for the Northern Goshawk in the State of Utah" (Graham et al. 1998, in press).

Based on the findings and recommendations by Graham et al. (1998) this HCS emphasizes management of habitat quality, quantity, distribution and connectivity. This is consistent with recommendations of the Scientific Committee presently evaluating needs for future Forest Plan planning regulations. In part these recommendations state "Given that habitat loss and fragmentation is a major cause of species at risk, the Forest Service should focus on the quantity, quality, and distribution of habitat necessary for viability". The primary assumption that forms the basis of this approach is that if vegetative communities and their processes are similar today to those occurring historically, then conditions approximate those under which species evolved. Presumably, therefore, the full complement of species will persist. Kaufmann et al. (1994) put it in these words:

> "Our guiding premise for sustaining ecosystems and protecting biodiversity now and into the future is to manage ecosystems such that their structure, composition and function of all elements; including their frequency, distribution, and natural extinction, are conserved. Conservation focuses on maintaining and restoring suitable amounts of representative habitats over the landscape and through time."

The goshawk is a far ranging species which inhabits all forest cover types in Utah. To provide for a viable population, habitats need to be both well distributed and spaced close enough to assure interchange of goshawks among habitat patches in the State; Map 1 (USDA-FS 1993; Graham et al. 1998, in press).

A habitat conservation strategy (HCS) has a greater likelihood of success if it provides for connectivity between habitat patches (USDA-FS, 1993; Graham et al. 1998, in press). A broadly distributed

population with few barriers to movement has a higher probability of viability than a subdivided population with more barriers within its range (Thomas et al. 1990:23). A broad, interconnected distribution lessens risk of catastrophic loss due to disease, habitat destruction, and other catastrophic events. If every patch can be reached and subsequently occupied, then all areas could be considered connected. Connectivity has positive implications for population viability because it allows individuals to emigrate to new areas. Connected habitat ensures that individuals will be available and capable to recolonize patches following local extinction events.

State Scale:

Matching the scale of analysis to the scale of biological processes is key to the success of PVA. Different taxa, and different ecological processes that influence the life histories of those taxa, call for analyses at different scales. Analysis of far-ranging, broadly distributed species such as the goshawk should generally be done at larger scales than analysis of species that operate within small home ranges and are narrowly-distributed.

The scientific committee presently evaluating the need to change future National Forest System planning regulations equated species viability with self sustaining populations (Committee of Scientists' Report, 1998 DRAFT). It is our professional judgement based on home range sizes of goshawks, recent PVA literature that a large scale is required to identify a self sustaining population because of the far-ranging nature of the goshawk. The State of Utah is one of the scales at which population viability analyses and determinations may be appropriate. It is our belief that the use of the state scale (i.e.- its aggregation of landscapes) to conduct a habitat based analysis for PVA will provide us with the information needed to understand the different ecological processes that influence the life histories of this far ranging, broadly distributed species. This analysis has been completed and is documented in the Habitat Assessment by Graham et al. (1998 in press).

The Habitat Assessment by Graham et al. (1998 in press) showed all forested landscapes in Utah are potentially suitable as goshawk habitat for some portion of their life cycle. Most of the forested lands in Utah are currently considered to be of medium or high value as goshawk habitat, and are well connected and distributed throughout the state (Map 1; from Graham et al. 1998, in press). Although all forested landscapes are used to some extent, certain forest cover types appear more likely to be occupied by goshawks than others (Graham et al. 1998, in press). Graham et al. conclude that "In general, existing habitat appears to be capable of supporting a viable population of goshawks at the State spatial scale." (Graham et al. 1998, page E9, in press).

In addition to the assessment findings, goshawks have been present in Utah for decades and monitoring results on National Forest System lands since 1991 were unable to detect a decline in territory occupancy (US Forest Service monitoring data). Similar unpublished data exists on Bureau of Land Management administered lands. Likewise, Kennedy (1997) was unable to detect a population decline in several western populations.

