CENTER FOR BIOLOGICAL DIVERSITY

BECAUSE LIFE IS GOOD.

November 15, 2004

Harv Forsgren
Southwestern Regional Forester
Attn: Goshawk SEIS Team
333 Broadway Blvd., SE
Albuquerque, NM 87102

Dear Mr. Forsgren:

These are comments for the Center for Biological Diversity on the Draft Supplement to the Final Environmental Impact Statement for Amendment of Forest Plans, dated September, 2004. The Center for Biological Diversity is a non-profit public conservation organization with over 9,000 members nationwide. The Center has long been interested in protecting the northern goshawk, and we have submitted comments on this project since its earliest iterations in the 1990's. Our members use and enjoy forests where goshawks can currently be found and, like many people, visit forests to see goshawks and other old-growth and mature-forest dependent creatures. We will be affected by the goshawk decision.

The following comments are a supplement to our earlier comments on the first EIS; we do not feel a need to repeat the discussion of goshawks and the goshawk plan that we have already made and that was, in fact, appended to the current SDEIS at Appendix AA. Those comments should be considered to be incorporated here, and, because no changes to the decision have been made, the points made in our administrative appeal of the 1996 FEIS should also be incorporated here.

1. The History of the Habitat Generalist/Habitat Specialist Dispute and the Court Order

The Forest Service first began to respond to concerns about the status of the goshawk and its diminishing habitat in 1990, when it established the Northern Goshawk Scientific Committee to review the goshawk's habitat needs. *Center for Biological Diversity v. U.S. Forest Service,* 349 F.3d 1157, 1160, (9th Cir. 2003). Two years later, the Forest Service announced its intent to prepare an environmental impact statement that would amend the Forest Plans in Arizona and New Mexico in order to afford protection for the goshawk. *Id.* at 1161.

The Scientific Committee published its report in 1992, and concluded that the goshawk was a "habitat generalist" that occupied a variety of different forest habitat types. *Id.* The Report recommended managing for goshawk habitat by encouraging a particular balance of different forest age and structural types, including stand openings that could be created by logging. Generally, forty percent of the landscape in goshawk foraging areas is to be comprised of the two oldest structural classes, VSS 4, 5, and 6; the remaining sixty percent is to be the youngest forest stands and openings. *Id. See also* Richard Reynolds et. al., *Management Recommendations for*

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the Northern Goshawk in the Southwestern United States, US Forest Service General Technical Report RM-217, August 1992, pp 23, 26.

In response to the Report, the Forest Service received letters of criticism regarding the conclusion that the goshawk is a "habitat generalist" from the Arizona Game and Fish Department and the Regional Director of the U.S. Fish and Wildlife Service. These agencies both indicated that there was a substantial body of evidence that the goshawk is limited not by lack of openings and prey base, but by an overabundance of such openings. *Center for Biological Diversity v. U.S. Forest Service*, 349 F.3d at 1161,1162. The crux of this dispute, since the 1990s, has been this question: does the goshawk prefer more old, closed canopy forest, dominated by large trees, or does the goshawk prefer a greater variety of habitats, with openings and young forest dispersed throughout approximately sixty percent of the goshawk's territory? Is it lack of large, old trees that is causing the goshawk's populations to decline, or is it a lack of forests openings and clearcuts? The Forest Service proposes to assist the goshawk through the creation of openings even though there is no evidence that supports such management, and, to the contrary, there is mounting evidence that logging, particularly in the PFA, harms the goshawk. It is not lack of openings but lack of old forest that is impairing goshawk populations. CBD-1

In 1994 the Forest Service released its Draft EIS for amending the Forest Plans in Arizona and New Mexico. *Id.* at 1162. The document "did not specifically mention or discuss the opposition expressed by the Fish and Wildlife Service's and the Arizona Game and Fish Department's submissions challenging the Management Recommendations for the Northern Goshawk's conclusion that the goshawk is a habitat generalist." *Id.* (Acronyms in original, transposed here.) Instead, the Draft EIS asserted that the Management Recommendations represented the best science available. *Id.*

The Forest Service took comments on the Draft EIS, and again received widespread criticism for its conclusion that the goshawk is a generalist for which forest openings need to be created by logging. One scientist, employed by the Forest Service and a published researcher on Arizona goshawk, suggested that the Forest Service should cease all old-growth forest logging in ponderosa pine forests in Arizona and New Mexico, "because the scientific literature strongly intimates that goshawks prefer to forage in mature forests." *Id.* at 1163. This scientist referenced both his own work and "numerous other scientific studies." *Id.* The New Mexico Department of Game and Fish joined with the Arizona Game and Fish Department and the U.S. Fish and Wildlife Service to criticize the "habitat generalist" conclusion, stating that "the proposed old growth standard does not incorporate important habitat attributes or distribution requirements" to sustain the goshawk. *Id.* Again, the source of the dispute involved whether the goshawk is in greater need of logged forest openings and early and mid-seral forest or stands with large, old trees and high canopy closure. No one disputed that goshawks may occasionally hunt in openings, but whether such openings were *required* for goshawks to survive was rigorously disputed. And, the importance of old-growth and mature forest stands, many of which the Forest Service proposed to log in order to create openings for the goshawk, was stressed. The state game agencies and conservation organizations believed that the proposed plan, which would permit logging of large, old growth trees in many circumstances, put far too much emphasis on openings and far too little on the preservation of forest stands that have a high canopy cover and that are made up of large, old trees.

The Final EIS was released in 1995. Despite its obligation to do so, the document "did not mention or respond to comments challenging the agency's conclusion that goshawks are

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habitat generalists." *Center for Biological Diversity,* 349 F.3d at 1165. The Forest Service signed the Record of Decision in 1996.

The agency decision was challenged by the Center for Biological Diversity and the Sierra Club, and was remanded to the agency by the Ninth Circuit Court of Appeals in 2003. *Id.* at 1169. The Court of Appeals found that "because the commenters' evidence and opinions directly challenge the scientific basis upon which the Final EIS rests and which is central to it, we hold that the Appellees were required to disclose and respond to such viewpoints in the final impact statement itself." *Id.* at 1167. As if aware that the agency might try to address the court's concerns in the narrowest manner possible, the court reiterated NEPA's objective that responsible opposing viewpoints be "internalize[d] into the decision-making process to ensure that an agency is cognizant of all the environmental trade-offs that are implicit in a decision." *Id.* at 1167, 1168. In other words, the opposing views must be incorporated into the whole decision-making process, not just addressed at the end.

Finally, the court noted that the agency had failed to show how the evidence it provided supports the conclusion that goshawks are habitat generalists. *Id.* at 1168. "The mere presence of the information in the record," the court wrote, "does not cure the deficiency here." Thus, it is not enough for the agency merely to acknowledge that there is a dispute regarding the habitat needs of the goshawk; the agency must indicate how the entirety of the evidence supports the conclusions the agency has come to. *Id.* at 1168, 1169.

2. The Draft Supplemental EIS

To respond to the Ninth Circuit's order that the agency "disclose and discuss responsible opposing viewpoints in the final statement itself" and to indicate how its evidence "supports its conclusions that goshawks are habitat generalists" the Forest Service released its Draft Supplemental EIS in September, 2004. This document contains a voluminous appendix with many scientific papers printed in full, but it contains only twenty-eight "new" pages added to the original EIS.

A careful comparison of the original EIS and the twenty-eight "new" pages, however, reveals that in twelve of those pages only extremely minor changes were made. The only addition to the original EIS of any substance is the entirely new "Review of Pertinent Information Concerning the Habitat Management for the Northern Goshawk." This review is, essentially, a mere literature review appended on to the original EIS. Twenty-three papers or other documents are discussed in turn, with a few paragraphs devoted to each. First, six pages are devoted to seventeen studies that contest the "habitat generalist" conclusion. Then, three pages are devoted to six more studies that have come out since the EIS was prepared. This is followed by a three-paragraph section called "Discussion on Literature Review" and a two-page "Summary Discussion." These two sections frame the entire dispute as a question of how much mature forest the goshawk requires, and they discuss in a very general way the differences between Alternative D and Alternative G. The section characterizes Alternative G, which the Forest Service originally chose, as relying on "scientific information" and "scientific literature" while it characterizes Alternative D as being based upon "unpublished progress reports, unpublished agency reports, an unpublished thesis, and a published, but not peer-reviewed, abstract." (The document does not acknowledge that its favored Alternative G also relies on a great deal of unpublished and un-peer reviewed information.)

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This section concludes by stating that "based on forest dynamics," the "maximum amount" of mature forest that can be obtained in the Southwest is twenty percent, and the maximum amount of old forest is another twenty percent. *SDEIS* 33. This concludes the literature review, which makes up nearly the entirety of what has been supplemented to the original EIS.

