WILLAMETTE VALLEY NATIVE PRAIRIE HABITAT PROGRAMMATIC SAFE HARBOR AGREEMENT FOR THE FENDER'S BLUE BUTTERFLY

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1. INTRODUCTION

The purpose of this programmatic Safe Harbor Agreement (Agreement) is to encourage non-Federal landowners to undertake proactive conservation and restoration actions designed to benefit the Fender's blue butterfly (*Icaricia icarioides fenderi*), Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*), and other native prairie species in Benton, Lane, Linn, Marion, Polk and Yamhill Counties of Oregon. The programmatic nature of the Agreement provides eligible landowners with a streamlined process for obtaining assurances that certain actions taken to benefit the Fender's blue butterfly will not result in additional regulatory obligations under the Endangered Species Act (ESA).

The Agreement is administered and implemented by the U.S. Fish and Wildlife Service's (Service's) Oregon Fish and Wildlife Office (OFWO) and Willamette Valley National Wildlife Refuge Complex (WV Refuge Complex). The OFWO serves as the "Permittee," and may enroll eligible and interested non-Federal landowners (Cooperators) through Certificates of Inclusion under this Agreement (see template in Appendix 1). Any Certificate of Inclusion may include roles and responsibilities to be carried out by additional signatory partners. The Service's WV Refuge Complex will also seek to develop and administer Certificates of Inclusion where they are involved in activities on the Cooperator's enrolled lands as a project partner. Although the OFWO is the designated Permittee, the WV Refuge Complex as a signatory to the Agreement will work jointly with the OFWO in all aspects of this Agreement. Collectively, the Permittee, Cooperators, and any other signatories to Agreement or Certificates of Inclusion are hereafter called the "Parties." This Agreement follows the Service's Safe Harbor Agreement policy (64 FR 32717) and regulations (64 FR 32706), both of which implement section 10(a)(1)(A) of the ESA.

2. BACKGROUND

The Willamette Valley ecoregion of Oregon includes the Willamette Valley and adjacent foothills, bounded on the west by the Coast Range and on the east by the Cascade Range, with dimensions up to 60 kilometers (40 miles) wide and 200 kilometers (120 miles) long (Defenders of Wildlife 1998, PNECRC 2002). It is estimated that just over one million acres of historical native grasslands existed in the Willamette Valley prior to 1850. Open prairie conditions were maintained in large part due to burning by the Kalapooya Indians for food production that effectively reduced the establishment of woody vegetation.

Fender's blue butterfly and Kincaid's lupine were once distributed throughout much of the historical native prairie, primarily in uplands. However, over the last century and a half, approximately 99 percent of the known habitat area for these species has been lost due to fire

suppression, invasive species encroachment, and land conversion to agricultural and urban uses. Current estimates of the remaining native upland prairie in this area are less than 988 acres (400 hectares) (USFWS 2000), making western Oregon upland prairie one of the most endangered ecosystems in the United States (Noss *et al.* 1995). Remnant habitats remain threatened by all of the same factors. For instance, urbanization is expected to continue in the Willamette Valley in order to accommodate a population that is projected to nearly double from the current count of over 2 million people (approximately 70 percent of the total Oregon population) by the year 2050 (ODFW 2006, p. 235; Hulse *et al.* 2002, p. 107).

In addition to the direct consequences of native prairie habitat loss and degradation, the fragmentation of remnant habitats has resulted in small, isolated populations of both Fender's blue butterfly and Kincaid's lupine, leading to additional threats associated with demographic and genetic factors such as inbreeding depression (USFWS 2000). As of the time of its listing in 2000, the Fender's blue butterfly was known to occupy only 32 sites across 408 acres (165 hectares), and Kincaid's lupine was known to occupy 54 known sites across 370 acres (150 hectares). These species are closely associated. Of the 32 sites found to support Fender's blue butterfly, Kincaid's lupine has been documented co-occurring as a larval host plant at 27 of them (USFWS 2000).

Most of the remaining populations of Fender's blue butterfly and Kincaid's lupine are on private lands, threatened by further habitat loss, invasion by non-native and woody plants, and the elimination of fire as a disturbance regime that was historically used to maintain native prairie habitat (Wilson *et al.* 2003). Habitats containing those features that are essential to the conservation of the known core populations have been identified, leading to the designation of 3,009.7 acres (1,218 hectares) as critical habitat for the Fender's blue butterfly, and 584.6 acres (236.5 hectares) for Kincaid's lupine in 2006. The majority of this designated acreage is on private lands (66 percent), with the rest being Federal (33 percent) and state and county/city (1 percent) (USFWS 2006a).

The Willamette Valley ecoregion has the lowest percentage of land specifically managed for biodiversity conservation in Oregon (Defenders of Wildlife 1998), with just over one percent of its land and water dedicated to conservation purposes (Macdonald 2000). About 96 percent of the Willamette Valley ecoregion is in private ownership (ODFW 2006). The conservation and recovery of Fender's blue butterfly, Kincaid's lupine and the suite of native species associated with them will rely, in large part, on the voluntary actions of many non-Federal landowners to conserve, enhance, restore, reconnect and actively manage native prairie habitats that support these species (USFWS 2006b).

3. PURPOSE AND NEED FOR THE AGREEMENT

The primary objective of this Agreement is to encourage actions designed to benefit the federally-listed as endangered Fender's blue butterfly and associated species by addressing landowner concerns about their ESA-related regulatory obligations if they engage in conservation and restoration activities that improve conditions for the butterfly on their property. In return for their voluntary conservation efforts, non-federal landowners (Cooperators) can receive assurances that allow them to return their enrolled property to the original baseline conditions for the butterfly. Under this Agreement, permit coverage can be extended to

Cooperators that will allow for specified future activities that may otherwise be subject to ESA take prohibitions so that those landowners will not be subject to new regulatory restrictions if beneficial activities successfully attract Fender's blue butterflies or benefit an existing population on their lands.

The Service has been actively working to implement restoration projects with landowners throughout the Willamette Valley for many years. Although many landowners have voluntarily restored habitat on their property, the ability for the Service to provide regulatory assurances for actions that benefit listed species is expected to increase landowner participation. To that end, this Agreement is intended to provide a streamlined approach for addressing landowner concerns related to the ESA that will further encourage ongoing habitat restoration efforts, and provide for new opportunities. Without this cooperative effort, it is assumed that many of the enrolled lands would not be used to contribute to the conservation and recovery of the Fender's blue butterfly and other at-risk species in the foreseeable future.

4. COVERED SPECIES

This Agreement covers the Fender's blue butterfly, a federally-listed as endangered species, hereafter referred to as the "covered species" or "butterfly." The Fender's blue butterfly is closely associated with Kincaid's lupine, a federally-listed as threatened plant. Activities are encouraged to benefit both species under this Agreement.

5. DESCRIPTION OF LANDS ELIGIBLE FOR ENROLLMENT

The geographical area covered by this Agreement includes the range of the Fender's blue butterfly, which occurs on prairie habitat within the Willamette Valley in Benton, Lane, Linn, Polk and Yamhill Counties of Oregon (see maps in Appendix 2). We are also including Marion County, because it is possible that Fender's blue butterfly may be discovered or may recolonize sites there in the future. Properties that are eligible for enrollment are non-Federal lands where the butterfly occurs or could occur through colonization, translocation or reintroduction. Eligible properties typically include pastures, hayland, cropland, vineyards, nurseries, Christmas tree farms, woodlands, and urban and rural areas managed as open spaces or left as remnant prairies.

Suitable or potential habitat will be evaluated by the Service based on available site information and field visits, and will be used to prepare or approve site-specific plans for any lands to be enrolled. Site-specific plans may be the same as those developed for a Partners for Fish and Wildlife project, an Oregon Department of Fish and Wildlife "Wildlife Habitat Conservation and Management Plan," a conservation plan approved by a Soil and Water Conservation District or the Natural Resource Conservation Service, a Nature Conservancy Cooperative Agreement, or for another similar program as long as all items included on the Site-Specific Plan Checklist (see Appendix 3) are included. Eligible Cooperator properties that are enrolled by the Permittee through the acceptance of site-specific plans and issuance of Certificates of Inclusion are hereafter referred to as the "enrolled property." Enrolled properties will be precisely described in the site-specific plans.

6. BASELINE DETERMINATIONS

The Parties agree that prior to the enrollment of a Cooperator through a Certificate of Inclusion under this Agreement, a current baseline determination will be made for the covered species. The baseline(s) will be established by mutual agreement between the Parties, and, if greater than zero, will be described and mapped as occupied habitat in each site-specific plan. If desired by any of the Parties, or deemed necessary by the Permittee to obtain a baseline determination, a survey or site review will be conducted at the appropriate time of year by a qualified biologist.

Botanical surveys to determine the extent to which Kincaid's lupine may be present should be conducted during the optimal survey period when flowering occurs, which is typically in May and June. Surveys should also be conducted to determine the same for spur lupine (*Lupinus arbustus*) and sickle-keeled lupine (*L. albicaulis*), which have also been found to serve as larval host plants for the butterfly. The extent to which the property supports nectar plants that may be used for adult butterfly food sources (see nectar sources list in Appendix 4) or stepping-stone habitat should also be determined if the site is within or near (i.e., within 1.2 miles or about 2 kilometers) any known natal lupine patches (USFWS 2006a, p. 63878). If desired, a site-specific "prairie quality index" and/or "index of prairie diversity" (or similar) could also be determined using the methods discussed in the Recovery Outline for *Lupinus sulphureus spp. kincaidii* (USFWS 2006b) in order to document baseline qualitative habitat conditions and for reference in monitoring changes over time.

If Fender's blue butterfly occurrence on the property is unknown and it has been determined that a) the property supports or may support any of the host lupine species mentioned above, and/or b) the site is found to support nectar plant sources or potential stepping-stone habitat near natal lupine patches, a presence/absence survey should be done. The survey should consist of thorough field observations for adults during the flight period (mid-May to early July) and egg searches on host lupine plants (during the same period) throughout the area to be enrolled to determine whether or not the species occurs on site and to identify any occupied locations. The surveyor(s) must be deemed to be qualified by the Permittee. If the butterfly is found to be present, the protocol in Appendix 5 or an alternate protocol approved by the Service may be used to census the population, if desired by any of the Parties to obtain more information. However, a population census is not required as part of the baseline determination.