These findings are also consistent with the recent USDI Fish and Wildlife Service (FWS) finding for the contiguous United States west of the 100th meridian (Federal Register; June 29, 1998 Vol. 63 No. 124). For the contiguous United States west of the 100th meridian the FWS concluded that "while forest management (e.g., timber harvest and fire exclusion) has changed the vegetation characteristics throughout much of the western United States, the goshawk continues to be well-distributed throughout its historic range. The Service finds no evidence that the goshawk population is declining in the western United States, that habitat is limiting the overall population, that there are any significant areas of extirpation, or that a significant curtailment of the species' habitat or range is occurring."

Based on the findings in Graham et al. 1998 that good quality habitat is well distributed and connected throughout the State of Utah, the absence of evidence of a population decline on National Forest System

Lands since 1991, and consistency with findings by the FWS, we believe the current goshawk population is viable in the State of Utah.

Forest, Multiple Forest and Bureau of Land Management Field Office Scale: dispersal and genetic exchange

As previously stated, 36 C.F.R. S 219.19 requires that "wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area." . To meet these requirements for a far-ranging, broadly distributed species such as the goshawk, it must be clear what role individual "planning areas" (i.e.- Forest Plan unit, Bureau of Land Management Field Office) play in sustaining population viability at the larger scale. This is especially true when the PVA, or surrogate analysis, is conducted at a scale larger than an individual "planning area".

Maintaining habitat at the forest level is important in meeting the requirements at 36 C.F.R. S 219.19. In addition to what was stated above, the requirements at 36 C.F.R. S 219.19 also specify that "habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area." For far-ranging, broadly distributed species such as the goshawk, the "planning area" managed under a Forest Plan provides an important piece of the total habitat that insures the maintenance of species representation throughout the area important to defining a self sustaining population (i.e.- the aggregation of landscapes within the State of Utah). This is not merely a legal requirement, it is a biologically important step because each forest represents a unit that must be aggregated up in order to access population viability determinations at a biologically appropriate scale. Habitat found on each forest provides connectivity, travel lanes, contributes to genetic diversity, and increases the number of individuals in the larger population.

Though the assessment completed by Graham et al. 1998 found that habitat appears to be capable of supporting a viable population of goshawks at the State spatial scale, because of the coarse nature of the state assessment, it recognized that "habitat deficiencies may be present at the local level". This HCS is being developed to provide administrative units with the necessary background information and analysis procedures to insure that projects proposed in areas involving goshawk habitat, or potential habitat, are properly designed and implemented to meet the assumptions of the state-scale analysis.

Implementation of the principles and processes found in the HCS will insure that the administrative units sustain habitat for the maintenance of species representation throughout the respective "planning area", and sustains habitat connectivity within and among National Forests, State and Bureau of Land Management lands important to the maintenance of population viability at the state scale. Connectivity of key goshawk habitat among administrative units has positive implications and are key to population viability because it allows juveniles to disperse from natal areas and allows individuals to emigrate to new areas. Connected habitat insures that individuals will be available to re-colonize habitats or emigrate to new breeding territories throughout the State when local declines in habitat value caused by stand-replacing fires, bark beetle epidemics, timber harvesting, periodic lows in prey abundance, urban encroachment, or other disturbances occur.

Project and individual landscape scale:

At this scale the focus of management activities is providing fine scale features of goshawk habitat. Features such as appropriate snag densities, large tree component, down woody debris, etc. are best measured and managed for at this scale. These features are necessary for goshawks to inhabit the area.

The HCS provides key habitat attributes that must be applied when planning and implementing projects that are in goshawk habitat areas. As previously stated, when developing site specific prescriptions the ecological principals and assessment process found within the management recommendations for the

northern goshawk in the southwestern United States (Reynolds et al. 1992) should be used. The recommendations from Reynolds et al. 1992 represent the best available scientific information for forming the development of site prescriptions and should be considered a component of this HCS when designing project level prescriptions.

Goshawk Habitat Management Strategy for Utah

*Strategy Goals and Objective*s
Goal: Provide habitat capable of sustaining viable populations of goshawk in the state of Utah.

> Objective 1: Design a proactive approach to habitat management which will result in the long term conservation and management of habitat for goshawk, its prey and other associated species.
>
> Objective 2: Provide a consistent approach to management of goshawk habitat on state and federal lands.

Projects designed to implement Forest or Resource Management Plans will use the following Desired Habitat Condition (DHC) statements (Graham et al. 1998, in press) for forested landscapes.