3. Flaws in the SDEIS

a. The SDEIS Fails to Respond to the Court's Order

The Ninth Circuit Court of Appeals ordered the final EIS to be remanded, holding that the final EIS "fails to indicate how [the Forest Service's] evidence supports its conclusion that goshawks are habitat generalists." *Center for Biological Diversity v. U.S. Forest Service,* 349 F.3d at 1168. The agency has apparently relied on the mere presence of the (unpublished, un-peer reviewed) paper "Is the Northern Goshawk an Old Growth Forest Specialist or a Habitat Generalist" in the SDEIS appendix in order to meet this requirement—the SDEIS does not contain any other indication of how its evidence supports this conclusion. All of the evidence proffered amounts only to a series of observations of goshawk in immature forests. No one—no conservationist, no agency biologist, no independent biologist, no one—disputes that goshawk are capable of flying, and occasionally do fly, from a mature forest into an opening in order to hunt for or capture prey. But the occasional presence of these birds in these habitats does not make them "habitat generalists." In order to know whether an animal is a habitat generalist, one must be able to know whether the animal's population is healthy and stable in such an environment, or whether a healthy population requires something more – requires a special feature. By framing the debate as one between the "generalist" and the "specialist," the Forest Service has avoided addressing the only questions that matter: are goshawk populations stable or not? Where are they stable and where are they not stable? What is the type of habitat that is most desirable for growing goshawks? Given the two kinds of habitat in question, in which one would goshawks most likely flourish over time? Instead of asking and responding to these questions, the Forest Service has merely announced that many scientists have observed goshawk in habitats with diminished old growth and mature forest, and has thus concluded the animal must be similarly at home—and its populations similarly healthy—in these forests as in forests dominated by large, old trees and a heavy canopy. But that conclusion does not follow. CBD-3

An honest appraisal of "how the evidence supports the conclusion that the goshawk is a habitat generalist" would include a definition of what the agency means by "generalist" and whether the goshawk populations in habitats characterized by large, old trees and high canopy closure are more stable than those in habitats that are not characterized by large, old trees and high canopy closure. But the agency's document does not resolve this question, and does not respond to the court's order.

b. A New EIS is Necessary

The standards for the Northern Goshawk were developed due to "concern with ensuring the viability of the northern goshawk." FEIS for Amendment of Forest Plans, 1995, p. 1. Concern for the goshawk "heightened" in the 1990s, and the Forest Service at that time began

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work on Forest Plan Standards designed to protect goshawk habitat. *Id.* p. 2. The Forest Service observed in the FEIS that "historically . . . little concern was expressed about the continued viability of this species."

The Forest Service is required by the National Forest Management Act to "provide for diversity of plant and animal communities." 16 U.S.C. § 1604(g)(3)(B). The implementing regulations for the National Forest Management Act require that viable populations of native species be preserved throughout the planning area. 36 C.F.R. § 219.19 Owing to the above requirements and the concern that the northern goshawk would become listed under the Endangered Species Act, the Forest Service undertook Forest Plan amendments to protect the bird from further population losses.

In this case, the Forest Service has responded to the court's finding that the agency failed to show a connection between its evidence and its conclusion by merely adding a "literature review" to the document. But a literature review is not enough. The National Environmental Policy Act requires that "The agency shall discuss at appropriate points in the final statement any responsible opposing view . . . and shall indicate the agency's response to the issues raised. 40 C.F.R. § 1502.9. In this case, the agency has apparently concluded that the "appropriate point" to discuss the considerable science that, as the Ninth Circuit Court of Appeals put it, "directly challenge[s] the scientific basis upon which the final EIS rests and which is central to it" is an appended sixteen page literature review. This literature review does not cure the original failure, does not provide a connection between the evidence and the conclusion, is not the appropriate point for the discussion, does not satisfy NEPA's requirement (and the Court's reminder) that the point of the analysis is to "internalize" the opposing issues, and only in the most basic manner comprises a "discussion" of the science that directly challenges the scientific basis upon with the final EIS rests. *See Center for Biological Diversity v. U.S.F.S.,* 349 F.3d at 1167.

Indeed, the court has already faulted the agency for doing precisely what it has now done again. The court warned that the agency may not merely "generally state that there are opposing views to the agency's proposed standards and guidelines;" rather, the agency has a duty to show that those opposing views were considered throughout the analysis process.

Were this a supplement to a draft EIS, the current supplement would possibly suffice to alert the decision-maker, other federal and state agency reviewers, and the reviewing public that there are alternative points of view. 40 C.F.R. § 1502.9(a). However, NEPA requires in the case of final environmental impact statements that the opposing view must occur in the statement itself. 40 C.F.R. § 1502.9(b). More importantly, NEPA envisions a process by which the agency reviews and responds to the available science throughout the analysis process, not just at the end: "Environmental impact statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made." 40 C.F.R. § 1502.2(g). In this case, the agency, after refusing in its original analysis process to acknowledge the substantial weight of evidence that did not support its desired conclusion, and after being ordered by the Ninth Circuit Court to remand *the final statement* in an opinion that repeatedly states that the opposing scientific opinion must be revealed "in the text of the final statement itself" – after all this, the agency still believes that appending a simple "literature review" to the end of its original EIS is enough to cure the deficiencies in that EIS. *See Center for Biological Diversity*, 349 F.3d at 1169. CBD-4

But doing so accomplishes nothing. It only proves that this decision is indeed a post-hoc rationalization of a decision already made. The agency needs to write a new environmental impact statement that addresses the opposing scientific views from the beginning, and that CBD-5

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addresses the questions above. It needs to consider where the goshawk is thriving and where it is declining, and if that information is unknown then it needs to respond to that fact as instructed at 40 C.F.R. § 1502.22. The agency must front up to the fact that the question of whether the goshawk is a "generalist" or a "specialist" is to a large degree beside the point – at least as the agency perceives this semantic distinction – and that the question that must be asked and then answered by the FEIS is how best to ensure continuing viability of the northern goshawk. In doing this it must consider the affected environment, including the loss of habitat in the Rodeo-Chediski and other fires, and it must consider in a careful way what the impacts will be from logging in the manner that it ultimately proposes. It must accomplish all of this in light of 40 C.F.R. § 1502.24, which requires that agencies insure the professional integrity of the discussions in their environmental documents. CBD-5

c. At Least One New Alternative is Necessary

The Forest Service is instructed by NEPA to "rigorously explore and objectively evaluate all reasonable alternatives." In the present case, the agency has neither rigorously explored the reasonable alternatives available, nor has it objectively evaluated the alternatives that it has already proposed.

The EIS is generally about how to save or create enough old-growth forest in order to preserve viable populations of goshawks, as required by the National Forest Management Act. Unfortunately, the agency can think of only one way to do that, which is to divide the forest into various classes, called "VSS" classes, and impose targets on the amount of each class desired around known goshawk nests. The result, however, is that logging can and does occur even in a VSS class that should be protected. Because, for example, VSS are defined by the majority of the stems in a stand, a stand with a majority of 16" DBH trees and a small number of 26" trees can be converted from a VSS 3 to a VSS 6 by logging it.[1] The result is that a stand that was once good habitat for goshawk has now been transformed, through logging, into a stand that is no longer good habitat for goshawk—all in the name of preserving goshawk. (Alternatively, and also commonly, the Forest Service can log a VSS 3 or 4 stand that contains large old trees, and convert the entire stand into a VSS 1, again transforming good habitat into bad, and again in the name of goshawk conservation.)

Clearly, another system needs to be considered. We propose, as we have been proposing for many years, a simple cap on the size of trees that can be logged. The Southwest, as we have noted in many comments and appeals to the Southwest Region of the Forest Service, has a tremendous shortage of trees twelve inches in diameter and up, and trees over sixteen inches in diameter are rare. Trees over twenty-four inches in diameter have vanished from many areas of the Southwest. CBD-6

In any event, an alternative must be proposed that escapes the consequence that logging may occur in good goshawk habitat and render that habitat unavailable to goshawks. If such alternatives are the only ones adhered to, then the final document must address this fact, and

[1] To illustrate, consider a stand with 100 trees 16" DBH and 5 trees 26" DBH. This is a VSS 3 stand because the stems are predominantly 16" DBH. If there is no VSS 6 stand nearby, then the appropriate action to take under the Forest Service's goshawk plan is, perversely, to *log the stand*, even though this logging will destroy the area for goshawk. This because logging all the 16" trees will leave just the 26" trees, and the stand is now dominated by stems >24" DBH, and is, therefore, a VSS 6. A good stand for goshawk has just been transformed into a bad one, and old-growth forest has just been manufactured by an industrial logging project.

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must state why the agency has chosen not to propose an alternative that actually saves, rather than pretends to save, goshawk habitat. CBD-6

d. The Standards Proposed do not Accomplish the Objectives Desired

As we have stated above, the current regime envisioned by all alternatives is flawed because it permits the Forest Service to convert good goshawk habitat into bad while following the letter, if not the spirit, of the guidelines. This problem must be addressed, but other features of the plan are also insufficient to protect the goshawk, and require a careful look.

To begin with, the EIS does not articulate exactly what the standards are that are envisioned for the different alternatives, although we know from the Record of Decision what Alternative G's standards are, and we now know from experience how haphazardly they have been followed. This next iteration of the final EIS must disclose what precisely the standards for each alternative are and how well the current standards have worked both to protect the goshawk and to protect old-growth forest. CBD-7

Currently, there is a gaping chasm between the objectives of the EIS, to protect goshawk and their habitat, and the implementation of the standards on the ground. Site-specific environmental documents rarely if ever address in the necessary detail how they are meeting the goshawk requirements. The requirement to "manage for old age trees such that as much old forest structure as possible is sustained over time across the landscape" is often asserted, but rarely shown in site-specific environmental analyses. The requirement to "restore degraded riparian areas to good condition as soon as possible" is nearly always ignored. The requirement to use the science found in the MRNG's is not followed. Inventories are not done as required. Nest replacement is not addressed. Snags and downed logs are not addressed, or not addressed sufficiently. Canopy cover is ignored. Road densities are not "managed at the lowest level possible." Grazing management is constantly undertaken without even a nod to the Forest Plan amendments. (One recent document we reviewed flatly stated that there is no connection between livestock grazing and goshawk habitat because "cows do not eat trees." *See 9/24/2004 EA for Macho, Cow, Bull, and Soldier Creek and Valle Osha AMPs,* Santa Fe National Forest.) Finally, the old growth standards appear to have been wholly forgotten about. Our FOIA's to the agency for information about where the current old growth allocations exist have been stonewalled for four months now, with the agency saying it does not make those allocations, or, if it does, only makes them for a specific point in time, and then dismisses them.

