United States Department of the Interior

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Reply To: 8330.3173
File Name:

December 10, 1998

Lieutenant Colonel James Lyman
Oregon Military Department
Headquarters, Oregon Army National Guard
1776 Militia Way
P.O. Box 14350
Salem, Oregon 97309-5047

Dear Lieutenant Colonel Lyman :

This is in reply to your agency's letter of May 26, 1998, which was received on May 27, 1998, requesting formal consultation under section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)(Act). This consultation addresses the implementation of Oregon Military Department's (OMD) Camp Rilea Oregon Silverspot Butterfly Habitat Management Plan (Plan), dated 1998, and its impact to the federally threatened Oregon silverspot butterfly (*Speyeria zerene hippolyta*). This plan presents a program for preserving and managing approximately 68 acres of the Oregon silverspot habitat in conjunction with ongoing training activities in adjacent areas at Camp Rilea in Clatsop County, Oregon.

This document represents the U.S. Fish and Wildlife Service's (Service) biological opinion on the effects of the action on the Oregon silverspot butterfly, Federally classified as threatened within the State of Oregon. Oregon Military Department has determined that the proposed action will have no effect on bald eagles, peregrine falcons, or western snowy plovers; therefore, these species will not be addressed in this Biological Opinion.

On August 20, 1998, the Service completed its review of the proposed project and pertinent information received up to August 20, 1998. The biological opinion is based on information provided in the May 4, 1998, Biological Assessment for the Oregon silverspot butterfly, Camp Rilea, Clatsop County, Oregon; the Camp Rilea Oregon Silverspot butterfly Habitat Management

Plan; annual monitoring reports produced by Dr. Paul Hammond between 1991 and 1997; and other sources of information. A complete administrative record of this consultation is on file in this office.

During the course of our review other individuals were contacted who had special knowledge or expertise concerning the proposed project, project area, or Oregon silverspot butterfly. These include:

Dr. Paul Hammond, Philomath, Oregon
Greg Mitchell, Oregon Military Department, Salem, Oregon
Jerry Elliot, Oregon Military Department, Salem, Oregon

Consultation History

Oregon Military Department has been involved in informal consultation with the U.S. Fish and Wildlife Service since the 1980s. The OMD consulted with the Service on individual proposed activities on Camp Rilea. As a result of these individual consultations, occupied habitat areas were defined, and management activities which were deemed as having an adverse affect on the Oregon silverspot butterfly's habitat were modified to minimize impacts. In particular, OMD agreed to reduce the frequency of mowing over much of the Oregon silverspot butterfly's habitat and training activities which involved an intensive and concentrated trampling of habitat were either stopped or moved to non-habitat areas in efforts to avoid take of the Oregon silverspot butterfly.

In 1989, OMD and Camp Rilea were planning the development of a comprehensive 10-year development plan. In conjunction with the development of this plan, OMD agreed to begin research and work on developing a long-term habitat management plan to guide management of the Oregon silverspot butterfly. In 1990, Camp Rilea, in consultation with the Service, began research and annual monitoring, and habitat management at Camp Rilea to develop a management program and information base for eventual formal consultation. Over a four-year period between 1990 and 1993, areas were identified for management and appropriate methods were determined for these areas. Ongoing monitoring from 1994-1997 provided the basis for adjustments and refinements of the management program resulting in the present Plan. At this time, delays have occurred with the finalization of Camp Rilea's comprehensive development plan; however, the Plan has been developed as a result of the research and monitoring started in 1990 and submitted for formal consultation.

A field tour of the management at Camp Rilea was conducted on October 7, 1998. A letter dated October 23, 1998, which summarized the recommended changes to the Camp Rilea Management Plan and to monitoring discussed during the October 7, 1998, field tour, was submitted to Oregon Military Department for consideration. In response to the Service's October 23, 1998, Oregon Military Department proposed to make changes to the Camp Rilea Management Plan. The scope

of proposed changes are summarized in a letter from the Oregon Military Department dated November 19, 1998.

