



United States Department of the Interior

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SEP 8 2003

Memorandum

To: Assistant Regional Director, Ecological Services
Portland, Oregon
Attention: Larry Salata

From: Manager, Western Washington Fish and Wildlife Office
Lacey, Washington *Ken S. Berg*

Subject: Biological and Conference Opinions for the Issuance of Enhancement of Survival Permits to Tagshinny Tree Farm, for the Tagshinny Tree Farm Conservation Plan, in Lewis County, Washington (FWS Ref: 1-3-03-FWF-1519)

This document constitutes the U.S. Fish and Wildlife Service's (Service) Biological and Conference Opinions (Opinion) prepared pursuant to section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act), on the potential effects of issuing proposed Enhancement of Survival Permits (Permits) to Tom Fox and others whose ownership comprises the Tagshinny Tree Farm (TTF) for 15 species for a period of 80 years, pursuant to section 10(a)(1)(A) of the Act. These Opinions are based on the Service's review of the proposed Draft Tagshinny Tree Farm Conservation Plan (Conservation Plan), located in Lewis County, Washington, and its effects on the marbled murrelet, bald eagle, and spotted owl (all federally threatened species), in accordance with section 7 of the Act. As per the No Surprises Regulations (50 CFR 17.3), the Service has also prepared Conference Opinions for the other 12 proposed Permit Species (all currently unlisted species). No designated critical habitat exists within the TTF.

CONSULTATION HISTORY

The Conservation Plan was developed from mid 1997 to June 2003. During this time, the Service provided technical and policy assistance to Mr. Tom Fox (Applicant) for the development of a Safe Harbor Agreement (SHA) and a Candidate Conservation Agreement with Assurances (CCAA). This Opinion evaluated information from the Draft Conservation Plan (dated March 2003), personal communications, scientific literature, and on-site field reviews. A complete administrative record of this consultation is on file at this office.

BIOLOGICAL AND CONFERENCE OPINION

DESCRIPTION OF THE ACTION

The Applicant is proposing to manage 133 forested acres (of a total 144 acres) in 5 parcels of commercial timberlands in Lewis County, Washington (see Figure 1), for a period of 80 years under both a SHA and a CCAA. The Conservation Plan has been written to incorporate both of these Agreements. Reference to the Conservation Plan is not intended to alter the function of the document as an agreement (ie., as a Safe Harbor Agreement and a Candidate Conservation Agreement with Assurances).

The TTF is located in Lewis County, Washington. The TTF is typical of other privately owned tree farms in Lewis County in that these lands are generally composed of young and simple structured conifer forests, due to past management practices of regeneration harvesting (clear cut harvesting). The TTF is composed predominantly of young stands that lack many of the important elements that many forest dwelling species require. For instance, large, dominant snags and large down logs are uncommon across the tree farm due to past management practices of clear cut harvesting. The multiple canopy layers that develop in older stands are also generally not present on the Applicant's property.

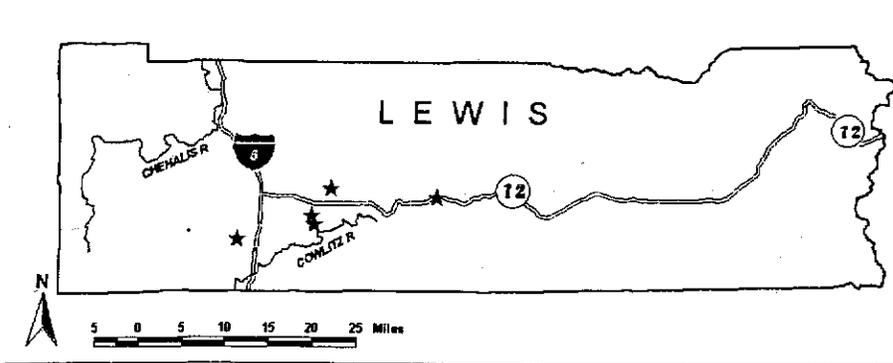


Figure 1.

★ = TTF parcels

The Applicant is committing to managing their lands as forest lands and not converting them to other non-forestry uses. This will occur in an environment where the lands surrounding the TTF are increasingly being utilized for non-forest management activities. The Applicant's parcels are surrounded by other private lands, that in some cases are managed for forestry, but often non-forestry use is the primary purpose for the land. Within ½ mile of the parcels, dairy farming and housing developments occur. In one case, a chicken farm occurs within 1/4 mile. There is a major state highway, an interstate highway, and numerous county roads in the vicinity of the TTF parcels (Figure 1).

Covered Activities

The Applicant has requested legal protection under the Act for specified forest management activities for the purpose of receiving a Permit, as identified in the Conservation Plan. These

activities (called covered activities) are: timber harvest (cutting, felling, limbing, yarding, and yarding corridors, construction and use of landings, loading and hauling of logs); road use, maintenance, and decommissioning; site preparation; tree planting; manual brush control; prescribed burning; fire suppression; erosion control; tree thinning and pruning; administration and monitoring; conducting stand examinations and inventories, and cruising timber; painting or marking of timber or stand boundaries; and entry by wildlife biologists, foresters, and other personnel for miscellaneous activities such as assessments, land surveys, and general reconnaissance. The use of pesticides is not a covered activity.

Enhancement Actions and Conservation Measures for Covered Species

As specified in the Conservation Plan, the Applicant will implement longer forest rotations (see Table 1); retain standing dead and green recruitment trees, and large woody debris; provide riparian and wetland buffers; provide various aged forested habitats; and ensure that the Conservation Plan lands stay under forest management. For a detailed description of the conservation measures and enhancement actions, see the Conservation Plan.

Table 1. Anticipated percentage of forested ownership by age class (by decade).

Decade	Percent of Forest Land by Forest Age Class				
	0-20 years	20-40 years	40-60 years	60-80 years	80+ years
2000 - 2010	75	0	23	0	2
2010 - 2020	70	6	22	0	2
2020 - 2030	6	75	0	17	2
2030 - 2040	13	67	6	12	2
2040 - 2050	18	6	71	0	5
2050 - 2060	15	13	67	0	5
2060 - 2070	50	14	6	25	5
2070 - 2080	59	15	10	11	5

Leave trees will be distributed and located so as to maximize wildlife values and minimize potential for windthrow. Leave trees will be evenly or randomly distributed (clumped) and will be left for the remainder of the Permit term with the intent of providing standing dead and ultimately fallen trees (down woody debris) to the forest floor. These trees will hasten the development of a multi-layered canopy and a heterogenous forest structure. Not every acre will have leave trees on it, but harvest units will average 7 wildlife and green recruitment trees for each acre harvested. Riparian buffers will also be left, dependant upon fish bearing potential (Table 2).

Table 2. Riparian and wetland protections on the Tagshinny Tree Farm.

Aquatic Habitat Type	Buffer Requirement	Buffer width	Retained Tree Density
Fish-bearing	Yes	100 feet managed, with 30-foot Equipment Limitation Zone (ELZ) on north side and 50-foot ELZ on south side of tributary to Skook Creek	150 trees > 8" dbh, w/ a minimum of 8 conifers > 16" dbh, per 1,000 feet of stream
Non Fish-bearing	variable	Apply a 20-foot ELZ along the south side of tributary to Skook Creek	Applicant will retain wildlife leave trees along non fish-bearing streams
Wetland	Yes	75 feet managed with a 30-foot ELZ	138 trees > 8" dbh, 70 of which are > 12" dbh, including 10 trees > 20" dbh per 1,000 feet of wetland

Timing Restrictions and Nest Tree Restrictions

The Applicant has committed to performing timber harvest within 75 feet of the wetland on the Kinzie parcel only between July 15 and October 1 if great blue herons are nesting.

The Applicant has also committed to the following measures if nest trees are found and occupied by northern spotted owls, marbled murrelets, or bald eagles.

- A. For spotted owls and murrelets, the nest tree will be protected until after 3 years of abandonment.
- B. For bald eagles, the nest tree will be protected if the nest is still present in the tree.

- C. Locate leave trees around the nest tree, where practicable.
- D. Conduct harvesting for the occupied stand as late in the nesting season as economically and operationally feasible. Nesting seasons for these species are as follows: spotted owl, March 1 through August 31; marbled murrelet, April 1 through September 15; and bald eagle, January 1 through August 15.

Commercial thinning strategies

Commercial thinning will usually be implemented at approximately 20-25 years after establishment of seedlings on regeneration harvests. Subsequent commercial thinning may be implemented each decade until a regeneration harvest is implemented for a stand, usually when the stand attains an age ranging from 50-70 years. Subsequent thinnings after the initial commercial thin will remove approximately 10-20 percent of the stand basal area.

Commercially thinned stands on the Applicant's parcels will be thinned with multiple entries, and many of the stands will have a few, scattered individual trees in excess of 80 years old at the time a regeneration harvest is scheduled. Commercial thinning on any of the parcels managed by the Applicant will remove subordinate, intermediate and co-dominant trees, leaving dominant trees to grow at or near maximum rates. Standing dead trees, green recruitment trees, and some defective trees will be retained at each thinning entry with the intent of retaining them as leave trees during final regeneration harvests.

Summary of Enhancement Actions and Conservation Measures

1. Covered lands will be retained in a forested condition throughout the Permit term.
2. Conifer harvest rotations will be 50-85 years throughout the Permit term.
3. Forest habitat ≥ 40 years of age will be ≥ 19 percent of ownership throughout the Conservation Plan term.
4. Conduct thinning operations to develop older-than-average age commercial stands with some diversity and substantial understory growth.
5. Three wildlife trees (snags) per acre ≥ 10 " Diameter at Breast Height (dbh) will be retained; preference will be given for snags ≥ 30 feet in height; all safe snags will be retained. Where snags are unavailable, green recruitment trees of the dominant size class will be retained in substitution. All retained snags will be left for the remainder of the Conservation Plan term.
6. Four green recruitment trees per acre ≥ 10 " dbh will be retained; three of these will be ≥ 14 " dbh; 2 green recruitment trees for every 10 acres will be ≥ 20 " dbh. All retained green recruitment trees will be left for the remainder of the Conservation Plan term.
7. Down logs will be recruited from the retention snags and green recruitment trees. All down logs in the riparian and wetland management zones will be retained throughout Conservation Plan term.
8. Identify and protect steep slopes and landslide-prone areas by retaining trees in these areas to protect slope integrity and prevent future landslides.

9. Riparian protection of the fish-bearing stream will include a 100-foot managed buffer with a 30-foot or 50-foot equipment limitation zone. Tree density targets in the buffer will be 150 trees >8" dbh with at least 8 conifers >16" dbh per 1,000 feet of stream. No yarding will occur across the fish-bearing stream.
10. Wetland protection will include a 75-foot managed buffer with a 30-foot equipment exclusion zone. Within the wetland buffer, a total of 138 trees >8" dbh, 70 of which will be >12" dbh, including 10 trees >20" dbh will be retained per 1,000 feet of wetland.
11. Timing restrictions will be adhered to for nesting great blue herons; harvesting within 75 feet of the wetland will be limited to the period between July 15 and October 1.
12. Roads under the control of the Applicant will be maintained by the Applicant according to management practices specified in the TTF SHA and CCAA. Use of interior, unrocked roads will occur only during dry or frozen road conditions when no rutting or damage will occur to the road surfaces.
13. If nest trees are found and occupied by spotted owls, murrelets or eagles, these structures will be protected until 3 years after abandonment. For all species, leave trees will be located around the nest tree, where practicable. Harvesting of the occupied stand surrounding the nest tree will be conducted as late in the breeding season as economically and operationally feasible.
14. Notification will be provided to the Service when harvest operations may affect occupied sites of listed species.

STATUS OF THE SPECIES

RANGEWIDE

Northern Spotted Owl

The northern spotted owl (*Strix occidentalis caurina*) is federally listed as threatened under the Act. A thorough account of the ecology and life history of the northern spotted owl is found in the Interagency Scientific Committee's *A Conservation Strategy for the Northern Spotted Owl* (Thomas et al. 1990), the three status reviews by the Service (USDI 1987, 1989, 1990), the final rule listing the northern spotted owl as a threatened species (55 FR 26114), and the final rule designating critical habitat for the owl (57 FR 1796). Relevant information regarding the landscape characteristics of the northern spotted owl habitat is found in Carey et al. (1992), Lehmkuhl and Raphael (1993), Carey and Peeler (1995), Hanson et al. 1993, and the Services' BO for *Alternative 9 of the Final Supplemental Environmental Impact Statement on the Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl* (USDA and USDI 1994a). The relationship between northern spotted owls and their prey is documented in Carey et al. (1992) and Carey and Johnson (1995).

On January 15, 1992, (57 FR 1796) the Service designated 6,887,000 acres of critical habitat on federal lands. Critical habitat units were designated solely on federal lands. This designation

provided additional protection to the species. Additional information regarding current status of the species was presented in the February 17, 1995, Federal Register document (60 FR 9484) that proposed a special rule under Section 4 (d) of the Act.

A final draft Recovery Plan was prepared but never released. Non-federal lands in certain portions of the owl's range are considered necessary to support and supplement the federal lands-based owl conservation strategy.

Demographic information is still lacking to reliably project a population trend. Much of the available data and many models suggest that although the population may be declining, the population is stable or nearly stable when adjustments are made for juvenile emigration rates. However, the most widely cited data indicate the population is declining (Burnham et al. 1994; Franklin et al. 1999). Within the last decade, barred owls (*Strix varia*) have been documented to replace spotted owls in some areas of Washington (Livezey pers. com.) and this may be influencing the population.

In Washington, 1045 status 1-3 (territorial) owl sites were recorded as of February 22, 2001. Of the 1045 sites, 155 were centered on non-federal lands. Of the remaining 890 territorial sites, exactly one-half (445) occurred exclusively on federal lands. Consequently, 600 of the 1045 territorial owls sites occurred on, or had owl management circles that extended into, non-federal lands.

Marbled Murrelet

The marbled murrelet (*Brachyramphus marmoratus*) was federally listed as threatened on September 28, 1992 (USDI 1992c). An account of the taxonomy, ecology, and reproductive characteristics of the murrelet is found in the 1988 Status Review (Marshall 1988); the Final Rule designating the species as threatened (USDI 1992c); the Services's BO for Alternative 9 of the Final Environmental Impact Statement; the *Ecology and Conservation of the Marbled Murrelet* (Ralph et al. 1995a); the Final Rule designating critical habitat for the species (USDI 1996); and the Recovery Plan for the species (USDI 1997).

In North America, marbled murrelets breed along the Pacific coast in Alaska, Canada, Washington, Oregon, and California (Nelson 1997). The size of the listed murrelet population in Washington, Oregon and California has been estimated at 18,550 to 32,000 (Ralph et al. 1995b). The large range in the population estimate is a result of two widely divergent population estimates in Oregon. In Washington, Speich and Wahl (1995) concluded that murrelet populations in Puget Sound are lower now than they were at the beginning of this century. The estimate for Washington, which was made in the early 1980s, is about 5,500 murrelets (Speich and Wahl 1995). Varoujean and Williams (1994) estimated that 1,720 murrelets occur on the outer coast of Washington and the western portion of the Strait of Juan de Fuca. It is unknown how many of these birds are part of the regional breeding population.

Murrelets are dependent upon old-growth forests and forests with older trees suitable for nesting (Hamer and Nelson 1995; Ralph et al. 1995b). Sites occupied by murrelets tend to have a higher proportion of mature forest age classes than do non-occupied sites (Raphael et al. 1995). Much of this habitat has been lost due to timber harvest over the last century (Booth 1991; Bolsinger and Wadell 1993; Ripple 1994; Perry 1995). Based on Teensma et al. (1991) and other sources, Ripple (1994) concluded that the amount of old-growth forest lands in the Oregon Coast Range was 43 percent in 1933 and 61 percent before the 1840s. This determination is consistent with Booth's (1991) conclusion that 82 to 87 percent of the old-growth forests that existed in western Washington and Oregon prior to the 1840s is now gone.

Population trends from demographic analysis suggest the population is declining throughout its range at 4 to 7 percent/year (Bessinger 1995). The loss of nesting habitat (older forest) has generally been identified as the primary cause of the murrelet's population decline and disappearance across portions of its range (Ralph et al. 1995a; USDI 1997). Other factors of importance include high predation rates, mortality in gillnets, and oil spill mortality. For example, the Tenyo Maru oil spill off the Washington coast killed 45 murrelets in 1991 (Nelson 1997).

Under the Northwest Forest Plan (NWFP), the US Forest Service and Bureau of Land Management adopted a plan for their lands that provides a long-term management strategy for murrelets (USDA and USDI 1994b). The NWFP mandates the protection of all sites determined to be occupied by murrelets, including those found outside mapped Late-Successional Reserves (LSRs). In the short-term, all known occupied sites of murrelets occurring on federal lands are to be managed as LSRs. In the long-term, unsuitable or marginally suitable habitat occurring in LSRs will be managed, overall, to develop late-successional forest conditions, thereby providing a larger long-term habitat base into which murrelets may eventually expand. Thus, the NWFP approach offers both long-term and short-term benefits to the murrelet. It is anticipated that implementation of the NWFP will result in an 80 to 90 percent likelihood of achieving a murrelet population well-distributed across federal lands in 100 years.

The range-wide status of the murrelet has been affected by a number of recent Habitat Conservation Plans (HCP). Three Oregon HCPs cover 302,106 acres and allow incidental take of murrelets associated with 2,440 acres of low quality nesting habitat. In California, one HCP has been approved that covers 211,000 acres and allows for incidental take associated with 4,696 acres of occupied murrelet habitat and 10,516 acres of lower quality unsurveyed or unoccupied murrelet habitat. Six HCPs and one HCP amendment in Washington (not including the Washington Department of Natural Resources (WDNR) HCP) cover approximately 580,000 acres of non-federal lands and allow for the incidental take of murrelets associated with 3,125 acres of suitable but low quality nesting habitat.

The Incidental Take Permit for the WDNR HCP permits the incidental take of all murrelets associated with the harvest of up to 74,286 acres of unsurveyed, low quality murrelet habitat. The habitat released for timber harvest will be identified based on the results of a habitat

relationship study that determines which habitat is most likely to be unoccupied, and the amount of habitat released will contain no more than 5 percent of the anticipated occupied sites on WDNR lands, based on the WDNR definition of suitable habitat. The remaining high-quality habitat will be surveyed for murrelets and all occupied sites, as well as any unoccupied habitat within 0.5 mile of occupied sites, will be protected from harvest. In addition, up to an estimated 52,000 acres of surveyed, unoccupied habitat will be released for harvest. However, all surveyed, unoccupied habitat will be maintained in southwest Washington in the short-term. Disturbance-related incidental take due to timber harvest may occur on an average of 23,500 acres per year, and on 338 acres per year due to non-timber resource activities.

Critical habitat for the murrelet was designated on May 24, 1996 (USDI 1996). Thirty-two critical habitat units (CHUs) totaling 3,887,800 acres were designated on federal, state, county, city, and private lands in Washington, Oregon, and California. The majority of these CHUs (78 percent) occur on federal lands, while 21 percent occur on state lands, 1 percent on private lands, less than 1 percent on county lands, and less than 1 percent on city lands.

Although most of the areas designated as murrelet critical habitat occur on federal lands (LSRs and Congressionally Withdrawn Areas), the Service designated non-federal lands where federal lands were insufficient in providing suitable nesting habitat for the recovery of the species. The CHUs are distributed more or less evenly across the range of the species in Washington and Oregon, and less so in California.

Bald Eagle

A detailed account of the taxonomy, ecology, and reproductive characteristics of the bald eagle (*Haliaeetus leucocephalus*) is presented in the *Pacific States Bald Eagle Recovery Agreement* (USDI 1986), in the Washington state status report for the bald eagle (Stinson et al. 2001), and the final rule to reclassify the bald eagle from endangered to threatened in all of the lower 48 States (60 FR 36010) (USDI 1995c).

On February 14, 1978, the bald eagle was federally listed throughout the lower 48 states as endangered except in Michigan, Minnesota, Wisconsin, Washington, and Oregon, where it was designated as threatened (USDI 1978a). The listing was the result of a decline in the bald eagle population throughout the lower 48 states. The decline was largely attributed to the wide-spread use of DDT and other organochlorine compounds in addition to destruction of habitat, illegal harassment and disturbance, shooting, electrocution from power lines, poisoning, and a declining food base.