The result is that, first, the proposed standards are not effecting the changes envisioned by the environmental effects section of the EIS, and, second, are not meeting the NFMA sustainability and diversity requirements that the EIS was originally designed to achieve. This lack of a link between the stated objectives and the proffered solution violates the NEPA. CBD-8

4. The Analysis of the Biology of the Goshawk is Incomplete or Erroneous

In narrowly reviewing only the nine studies required by the court and justifying continuing the limited protections of the original Amendment, the U.S. Forest Service ignores numerous studies conducted since 1992 showing that goshawks avoid forest conditions created by the MRNG and that suggest goshawks are harmed by these forest conditions, ignores considerable available information on the status of the goshawk, and fails to consider alternatives CBD-9

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that maximize goshawk habitat by restoring natural disturbance processes in ponderosa pine ecosystems. CBD-9

a. The U.S. Forest Service failed to consider studies demonstrating goshawks are dependent on large tree, high canopy closure forests in the home range.

Although it is well recognized and undisputed in the DEIS that goshawks require mature forests for nesting, goshawk habitat requirements in the larger home range has continued to be a source of controversy with the DEIS asserting that although evidence indicates goshawks select mature and old-growth forests, the variety of seral-stages and forest structures found in the home range suggests they are a habitat generalist that use "habitats opportunistically." This conclusion runs counter to a considerable number of studies that show goshawks select large tree, high canopy closure forests in the home range, many of which the Draft Supplemental Environmental Impact Statement (DEIS) fails to consider. CBD-10

Using radio telemetry to locate goshawks where they actually occur, studies consistently demonstrate goshawks select forest habitats with high canopy closure and large trees and avoid or don't select many of the stand characteristics created by the Amendment, such as young stands, logged openings and edges (Table 1 and further discussion below). These studies were either ignored by the MRNG or were not fully considered. Of nine studies, for example, that show goshawks select high canopy closure and/or large trees (Table 1), the DEIS cites only four (Austin 1993, Bright-Smith and Mannan 1994, Beier and Drennan 1997, and Hargis et al. 1994)(Table 1).

Table 1. Studies documenting goshawk selection for high canopy closure, tree density and tree size in North America.

Study	Selected canopy closure
Austin 1993	>40%
Beier and Drennan 1997	>80% most selected; mean = 48.3%
Boal et al. 2001*	Mean = 53–86% dependent on forest type
Bright-Smith and Mannan 1994	Mean rank of relative preference for stands increased with increasing canopy closure for all goshawks (>55% for three goshawks)
Drennan and Beier 2003	Mean = 50% **(winter habitat use)**
Hargis et al. 1994	Mean = 34%
Stephens 2001	Mean = 43.5% in mixed conifer, 21.9% in pinyon/juniper **(winter habitat use)**
	Selected tree size and density
Austin 1993	>52 cm dbh

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Beier and Drennan 1997	Greater density of trees >40.6 cm dbh
Bloxton 2002	>medium (30–50 cm dbh) and large (>50 cm dbh) tree density, basal area, total snag density, and small snag density (12.5–30 cm dbh)
Boal et al. 2001*	Tree densities of 570–1,030 stems/ha of trees 19.6–24.6 cm dbh, dependent on forest type
Good 1998	> tree density between 23–37.5 cm dbh
Hargis et al. 1994	>basal area and density of trees 15–27 and >46 cm dbh

*Did not statistically compare individual stand traits of used versus random stands.

The DEIS does not outright deny that goshawks select mature forests, as demonstrated in the above studies, but claims that goshawks use habitats opportunistically:

> "Goshawks forage in larger areas surrounding the nesting areas. These areas are approximately 5,400 acres in size. There is evidence that goshawks use mature and old forest within these areas more heavily. However, goshawks use available habitats (openings) opportunistically which suggests that the choice of foraging habitat by goshawks may be as closely tied to prey availability as to habitat structure and composition."

The above statement is presumably based on Reynolds (2004) (Appendix I to the DEIS), who concluded that because goshawks have been observed in unusual habitats, such as aspen surrounded by shrub-steppe and tundra, that goshawks use habitats opportunistically:

> "The opportunistic behavior of goshawks is evidenced by the fact that, when a habitat contains sufficient trees to support goshawk nests and when there is sufficient and available food, goshawks occur whether the habitat is forests, woodlands, or shrub lands."

We don't deny that in other parts of North America goshawks are found in unusual habitats. As discussed above, however, numerous studies show goshawks selects large tree, high canopy cover forests in the Southwest and other parts of the western United States. In one of the premier textbooks on wildlife habitat relationships, Morrison et al. (1998) conclude:

> "If many studies conducted across different time periods and locations consistently show preference of a particular resource or behavior, then one can likely infer that the species is exhibiting a behavior of adaptive significance; this implies a requirement."

This is not to say that goshawks only occur in mature forests with large trees, and high canopy closure, but rather that such forests best allow the goshawk to fulfill its ecological needs. This fact is further evidenced by a number of studies discussed below that found reduced goshawk occupancy and productivity after removal of forest cover by logging. The fact that some

goshawks occur in shrub-steppe or tundra is ultimately immaterial to the habitat needs of the goshawk in Southwestern forests, where to date no studies have shown a preference for openings, young forests, or other features created by logging under the forest plan amendments and a number of studies have shown such logging harms goshawks.

The DEIS never defines what they mean by opportunistic behavior. Typically, this would be defined as using habitats according to their availability (Le Sorte et al. 2004). Under this definition, the goshawk clearly does not use habitats opportunistically, as the numerous studies cited in these comments demonstrate. CBD-11

b. The U.S. Forest Service failed to consider several studies that show goshawk avoidance of young stands and openings.

The DEIS fails to discuss findings in several studies that goshawks avoid openings, young, logged forests and forests with <40% canopy closure (e.g. Austin 1993, Beier and Drennan 1997, Bloxton 2002, Boal et al. 2001, Bright-Smith and Mannan 1994, Titus et al. 1996). Austin (1993) found that goshawks avoided meadows; Fischer (1986) found that goshawks avoided open montane slopes and oak (*Quercus spp.)* shrubland-grassland was not present in their home ranges; and Boal et al. (2001) and Lapinski (2000) found that goshawks avoided open areas. Three studies demonstrated avoidance of clearcuts and seedling, sapling, and young stands (generally stands younger than 30 years) (Austin 1993, Titus et al. 1996, Bloxton 2002). Austin (1993) and Beier and Drennan (1997) documented avoidance of stands with <40% canopy closure. Bright-Smith and Mannan (1994) documented avoidance of more open, partially logged old-growth forest. These studies run directly counter to provisions of the Amendments that call for managing 40% of the landscape in early seral and young forest, and creating openings both in the post-fledging family area (PFA) and foraging area. CBD-12

More recently, both Joy (2002) and La Sorte et al. (2004) found that selection of nesting stands was associated with continuous forest, lack of openings and less vegetation diversity at the scale of the nest stand, PFA and in the case of Joy (2002) a portion of the foraging area. These studies provide further evidence that creating vegetation diversity and openings is not beneficial to the goshawk, particularly in the PFA.

c. The U.S. Forest Service failed to consider information indicating lack for selection for vegetation diversity, edges and prey abundance.

In concluding that existing science continues to support provisions of the Amendment, the DEIS ignores considerable evidence to the contrary and selectively cites studies. For example, the DEIS heavily relies on Hargis et al. (1994) because it was one of the few studies that concluded that vegetation diversity benefits the goshawk. Hargis et al., however, is only one of two radio-telemetry studies that found such selection (also Good 1998). Every other study didn't find similar selection or found the opposite. Bright-Smith and Mannan (1994), for example, found that only 1 of 11 goshawks showed any selection relative to stand diversity, using areas of high diversity less than expected. It is also important to note that Hargis et al. (1994) did not find that goshawks actually used open habitats. To the contrary, they found that goshawks selected forests with higher than average canopy closure and large trees. To the extent they found a CBD-13

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positive benefit of vegetation diversity, it was not logged areas that created such diversity, rather it was pumice fields and other naturally open habitats.

The DEIS similarly fails to discuss a lack of positive results in regards to forest edges and prey abundance, both of which the Amendment attempts to create. Three studies attempted to determine if goshawks selected forest edges with none finding a statistically significant relationship (Bright-Smith and Mannan 1994, Titus et al. 1996, Good 1998). Bright-Smith and Mannan (1994) did find that 1 of 11 goshawks used forested areas 50–100 m from forest edges more than expected based on availability. However, another of the goshawks used forested areas 50–100 m less than expected based on availability and 2 goshawks used forested areas >200 m from edges more than expected based on availability. Four studies comparing prey abundance at goshawk locations and random points suggested that goshawks did not select stands on the basis of prey abundance, but on forest structure (Fischer 1986, Beier and Drennan 1997, Good 1998, Drennan and Beier 2003). Beier and Drennan (1997) concluded: CBD-13

> "We suggest that prey availability is more important than prey abundance in habitat selection by a forest raptor, the goshawk. Obviously, prey numbers are a component of prey availability: if prey are absent availability must be zero. However, we believe that as long as prey numbers are above a rather low threshold, goshawks select foraging sites where structural characteristics favor their foraging strategies."

These contrary results were not discussed or given careful consideration by the DEIS.

d. The U.S. Forest Service failed to consider studies showing that goshawks select stands with >40% canopy closure.