BIOLOGICAL OPINION

Description of the Action Area

Camp Rilea is a 1,740-acre military training area located between U.S. Highway 101 and the Pacific Ocean south of Warrenton and north of Gearhart. The facility and lands are owned by the OMD. Much of the funding to operate the camp is provided by the National Guard Bureau (NGB), a federal agency within the Department of Defense.

Camp Rilea is biologically diverse, with many different vegetative communities from dunegrass to shore pine forest. Meadows are one of the more unique vegetative communities existing on the camp, comprising about 85 acres.

Description of the Proposed Action

The proposed action is the implementation of the Plan. The Plan's goal is to maintain the designated habitat areas in fair to good condition and observe a number of butterflies using the area, thereby conserving habitat for the species without significantly compromising military training capabilities. The Plan incorporates a number of individual actions which involve the management of 68 acres of meadow habitat which contain the species host plant, western blue violet (*Viola adunca*) for a period of 20 years or until habitat conservation efforts elsewhere on the Clatsop Plains make these 68 acres unnecessary. The Plan will be reviewed every five years, and the program reviewed after 20 years.

Specific objectives of the plan are to: 1) establish a new baseline with 1999 and 2000 data using new sampling methodologies; 2) achieve and maintain a good or better condition for 60 percent of the total violet transect area (i.e., good condition is defined as an average of 0.51-1.00 violets per linear transect foot, and fair condition is defined as an average of 0.26-0.50 violets per linear transect foot); 3) maintain or increase the frequency of violets in each habitat management area as compared to the baseline; 4) maintain or increase the frequency of sand-dune goldenrod (*Solidago spathulata*) in each habitat management area as compared to the baseline; and 5) monitor managed and suitable habitat areas for Oregon silverspot butterflies use during the late summer and fall.

Ten habitat management areas and three peripheral forest fringe areas have been identified on Camp Rilea property for management purposes. The actions include habitat management through a regime of two or three mowing treatments per year; a first spring mowing between April 1 and May 7, a second spring mowing between May 16 through the first week of June if the grass height exceeds 5 inches in late May, and one fall mowing between mid-October through

December. Mowing height would be set about 3 inches above the ground. The mowing regime is designed to produce about 5-7 inches of height by mid-summer when mature silverspot larvae and pupae are present in the habitat and to control the new growth of grass and Scotch broom (*Cytisus scoparius*) . The maximum vegetation height at the end of the growing season during egg-laying in September should be no more than 10 inches if this mowing regime is followed.

The purpose of the fall mowing is to cut dead vegetation from the summer's growth of grass, particularly bent grass, and to control regrowth of Scotch broom and European beachgrass (*Ammophila arenaria*) . While this is the basic management protocol for mowing over most management areas, a few areas with special values or concerns and conditions producing heavy regrowth require slight variations or different approaches. Areas 2 and 10 may need a second mowing into mid-June in some years because of the density of exotics. Areas 4W and 7 have special botanical values, and Area 9 is located in a residential area where aesthetics are a concern. The detailed management program for each management area is described in the Plan and summarized in Table 13 of the Plan, which are hereby incorporated by reference. Information received October 7, 1998, indicates that Area 4W will have a mowing in July after the spring blooming season of Fritillaria is complete. A second mowing in Area 4W will occur in fall. Forest fringe areas will be maintained as forest and the canopy will be maintained. However, some removal of lower limbs and understory plants may occur to maintain or create openings.

Where the dominance and abundance of exotics in the vegetative community is fairly high compared to the native species, more frequent mowing is often required to control non-native grasses which may grow profusely and produce heavy thatch in wet and warm springs. Rank, tall grasses and abundant shade or thatch suppress the growth of violets. The maintenance and restoration of a short meadow grassland is aimed at maintaining over the long term an area for adult females to lay their eggs and encourage growth of native species.

Additional habitat management activities include the control of Scotch broom. Techniques vary with different stages in the life cycle of Scotch broom. Mature bushes are cut down and smashed with a roller carried by a tractor. Healthy vigorous plants are mowed off close to the ground. Vigorous plants may also be killed by cutting bushes off at ground level by hand. August and September are suggested months for this work. Freshly cut stumps are then treated with a small amount of the herbicide Roundup (glyphosate), which is applied directly to the stumps from a small spray bottle.