1) Diverse forest cover types with strong representation of early seral tree species dominate the landscape.

2) High quality habitat patches that are no more than 60 miles apart, preferably less than 20 miles apart, exist throughout landscapes (connected habitat).

3) Forested landscapes have 40% of the area dominated by large trees, well distributed. Large trees are defined relative to the average for the cover type and site potential.

4) Habitats for prey and other associated species are present to meet needs as described by Reynolds et al. 1992 and Graham et al. 1998, in press (i.e.- snags, down woody, cover, etc.)

5) A variety of structural stages as recommended by Reynolds et al. 1992 are present.

Habitat attributes to be maintained or improved at a project or landscape level to allow progression toward DHC.
As previously stated, recommendations from Reynolds et al. 1992 represent the best available scientific information for forming the development of site prescriptions at the project level. However, the Reynolds recommendations do not address all cover types, growth conditions, fire regimes, or historic vegetative patterns found in the State of Utah. Where site specific conditions differ from those described below, the administrative unit (i.e.- Forest or Field Office) must interpret and document their own specific values based on local data. These local data should be interpreted using the Reynolds et al. 1992 habitat evaluation process. Refer to the attached example for lodgepole developed by the Ashley National Forest.

The following attributes are drawn primarily from the Reynolds et al. 1992 recommendations. National Forests within the Intermountain Region (Region 4) will develop recommendations for aspen and lodgepole cover types based on the process used by Reynolds et al. 1992 (within 12 months of the approval date of this strategy). Development of desired values for common forest cover types in Utah will help assure consistency in application of this strategy across administrative boundaries.

These are desirable values and will apply over a wide range of forest cover types. However, in some instances they may need to be adjusted to reflect local site capabilities. For example, some sites will not be able to achieve the recommended percentages of canopy closure. This does not mean that goshawks will not use those sites. Goshawks tend to use the densest canopies available, so managers should strive for the highest percentage of canopy closure possible on their project areas.

1) Down logs and tons of woody debris per acre.

	Nest Areas	**Home Range**				
Attribute	*All Cover Types*	*Ponderosa Pine*	*Mixed Species*	*Spruce/fir*	*Aspen*	*Lodgepole*
Down logs/acre > 12 inch midpoint diameter and at least 8 feet long.	NR*	at least 3	at least 5	at least 5	**	**
Tons of woody debris/ac greater than 3 inches diameter; down logs contribute.	NR	5-7	10-15	10-15	**	**

*NR= not required, but presence of these features are not detrimental
**Aspen and Lodgepole attributes will be added within 12 months from the approval date of this strategy.

2) Snags per acre.

	Nest Areas	**Home Range**				
Attribute	*All Cover Types*	*Ponderosa Pine*	*Mixed Species*	*Spruce/fir*	*Aspen*	*Lodgepole*
Snags/acre > at least 18 inch dbh; at least 30 feet tall.	NR	at least 2	at least 3	at least 3	**	**

*NR= not required, but presence of these features are not detrimental
**Aspen and Lodgepole attributes will be added within 12 months from the approval date of this strategy.

3) Percent canopy cover by size class and cover type.

	Nest Areas	**Home Range**				
Structural Class	*All Cover Types*	*Ponderosa Pine*	*Mixed Species*	*Spruce/fir*	*Aspen*	*Lodgepole*
% closure for mid-aged forest (VSS 4)	NA	40-60	40-60	40-60	**	**
% closure for mature forest (VSS 5)	50-70+	40-50	50-60	60-70	**	**
% closure for old forest (VSS 6)	50-70+	40-50	60	60-70	**	**

*NA= not applicable for this VSS class
**Aspen and Lodgepole attributes will be added within 12 months from the approval date of this strategy.

4) Maintain a balance of age and size classes for each forest type within a landscape that is sustainable over time.