The Amendment calls for managing ponderosa pine forests, the primary habitat for the goshawk in the Southwest, to have an average of 40% canopy closure over the 40% of the landscape covered by mature and old forests. This is less than the mean canopy closure of stands where goshawks have typically been observed as noted in Table 1, which was not discussed in the DEIS. Moreover, Beier and Drennan (1997) found that goshawks exhibited the greatest selection for stands with >80% canopy closure. Reducing stands to an average of 40% potentially will harm goshawk populations and should have been discussed by the DEIS. CBD-14

e. The U.S. Forest Service failed to consider studies demonstrating that cutting in goshawk territories reduces goshawk occupancy and reproduction, goshawk density and viability. CBD-15

Occupation and productivity. A number of studies in the western United States have documented that logging in goshawk territories reduces occupancy and productivity. Crocker-Bedford (1990) compared nest occupancy and productivity of goshawk territories from 1985–1987 where there had been only light timber harvest prior to 1973 (control locales) with territories where there had been a second selection harvest between 1973–1984 (treatment locales) on the Kaibab Plateau in northern Arizona. Nest occupancy rates in the 12 treatment territories were significantly lower (17%) than in the 19 control territories (63%)($\chi^2 = 6.42$, 1 df, $P = 0.012$). Territories in treatment locales averaged only 0.08 nestlings per territory (active and

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inactive) compared to 1.32 nestlings per territory in control areas during 1987 ($t = 4.6$, 29 df, $P < 0.001$).

Crocker-Bedford (1995) reanalyzed his 1987 data with 22 additional territories that were not considered in Crocker-Bedford (1990) because they had some timber harvest in 1985 or 1986. Reanalysis documented significant differences in 1987 occupancy and productivity corresponding with 1973–1986 harvest levels within 2.7 km radius circles assumed to approximate goshawk home ranges. Home ranges ($n = 53$) were grouped into 4 classes based on amount of harvest: little to no harvest ($n = 12$), 10–39% of area selectively harvested (n = 14), 40–69% of area selectively harvested (n = 16), or 70–90% of the area selectively harvested (n=11). For the 4 classes, nest occupancy rates were respectively 83%, 43%, 31% and 9% and young produced per nest cluster were 1.67, 0.86, 0.31, and 0.

Ward et al. (1992) compared canopy closure in 101-, 283-, 647-, and 1010- ha areas surrounding goshawk nest clusters (a group of alternate nest stands used by a single pair of territorial goshawks) on the Kaibab Plateau that were either still occupied or unoccupied in 1986 and 1989. In general, they found a "near total loss of the 60–80% and 80–100% canopy closure sic[areas]," and a drastic reduction in the 40–69% canopy closure areas since 1972 (Ward et al. 1992, 5). Territories active in 1986 and 1989 had significantly or nearly significantly higher proportions of area with ≥40% canopy closure for the 101-, 283-, 647-, and 1010- ha areas than inactive territories. Conversely, inactive territories had significantly or nearly significantly higher proportions of the 20–40% canopy closure class than did active territories. The near disappearance of the 60–80% and 80–100% classes precluded statistical analysis to determine if goshawk occupancy was correlated with canopy closures >60%.

Within lodgepole pine (*P. contorta*) and Douglas-fir (*Psuedotsuga menziesi*) stands on the Targhee National Forest in Idaho and Wyoming, Patla (1997) determined that high-occupancy territories had significantly greater proportions of mature forest cover and lower proportions of young forest and seedling cover within the nesting area (12.1 ha around nest tree) and post-fledgling area (170 ha around nest tree), and significantly less young forest cover in the foraging area (2,185.4 ha around nest tree), than low-occupancy territories.

Finn et al. (2002) demonstrated that occupancy at 30 historic goshawk nest sites (located between 1975–1996) on the Olympic Peninsula, Washington were related to habitat attributes in circles approximating the nest area (39 ha), post-fledging area (PFA; 177 ha), and home range (1886 ha). Goshawks were more likely to occupy nest sites with less nonforest cover (primarily consisting of clearcuts) and less heterogeneity in the home range. Goshawks were unlikely to occupy a nest site if nonforest cover exceeded 20% in the home range and 15% of the PFA. Late-seral forest was consistently >40% of the landscape surrounding occupied nest sites at all scales. In addition, breeding success was "strongly and positively correlated with occupancy" (Finn et al. 2002, 427).

La Sorte et al. investigated the habitat associations of sympatric northern goshawks and red-tailed hawks at both fine- (16 m circle around nest) and mid- (2,085 m circle) scales on the Kaibab Plateau Arizona. At the fine scale, La Sorte et al. compared detailed measurements of forest structure in nest stands of the two species both to each other and to random points using a

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combination of univariate and multivariate techniques. At the mid-scale, the effects of forest fragmentation on both species was examined by identifying the area and patch characteristics of non-forest area (defined as <20% canopy cover) within variable radius plots surrounding nest sites using Landsat imagery.

Non-forest area was an important discriminant of red-tailed hawk and goshawk nest sites at the mid-scale. Red-tailed hawks were associated with non-forested areas between 105-645 m and steeper slopes within 105 m of the nest site. In contrast, goshawks were consistently associated with continuous forest and negatively associated with nonforest area extending to 645 m. La Sorte et al. note that:

> "This forested area corresponds to the post-fledging family area (PFA; Reynolds et al. 1992) estimated at 168 ha. or a circle of 732 m. The PFA, characterized by mature forest structure, is the area where adults forage during the breeding season and young develop their hunting skills… For goshawks, patterns at the mid-scale suggested that selection was occurring exclusively for regions of continuous forest on level terrain centered at the nest stand."

Based on these results, La Sorte et al. conclude that "goshawks were considerably more specialized at both scales," and that this suggests habitat is essential to goshawk management:

> "The real issue is one of habitat: if the habitat requirements of a species are not available, that species will have difficulty fulfilling its ecological role. In this case, the threats to goshawk breeding habitat are more severe because of the goshawk's specialization on features that have economic value and features that are threatened by catastrophic wildfires."

Of these studies, only Crocker-Bedford and Chaney (1986), Crocker-Bedford (1990 and 1995) and Ward et al. (1992) were cited by the DEIS. Failure to consider this information resulted in the DEIS failing to evaluate or disclose the full effects of continuing management as prescribed in the Amendments. Collectively, these studies demonstrate that continued cutting as prescribed in the Amendment is likely to reduce goshawk occupancy and productivity. The Amendment allows logging that will reduce stand characteristics below those commonly found to be selected by goshawks (e.g. <40% canopy cover dominated) over 60% of the landscape. This is above the amount found to be detrimental to goshawk status in nearly all of the above studies. The Amendment also calls for managing the PFA for vegetation diversity, specifically creating early seral habitats, young forest and openings over 40% of the area. La Sorte et al. (2004) found that goshawks were selecting for areas of continuous forest in the PFA and thus it doesn't make sense to manage the PFA for vegetation diversity, including early seral habitats. CBD-16

Joy (2002) compared vegetation characteristics between high quality territories, low quality territories, and random locations. Territory quality was defined by measured reproductive fitness and vegetation was described using remote sensing techniques. Joy (2002) concludes:

> "The majority of significant relationships within vegetative types occurred between higher quality territories and random locations. In particular, the amount of deciduous-

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> dominated vegetation (less) and openings (fewer) within a 0.60 km and 1.2 km radius of the sample plots were important. These distances incorporated the NA, PFA, and 11% of the FA (Reynolds et al. 1992) within a goshawk's home range… Greater proportions of ponderosa pine and lower diversity of vegetative types distinguish habitat in higher quality territories from random locations."

Based on these findings, Joy (2002) concludes:

> "If higher quality territories represent goshawk population "sources," thus contributing to persistence of the species on the study area, then the habitat conditions therein should not be altered greatly beyond the vegetative characteristics identified in this study."

Density. Several studies have observed comparatively greater goshawk densities in areas where little or no logging has occurred. Crocker-Bedford and Chaney (1988), for example, found that mean goshawk density on the Kaibab Plateau was approximately 1.1 pair/1,000 ha. In an area that had received the least previous harvest, however, they observed goshawk densities of 1.5 pairs/1,000 ha. CBD-17

Despite observed lower densities of goshawks in logged areas, the Kaibab Plateau is widely acknowledged to harbor both some of the best remaining habitat for goshawks and also some of the highest observed densities, in part reflecting relatively light history of logging. Kennedy (1989), for example, found a substantially lower goshawk density in the Jemez Mountains of New Mexico than the Kaibab Plateau (.64 pairs/1,000 ha. compared to 1.1 pairs/1,000 ha) and concluded:

> "The northern goshawk population in the Jemez Mountains is lower than most published records. This is particularly apparent when you compare these densities with density estimates for the Kaibab Plateau in northern Arizona. This area is similar ecologically to the Jemez Mountains, but has not been managed for timber as intensively. Under similar management strategies, these two area should support similar northern goshawk nesting densities."

Similar results have been found in other regions of the goshawk's range. Widen (1997) reported the results of nine goshawk studies from throughout Fennoscandia documenting regional declines in densities of goshawk breeding pairs, ranging from loss of 1 pair/1,000 ha. to loss of 20 pairs/1,000 ha. in different study areas of Sweden. Based on these results, Widen concluded that goshawks had declined by 50-60% between 1950 and 1980 across Fennoscandia and that the most likely causes for these declines were logging of boreal forests and prey fluctuations. Significantly, Widen did not believe that logging had resulted in a shortage of nest stands, but rather decreases in hunting habitat:

> "Several independent studies show that goshawk populations in Fennoscandia have declined by 50-60% from the 1950s to the 1980s. This decline coincides in time with an intensification of forest management, which has changed the forest landscape. I suggest that changes in the boreal forest landscape have resulted in a deterioration of goshawk hunting ranges, making it more difficult for them to secure adequate food for breeding.