In each site-specific plan, the current baseline on each property occupied by Fender's blue butterflies shall be described as occupied habitat based on the results of the botanical survey(s), the butterfly presence/absence survey and population census (if applicable). The locations of any occupied habitat areas will be delineated on a site map with associated acreage figures. Because some habitat exists in a degraded or low quality state (i.e. isolated plants or areas that lack adequate plant associations for breeding and feeding), site-specific baseline determinations may also include an assessment of habitat quality, at the option of the Parties. In these situations, baseline determinations may employ an estimate of the total or aggregated plant cover that contributes to butterfly habitat and will establish a baseline-level equivalent that considers habitat quality, quantity and location for Fender's blue butterfly.

For any federally-listed species that may occur within the area covered by a site-specific plan, the landowner is not released from the responsibility of avoiding "take" of endangered or threatened species that are present prior to enrollment under this Agreement. In cases where the butterfly does *not* currently occur on-site, the baseline will be zero, or an elevated baseline (i.e., set above zero even if the species or habitat does not occur on-site) may be established by mutual agreement of the Parties. In those instances where use of the enrolled property is not currently subject to any restriction under the ESA, there are no (i.e., zero) baseline responsibilities applicable to the enrolled property.

7. MANAGEMENT CONSIDERATIONS

Cooperators must carry out habitat restoration and/or management activities that are anticipated by the Parties to produce a net conservation benefit for the covered species. Work to be conducted on a Cooperator's enrolled lands will be described in a site-specific plan that must be approved by the Permittee and incorporated as part of the Certificate of Inclusion for the enrolled lands. The management considerations discussed in sections 7.A. and 7.B. below provide guidance and principles for designing site-specific plans.

A. Management considerations for the Fender's blue butterfly

The Fender's blue butterfly suffers from few populations, low numbers and habitat fragmentation. Conserving existing populations and actively maintaining, enhancing and expanding the size of existing butterfly habitat patches will be essential for recovery. In addition, reestablishing habitat connectivity by creating stepping stones of habitat between existing butterfly populations will improve the prospects for individuals to reach other suitable habitats for reproduction, dispersal and recolonization (USFWS 2006a, p. 63874).

Schultz *et al.* (2003) summarized the biology, conservation issues and recovery needs for the Fender's blue butterfly. Their paper states that achieving the level of population growth rate needed for recovery will require "(1) active, aggressive management of existing habitats; (2) where possible, augmenting the size of existing habitats, and (3) restoration of habitat in areas that are entirely degraded." The following are key considerations and guidelines for designing management strategies to benefit the Fender's blue butterfly and their habitat:

i. Habitat patch size and proximity to other patches are important considerations. If a site is more than a few kilometers from an existing Fender's blue butterfly population, it will function independently and in isolation (Schultz 1998). In this case, at least 15 acres (6 hectares) of high quality habitat should be restored to begin a new butterfly population. If a new site is within about 1 km (0.62 miles) of existing habitat (based on butterfly dispersal ability, USFWS 2006a) and major barriers to dispersal are absent, it is likely to interact with existing habitat, thus reducing the minimum size requirement needed for that site to benefit an existing population (Schultz *et al.* 2003).

ii. Management of habitat requires maintaining an open, prairie structure – a condition that ensures the vigor of obligate lupine host plants and other native nectar plants, and which is conducive to butterfly flight in search of food and mates. Butterfly use of lupine host plants seems to be impaired when the plants are overgrown and shaded by taller vegetation. Habitat management techniques needed to address this issue are mowing and removal of weeds or competing vegetation. Prescribed burning in late-summer or early fall can be used to improve habitat quality. However, burning should be avoided or used with caution in areas where Fender's blue butterfly occurs because it can kill the larvae (Schultz *et al.* 2003). In occupied habitat, burning should be done in accordance with the guidelines discussed under "Prescribed fire" in section 8B.

iii. Site-level factors that should be considered when designing habitat restoration projects include three primary components: providing sufficient abundance of larval host plants (i.e., Kincaid's, spur and sickle-keeled lupine), sufficient abundance of nectar plants, and a prairie community structure that promotes healthy populations of host and nectar plants unencumbered by overtopping shrubs, trees, or tall exotic grasses. In addition, providing and maintaining a diversity of native nectar flowers can help ensure that sufficient nectar sources will be available throughout the flight season, from around early May through late June (Schultz *et al.* 2003). While some introduced nectar sources are used by the butterfly, native nectar sources have been found to be of higher quality than non-native sources (Schultz and Dlugosch 1999). Native nectar sources should be incorporated into habitat restoration and enhancement projects if needed so the butterflies will spend more of their limited flight time (approximately 15 days) egg laying, and less time meeting their food requirements from lower quality sources, such as exotic vetches (Schultz *et al.* 2003, p. 65, 67 as cited in USFWS 2006a).

B. Management considerations for the Kincaid's lupine

While Kincaid's lupine is not a covered species under this Agreement, it is recognized as critical in providing for the conservation and recovery of the Fender's blue butterfly since it is a larval host plant and nectar source. Being a federally-listed species, it is also in need of management actions to ensure its long-term survival. Therefore, actively restoring and managing butterfly habitat will typically involve actions designed to benefit both listed species.

Wilson *et al.* (2003) summarized the biological information and identified key issues related to the recovery and protection of Kincaid's lupine. They state that the three major threats to Kincaid's lupine populations are habitat loss, invasion by non-native plants, and elimination of historical disturbance regimes such as fire that has led to the successional advancement of woody species (Wilson *et al.* 2003, USFWS 2000). Key considerations and guidelines for designing management strategies to benefit Kincaid's lupine are as follows:

i. Habitat patch size is an important factor for Kincaid's lupine seed production and seed fitness, and the associated risk of inbreeding depression (USFWS 2006a). Kincaid's lupine populations should be maintained or expanded to consist of at least 0.25 acres (0.1 ha) of lupine cover, and connectivity should be maintained or improved so that populations are located within 5 miles (8 km) of neighboring populations (Gisler *et al.*, in litt. 2005, pp. 6, 7 as cited in USFWS 2006a). The 5-mile criterion is based on the travel distance of the common honeybee (*Apis mellifera*) (Beekman and Ratnieks 2000, p. 493; Steffan Dewenter and Kuhn 2003, p. 571 as cited in USFWS 2006a), which is the pollinator with the greatest travel distance for Kincaid's lupine (Gisler *et al.*, in litt., 2005, p. 7 as cited in USFWS 2006a).

ii. Efforts to increase and re-introduce populations should focus on areas that are within the historical Kincaid's lupine distribution, and that currently exhibit conditions that are known to support the species and which are likely to result in successful lupine establishment.

iii. Natural colonization of extirpated sites is unlikely, so active efforts to reintroduce Kincaid's lupine will likely be required for it to become established where it is currently absent. The best available science on restoration, site preparation, and the viability and establishment of Kincaid's lupine seeds and seedlings summarized in Wilson *et al.* (2003), and supplemented by any subsequent research findings that may become available, should be used to develop propagation and restoration methods at the time a site-specific plan is developed.

iv. Symbiotic relationships with nitrogen-fixing bacteria and mycorrhizal fungi may be important. If it is likely that symbionts are scarce, propagated and introduced Kincaid's lupine plants and seeded areas could benefit from inoculation by adding small amounts of soil from sites that currently support the species.

v. Open prairie conditions that allow for a high level of exposure to sunlight are required to support Kincaid's lupine. In full sun, the lupine tends to grow more leaves, and those leaves in turn may be used for egg-laying by the butterfly. A variety of tall grasses and herbaceous and woody species, including many that are invasive non-native species, shade and displace the lupine, and compete for water and nutrients. Site-specific plans should include active management practices (e.g., prescribed burning, mowing and weed removal) that will help to maintain, restore and enhance habitat for the lupine and other native prairie species.

8. ON-THE-GROUND ACTIVITIES

The on-the-ground activities and best management practices discussed in this section serve as a menu of typical activities that will occur to restore habitat under this Agreement. Activities can be chosen selectively and incorporated into a site-specific plan as appropriate for a given property to be enrolled. All of the activities are intended to benefit listed species, and care will

be be taken to avoid short-term adverse affects to listed species (e.g., trampling, compressing, etc.) whenever possible.

A. Surveys and monitoring

Surveys may be conducted by individuals that are deemed to be qualified by the Permittee to determine the baseline for the covered species, to monitor responses to management activities, and to assess population health and trends. Fender's blue butterfly surveys may be done using observations for presence of the species at a site, non-destructive egg or larvae counts or the protocol in Appendix 5. Monitoring of Kincaid's lupine may be accomplished by measuring the area of plant coverage or counting the number of lupine stems along a series of transects or plots. Other methods may be used as appropriate to meet the purposes of the monitoring effort upon approval by the Permittee.

Monitoring surveys may be conducted over the entire range of Fender's blue butterflies and Kincaid's lupine each year on lands that are enrolled or on lands under consideration for enrollment under this Agreement in order to collect baseline information. Handling of individuals of these species is only to be done by individuals specifically permitted for this purpose and is to be kept to the minimum needed to complete the surveys. No more than five percent of the Fender's blue butterfly population on lands to be surveyed may be captured per week, throughout the flight season, for identification purposes.