	Nest Areas			**Home Range**		
Structural Class	*PP, MS, S/F****	*Aspen*	*Lodgepole*	*PP, MS, S/F****	*Aspen*	*Lodgepole*
% of grass/forb and shrub (VSS 1)	0 (0-1" dbh)	**	**	10% (0-1" dbh)	**	**
% of seedling and sapling (VSS 2)	0 (1-5" dbh)	**	**	10% (1-5" dbh)	**	**
% of young forest (VSS 3)	0 (5-12" dbh)	**	**	20% (5-12" dbh)	**	**
% of mid-aged forest (VSS 4)	0 (12-18" dbh)	**	**	20% (12-18" dbh)	**	**
% of mature forest (VSS 5)	100% (18-24" dbh)	**	**	20% (18-24" dbh)	**	**
% of old forest (VSS 6)	100% (24"+ dbh)*	**	**	20% (24"+ dbh)*	**	**

* Age to mid age VSS 6 for PP, MS and S/F is 200+ year
** Aspen and Lodgepole attributes will be added within 12 months from the approval date of this strategy.
*** PP is ponderosa pine; MS is mixed species; S/F is spruce/fir

5) Understory composition.
Nest Areas - retain dense understories to provide for protection of fledglings from predators.
Home Range - Manage for open understories in order to enhance the detection and capture of prey by goshawks.

Application of the Strategy

This conservation strategy will be integrated at the landscape assessment level by field units. Examples of integration opportunities include watershed assessments, ecological unit assessments and PFC assessments. Such assessments are generally made to support project level NEPA analysis. Integration of this strategy will occur by describing existing landscape conditions and then determining project opportunities to move the existing conditions toward the desired habitat conditions described in this strategy. This will help ensure that projects are developed in such a way as to promote sustainable goshawk habitat, resulting both short term and long term goshawk viability.

Identifying the attributes of goshawk habitat on landscapes across forest areas will be key to understanding whether the objectives in this habitat conservation strategy are being achieved. It is also important to identifying local deficiencies in habitat (both those occurring as a result of management activities or through natural events). Accounting for deficiencies is important to identify what habitat characteristics need to be improved in a particular landscape. This strategy recommends use of the habitat assessment process described by Graham et al. 1998 (in press) to identify and evaluate landscape

conditions relative to goshawk habitat. The best available information on habitat conditions should be used.

A forest wide geographic information system (GIS) database should be used to store and retrieve data for these landscape assessments. Relative to goshawk habitat, the database should include coverage of areas meeting low[1], medium[1], and high[1] quality nesting and foraging habitat. This coverage will help in the monitoring process to determine the success of the administrative unit in meeting desired habitat conditions and thereby maintaining species representation throughout the administrative planning area. The coverage is also key to describing habitat connectivity within and among administrative units important to maintenance of population viability at the state scale.

Deficiencies are the absence of any desired habitat conditions described in this strategy when a particular landscape is capable of achieving the DHC. Local deficiencies may occur in landscapes managed for high quality goshawk habitat. Not all acres within a landscape will contain high quality habitat at the same time, and in some cases landscapes may not be capable of achieving some or all DHCs. The purpose of this strategy is to promote, create and sustain all the DHCs that are capable of occurring on a landscape.

Habitat Monitoring

This strategy incorporates two types of monitoring: 1) tracking changes in goshawk habitat over time; and 2) evaluating the implementation and effectiveness of the strategy in maintaining or improving goshawk habitat. Both types of monitoring will occur to some degree at each planning scale (e.g., project, Forest, Field Office and statewide).

1. Tracking changes in goshawk habitat over time

This type of monitoring will occur on state and federal lands, statewide. Each NationalForest will monitor its forested landscapes for the attributes described in the DHC statements provided earlier (early seral tree species, habitat connectivity, large trees, stand level characteristics such as snags and down woody debris, and a variety of vegetative structural stages). At the Forest level this is accomplished by identifying changes in habitat caused by management activities or natural events. When conditions at the Forest level are trending away from DHCs, appropriate corrective actions will be developed and implemented. Results of Forest-level monitoring will also be aggregated to a central repository at the state level in order to monitor the quality and connectivity of statewide habitat. State-wide assessments will also be completed during programmatic planning activities such as Land and Resource Management Plan revisions.