Seed collections of native plants will be made as needed to use in re-vegetation projects, such as after construction projects. Area 5, which is approximately 4.5 acres and relatively free of exotic species, will act as the seed source for re-vegetation projects. The native species in this area are primarily perennials which persist and spread through rhizomes and vegetatively as well as by seed. During years when seed is needed, Area 5 will not be mowed in the spring. After seed is

mature in October, Area 5 will be mowed and resulting hay gathered for placement over the area requiring re-vegetation.

Experimental applications of nitrogen fertilizer will commence in Area 7 to see if violet growth can be improved. Prior to 1994, this area had routinely been fertilized as part of lawn maintenance and numbers of blooming violets were high at this time. However, habitat quality of violets went from good and excellent in 1991 to poor and fair in 1997 after fertilization was ceased in 1994. If the experiment shows that lack of nitrogen is the problem, native clover would be seeded into this area, and possibly other areas.

Ongoing and proposed activities which may take place at Camp Rilea include:

1) troop training will continue adjacent to some of the management areas;
2) future planned construction at the present baseball field;
3) a new baseball field southeast of the helicopter landing field;
4) construction of utility lines within a 5-foot construction easement along roads;
5) raising and lowering the flag and firing a cannon each day in Area 4E;
6) the Hand Grenade Range will continue to be used in Area 6 until it is relocated; and
7) firing position for the 200-meter KD Range within the Oregon silverspot butterfly habitat in Area 7 will be maintained and improved
8) the 300-meter firing position in Area 5 will be maintained.

Further details on troop training activities is provided on page 56 of the Plan. Firing position for the 200-meter KD Range will be provided at the Modified Record Fire Range.

A present baseball field is located along Valley Way Road between First Causeway Road to the north and Demo Road to the south. This area has been identified as a possible site for a future planned construction project and contains an area with extensive populations of sand-dune goldenrod (*Solidago spathulata*), a preferred nectar source, a few violets and other native grassland species. On the other hand, Area 10 has been determined to be lacking in nectar sources. To enhance Area 10 and minimize the permanent loss of nectar sources from future construction in the vicinity of the present baseball field, the Plan proposes the transplantation of long strips of meadow sod into Area 10.

A new baseball field will be constructed southeast of the helicopter landing field to replace the present baseball field. To test the transplant technique, a narrow strip of good violet-goldenrod habitat about 200 feet long by 20 feet wide along the top of the sand dune on the southeast edge of the helicopter field will be transplanted into Area 10.

A 5-foot easement will be maintained along all roadways through and/or adjacent to silverspot butterfly habitat to facilitate future construction projects. During excavation, all dirt will be placed upon the existing roadways, and not piled on the adjacent silverspot habitat. Use of construction equipment will be limited to the roadways. Once the utility line is installed, the disturbed area will be allowed to revegetate with the native meadow vegetation. Disturbance

would be within a 5-foot wide area. A worst case analysis based upon a 5-foot wide area of disturbance computes to a maximum habitat area of 1.31 acres.

A squad of ten people march from Pacific Road to the flag pole across 4E twice a day to raise and lower the flag. A tractor pulls a cannon to and from the flag pole area 4 times a year. The cannon is fired each day along with raising and lowering the flag. Camp Rilea proposes to install a short walk approximately 8 feet wide and 60 feet long from Pacific Road to the flag pole. As part of this Plan, 0.01 acres of violet habitat will be permanently lost from the management areas due to construction of the flagpole walk in Area 4E.

The following additional precautions will be taken to avoid take of the Oregon silverspot butterfly:

1) No herbicides will be used in habitat management areas for the Oregon silverspot butterfly except for topical applications of herbicide to control Scotch broom.
2) No insecticide sprays will be used on Camp Rilea at any time of the year within 500 feet of any Oregon silverspot management area.
3) No insecticide spray will be used on Camp Rilea during the adult silverspot flight season of July 15 to October 1. The interiors of building are excepted from this restriction as explained in the management plan under the section "Pesticide Use at Camp Rilea.".