In the 18 years since it was listed throughout the conterminous 48 states, bald eagle populations have increased in number and expanded their range. The improvement is a direct result of recovery efforts including habitat protection and the banning of DDT and other persistent organochlorines. The species has doubled its breeding population every 6 to 7 years since the late 1970s. In 1998 in Washington state there were 664 occupied nests, and there appear to be

indications that the population in western Washington may have reached its carrying capacity (Stinson et al 2001). As a result, the Service has reclassified the bald eagle from endangered to threatened in the lower 48 states (USDI 1995c). In 1999, the Service proposed to remove the bald eagle in the lower 48 states from the list of Endangered and Threatened Wildlife (USDI 1999), since the bald eagle's population growth has exceeded most of the goals established in the various regional recovery plans.

Habitat suitability for bald eagles involves accessible prey and trees for nesting and roosting (Stalmaster 1987). Food availability, such as aggregations of waterfowl or salmon runs, is an important factor attracting bald eagles to wintering areas and can also influence nest and territory distribution (Stalmaster 1987).

Bald eagle nests in the Pacific Recovery Area are usually located in uneven-aged stands of coniferous trees with old-growth forest components that are located within 1 mile of large bodies of water. Nests are most commonly constructed in Douglas-fir or Sitka spruce trees, with average heights of 116 feet and size of 50 inches dbh (Anthony et al. 1982; cited in USDI et al. 1996). Bald eagles usually nest in the same territories each year and often use the same nest repeatedly.

A number of habitat features are desirable for wintering bald eagles. During the winter months bald eagles are known to band together in large aggregations where food is most easily acquired. The quality of wintering habitat is tied to food sources and characteristics of the area that promote bald eagle foraging. Key contributing factors are available fish spawning habitat with exposed gravel bars in areas close to bald eagle perching. Wintering bald eagles often roost communally in single trees or large forest stands of uneven ages that have some old-growth forest characteristics (Anthony et al. 1982; cited in USDI et al. 1996). Communal night roosting sites are traditionally used year after year and are characterized by more favorable micro climatic conditions (Anthony et al. 1982; cited in USDI et al. 1996).

Coastal Cutthroat Trout

Coastal cutthroat trout (*Onchorhynchus clarki clarki*) was jointly proposed for listing as a threatened species in the Southwest Washington/Lower Columbia Evolutionary Significant Unit on April 5, 1999 (FR16397). After public review and analysis of current biological information by the Service, it was determined that the species did not warrant listing (FR Vol.67, No. 129, July 5, 2002). The primary reasons that the species did not warrant listing were the following: improved State Forest Practice Rules, healthy-sized total populations, and improved understanding of the ability of freshwater forms to produce anadromous progeny.

The life history of coastal cutthroat is complex with considerable variation within and between populations. Various life history forms frequently occur in the same streams (Johnson et al. 1999). There is also evidence that life history patterns can change within individual fish over time (Johnson et al. 1999). For practical reasons, Johnson (1999) and others, have identified

three general life history forms for costal cutthroat trout: nonmigratory, freshwater migratory, and sea-run migratory. Cutthroat trout typically spawn in small headwater streams using smaller gravels than the other salmonids.

Non-migratory coastal cutthroat trout typically inhabit small streams, often in headwater areas. Fish typically live their entire life within a very short reach of stream. These fish normally do not grow to more than 150mm to 200mm and seldom live more than three years (Trotter 1989).

Freshwater-migratory coastal cutthroat trout perform migrations within freshwater only. Several migration strategies have been observed: populations that migrate from large streams to smaller ones to spawn (fluvial-adfluvial); fish that reside in lakes the majority of the time but migrate upstream to spawn (lacustrine-adfluvial); and fish that live in lakes the majority of the time but migrate downstream to spawn in the lake outlet (lacustrine) (Johnson et al. 1999).

Sea-run migratory coastal cutthroat trout migrate from freshwater natal areas to marine waters. Fish smolt in the spring at age 2 and migrate to protected near shore waters. At age 3 or 4 they migrate to the open ocean (Trotter 1989). The fish then return in the fall or winter to feed, seek refuge, or spawn (Johnson et. al. 1999).

Oregon Spotted Frog

The Oregon spotted frog (*Rana pretiosa*) is a federal candidate species being considered for listing as threatened or endangered under the Act. It is listed as an endangered species by the State of Washington (WDFW 1998). Historically, the range of the Oregon spotted frog in Washington state was distributed through the lowlands of the Puget Trough from the Canadian border south to Vancouver, Washington, and east into the southern Washington Cascades (McAllister et al. 1993; McAllister 1995; McAllister and Leonard 1997). It has been estimated that this species has been lost from over 90 percent of its original range (Hayes 1997). Populations are currently known to occur only in Klickitat, Skamania, and Thurston Counties (Leonard 1997, McAllister and Leonard 1997).

This species is the most aquatic native frog found in our region and is nearly always found in or near perennial water bodies such as a spring, pond, lake or sluggish stream (Leonard et al., 1993). There is probably a relationship with fairly large marshes (approximate minimum size of 9 acres) that can reach suitably warm temperatures and can support a large enough population to persist despite high predation rates (Hayes 1994). Oregon spotted frog habitat includes zones of shallow water and abundant emergent or floating aquatic plants, which are used for basking and escape cover from predators (Leonard et al. 1993; Corkran and Thoms 1996; McAllister and Leonard 1997). Oregon spotted frogs, however, have been found in riparian forests and areas with dense shrub cover (McAllister and Leonard 1997). Historically, this species was also associated with lakes in the prairie landscape of the Puget Sound lowlands (McAllister and Leonard 1997). Oregon spotted frogs have been documented at elevations ranging from near sea level in Washington and in western Oregon to approximately 5000 feet in the Oregon Cascades (Dunlap 1955, Hayes 1997, McAllister and Leonard 1997).

Oregon spotted frogs breed in shallow pools 2–12 inches deep that are near flowing water, or which may be connected to larger bodies of water during seasonally high water or at flood stage. Characteristic vegetation includes grasses, sedges, and rushes, although eggs are laid where the vegetation is low or sparse (McAllister and Leonard 1997). Eggs are laid in shallow, often temporary, pools of water, which can result in high mortality rates for eggs due to desiccation and/or freezing (Leonard et al. 1993). Oregon spotted frogs experience high mortality rates at all stages of the life cycle (Licht 1974).

Studies have indicated that adult frogs move to remnant pools in response to reduced water levels from spring to summer and disperse from these pools during increased precipitation during September and October (Watson et al. 1998). Telemetered Oregon spotted frogs in a Washington study stayed within 2600 feet of capture locations, and one Oregon study indicated that adult frogs often move less than 300 feet between years (Hayes 1998; Watson et al. 1998). Overwintering sites are associated with springs or other locations with low-flow conditions, which may result from an avoidance of sites that could freeze. Oregon spotted frogs apparently burrow in mud, silty substrate, or clumps of emergent vegetation when inactive during periods of prolonged or severe cold (Hayes 1994; McAllister and Leonard 1997).

Limited distribution and isolation of Oregon spotted frog populations have prompted concern for this species' survival. Loss of wetland habitat (e.g., development, dams) and/or alteration of the character of wetlands (e.g., hydrological modifications, introduction of exotic plants such as reed canarygrass, grazing in some circumstances) have been the main reasons for decline of this species (McAllister and Leonard 1997). Other threats to this species include introduction of bullfrogs and predatory fishes and susceptibility to toxic chemicals.

Van Dyke's Salamander

The Van Dyke's (*Plethodon vandykei*) salamander is a federal species of concern and a state candidate in Washington. Van Dyke's salamander is endemic to Washington, occurring in three population centers: the Cascade, Willapa, and Olympic Ranges (Leonard et al. 1993). In the Cascade Range, it is known from 26 sites west of the crest to the Puget Trough, from central Skamania County in the south to the north end of Mt. Rainier in the north (Jones 1998). Populations are patchily distributed and of low density; much potential habitat appears to be unoccupied (Blaustein et al. 1995; Jones 1998). They range from sea-level to approximately 3,700 feet elevation near northwest Mount Rainier.

Van Dyke's salamanders are most commonly associated with headwater streambank or seep habitats, often in mature and old-growth coniferous forests (WDW 1991; Jones 1998). The Van Dyke's salamander is considered to be the most aquatic species of woodland salamander (Leonard et al. 1993); it has also been collected at considerable distances from free water, however, usually in microhabitats that retain moisture, such as north-facing slopes (Blaustein et al. 1995; Jones 1998). The species is typically located in the splash zone of creeks under rocks, logs, and wood debris (Leonard et al. 1993). It has also been found in wet talus, forest litter, lava

tubes, and along montane lake shores (WDW 1991; Jones 1998). Two nests have been reported for this species: one was inside a partially rotten log alongside a stream (Jones 1989), another was under a moss-covered stone (Nussbaum et al. 1983).

Limited distribution and isolation of Van Dyke's salamander populations have prompted concern for this species' survival. Its apparent association with riparian habitats in mature and old-growth forests led to this species' inclusion in the list of Survey and Manage species in the NWFP (USDA and USDI 1994b). Lehmkuhl et al. (1991) compiled a list of species associated with late-successional Douglas-fir forests in the Pacific Northwest and modeled the risk of local extinction for each species from habitat loss or fragmentation. This model was based on frequency of occurrence, abundance, body size, and vagility of various species. The Van Dyke's salamander was determined to be a species at high risk (score of 9, on a scale of 1 to 10, with 10 being the highest). Similarly, Thomas et al. (1993) identified this as a high-risk species, closely associated with old-growth forest conditions. The principle management recommendation of Washington Department of Wildlife (1991) is the maintenance of riparian corridors along all stream types, but especially Type IV and V waters. Additional recommendations exist for protection of wet talus where the species is known to occur.

Northwestern Pond Turtle

The northwestern pond turtle (*Clemmys marmorata*) is listed by the State of Washington as an Endangered species (WDFW 1999b), and is designated as a federal species of concern. The Service was petitioned in 1992 to list the northwestern pond turtle, but since the species still occurred in 90 percent of its original range and it was estimated that it was not likely to become extinct in the foreseeable future, the Service determined that a listing was not warranted at that time.

The range of the northwestern pond turtle extends from the Puget Sound lowlands in Washington south to the Sierra San Pedro Martir in Baja California Norte (Hays et al. 1999). Most populations occur west of the Sierra-Cascade Crest. Documented observations of northwestern pond turtles in Washington appear to be clustered around the southeastern edge of Puget Sound and along a small portion of the Columbia River (Nussbaum et al. 1983; WDW 1993). Populations are confirmed only in Klickitat and Skamania counties, with recent individual sightings documented in Pierce and King counties (WDW 1993). Historical records also exist in Clark and Thurston Counties (WDW 1993). A single historic location is known from south-central Lewis County, in Salmon Creek about 15 miles south of the Kinzie Road parcel. The animal was found crossing a logging road. It was identified, photographed and released (Bob Bicknell, pers. comm.). An x-ray of the specimen determined that it was a female without eggs. A discussion between Kelly McAllister, Wildlife Biologist with Washington Department Fish and Wildlife (WDFW) (pers. comm.) and Craig Hansen (USFWS), indicated that it was an unusual observation and that no additional occurrences of the species have been found in Lewis County. But apparently, concentrated survey efforts to verify more turtles in that area have not occurred (Bob Bicknell, pers. comm.).

The northwestern pond turtle is declining in numbers throughout its range and it is now only common to a fraction of its original range (Holland and Bury 1998, Hays et al. 1999). Declines in populations of northwestern pond turtles can be attributed to predation from various fish, avian and mammalian species; introduction of exotic species such as bullfrogs and largemouth bass; intentional or accidental killing of individuals by humans; the loss of suitable habitat; severe drought; and disease and parasites.

Only about 250 to 300 northwestern pond turtles are known to remain in the wild in Washington with the majority of these residing in the Columbia Gorge (Hays et al. 1999). A total of 26 individuals were released at the Puget Sound reintroduction site near Lakewood, Washington. Two adult males were also released into wetlands at Northwest Trek in 1996. Other than a few scattered individuals, it is thought that wild populations of the northwestern pond turtle have been effectively extirpated from the Puget Sound lowlands, since no breeding population of wild turtles has been located since the early 1980's (Hays et al. 1999).

The northwestern pond turtle forages in marshes, sloughs, moderately deep ponds, and slow-moving portions of creeks and rivers usually associated with emergent vegetation. Resting habitat includes emergent basking sites such as partially submerged logs, vegetation mats, rocks, and mud banks (Nussbaum et al. 1983). Pond turtles hibernate in bottom mud of streams or ponds, or on land up to 1,600 ft from water (Ernst and Barbour 1972; Holland 1989). Uplands adjacent to water bodies are utilized by turtles for dispersal, to nest, overwinter, and to aestivate (Hays et al. 1999). Northwestern pond turtles are found from sea level to 4,500 feet, but all records in Washington are below 975 feet in elevation. In Washington, suitable habitat is a pond or lake. Northwestern pond turtles prefer waters with abundant aquatic vegetation and protected shallow water where juveniles rest and feed under cover. Adults appear to require logs, shallow banks and floating vegetation for basking. Females deposit eggs in soft soil on upland sites 144 to 600 feet from water (Nussbaum et al., 1983).

Breeding habitat for this species is primarily located near the margin of a pond or stream, but pond turtles have also been found hundreds of feet from water (Nussbaum et al. 1983). They are known to utilize meadows as well as young seral stages of most forest types including hardwoods, mixed hardwoods, and conifer forests. Average home ranges in California for adult males, adult females, and juveniles are 2.47, 0.62, and 1.0 acres, respectively (Holland and Bury 1998). Based on preliminary information from the Columbia Gorge population, home ranges in Washington may be larger (Hays et al. 1999).

Great Blue Heron

Great blue heron (*Ardea herodias*) breeding areas are a Washington state priority habitat (WDW 1991). This species is not listed under the Act. The great blue heron occurs throughout southern Canada, the United States, and Mexico. It occurs year-round along the west coast, from southern Alaska to the tip of Baja California. The great blue heron is common in marshes, mud flats, and agricultural areas at low to mid-elevation on both sides of the Cascade crest in Washington state.

West of the Cascade crest, great blue herons occur in all vegetation zones below the silver fir zone. Along river valleys they may be found up to fairly high elevations (e.g., along the Skagit River near Ross Lake in Whatcom County). They also occur at Cle Elum, Kachess, and Keechelus lakes in Kittitas County, but these birds may not be breeding (Smith et al. 1997).

Great blue herons nest colonially in tall deciduous trees or conifer trees near water and disperse to feeding areas. Adult great blue herons are attentive to their young and susceptible to disturbance until young are fledged, which is about July 1 in Washington (Butler 1992).

Great blue heron feeding areas can include irrigated agricultural fields, irrigation canals, and the marshy edges of ponds, lakes, and estuarine areas (Smith et al. 1997). Documented distances from an active nesting colony to a foraging area range from 13 to 18 miles, but most feeding areas are located within 2.5 to 3 miles of the colony (Short and Cooper 1985).

Human disturbance has been documented to be a major cause of nest abandonment by great blue herons, causing colony-wide nest failures (Smith et al. 1997). Herons that have experienced few past disturbances are not likely to tolerate human activities near their colonies (Bowman and Siderius 1984). In contrast, some studies suggest that herons that are frequently or consistently exposed to disturbance may habituate to human activities (Shipe and Scott 1981; Webb and Forbes 1982; Vos et al. 1985; Calambokidis et al. 1985). Thus, herons nesting in different locations may have different tolerance levels to human activity, with colonies located close to human activity responding less to disturbance than those in more remote areas (Simpson 1984).

Pileated Woodpecker

The pileated woodpecker (*Dryocopus pileatus*) is a candidate for listing by Washington state (WDFW 1999b) and is not listed under the Act. The pileated woodpecker occurs from northern British Columbia south through the Pacific states to central California; in the northern Rockies through Idaho and western Montana; across southern Canada to Nova Scotia; and south to the Gulf Coast and Florida. The pileated woodpecker is found throughout forested areas of Washington state, primarily at low to moderate elevations (Smith et al. 1997). They can exist in the city when there are suitable trees, and are found in several parks in Seattle including Seward Park, Discovery Park, and Camp Long. The species does not occur in the dry, non-forested portions of the Columbia Basin (Smith et al. 1997).

Pileated woodpeckers typically utilize mature and old-growth forests and second-growth forests with substantial numbers of large snags and fallen trees. Optimum habitat appears to be conifer stands with more than two canopy layers. West of the Cascade crest, pileated woodpeckers generally breed in forest stands older than 70 years, though they can use younger stands if large snags are present (Mellen et al. 1992). They excavate large nest holes (three holes per year per pair on average) in snags or living trees with dead wood, generally excavating through hard outer wood into rotten heartwood. The range of tree diameters used for nesting on the Olympic Peninsula was 25 to 45 inches dbh (Aubry and Raley 1992). In a study in Oregon, pileated

woodpeckers showed a preference for foraging in forests 40 years or older and in riparian zones (Mellen et al., 1992). Typical tree species used as nest sites include western larch, black cottonwood, and ponderosa pine east of the Cascade crest, and Douglas fir, grand fir, and western white pine, where available, west of the Cascade crest (Bull 1987; Mellen 1987). Most nest trees are hard snags with bark and broken tops (WDW 1991). Pileated woodpeckers also use tree cavities for roosting. Territory size has been reported as ranging from 320 to 600 acres (Brown 1985).

Pileated woodpeckers forage mainly by excavating wood and chipping bark from large-diameter dead and down logs, stumps, snags, and live trees. They feed primarily on ants, beetle larvae, and other insects (Bull et al. 1992). West of the Cascade crest, they spend most time foraging in forest stands older than 40 years, and in deciduous riparian areas (Mellen et al. 1992). They seldom forage in clearcuts, but they are known to feed in timber harvest debris in shelterwood cuts.

Pileated woodpeckers typically begin breeding at one year of age, and generally breed annually thereafter (Bull and Jackson 1995). The most common clutch size is 4 eggs (Bull and Jackson 1995). In northeast Oregon, 2 nesting adults were >9 years old and 3 others were >7 years old. In western Washington, 43 percent of radio tagged adults survived 1 year (Bull and Jackson 1995).

In Washington from 1966 - 1980 there was a significant ($p < .10$) declining trend of - 7.7 percent/year, although the recent trend (1980 - 1996) has shown a significant ($p < .05$) trend of a +8.0 percent/year. The overall trend throughout the United States and Canada shows an increasing long term trend from 1966 - 1996, although there are specific geographic areas in the western United States and southeastern United States that show a declining trend during that time period (Sauer et al. 1997).

Osprey

The osprey (*Pandion haliaetus*) is not a listed species under the Act. The osprey is a "monitor species" at the state level in Washington and is on the state Priority Habitat and Species list (WDW 1991). The osprey breeds along the sea coasts, rivers, and lakes of coastal North America, and winters in the West Indies, Central America, and South America (WDW 1991). In Washington, the osprey is common along large water bodies (the ocean, lakes, and large rivers) in lower-elevation forested landscapes throughout the state except for the Columbia Basin (Smith et al. 1997). Ospreys are less common at higher elevations, but have been found nesting as high as Ross Lake (1,600 ft elevation), and foraging in the Snoqualmie Pass and White Pass areas (Smith et al. 1997).

Ospreys build large nests in live trees, on dead snags with flat, broken tops, or on artificial nest platforms, always near water (Smith et al. 1997; WDW 1991). Nest trees are typically as tall or taller than surrounding structures. Nests are platforms of sticks at the top of large trees (dbh range from 16-33 inches), generally found within 328 feet of water, although they are

occasionally found in forests. Nests can be semi-colonial if prey species are abundant. Osprey pairs apparently vary in their tolerance of human disturbance (Van Daele and Van Daele 1982). Human activities initiated during early nesting and incubation are probably most disturbing to ospreys (WDW 1991). Disturbance during this period may cause adults to leave the nest frequently or for extended periods, which can be fatal to embryos and nestlings (Van Daele and Van Daele 1982; Levenson and Koplin 1984).

Ospreys forage in shallow waters of rivers, lakes, reservoirs, estuaries, and salt marsh ponds. This species feeds almost exclusively on live fish captured at the water's surface. Although nests are generally built near productive water bodies, osprey hunting ranges have been estimated to extend as much as 6 to 9 miles from the nest (Henny 1986; Poole 1987; Sidle and Suring 1986).