2. Implementation and effectiveness monitoring

This monitoring will be conducted to verify that projects are properly implementing the strategy, and that they are effective in creating desired habitat conditions for the goshawk and its prey. It will be part of the design of every project affecting goshawk habitat on National Forest system lands. Time periods and indicators for monitoring will vary depending upon the purpose of the project. Time periods and indicators at the project level will be documented within individual project records. At the Forest and statewide levels, monitoring will track the net change in availability and connectivity of [2]high value

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[1]*High, medium, low are subjective values based on an expected abundance of goshawks and their prey.*
[2] *High Vallue: Areas rated high as nesting habitat and high as habitat for one or more prey groups (mamals, woodpeckers, and other birds).*

goshawk habitat. This monitoring will be reviewed annually at the state level to determine if the strategy is being successfully implemented or if changes are needed.

An additional indication of the strategy's effectiveness is provided by territory occupancy (see next section).

Population Monitoring

Concurrent with habitat monitoring, Forests will monitor goshawk territory occupancy. Data will be collected and analyzed at the Forest level and shared with the Utah Division of Wildlife Resources for aggregation to larger scales, including the State. A territory is considered occupied if evidence of goshawk use is present. Nesting does not need to occur for a territory to be occupied. Each agency will be responsible for maintaining and updating their respective population databases, and coordinate findings annually.

This is the minimum level of population monitoring required under this strategy. It will help ensure that there is reproductive potential in the form of adult birds present on every management unit. Occupancy data are strongly influenced by the level of survey, monitoring effort and observer training and experience. Therefore, when conducting population monitoring, managers should be prepared to invest sufficient field effort to obtain reliable results.

However, occupancy data have limitations which should be considered during interpretation. Because it does not indicate if reproduction is actually occurring, occupancy is not sensitive to the early stages of habitat decline and may not detect population sinks (areas where goshawks are either nesting unsuccessfully or failing to initiate nesting). Whenever possible, occupancy data should be supplemented with nest productivity data in order to provide additional information on habitat quality.

Monitoring and Evaluation Procedures for Territory Occupancy

Population monitoring will be conducted annually using a random sample of at least 20 territories or 50% of all known territories, whichever is greater. If fewer than 20 territories are known, monitor all of them. Once a territory is identified, it always remains in the pool of known territories. New territories will be included in the sample as they are located and could be analyzed separately.

If monitoring reveals three consecutive years of a 20% or greater decline in territory occupancy, further evaluation must occur to determine the cause and appropriate corrective action. This evaluation would be conducted by an interagency team. Corrective actions will be determined in part based on the scale at which the populations are declining.

There must be a strong commitment to monitoring both habitat and populations. Failure to make this commitment could result in underestimation of territory occupancy which could unnecessarily limit management activities. Furthermore, it will result in insufficient information to make necessary management changes.

Management Responses to Suspected Occupancy Declines

Declining occupancy at the landscape level requires review; it does do not necessarily mean that population viability is at risk. If declines at the landscape level occur, only those activities that would benefit habitat for the goshawk at the landscape area should be implemented. If that is not possible in the landscape, habitat should be developed or maintained in adjacent areas.

Declining occupancy in multiple landscapes are serious. Such declines suggest a wide spread or systematic problem which could relate to management strategies rather than individual projects. Such declines indicate a need to evaluate conditions over a multiple landscape scale and develop corrective or compensatory strategies.

Declining occupancy at the Forest level could affect findings in project level Biological Evaluations (BEs) and require review of the habitat strategy, Forest or Resource Management Plan direction, and standards and guidelines. Forests should identify the most likely cause of the decline and determine actions to reverse the decline in trend. The habitat strategy would only be modified if review indicated that the existing strategy had been fully implemented, and yet habitat was still implicated in the decline. When occupancy is declining at the forest level, projects should be specifically designed to enhance habitat rather than to mitigate or be neutral in their effects to goshawks.

Recommended management activities/actions National Forests in Utah should implement to maintain or improve habitat for the goshawk on state and federal lands, and assure habitat connectivity throughout the state.

There are a variety of management activities that could be employed to achieve DHC's. These activities should be coordinated at the site specific level by local land managers. However, there is a guideline that always applies:

-Protect active nests areas (NA) and their post-fledgling area (PFA) from disturbance during critical phases of reproduction. The recommended seasonal restriction from the Reynolds et al. 1992 is March 1 through September 30. Seasonal restrictions may vary from this recommendation when site specific information justifies it.