An annual monitoring program within management areas will consist of: 1) height of general meadow vegetation (September); 2) numbers of blooming goldenrod patches (September); 3) densities of blooming violets (May); and 4) Oregon silverspot butterfly numbers and use of habitat areas (last week of August through October 1). Additional details on methodologies are provided in the Plan. In addition, the 15 acres of violet habitat outside the designated habitat management areas will be monitored once per week to check for female egg-laying activity and changes in Oregon silverspot butterfly use.

The level of monitoring proposed in the Plan will be followed for five years. Other vegetation problems such as Scotch broom, bent grass, European beach grass, and wild carrot will also be evaluated at the same time. Monitoring frequency will be reviewed and possibly reduced after the five year period if violet and silverspot numbers have reached satisfactory levels in most of the management areas.

Status of the Species/Environmental Baseline

Listed species/critical habitat:
Detailed accounts of the taxonomy, ecology, reproductive characteristics, range, distribution, habitat requirements, and habitat management of the Oregon silverspot butterfly are found in Hammond (1986;1987;1988a,b,c; 1989; 1990a,b; 1991a,b; 1992a; 1993), Hammond et al. (1982; 1984a; 1985a,b; 1991), McCorkle et al. (1980, 1988), Arnold (1988), Bergen (1985), McIver et

al. (1991), Morlan (1987), Pickering and Macdonald (1994), Pickering et al. (1993), Pickering et al. (1992), Singleton (1989), Vander Schaaf (1983, 1984), Washington Department of Wildlife (1993), and the Oregon Silverspot Butterfly Recovery Plan (USDI 1982).

The Oregon silverspot butterfly was listed as threatened with critical habitat on July 2, 1980 (U.S. Dept. of the Interior 1980). This subspecies of the silverspot butterfly is endemic to the coastal environment along the southern Washington, northern and central Oregon, and northern California coasts. At least 17 populations were known to exist from Grays Harbor, Washington south to Florence, Oregon. Within the last decade, the species is known from six localities: Long Beach in Washington; Clatsop Plains, Cascade Head, Mt. Hebo, and Rock Creek/Big Creek in Oregon; and Del Norte County in California. Only the Rock Creek/Big Creek population in Lane County has designated critical habitat.

Currently, there are four populations large enough to be considered viable near the coasts of central Oregon and northern California. These are the Mt. Hebo, Rock Creek/Big Creek, Cascade Head, and Del Norte County populations. The Mt Hebo population is the strongest population with numbers in the 1000s. The Rock Creek/Big Creek populations, the Cascade Head population have numbers in the low hundreds. There is concern that the Oregon silverspot butterfly population throughout its range is low and declining. Vanbuskirk's 1993 census on the Clatsop Plains and the central Oregon coast indicate a dramatic reduction in silverspot butterflies and their habitat. Previous surveys and analysis support this pattern of decline through the early 1990's. A multi-year prescribed burn has been planned at Cascade Head in efforts to enhance habitat condition for the Oregon silverspot butterfly. No population estimates exist for Del Norte, but observations of habitat condition and butterflies in recent years suggest this population is also experiencing declines (P. Hammond, personal communication, Philomath, Oregon).

The Long Beach and Clatsop Plains populations represent the two northernmost sites of the species range. Populations of Oregon silverspot butterflies have been particularly low in recent years in this northern part of the species range. The viability of these two sites is currently in question at this time as confirmed sightings of the species have not been reported in recent years although survey efforts have been extremely limited. However, the Clatsop Plains population has been known to fluctuate dramatically, and comprehensive surveys are difficult to conduct due to habitat fragmentation and access difficulties.

At Clatsop Plains, based upon surveys in the 1980s through early 1990s, most of the Oregon silverspot butterfly's habitat and use is west of U.S. Highway 101. Use has also been observed in the vicinity of Cullaby Lake on the east side of the highway.

The habitat occupied by the Oregon silverspot butterfly within its range is stabilized dune within 1/2 mile of the Pacific Ocean. This is a highly specialized and restricted environment, limited to salt-spray meadows and adjacent coniferous forest. The salt spray influence from the Pacific Ocean plays a role in retarding the natural succession of the vegetation from meadow to brush

and forest. Historically, fire also has played a major role in setting back succession and maintaining the meadow habitat in low growing meadow species. The inland, Mt. Hebo population probably became established after forest fires that occurred after the turn of the century, but also experiences a maritime influence and conditions which have hindered rapid succession. The soils in Oregon's central coast are shallow, rocky and low in fertility, which has also hindered succession.