B. Removal of invasive non-native species and woody vegetation

Upland prairie sites that do, or that could, support Fender's blue butterflies and Kincaid's lupine generally require routine treatment to remove woody vegetation and invasive exotic plants, such as Himalayan blackberry (*Rubus armeniacus*) and Scot's broom (*Cytisus scoparius*), in order to maintain and enhance the native plant community and open prairie conditions.

i. Manual treatments

Manual maintenance typically involves eliminating woody vegetation and exotic species by hand or with hand tools, such as lopping shears, shovels, hoes, weed wrenches, lopping sheers, trowels, and weed pullers. These activities may be implemented year-round. However, the work will be conducted between mid-August and February whenever possible in habitat occupied by Fender's blue butterfly. Manual removal of woody vegetation and exotic species may occur on all portions of an enrolled property each year.

ii. Mechanical treatments - ground-level

In some situations, the use of mechanical treatments may be more appropriate than manual techniques, e.g., for controlling dense stands of tall fescue (*Festuca arundinacea*) or for releasing competition around numerous Kincaid's lupine plants

and/or patches of native plants. Mechanical maintenance techniques include mowing, line trimming, grubbing, girdling trees, raking, and chain saw or mechanical removal of woody species. Mechanical maintenance activities in occupied Fender's blue butterfly habitat will primarily be conducted when the lupine and nectar plants have completed seed production and the butterflies are in diapause (i.e., mid-August through February), unless otherwise specified in a site-specific plan where the techniques and locations of the treatments will have no effect on listed species. Mechanical treatment to remove woody vegetation, exotic species and competing plants may occur on up to one-half of the occupied Fender's blue butterfly habitat on an enrolled property each year. One hundred percent of the area of those sites may be mechanically treated over time.

When mowing occupied Fender's blue butterfly habitat, mowers will be set to a blade height high enough to minimize the risk of gouging the ground, harming low-stature native plants, and impacting butterfly larvae (generally at least 10 to 15 centimeters (cm) [4 to 6 inches]). Tractor mowers that are rubber-tracked are preferred over wheeled mowers whenever practicable. Mowing may be conducted throughout sites with Fender's blue butterflies after lupine senescence and before lupine re-emergence (generally August 15 to March 1). After the butterfly flight season but before Kincaid's lupine senescence (generally June 30 through August 15), tractor mowing may occur no closer than 2 meters (m) (6 feet) from the nearest Kincaid's lupine plants. Mowing with hand-held mowers may be implemented during the Fender's blue butterfly flight season (generally May 1 to June 30) as long as a buffer of at least 8 m (25 feet) is maintained between the mower and any individual of a Kincaid's lupine plant.

Early spring tractor mowing (i.e., March 1 through May 15) may be used for management purposes only in habitat unoccupied by the butterfly. At unoccupied butterfly sites with listed plants, the preferred timing for mowing will be in the fall and winter after listed plants have senesced for the season (generally August 15 through February). Spring mowing may be implemented at unoccupied sites with listed plants if needed to achieve the management objective and as long as a buffer of at least 2 m (6 feet) is maintained from the nearest listed plants. However, if needed to control serious infestations of weeds that reproduce mainly by seed (e.g., meadow knapweed [*Centaurea* x *pratensis*]), up to one half of the listed plant population at a site may be mowed in an effort to reduce seed set by non-native weeds. The mowers will generally be set to a height of 10 to 15 cm (4 to 6 inches) in order to reduce harm to low-stature native plants and minimize gouging the ground.

Line trimmers, which provide more precision than mowers, may be used in occupied habitat in early spring when necessary. Care will be taken to minimize the risk of injuring low-stature native plants and Fender's blue butterfly larvae with the line trimmers.

Raking may be used to reduce thatch build up. Rakes may be tractor-mounted or hand-held, and can help to gather and loosen thatch and leaf litter. Thatch that

exceeds 10 to 20 percent cover can reduce native plant species diversity or rare plant habitat availability, and may also increase small mammal populations that damage native plants. Raking will occur after listed plants have senesced for the season. Efforts will be made to avoid disturbing underlying soil. At sites supporting Fender's blue butterfly populations, between one quarter and one third of the occupied habitat may be raked annually. Efforts will be made to identify and avoid individual, semi-senesced Nelson's checker-mallow. Tractors shall be equipped with rubber tracks whenever practicable to minimize soil compaction. Thatch and leaf litter will be removed from significant prairie habitats.

iii. Mechanical treatments – tilling, plowing, disking and sod rolling

Tilling, plowing, disking and sod rolling may be used as management activities to kill or suppress invasive plant species and prepare sites for native vegetation establishment in areas that have been heavily infested with non-native and invasive plant species. These activities will not be conducted where they may adversely affect listed plants or butterflies (generally within 10 m [30 feet] of known populations). Erosion control measures and buffers will be maintained as needed to prevent soil run-off into adjacent watercourses. These activities may occur within oak savanna habitats. Care will be taken to avoid the root-zones of desirable trees and shrubs to the extent possible in order to minimize potential impacts to those plants. Care is to be taken to select access routes designed to avoid trampling or compressing listed species.

A plow or tractor with a tiller attachment may be used to turn the soil up to 30 cm (12 inches) deep in the treatment area. This action disturbs the root system of the weeds and exposes them to sunlight, reducing the viability of the weed species. It also brings up the seed stock and promotes weed growth, which can then be treated by further disking or herbicide applications. Additional tilling and disking applications may be needed to promote and then suppress new weed growth, reducing the weed seed stock in the soil. Once tilling, plowing and disking activities have been completed, the treated area will be further prepared by packing the soil to eliminate air pockets and create a surface crust that can help maintain surface moisture, and the area will be seeded or planted with native vegetation (Campbell 2004), especially potential nectar plants.

Sod rolling may be used to control invasive plant species, especially those with rhizomes such as reed canary grass. A bulldozer is used to roll away the top layer of soil and plant material, leaving a relatively intact soil layer beneath. The bulldozer pushes the vegetative mat and deposits the mat into windrows at the edge of the site. The invasive plant and sod windrows are composted in place, killing the invasive plant seeds and root material. Afterward, remaining soil can be re-used on site for site restoration activities. This technique will not be used where listed plants or butterflies are present but is suitable in adjacent habitats (generally no closer than 10 m [30 feet] from listed species) for site preparation prior to reintroduction or augmentation of listed or other native species.

iv. Prescribed fire

In the fall (i.e., mid-August through November), prescribed burns may be performed to discourage woody plant growth, remove accumulated leaf litter and duff, and encourage the spread of native prairie grasses and forbs. An annual burn unit (ABU) will be determined based on the individual site conditions and population sizes. Prescribed fire may be used to manage prairie habitats on the enrolled property each year, but the area that may be burned in any one year is limited on sites occupied by Fender's blue butterfly and Nelson's checker-mallow, as described below. A vegetative buffer (generally 15-m [50-feet] wide) and erosion control measures will be maintained along any adjacent watercourse as needed to avoid the risk of potential impacts to listed fish.

The ABU for sites supporting 100 or more adult Fender's blue butterflies may be a maximum of one-third of the occupied habitat. The ABU for sites with less than 100 adult Fender's blue butterflies may be up to a maximum of one-fourth of the occupied habitat. No more than half of any area occupied by Nelson's checker-mallow may be burned, because this species may not have completely senesced in the fall when prescribed burns are implemented. The center of the ABU will be within 100 meters of unburned occupied habitat, which can serve as a recolonization source. Once burned, a unit will not be re-burned for at least three years so that butterfly or plant populations may rebuild. The use of fire for habitat maintenance inherently increases the risk of accidentally impacting more habitat than originally intended. The responsible Parties will plan to burn approximately five percent less than the annual maximum so that the maximum allowable ABU will not be exceeded.

Large woody plants will be removed before burning to reduce fuel loads if feasible. Ignition of burn areas will be by hand using propane, fuses, or drip torches. Pre-burn hose lays, wet-lining, or fire retardant foam will be used to control and suppress fires. However, fire retardant chemicals will be used sparingly near listed plant and butterfly populations, and will typically not be used where they could enter a watercourse (generally no closer to water than 40 m [120 feet]). Prescribed burns will be conducted in a manner consistent with state and local smoke management regulations. Vehicles will not be operated in areas where listed species occur. Additionally, where patch size allows, butterfly refugia within burn units will be protected with a fire break and/or watered down before burning.

During a burn year on sites occupied by Fender's blue butterfly, management activities will also be limited for adjacent units of the site. For example, if one-third of the site is burned, the remaining unburned portion of the site will not be mowed so that the maximum area affected by management activities is no more than one-third of the site.

When using prescribed fire as a management technique, additional consideration of subsequent annual treatments for the ABU will be necessary. That is, in the year

following a burn, management of that unit will be limited to manual techniques and herbicide applications.

Occupied habitat that is scheduled to be burned may be used as a source for collecting Fender's blue butterfly eggs and larvae if an appropriate holding/rearing facility is available. Any eggs and larvae that are collected will be used to further research on Fender's blue butterfly. Research efforts may provide information that will improve the effectiveness of captive rearing, reintroduction, or augmentation techniques for future use at historical or declining sites that currently do not support a viable population, or to increase the stability of existing populations. While it is acknowledged that this activity may occur on lands enrolled under this Agreement, a separate ESA 10(a)(1)(A) permit will be required for any associated collection, rearing and reintroduction of Fender's blue butterflies.

v. Herbicide use

Herbicide application, used alone or in combination with other methods, may be used where appropriate to provide a feasible and effective strategy for controlling invasive species and preparing sites for native plant restoration. Specific herbicides anticipated for restoration and management under this Agreement in occupied habitat (i.e., that supports either Kincaid's lupine or Fender's blue butterfly), or where occupied habitat may be affected, are described below. These herbicides were selected based upon their efficacy and relatively low risk to federally-listed species when applied as described. In addition to the guidelines specified for each herbicide below, the best management practices (BMPs) at the end of this section apply to all herbicide use anticipated under this Agreement.

At sites supporting Fender's blue butterflies, the size of the area treated with herbicides will generally be limited to one quarter to one third of the occupied habitat actively used by butterflies. Larger areas of treatment would only occur if the risk to butterflies was minimal and it was necessary to achieve the management objectives for the site. The seasonal use restrictions discussed below apply on sites where listed species and designated critical habitats are present. If neither is present, herbicide application may occur during other times of the year.

Triclopyr
Product(s): Garlon 3A® only with no surfactants
Purpose: This chemical is a systemic herbicide used to control woody and broadleaf plants (OSU 1996c). For the purposes of this Agreement, it may be used to control woody species, including both native and non-native tree and shrub species (e.g., Oregon ash, Oregon white oak, English hawthorn, serviceberry, cascara, etc.) in order to maintain an early seral native prairie community (i.e., suitable habitat for the covered species).
Application methods: This chemical will be hand painted or directly wicked onto fresh cut stumps, within 24 hours of cutting. For broadleaf weed control, it will be

applied primarily via spot foliar application using a hand-held wand or mounted on an all-terrain vehicle. No spraying will occur.
Surfactants: None.
Seasonal use: Application timing is limited to the summer dry period after native plants have senesced (typically August 15-October 31), and to allow for residual chemical to break down prior to fall rains.