Northern Goshawk

The northern goshawk (*Accipiter gentilis*) is a Washington state candidate for listing as threatened or endangered. The Service found that the listing of this species as endangered or threatened was not warranted (DOI 1998), however, at the regional level it is considered a federal species of concern. The WDFW issues falconry permits to capture goshawks and from 1990 to 1997, 47 goshawks were taken from the wild (WDFW 1999 (b)).

Northern goshawks have been observed using a variety of forest types, however Austin (1994) found a close correlation between goshawks and closed-canopy mature and old-growth forests. Specifically, in the Pacific Northwest, goshawks are associated with mature and late-successional conifer forests and are most abundant in old-growth forests (Thomas et al., 1993). However, goshawks are known to nest in large industrial forest stands (500+ acres) of young conifers (41-55 years old) in Lewis County, Washington (Bosakowski et al. 1999).

On the Olympic Peninsula, nest trees used by northern goshawk ranged from 8 to 58 inches dbh. In Lewis County, Washington, nest trees on industrial forest lands were in dominant trees averaging 22 inches dbh, where stand dbh averaged 10.1 inches (Bosakowski et al. 1999). Where nest trees are available, the home range size is determined by the prey species density (Reynolds et al. 1992). Northern goshawks prey on a variety of small to medium-sized animals including American robin, Stellar's jay, northern flicker, grouse, voles, Douglas squirrel, mountain beaver and snowshoe hare. Prey can be found in a variety of forest types and successional stages and along forest edges.

Olive-sided Flycatcher

The olive-sided flycatcher (*Contopus borealis*) is currently a federal species of concern in Washington. The olive-sided flycatcher is not listed as an endangered species, threatened species, or candidate species in Washington state nor is it listed as a priority species by WDFW. The olive-sided flycatcher breeds from Alaska east through much of Canada to the Great Lakes region and the northeastern United States, and southward through the mountains of the Pacific

Northwest, the Rocky Mountains, and the mountains of California. The species winters in montane Central and South America from southern Mexico through Colombia and Venezuela, south to Peru (Ehrlich et al. 1988). The olive-sided flycatcher occurs in virtually all forested areas of Washington state (Smith et al. 1997).

The olive-sided flycatcher inhabits primarily mature forest, old-growth forest, and wet conifer forest, especially those forests with an abundance of snags (Altman 1997; Ehrlich et al. 1988; Sharp 1992). Optimal habitat is natural or man-made edges and forest openings where tall trees and snags are present for singing and foraging perches, and varying sized hemlocks and true fir are present for nesting. This may include harvest units, post-fire habitat, natural edges of bodies of water or old-growth forest with extensive areas of broken canopies. Another frequently reported habitat association of the olive-sided flycatcher is along the wooded shores of streams, lakes, rivers, beaver ponds, bogs, and muskegs, where natural edge habitat occurs and standing dead trees are often present (reported in Altman 1997). Olive-sided flycatchers were found to occur in relatively similar abundance in young, mature, and old-growth forest stands in the southern Washington Cascades (Carey et al. 1991; Gilbert and Allwine 1991; Manuwal 1991; Ruggiero et al. 1991). This species may also use mixed woodlands near edges and clearings. Smith et al. (1997) consider the olive-sided flycatcher an edge species that occurs throughout forested areas where forest stands are adjacent to open areas, such as clear-cuts, burns, montane meadows, and western Washington agricultural areas. In western Washington, olive-sided flycatchers occur primarily in harvest units where at least a few large snags and green trees are left (Altman and Sallabanks 2000).

The most important variable for nest success in managed early successional forest may be the presence of snags >40 feet tall (Altman 1999). Successful nesting in harvest units occurs in both small clumps of trees and with canopy closure <50 percent and in singular, dispersed trees through the harvest unit. Nests are often located high in conifer trees, usually on a horizontal branch far from the trunk. Olive-sided flycatchers typically forage by sallying for flying insects from prominent, high hunting perches (live trees or snags) with a view of openings (Altman 1997; Ehrlich et al. 1988; Marshall 1988; Sharp 1992).

Breeding bird survey data indicates a highly significant ($p < .01$) -2.9 percent annual long term decline in the Cascade mountains (Sauer et al. 1997). In Washington, there has been a significant ($p < .05$) long term declining trend of -2.8 percent per year and highly significant ($p < .01$) recent declining trend of -3.7 percent per year. Habitat loss or alteration on the wintering grounds (Central and S. America) may be a reason for the declines for the species (Altman and Sallabanks 2000). Limiting factors on the breeding range may be conversion of forest lands to other uses.

Long-eared Myotis

Long-eared myotis (*Myotis evotis*) are designated as a federal species of concern. This species is not listed by WDFW as a priority species. The long-eared myotis occurs in western North America, from British Columbia, southern Saskatchewan and Alberta south along the Pacific

coast to Baja California and east to Montana, Idaho, the Dakotas, Utah, Nevada, Wyoming, Colorado, New Mexico and Arizona. Long-eared myotis are generally distributed throughout Washington, but may be more common in drier east-side conditions, or in habitat that supports lodgepole pine. They have been observed in humid coastal forests to semi-arid grasslands, however, in the drier part of their range they are probably limited to watercourses.

Long-eared myotis have been found in a variety of habitats such as mature and immature conifer, alder/salmonberry, arid grasslands, and shrub-steppe (Maser et al. 1981; Nagorsen and Brigham 1993). Cross (1976) found them across southern Oregon in mixed conifer, ponderosa pine, and shrub-steppe habitats. Perkins (1982, 1983) found long-eared myotis in agricultural and riparian areas, oak woodlands, mature conifer forest, Douglas-fir forest (all age classes), and old-growth true fir forest in western and northwestern Oregon. In the southern Washington Cascades and the Oregon Coast Range, Thomas (1988) detected Myotis bats (including long-eared myotis) more frequently in old-growth Douglas-fir forests than in mature and young Douglas-fir forest. In Washington, Myotis species were detected 2.7 to 5.7 times more often in old-growth forests than in young and mature forests (Christy and West 1993) where roost sites are plentiful.

Long-eared myotis use buildings, bridges, rock crevices, pieces of loose bark attached to trees, and snags as day roosts (Maser et al. 1981; Christy and West 1993). Female long-eared bats primarily used conifer stumps as day-roosts in watersheds dominated by younger forest on the western slope of the Cascade Mountains, Oregon (Waldien et al. 2000). Maternity roosts and hibernation sites have been documented in buildings, caves, mines, and rock fissures (Cross 1977; Cross and Schoen 1989; Perkins et al. 1990; Nagorsen and Brigham 1993). Maternity colonies of 12 - 30 individuals have been found in buildings and hollow trees (Maser et al. 1981; Waldien et al. 2000).

Long-eared myotis are insectivores. Major food items in two Oregon studies were found to be moths, flies, beetles, bees, and ants (Whitaker et al. 1977; Whitaker et al. 1981). The species obtains its prey by aerial foraging and gleaning from foliage. Feeding rates of myotis were found to be 10 times greater over water than in the forest interior (Christy and West 1993).

The amount of ecological information currently published about long-eared myotis and their population status in Washington state is limited. However, according to Johnson and Cassidy (1997), the long-eared myotis "is said to be the most abundant bat in lodgepole pine forests in Washington." The species may be relatively more abundant on the east side of the state than the west (Johnson and Cassidy 1997).

Long-legged Myotis

Long-legged myotis (*Myotis volans*) are designated as a federal species of concern. This species is not listed by WDFW as a priority species, however, it is designated as a monitor species. The long-legged myotis occurs in western North America from southeast Alaska and western Canada to central Mexico. The long-legged myotis can be found throughout Washington except for the

driest parts of the Columbia Basin (Barbour and Davis 1969; Johnson and Cassidy 1997). According to Johnson and Cassidy (1997), the long-legged myotis "is one of the few myotis bats that regularly occurs at high elevations in cool, wet forests."

The long-legged myotis occurs in a variety of habitats such as immature and mature conifer forests, alder forests, and arid range lands (Maser et al. 1981; Nagorsen and Brigham 1993). Foraging habitat includes all seral stages, but there is a preference for young forest (Brown 1985); they also forage over open water (ODFW 1996). Cross (1976) found them across southern Oregon in all major habitats outside the coastal zone, including oak woodland, mixed evergreen, mixed conifer, ponderosa pine, and shrub-steppe; greatest numbers were encountered in ponderosa pine. Perkins (1982, 1983) reported them from agricultural and riparian areas, oak woodlands, Douglas-fir forest (all age classes), and old-growth true fir forest in western and northwestern Oregon. In the southern Washington Cascades and the Oregon Coast Range, Thomas (1988) detected long-legged myotis more frequently in old-growth and mature Douglas-fir forests than in young Douglas-fir forest. He hypothesized that the higher activity in old-growth stands "likely reflects an increased diversity and/or abundance of day roosts compared with young and mature stands" (Thomas 1988).

Roosts are located in buildings, bridges, crevices in rock cliffs, fissures in the ground, snags, and under large pieces of still-attached tree bark (Nagorsen and Brigham 1993). In Washington, myotis species were detected 2.7 to 5.7 times more often in old-growth forests than in young and mature forests (Christy and West 1993) where roost sites are plentiful. The long-legged myotis uses buildings, rock crevices, and trees for maternity colonies (Barbour and Davis 1969; Nagorsen and Brigham 1993). Female long-legged myotis select large snags that extend above the canopy for day roosts (Ormsbee and McComb 1998). Maternity colonies may contain several hundred individuals (Maser et al. 1981).

The long-legged myotis is insectivorous, with moths, flies, bugs, and beetles forming the bulk of the diet (Whitaker et al. 1977; Whitaker et al. 1981). Thomas (1988) found that feeding rates for Myotis bats (including long-legged myotis) in the southern Washington Cascades and Oregon Coast Range averaged 10 times higher over water than in forest stands.

Pacific Townsend's Big-eared Bat

The Pacific Townsend's big-eared bat (*Corynorhinus townsendii*) is a federal species of concern and is a candidate for listing by the state of Washington. Pacific Townsend's big-eared bat occurs in western North America from southern British Columbia to northern Mexico and as far east as South Dakota, Oklahoma, and Texas (ODFW 1992). A narrow range extension extends into the central Atlantic states (Appalachian Mountains). The species has been documented from a number of locations throughout Washington at elevations lower than 9,600 ft, except in the driest portions of the Columbia Basin, but they occur chiefly at low to mid-elevations (Johnson and Cassidy 1997).

Pacific Townsend's big-eared bat is essentially non-migratory and can occur in nearly any forest type as long as suitable roost, nursery, and hibernation sites are present (WDW 1991). In a northwestern Oregon study, these bats were captured (by mist nets) only in mature or old-growth Douglas-fir forests (Perkins 1983). These bats use caves, mines, buildings, and the undersides of bridges with appropriate temperature and humidity for maternity roosts, day roosts, and hibernation (Christy and West 1993). However, caves within clearcuts may not be suitable because the lack of vegetation can affect the cave's microclimate (WDW 1991). Big-eared bats are known to use hollows in standing dead trees and tall stumps on occasion.

According to Johnson and Cassidy (1997), "this bat is relatively widespread [in Washington], but there is much concern about the species' future because Pacific townsendii bats in hibernacula and maternity colonies are sensitive to disturbance." Pacific Townsend's big-eared bats prefer cold areas near the entrance of caves as hibernacula (Barbour and Davis 1969; Humphrey and Kunz 1976). Thus, Pacific Townsend's big-eared bats hibernating in caves or mines are easily aroused by disturbance, and frequent arousal is known to compromise their ability to survive the winter. Maternity colonies are normally in caves, and disturbance has been known to cause females to abandon their young. In addition, timber harvest activities around the mouth of a cave may disturb roosting, nursing or hibernating bats, causing them to die or abandon the cave. Pacific Townsend's big-eared bats are particularly sensitive to arousal during hibernation, as this can deplete necessary fat reserves and lead to death. Pacific Townsend's big-eared bats are also very sensitive to disturbance while day roosting because they hang directly from the ceiling of the roost and do not go into torpor during the day in summer colonies (Barbour and Davis 1969).

Food habits studies found that while Pacific Townsend's big-eared bat feeds on a variety of insects. Its primary prey items are moths (Whitaker et al. 1981) obtained both by aerial foraging and gleaning from foliage (ODFW 1992). Pacific Townsend's big-eared bats have been observed foraging in upland habitats (forest edges, roads, open areas within the forest) more often than over water (Christy and West 1993).

ENVIRONMENTAL BASELINE (in the action area)

Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the past and present impacts of all federal, state, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed federal projects in the action area which have undergone section 7 consultation, and the impacts of state and private actions which are contemporaneous with the consultation in progress. Such actions include, but are not limited to, previous timber harvests and other land-management activities. The environmental baseline for this action includes adoption of the NWFP, and the issuance of section 10(a)(1)(B) permits.

Action Area

The action area is defined as all areas to be affected directly or indirectly by the federal action and not merely the project site where work occurred (50 CFR 402.02). Effects to species and

habitat can occur at the project site, and can also extend beyond it depending on the type of project. For example, sediment in streams can be transported beyond the project site which could alter habitat and affect species both in the short and long-term. For instance, removing a forest stand through timber harvest can potentially influence other adjacent timber stands through a change in micro-climate or increase the chance for blowdown. Considering the covered activities with this Conservation Plan, the makeup of the forest types associated with the TTF, and the physical landscape conditions in the immediate area of the TTF, for the purposes of this consultation the Service recognizes the action area to include the covered lands and the areas surrounding it within 0.25 mile.

Current habitat conditions

The TTF is located in Lewis County, Washington. The TTF is typical of other privately owned tree farms in Lewis County in that these lands are generally composed of young and simple structured conifer forests, due to past management practices of regeneration harvesting (clear cut harvesting) and lack many of the important elements that many forest dwelling species require. For instance, large, dominant snags and large down logs are uncommon across the TTF. The multiple canopy layers that develop in older stands are also generally not present on the Applicant's property.

Table 3 summarizes forest age classes present throughout the covered lands on the TTF. Seventy five percent of the TTF has forest younger than 20 years old. The individual parcels associated with the TTF are described below. For a detailed description of these parcels, refer to the Conservation Plan.

Home parcel - The Home parcel is 46 acres total; 39 acres are forested and 7 acres are unforested and will not be growing commercial timber in the future. The forested acreage consists of approximately 20 acres of early seral conifer forest following regeneration harvest in 1992 with the remaining acreage in simple structured 45 year old forest. The Applicant is also growing several acres of hybrid poplar on this parcel.

Kinzie Road parcel - The Kinzie parcel is actually three tracts in close proximity to each other (~325 feet at the closest point) that are treated collectively as one parcel and is a total of 67 acres (table 2). There is a seasonal, potentially fish bearing stream, emptying into and flowing from an open water wetland. This stream is a tributary to Skook Creek, which flows into the Cowlitz River, approximately 1.5 miles downstream from the parcel. The wetland is approximately 4 acres in total size, of which the applicant owns 1 acre. There are trees within the wetland management zone left from previous timber harvest and also a few along the seasonal stream. Most of the parcel is composed of young forest stands.

The seasonal stream is relatively small (bankfull width is less than 5 feet), low gradient, and flows primarily just during the winter months. Anadromous fish use of the stream is prevented due to a blocking culvert downstream on a county road, but there may be use of the stream by

resident coastal cutthroat trout. When fish passage is restored at the county road location, anadromous fish may eventually use the stream.

The road that runs through this parcel is level, narrow, and in most places has vegetation growing between the tire tracks. The road bed is primarily composed of native material, however, there is a patch of gravel over the culverts, to stabilize this area and prevent siltation into the stream. Because the road is level and is perpendicular to the stream, there is very little sediment delivery to the stream from the road.

Highway 12 parcel - The Highway 12 parcel is approximately 15 acres in size (Table 3) and is along Mayfield Lake. It is approximately 1.5 miles downstream of Riffe Lake. Adjacent to the eastern portion of the parcel, a leave strip of mature (> 80 years old) Douglas-fir, bigleaf maple and western red cedar has been retained in a power line right-of-way owned and managed by Tacoma City Light. This leave strip of older forest of approximately 2 acres runs from the top of the parcel to the base of the slope, becoming contiguous with the shoreline buffer along Mayfield Lake. In combination, the leave strip beneath the power-line (2 acres) and the portion of the Shoreline buffer on the Applicant's parcel equals about 4 acres of late-successional forest. At the northwest corner of this stand is a large diameter (>50 inches) dbh Douglas-fir which will be retained, regardless if it remains alive or dies, during the term of the Conservation Plan.

Burchett Road parcel - The Burchett Road parcel is 10 acres in size dominated by 18 year-old Douglas-fir on approximately 8 acres, with 45-50 year old Douglas-fir dominating the remaining 2 acres (see Table 2).

Winter Road parcel - The Winter Road parcel is 6 acres, and is forested by approximately 40 year old Douglas fir that was commercially thinned in 2000. The current stand density ranges from approximately 100-150 trees per acre. Some small openings of about one - two crown diameters in size exist throughout the stand. These openings have well-developed shrub patches that prohibit conifer regeneration but are likely good foraging sites for small, forest floor dwelling mammals and birds.

Table 3. Summary of forest age classes by parcel (forest habitat baseline conditions), as of January, 2001. *

Parcel Name	Total Acres/ Forested Acres	Current Acres of Forest Land by Age Class				
		0-20 years	20-40 years	40-60 years	60-80 years	80+ years
Home	46/39	27	0	12	0	0
Kinzie Road	67/64	53	0	11	0	0
Highway 12	15/14	12	0	0	0	2
Burchett Road	10/10	8	0	2	0	0
Winter Road	6/6	0	0	6	0	0
Total Acreage	144/133	100	0	31	0	2
Percent Forested Acres		75	0	23	0	1.5

* Table 3 from TTF Conservation Plan

Northern Spotted Owl

A WDFW Heritage Database search was performed on December 9, 2002, for spotted owls on and near the TTF parcels. Currently, there are no known spotted owls occupying the Applicant's properties. The closest known owl sites are the North Fork Cedar Creek Site, #256, approximately 4.6 miles southeast of the Kinzie Road parcel, and the Lacamas Creek Site, #1037, approximately 3.6 miles northeast of the Winter Road parcel. Lands between the owl sites and the Applicants parcels are privately owned and managed for a variety of uses. Northern spotted owl survey results indicate that the North Fork Cedar Creek Site was last known to be occupied with a reproductive pair in 1995, while the Lacamas Creek Site was last known to be occupied with a reproductive pair in 1993 (WDFW 1999a). No subsequent surveys have been conducted since that time, thus, it is unknown whether these sites are currently occupied. The likelihood that the Applicant's parcels in their current condition are utilized by northern spotted owls is low primarily due to the young age of the forested parcels, but also because of their patchiness, their distance from known owl site centers, and non-forest land management practices in the area.

The habitat conditions on the Applicant's property are not currently suitable to support nesting spotted owls. The parcels owned and managed by the Applicant were, for the most part, harvested prior to the Applicant's acquisition of the parcels. Currently, 75 percent of the forested acreage combined in all the parcels is comprised of forests from 0-20 years age, approximately 23 percent is in forest from 40-60 years age, and 1.5 percent of the land has mature forests greater than 80 years age. The stands in the 40-60 age class could be utilized by spotted owls as dispersal habitat. The 2 acres of older forest may contain nesting structures or contribute to the size of nesting habitat when combined with the older forest on adjacent Tacoma City Light land, however, the patch size is so small that nesting by spotted owls is unlikely. The 12-acre portion of the Home parcel > 40 years of age could function as dispersal habitat, although this stand is a combination of thinned and unthinned, and is likely too small to be utilized by spotted owls. In addition, many of the important habitat elements (e.g., snags, down logs, large dominant trees) are missing from this tract. Thus, irrespective of patch size, currently approximately 30 acres of low quality owl habitat may be available for use as dispersal habitat. The quality would be considered marginal as most of stands are at the lower end of the 40-60 year age class.

Marbled Murrelet

A WDFW Heritage Database search was performed on December 9, 2002 for marbled murrelets on and near the TTF parcels. Currently, there are no known marbled murrelets nesting on the Applicant's properties. The nearest detection of a marbled murrelet is approximately 2 miles north of the Burchet Road parcel, made in 1993. This detection though did not indicate nesting in the area of the detection, the bird was potentially flying to suitable habitat elsewhere.