Determination

Based on the best available information on the quality, quantity, distribution and connectivity of goshawk habitat in Utah, it is our determination that habitat is currently adequate to support viable populations of goshawks in Utah. Implementation of this strategy will ensure the continued existence of goshawk habitat and therefore a viable goshawk population in the state.

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Table 1 - Proportion of land managed by various administrative entities rated as high, medium and low nesting habitat.

Entity	High[1]	Medium	Low
	----------percent----------		
Forest Service	40	44	16
Bureau of Land Management	10	12	78
State	32	18	50
Native American	6	36	58
Private	26	30	44
National Park Service	9	7	83
Bankhead Jones	23	-	77

[1]High: Areas rated high as nesting habitat and high as habitat for one or more prey groups (mammals, woodpeckers, and other birds).
[2]Optimum: Areas rated high as nesting habitat and high as habitat for all three prey groups (mammals, woodpeckers, and other birds).

Table 2 - Proportion of land managed by various administrative entities rated as high and optimum habitat.

Entity	High[1]	Optimum[2]
	--------percent---------	
Forest Service	57	24
Bureau of Land Management	3	0
State	34	9
Native American	2	0
Private	7	5
National Park Service	4	4
Bankhead Jones	10	10

[1]High: Areas rated high as nesting habitat and high as habitat for one or more prey groups (mammals, woodpeckers, and other birds).
[2]Optimum: Areas rated high as nesting habitat and high as habitat for all three prey groups (mammals, woodpeckers, and other birds).

Table 3. Proportion of nest stands by potential vegetation type and cover type.

Proportion of Nests by Potential Vegetation Type	
Potential Vegetation Type[1]	**Proportion of Nests (%)**
White Fir (WF)	9
Subalpine Fir (SAF)	38
Lodgepole Pine (LPP)	17
Engelmann Spruce (ES)	2
Ponderosa Pine (PP)	10
Quaking Aspen (QA)	10
Douglas-fir (DF)	14
Pinyon Pine/Utah Juniper (P/J)	0
Proportion of Nests by Cover type	
Cover Type[2]	**Proportion of Nests (%)**
White Fir (WF)	9
Subalpine Fir (SAF)	9
Lodgepole Pine (LPP)	8
Engelmann Spruce (ES)	12
Ponderosa pine (PP)	12
Quaking Aspen (QA)	10
Douglas-Fir (DF)	7
Lodgepole Pine/Quaking Aspen (LPP/QA)	20
Engelmann Spruce/Subalpine Fir (ES/SAF)	1
Engelmann Spruce/Lodgepole Pine (ES/LPP)	9
Douglas-Fir/Ponderosa Pine/Aspen/Lodgepole Pine (DF/PP/QA/LPP)	1
Douglas-Fir/Lodgepole Pine (DF/LPP)	1
Quaking Aspen/Engelmann Spruce (QA/ES)	1

[1] Potential Vegetation Type: Defined as a classification system that integrates a variety of physical and biological components including climate, soil, geology and vegetation. These are identified by species indicative of similar conditions (Hann and others 1997)

White Fir (WF) = *Abies concolor*

Subalpine Fir (SAF) = *Abies Lasiocarpa*
Lodgepole Pine (LPP) = *Pinus contorta*
Engelmann Spruce (ES) = *Picea engelmannii*
Ponderosa Pine (PP) = *Pinus ponderosa*
Quaking Aspen (QA) = *Populus tremuloides*
Douglas-fir (DF) = *Pseudotsuga menziesii*
Pinyon Pine/Utah Juniper (P/J) = Pinus ebulus/Juniperus oesteosperma

2 Cover Type: Defined as a plurality of one species or a mixture of two or more species in a particular forest or stand.
Cottonwood = *Populus* spp.
Gambel Oak = *Quercus gambelii*
Limber Pine = *Pinus flexilis*
Maple = *Acer* spp.
White Fir (WF)
Subalpine Fir (SAF)
Lodgepole Pine (LPP)
Engelmann Spruce (ES)
Ponderosa pine (PP)
Quaking Aspen (QA)
Douglas-Fir (DF)
Lodgepole Pine/Quaking Aspen (LPP/QA)
Engelmann Spruce/Subalpine Fir (ES/SAF)
Engelmann Spruce/Lodgepole Pine (ES/LPP)
Douglas-Fir/Ponderosa Pine/Aspen/Lodgepole Pine (DF/PP/LPP)
Douglas-Fir/Lodgepole Pine (DF/LPP)
Quaking Aspen/Engelmann Spruce (QA/ES)
Gambel Oak/Quaking Aspen (GO/AQ)
Quaking Aspen/Subalpine Fir (QA/SAF)
Gambel Oak/Maple (GO/M)