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This factor is more important than a shortage of suitable nest sites. Declining prey densities (e.g., grouse) may be associated with forestry and is also an important factor that may affect goshawk numbers."

Population viability. Two long-term studies of goshawk population demography have been conducted, both in Arizona. Reynolds and Joy (1998) and Reynolds (1999) studied goshawks on the Kaibab Plateau from 1991-1996[2], using mark and recapture methods to estimate survival and productivity. Ingraldi (2001) monitored demographic vital rates of goshawks on the Sitgreaves portion of the Apache-Sitgreaves National Forest from 1993-1999. The study areas are within 150 air miles of each other and have similar climate and physiography. The extent of timber harvest, however, differs considerably between the two study areas. Ingraldi (2001), for example, states:

> "Since European settlement, The Apache-Sitgreaves National Forest has been intensively managed, with much of the area grazed by livestock and used for timber production. Like many National Forest lands in the southwestern United States, the Apache-Sitgreaves National Forest is currently dominated by stands of younger age classes of ponderosa pine (*Pinus ponderosa*). Most ponderosa pine stands on level terrain have been logged, with the steeper slopes of canyons and drainages receiving less logging impact."

CBD-18

In contrast, Reynolds and Joy (1998) note that "the Kaibab Plateau was spared the extensive logging that occurred elsewhere on the Colorado Plateau and Southwest during the railroad logging era," experienced single tree selective cutting from the 1920's to the 1960's, a small amount of clearcutting in the late 1960's and 1970's and intensive even-aged management from the early 1980's to 1991. Thus, although the Kaibab Plateau was not spared from forest management, it experienced considerably less logging than other areas in the Southwest, including the Apache-Sitgreaves National Forest.

Not surprisingly, the two studies produced substantially different results for a number of important demographic parameters (Table 1). Significantly, goshawks on the Apache Sitgreaves had substantially lower adult female survival than goshawks on the Kaibab Plateau (.75 compared to .866).

Table 1. Results from two demographic studies of the northern goshawk.

Parameter	Kaibab	A-S
Number of territories studied	107	44
Mean occupancy	77%	68%
Mean nesting activity rate	50%	48%
Mean nest failure rate	21%	31%
Fledglings/successful nest	1.75	1.87
Adult female survival	.866 SE .051	.80 +/- .5
Lambda	N/A	.87 +/- .04 95% CI

[2] We have also included data up until 1998 from Reynolds (1999) for comparison with Ingraldi (1998).

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According to a sensitivity analysis performed by Ingraldi (2001), adult female survival influences goshawk population trend more than any other parameter and indeed Ingraldi found that based on his estimate of low female survival, goshawks on the Apache-Sitgreaves National Forest had a high likelihood of extinction in the absence of immigration:

> "If the demographic parameters I observed over the past seven years were to persist, my model suggests that northern goshawks will not continue to occupy the Apache-Sitgreaves National Forest without immigration of birds into the study area."

Of-course, direct evidence is lacking to test that lower adult survivorship on the Apache Sitgreaves National Forest compared to the Kaibab Plateau relates directly to differences in habitat condition, but this is clearly the most plausible hypothesis. Ingraldi (1998) states:

> "I observed lower survivorship rates for adult females than did Reynolds and Joy (1998) on the Kaibab Plateau during 1991-1996. This difference may be due to more favorable weather conditions in the early 1990's, larger areas of forest stands with old-growth attributes on the Kaibab Plateau, or that there was a greater proportion of larger trees on the Kaibab Plateau."

In conclusion, the only two intensive studies of goshawk demography had substantially different results that potentially correspond with recognized differences in habitat quality related to logging. Although more study is required to determine the role of habitat loss in the observed differences between the two goshawk populations, the fact that goshawks are declining at a substantial rate on the Apache-Sitgreaves National Forest where there has been extensive forest management, in combination with other evidence that logging harms goshawk populations, indicates that there is substantial cause for concern for the status of the goshawk. CBD-19

Taken together, studies showing the goshawk selects forests with large trees and high canopy closure, studies showing reduced occupancy, productivity and density in response to logging, and a study showing the goshawk is faring poorly on at least one national forest in the Southwest all suggest that the goshawk requires substantial protection from logging across the landscape. The DEIS fails to fully consider this information or to provide alternatives that address these concerns.

f. The U.S. Forest Service failed to evaluate considerable information on the status of the goshawk in Southwest forests.

In addition to all of the studies on the habitat requirements of and impacts of logging on northern goshawks, the DEIS fails to discuss or evaluate information on the status of the goshawk in Arizona and New Mexico. Some relevant studies include Reynolds and Joy 1998, Ingraldi 1999, Ingraldi 2001, and Joy 2002, as well as unpublished data from Reynolds. There has been no comprehensive, region-wide monitoring program that includes searching for newly established nests, determining reproductive success, and goshawk dispersal and distribution, and it is uncertain that any of the individual national forests have implemented forest-wide programs to survey or monitor northern goshawk abundance and/or reproductive success. Nonetheless, there CBD-20

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has been a considerable data collected in developing ecological assessments and environmental impact statements for forest projects in numerous national forests throughout the region, and many of the national forests (for example, Coconino, Kaibab, and Apache-Sitgreaves National Forests) have programs (in the case of Coconino National Forest, in conjunction with Northern Arizona University) to monitor known PFAs and gather annual data on goshawk abundance and nesting. Viewed individually and collectively across the region, these data provide extremely valuable information on the status of the goshawk in the Southwestern forests, and indicate a serious need to evaluate the management.

Furthermore, recent large-scale events such as the Rodeo-Chediski Fire of 2002 and widespread incidence of bark beetle infestations in numerous forests along the Mogollon Rim have had significant ecological effects on the forests, and potentially significant effects on goshawk populations. For example, it appears that as many as half of all PFAs within the Apache-Sitgreaves National Forests were within the fire boundary of the Rodeo-Chediski Fire (Personal communication with Michael Ingraldi, Arizona Game and Fish Department). The management strategy needs to be evaluated in light of these recent events, with consideration of changes to the forest structure at the stand and landscape scales, and the implications for the overall viability of the goshawk population region-wide. CBD-21

g. The U.S. Forest Service's claim that the MRNG mimics natural conditions and creates the maximum amount of old-growth ignores considerable science demonstrating that stand-replacing events were rare in ponderosa pine ecosystems and fails to consider alternative approaches.

In the face of information that goshawks do in fact select mature and old-growth forests in the PFA and foraging area, the DEIS adopts a novel argument for justifying managing the landscape as a mosaic of vegetation types, including those not selected by the goshawk. The DEIS now argues that mature and old-growth forests can't be sustained on more than 40% of the landscape and that this amount is within the natural range of variability for southwestern forests:

> "While recognizing the importance of mature and old forest to goshawks and many of their prey, the actual recommended amount of mature and old forests in RM 217 was determined by the growth dynamics of forests. Based on forest dynamics, the maximum amount of mature and old forest (to 240 years) in a sustaining forest landscape is 40 percent (20 percent in mature, 20 percent in old forest) (Reynolds et al. 1992)… The recommendations in RM-217 would result in large-scale forest composition and structure that is consistent with our knowledge of the historic range of variability of the forests in the Southwest. Such forest structure could be reliably sustained over time. Forest composition and structure resulting from the recommendations contained in Alternative D would be much more difficult to sustain." CBD-22

The above conclusion is not supported by reference or analysis. A careful examination of Reynolds et al. (1992), the only reference for the above conclusions, finds no statements or analysis that 40% is the maximum amount of old-growth that can be sustained or that this is within the natural range of variability for Southwest forests.

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Our review of the literature finds no support for the statement made in the DEIS that "the maximum amount of mature and old forest (to 240 years) in a sustaining forest landscape is 40 percent ." Contrary to this assertion, Reynolds et al. (1992) states that "under pre-settlement conditions, catastrophic crown fires were apparently rare." In the absence of stand replacing fires, there is no other mechanism that would result in 60% of the landscape to be in early and mid-seral conditions. In fact, our review of the literature found that old growth forests historically occupied as much as 60-80% of the landscape (Rixon 1905), with average tree sizes of ponderosa pine greater than 19 inches diameter (Rixon 1905, Lieberg et al. 1905). Also, there is no lack of peer-reviewed articles that state that the ponderosa pine forests in the Southwest were occupied by forests with large trees with relatively dense canopy over and open understories, maintained by frequent, low-intensity fires (Covington and Moore 1994, Swetnam and Baison 1995, Fule et al. 1997). CBD-23 CBD-24

5. Conclusion

We are disappointed by this latest effort by the U.S. Forest Service to comply with its NFMA mandate to protect the northern goshawk, and by its continuing insistence to turn a blind eye to what just about everyone else can see—that the bird is in trouble, is losing its habitat, and that the solution offered by the agency does not accomplish the objectives the agency at least pretends to have. The agency continues to ignore the important science, and continues to frame the problem in its self-serving way as a dispute about whether the goshawk is a specialist or a generalist even as its own timber planners place logging units in old growth forest. The current standards are all but ignored but the agency still pretends—without a shred of analysis to show it—that its plan will create "the maximum amount of mature and old forest" that is possible.

The agency must return to the drawing board, conduct a real review not of the literature but of the goshawk populations that inhabit the landscape under the agency's control, and then propose a strategy that conforms to what the agency learns in this review. In the meantime, it should start treating the current goshawk standards as if they mattered. CBD-25

A full bibliography of the documents cited here follows; we have provided attached to this letter hard copies of nearly all of the documents we have cited that were not also cited by the Forest Service in its analysis.