Forest stands on the Applicant's ownership were mostly regeneration harvested prior to being purchased by the Applicant, or are second-growth forest stands and, as such, the parcels contain little mature and late-successional forest habitat, in patches or individual trees, suitable for marbled murrelets. Although the 2 acres of late-successional forest on the Highway 12 parcel likely contains structures suitable as murrelet nest sites, i.e. limbs > 7 inches in diameter suitable as nest platforms and >1 platform per acre, the patch size is so small that, even with the 2-acre Shoreline buffer, it is likely unsuitable for nesting murrelets. This 2 acres of late-successional trees constitutes the only likely suitable murrelet habitat on the TTF.

Four hundred acres of lowland, old-growth forests are also found at Lewis and Clark State Park, less than two miles from the Home property. Lewis and Clark State Park will remain in perpetuity and, assuming this park is suitable murrelet habitat, could provide a possible source of murrelets that may occupy the Applicant's ownership in the future. However, at present marbled murrelets do not occur, nor have they been observed on or over any of the Applicant's parcels.

There are important, late-successional forests nearby on federal lands at the Mineral Block of the Gifford Pinchot National Forest, located approximately 6 miles north of the Highway 12 parcel, and 15-20 miles northeast of the remaining parcels. These federal lands likely provide suitable murrelet habitat.

Bald Eagle

A WDFW Heritage Database search was performed on December 9, 2002 for bald eagles on and near the TTF parcels. Currently, there are no bald eagles nesting on the Applicant's properties. There are three bald eagle nest territories within several miles of TTF parcels as follows: an eagle nest several miles north of the Burchett parcel; a nest site several miles northwest of the Kinzie parcel; and several sites along the Cowlitz River south of the Kinzie parcel.

Although there are no known nesting bald eagles on the TTF lands, forest habitat along the Cowlitz River and Mayfield Lake adjacent to the Applicant's Highway 12 parcel is currently suitable for eagle use. The habitat is present as a Shorelines of the State (RCW 76.09.910) riparian buffer adjacent to the Highway 12 parcel. The Applicant has reported observing bald eagles perching in the Highway 12 parcel (Tom Fox, Tagshinney Tree Farm owner, pers. com.). The position of the shoreline management buffer along Mayfield Lake is situated adjacent to commercial forest lands under private ownership and or administered by Tacoma City Light, that are mixed with a matrix of forest lands managed by the WDNR under their HCP (1997).

The other location where eagles may find suitable habitat is on the Kinzie Road parcel because of its association to the wetland, but the 45-year old residual trees currently appear to not be large enough to accommodate nesting eagles. They could, though, now provide perching.

Coastal Cutthroat Trout

Coastal cutthroat trout occur in the Cowlitz River drainage, which includes Skook Creek and similar tributaries (WDFW 2000). Skook Creek is a right bank tributary to the Cowlitz River at River Mile 38.5. The stream that drains the open water wetland on the Kinzie parcel is a tributary to Skook Creek. Thus, cutthroat trout may currently reside in the wetland on the Kinzie parcel, but it hasn't been comprehensively surveyed for their presence. It holds water all year and appears to offer suitable depth and cover for cutthroat trout.

The stream that enters the wetland is a seasonal stream containing water from November through May, in a typical year. It was sampled for fish presence by the Applicant during November, 1996, but no fish were found in the creek. The stream on this parcel is approximately 1,750 feet, of which only approximately the lower half is considered to be potentially fish bearing.

The condition of the stream and wetland, as well as the adjacent vegetation and road condition, is described in the current conditions section above. While resident cutthroat trout have not been observed in the stream or wetland (there has not been an intensive survey effort to determine fish utilization), it is likely that they are present in these habitats.

Oregon Spotted Frog

Oregon spotted frogs are not known to occur on the Applicant's property. However, suitable habitat for this species, including non-woody plants such as rushes, sedges and sluggish water, is available along the Skook Creek tributary during the winter, and year-long around the wetland

found on the Applicant's Kinzie Road parcel. The Kinzie Road parcel contains a 4.3 acre wetland, with a seasonal tributary stream entering the wetland. A short reach (< 50 feet) of a perennial stream flowing from the wetland also occurs on the Applicant's property. Although the seasonal stream is unlikely to be suitable habitat for the Oregon spotted frog, the wetland complex could function as suitable habitat. The condition of the stream and wetland, as well as the adjacent vegetation, is described above in the current conditions. Although Oregon spotted frogs are not known to occur in this stream/wetland system, there may be habitat capable of supporting them if they disperse to this area. There are currently no records of Oregon spotted frogs from Lewis County.

Van Dyke's Salamander

A WDFW Heritage Database search was performed on December 9, 2002 for Van Dyke's salamanders on and near the TTF parcels. Currently, there are no Van Dyke's salamander records from the Applicant's properties. The nearest record for the species is several miles northwest of the Highway 12 parcel.

The only potentially suitable habitat on the Applicant's property is located on the Kinzie Road parcel, and possibly the Highway 12 parcel, beneath bark of fallen trees, since there are no seeps near talus or rock faces adjacent to stream courses for this species to occupy as habitat. The seasonal stream does not contain splash zones or waterfalls and thus the likelihood of this species occupying the TTF is low.

Northwestern Pond Turtle

Northwestern pond turtles are not currently known to occupy the Applicant's property, although surveys have not been conducted for them. Only one known historic observation comes from Lewis County. In 1993 a pond turtle was captured (and released after an x-ray determined it was a female without eggs) crossing a Weyerhaeuser logging road in the Salmon Creek drainage (B. Bicknell, pers. comm.). This observation came from an area that historically had no populations (Hayes et al. 1999).

Low quality habitat does exist on the Applicant's property in the form of the open water wetland located at the Kinzie Road parcel. The wetland has some mature trees next to it left from previous forest practices. The condition of the wetland, as well as the adjacent vegetation, is described in the Conservation Plan. Although northwestern pond turtles are not known to be in this stream/wetland system, it is believed that they could potentially inhabit the system under current conditions if they ever disperse to this area.

Great Blue Heron

Great blue herons have been observed (apparently nesting) on the Kinzie Road parcel along the wetland, but in the past few years there have not been observations. Prior to 1997, up to 4 great blue herons (2 pairs) were observed in riparian habitat at the Kinzie Road parcel, and they may

again occupy the area in the future. This forested buffer has a conifer density of greater than 120 trees per acre and extends for approximately 100 feet from the wetland margin. This habitat may improve for herons in the future, particularly if fish densities eventually increase.

Pileated Woodpecker

A query of the WDFW database, conducted on November 20, 1997, indicated that no pileated woodpeckers are known to occur in the vicinity of the Applicant's property. However, pileated woodpeckers have been observed foraging at both the Home and Kinzie Road parcels, although they are not known to nest on any of the Applicant's parcels. There may be isolated and individual trees on the properties that could provide for roosting and nesting but it isn't known if they are being used for that. The 2 acres of trees 80+ years old on the Highway 12 parcel are large enough to be suitable as potential nest and roost sites.

Osprey

A query of the WDFW Heritage database on January 10, 2003, did not have any records of osprey nests on any of the parcels. It did have several records for osprey nests along the Cowlitz River, however. The closest nest was approximately ½ mile west of the Highway 12 parcel. Osprey have been observed taking fish from a small, man-made pond at the Applicant's Home parcel, although these birds are thought to nest elsewhere (Tom Fox, personal communication). The wetland at the Kinzie Road parcel also may be suitable for osprey feeding and nesting. Occasional trees on the Applicant's ownership may be large enough to accommodate a platform-based nest if and when the top of the tree breaks off. The wetland may currently provide foraging opportunities for ospreys, but when the county culvert downstream on Skook Creek is eventually made fish passable, there is a higher likelihood that the wetland will provide more foraging than occurs now.

Northern Goshawk

Northern goshawks have not been observed, and are not currently known to nest, on the Applicant's property. A query of the WDFW Heritage database on January 10, 2003, did not have any records of goshawks in the vicinity of any of the parcels. The chance that goshawks nest on the TTF lands is considered extremely low, but the parcels may be used by transitory and migratory birds on occasion.

Olive-sided Flycatcher

Olive-sided flycatchers are not currently known to occupy the Applicant's property. Spring and summer habitat for this species, in the form of forest edge, mature conifer stands, and a few standing dead trees are available on the Applicant's parcels. Suitable breeding habitat likely exists on the Home and the Kinzie Road parcels where 45 year old trees are adjacent to regeneration harvests, as well as standing dead trees near the wetland. Thus, it is possible that olive-sided flycatchers may use this land and habitat in the future. The species has been reported in Lewis County (Smith 1997).

Long-eared Myotis

A search of the WDFW Heritage database on January 10, 2003, did not have any records of long-eared bats on the Applicant's parcels. Habitat and trees to support the species are present on the parcels, although there are no caves or mines. Trees with cavities are present in some of the standing dead trees, but tree decadence is minimal, so that bark roosts are not likely to be common on the ownership. There is an abundance of Douglas fir stumps, some of which could be used by long-eared bats. Approximately 45-year old forest stands with standing dead trees, with nearby water sources, are adjacent to forest openings that can be used for foraging by bats, at the Home, Highway 12, Winter Road, and Kinzie Road parcels. The wetland on the Kinzie parcel may be particularly attractive for foraging bats. Thus, there is moderate likelihood of finding the species on the property.

Long-legged Myotis

The amount of ecological information currently published about long-legged myotis and their population status in Washington state is limited. A search of the WDFW Heritage database on January 10, 2003, did not have any records of long-legged myotis bats on the Applicant's parcels. Some habitat for the species is available on the Applicant's properties through the mosaic of green conifer trees, snags, clearcuts, and wetlands. The wetland on the Kinzie parcel may be particularly attractive for foraging bats. There are no known caves or mines on the properties, though.

Pacific Townsend's Big-eared Bat

Pacific Townsend's big-eared bat are not currently known to occupy the Applicant's property, but may occur in the vicinity of the Applicant's property (WDFW Heritage search 11/20/97). Forest habitat suitable for Pacific Townsend's big-eared bat is available at the Home, Kinzie Road and Highway 12 parcel in the form of standing dead, and some large, live trees which may provide potential roost sites. However, Pacific Townsend's big-eared bats are more likely to roost in caves, or mines, which are not found on the Applicant's property. Some habitat for the species is available on the Applicant's properties through the mosaic of green conifer trees, snags, clearcuts, and wetlands.

EFFECTS OF THE PROPOSED ACTION

Northern Spotted Owl

The TTF does not provide high quantity and or quality spotted owl habitat for at least four reasons: the properties are in five small, separate disjunct parcels; most of the forest stands are currently very young; the majority of the TTF is distant from federal lands that may provide a reliable spotted owl source; and the management of adjacent ownerships is not conducive to spotted owls. These 4 factors cumulatively affect the current and future spotted owl habitat capability for the TTF. These factors are discussed below.

The TTF is comprised of 5 separate forest stands of the following acreages: 46 acres, 67 acres, 15 acres, 10 acres, and 6 acres (see above). These small and isolated parcels effectively make managing for spotted owls problematic. Even under the best of circumstances if all the ownership was in a single parcel, it would only amount to 146 acres. This small amount of acreage would under most circumstances have little influence on spotted owl use and or survival. For instance, the median home range size used for owl management purposes in this area of Washington is 3,500 acres.

Spotted owl densities are low in landscapes dominated by stands less than 80 years old (Thomas et al. 1990). Due to past intensive management practices the forest stands on the TTF are also very young and less than 80 years old (table 2), as are the majority of adjacent private land-holdings. There is approximately 2 acres of suitable owl habitat on the Highway 12 parcel but, other than that, there is currently no suitable spotted owl habitat on TTF lands that meets the definitions of old forest habitat, sub-mature habitat, or young forest marginal habitat (WAC 222-16-085). Currently, approximately 30 acres are potentially providing dispersal habitat for owls.

There are no spotted owls nesting on any TTF properties and the properties are not within the home range (1.8 mile radius) of any known owl site. There are no records of spotted owls permanently, or temporarily, residing on TTF properties, although no spotted owl surveys have occurred on the Applicant's property. It is also relevant to note that the area south of Highway 12 and east of Interstate 5 has been identified as a Non-essential Landscape for spotted owls in Washington by the Spotted Owl Scientific Advisory Group in 1993 (Hanson et al. 1993). This area did not provide the demographic support or demographic interchange capability that other areas of the state did to merit its inclusion as an essential landscape (Hanson et al. 1993). The only parcels that are outside of this are the Burchett and Winter Road parcels for a total of 16 acres (see Figure 1).

The majority of TTF properties are approximately 20 miles from federal National Forest lands, known as the Mineral Block of the Gifford Pinchot National Forest. The exception is the Highway 12 parcel that is approximately 6 miles from these lands (see map). The Mineral Block is a checkerboard ownership of approximately 32,000 acres of federal lands disjunct from other federal lands on the Gifford Pinchot National Forest. The Mineral Block supports low densities of spotted owls and has been identified as being important for population connectivity between the western Washington Cascades and the Olympic Peninsula (Recovery Plan for the Northern Spotted Owl, Draft 1992). The Mineral Block is anticipated to help contribute to the spotted owl population in the adjacent landscapes in the future.

The likelihood that the TTF properties would routinely provide habitat for transient spotted owls from the Mineral Block is low, due to the distances involved and poor habitat characteristics of the area. As the habitat associated with the Mineral Block and the TTF improves in the future, though, it may become more likely.

There are also four hundred acres of older forest at the Lewis County State Park, which is approximately 2 miles from the Home parcel (Figure 1). This habitat may also contribute to spotted owl use of the general landscape. It is also possible that spotted owls could use the Applicant's property and also use the Lewis County State Park habitat.

As described in the Environmental Baseline above, there are two spotted owl sites less than 5 miles from the TTF. The closest known owl sites are the North Fork Cedar Creek Site, #256, approximately 4.6 miles southeast of the Kinzie Road parcel, and the Lacamas Creek Site, #1037, approximately 3.6 miles northeast of the Winter Road parcel (WDFW 1999a). Northern spotted owl survey results indicate that the North Fork Cedar Creek Site was last known to be occupied with a pair in 1995, while the Lacamas Creek Site was last known to be occupied with a pair in 1993 (WDFW 1999a). The site center for the Lacamas Creek site came from one observation in September of 1993. The North Fork Cedar Creek site, on-the-other hand, has a series of observations dating from 1982. None of the observations over this time period have occurred on the TTF.

No subsequent surveys have been conducted recently, thus, it is unknown whether these sites are currently occupied. These owl sites are close enough that if they are still active, those owls could occasionally use the TTF properties throughout the year, for either foraging or as habitat for dispersing young. This use would be conditional on the premise that the TTF had suitable habitat, which may occur in the mid to late decades of the Conservation Plan, but at the current time is very limited.

The TTF is in a general landscape that is not conducive for spotted owls. The Applicant's parcels are surrounded by other private lands, that are either managed for short-rotation forestry or in some cases, non-forestry land uses. Within ½ mile of the parcels, dairy farming and housing developments occur. In one case, a chicken farm occurs within a 1/4 mile. There is a major state highway, an interstate highway, and numerous county roads in the vicinity of the TTF parcels (Figure 1). The dairy farms, chicken farm, housing developments, and county, state, and federal highways substantially affect the likelihood that the TTF would be used by spotted owls. The likelihood that these non-forestry land uses will disappear in the future, and be replaced by older forests that could provide habitat for spotted owls in the future, is unlikely. The opposite is more probable, that more nearby lands will convert to non-forestry uses that exclude use by spotted owls.

The adjacent areas around the TTF that continue to be managed for forestry are also in forests that generally do not provide spotted owl habitat, except in a couple of case mentioned above. These forests are young, second growth stands on their second or third rotation in some cases. Most of these forest lands will probably be managed on a short rotation and will be clearcut approximately every 50 years. Most of the leave trees from these harvests will be left in riparian zones.

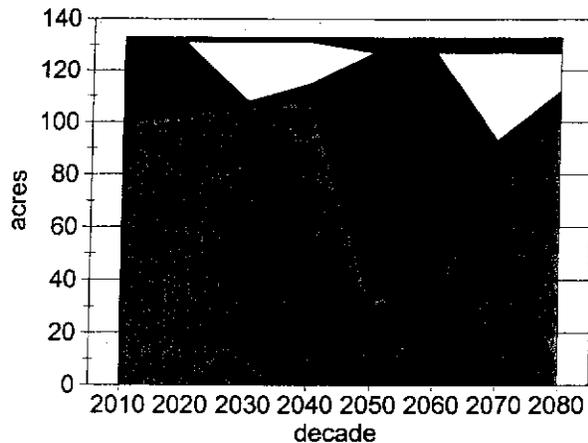
Although the current habitat conditions on the TTF are unfavorable for spotted owls, conditions for the species should improve over the 80 year duration of the Conservation Plan, at least on the Applicant's property. The management practices associated with adjacent ownership such as conversion of forest to other uses, continuation of dairy and chicken farming, and other non-favorable spotted owl land management practices will probably not change in the future.

As such, even when conditions eventually improve on TTF lands, off ownership management will still strongly influence spotted owl (and other species) use of this property. Because of this, the TTF will never offer ideal habitat conditions for spotted owls. On the other hand, there is the potential that spotted owls may sporadically use habitats on the TTF for dispersing and by foraging individuals, particularly over an 80 year time frame.

The Conservation Plan has a detailed description of forest ages by parcel for the duration of the Conservation Plan in Appendix C. Appendix C lists the age distribution by parcel for 8 decades, ending in the year 2080. Figure 2 combines information from Appendix C for all the ownership and also merges the 0 to 20 and 20 to 40 year classes together. This Figure shows the amount of forest in 4 age classes for all the parcels combined: 0 to 40 years; 40 to 60 years; 60 to 80 years; 80 years and greater. As is evident from Appendix C, and Figure 2, the forests are relatively young at present.

Figure 2. Future Forest Ages on the Tagshinny Tree Farm

- blue: 0 to 40 years old
- red: 40 to 60 years
- yellow: 60 to 80 years
- dark blue: 80 years and >



For the purposes of this Opinion, at year 40 the forests should have most, if not all, of the structural features and characteristics that provide for spotted owl dispersal. Forest stand growth information provided from the Applicant and general forest growth patterns in Lewis County were used to make this estimate. The following definition of dispersal habitat from the State Forest Practice Rules, (WAC 222-16-085) was considered for this comparison: 70 percent canopy closure; 70 percent or more of the stand in conifer species greater than 6 inches dbh; a minimum of 130 trees per acre with a dbh of at least 10 inches or a basal area of 100 square feet of 10 inch dbh or larger trees; a total tree density of 300 trees per acre or less; and a minimum of 20 feet between the top of the understory vegetation and the bottom of the live canopy, with the lower boles relatively free of dead limbs.

For the purposes of this Opinion, some forest stands at age 60 and older may provide some limited foraging opportunities for spotted owls. Potentially on better growing conditions, or in atypical situations, some of these older stands may even meet the definition of young forest marginal habitat, as described in WAC 222-16-085. Young forest marginal habitat is identified by the presence of some of the characteristic that provide for roosting, foraging, and dispersal. The following variables are used to classify young forest marginal habitat: conifer dominated or conifer hardwood (greater than or equal to 30 percent conifer); greater than or equal to 70 percent canopy closure; 115 to 280 trees per acre (greater than or equal to 4 inches dbh) with dominants/codominants greater than or equal to 85 feet high or alternatively dominants/codominants greater than or equal to 85 feet high with 2 or more layers and 25 to 50 percent intermediate trees; greater than or equal to 2 snags/acre (>20 inch dbh and 16 feet tall); greater than or equal to 10 percent of the ground covered with 4 inch diameter or larger wood with 25 to 60 percent shrub cover.

As can be seen in Figure 2, there are time frames during the Conservation Plan that older forest acreage increases and decreases. During time frames when there is more older forest present, are also the most likely periods that would be providing improved habitat conditions for spotted owls. It is extremely unlikely though, that spotted owls would ever use the TTF as nesting habitat. That type of higher quality habitat is not expected to develop over the term of the Conservation Plan on the ownership, other than for several acres at the Highway 12 parcel.