Glyphosate
Product(s): Rodeo®, Roundup®, Aqua-Master® and Accord® with vegetative-based surfactant
Purpose: This chemical is a broad-spectrum, nonselective systemic herbicide used to control annual and perennial plants, including grasses, forbs, and woody species (OSU 1996b). For the purposes of this Agreement, it will be used to control non-native and invasive grasses and forbs (e.g., reed canary grass, tall oatgrass, bull thistle, etc.).
Application methods: This chemical will primarily be applied via spot foliar application using a hand-held wand (backpack or ATV-mounted) or ATV-towed weed wipers. ATV or tractor-mounted boom sprayers will only be used in limited areas dominated by invasive plants.
Surfactants: Only vegetable oil-based surfactants will be utilized, such as Super Spread MSO (principal functioning agents: methyl soyate and nonylphenol ethoxylate blend).
Seasonal use: Application timing will be limited to February 1-August 15 for wipe-on application to allow for control of tall invasives while protecting native plants. Spray and wipe-on application will be permitted August 15-October 31 , which is during the summer dry period after most native plants have senesced, and will allow for residual chemical to break down prior to fall rains.

2, 4-D Amine
Product(s): Weedar 64®) with vegetative-based surfactant
Purpose: This chemical is a systemic herbicide used to control many types of broadleaf plants (OSU 1996a). For the purposes of this Agreement, it will be used to treat non-native and invasive broadleaf species (e.g., Canada thistle, tansy ragwort, etc.).
Application methods: This chemical will primarily be applied via spot foliar application using a hand-held wand (from either a backpack or ATV-mounted sprayer). ATV or tractor-mounted boom sprayers will only be used in limited areas dominated by invasive plants. Spot application may occur on cut stems utilizing mow and spray or wipe implements such as a Brown Brush Monitor.
Surfactants: Only vegetable oil-based surfactants will be utilized, such as Super Spread MSO (principal functioning agents: methyl soyate and nonylphenol ethoxylate blend).
Seasonal use: Application timing is limited to February 1–August 15 for wipe-on application to allow for control of tall invasives while protecting native plants. Spray and wipe-on application will be permitted August 15-October 31, which is during the

summer dry period after most native plants have senesced, and will allow for residual chemical to break down prior to fall rains.

Clethodim
Product(s): Envoy® only with vegetative-based surfactant
Purpose: This chemical is a selective post-emergent herbicide used to control annual and perennial grasses (OSU 1996a). For the purposes of this Agreement, it will be used to treat non-native and invasive grass species (e.g., tall fescue, tall oatgrass, false brome, etc.)
Application methods: This chemical will primarily be applied via spot foliar application using a hand-held wand (backpack or ATV mounted) or ATV-towed weed wiper. Limited application may occur utilizing ATV or tractor-mounted boom sprayers on limited areas dominated by invasive plants.
Surfactants: Only vegetable oil-based surfactants will be utilized, such as Super Spread MSO (principal functioning agents: methyl soyate and nonylphenol ethoxylate blend).
Seasonal use: Application timing is limited to June 1-October 25 on upland prairie sites and August 1-October 25 on wet prairie sites. Though native forbes may have not completely senesced by this time of year, they should not be affected by application of this herbicide since it is grass-specific. Applications during these periods will allow for residual chemical to break down prior to fall rains.

Sethoxydim and Fluazifop-P-butyl
Product(s): Poast® or Fusilade II with vegetative-based surfactant
Purpose: These chemicals are selective post-emergent herbicides used to control annual and perennial grasses (OSU 1996b). For the purposes of this Agreement, these chemicals will be used to control non-native grasses (e.g., tall fescue, tall oatgrass, false brome, etc.)
Application methods: These chemicals will primarily be applied via spot foliar application using a hand-held wand (backpack or ATV mounted) or ATV-towed weed wipers. Limited application may occur utilizing ATV or tractor-mounted boom sprayers on limited areas dominated by invasive plants.
Surfactants: Only vegetable oil-based surfactants will be utilized, such as Super Spread MSO (principal functioning agents: methyl soyate and nonylphenol ethoxylate blend).
Seasonal use: Application timing is limited to the early season from February 15–May 15, as well as application between June 1-October 25 on upland prairie sites, and August 1-October 25 on wet prairie sites. Though native forbes may have not completely senesced by this time of year, they should not be affected by application of this herbicide since it is grass-specific. Applications during these periods will allow for residual chemical to break down prior to fall rains.

The BMPs below are designed to further reduce the risk of impacting non-target species, including Fender's blue butterfly, Kincaid's lupine and other listed plants. All applicable BMPs are to be followed whenever herbicides are used, and must be incorporated into any site-specific plan that involves the use of herbicides.

a) All manufacturer's label requirements and restrictions will be followed and recommendations will be used as appropriate (e.g., regarding application rates, use of surfactants, marking dies, foaming agents, weather conditions, personal protective equipment, etc.), while maintaining consistency with the guidelines described herein.

b) Herbicides will only be applied by licensed herbicide applicators.

c) Most activities covered under this Agreement will occur on uplands, but in any case, herbicide treatments will occur at least 40 m (120 feet) away from any ephemeral or perennial watercourse unless otherwise needed to achieve project objectives.

d) Herbicide application will only occur during calm dry weather conditions to prevent drift and runoff; no spraying will occur during windy conditions (i.e., over seven miles per hour), when precipitation is occurring or has been forecasted to occur within 24 hours of application, or if an inversion is occurring.

e) Sprayers will be set to minimize drift (e.g., with low nozzle pressure, large droplet size, low nozzle height) to the extent practical and feasible.

f) Dyes may be used for herbicide applications to ensure complete and uniform treatment of invasive plants as well as to immediately indicate drift issues.

g) If Kincaid's lupine plants occur on the site, the plants must be marked in the field before senescence. Only grass-specific herbicides (i.e., clethodim and sethoxydim) may be sprayed before the Kincaid's lupine plants have completely senesced.

h) If Fender's blue butterfly occurs, or is suspected to occur, on the site, Kincaid's, spur and sickle-keeled lupine plants must be marked in the field before senescence and avoided to the extent possible. Herbicide may only be applied when the butterflies are in diapause.

i) If Nelson's checker-mallow occurs on the site, any application of triclopyr, glyphosate or 2,4-D will be by hand (e.g., with a backpack sprayer wand) and plants may be covered (e.g., with 5-gallon buckets or other suitable shielding) or otherwise protected (e.g., by clipping leaves to remove exposed green tissue) as needed to reduce the risk of herbicide affecting the plants. Any coverings used will be removed immediately after herbicide treatment.

The use of herbicides to control invasive plants and other unwanted vegetation is a management tool for restoration under this Agreement. Since there are areas of

scientific and management uncertainty, some future actions may require refinement or change over time as new information or data from monitoring is available. Changes in existing treatments or use of alternative techniques may be warranted to achieve conservation and recovery goals. Alternative herbicides to those above described may be used provided that they are likely to have similar effects to listed species. Any changes in the use of herbicides would be analyzed for impacts to listed species and critical habitat and consultation would be reinitiated as appropriate. If herbicides with entirely new chemical properties are proposed for use, an amendment to this Agreement may be required.

vi. Solarization and shade cloth

Solarization involves the removal of heavily infested weed patches by tilling, then covering an area with plastic during the growing season. Elevated temperatures kill most of the target species. Follow-up with hand weeding may be necessary. Treated areas are typically seeded with native species. Solarization will only be implemented in habitat that is not occupied by Fender's blue butterfly, Kincaid's lupine or other listed plants.

Use of shade cloth is a technique to control monotypic weed infestations. Dark cloth is placed and fastened to the ground with stakes; the plants under the cloth die, and the cloth is subsequently removed after two years. Shade cloth will be installed during the growing season, but will not be used directly over any individuals of listed plants or near Kincaid's lupine plants (generally no closer than 20 m [65 feet]) to prevent inadvertent impacts to Fender's blue butterflies.

vii. Infrared radiation

Infrared radiation is a thermal control weed management technique. Covered infrared radiators are passed over sites proposed for prairie restoration that no longer support Fender's blue butterflies, Kincaid's lupine or other listed species. The high temperature damages the cellular structure and mostly kills weeds in early life stages (typically within several hours or few days). First signs of the effectiveness are change of leaf color and plant withering. Treated areas are typically seeded with native species. Infrared radiation treatment will only be implemented in unoccupied habitat.

C. Revegetation

Native plants may be seeded or planted to increase the cover and diversity of native vegetation on a project site, discourage potential spread and establishment of exotic and woody species and improve habitat for Fender's blue butterfly and other associated species. Adding native nectar plants to sites where native nectar plants are depauperate may be essential for successful butterfly habitat restoration (Alverson 2001 as cited in USFWS 2005a). Additionally, most of the current Fender's blue butterfly sites are

isolated from one another and in order to "connect" these habitats for Fender's blue butterfly dispersal, native prairie habitat patches will need to be reestablished.

Revegetation will involve many of the treatments to remove exotic vegetation as previously described, followed by the planting of native species, including Kincaid's lupine. This work will be conducted in early spring or late winter in occupied habitat, while Fender's blue butterflies remain in diapause, and at some distance from extant Kincaid's lupine plants, where the inactive larvae may be present. Spot tilling may be used to control monotypic weed patches. Revegetation may occur on all enrolled lands each year.

Seed and plant parts from native prairie plants may be collected to create nursery stock for restoration projects, and a variety of native forbs, including nectar species for Fender's blue butterfly. If listed species occur at a site where collection of seeds or plant parts of non-listed plants is to take place, care will be taken to avoid trampling or otherwise harming listed plants.