Interagency Agreement
concerning the

Conservation Strategy for the Management of Northern Goshawk Habitat in Utah

Introduction:
The purpose of this Conservation Agreement is to attain the goal of long-term conservation of the Northern goshawk, its habitat and associated species throughout Utah through proactive management. Conservation of the Northern goshawk and its habitat will require improving degraded habitat conditions, maintaining and/or expanding populations, and restoring many of the natural functions of the ecosystems they inhabit which cross administrative boundaries and authorities of the signatories.

Achievement of the desired habitat conditions contained within the strategy will provide that habitat is available to sustain viable goshawk populations in the State of Utah. This determination is based on the best available scientific information and professional judgement of interagency biologists and responsible officials.

Agreement Terms:
The signatory agencies agree that this strategy represents the best available scientific information on the northern goshawk and its use of habitat in the State of Utah, and recommend that field offices apply the strategy through their own processes with NEPA compliance where appropriate.

Special Provisions:

A. This Agreement may be modified or amended as necessary upon review of the proposed amendments by the Northern Goshawk Technical Team, approving officials, and consent of participating agencies. The agreement may be terminated by any party with a 60 day notice to all other parties.

   The Forest Service is initiating NEPA procedures which consider adopting the recommendations in the strategy as interim direction through amendments to the Regional Guide and Utah National Forest Plans, as appropriate. Alternatives to recommendations in the strategy will be considered during the appropriate NEPA compliance process.

   The Bureau of Land Management is proposing to adopt the recommendations in the strategy through amendments to various land use plans subject to consistency determinations and whether or not additional NEPA analysis is required.

B. This Agreement is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds among the parties of this agreement will be handled in accordance with applicable laws, regulations, and procedures.

C. Principal contacts for this Agreement are the members of the Northern Goshawk Technical Team and approving officials.

In Witness Whereof, the parties have caused this Conservation Strategy and Agreement for the Northern Goshawk in the State of Utah to be executed as of the date of the last signature below.

Reviewed by:

/s/ Hugh C. Thompson Date: 9/12/98
HUGH C. THOMPSON
Forest Supervisor
Dixie National Forest

/s/ Janette S. Kaiser Date: 10/14/98
JANETTE S. KAISER
Forest Supervisor
Manti-LaSal National Forest

/s/ Peter W. Karp Date: 10/15/98
PETER W. KARP
Forest Supervisor
Uinta National Forest

/s/ Bert Kulesza Date: 10/23/98
BERT KULESZA
Forest Supervisor
Ashley National Forest

/s/ Bernie Weingardt Date: 10/22/98
BERNIE WEINGARDT
Forest Supervisor
Wasatch- Cache National Forest

/s/ Rob Mrowka Date: 10/20/98
ROB D. MROWKA
Forest Supervisor
Fishlake National Forest

/s/ Ronald B. Bolander Date: 10/26/98
RONALD BOLANDER
Threatened, Endangered, and Sensitive Species Coordinator
BLM, Utah State Office

/s/ Frank Howe Date: 10/22/98
FRANK HOWE
Non-Game Avian Program Coordinator
Utah Division of Wildlife Resources

/s/ Ted Owens Date: 10/16/98
TED OWENS
Wildlife Biologist
USDI Fish and Wildlife Service

Approved and agreed by:

/s/ Christopher J. Pyron (for) Date: 10/26/98
JACK BLACKWELL
Intermountain Regional Forester

/s/ G. William Lamb Date: 10/26/98
BILL LAMB
Utah State Director of BLM

/s/ John Kimball Date: 10/22/98
JOHN C. KIMBALL
Director of Utah DWR

/s/ Reed E. Harris Date: 10/16/98
REED HARRIS
USDI-FWS Utah Field Supervisor

LITERATURE CITED

Ashley National Forest. 1998. Northern goshawk monitoring information 1996-1998, [Unpublished Data]. Vernal, UT:U.S. Department of Agriculture, Forest Service, Ashley National Forest.