Some disturbance effects to spotted owls may occur over the term of the Conservation Plan. This could occur from legal timber management activities such as the following: tree planting, pre-commercial thinning, commercial thinning, regeneration harvesting, road maintenance and building, and other covered activities that are commonly used. These activities could occur in both suitable and non-suitable habitat. If spotted owls were in close proximity to these activities, there could potentially be disturbance effects that alter the behavior of the species that ultimately lead to take.

Some timber management activities could also potentially harm spotted owls through removal or degradation of suitable habitats. This potentially could occur in association with timber stands 40 years and older. Commercial thinning and regeneration harvests would be the most likely

activities that could lead harm spotted owls by removing or altering marginally suitable habitats. In some cases commercial thinning could temporarily degrade habitat, with eventual recovery in future years. In other cases such as regeneration harvests, habitat would be entirely removed and habitat recovery would take a considerable amount of time.

Because of the distributed nature of the TTF parcels, it is possible that timber management activities could potentially affect different owl territories in the same year, and or more than one dispersing individual per year.

Potential of direct injury or death of spotted owls is anticipated to be extremely low under the Conservation Plan. This is primarily based on the current and expected future surrounding landscape conditions, and on the tree farm itself, considering that nesting habitat for spotted owls will not develop over the duration of the Conservation Plan. An extra measure of security under the Conservation Plan has been added, though, that if a spotted owl nest site is discovered, the nest tree will be protected until after 3 years of abandonment, leave trees would be located around the nest tree, and there would be a timing restriction that encourages timber harvest as late in the breeding season as is practicable.

The Service does not anticipate short term reductions in the baseline of this species to result from the Conservation Plan. Any take in future years is expected to be offset by the periodic development of habitats that spotted owls would be more likely to use. If the Conservation Plan did not exist, there would be less incentive for stands to be grown more than the traditional time of approximately 50 years before regeneration harvest. With this Conservation Plan, the Applicant will grow portions of his property in excess of 60 years, albeit small areas, which should benefit spotted owls during those time frames. When the suitable habitat is removed, spotted owls will have benefitted from having had that habitat available that otherwise may not have been provided without the Conservation Plan.

In summary, the Conservation Plan will provide improving habitat over the current conditions for spotted owls over the TTF. But because there are so few acres associated with this Conservation Plan, those acres will never significantly contribute to spotted owl populations. Additionally, high quality habitat will never develop over the term of the Conservation Plan, but habitat will improve over existing conditions. Any degradation of these lower quality habitats will be temporary and not negatively impact the population. Overall, general habitat conditions for the species are expected to improve over the duration of the Conservation Plan as upland, riparian, wetland, and associated habitats mature over the 80 year duration.

Marbled Murrelet

There are currently only 2 acres of the TTF (on the Highway 12 parcel) that are potentially marbled murrelet habitat, although no surveys have been conducted to determine occupancy. There are limbs >7" diameter that could provide nesting platforms for marbled murrelets on these two acres. This parcel is approximately 40 miles from Puget Sound marine areas, so it is within

the potential range of marbled murrelet usage. This 2 acre patch is associated with the shoreline buffer along Mayfield Lake and in effect forms a 4 acre patch. Otherwise, the remaining forest stands on the other parcels are too young to have the structural features that marbled murrelets use for nesting habitat.

There is a substantial body of information that characterizes marbled murrelet nesting habitat (USDI Recovery Plan for the Marbled Murrelet, 1997). Marbled murrelet nesting habitat is normally associated with old growth forests, but mature forests with an old-growth component are also used. The earliest possible recovery time for nesting habitat, once lost, is generally 100 to 200 years (USDI Recovery Plan for the Marbled Murrelet, 1997). There may be some exceptions in some areas, for example, on the Tillamook State Forest in Oregon. On the Tillamook State Forest, murrelets have been reported using platforms created by dwarf mistletoe in younger age stands of 65 to 150 years old (S. K. Nelson pers. com. *in* USDI Recovery Plan for the Marbled Murrelet, 1997) where there are patches of older forest intermingled within the younger age stands. This is in a large landscape though, and may have had murrelets using stands prior to the forest fires earlier in the century.

It is unknown whether existing residual 40 to 50 year old leave trees following clearcut harvest (as occurs now) would eventually be used by murrelets during the duration of the Conservation Plan, but the likelihood is low. There are very small areas scattered on the TTF that have leave trees from previous timber harvests, for example, adjacent to the wetland on the Kinzie Road parcel. These residual trees would have to survive, and eventually develop the platforms that murrelets need for nesting, and murrelets would then need to locate them to utilize them. Over the duration of the Conservation Plan, there may be some of these scattered trees, individually and in clumps, that could develop the large platforms necessary for murrelet nesting. Whether or not murrelets would find these trees and actually nest in them is questionable. It is also not known if murrelets can shift to new sites when previously used habitat is gone (Nelson 1997).

The nearest detection of a marbled murrelet to the TTF is near Onalaska, Washington which is several miles from the Burchett Road parcel. Apparently, this detection did not represent an occupied behavior with a specific stand. Gifford Pinchot National Forest lands in the Mineral Block do have records of marbled murrelet use, which is approximately 6 miles north of the Highway 12 parcel. The Lewis and Clark County Park may have suitable habitat in a large enough block to support nesting, but our data search did not document murrelet presence or occupancy there.

Some disturbance effects to marbled murrelets may occur over the term of the Conservation Plan. Although there is currently very little empirical information that documents effects of disturbance on this species, it could potentially occur from timber management activities such as the following: tree planting, pre-commercial thinning, commercial thinning, regeneration harvesting, road maintenance, and other potentially some other covered activities that are commonly used. Murrelets have been reported nesting in state parks with consistent human activity, however. Unsuccessful nesting in these parks may be from increased predation rates and not necessarily

the noise and associated disturbance from human activities (Nelson 1997). If nesting marbled murrelets were in close proximity to these activities, there could potentially be disturbance effects that alter the behavior of the species which could be detrimental. If nesting is documented though, the applicant has agreed to implement timing restrictions that would direct activities to as late in the nesting season as practicable. Considering that the applicant will not be conducting surveys to determine occupancy though, actual implementation of this measure may not occur.

Some timber management activities could also potentially harm marbled murrelets through removal or degradation of suitable habitats. This potentially could occur in association with mature timber stands associated with previous leave trees that marbled murrelets could use. In the case of the Highway 12 parcel, removal of suitable nest trees could occur that would directly remove a potential nest tree, as this parcel has been identified as having suitable habitat. The Conservation Plan states that for the Highway 12 parcel "that no plans for removing the older forest have been proposed, although individual trees may be removed that will degrade the habitat". Commercial thinning, regeneration harvests, and road building on all the parcels would be the most likely activities that could lead to direct harm of marbled murrelets by removing or altering suitable habitats. In some cases, commercial thinning could temporarily or permanently degrade habitat through canopy tree removal, with eventual recovery in future years. In this case, windthrow of suitable nest trees, loss of suitable nest branches, an increased chance of predation, and altering the micro-climate could all occur which may harm the species. In other situations, such as regeneration harvests, the suitable habitat would be removed in entirety and habitat recovery would not occur for the duration of the Conservation Plan.

Potential of direct injury or death of marbled murrelets is anticipated to be extremely low, to almost non-existent, under the Conservation Plan. This is primarily based on the current and expected future habitat conditions on the TTF itself, and also on broader landscape conditions that don't have murrelets in the vicinity of the TTF.

Bald Eagle

The highest quality habitat currently available on the TTF for bald eagles is the Highway 12 parcel. This parcel has older forest and is adjacent to the Mayfield Lake, and is within about 1.5 mile of Riffe Lake. Trees are present on this parcel that could support nesting and roosting, and its proximity to foraging habitat likely makes this parcel the most important for bald eagles on the TTF. It may also provide winter communal roost habitat, although no surveys have been done to document this. Bald eagles are not known to nest on the parcel now, nor are roosting occurrences known for this parcel. But the potential exists, and likely will for the duration of the Conservation Plan.

The Kinzie Road parcel may eventually provide nesting habitat, but it doesn't currently. The remaining residual trees left from previous timber harvests are not yet big enough to provide for nesting. They are large enough to provide perching opportunities though, and they may currently

be used for that purpose. When the fish blocking culvert on the county road is made fish passable and anadromous fish start to use the wetland, the wetland and associated riparian habitats may improve for bald eagles. Other parcels may occasionally provide habitat for perching and hunting in adjacent open areas, but are not expected to currently provide habitat for nesting.

Some disturbance of bald eagles is expected to occur as a result of implementing the Conservation Plan. This could occur on all parcels, but is more likely to happen on the Highway 12 and Kinzie Road parcels for reasons specified above. Disturbance effects on bald eagles may occur from the following: tree planting, pre-commercial thinning, commercial thinning, regeneration harvesting, road maintenance and building, and other traditional and approved forestry applications that are commonly used. If bald eagles were in close proximity to these activities, there could potentially be disturbance effects that alter the behavior of the species that ultimately lead to take. If nesting is documented though, the Applicant has agreed to implement timing restrictions that would direct activities to as late in the nesting season as practicable. Implementing these timing restrictions would reduce the amount of disturbance. Because bald eagles and their nests are often visible in comparison to some other species, an active bald eagle nest going un-noticed on this managed tree farm is considered unlikely.

Some timber management activities could also potentially harm bald eagles through removal or degradation of suitable habitats, although over the majority of the TTF this is considered very remote, because of the absence of higher quality habitats. Commercial thinning and regeneration harvests would be the most likely activities that could lead to direct harm of bald eagles by removing or altering suitable habitats. The most likely parcel this could happen on would be the Highway 12 parcel, and also potentially the Kinzie parcel in the future. The Highway 12 parcel could currently, and will over the long term, provide nesting and roosting habitat for bald eagles. As described in the Conservation Plan, the Applicant will not clearcut harvest this stand, but may remove some trees through partial harvest. If the stand was being used as a winter communal roost, partial timber harvest could temporarily affect the micro-climate within the stand that would make it less suitable for bald eagles to use, at least until the canopy adequately recovered.

The potential of direct injury or death of bald eagles is anticipated to be extremely low. The Applicant has agreed to implement seasonal timber harvest restrictions if a bald eagle nest is found. The restrictions would prevent and or limit timber harvest until as late during the breeding season as is economically and operationally feasible. The Applicant has also agreed to contact and consult with the Service at least 30 days prior to commencement of scheduled timber harvest operations if a nest is located. This will provide the Service and the Applicant the opportunity to work together to consider other alternative mitigative measures that may be feasible for both parties. Additionally, the Applicant will protect bald eagle nest trees for up to 3 years following abandonment. Although no current nests are known on the TTF parcels, any future nesting will likely reflect positive habitat improvements made through implementation of the Conservation Plan.

In summary, the Conservation Plan will provide improving habitat for bald eagles over the TTF. Any degradation of habitat will be temporary and not negatively impact the population. Habitat conditions for the species are expected to improve over the duration of the Conservation Plan as riparian, wetland, and associated forested habitats improve.

Coastal Cutthroat Trout

Resident coastal cutthroat trout may currently reside in the wetland complex on the Kinzie Road parcel. Cutthroat trout occur in the Cowlitz watershed (WDFW 2000), and resident fish probably occur in Skook Creek. The Cowlitz cutthroat stock status is listed as "depressed" based on depressed adult and juvenile trap counts and long-term declines in the Columbia River in the Columbia River Mile 72 to 48 (WDFW 2000). The blocking culvert associated with the county road downstream of this parcel prevents migratory fish from accessing this parcel, including anadromous cutthroat trout. As such, cutthroat trout do not have access to the wetland complex, although resident fish do.

Cutthroat trout spawn in fine gravels (WDFW 1991). The small streams on the Kinzie parcel have been identified as having a mud and or clay bottom (see Conservation Plan) and as such probably do not provide much spawning habitat. There may be very small areas with spawning gravels, but it is likely very limited in quantity. The small streams entering and leaving the wetland will primarily provide rearing habitat for cutthroat trout, and not spawning habitat.

The wetland, and streams associated with the wetland, will improve in their ability to provide habitat for cutthroat trout over the current conditions. As described in the Conservation Plan, and above in the current conditions section, the in-stream and its associated riparian habitat reflects previous timber harvests, when the stream was considered non-fish bearing. The wetland also received similar type management.

Riparian conservation measures are described in detail in the Conservation Plan and also in the proposed action section above. The riparian zone along the designated fish bearing reach of the stream on the Kinzie parcel will receive a 100-foot wide managed buffer on each side. The wetland will have a 75-foot managed buffer zone. A managed buffer allows trees in excess of the target condition to be removed for commercial values.

Riparian vegetation influences many functions important for fish such as shade, bank stability, sediment control, organic litter, and large woody debris (Spence et. al. 1996). These inputs and stream protection capabilities, are currently limited due to past management on the Kinzie parcel. As the riparian zone along the small stream on the Kinzie parcel matures, it will provide a higher amount of these habitat components for fish than are currently present. The same situation will occur along the wetland.

Removal of trees within riparian or wetland areas that provide habitat functions, as described above, could degrade cutthroat trout habitat. The removal of trees that may eventually provide

in-water cover for fish, or pools in the stream, may also reduce the effectiveness of in-stream habitat. The removal of riparian trees can also reduce potential leaf fall and bank stability. Additional impacts over the duration of the Conservation Plan may also occur from road delivered sediments entering fish bearing waters.

The managed buffers are expected to provide a high level of riparian and stream function, although not 100 percent of capability. Trees will be harvested within the zone of potential recruitment that could provide habitat functions for fish. Although, for the following site specific reasons the stream buffer is believed to be adequate for the purposes of this Opinion: low gradient of the stream; small size (width) of the stream; winter flow only regime of the stream; mud/clay substrate of the stream; adjacent level riparian topography; and the species and life stages of fish expected to use it. The wetland buffer is also believed to be adequate for providing important functions for cutthroat trout such as shade, large woody debris, organic inputs, and other important elements.

In summary, the Conservation Plan will provide improving habitat for coastal cutthroat trout over the TTF. Any degradation of habitat will be temporary and not negatively impact the population. Habitat conditions for the species are expected to improve over the duration of the Conservation Plan as riparian, wetland, and associated habitats improve.

Oregon Spotted Frog

Oregon spotted frogs are not known to occur on TTF properties, although there have not been surveys for the species on the TTF. There are also no historical records of Oregon spotted frogs from Lewis County. The Kinzie Road parcel, with its wetland habitats, appears to be the only parcel with suitable habitat for the species. This parcel though, is approximately 35 miles from the nearest known population which is near Olympia, Washington. The other parcels do not currently have suitable wetland habitat and are not expected to have them in the future.

See the proposed action above and the Conservation Plan for a detailed description of the conservation measures that would minimize and mitigate take of Oregon spotted frogs. It is expected that the wetland and riparian conservation measures would minimize and mitigate potential impacts to the species, if they were ever determined to occur on the TTF.

Disturbance effects to Oregon spotted frogs may occur from the following: tree planting; pre-commercial thinning; commercial thinning; regeneration harvesting; road maintenance; and other covered activities. If Oregon spotted frogs were in close proximity to these activities, there could potentially be disturbance effects that alter the behavior of the species that ultimately lead to take. Only a very small portion of the TTF (Kinzie parcel) has suitable habitat and the frequency of forest management activities associated with, or near, that habitat will also be infrequent. Because of low frequency of forest activities associated with suitable habitat, the implemented conservation measures associated with wetland habitats, and the low likelihood of species actually occupying the habitat, take from disturbance will likely be infrequent and minimal.

Some timber management activities could also potentially impact Oregon spotted frogs through removal or degradation of suitable habitat elements. The wetland habitats though will receive long term protection with riparian buffers and an equipment limitation zone. The hydrologic pattern of the Kinzie parcel wetland should remain relatively constant, although, if the beaver dam that created the wetland is degraded or deteriorates over time, that habitat could change through natural processes. The TTF owns approximately 1 acre of the approximate 4 acre wetland, so the Applicant does not have full control over the management of the wetland. There also may be some associated wetlands with the small stream that drains into the open water wetland. No new roads are expected to be constructed on the Kinzie parcel (see the Conservation Plan) that might alter or degrade hydrological patterns that could impact Oregon spotted frogs. It is possible though, that some fine sediments could enter associated shallow wetland habitats that could degrade habitat over time. The existing road on this parcel though, because of its location, flat gradient, and infrequent use, is not expected to provide substantial amounts of fine sediments to habitats used by Oregon spotted frogs.

Commercial thinning, regeneration harvests, and potentially other covered activities could lead to direct harm of Oregon spotted frogs by altering suitable habitats that Oregon spotted frogs use and in some cases kill the frogs. Oregon spotted frogs could also be killed by motorized vehicles running over them during the course of forest management activities.

In summary, the Conservation Plan will provide improving habitat for Oregon spotted frogs over the TTF if they eventually disperse to it, or in the remote possibility they already occur here. There are no historical records of Oregon spotted frogs from Lewis County, which may indicate their absence in the area for a considerably long time. Potential habitat conditions on the TTF for the species are expected to improve over the duration of the Conservation Plan as riparian, wetland, upland, and associated habitats improve. Any degradation of habitat will be temporary and not negatively impact the population.

Van Dyke's Salamander

Van Dyke's salamanders are not known to occur on the TTF properties, although surveys for the species have not occurred. Suitable habitat for the species on the TTF appears to be limited and may only occur on the Kinzie parcel and potentially the Highway 12 parcel. The types of aquatic habitats that Van Dyke's salamanders are most commonly associated with, such as the splash zones or waterfalls of creeks, under rocks or woody debris, or in seepages with talus, generally do not occur on the TTF, as described in the description of the action above. Jones (1998) reports that the species may also be encountered in upland habitats.

See the proposed action above and the Conservation Plan for a detailed description of the conservation measures that would minimize and mitigate impact to Van Dyke's salamanders, if they are actually present, or alternatively, eventually disperse to the TTF. They do occur in the southern Cascades in Lewis County and the nearest record is several miles northwest of the Highway 12 parcel. It is expected that the wetland, down log, and riparian conservation measures would minimize and mitigate potential impacts to the species.

Disturbance impacts to Van Dyke's salamanders may occur from the following: tree planting; pre-commercial thinning; commercial thinning; regeneration harvesting; road maintenance; and other covered activities. If Van Dyke's salamanders were in close proximity to these activities, there could potentially be disturbance effects that alter the behavior of the species that ultimately lead to take. Only a very small portion of the TTF (Kinzie and Highway 12 parcels) have suitable habitat and the frequency of forest management activities associated with, or near, that habitat will also be infrequent. Because of low frequency of forest activities associated with suitable habitat, the implemented conservation measures associated with wetland habitats, riparian habitats, and down logs, and the low likelihood of species actually occupying the habitat, take from disturbance will likely be infrequent and minimal.

Some timber management activities could also potentially harm Van Dyke's salamanders through removal or degradation of suitable habitat elements. The wetland habitats though will receive long term protection with riparian and wetland buffers and an equipment limitation zone. The hydrology pattern of the Kinzie parcel wetland should remain relatively constant, although, if the beaver dam that created the wetland is degraded or deteriorates over time, that habitat could change through natural processes. The TTF owns approximately 1 acre of the approximate 4 acre wetland, so the applicant does not have full control over the management of the wetland. There also may be some associated wetlands with the small stream that drains into the open water wetland. No new roads are expected to be constructed on the Kinzie parcel (TTF Conservation Plan) that might alter or degrade hydrological patterns that could impact Van Dyke's salamanders. It is possible though, that some fine sediments could enter associated shallow water wetland habitats that could degrade habitat over time. The existing road on this parcel though, because of its location, flat gradient, and infrequent use, is not expected to provide substantial amounts of fine sediments to habitats that may be used by Van Dyke's salamanders.

Commercial thinning, regeneration harvests, and potentially other covered activities could lead to direct harm of Van Dyke's salamanders by altering suitable habitats that the species uses and in extreme cases kill salamanders. Van Dyke's salamanders could also be killed by motorized vehicles running them over or by timber yarding activities crushing them during the course of forest management.

In summary, the Conservation Plan will provide improving riparian and upland habitat for Van Dyke's salamanders over the TTF, if they are there currently, or they eventually disperse to the area. Any degradation of habitat will be temporary and not negatively impact the population. Habitat conditions for the species are expected to improve over the duration of the Conservation Plan as riparian, wetland, upland, and associated habitats improve.