D. Collection, storage and cultivation of Kincaid's Lupine seed and plant material

The collection of some leaves, flowers, and seeds from Kincaid's lupine plants found on the enrolled lands may be allowed to support various seed banking, propagation and scientific research efforts designed to benefit the species. Sources of plant material may need to be developed for reintroduction purposes, and for research that may be essential in identifying new management techniques and understanding existing habitat conditions. Unless and until new guidance becomes available that is likely to improve the success of propagation efforts, the protocols below will be followed.

i. Plant material collection and transport

Kincaid's lupine seed is contained in seed pods. Seed may be collected by gathering pods or by gathering loose seed if pods are open. Mesh bags may be tied over stems with developing fruits to capture the seeds as the fruits open. While Kincaid's lupine produces rhizomes, propagation from root cuttings is not recommended. A limited number of leaves and flowers may be collected for research purposes.

Seed collection limits are as follows: up to 50% of seeds from populations of less than 50 individuals; up to 15% of seeds from populations of 50-500 individuals; and up to 25% of seeds from populations of over 500 individuals, or covering at least 60 square meters. The same limitations apply to the collection of leaves and flowers.

Before seeds are transferred to storage bags, they will be cleaned by hand or by sieve and blower. Collectors will use "breathable" containers to store and transport seed. Collectors will label all seed containers with the following information: 1) Name of plant; 2) Place of collection, and 3) Date of collection. During transport, seed will be stored in a cool, dry environment, avoiding heat (*i.e.*, trunk of car) or direct sunlight.

ii. Propagule storage

Seeds will be thoroughly dried and cleaned before long-term storage. Seeds will be stored in containers that are airtight and moisture proof to prolong their viability. To maintain dryness and deter insect predation, agents such as dry wood ash, diatomaceous earth, dry charcoal, lime, silica gel or paper may be added to storage containers. Seed material will be stored for no more than two years before cultivating or outplanting unless placed in a cold-storage facility.

iii. Propagule cultivation

Kincaid's lupine seeds will be scarified by scratching through the outside of the seed coat with a knife blade, flat metal file or sandpaper (Leininger 2001). Seed will also be cold stratified from 4 to 8 weeks at 1-8°C (35-46°F). Following scarification and cold stratification, seed will be placed at alternating temperatures such as 10°/20°C (50°F/68°F) either on germination paper or in pots with planting medium composed of standard potting mix and grown until suitable for outplanting.

Plants will be cultivated in greenhouses or nursery facilities so that individual populations are isolated in a manner that cross-pollination contamination does not occur. Mixing of genetic lines from source populations that are historically genetically isolated in the field can have deleterious effects due to out-crossing depression and could result in the loss of entire seed collection efforts, therefore mixing of genetic lines will be conducted with caution and according to a Service-approved genetic management program. Seed from field collections and their carefully maintained F1 progeny from the same population or populations from the same recovery zone may be cultivated for plant introduction activities. Under greenhouse cultivation, propagules and progeny from F1 and F2 generations may used for introduction into prairie habitat. Only the F1 generation should be used for subsequent propagation. The F2 generation propagules and plant plugs may be outplanted in the field, but further greenhouse propagation is not permitted. The F3 propagules or plant plugs will not be propagated or introduced into prairie habitat unless genetic information suggests that negative effects of genetic drift or domestication have not occurred.

E. Reintroduction and augmentation of Kincaid's lupine

Kincaid's lupine has been extirpated from many of its historical locations, and its reestablishment and recovery may not be possible without reintroduction efforts on sites such as those enrolled under this Agreement. In addition, reintroductions or augmentation of existing lupine populations may be necessary to provide stepping-stone habitat that will provide connectivity between Fender's blue butterfly populations and new habitats that can be colonized (USFWS 2006a). Therefore, efforts may be made to reintroduce Kincaid's lupine to suitable habitats or augment existing populations on enrolled properties. Any sites used for reintroduction will be carefully selected, managed and monitored using the guidance and best management practices discussed below.

Recovery plans, recovery policy, and current research findings will also be considered, as available, to provide the further direction on reintroduction efforts.

i. Seeding Kincaid's lupine

Non-native vegetation will be cleared in the immediate project area prior to seeding. Non-scarified seed may be planted after fall rains begin, generally from October to January, and scarified seed may be planted October to March. Seed will be sown at a depth of 0.25-1 cm (1/8-1/2 inches). In most instances, seed will be sown by hand. Seed may be sown with a no-till drill outside of areas where listed species occur and when soil is dry enough to support vehicle weight without soil compaction. In either case, seed will be sown in a manner that conforms to the density and spacing of the source populations, taking into consideration that significant pre-establishment mortality may occur and planting in higher densities may compensate for loss.

In order to assist with post-planting monitoring of introduction efforts, markers in the form of mapped grids, metal tags, or flags may be used to indicate locations of planted areas so they can be tracked over time. In addition, global positioning system-derived coordinates may be used to outline the areas.

ii. Planting Kincaid's lupine plugs

Plugs may be out-planted when soil is saturated by rain (i.e., generally November through April) and when the growing trends and cycles of individual plants from the greenhouse or nursery match that of plants growing in the field. Actively growing plugs should not be planted when natural plants are dormant. Habitat conditions (e.g., soil, topography, etc) should be similar to the habitat of source materials.

Plugs will be transplanted by hand into pre-excavated soil pits suitable to accommodate the plug along with soil amendments (including mix of planting and/or native soils) during fall and winter in upland prairie. No fertilizer will be used. Nitrogen-fixing *Bradyrhizobium* inoculum may be used to promote growth of root nodules. Plugs will only be out-planted in well-restored native prairie with minimal weed densities, especially grasses and aggressive non-native plant species. Care will be taken to avoid trampling of listed species.

Planting should occur in a manner that conforms to the density and spacing of the source populations, taking into consideration that some pre-establishment mortality will occur and planting in higher densities may compensate for loss. In order to assist with post-planting monitoring of plant augmentation and reintroduction efforts, markers in the form of mapped grids, metal tags, or flags will indicate locations of planted rhizomes and plugs so they can be tracked over time.

F. Threat reduction

Land use practices and site conditions may be changed to improve conditions for the Fender's blue butterfly, Kincaid's lupine, and other associated species. For example, grazing can be destructive to Kincaid's lupine and other native plants if it removes vegetative and reproductive plant structures, or if it disturbs the substrate. Grazers can also increase the spread or introduce invasive species into habitats (USFWS 2006b). Therefore, practices such as fencing to exclude livestock from sensitive areas, or changing the seasonal usage, may be included in site-specific plans. Similarly, the use of herbicides for a Cooperator's on-going land management practices may be curtailed or eliminated near sites where listed species occur. Opportunities to include measures that reduce threats and further improve conditions for listed species will be determined on a site-specific basis using available information, including recovery plans. Currently, a detailed account of the threats to existing populations of Kincaid's lupine is available in the Recovery Outline for *Lupinus sulphureus* spp. *kincaidii* (USFWS 2006b). Additional guidance will be available once recovery planning efforts for these species are completed.

9. OTHER RESPONSIBILITIES OF THE PARTIES

A. The Permittee

The Permittee (OFWO) agrees to:

i. Upon execution of the Agreement and satisfaction of all other applicable legal requirements, the OFWO will obtain and hold an enhancement of survival permit in accordance with ESA section 10(a)(1)(A), authorizing incidental take of the covered species as a result of lawful activities on the enrolled property in accordance with the provisions of such permit. The term of the permit will be 25 years.

ii. Work cooperatively with the Willamette Valley National Wildlife Refuge Complex to jointly administer and implement the Agreement on actions that support mutual goals.

iii. Hold any enhancement of survival permit issued pursuant to section 9.A.i hereof and extend coverage to qualified non-federal landowners (Cooperators) through issuance of Certificates of Inclusion.

iv. Encourage private landowner participation in the Agreement and enrollment as Cooperators.

v. Assist in development, review and/or approval of site-specific plans for lands proposed to be enrolled and managed by each respective Cooperator; ensure consistency and compliance with the provisions in this Agreement.

vi. Provide Cooperators with technical assistance to the maximum extent practicable when requested or needed.

vii. Ensure that impacts to cultural and historic resources due to activities to be carried out under this Agreement are avoided or otherwise in compliance with Section 106 of the National Historic Preservation Act.

viii. Issue Certificates of Inclusion with eligible Cooperators upon completion of qualified site-specific plans for the lands to be enrolled.

ix. Assist Cooperators with obtaining funding to conduct activities designed to benefit the covered species. Sources of these funds may be Farm Bill programs, the Partners for Fish and Wildlife Program, the Landowner Incentive Program, or other sources.

x. Carry out monitoring as described in this Agreement and in site-specific plans, as applicable. At a minimum, the Permittee, or designees thereof, will be responsible for making periodic site visits (every 1-3 years) to each enrolled property to conduct the following compliance monitoring:

a) Ensure that agreed-upon conservation measures are being implemented as specified in this Agreement and in site-specific plans.

b) Assess habitat and species presence in relation to the baseline to determine whether or not conditions are being maintained or are improving for the covered species.

c) Determine whether or not take of covered species has occurred.

xi. Prepare annual reports due no later than December 31st each year. At a minimum, annual reports shall include the items listed on the "Template – Permittee Annual Report" in Appendix 6.

B. The Willamette Valley National Wildlife Refuge Complex agrees to:

i. Work cooperatively with the Oregon Fish and Wildlife Office to jointly administer and implement the Agreement on actions that support mutual goals.

ii. Assist in development, review and/or approval of site-specific plans for lands proposed to be enrolled and managed by each respective Cooperator.

iii. Provide Cooperators with technical assistance to the maximum extent practicable when requested or needed.