Sincerely,

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CBD-1

Mounting evidence suggests that goshawk reproduction (Salafsky 2004, Salafsky et al. 2005) and survival (Wiens 2004) are related to total prey abundance. In rare cases (Younk and Bechard 1994), one or two prey species may be so abundant that goshawk reproduction and survival is supported by a less diverse (fewer species) suite of prey. However, in most cases it appears that the prey abundance needed to support goshawk reproduction and survival is available only if there is a wide diversity of prey species. A wide diversity of prey also likely protects goshawk reproduction and survival in years when the population of some prey species declines. The MRNG fully recognized the importance of a diverse suite of prey for goshawk viability (Reynolds et al. 1992, p 12).

The MRNG and 1996 amendment defined sets of desired forest conditions based on goshawk and their prey's habitat relationships. Some prey (e.g., rabbits, ground squirrels, grouse, band-tail pigeon; see Reynolds et al. 1992, Appendix 3) require openings. Pre-settlement southwest ponderosa pine and mixed-conifer forests typically had many small openings around groups of trees. Many of these openings have filled in with trees due to lack of fire. The MRNG recommended restoring these openings (using active management such as tree removal and return of fire). Restoring openings improves the health (growth and productivity) of trees within groups and restores the diversity of habitats for goshawks and their prey. The MRNG recommended small group regenerating cuts (limited to a group of trees) to create a landscape-level balance among the six VSS classes. At any time, these created openings should not exceed 10 percent of the total area supporting groups of trees. Restoring small openings around grouped trees improves forest productivity by restoring the grass/forb/shrub habitats and decreasing competition among the trees. Improved forest productivity benefits the entire goshawk food web (Reynolds et al. 1992).

CBD-2

The "Draft Supplement to the Final Environmental Impact Statement" (DSFEIS) was prepared in accordance with the opinion set forth by the Ninth Circuit Court. The summary of the DSFEIS states, "The Forest Service, Southwestern Region, is preparing a 'Supplement to the Final Environmental Impact Statement (FEIS) for Amendment of Forest Plans in Arizona and New Mexico' to disclose, review, and assess scientific arguments challenging the Agency's conclusions over the northern goshawk's habitat preferences" (USDA-FS 2004).

The summary continues to define its scope by stating "The Supplement to the FEIS is being prepared in accordance with an opinion filed November 18, 2003, by the Ninth Circuit Court of Appeals (CV-00-01711-RCB) which held that the FEIS failed to disclose responsible scientific opposition that was addressed in the project record. This supplement to the FEIS will address the issue of scientific arguments over the northern goshawk's habitat preference and update the "FEIS for Amendment of National Forest Management Plans in the Southwestern Region" (USDA-FS 2004). The scope of the DSFEIS was purposely defined to respond to the court's opinion, and does so.

CBD-3

The Forest Service has conducted research to determine whether goshawk populations are stable or not (e.g., Kaibab NF, Klamath NF, San Juan/Rio Grande NF, Tongass NF). None of this

research has yet clearly demonstrated what kind of habitat is best for sustaining goshawk populations. However, this is the principal objective of a 14-year study of the goshawk population on the Kaibab Plateau, an objective that has proven to be a very complex problem because goshawk populations are affected not only by the availability of forest habitats but also by the availability of food. Each species of goshawk prey is, in turn, affected by the abundance of their habitats, the quality of which varies according to drought versus wet periods (Salafsky 2004). Most goshawk studies have been short term (< 10 years). Short-term studies of management effects on goshawks cannot detect the full range of variation in goshawk vital rates nor tease-out how management affects the complex interactions among the various factors that limit goshawk population's such as vegetation structure, food, predators, competitors, weather, and disease (Reynolds et al., in press b).

The goshawk is considered a "habitat generalist" because it occupies, nests, and survives in many forest and woodland habitats. In contrast, "habitat specialists" (e.g., pygmy nuthatch, Abert's squirrel in ponderosa pine forests) occupy one or a few types of habitat only. The goshawk occurs and breeds in nearly all of the many North American forest and woodland types, forages in deep forests and woodlands, but also forages along opening edges, and into openings (Squires and Reynolds 1997, Reynolds et al., in press b). This wide diversity of habitats appears a great deal to be related to where goshawks hunt for food; while many goshawk prey occur in mature and old forests, others occur in younger forests and forest openings. In canopied forest types (aspen, ponderosa pine, Douglas-fir, spruce-fir), a certain structure of vegetation is more suitable than others for goshawk foraging. This structure includes subcanopy space and abundant tree hunting perches, characteristics found more often in mid-aged to old forests. This structure is important to goshawks because in canopied forests, it is in the subcanopy space where they nest and hunt.

Goshawks occupying canopied forests may be considered vegetation structure specialists; however, even in canopied forests, goshawks hunt edges and into openings (Reynolds et al. in press b). Thus, the descriptor "structural specialist" does not always fit. Nonetheless, the MRNG suggested that, within canopied forests, as much of a landscape as can be sustained should be in mid-aged (VSS 4) to old forest (VSS 6). This amounts to about 60 percent of the forested landscape with the desired vegetation structure (Reynolds et al. 1992).

Finally, a review of goshawk literature (Reynolds et al. in press b) clearly demonstrated that goshawks occupy, nest, and survive in managed forests.

CBD-4

The Council on Environmental Quality (CEQ) regulations at 40 CFR 1502.9(b) state: "Final environmental impact statements shall respond to comments as required in Part 1503 of this chapter. The Agency shall discuss at appropriate points in the final statement any responsible opposing view which was not adequately discussed in the draft statement and shall indicate the Agency's response to the issues raised."

In addition, the CEQ regulations state at 40 CFR 1502.2(c): "Environmental impact statements shall be kept concise and shall be no longer than absolutely necessary to comply with NEPA and with these regulations."

In keeping with the intent of the CEQ regulations, the Agency has reviewed and assessed scientific literature, including opposing scientific views, in a clear and concise format. The

Agency has kept with the Court's opinion in that it "disclose responsible opposing scientific opinion and indicates its response in the text of the final statement itself."

CBD-5

As stated in response CBD-2, the Agency has prepared a supplement to the FEIS that is in accordance with the opinion set forth by the Ninth Circuit Court's November 18, 2003, opinion. In doing so the Agency has reviewed and assessed, within the body of a supplemental FEIS, current scientific materials that weigh any number of issues surrounding the current state of northern goshawk and its habitat requirements.

Having reviewed and assessed in excess of 450 northern goshawk related literature citations, the Agency has met the requirements of 40 CFR 1502.22 to provide "a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment."

CBD-6

Regional tree data from ponderosa pine stands does not support the contention that trees less than 12" are "in short supply" and that trees over 16" are "rare." Even the statement that trees greater than 24" have "vanished" from many areas of the Southwest is not supported by the facts (refer to following graph).

A comparison between 1999 regional forest inventory and analysis data and historic regional stand data (Woolsey 1911) dating back to the early 1900s indicates that there are excesses above historic ranges in all size classes region-wide up to the 23-24.9" size class (refer to following graph). There exists a slight deficit from historic levels in the 23-24.9" class, but excesses above historic levels exist above 25". The slight deficit below historic levels in the 23-24.9" class is less than .3 trees per acre, or a tree every 3 acres.

Establishment of a stand-specific diameter cap may ensure the retention of larger trees at the stand level, provided the diameter cap was based upon tree data from that stand. However, establishing a region-wide diameter cap: (1) fails to consider the unique set of biological and social issues associated with stand-level treatments; (2) would severely limit the Agency's ability to achieve site-specific management objectives; (3) fails to consider region-wide data that show no real deficit in the number of large trees over historic levels; and (4) fails to recognize thinning treatments that emphasize thinning-from-below will not result in a decrease in the number of large trees on the landscape over time. It is on this basis that the Agency concludes that such an alternative is not reasonable and feasible.

Dia. Classes (inches)	1.0 2.9	3.0 4.9	5.0 6.9	7.0 8.9	9.0 10.9	11.0 12.9	13.0 14.9	15.0 16.9	17.0 18.9	19.0 20.9	21.0 22.9	23.0 24.9	25.0 26.9	27.0 28.9	29.0 +
Survey Date															
1999	80.85	56.53	39.56	29.92	21.42	14.50	8.96	5.7	3.55	2.15	1.54	0.91	0.50	0.40	0.45
1985-87	84.03	58.87	45.85	29.83	18.27	11.71	7.28	4.39	2.91	1.82	1.21	0.82	0.50	0.30	0.35
1966	88.42	48.32	28.49	17.84	11.28	7.05	5.12	3.72	2.63	1.70	1.22	0.87	0.62	0.44	0.51
1910	N/A	N/A	3.44	2.26	2.03	1.79	1.45	1.43	1.41	1.19	1.20	1.20	0.50	0.40	0.37

Ponderosa pine stands on non-reserved lands (trees/acre by size class)

The 1910 survey did not include trees less than 5" in diameter

Data compiled by Jeff Hogg

The same or more trees than in 1910

Less trees than in 1910

CBD-7

As stated in response CBD-2, the Agency has prepared a supplement to the FEIS which is in accordance with the opinion set forth by the Ninth Circuit Court's November 18, 2003, opinion. In doing so the Agency has reviewed and assessed, within the body of a supplement to the FEIS, current scientific materials that weigh any number of issues surrounding the current state of northern goshawk and its habitat requirements. The supplement to the FEIS does not propose to adjust or alter the standards and guidelines currently in place and incorporated into each national forest plan (Alternative G) or the standards proposed under any of the other alternatives analyzed and displayed in Appendix E of the original EIS.