Northwestern Pond Turtle

Northwestern pond turtles are not known to occur on the TTF properties, although there have been no surveys for the species. In 1993 a pond turtle was found crossing a logging road in the

Salmon Creek watershed in Lewis County (B. Bicknell pers. com). This record comes from an area that no historical populations have been found (Hayes et al. 1999). No other records exist for Lewis County. Suitable habitat for the species on the TTF appears to be limited and may only occur on the Kinzie parcel, in association with the wetland complex and proximate uplands.

See the proposed action above, and the Conservation Plan for a detailed description of the conservation measures that would minimize and mitigate take of northwestern pond turtles. It is expected that the wetland, down log, and riparian conservation measures would minimize and mitigate potential impacts to the species if they are currently present, or eventually disperse to the area. The closest known occurrence appears to be the Salmon Creek observation near Toledo, approximately 12 miles from the nearest TTF parcel.

Disturbance effects to northwestern pond turtles may occur from the following: tree planting; pre-commercial thinning; commercial thinning; regeneration harvesting; road maintenance; and other covered activities. If northwestern pond turtles were in close proximity to these activities, there could potentially be disturbance effects that alter the behavior of the species that ultimately lead to take. The northwestern pond turtle appears to be sensitive to human disturbance (Hays et al. 1999). Disturbance may alter frequency and duration of basking or foraging, which may be specifically important for pregnant females (Hays et al. 1999).

Only a very small portion of the TTF (Kinzie parcel) has suitable habitat and the frequency of forest management activities associated with, or near, that habitat will also be infrequent. Because of low frequency of forest activities associated with suitable habitat; the implemented conservation measures associated with wetland habitats, riparian habitats, and down logs; and the low likelihood of species actually occupying the habitat, take from disturbance will likely be infrequent and minimal to northwestern pond turtles.

Some timber management activities could also potentially harm northwestern pond turtles through removal or degradation of suitable habitat elements. The wetland habitats though will receive long term protection with riparian/wetland buffers and an equipment limitation zone. The hydrologic processes of the Kinzie parcel wetland should remain relatively constant, although, if the beaver dam that created the wetland is degraded over time, that habitat could change through natural processes.

The TTF owns approximately 1 acre of the approximate 4 acre wetland, so the Applicant does not have full control over management of the wetland. There may also be some associated wetlands with the small stream that drains into the open water wetland. No new roads are expected to be constructed on the Kinzie parcel (Conservation Plan) that might alter or degrade hydrological patterns that could impact northwestern pond turtles. It is possible though, that some fine sediments could enter associated shallow water wetland habitats that could degrade habitat over time. The existing road on this parcel though, because of its location, flat gradient, and infrequent use, is not expected to provide substantial amounts of fine sediments to habitats that may be used by northwestern pond turtles.

Northwestern pond turtles may disperse, nest, overwinter, and aestivate on upland areas. Many turtles overwinter on land up to 500 meters from water (Hays et al. 1999). In situations where turtles are using upland areas, and are outside of the riparian and wetland buffer zones, turtles may be prone to harm from the covered activities. Upland forest management activities may change and degrade habitat that turtles may use for dispersing, nesting, overwintering or aestivating. But, because of the relative infrequency of timber management activities, and the low likelihood of turtles actually occupying the TTF properties, there is a low potential of this happening.

Northwestern pond turtles could be killed by motorized vehicles running over them during the course of forest management or by timber yarding activities. While there is a chance of this happening, it is believed to be extremely low for the same reasons mentioned above.

In summary, the Conservation Plan will protect upland and aquatic habitats for northwestern pond turtles on the TTF on the Kinzie parcel. Any degradation of habitat from the covered activities will generally be temporary and not negatively impact the population. If turtles eventually colonize and occur on the TTF, it may indicate that the regional turtle population is improving. Habitat conditions for the species on the TTF are expected to be stable, or improve, over the duration of the Conservation Plan as riparian, wetland, upland, and associated habitats mature and improve.

Great Blue Heron

The highest quality habitat currently available on the TTF for great blue herons is the Kinzie parcel. Great blue herons have been observed here in the past, apparently nesting (Tom Fox pers. com.). For unknown reasons they have not been present for the past several years, but they may return in the future. The Highway 12 parcel may provide limited nesting opportunities while the other TTF parcels appear to be less likely to provide nesting habitat for herons.

See the proposed action above and the Conservation Plan for a detailed description of the conservation measures that would minimize and mitigate take of great blue herons. It is expected that the wetland and riparian conservation measures would minimize and mitigate potential impacts to the species. In addition, when fish passage is restored on the county road downstream of the wetland, and anadromous fish start to use the wetland, there may be more foraging opportunities than currently exist for great blue herons on the Kinzie parcel.

In some circumstances, great blue herons can be sensitive to human disturbance. Where great blue herons are not habituated to human intrusion, they may be more prone to disturbance and nest abandonment (WDFW, Priority Habitats and Species, 1999 (a)). Different great blue heron colonies may have different tolerance levels to human disturbance depending on their past exposure. Great blue heron nest colonies have been abandoned in response to logging and other intrusions (WDFW, Priority Habitats and Species, 1999).

If nesting great blue herons eventually return to the Kinzie parcel they could be disturbed from the covered activities. If herons are nesting, and the disturbance occurs during the nesting season, the disturbance could be severe enough to cause nest abandonment. The Conservation Plan provides for a timing restriction with a distance association, but the distance and time frame may not be adequate to prevent nest abandonment in a worst case scenario. Great blue heron research has supported buffer distances for reducing disturbance impacts several fold greater than 75 feet (WDFW, Priority Habitats and Species, 1999). While the buffer restriction may be inadequate to fully minimize disturbance effects to herons, the frequency of disturbance is expected to be very episodic with durations of no or very minor disturbance because of the nature of timber management. There could be many years that there were no disturbance effects, followed by a disturbance that could ultimately lead to nest abandonment.

The potential of direct injury or death of great blue herons is anticipated to be extremely low due to the implemented conservation measures associated with the riparian and wetland management zones, and the location and frequency of the covered activities.

In summary, the Conservation Plan will provide improving habitat for great blue herons over the TTF. Any degradation of habitat will be temporary and not negatively impact the population. Habitat conditions for the species are expected to improve over the duration of the Conservation Plan as riparian, wetland, and associated habitats improve.

Pileated Woodpecker

Pileated woodpeckers are expected to occur on the TTF properties. All the parcels could be expected to provide varying amounts of habitat over the duration of the Conservation Plan. Habitat quality will likely vary over time with the individual parcels as larger snags cycle through their decay stages and the associated forest matures. As such, these parcels are anticipated to provide forested habitat for pileated woodpeckers as they mature over time. Clearcut parcels will also provide some limited foraging opportunities when down logs and snags are present.

See the proposed action above and the Conservation Plan for a detailed description of the conservation measures that would minimize and mitigate take of pileated woodpeckers. It is expected that the green recruitment tree, snag, down log, riparian conservation measures, wetland conservation measures, and extended forest rotations would minimize and mitigate potential impacts to the species. The TTF will also be kept in forestry and not converted to other uses that may be more deleterious to the species.

Some disturbance effects to pileated woodpeckers may occur over the term of the Conservation Plan. This could occur from legal timber management activities such as the following: tree planting, pre-commercial thinning, commercial thinning, regeneration harvesting, road maintenance, and other covered activities. These activities could occur in both suitable and non-suitable habitat. If pileated woodpeckers were in close proximity to these activities, there could

potentially be disturbance effects that alter the behavior of the species that ultimately lead to take. Although, Bull and Jackson (1995) report that pileated woodpeckers are usually tolerant of human activity near their nest. They also report that some individuals are tolerant of humans near their roost, but that others changed roost trees if disturbed. They did not elaborate on the degree of tolerance and they made no comparison to a commercial logging operation in proximity to a pileated woodpecker nest or roost. We surmise that it is probably more of an impact than a solitary person would be. We expect that harassment associated with a commercial logging operation and other intensive timber management could negatively affect pileated woodpecker behavior at certain times.

Some timber management activities could also potentially harm pileated woodpeckers through removal or degradation of suitable habitats. Commercial thinning and regeneration harvests would be the most likely activities that could lead to direct harm of pileated woodpeckers by removing or altering suitable habitats. Dangerous snags are often removed during these operations for worker safety, and some of those snags could be used by pileated woodpeckers for their life history needs. Snags that are used by pileated woodpeckers, and that are cut down, will have a negative impact to those birds. In some cases commercial thinning could temporarily degrade habitat, potentially exacerbated by snag removal, with habitat recovery in future years as canopy cover returns and new snags are recruited into the forest.

The possibility of pileated woodpeckers being killed is considered low. Pileated woodpeckers could be killed though, with perhaps pre-fledged birds being most susceptible if a nest tree was removed with the birds still in it. Adult birds could also be killed by fast moving vehicles, due to the species occasionally foraging on the ground (Bull and Jackson 1995), however, this is considered less likely on forest roads than on highways where vehicle travel speed is higher.

In summary, the Conservation Plan will provide improving habitat for the species over the TTF. Any degradation of habitat will be temporary and not negatively impact the population. Habitat conditions for the species are expected to increase in function over current conditions as riparian, upland, and associated habitats develop and mature.

Osprey

The highest quality habitats currently available on the TTF for ospreys are the Highway 12 parcel and the Kinzie parcel. Both of these parcels are in close proximity to water and potential foraging opportunities. The Highway 12 parcel has older forest and is adjacent to Mayfield Lake, and approximately 1.25 miles downstream of Riffe Reservoir. Trees are present in this parcel that could support nesting, but ospreys are not known to nest on the parcel currently. The Kinzie Road parcel may eventually provide nesting habitat, but it doesn't currently. The remaining residual trees left from previous timber harvests are probably not yet big enough to provide for nesting. They are large enough to provide perching opportunities though, and they may currently be used for that purpose.

See the proposed action above and the Conservation Plan for a detailed description of the conservation measures that would minimize and mitigate take of ospreys. It is expected that the green recruitment tree; riparian and wetland conservation measures; and extended forest rotations would minimize and mitigate potential impacts to the species. When fish passage is restored at the county road, and anadromous fish start to use the Kinzie parcel wetland, the wetland and associated riparian habitats may improve for ospreys. The TTF will also be kept in forestry and not converted to other uses which will be beneficial for the species.

Some disturbance of ospreys is expected to occur as a result of implementing the Conservation Plan. This could occur on all parcels, but is more likely to happen on the Highway 12 and Kinzie Road parcels for reasons specified above. Disturbance effects on ospreys may occur from the following: tree planting, pre-commercial thinning, commercial thinning, regeneration harvesting, road maintenance, and other covered activities. If ospreys were in close proximity to these activities, there could potentially be disturbance effects that alter the behavior of ospreys that negatively affect the species. Individual pairs of ospreys vary in their ability to tolerate human disturbance, and it appears to be at least partially based on habituation (WDW 1991).

Some timber management activities could also potentially affect ospreys through removal or degradation of suitable habitats, although over the majority of the TTF this is considered very remote, because of the absence of higher quality habitats. Commercial thinning and regeneration harvests would be the most likely activities that could negatively impact ospreys by removing or altering suitable habitats. The most likely parcel this could happen on would be the Highway 12 parcel. This parcel could currently, and will over the long term, provide nesting and roosting habitat for ospreys. As described in the Conservation Plan, the Applicant will not clearcut harvest this stand, but may remove some trees through partial harvest. Over the term of the Conservation Plan, the covered activities could also affect ospreys at the Kinzie Road parcel, particularly in future years as fish use increases and trees mature.

The possibility of ospreys being killed is considered extremely low to almost non-existent from TTF covered activities.

In summary, the Conservation Plan will provide improving habitat for ospreys over the TTF. Any degradation of habitat will be temporary and not negatively impact the population. Habitat conditions for the species are expected to improve over the duration of the Conservation Plan as riparian and associated habitats improve.

Northern Goshawk

There is currently very little suitable habitat for northern goshawks on the TTF properties. The stands are generally very young and fragmented from contiguous habitat that the species is commonly associated with. There are no known nesting northern goshawks on the TTF. Currently, nesting opportunities are likely only available on the Home site because of the size of the parcel which may contain trees large enough for nesting, and possibly on the 2 acres of the

Highway 12 parcel near the power line right-of-way because it contains large trees contiguous with adjacent old forest habitat. Because of the very limited acreage (144 total acres) associated with the Conservation Plan, there is little opportunity to greatly influence habitat for the species, now or in the future.

See the proposed action above and the Conservation Plan for a detailed description of the conservation measures that would minimize and mitigate take of northern goshawks. It is expected that the green recruitment tree, snag, down log, riparian and wetland conservation measures, and extended forest rotations would minimize and mitigate potential impacts to the species. Figure 2 shows that later periods of the Conservation Plan will provide more mature forest that may be more beneficial to northern goshawks than are currently available. The TTF will also be kept in forestry and not converted to other uses.

Some disturbance of northern goshawks is expected to occur as a result of implementing the Conservation Plan. Disturbance effects on northern goshawks may occur from the following: tree planting, pre-commercial thinning, commercial thinning, regeneration harvesting, road maintenance, and other covered activities. If northern goshawks were in close proximity to these activities, there could potentially be noise and visual disturbance effects that alter the behavior of the species with negative results.

Some timber management activities could also impact northern goshawks through removal or degradation of habitats, although, over the majority of the TTF this is considered very remote, because of the limited amount of low quality habitat. The amount of potential, but low quality habitat, will change over the 80 year duration of the Conservation Plan due to forest growth and maturation. As such, potential impacts to the species could occur during those later time periods when low quality habitat exists and the Applicant has land management activities planned for those specific areas. Commercial thinning and regeneration harvests would be the most likely activities that could negatively affect northern goshawks by removing or altering potential habitats during those select time periods.

The possibility of northern goshawks being killed is considered extremely low from TTF activities. In the very remote situation that a nest tree was harvested with pre-fledged birds present, mortality would be possible.

In summary, the Conservation Plan will provide improving habitat for northern goshawks over the TTF. Any degradation of habitat will be temporary and not negatively impact the population. Habitat conditions for the species are expected to improve over current conditions as riparian, upland, and associated habitats mature and improve.

Olive-sided Flycatcher

Olive-sided flycatchers could occur on the TTF properties, although not in high densities. All the parcels could be expected to provide varying amounts of habitat over the duration of the

Conservation Plan. Habitat quality will likely vary over time with the individual parcels as snags cycle through their decay stages and the associated forest matures. As such, these parcels are anticipated to provide forested habitat for olive-sided flycatchers as they mature over time. Regeneration harvested parcels will also provide some foraging opportunities where large green trees and snags are left.

See the proposed action above and the Conservation Plan for a detailed description of the conservation measures that would minimize and mitigate take of olive-sided flycatchers. It is expected that the green recruitment tree, snag, riparian and wetland conservation measures, extended forest rotations, edge habitat associated with aquatic areas, and edge habitat associated with regeneration harvests would minimize and mitigate potential impacts to the species. The TTF will also be kept in forestry and not converted to other uses which will be beneficial to the species.

Some disturbance of olive-sided flycatchers is expected to occur as a result of implementing the Conservation Plan. Disturbance effects to olive-sided flycatchers may occur from the following: tree planting, pre-commercial thinning, commercial thinning, regeneration harvesting, road maintenance and building, and other covered activities. If olive-sided flycatchers were in close proximity to these activities, there could potentially be noise and or visual disturbance effects that alter the behavior of the species that reduces survival.

Some timber management activities could also potentially harm olive-sided flycatchers through removal or degradation of suitable habitats. Commercial thinning and regeneration would be the most likely activities that could lead to direct harm of olive-sided flycatchers by removing or altering suitable habitats. Dangerous snags are often removed during these operations for worker safety, and some of those snags could be used by olive-sided flycatchers for their life history needs. In some cases commercial thinning and partial harvest could temporarily degrade habitat, potentially exacerbated by snag removal, with eventual habitat recovery in future years.

Olive-sided flycatcher nests are often located high in conifer trees, usually on a horizontal branch far from the trunk (Altman and Sallabanks, 2000). Since there will be no surveys conducted for the species, the removal of a nest tree during timber harvest activities could happen, and if so, eggs or pre-fledged birds could be killed.

In summary, the Conservation Plan will provide improving habitat for olive-sided flycatchers over the TTF. Any degradation of habitat will be temporary and not negatively impact the population. The TTF will remain in forestry and not converted to other non-forestry uses. Habitat conditions for the species are expected to improve over the duration of the Conservation Plan as riparian, upland, and associated habitats mature and develop.

Long-eared Myotis and Long-legged Myotis,

The highest quality habitats currently available on the TTF for long-eared myotis and long-legged myotis are the Highway 12 parcel and the Kinzie parcel, which are both in close proximity to

water and potential foraging opportunities. The other parcels will likely offer fewer opportunities for providing habitat for these species. Snags, and potentially bark on some trees, may offer the highest likelihood for roosting opportunities for these two species. There are no known caves or mine tunnels on the TTF that may offer that type of important feature, both for roosting and or hibernating.

See the proposed action above and the Conservation Plan for a detailed description of the conservation measures that would minimize and mitigate take of these bat species. It is expected that the green recruitment tree, snag, riparian and wetland conservation measures, and extended forest rotations would minimize and mitigate potential impacts to the species. The TTF will also be kept in forestry and not converted to other uses that might eliminate bat habitat altogether.

Some disturbance of these bat species is expected to occur as a result of implementing the Conservation Plan. Disturbance effects may occur from the following: tree planting, pre-commercial thinning, commercial thinning, regeneration harvesting, road maintenance, and other covered activities. If these bat species were in close proximity to these activities, there could potentially be noise and or visual disturbance effects that alter the behavior of the species that reduces survival. Disturbance to a hibernation or maternity site could be especially detrimental. Long-legged myotis have been reported to use snags for maternity roosts (Christy and West 1993). Because there are no caves or tunnels, disturbance to a hibernation colony is unlikely. Bats aroused from hibernation use considerable energy reserves, which could reduce survival.

Some timber management activities could also potentially harm long-eared myotis and long-legged myotis through removal or degradation of suitable habitats. Commercial thinning and regeneration harvests would be the most likely activities that could lead to direct harm of these species by removing or altering suitable habitats. Dangerous snags are often removed during these operations for worker safety, and some of those snags could be used by these species for roosting. Surveys for the species will not be conducted, so roost locations will be unknown and susceptible to removal through timber harvest. In some cases, commercial thinning and partial harvest could temporarily degrade habitat, potentially exacerbated by snag removal, with eventual habitat recovery in future years.

In a worst case scenario these bat species could be killed outright if they were occupying a dead or living tree that was cut down while they were in it. Bats could also be struck and killed by moving vehicles on the TTF.

In summary, the Conservation Plan will provide improving habitat for these 2 species of bats over the TTF. The TTF will be kept in forestry and not converted to other non-forestry use. Any degradation of habitat will be temporary and not negatively impact the population. Habitat conditions for the species are expected to improve over the duration of the Conservation Plan as riparian, wetland, and associated habitats grow and mature over the 80 year permit duration.

Pacific Townsend's Big-eared Bat

The highest quality habitats currently available on the TTF for Pacific Townsend's big-eared bat are the Highway 12 parcel and the Kinzie parcel, which are both in close proximity to water and potential foraging opportunities. The other parcels will likely offer fewer opportunities for providing habitat for this species. Pacific Townsend's big-eared bat relies almost exclusively on caves, mines, and some human made structures for roosting and hibernating (Christy and West 1993). There are no known caves, mines, or human made structures on the TTF that may offer that type of important feature, both for roosting and or hibernating.

See the proposed action above and the Conservation Plan for a detailed description of the conservation measures that would minimize and mitigate take for Pacific Townsend's big-eared bat. It is expected that the green recruitment tree, snag, riparian and wetland conservation measures, and extended forest rotations would minimize and mitigate potential impacts to the species. The TTF will also be kept in forestry and not converted to other uses that might eliminate bat habitat altogether.

Disturbance effects to Pacific Townsend's big-eared bat may be possible in some unique circumstances, but generally is not expected to occur because of the low likelihood of the species occurring on the TTF due to the absence of suitable roosting and hibernation sites. The highest likelihood of the TTF being used by the species is for foraging, and potentially some covered activities could disturb the species during foraging activities. If this species was in close proximity to these activities, there could potentially be noise or other activities that potentially could alter the behavior of the species. Disturbance to a hibernation or maternity roost is unlikely because that type of habitat is not present on the TTF.