Committee of Scientists' Report, 1998 DRAFT.

Dewey, S.R. 1996. Ashley National Forest: Northern goshawk inventory and monitoring report: 1991-1996. Unpublished Monitoring Report. Vernal, UT:U.S. Department of Agriculture, Forest Service, Ashley National Forest. 29 p.

Graham, R.T.; Rodiguez, R.L.; Paulin, K.M.; Player, R.L.; Heap, A.; Williams, R. 1998. Habitat Assessment and Management Recommendations for the Northern Goshawk in Utah. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Gen. Tech. Rpt. in press.

Hann, W.J.; Jones, J.L.; Karl, M.G.; Hessburg, P.F.; Keane, R.E.; Long, D.G.; Menakis, J.P.; McNicoll, C.H.; Leonard, S.G.; Gravenmier, R.A.; Smith, B.G. 1997. Chapter 3: Landscape dynamics of the Basin, In the Interior Columbia Basin and Portions of the Klammath and Great Basins: volume H; Gen. Tech. Rep. PNW-GTR-405. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station: 338-1055.

Kaufmann, M.R.; Graham, R.T.; Boyce, D.A., Jr.; [and others], 1994. "An Ecological Basis Ecosystem Management". General Technical Report RM-246. Rocky Mountain Forest and Range Experimentation Station, Ft. Collins, Colorado. 22 p.

Quigley, Thomas M., Richard W. Haynes and Russell T. Graham. Rech. eds. 1996 Integrated scientific assessment for the Interior Columbia Basin and portions of the Klammath and Great Basins, Gen. Tech. Rep. PNW-GTR-382. Portland, OR: U.S. Department of Agriculture Forest Service, Pacific Northwest Research Station. 303 p.

Reynolds, R.T.; Graham, R.T.; Reiser, M.H.; Basset. R.L.; Kennedy, P.L.; Boyce, D.A., Jr.; Goodwin, G.; Smith, R.; Fisher, E.L. 1992. Management recommendation for the northern goshawk in the southwestern United States. Gen. Tech. Rep. GTR-RM-217. Fort Collins, CO: U.S. Department of Agriculture, Rocky Mountain Forest and Range Experiment Station. 90 p.

Reynolds, R.T.; Joy, S.M.; Leslie, C.G. 1994. Nest productivity, fidelity, and spacing of northern goshawks in Arizona. In: Block, W.M.; Morrison, M.L.; Rieser, M.H. eds. The northern goshawk: ecology and management; Prodeedings of a symposium of the Cooper Ornithological Society; 1993 April 14-15; Sacramento. AS. Studies in Avian Biology, Cooper Ornithological Society; 16: 50-57 p.

Sustaining the Peoples Lands.
Recommendations for Stewardship of the National Forests and Grasslands into the Next Century. Draft #4 Committee of Scientist July 14, 1998.

Thomas, J.W.; Forsman, E.D.; Lint, J.B.; [and others], 1990. A conservation strategy for the northern spotted owl: a report of the Interagency Scientific Committee to address the conservation of the northern spotted owl. Portland, OR: U.S. Department of Agriculture, Forest Service; U.S.

Department of Interior, Bureau of Land Management, Fish and Wildlife Service, and National Park Service. 427 p.

U.S. Department of Agriculture, Forest Service. 1997. Proper functioning condition assessment U.S. Department of Agriculture, Forest Service, Intermountain Region, Ogden, UT. 25 p.

U.S. Department of Agriculture, Forest Service, Intermountain Region: Ogden, UT. News Release. Forest Service confirms sensitive species status for Nevada's northern goshawks. February 5, 1993.

White, C.M., Holman L.; and Beal D. 1992. A preliminary survey of northern goshawk nesting habitat: Manila Ranger District, Ashley National Forest and Evanston and Mountain View District, Wasatch-Cache National Forest. [Unpublished Data]. U.S. Department of Agriculture, Forest Service, Logan, UT.