CBD-8

The development of the Goshawk standards and guidelines took several years of research and work by a scientific committee composed of notable scientists involved in goshawk population and habitat research. This work incorporated literally hundreds of research papers into the development of the goshawk guidelines. The research and the guidelines themselves are based on sound research, best available science, and extensive forest stand modeling. Statements questioning the efficacy of the goshawk guidelines are unwarranted without substantive documentation to support such statements.

CBD-9

Many studies of habitats used by foraging goshawks show that goshawks use a variety of habitat types, forest ages, including edge, riparian, and openings, and that goshawk hunting is not limited to old-growth forests (see DSFEIS, Appendix I). None of these studies unequivocally showed that goshawks would be harmed by the desired forest conditions described in the MRNG. In fact, growing trees long enough to restore mature and old forests, as specified in the MRNG, is predicted to benefit goshawks (see response to CBD-3). The desired forest conditions identified in the MRNG (i.e., groups of trees, interspersion of different-aged groups of trees (VSS), and openings) are, in fact, characteristics that resulted from pre-settlement natural disturbances (mostly fire) and tree establishment and growth processes (Pearson 1950 p 121, Reynolds et al. in press a).

CBD-10

All goshawk studies cited in Table 1 (p. 8, CBD) show that they used forests with less than 53 percent canopy closure. This level of canopy closure is representative of open forests, suggesting that goshawks can in fact occupy, survive, and breed in open forests. While most of the studies cited were conducted in ponderosa pine, goshawks in some of the studies used pinyon-juniper woodlands (Stephens 2001, Drennen and Beier 2003), a vegetation type characterized by open conditions (widely spaced trees) with relatively short trees and little or no subcanopy space. Goshawk hunting in these woodlands was, therefore, likely limited to the openings between trees.

CBD-11

“Opportunistic behavior” as used in the MRNG was not defined as “using habitats according to their availability” (see CBD p. 10). Rather, opportunistic behavior was defined operationally as the range-wide use of a wide variety (forests, shrublands, tundra) of habitats by nesting and wintering goshawks (see Reynolds et al. in press b).

CBD-12

The MRNG described the landscape mixes of habitats (using VSS as a classification system) for goshawks and many of their prey species. The desired openings are mostly small (< 1 acre; see Reynolds et al. in press a), and the groups of mature and old forests (VSS 5 and 6) have canopy cover greater than 40 percent (in VSS 5 and 6, the desired interlocking nature of the tree crowns will provide essentially closed canopies). The small openings around groups of trees resemble the pre-settlement forest conditions, which, as shown in the MRNG, benefit the goshawk and its prey species. In presettlement forests, these habitat conditions were created and maintained by natural disturbances (mostly low intensity fire). Currently, these conditions have been lost by management that included large area, intensive tree cutting (e.g., seed-tree, shelterwood) and fire suppression. As a result, much of the natural habitat diversity found in presettlement forests has been lost, including old trees and openings. The desired forest conditions described in the MRNG require a restoration of the natural habitat diversity, which is likely to be restored only by active forest management (restoration of fire, mechanical treatments that mimic the effects of fire). The small openings between tree groups fragment forests no more than the presettlement forests were naturally fragmented.

CBD-13

In the Bright-Smith and Mannan (1994) study, 8 of the 11 goshawks with sufficient numbers of radio-telemetry relocations used the canopy closure categories in proportion to the occurrence of each category. Six of the 11 goshawks used the edge category randomly. Only 1 of the 11 goshawks used the habitat diversity category non-randomly (Bright-Smith and Mannan 1994). This study, as well as the Hargis et al. (1994) and Good (1998) studies, showed a wide range of habitat use by individual breeding goshawks—some individuals use all canopy closure classes and some do not, some use edges and some do not, some use the full range of habitats within their home range and some do not.

What were not determined in these studies were the reasons why each goshawk used their habitats in the manner in which they did. Goshawks feed on a wide variety of prey species (typically 10-30 species; Reynolds et al. in press a), and these prey occupy a diversity of habitats (from openings to old forests; see Reynolds et al. 1992). It is not surprising, therefore, that hunting goshawks visit a wide range of habitats. However, there are typically differences in dietary preference among individuals in a raptor population, and, as well, differences in the habitat compositions on each goshawk territory. These differences alone could result in the variation of habitats used by the individual goshawks noted above.

Salafsky (2004) showed that food is critically important for reproduction in goshawks; without sufficient food, goshawks do not lay eggs. Salafsky (2004) also showed that it was the combined abundance of all prey species (total prey abundance) that was important for reproduction, especially during years when the abundance of one or more prey species was low—no single prey species was abundant enough to support reproduction in goshawk. Habitat quality for goshawks is, then, likely tied to the availability of a diversity of habitat and associated prey species.

The MRNG (Reynolds et al. 1992) and Reynolds et al. (1996) suggest that the desired diversity of habitats for a forest type be based on the natural range of variability of each forest type occupied by goshawks. It was reasoned that this natural diversity of habitats would be more likely to support viable goshawk populations (through both wet and drought years) than forests lacking diversity. Implementation of the MRNG restores the natural variation in habitat diversity lost or reduced in past management. This includes a restoration of mature and old forest age classes and the small openings between groups of trees that have been filled in by trees since fire suppression. Landscapes restored in this manner will resemble the forest conditions that persisted for many thousands of years and to which native goshawk prey species have adapted.

CBD-14

The MRNG and the 1996 amendment recommend a minimum canopy cover of 40 to 60 percent in post fledging areas and 40 percent in foraging areas in mature and old forest vegetative structural stages (VSS) in ponderosa pine forests (recommended canopy cover is higher in mixed-conifer and spruce-fir forests). The MRNG also recommend that trees in VSS 4, 5, and 6 (both post-fledging areas and foraging areas) have interlocking crowns. Interlocking crowns in the tree groups, in effect, will afford > 60 percent canopy cover. Managing to a minimum of 40 percent will not reduce a stand or forest to an average of 40 percent unless all the forest is exactly at 40 percent.

CBD-15

The specific logging treatment effects on goshawk occupancy and reproduction that were investigated by Crocker-Bedford (1990) and Ward et al. (1992) were, for the most part, the removal of most large trees in large areas (20-50 acres). Nothing resembling this kind of past forest treatment occurs during implementation of the MRNG. In fact, implementing the MRNG and the amendment will restore these harvested areas to forest conditions that occurred before they were cut—prime habitat for goshawks and their prey species. The same is true for the LaSorte et al. (2004) study, also conducted on the Kaibab Plateau. The Finn et al. (2002 a,b) and Patla (1997) studies were conducted in considerable different, non-Southwest, forest types.

CBD-16

Management prescriptions in the MRNG and the 1996 amendment were intended to restore the natural pattern of Southwestern conifer forests—a pattern that has been greatly changed by past even-aged forest management prescriptions (e.g., seed-tree, shelter wood, overstory removal harvests) and other management (e.g., fire suppression). Forest management prescriptions typically created large (e.g., >30 acres) openings by removing the large tree components, which reduced the abundance of some important goshawk prey species (Reynolds et al. 1992).

Both the desired forest conditions described in the MRNG and the natural pattern in Southwest conifer forests are comprised of small groups of similarly-aged trees with interlocking crowns (Reynolds et al. 1992). The interlocking nature of the tree crowns allows for a very high level of canopy cover (>60 percent) within the older ages classes (VSS 5 and 6). Each group of trees is surrounded by a small opening, which allows the spread of tree roots into the open areas where there is little competition. Reduced competition allows for more rapid growth of trees and earlier attainment of the large tree forest age class (VSS 6). Small openings and older forests (VSS 1 and VSS 4-6) are conditions that improve goshawk prey populations and a goshawk's accessibility to prey (Reynolds et al. 1992, Reynolds et al. in press a, b).

The MRNG also recommended a high level of interspersion of tree groups of different ages (VSS) to benefit several prey species. Thus, the desired conditions consist of all forest age classes (VSS) in close proximity, a condition also often occurring in natural (presettlement) forests (Pearson 1950).

Much of the North Kaibab Ranger District has been managed (from approximately 1960-1991) with seed-tree, shelter wood, and overstory removal harvests. As a result, much of the district has many areas with few large trees. These were the conditions that prevailed during studies on the North Kaibab Ranger District by Crocker-Bedford and Chaney (1988), Crocker-Bedford (1990), Ward et al. (1992), and LaSorte et al. (2004). The management prescriptions in the amendment are intended to restore the natural all-age forests that existed on these areas before harvests, thus improving habitats of all plants and animals in the goshawk food web.

CBD-17

In 14 years of intensive surveys for nesting goshawks on the 1,730 km^2 Kaibab Plateau (North Kaibab Ranger District and the Grand Canyon National Park-North Rim), Reynolds and Joy (in press) and Reynolds et al. (2005) estimated (based on 107 and 121 known nesting territories, respectively) that the potential maximum numbers of territories was 145 and 150. These estimates result in one nesting territory per 1,192 ha and one territory per 1,153 ha, respectively—

very close to the Crocker-Bedford and Chaney (1988) estimate (1.1 pairs/1,000 ha). Nearly all of the North Kaibab Ranger District had been harvested (single tree harvests before the 1960s; clearcut, seed tree, shelter wood, and overstory removal after the mid-1960s; Burnett 1991) prior to all the above studies.

However, the Grand Canyon National Park had not been tree harvested and the estimated density of goshawk territories there was not significantly different from the density of territories on the North Kaibab Ranger District (Reynolds et al. 2005). Thus, the supposition that nesting territories and breeding goshawks occur at higher densities in unlogged areas is not always supported.