Some timber management activities could also potentially harm Pacific Townsend's big-eared bats through removal or degradation of suitable habitats. Commercial thinning and regeneration harvests would be the most likely activities that could lead to direct harm of these species by removing or altering suitable foraging habitats. Surveys for the species will not be conducted, so foraging locations will be unknown and susceptible to modification through forest removal.

Other than the remote possibility of Pacific Townsend's big-eared bats being struck and killed by moving vehicles, it is unlikely that other covered activities will directly kill the species.

In summary, the Conservation Plan will provide improving habitat for Pacific Townsend's big-eared bats on the TTF. The TTF will be kept in forestry and not converted to other non-forestry use. Any degradation of habitat will be temporary and not negatively impact the population. Habitat conditions for the species are expected to improve over the duration of the Conservation Plan as riparian, wetland, and associated habitats grow and mature over the 80 year permit duration.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. As described previously under the Environmental Baseline of this Opinion, the Service recognizes the action area to include the covered lands and the areas surrounding it within 0.25 mile.

Forested acreage accounts for approximately 83 percent of the land area in Lewis County with federal forests accounting for approximately 29 percent and non-federal forests accounting for approximately 54 percent (Caudill, 2001). Approximately 7 percent of the county is in agriculture. Caudill (2001) considered Lewis County to be in a transition period, slowly moving from a natural resource-based economy (forestry and agriculture) to a more diverse economy which relies on light manufacturing, wholesale and retail trade, and business and personal service sectors to drive the local economy. Because of the changing economic nature of Lewis County towards urbanization, there will likely be future loss and degradation of existing natural forested habitats, particularly in the forest/urban interface. Some of this habitat loss and modification will also probably occur within the action area of the TTF Conservation Plan.

Because of the distributed nature of the TTF parcels, areas surrounding various parcels may be more prone to future state, tribal, local, or private actions than other areas. For instance, a specific area, because of its location to a major highway, may be more prone to residential development than another area that is further from convenient transportation. Over an 80-year time frame, however, all the parcels likely will be in the vicinity of some non-federal actions that will influence fish and wildlife habitats in the action area. Land management actions that will not be subject to separate consultation but will likely occur within the action area, include: commercial forest management, residential and commercial development, and farming.

1. Commercial forest management on non-federal lands will continue to occur and be regulated by the Washington Forest Practices Rules (WAC 222). On industrial and non-industrial forested lands, the Forest Practices Rules specify management for: the small forest landowner forest riparian easement program; watershed analysis; road construction and maintenance; timber harvesting; reforestation; and application of forest chemicals. Covered species will be impacted from these activities, often negatively, but sometimes positively, depending on the type and location of the forest practice.

The majority of the covered species in the TTF conservation plan are strongly associated with forested habitats. Modification of forests through management, or through natural processes, affects the covered species, as described for specific species in the Effects section of this Opinion. Forest practices in the action area will influence the covered species in many of the same ways as the TTF Conservation Plan. For example, the removal of snags, standing live trees, riparian trees, and forest canopy, and the overall simplification of forests are often detrimental to terrestrial and aquatic species. The Forest Practices Rules require that some of

these important forest components are left in association with forest practices, however, the cumulative and fragmented nature of these practices may not contribute to the maintenance or recovery of the covered listed species. For example, there are no provisions in the Forest Practices Rules to grow forests that may be capable of supporting late seral species, such as spotted owls and marbled murrelets. As such, the majority of the action area will never provide older forest habitat that supports these species.

2. Urbanization, resulting in fragmentation of forests and removal of fish and wildlife habitats throughout Lewis County is expected to continue. Lands that are currently managed for commercial timber and agriculture are expected to be converted for other uses within the action area. This conversion may be especially pronounced and occur most rapidly near major transportation corridors. The effects of land conversion were not analyzed to great depth in the TTF Conservation Plan, nor in this Opinion, but an important factor of both documents is that lands under the Conservation Plan will stay under long-term forest management, instead of being converted to other non-forest uses.

As stated earlier, Lewis County is in a transition period as it slowly moves from a natural resource economy to one more dependent upon other revenue sources. The action areas surrounding the parcels are generally within, or close to, the forest/urban interface and will be increasingly attractive for urbanization. Some farms may stay as farms, but others may convert to residential home sites or commercial sites over the 80-year permit duration. Some timberland owners may also be prone to urbanization for a variety of economic and social reasons (Kline 2000). Urbanization often results in a decline in aquatic and terrestrial habitats. Increased water runoff, loss of wetlands, stream channel simplification, permanent removal of forest canopy and forest structure, and forest fragmentation will affect terrestrial and aquatic species in the action area.

3. Agriculture is expected to continue within Lewis County. Livestock grazing and confinement operations, pesticide applications, stream bank control, and planting and harvesting of row crops will affect the covered species throughout the area. Many of these agricultural practices will be detrimental to forest-dwelling species.

These types of activities will affect terrestrial and aquatic species in the action area through increased water runoff, increased nutrient loading, animal trampling of sensitive wetland areas, mortalities of plant and animal species through the use of pesticides, introduction of potential diseases, and introduction of non-native plant species. Terrestrial and aquatic species likely will be negatively affected by these practices through reduction and degradation in habitats. Individual animals may also be directly killed in these areas.

Commercial forest management, urbanization, and agriculture are reasonably certain to occur within the action area. Local, regional, and international markets will influence how lands are managed in Lewis County, including the action area. While it may not be possible to predict at what rate and precisely where these things will happen over an 80 year period, the trend does suggest a slowly changing economy for Lewis County (Caudill 2001).

The outcomes caused by these various land management options to the covered species within the action area will often be detrimental. However, the action area covers only an extremely small portion of their larger ranges. As detailed in the Status section of this Opinion, most of the covered species have large range-wide distributions throughout forested areas of the state, and beyond the state. A potential exception to this is the currently unlisted Van Dyke's salamander, which is known from only three areas in Washington. There are no records of the species within the action area, and generally, the action area is not expected to offer high quality habitat. Another covered species, the Oregon spotted frog, has a range-wide distribution that is relatively large and extends well beyond Washington state. However, it is now known to occur in only three locations within Washington. None of these locations are in Lewis County and much of the action area would not provide suitable habitat for the species.

In summary, even if the entire action area was degraded substantially due to future non-federal activities over the next 80 years, it would not affect species viability for any of the 15 covered species. This is based principally on the very limited acreage associated with the action area, the preponderance of lower quality habitats within the action area and, in some cases, a lack of habitat.

CONCLUSION

Covered Species

After reviewing the current status of the spotted owl, marbled murrelet, and bald eagle, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the Conservation Plan, as proposed, is not likely to jeopardize the continued existence of these threatened species. No critical habitat for the marbled murrelet or spotted owl will be affected by the Conservation Plan. After reviewing the current status of the other 12 unlisted species (see list below), the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's conference opinion the Tagshinny Tree Farm Conservation Plan, as proposed, is not likely to jeopardize the continued existence of these 12 species.

Coastal cutthroat trout, Oregon spotted frog, Van Dyke's salamander, northwestern pond turtle, great blue heron, pileated woodpecker, osprey, northern goshawk, olive-sided flycatcher, long-eared myotis, long-legged myotis, Pacific Townsend's big-eared bat

Generally, the Conservation Plan will have neutral to moderately beneficial effects for the species analyzed under this Biological/Conference Opinion. Forest habitat conditions will improve over time in comparison to their current condition. Below is a summary of the rationale for the determination of this no-jeopardy Biological/Conference Opinion.

1. The Conservation Plan is for an extremely limited amount of land (total of 144 acres) in 5 parcels within the range of these species;

2. The various habitat types will show a general improvement over their current baseline conditions;
3. The Conservation Plan ensures that the lands will stay under forest management for 80 years;
4. The Conservation Plan generally extends the length of rotation for the forest, which is beneficial for these species overall;
5. Timing restrictions for certain species will be implemented if the species are found nesting on the TTF;
6. Green recruitment trees, snags, and down logs will be retained to provide important habitat features and structural diversity;
7. Riparian and wetland habitats will be protected and improve in function over their current baseline condition.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, and federal regulations issued pursuant to section 4(d) of the Act, prohibits take of endangered and threatened species, respectively, without a special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the Conservation Plan is not considered to be a prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The proposed Tagshinny Tree Farm Conservation Plan, (which includes both a Safe Harbor Agreement and Candidate Conservation Agreement with Assurances) and its associated documents, clearly identify anticipated impacts to affected species likely to result from the proposed taking and the measures that are necessary and appropriate to minimize those impacts. All conservation measures described in the proposed Conservation Plan are hereby incorporated by reference as reasonable and prudent measures and terms and conditions within this Incidental Take Statement pursuant to 50 CFR §402.14(i). Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(A) and section 7(o)(2) of the Act to apply. If the Applicant fails to adhere to these terms and conditions, the protective

coverage of the section 10(a)(1)(A) permit and section 7(o)(2) may lapse. The amount or extent of incidental take anticipated under the proposed Tagshinny Tree Farm Conservation Plan, associated reporting requirements, and provisions for disposition of dead or injured animals are as described in the Conservation Plan and its accompanying section 10(a)(1)(A) permit.

Twelve of the fifteen species addressed in this Biological/Conference Opinion are not currently listed under the Act. Therefore, there are no take prohibitions in place for these 12 species at the time of this writing. The incidental take statements below, (and the section 10(a)(1)(A) Permit as it pertains to these species), do not become effective until (if and when) the currently unlisted species are listed under the Act. To the extent these incidental take statements conclude that take of any migratory bird species listed as threatened or endangered under the Act will result from the Service's issuance of the Permit, the Service will not refer the incidental take of such migratory birds or eagles for prosecution under Migratory Bird Treaty Act of 1918, as amended (16 USC sections 703-712) or the Bald and Golden Eagle Protection Act of 1940, as amended (16 USC sections 668-668-d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

Take Not Covered

It is our policy (per Region 1 memorandum of July 27, 1998) to not consider for inclusion pesticide applications as a covered activity under section 10(a)(1)(B) and 10(a)(1)(A) Permits. The exceptions are those HCPs that address this topic and were submitted to us before July 27, 1998. The Tagshinny Tree Farm Safe Harbor Agreement and Candidate Conservation Agreement with Assurances was submitted to us after 1998. No take is authorized as a result of pesticide use in the Plan Area as a result of this Agreement.

Amount or Extent of Take

The Service anticipates that the proposed action has the potential to result in the incidental take of permit species, as detailed below. We anticipate incidental take of individuals of the permit species would often be difficult to observe for the following reasons: 1) low likelihood of finding an individual injury or death (and relating it to the action), given the relatively low density, secretive nature/concealing habitat (such as fossorial or log dwelling species), small size, and/or sporadic distribution of most proposed permit species; 2) the delayed effects of many of the activities that could take proposed permit species; 3) the rapid rate of decomposition of some of the proposed permit species after death. However, take for these species can be anticipated by removal or degradation of suitable habitat that the species is expected to use for their life history needs, or harassment activities that may affect species in suitable habitat through noise and visual harassment, as measured in acres. Even though the likelihood of some of these species occurring on the TTF is low, now and in the future, take estimates are provided for them. As such, take will be estimated in acres on TTF parcels that may currently, or eventually, be capable of supporting the species.

Northern Spotted Owl

We anticipate that an undetermined number of northern spotted owls would be taken over an 80 year period as a result of this proposed action. The number of spotted owls to be taken could not be determined, but it is anticipated to be extremely low. This is based on the low amount of suitable habitat in the general landscape surrounding the TTF and the low likelihood for the recruitment of suitable habitat in the future on the TTF. Spotted owl habitat that may eventually develop on TTF lands is expected to be low quality, primarily dispersal and potentially foraging type habitats. The management practice of commercial thinning will encourage stand growth, and hence potentially dispersal habitat and low quality foraging habitats to develop. When thinning occurs in dispersal or low quality foraging habitat, it may temporarily degrade the habitat, with eventual recovery of those habitats after given adequate time. Because of this, all of the TTF may at one time provide some level of low quality habitat over the duration of 80 years. Because of these factors, and that the Applicant will be committing to extending the forest rotation, the Service is granting take for spotted owls over all the forested covered lands of the TTF, for a total of 133 acres.

Take of spotted owls will be in two forms: disturbance from harassment that alters behavioral patterns of spotted owls; and harm from the removal or degradation of habitat that spotted owls use. Over an 80 year term, spotted owls may potentially be incidentally taken from legal TTF management practices (covered activities).

The incidental take over 80 years is expected to be in the following forms:

Harassment: None of the TTF lands currently occur within a designated spotted owl territory. As such, there will be no take of spotted owls for the immediate period. Over the 80 year Conservation Plan, if spotted owl territories change location, and or spotted owls disperse through the landscape, take could occur on TTF lands. Disturbance, in the form of harassment, from the covered activities could cause take of northern spotted owls. Because the parcels are distributed across the landscape, multiple owls could be taken by harassment, including both territorial and dispersing individuals. As such, the Service is authorizing harassment of an undetermined number of spotted owls associated with covered forest management activities on 133 acres of the TTF during the 80 year period.

Harm: None of the TTF lands currently occur within a designated spotted owl territory nor are any spotted owls known to occur on the TTF. As such, there will be no take of spotted owls for the immediate period. Over the 80 year term, if spotted owl territories change location, or spotted owls disperse through the landscape, take could occur on TTF lands. The proposed action of the Conservation Plan will never recruit high quality owl habitat, but some dispersal habitat and limited foraging habitat may eventually develop. The covered activities could degrade, and or eliminate, these lower quality habitats. Because the parcels are distributed across the landscape, multiple owl sites could be taken. As such, the Service is authorizing harm of an undetermined number of spotted owls associated with the 133 acres of the Conservation Plan during the 80 year period.

Injury/death: No take in the form of direct injury or death on the TTF is anticipated to spotted owls from the covered activities.

Marbled Murrelet

We anticipate that an undetermined number of marbled murrelets would be taken over an 80-year period as a result of this proposed action. The number of marbled murrelets to be taken could not be determined but is anticipated to be extremely low. This is based on the current rarity of suitable nesting habitat on TTF lands; the difficulty and remote chance of recruiting suitable nesting habitat during the 80 period on the TTF; and the pertinent conservation measures that will be implemented through the Conservation Plan. There is a very low likelihood that marbled murrelets will ever nest on TTF lands, but in the rare event that they do, the Service is granting take for the species.

The TTF is composed of very young forest, with some residual trees that were left from previous timber harvest, for example in riparian zones and some upland areas. It is these small patches of forest that have the highest relative potential on the TTF to eventually develop into suitable nest trees. It is estimated that there are currently 2 acres on the Highway 12 parcel that are suitable habitat and another 31 acres of small forest patches with some residual trees that have the highest relative potential to eventually develop into habitat, although this is considered very low for reasons specified in the Effects section.

Take of marbled murrelets will be in two forms: disturbance from harassment that alters behavioral patterns of marbled murrelets; and harm from the removal or degradation of habitat that marbled murrelets may use. Over an 80 year term, marbled murrelets may potentially be incidentally taken from legal TTF management practices. The likelihood of this is considered extremely low, however, due to the current and future habitat conditions on the TTF and in the broader landscape habitat conditions surrounding the TTF.

The incidental take over 80 years is expected to be in the following forms:

Harassment: It is expected that the proposed covered activities will cause incidental take through harassment. Covered activities will mostly occur in unsuitable habitat, but occasionally may occur adjacent to areas that may potentially provide habitat, as described above and in the Effects section. As such, the Service is authorizing harassment of an undetermined number of marbled murrelets associated with the 133 acres during the 80 year period.

Harm: It is expected that the covered activities would, on extremely rare occasions, degrade suitable habitats for marbled murrelets through removal of forest. The Highway 12 parcel is the most likely place that it would occur, as it has been identified as having some suitable habitat present. Other parcels are less likely to have, or eventually recruit, suitable habitat. But as described above, approximately 31 acres have the highest relative potential to develop into marbled murrelet habitat, or provide individual trees with nesting features. Timber harvest adjacent to suitable nesting habitat, or potential nesting trees, could increase the chance of

blowdown, and or other tree mortalities, that could degrade suitable habitat. The chance of increasing predation upon marbled murrelets as a result of increasing edge effects, is also possible from timber harvest in suitable habitat and adjacent to suitable habitat. Regeneration harvest would eliminate habitat altogether. As such, the Service is authorizing harm of an undetermined number of marbled murrelets associated with covered forest management activities on 33 acres of the TTF during the 80 year period.

Injury/death: No take in the form of direct injury or death on the TTF is anticipated to marbled murrelets from the covered activities.

Bald Eagle

We anticipate that an undetermined number of bald eagles would be taken over an 80-year period as a result of this proposed action. The number of bald eagles to be taken could not be determined but is anticipated to be low. This is based on the current absence of nesting and low likelihood of communal roost sites on the properties; the expected present and future habitat types; and also in conjunction with the pertinent conservation measures to protect this species.

Take of bald eagles will be in two forms: disturbance from harassment that alters behavioral patterns of bald eagles; and harm from the removal or degradation of habitat that bald eagles may use. Over an 80 year term, bald eagles may potentially be incidentally taken from legal TTF covered activities.

The incidental take over 80 years is expected to be in the following forms:

Harassment: It is expected that the proposed covered activities will cause incidental take through harassment. The Kinzie and Highway 12 parcels are the most likely places that it would occur. The Service is authorizing harassment of an undetermined number of bald eagles associated with covered forest management activities on the Highway 12 parcel and the Kinzie parcels, for a total of 82 acres.

Harm: It is expected that the proposed covered activities would, on extremely rare occasions, slightly degrade suitable habitats for bald eagles through removal of trees. The Kinzie and Highway 12 parcels are the most likely places this could occur. The highest quality habitats that bald eagles would be expected to use on these parcels will generally be protected, although there will be some partial harvest in areas that could provide habitat for bald eagles. Regeneration harvest will happen outside, but next to, some of these areas. Both forms of this timber harvest could increase the chance of blowdown, and or other tree mortalities, that could degrade suitable habitat. Suitable winter communal roosting habitat could also be degraded if a roost site had partial timber harvest associated with it, although a regeneration harvest would eliminate the roost site in its entirety. The Service is authorizing harm of bald eagles over 82 acres associated with covered forest management activities for these two parcels over the duration of the Conservation Plan.

Injury/death: No take in the form of direct injury or death of bald eagles is anticipated from the covered activities.

Cutthroat Trout

The Service anticipates that an undetermined number of coastal cutthroat trout may be taken over the 80-year period as a result of the proposed action. Coastal cutthroat trout are known to occur in the watershed of the Kinzie parcel, and resident forms may already be present in the wetland. When fish passage is restored at the county road, cutthroat trout use will most likely increase in the Kinzie wetland and adjacent streams. Take, in the form of harm, may occur as a result of habitat degradation from tree removal and road maintenance in the riparian management zone.

Take of cutthroat trout will be from harm caused by the removal or degradation of riparian and in-stream habitat that affects cutthroat trout. Over an 80 year term, cutthroat trout may potentially be incidentally taken from legal TTF covered activities

Harm: It is expected that the covered activities would temporarily degrade cutthroat habitat. Aquatic habitat could be degraded by the covered activities from: temporal increases in fine sediments; loss of shade from blowdown magnified by timber harvest; timber harvest of recruitable in-stream wood; potential reduction of bank stability from tree harvest; and loss of detrital inputs from tree removal. As such, the Service is authorizing harm of an undetermined number of cutthroat trout associated with the 850 feet of seasonal stream and 1 acre of the wetland on the Kinzie Road parcel during the 80 year period.

Injury/death: The Service does not anticipate any direct injury or death to cutthroat trout from the covered activities.

Oregon Spotted Frog

We anticipate that an undetermined number of Oregon spotted frogs would be taken over an 80-year period as a result of this proposed action. The number of Oregon spotted frogs to be taken could not be determined, but is anticipated to be extremely low. This is based on the current low likelihood of occurrence of the species on the TTF, and considering the pertinent conservation measures to protect this species if they should ever colonize the TTF.