C. The Cooperator

In consideration of the foregoing, the Cooperator agrees to:

i. Allow access to the enrolled property upon reasonable notice by the Permittee or other agreed-upon party for purposes related to this Agreement and associated site-

specific plan for activities including, but not limited to, monitoring, research, management, restoration and capture and relocation of the covered species.

ii. Notify the Permittee of any proposed or pending transfer of ownership so that the Permittee can attempt to contact the new owner, explain the baseline responsibilities and Certificate of Inclusion applicable to the enrolled property, and invite the new owner to continue the existing Certificate of Inclusion or enter into a new one that would benefit listed species on the enrolled property.

iii. Report to the Permittee any dead, injured, or ill specimens of the covered species observed on the enrolled property.

iv. Either directly or through a designated responsible party, submit an annual report to the Permittee no later than September 30th of each year. At a minimum, annual reports shall include all items listed on the "Template – Cooperator Annual Report" included in Appendix 7.

v. Cooperatively implement actions that will benefit the covered species, as described in this Agreement and in the site-specific plan for the enrolled property.

vi. Actively pursue resources, if necessary, to implement actions described in the site-specific plan, such as by providing funding and/or in-kind contributions (e.g. labor, materials and supplies) or seeking grants and support from other sources.

vii. Notify the Permittee 60 calendar days in advance of any planned activity that the Cooperator reasonably anticipates will result in "take" (i.e. death, injury or other harm) of the covered species on the enrolled property. Notify the Permittee immediately of any unexpected "take" on the enrolled property. This includes "take" that may result from management activities. Notification may be by letter, e-mail or phone.

D. Additional parties

Additional parties may participate in this Agreement. The roles and responsibilities of additional parties will be described in the Certificate(s) of Inclusion for specific lands to be enrolled, and all responsible parties will sign the Certificate(s) of Inclusion, as applicable and appropriate.

10. AGREEMENT DURATION

The Agreement becomes effective upon issuance by the Service of the section 10(a)(1)(A) enhancement of survival permit described in section 9 hereof and will be in effect for 15 years. The permit will have a term of 25 years. Certificates of Inclusion issued by the Permittee will extend permit coverage to Cooperators for a minimum of 10 years, unless cancelled, and will not have a term longer than the end date of the section 10(a)(1)(A) permit.

11. ASSURANCES REGARDING TAKE OF COVERED SPECIES

Provided that such take is consistent with maintaining the baseline conditions identified in an approved site-specific plan authorized by a Certificate of Inclusion to this Agreement and as described in section 6 hereof, the survival enhancement permit referenced in section 9 shall authorize the Parties to take the covered species incidental to otherwise lawful activities in the following circumstances, as appropriate:

A. Implementing the management activities identified in an approved site-specific plan authorized by a Certificate of Inclusion to this Agreement.

B. Carrying out routine activities on or adjacent to the enrolled property after management activities described in an approved site-specific plan authorized by a Certificate of Inclusion to this Agreement have been initiated.

C. Making any lawful use of the enrolled property after the management activities identified in an approved site-specific plan that coincides with a Certificate of Inclusion to this Agreement have been fully implemented.

12. MODIFICATIONS

A. Modification of the Permit/Agreement

The Permittee may propose amendments to the permit, as provided in 50 CFR 13.23. The Parties may propose amendment to the Agreement, as provided in 50 CFR 17.32(c)(5)(ii), by providing written notice to, and obtaining the written concurrence of, the other affected Parties. Such notice shall include a statement of the proposed modification, the reason for it, and its expected results. The affected Parties will have at least 30 days after receipt of such notice to respond to proposed modifications. Proposed modifications will become effective upon the written concurrence of other affected parties.

B. Termination of the Agreement

As provided for in Part 12 of the Service's Safe Harbor Policy (64 FR 32717), the Permittee or Cooperator may terminate the Agreement for circumstances beyond the control of the Permittee or Cooperator. In such circumstances, the Cooperator may return the enrolled property to baseline conditions even if the management activities identified in the site-specific plan for enrolled property have not been fully implemented, provided that the Cooperator gives the Service the notification required by section 9 above prior to carrying out any activity likely to result in the taking of the covered species. If the Cooperator terminates the Agreement for any other reason, the permit referenced in section 9 above shall immediately cease to be in effect.

C. Baseline Adjustment

The baseline conditions set forth in section 6 above may, by mutual agreement of the Parties, be adjusted if, during the term of the Agreement and for reasons beyond the control of the Cooperator, the utilization of the enrolled property by the covered species or the quantity or quality of habitat suitable for or occupied by the covered species is reduced from what it was at the time the Certificate of Inclusion was issued.

13. OTHER MEASURES

A. Remedies

Each party shall have any remedies otherwise available to enforce the terms of this Agreement, except that no party shall be liable in damages for any breach of this Agreement, any performance or failure to perform an obligation under this Agreement or any other cause of action arising from this Agreement.

B. Dispute Resolution

The Parties agree to work together in good faith to resolve any disputes arising under this Agreement, and may use dispute resolution procedures agreed upon by all Parties.

C. Succession and Transfer

If the Cooperator transfers his or her interest in the enrolled property to a non-Federal entity, the Service will regard the new owner as having the same rights and responsibilities with respect to the enrolled property as the Cooperator, if the new property owner agrees and commits in writing to become a party to this Agreement and subject to the permit referenced in section 9 hereof through a Certificate of Inclusion.

D. Availability of Funds

Implementation of this Agreement is subject to the requirements of the Federal Anti-Deficiency Act and the availability of appropriated funds. Nothing in this Agreement will be construed by the Parties to require the obligation, appropriation, or expenditure of any funds from the U.S. Treasury. The Parties acknowledge that there will be no obligation under this Agreement to expend any Federal agency's appropriated funds unless and until an authorized official of that agency affirmatively commits to such expenditure in writing.

E. Relationship to Other Agreements

If a Cooperator enrolls lands under this Agreement that are related to any other Federal agreement(s), such as a Cooperative Agreement for a Partners for Fish and Wildlife or Farm Bill project, the nature of the relationship between the agreements and covered activities will be described in the Cooperator's Certificate of Inclusion.

F. No Third-Party Beneficiaries

This Agreement does not create any right or interest in any member of the public as a third-party beneficiary, nor shall it authorize anyone not a party to this Agreement to maintain any cause of action pursuant to the provisions of this Agreement. The duties, obligations, and responsibilities of the Parties to this Agreement with respect to third parties shall remain as imposed under existing law.

G. Other Listed Species, Candidate Species, and Species of Concern

Although the Service regards it as unlikely, the possibility exists that other listed, proposed, or candidate species, or species of concern may occur in the future on enrolled property as a direct result of the on-the-ground activities specified in section 8 above. If that occurs and the Cooperator so requests, the Parties may agree to amend the Agreement and associated permit to cover additional species and to establish appropriate baseline conditions for such other species.

H. Notices and Reports

Any notices and reports, including monitoring and annual reports, required by this Agreement shall be delivered to the persons listed below, as appropriate:

State Supervisor
Oregon Fish and Wildlife Office
U.S. Fish and Wildlife Service
2600 SE 98th Avenue, Suite 100
Portland, Oregon 97266
Phone number: (503) 231-6179

Regional Director
U.S. Fish and Wildlife Service
911 N.E. 11th Avenue
Portland, OR 97232-4181
Phone number: (503) 231-6241

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15. SIGNATURES

IN WITNESS WHEREOF, THE SERVICE HERETO has executed this Safe Harbor Agreement to be in effect as of the date that the permit referred to in section 9 above is issued.

State Supervisor, Oregon Fish and Wildlife Office
U.S. Fish and Wildlife Service

5/13/09
Date

Project Leader, Willamette Valley National Wildlife Refuge Complex
U.S. Fish and Wildlife Service

May 6, 2009
Date

Assistant Regional Director – Ecological Services
Region 1, U.S. Fish and Wildlife Service

May 22, 2009
Date

APPENDICES

Appendix 1: Template - Landowner Certificate of Inclusion

Appendix 2: Maps of Fender's blue butterfly and Kincaid's lupine distribution

Appendix 3: Site-Specific Plan Checklist

Appendix 4: Fender's Blue Butterfly Nectar Sources

Appendix 5: Protocol and Instructions for Censusing the Fender's blue butterfly

Appendix 6: Template - Permittee Annual Report

Appendix 7: Template - Cooperator Annual Report

Appendix 1:
Template - Landowner Certificate of Inclusion

TEMPLATE

Landowner Certificate of Inclusion in the
WILLAMETTE VALLEY NATIVE PRAIRIE HABITAT
PROGRAMMATIC SAFE HARBOR AGREEMENT
FOR FENDER'S BLUE BUTTERFLY
AND KINCAID'S LUPINE

This certifies that the property described as follows [**(description of property and enrolled lands covered by the Safe Harbor permit)**] owned by [**(Cooperator's name)**], is included within the scope of Permit No. [**(permit number)**], held by the U.S. Fish and Wildlife Service, Oregon Fish and Wildlife Office, on [**(date)**], and expiring on [**(date)**] under the authority of section 10(a)(1)(A) of the Endangered Species Act of 1973, as amended, 16 U.S.C. 1539(a)(1)(A). Such Permit authorizes certain activities by participating landowners (Cooperators) as part of a Safe Harbor program to restore and enhance habitat for the Fender's blue butterfly (*Icaricia icarioides fenderi*) and other associated species. Pursuant to that Permit and this Certificate of Inclusion, the holder of this Certificate is authorized to engage in any otherwise lawful activity on the above described property that may result in the incidental taking of the Fender's blue butterfly, as appropriate, subject to the terms and conditions of such Permit and the terms and conditions of the Safe Harbor Agreement entered into pursuant thereto by the Permittee, the terms of which become binding upon the Cooperator upon the date of the last signature below. The appended site-specific plan is incorporated as part of this Certificate of Inclusion for the enrolled property. **[At a minimum, site-specific plans must include those items shown on the site-specific plan checklist in Appendix 3.]**

_____ _____

Oregon Fish and Wildlife Office of the U.S. Fish and Wildlife Service, Permittee — Date