CBD-18

Reynolds et al. (2005) report the difficulty of finding and monitoring breeding goshawks determined during 12 years of intensive mark-recapture study of nesting goshawks on 121 territories. This difficulty stems from their elusive behavior, their complex forest habitats, and their annual frequent use of many widely-dispersed alternate nests within their breeding territories. Because not all goshawks breed every year (only breeding goshawks can be detected with reliability), as many as 8 years of repeated searching is needed to unequivocally classify areas as “unoccupied” by territorial breeding goshawks (Reynolds et al. 2005).

Further, alternate nests of goshawks can be more than 1.5 miles apart and between 55-76 percent of goshawks laying eggs in a year moved to an alternate nest (Reynolds et al. 2005), making the monitoring of goshawk reproduction and other vital rates difficult. A review of the goshawk literature makes it apparent that few studies of breeding goshawks have been conducted with the necessary sampling effort to make reasonable comparisons with the densities and vital rates reported on the Kaibab Plateau (Reynolds and Joy in press, Reynolds et al. 2005).

CBD-19

As discussed above, Southwestern forests have been greatly changed by past forest management. Implementation of the 1996 amendment and the MRNG will restore the changed forests, benefiting the goshawk and members (plant and animal species) in its food web (see Salafsky 2004 for the importance of prey abundance in goshawk reproduction). Once the desired forest conditions are attained (which may take decades depending on differences between existing and desired conditions), 40 percent of landscapes will consist of mature and old trees with canopy cover exceeding 40 percent (likely to be > 60 percent given the interlocking crown requirement) (Reynolds et al. 1992). Not implementing the MRNG in these changed forests is more likely to be detrimental to goshawk viability (Reynolds et al. in press a).

CBD-20

The FSFEIS is being prepared to display, discuss and disclose scientific arguments and information which is in opposition to the findings in the original FEIS which are based on the MRNG (Reynolds et al. 1992). Reynolds and Joy (1998) demonstrated goshawk productivity can vary widely by year, while nest or territory occupancy remains fairly stable. Boyce et al. (2005), has demonstrated that much of the goshawk survey data, often used to show population trends is invalid, based on the number of attempts at locating nest sites.

National forests in the Southwestern Region have been monitoring northern goshawks for over 10 years. Beginning in 1991 a standardized protocol became available for conducting goshawk surveys. This protocol included standard procedures for timing, intensity, and duration of goshawk surveys. Data has been summarized for each national forest in the Southwestern Region beginning in 1991, and ending in the 2004 field season. As reported in Reynolds et al. *(*2003), goshawk productivity on many national forests in the region was down during the drought. The summarized information is reported by post family-fledgling area. The post fledging area is described in the MRNG (Reynolds et al. 1992, p 13). Currently all 11 national forests including 44 ranger districts, in the Forest Service's Southwestern Region have collected nesting information on the northern goshawk (See Appendix AM).

CBD-21

From 1985 to 2002, wildfires burned approximately 1,678,000 acres in the Southwestern Region. These acres include vegetation types comprised of alpine tundra, subalpine forest, mixed conifer forest, ponderosa pine forest, several woodland types, and mountain and desert grasslands. Of the approximately 1.7 million acres burned, 6 percent burned at high intensity. Implementing the MRNG (Reynolds et al. 1992) at the landscape level helps to reduce the risk of future wildfires, deter crown fires, and lessen the effect of wildfire by widening the canopy in foraging areas and protecting nesting territories.

CBD-22

The MRNG had a long-term planning horizon and recognized that forests are dynamic, changing through plant establishment, growth, death, succession, and natural and anthropogenic disturbances (Reynolds et al. 1992, Reynolds et al.). An objective of the MRNG was to sustain goshawk and prey habitats in each goshawk breeding territory and, ultimately, in entire landscapes. Because of the dynamic nature of forests, the MRNG recognized, while VSS 2 and 3 were of little value to nesting and foraging goshawks, their presence was necessary for sustaining the very important VSS 5 and 6 within territories and landscapes.

In other words, the MRNG found, a "balance of age classes" was necessary for sustaining the important VSS (1, 4, 5, and 6) through the long planning horizon. The data and justification for the amounts of the different VSS in landscapes, and the number of years required for trees to grow through each VSS, are presented in Appendix 5, Tables 1-5 in Reynolds et al. (1992). The mosaic of age classes was a desired condition based on among-age class needs of some important prey (e.g., Kaibab squirrel) (Reynolds et al., 1992) and was not "novel" when compared to the natural mosaic of age classes in presettlement Southwest ponderosa pine forests (see, Pearson 1950, figure 38).

Presettlement ponderosa pine forest landscapes typically contained many tree age classes but were visually dominated by the large diameter, mature and old trees. Because the MRNG and 1996 amendment restores the mature and old age classes as well as the interspersion of all VSS groups, the desired forest conditions closely resemble the natural old-growth ponderosa pine condition. The natural mosaic of age classes that maintained old growth in presettlement landscapes is the same mosaic recommended in the MRNG and 1996 amendment to sustain older, productive forest ecosystems that support the goshawk and its prey.

CBD-23

The contention that up to 60 to 80 percent of the landscape can exist as old growth and that pine forests in the Southwest were occupied by forests with large trees with relatively dense canopy and open understories (Covington and Moore 1994) and (Baison and Swetnam 1995) and (Fule et al. 1997) as referenced, depends upon the "scale" used to identify old-growth conditions. Just because large trees may dominate a landscape does not mean that the area meets the definition of functioning old growth. There is far more to functioning old growth than simply large trees.

There seems to be at least four different spatial scales being considered by individuals when talking about old growth: (1) the individual tree scale; (2) the group scale (sub-stand size areas as recommended in MRNG); (3) the stand scale; and (4) the landscape scale (multiple stands or large blocks). Unfortunately, when people discuss the merits of old growth, people are not always using the same scale.

If old growth is defined as a single tree (tree scale), old growth can occupy far more than 40 percent of the landscape. Individual old trees (tree scale) can exist in most or all forested stands across the landscape. The only place old trees might be deficit for some time would be in stand-replacement fire areas or areas logged where all mature trees have been removed. However, if "old growth" represents a defined forest area (group, stand, or large block), it is not possible to have 60 to 80 percent of the landscape as old-growth conditions on a sustainable basis.

The goshawk VSS distribution (MRNG) is based on six VSS size classes with age/size classes ranging from seedlings to old, mature trees. Each VSS or size class category spans approximately 40 years, assuming average tree growth rates in the Southwest. When ponderosa pine stands were modeled (RMYIELD forest model) factoring typical size-age relations, average growth rates, and average tree longevity (Richard Bassett and others – Regional Office- USDA-FS pre-1990), it was determined that there did exist a finite number of acres (group, stand, or block) or maximum percent of the landscape in old growth that could be supported by younger tree groups, stands, or blocks on a sustained basis.

When landscapes were modeled that contained more than 20-40 percent (VSS 5 and 6) old growth, there had to be fewer acres of VSS 1-4. The analysis showed that in the long term, any present day shortages of VSS 1-4 resulted in shortages of VSS 5 and 6 at some point in the future. This same finding applies when old growth is modeled at the tree scale. Some minimum number of younger trees were needed to support an optimum number of older trees within a stand. That number of younger trees must be larger than some optimum number of old trees because not all young trees survive until old age (the "inverse-J" distribution curve).

An example involving ponderosa pine may help clarify. For simplicity, assume that old growth equates to big, old trees, and that it requires that ponderosa pine trees reach 200 years of age before they take on old-growth tree characteristics. Based on data provided by such forest scientists as Pearson (1950) and Cooper (1960), assume <u>average</u> lifespan of ponderosa pine trees is ~250-300 years. Based on these assumptions, nearly two-thirds of the trees or 66 percent of the area must consist of trees less than 200 years of age to support old-growth trees (200-300 years of age). Furthermore, to sustain 33 percent of the individual trees or 33 percent of the area as old growth over time, the continual establishment of younger trees is critical. Any reduction in regeneration in order to retain a larger percent of the trees or area in old growth will eventually result in a decline of old growth below the optimum 33 percent level. The MRNG and amendment call for 40 percent of the landscape to be managed as VSS 5 and 6 with the other 60

percent of the areas to be distributed between the smaller size classes to support the continued existence of old growth over time.

Whether your scale is a single tree (tree scale), an even-aged group (group scale), an even-aged stand (stand scale), or an even-aged block (landscape or multistand scale), one must start out with a larger number of young trees, or a larger or equal number of smaller tree groups, smaller tree stands, or smaller tree blocks to support a desired number of large, old trees or large-tree areas. Table 2 of the "Draft Supplement to the FEIS" (pg 11) lists 20 percent of the landscape in VSS 6 (old growth) and another 20 percent in VSS 5 (mature forest) as a commonly agreed upon habitat component for the northern goshawk. The goshawk work by Austin (1993, p 42) also supports the 20 percent minimum threshold amount of closed-mature/old-growth habitat.

The difference between Alternative D and Alternative G (DSFEIS, pg. 32) is not over the total amount of old growth that can be sustained on the landscape, but whether old growth should be managed as large blocks (multiple stands) or managed as substand-size areas (VSS 5 and 6) as outlined in the MRNG (Reynolds et al. 1992).

CBD-24

See responses to CBD-22 and CBD-23

CBD-25

The FSFEIS is being prepared to display, discuss and disclose scientific arguments and information which is in opposition to the findings in the original FEIS which are based on the MRNG (Reynolds et al. 1992). Reynolds and Joy (1998) demonstrated that goshawk productivity can vary widely by year, while nest or territory occupancy remains fairly stable. The North Kaibab Ranger District has been implementing the MRNG for 8 years, harvesting an average of 4,372 MBF per year over an average of 2,380 acres per year under the management guidelines. During this time, territory occupancy has remained stable (Reynolds and Joy, 1998).