Over an 80 year term, Oregon spotted frogs may be incidentally taken from legal TTF covered activities. The Kinzie parcel is the most likely parcel that take could occur. Take of Oregon spotted frogs may occur in two forms: disturbance from harassment that alters normal behavioral patterns; and harm from the removal or degradation of habitat that Oregon spotted frogs may use.

The incidental take over 80 years is expected to be in the following forms:

Harassment: It is expected that the proposed covered activities will cause incidental take through harassment associated with the covered forest management activities. As such, the Service is

authorizing harassment of an undetermined number of Oregon spotted frogs associated with 67 acres of upland, aquatic, and riparian habitats on the Kinzie parcel during the 80 year period.

Harm: It is expected that the proposed covered activities would, on extremely rare occasions, degrade suitable habitats for Oregon spotted frogs through the covered activities. The Kinzie parcel is the most likely place that it would occur because of suitable habitat availability. Partial timber harvests within the riparian, and or wetland zones, could temporarily degrade micro habitats that the frogs are dependant upon, leading to incidental take. The Service is authorizing harm of an undetermined number of Oregon spotted frogs associated with 67 acres of upland, aquatic, and riparian habitats on the Kinzie parcel over the 80 year term of the Conservation Plan.

Injury/death: The Service anticipates an extremely low amount of direct injury or death to Oregon spotted frogs from the covered activities associated with the 67 acre Kinzie parcel.

Van Dyke's Salamander

We anticipate that an undetermined number of Van Dyke's salamanders would be taken over an 80-year period as a result of this proposed action. The number of Van Dyke's salamanders to be taken could not be determined, but is anticipated to be very low. This is based on the current low likelihood of occurrence on the TTF in conjunction with the pertinent conservation measures to protect this species.

Over an 80 year term, Van Dyke's salamanders may be incidentally taken from legal TTF covered activities. Take of Van Dyke's salamanders may occur in two forms: disturbance from harassment that alters normal behavioral patterns; and harm from the removal or degradation of habitat that the species may use.

The incidental take over 80 years is expected to be in the following forms:

Harassment: It is expected that the proposed covered activities will cause incidental take through harassment. As such, the Service is authorizing harassment of an undetermined number of Van Dyke's salamanders over the 67 acres associated with the Kinzie parcel and 15 acres associated with the Highway 12 parcel, for a total of 82 acres during the 80 year period.

Harm: It is expected that the proposed covered activities would, on extremely rare occasions, degrade suitable habitats for Van Dyke's salamanders through the covered activities. The Kinzie parcel is the most likely place that it would occur because of suitable habitat presence. Partial timber harvests within the riparian, and or wetland zones, could temporarily degrade micro habitats that the species are dependant upon, leading to incidental take. The Service is authorizing harm of an undetermined number of Van Dyke's salamanders over the 67 acres associated with the Kinzie parcel and 15 acres associated with the HWY 12 parcel, for a total of 82 acres during the 80 year period.

Injury/death: The Service anticipates an extremely low amount of direct injury or death to Van Dyke's salamanders from the covered activities associated with the 67 acre Kinzie parcel.

Northwestern Pond Turtle

We anticipate that an undetermined number of northwestern pond turtles would be taken over an 80-year period as a result of this proposed action. The number of northwestern pond turtles to be taken could not be determined, but is anticipated to be extremely low. This is based on the current low likelihood of occurrence on the TTF, the low likelihood of future recruitment to the TTF, and in conjunction with the pertinent conservation measures to protect this species.

Over an 80 year term, northwestern pond turtles may be incidentally taken from legal TTF covered activities. Take of northwestern pond turtles may occur in two forms: disturbance from harassment that alters normal behavioral patterns; and harm from the removal or degradation of habitat that the species may use.

The incidental take over 80 years is expected to be in the following forms:

Harassment: It is expected that the proposed covered activities will cause incidental take through harassment. As such, the Service is authorizing harassment of an undetermined number of northwestern pond turtles associated with the 67 acre Kinzie parcel during the 80 year period.

Harm: It is expected that the proposed covered activities would, on extremely rare occasions, degrade suitable habitats for northwestern pond turtles through the covered activities. The Kinzie parcel is the most likely place that it would occur because of the presence of suitable habitat. Partial timber harvests within the riparian, and or wetland zones, could temporarily degrade micro habitats that the species are dependant upon, leading to incidental take. Upland forest management activities may change and degrade habitat that northwestern pond turtles may use for dispersing, nesting, overwintering, or aestivating. The Service is authorizing harm of an undetermined number of northwestern pond turtles associated with 67 acres of upland, aquatic, and riparian habitats on the Kinzie parcel over the 80 year term of the Conservation Plan.

Injury/death: The Service anticipates a low amount of direct injury or death to northwestern pond turtles from the covered activities associated with the 67 acre Kinzie parcel.

Great Blue Heron

We anticipate that an undetermined number of great blue herons would be taken over an 80-year period as a result of this proposed action. The number of great blue herons to be taken could not be determined, but is anticipated to be low. This is based on the current situation that great blue herons are not nesting on TTF lands now, and if they return, the conservation measures will provide protection measures for the species. The most likely places that take could occur are the Highway 12 parcel and the Kinzie parcel, due to availability of nearby foraging areas. Great blue herons normally nest in trees in riparian habitats. If great blue herons eventually return to one or

both of these parcels, they most likely would nest in a riparian habitat, although we can't be certain. For the Kinzie parcel, considering the wetland habitat, approximately 1,750 lineal feet of riparian habitat associated with the small stream, and immediately adjacent upland habitat, there are approximately 25 acres that nesting would be most likely. We are considering all of the Highway 12 parcel to provide potential nesting habitat.

Over an 80 year term, great blue herons may be incidentally taken from legal TTF covered activities. Take of great blue herons may occur in two forms: disturbance from harassment that alters normal behavioral patterns; and harm from the removal or degradation of habitat that great blue herons may use.

The incidental take over 80 years is expected to be in the following forms:

Harassment: If the species returns to the TTF, it is expected that the proposed covered activities will cause incidental take through harassment by forest management in the adjacent harvest units. As such, the Service is authorizing harassment of an undetermined number of great blue herons over the 67 acres associated with the Kinzie parcel and 15 acres associated with the Highway 12 parcel, for a total of 82 acres during the 80 year period.

Harm: If the species returns to the TTF, it is expected that the proposed covered activities would, on extremely rare occasions, degrade suitable habitats for great blue herons through the covered activities. The Highway 12 parcel and the wetland and riparian habitats associated with the Kinzie parcel are the most likely places this could occur. Partial timber harvests within the riparian, and or wetland zones, could temporarily degrade habitats that the species are dependant upon, leading to incidental take. Timber harvest on the adjacent upland stands may lead to increased blowdown, or other tree mortalities, that would also lead to take. The Service is authorizing harm of an undetermined number of great blue herons over 25 acres associated with the Kinzie parcel and 15 acres associated with the Highway 12 parcel, for a total of 40 acres during the 80 year period.

Injury/death: The Service anticipates an extremely low amount of direct injury or death to great blue herons from the covered activities associated with the 40 acres of the TTF on the Kinzie and Highway 12 parcels.

Pileated Woodpecker

We anticipate that an undetermined number of pileated woodpeckers would be taken over an 80-year period as a result of this proposed action. The number of pileated woodpeckers to be taken could not be determined, but is anticipated to be low. This is based on the limited acreage associated with the Conservation Plan, the large territory size often used by the species, and the pertinent conservation measures to protect the species. Over the duration of the Conservation Plan, forested acreage will provide varying amounts and quality of habitat with snags, down logs, and forested habitats. Because of these factors, and that the Applicant will be committing to extending the forest rotation, the Service is granting take for pileated woodpeckers over all the forested covered lands of the TTF, for a total of 133 acres.

Take of pileated woodpeckers will be in two forms: disturbance from harassment that alters behavioral patterns of pileated woodpeckers; and harm from the removal or degradation of habitat that the species may use. Over an 80 year term, pileated woodpeckers may potentially be incidentally taken from legal TTF covered activities.

The incidental take over 80 years is expected to be in the following forms:

Harassment: It is expected that the proposed covered activities will cause incidental take through harassment. Because of the large territorial nature of the species, the implemented conservation measures, the low amount of acreage (133 acres) involved, and the lower quality habitats involved, take from harassment is expected to be relatively infrequent, but will probably occur. As such, the Service is authorizing harassment of an undetermined number of pileated woodpeckers associated with covered forest management activities over 133 acres on the TTF during the 80 year period.

Harm: It is expected that the proposed covered activities would occasionally degrade suitable habitats for pileated woodpeckers, and in the case of regeneration harvests, eliminate the habitat. The removal of snags that the species utilize for their life history needs is particularly detrimental and some unsafe snags will probably be removed when they conflict with worker safety. The Service is authorizing harm of an undetermined number of pileated woodpeckers associated with covered forest management activities over 133 acres on the TTF during the 80 year period.

Injury/death: Pileated woodpecker nesting surveys will not be conducted, so there is the potential that eggs or pre-fledged birds could be killed through timber harvest. The Service anticipates an extremely low amount of direct injury or death to pileated woodpeckers from the covered activities over the 133 acre Conservation Plan.

Osprey

The Service anticipates that an undetermined number of ospreys would be taken over an 80 year period as a result of this proposed action. The number of ospreys to be taken could not be determined, but it is anticipated to be extremely low. This is based on the limited amount of habitat with the TTF and the associated pertinent conservation measures with the Conservation Plan. Generally, the Conservation Plan should provide neutral to slightly beneficial affects for ospreys. However, take is being granted for the habitats and areas on the TTF that may be most likely to eventually harbor ospreys.

Take of ospreys will be in two forms: disturbance from harassment that alters behavioral patterns of ospreys; and harm from the removal or degradation of habitat that the species may use. Over an 80 year term, ospreys may potentially be incidentally taken from legal TTF management practices.

The incidental take over 80 years is expected to be in the following forms:

Harassment: It is expected that the proposed covered activities will cause incidental take through harassment. As such, the Service is authorizing harassment of an undetermined number of

ospreys associated with covered forest management activities over 82 acres on both the Highway 12 and Kinzie parcels during the 80 year period.

Harm: It is expected that the proposed covered activities would, on extremely rare occasions, slightly degrade suitable habitats for ospreys through removal of timber. The Kinzie and Highway 12 parcels are the most likely places that it would occur, because of their proximity to foraging habitats. The highest quality riparian habitats that ospreys would be expected to use on these parcels will generally be protected, although, there will be some partial harvest in areas that could provide habitat for ospreys. Upland forests could also provide suitable nest trees that ospreys could use, and these areas will be subject to regeneration harvests. Although nest trees would not be harvested, regeneration harvest could impact nest trees. Both regeneration and partial timber harvest could increase the chance of blowdown, and other tree mortalities, that could degrade suitable habitat. The Service is authorizing harm of ospreys associated with covered forest management activities over 82 acres on the Highway 12 and Kinzie parcels over the 80 duration of the Conservation Plan.

Injury/death: No take of direct injury or death of ospreys is anticipated from the covered activities.

Northern Goshawk

We anticipate that an undetermined number of northern goshawks would be taken over an 80-year period as a result of this proposed action. The number of northern goshawks to be taken could not be determined, but is anticipated to be very low. This is based on the limited acreage associated with the Conservation Plan, the large territory size often used by the species, the fact that TTF lands are unlikely to ever offer high quality northern goshawk habitat, and the conservation measures that will be implemented to protect the species. The TTF will never offer ideal northern goshawk nesting habitat, and may primarily offer foraging opportunities, depending upon the stage of the forest. Because of these factors, and that the applicant will be committing to extending the forest rotation, the Service is granting take for northern goshawks over all the covered forest lands of the TTF, for a total of 133 acres.

Take of northern goshawks will be in two forms: disturbance from harassment that alters behavioral patterns of northern goshawks; and harm from the removal or degradation of habitat that the species may use. Over an 80 year term, goshawks may potentially be incidentally taken from legal TTF management practices.

The incidental take over 80 years is expected to be in the following forms:

Harassment: It is expected that the proposed covered activities will cause incidental take through harassment. In the rare circumstance that a northern goshawk nest site occurred on the TTF, or if they were foraging on TTF lands, some covered activities could disrupt the behavior of the species that could affect their survival. As such, the Service is authorizing harassment of an undetermined number of northern goshawks associated with covered forest management activities for 133 acres of the TTF during the 80 year period.

Harm: It is expected that the covered activities could, on rare occasions, degrade suitable habitats for northern goshawks, and in the case of regeneration harvests, eliminate the habitat. The TTF will never offer ideal northern goshawk nesting habitat, and may primarily offer foraging opportunities, depending upon the stage of the forest. The removal of high canopy closure forests that the species utilize for their life history needs is detrimental, and at certain times during the 80 year permit period, this will happen. The Service is authorizing harm of an undetermined number of northern goshawks associated with the covered forest management activities for 133 acres of the TTF over the 80 year duration.

Injury/death: The Service does not anticipate any direct injury or death to northern goshawks from the covered activities over the 133 acre Conservation Plan.

Olive-sided Flycatcher

We anticipate that an undetermined number of olive-sided flycatchers would be taken over an 80-year period as a result of this proposed action. The number of olive-sided flycatchers to be taken could not be determined, but is anticipated to be low. This is based on the limited acreage associated with the Conservation Plan (133 forested acres), and the pertinent conservation measures that will be implemented to protect the species. Over the duration of the Conservation Plan all parcels will at some time offer varying quality habitat for the species. Olive-sided flycatcher habitats will develop, and eventually in some situations, be degraded. Because of these factors, and that the Applicant will be committing to extending the forest rotation, the Service is granting take for olive-sided flycatchers over all the covered lands of the TTF.

Take of olive-sided flycatchers will be in two forms: disturbance from harassment that alters behavioral patterns of olive-sided flycatchers; and harm from the removal or degradation of habitat that the species may use. Over an 80 year term, olive-sided flycatchers may potentially be incidentally taken from legal TTF forest management practices.

The incidental take over 80 years is expected to be in the following forms:

Harassment: It is expected that the proposed covered activities will cause incidental take through harassment. There may be covered activities that occur in close proximity to nesting olive-sided flycatchers that reduce survival of impacted birds. As such, the Service is authorizing harassment of an undetermined number of olive-sided flycatchers over the 133 forested acres associated with the TTF during the 80 year period.

Harm: It is expected that the proposed covered activities would occasionally degrade, and potentially eliminate habitat in some cases, for olive-sided flycatchers. The removal of snags and large dominant trees could be especially detrimental. The Service is authorizing harm of an undetermined number of olive-sided flycatchers over the 133 acres of TTF lands for the 80 year duration of the Conservation Plan.

Injury/death: Olive-sided flycatcher nesting surveys will not be conducted, so there is the potential that eggs or pre-fledged birds could be killed through timber harvest. The Service

anticipates a very low amount of direct injury or death to olive-sided flycatchers could occur from the covered activities over the 133 acre TTF for the 80 year period.

Long-eared Myotis and Long-legged Myotis

We anticipate that an undetermined number of long-eared myotis and long-legged myotis would be taken over an 80-year period as a result of this proposed action. The number of long-eared myotis and long-legged myotis to be taken could not be determined, but is anticipated to be low. This is based on the limited acreage associated with the Conservation Plan, the apparent rarity of high quality myotis habitats on TTF lands, the absence of caves and or mine tunnels, and the pertinent conservation measures to protect the species. Take is being authorized for all parcels on the TTF because there will be occasional, suitable tree habitats on these parcels over the 80 year duration.

Take of long-eared myotis and long-legged myotis will be in two forms: disturbance from harassment that alters behavioral patterns of these species; and harm from the removal or degradation of habitat that the species may use. Over an 80 year term, these species may potentially be incidentally taken from legal TTF covered activities.

The incidental take over 80 years is expected to be in the following forms:

Harassment: It is expected that the proposed covered activities will cause incidental take through harassment when covered forest management activities occur near maternal or solitary roost sites. Covered activities that occur in foraging habitat may also cause harassment. As such, the Service is authorizing harassment of an undetermined number of long-eared myotis and long-legged myotis over the 133 acres associated with the TTF during the 80 permit term.

Harm: It is expected that the proposed covered activities would occasionally degrade suitable habitats for long-eared myotis and long-legged myotis. The removal of snags, trees that these species use for roosting, maternity colonies, or hibernation, would be especially detrimental. The Service is authorizing harm of an undetermined number of long-eared myotis and long-legged myotis over 133 acres of TTF lands for the 80 year permit term.

Injury/death: Long-eared myotis and long-legged myotis surveys will not be conducted, so there is the potential that these species could be killed through timber harvest. The Service anticipates a very low amount of direct injury or death to these species could occur from the covered activities over the 133 acre TTF for the 80 year duration.

Pacific Townsend's Big-eared Bat

We anticipate that an undetermined number of Pacific Townsend's big-eared bat would be taken over an 80-year period as a result of this proposed action. The number of Pacific Townsend's big-eared bat to be taken could not be determined, but is anticipated to be extremely low. This is

based on the limited acreage associated with the Conservation Plan, the absence of caves and or mine tunnels on the TTF, and the pertinent riparian conservation measures to protect the species. The Service expects that any take of the species would primarily affect foraging habitat, and would be very temporary in nature.

Any take of Pacific Townsend's big-eared bat would primarily be from disturbance that alters behavioral patterns of this species. Take, in the form of harm, is not expected to occur because there are no roosting habitats from caves or mine tunnels on the TTF. Over an 80 year term, this species may potentially be incidentally taken from legal TTF covered activities.

The incidental take over 80 years is expected to be in the following forms:

Harassment: It is expected that the proposed covered activities could cause incidental take through harassment. This could potentially occur in areas that may provide foraging habitat, primarily associated with riparian/aquatic habitats when covered activities occur in or adjacent to these habitats. As such, the Service is authorizing harassment of an undetermined number of Pacific Townsend's big-eared bat associated with the Highway 12 parcel and the Kinzie parcel for a total of 82 acres of the TTF for the 80 permit term.

The Service is not granting any direct take that causes injury or death of Pacific Townsend's big-eared bat. This is based primarily on the absence of suitable roost sites on the TTF with the resultant extremely low likelihood of the species occurring on the TTF.

EFFECT OF THE TAKE

In the accompanying Opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the following listed species: marbled murrelets, northern spotted owls, and bald eagles. In addition, the Service has determined that this level of anticipated take is not likely to result in jeopardy to the following currently unlisted species: coastal cutthroat trout, Oregon spotted frog, Van Dyke's salamander, northwestern pond turtle, great blue heron, pileated woodpecker, osprey, northern goshawk, olive-sided flycatcher, long-eared myotis, long-legged myotis, and Pacific Townsend's big-eared bat

REASONABLE AND PRUDENT MEASURES/TERMS AND CONDITIONS

All conservation measures and enhancement activities described in the proposed Tagshinny Tree Farm Conservation Plan (including both the Safe Harbor Agreement and Candidate Conservation Agreement with Assurances) are hereby incorporated by reference as reasonable and prudent measures and terms and conditions within this Incidental Take Statement, pursuant to 50 CFR 402.14(i). Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(A) and section 7(o)(2) of the Act to apply. If the Applicant fails to adhere to these terms and conditions, the protection of the section 10(a)(1)(A) Permit and section 7(o)(2) may lapse. The amount or extent of incidental take anticipated under the

proposed Conservation Plan, the associated reporting requirements, and provisions for disposing of dead or injured animals, are calculated per the proposed action described in the Conservation Plan and the accompanying section 10(a)(1)(A) Permit.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, help implement recovery plans, or to develop information.

We recommend the following per our section 7(a)(1) responsibilities:

1. The Service should conduct regular compliance monitoring and stay in close communication with the Applicant.
2. The Service should provide updates and information to the Applicant on new technologies and scientific advances in habitat management relevant to the types of habitats and species associated with the Agreement.
3. The Service will encourage the Applicant to consult with the WDFW when locating leave trees, to maximize habitat and species benefits.
4. The Service will encourage the Applicant to consult with the WDFW about the potential for in-stream wood placement when harvest units occur in proximity to the stream on the Kinzie parcel.

REINITIATION – CLOSING STATEMENT

This concludes formal consultation on the proposed Tagshinny Tree Farm Safe Harbor Agreement and Candidate Conservation Agreement with Assurances. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions regarding this Opinion, please contact Mark Ostwald of my staff at (360) 753-9564 or the letterhead phone/address.

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