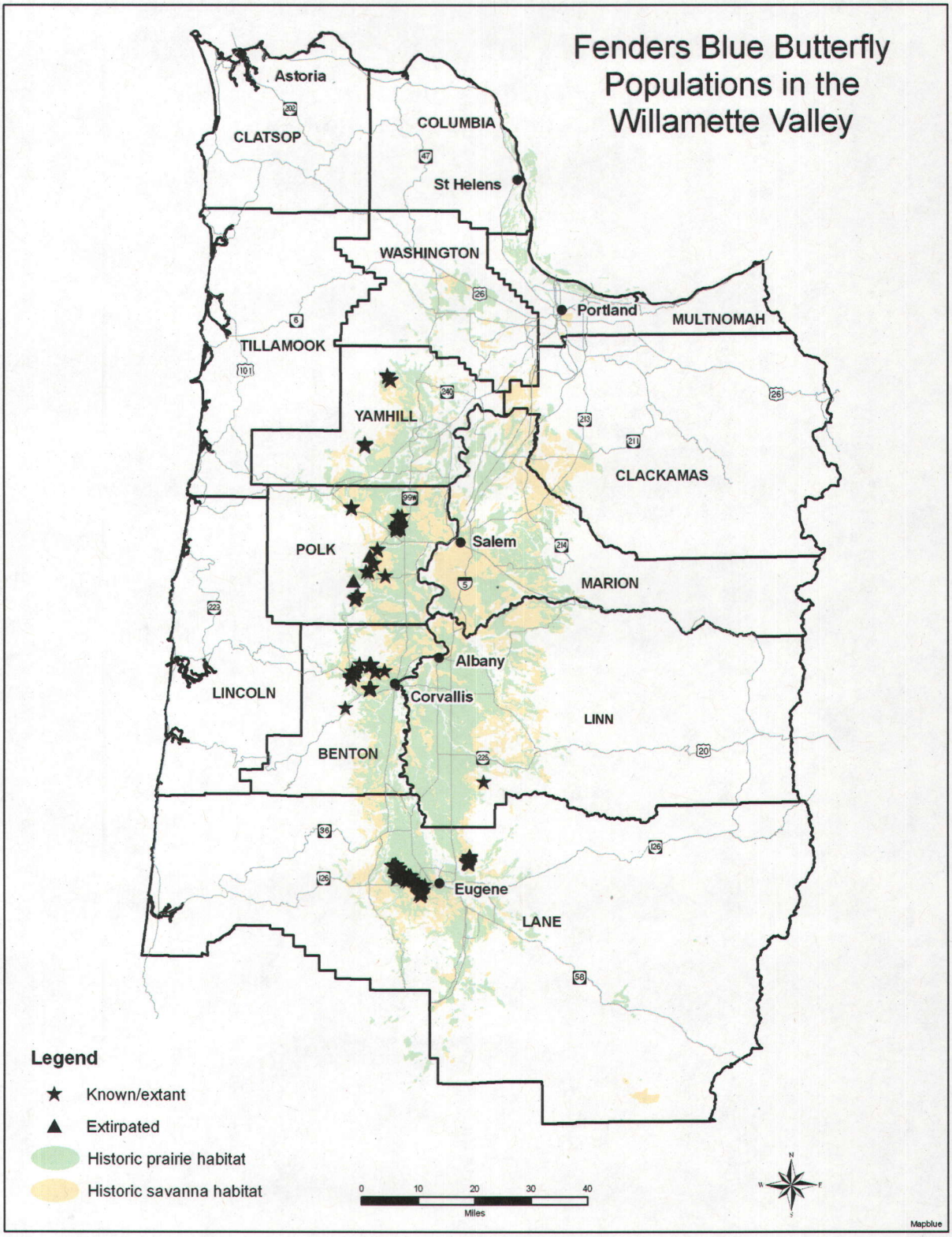
_____ _____

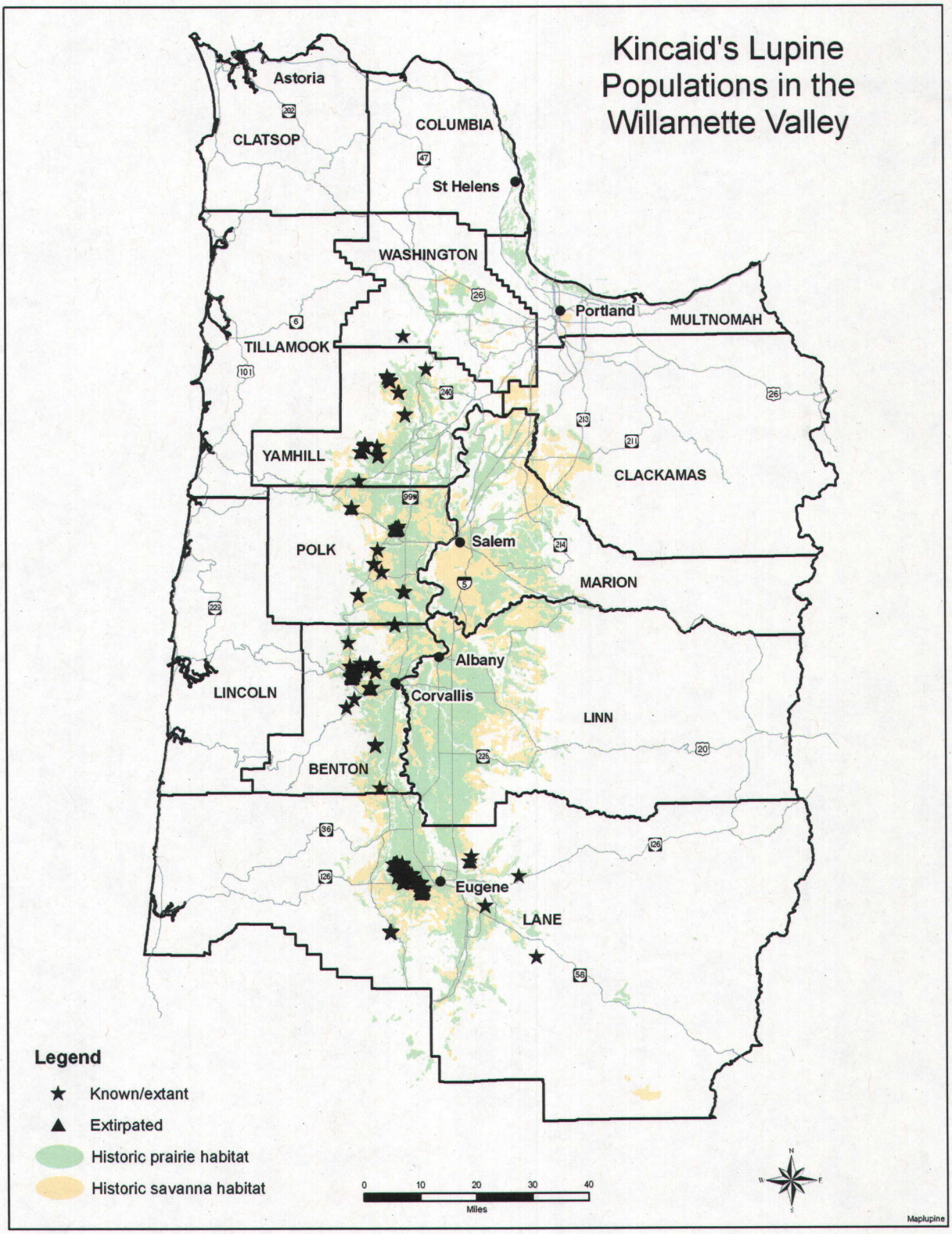
Signature of Participating Landowner, Cooperator — Date

_____ _____

[Additional parties, optional] — Date

Appendix 2:
Maps of Fender's blue butterfly and Kincaid's lupine distribution


Fenders Blue Butterfly Populations in the Willamette Valley
Astoria
CLATSOP
COLUMBIA
St Helens
WASHINGTON
Portland
MULTNOMAH
TILLAMOOK
YAMHILL
CLACKAMAS
POLK
Salem
MARION
Albany
LINCOLN
Corvallis
LINN
BENTON
Eugene
LANE
Legend
Known/extant
Extirpated
Historic prairie habitat
Historic savanna habitat
0 10 20 30 40
Miles
N
W
E
S
Mapblue


Kincaid's Lupine Populations in the Willamette Valley
Astoria
CLATSOP
COLUMBIA
St Helens
WASHINGTON
Portland
MULTNOMAH
TILLAMOOK
YAMHILL
CLACKAMAS
POLK
Salem
MARION
LINCOLN
Albany
Corvallis
LINN
BENTON
Eugene
LANE
Legend
Known/extant
Extirpated
Historic prairie habitat
Historic savanna habitat
0 10 20 30 40
Miles
N
W
E
S
Maplupine

Appendix 3:
Site-Specific Plan Checklist

Site-Specific Plan Checklist

At a minimum, each site-specific plan for enrolled lands must include the items listed below.

Site Description

- ☐ Legal description of property to be enrolled.
- ☐ Vicinity map and directions to the property from a major highway or road.
- ☐ Site map(s) of the property, with portions of the property to be enrolled delineated.
- ☐ Representative photos of the enrolled property, with photo locations identified on the site map.
- ☐ A description of current and recent land use practices on the enrolled land, with descriptions of site and habitat conditions.
- ☐ The baseline for the covered species, with locations of any occupied habitat or potential suitable habitat for the lands to be enrolled shown on a site map.
- ☐ Description and map showing occurrence of Kincaid's lupine on the enrolled property.
- ☐ Information about any other Federally-listed species that may occur on the enrolled property or in areas that could be affected by the covered activities. Include a description of how adverse effects to listed species will be avoided, or how any potential take under the Endangered Species Act is to be permitted prior to implementation.

Implementation Plan

- ☐ Descriptions of the specific actions to be implemented on the enrolled property, with a timeline for implementation and the responsible party or parties for each action.
- ☐ Discussion of how the actions to be implemented are expected to provide a net conservation benefit the Fender's blue butterfly within the period covered by the Certificate of Inclusion.
- ☐ Discussion of when the enrolled lands may be returned to baseline conditions. Typically, the Cooperator's right to return to baseline will be effective after the agreed-upon management activities have been fully implemented and the expected net conservation benefits have had time to accrue.

Monitoring and Reporting

- ☐ The Cooperator's annual reporting plan for compliance monitoring (see template in Appendix 7).

- ☐ A biological monitoring plan. The plan must be adequate for determining the status of and changes in Fender's blue butterfly populations and/or their habitats, management effectiveness, and any other relevant factors pertaining to the enrolled lands during the term of the Certificate of Inclusion. Monitoring results are to be submitted with the Cooperator's annual reports.

- ☐ Methods for quantifying any "take" of listed species that may occur.

- ☐ The party or parties responsible for monitoring and reporting.

Additional Measures (as appropriate)

- ☐ Implications to neighboring landowners. If activities on the enrolled lands could change the baseline for the covered species on neighboring lands, describe how those landowners have been or will be notified and/or involved, and reference any related Certificates of Inclusion.

- ☐ Describe any other plans or agreements that may be related to the implementation of activities on the enrolled lands, or relevant to the expected benefits to the covered species.

Appendix 4:
Fender's Blue Butterfly Nectar Sources

Fender's Blue Butterfly Nectar Sources[1]

Scientific Name[2]	Common Name[2]	Origin[3]
Allium acuminatum	tapertip onion	Native
Allium amplectens	narrowleaf onion	Native
Anthemis arvensis	corn chamomile; field chamomile	Introduced
Bellis perennis	English daisy; lawn daisy	Introduced
Calochortus tolmiei	Tolmie's mariposa lilly; Tolmie star-tulip	Native
Camassia quamash	small camas	Native
Cryptantha intermedia	Clearwater cryptantha	Native
Eriophyllum lanatum	wooly sunflower	Native
Geranium oreganum	Oregon geranium	Native
Hypochaeris radicata	rough cat's ear, hairy cat's ear	Introduced
Iris tenax	Toughleaf iris	Native
Lathyrus sphaericus	grass pea	Introduced
Leucanthemum vulgare (Chrysanthemum leucanthemum)	Common oxeye daisy	Introduced
Linum bienne (Linum angustifolium)	pale flax	Introduced
Linum perenne	blue flax	Introduced
Lupinus arbustus (Lupinus laxiflorus)	spur, longspur or silvery lupine	Native
Lupinus sulphureus spp. *kincadii*	Kincaid's lupine	Native
Myosotis discolor	forget-me-not	Introduced
Sidalcea campestris	Meadow checkermallow	Native
Sidalcea malviflora ssp. *virgata*	rose checker-mallow	Native
Vicia cracca	bird vetch	Introduced
Vicia hirsuta	tiny vetch	Introduced
Vicia sativa	Common vetch; garden vetch	Introduced
Vicia villosa	winter vetch	Introduced

Note: The Fender's blue butterfly has been documented feeding on all of the species listed above, although this is not intended to be an exhaustive list. Generally, native species provide more important nectar sources for Fender's blue butterfly than introduced species, and butterfly densities have been found to be highly associated with native nectar sources (Schultz and Dlugosch 1999).

[1] Source: Schultz, C.B. and K. M. Dlugosch. 1999. Nectar and hostplant scarcity limit populations of an endangered Oregon butterfly. Oecologia 119:231-238.

[2] Sources: Oregon Plant Atlas at http://www.oregonflora.org/oregonplantatlas.html, Oregon State University, Corvallis, OR; USDA Natural Resource Conservation Service Plants Database at http://plants.usda.gov/; USFWS 2006a.

[3] Source: USDA Natural Resource Conservation Service Plants Database at http://plants.usda.gov/.

Appendix 5:
Protocol and Instructions for Censusing the Fender's blue butterfly

PROTOCOL and INSTRUCTIONS for CENSUSING the FENDER'S BLUE BUTTERFLY[1]

Record the site name, observer(s), date, time, weather conditions, butterfly species observed, nectar sources that are in bloom, and any other notes. Include a detailed map showing the surveyed location(s) and any Fender's blue butterfly locations. Keep notes about site-specific methods and instructions that can be used for future or on-going monitoring.

Timing. Census sites every 6-10 days during the flight period (mid-May through early July). When the weather is good--Warm (60's-70's) and Sunny (unless very hot, then cloudy weather OK). The time to census is ~ 11am to 3 pm; as early as 10 am or as late as 4 pm, or even later in particularly good conditions (70's-80's).

Census all blue butterflies. Censusing Fender's blue (FB) butterflies is made complicated by the fact that another blue butterfly, the Silvery blue (SB, Glaucopsyche lygdamus), is present at the same time that the FB is present. FB males are indistinguishable at a distance from sympatric SBs. Therefore, as you census you will need to capture some of the BLUE butterflies and identify them to find the proportion of the FB to SB. One of the main distinguishing characteristics between the FB and SB is that the FB has an extra row of very faint dots along the margins on the underside of both the forward and hind wings. Other blue butterflies that may be present in small numbers include Eastern-tailed blues, acmon blues, common hairstreaks, and purplish coppers. But these other blues are rather uncommon and are usually smaller or different enough as not to be confused with either SB or FB.

Method. Mark the area with flags that are 12 meters apart. Walk between the flags and record all BLUES - that means Silvery blue (SB) males and females and Fender's blue (FB) males per grid cell. SB females are browner than the males, but they always have at least a tinge of blue near the body. When they fly, you'll get a hint of blue color from the females. In contrast, the FB females are a rich rusty-brown with no blue at all. They look brown when they fly. On the line marked "M" record all BLUES - that means SB males and females and FB males. On the line marked "F" record only butterflies that are FB females. The grid cell to be recorded is the lowest letter/number combination. Walk about 5 minutes/100m--strolling pace, it's ok to pause when many butterflies are flying or when wind gusts come up. Net about 10-20 Blues at each site to the find proportion of SB to FB. If the numbers are low you can net butterflies (an ID them) as you census and indicate what you ID at the top of the datasheet (for example: FB=5, SB= 9, this makes a ratio of 5/14 = 36% Fenders). You will need to net butterflies throughout the site and not just at the beginning to make sure you sample from the entire site. Record the weather, put a check in the nectar sources boxes (which flowers are blooming), record FB nectaring, and record other butterflies/moths seen in cells at the sites. In the blanks at the beginning of each line record the start and end time. For small sites you will need to walk through all the lupine and nectar plant areas and record and ID (netting butterflies) the blues you see.

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[1] Source: Adapted from unpublished protocol by Cheryl Schultz, Washington State University, Vancouver, WA.

Limitations. Handling of FB individuals is to be kept to the minimum needed to complete the surveys. No more than five percent of the Fender's blue butterfly population on lands to be surveyed may be captured per week, throughout the flight season, for identification purposes.

Monitoring may also include examining lupine leaves and counting (non-destructively) Fender's blue butterfly eggs. At some of the smaller sites where no adults are seen, this may be the only way to document the species' presence.

Appendix 6:
Template - Permittee Annual Report

TEMPLATE

Permittee Annual Report for the
WILLAMETTE VALLEY NATIVE PRAIRIE HABITAT
PROGRAMMATIC SAFE HARBOR AGREEMENT
FOR FENDER'S BLUE BUTTERFLY
AND KINCAID'S LUPINE

Permittee's Name: U.S. Fish and Wildlife Service, Oregon Fish and Wildlife Office

Permit Tracking Number: TE-XXXXXX-0

Location: Benton, Lane, Linn, Marion Polk and Yamhill Counties in the Willamette Valley of Oregon

Covered Species: Fender's blue butterfly, *Icaricia icarioides fenderi*

Management and Conservation Actions
Instructions: Provide a summary of significant activities and accomplishments for the period, including 1) any new Cooperators enrolled during the reporting period, a description of newly enrolled lands, management activities to be carried out, and expected benefits to the covered species, 2) actions taken to date on enrolled lands in relation to each of the management and conservation activities described in the Agreement, Certificates of Inclusion and Permit, and 3) supplemental information such as additional comments and copies of photos, data, scientific papers, or other products related to activities covered under this Agreement, as available.

Monitoring Program
Instructions: Describe in general terms the monitoring programs for various enrolled lands, results and findings for the current year. Annual reports are designed to provide information concerning the effects and effectiveness of the Agreement's conservation actions on the covered species, as well as to determine if the conservation actions the Permittee undertakes meets the Agreement's "standard" of benefiting the covered species. The monitoring report will document any changes in the covered species population or the habitat associated with that species on the enrolled lands over time, and will denote whether the data provided is from the Permittee Cooperator, professional scientist or other specific individual or entity. A current list of Cooperators should be included that indicates when each Cooperator's enrolled lands were last visited. Every property should be visited at least once every 1-3 years.

Date of the Report: [Due on or before December 31st, for the prior fiscal year]
Annual period covered:

Date Annual Report was Received:_____ **Date Annual Report was Reviewed:** _____

Signature of Reviewer: _____

Printed Name and Phone # of Reviewer: _____

Appendix 7:
Template - Cooperator Annual Report

TEMPLATE

Cooperator Annual Report for the
WILLAMETTE VALLEY NATIVE PRAIRIE HABITAT
PROGRAMMATIC SAFE HARBOR AGREEMENT
FOR FENDER'S BLUE BUTTERFLY
AND KINCAID'S LUPINE

Cooperator's Name: [Cooperator]

Permit Tracking Number: TE-XXXXXX-0

Enrolled lands: [description and specific location of the enrolled lands covered in the report]

Covered Species: Fender's blue butterfly, *Icaricia icarioides fenderi*

Management and Conservation Actions:
Instructions: Provide a summary of significant activities and accomplishments for the period, including 1) actions taken to date on enrolled lands in relation to each of the management and conservation activities described in the site-specific plan, Certificate of Inclusion and Permit, 2) "take" of covered species, and 3) any supplemental information such as additional comments, observations and copies of photos, data, scientific papers, or other products related to activities covered under this Agreement, as available.

Monitoring Program:
Instructions: Describe in general terms the monitoring program, results and findings for the current year. Annual reports are designed to provide information to the Service concerning the effects and effectiveness of the Agreement's conservation actions on the covered species, as well as to determine if the conservation actions the Permittee and Cooperator(s) undertake meet the Agreement's "standard" of benefiting the covered species. The monitoring report will document any changes in the condition of individuals of the covered species or the habitat associated with that species over time and will denote whether the data provided is from the Permittee, Cooperator, professional scientist or other specific individual or entity. Photos from established photo monitoring points should be included, if available.

Date of the Report: [Due on or before September 30th, for the period covering the fiscal year]
Annual period covered:

Date Annual Report was Received: _____

Date Annual Report was Reviewed: _____

Signature of Reviewer: _____

Printed Name and Phone # of Reviewer: _____