An essential component of the Oregon silverspot butterfly's habitat is the western blue violet (*Viola adunca)* which is the obligatory food plant of the species' larvae. The life cycle of this butterfly begins when the adult female deposits eggs on or near the violets during late August and September. The larvae hatch in approximately 16 days, and the newly hatched larvae wander a short distance to find a suitable place for diapause (suspension of growth for overwintering). In late spring and early summer, the larvae emerge to feed on the violet leaves. The larvae feed and grow for 2 months (six instar or development stages) then seek shelter to pupate. After 2 weeks or longer, the butterfly emerges as an adult (eclosion) from its cocoon. The adult silverspot butterflies leave the windy meadow for shelter in an adjacent forest. There, the butterfly will feed on nectar-producing flowers and find a mate.

Males set up and patrol breeding territories. These territories are located on the forest fringe, or in forest openings where some type of nectar source is present. Breeding occurs through August and September. The males rarely return to the meadow. The gravid (mated, egg-bearing) female returns to the meadow to lay eggs in August and September. A female may lay 200-300 eggs.

Eclosion of adult butterflies on the Clatsop Plains occurs as early as late June for the males, and mid-July to early August for females. The adults feed on nectar obtained from flowering plants such as those within the composite (e.g., *Senecio jacobae* and *Solidago spathulata*) and aster families, including California aster (*Aster chilensis*). Yarrow (*Achillea millefolium*), Indian thistle (*Cirsium edule*), and pearly everlasting (*Anaphalis margaritacae*) are also used as a nectar source by the silverspot butterfly.

The major threat contributing to the reduction of the Oregon silverspot butterfly's range and population is the loss and degradation of suitable habitat. The native grasslands were historically maintained by periodic disturbances and environmental factors which suppress ecological succession to woody shrubs and trees. A major factor and threat in the loss and degradation of habitat has been the suppression of the natural fire regime that has allowed the accelerated succession of historic breeding meadows to brush and forest. A second threat is the introduction and spread of exotic vegetation, such as Scotch broom, European beachgrass, and a variety of tall exotic grasses. A third threat contributing to this loss is urban and commercial development and other changing land uses. Development in and through native grasslands result in ground disturbing activities which destroyed or altered the native vegetation community and fragmented remaining habitat patches. These threats have contributed to the loss, degradation, and

fragmentation of the Oregon silverspot butterfly's habitat and have accelerated vegetational changes over the Clatsop Plains in recent decades.

Still another threat to Oregon silverspot butterflies is a cold, wet spring and summer. Heavy mortality of eggs and larvae can occur as a result. While viable populations will generally rebound provided good conditions, a small population size is particularly vulnerable to loss and extinction from otherwise natural mortality factors.

In Clatsop Plains, habitat is comprised of a linear, approximately 1/2 mile-wide system of grassland remnants running parallel to the Neacoxie Creek and Sunset Lake waterway for a distance of seven miles. Habitat was more contiguous in the past than present. In general, habitat quality and availability has been on a steady decline in the Clatsop Plains area. At this time, three distinct regions which contain butterfly habitat are noted (Hammond 1988b,c; Macdonald and Pickering 1994, Vanbuskirk 1997). The first (Del Rey) lies primarily along the west side of Neacoxie Creek in the vicinity of Del Rey Beach Road. Nearly 300 acres of butterfly habitat are identifiable in this strip which runs from the southern end of Sunset Lake to the Gearhart Golf Course. The second region (Sunset Lake) lies along the east side of Neacoxie Creek and west and east sides of Sunset Lake. Between 200 and 250 acres of habitat are found within this region. The third region is centered on Camp Rilea with a few outlying parcels in the Sunset Beach area. Most of the lands which are high quality butterfly habitat are found within Camp Rilea on the east side of the Sunset Lake and Long Lake waterway, but a few parcels occur along the west side as well. Approximately 95 acres are located at Camp Rilea and outlying areas. Current estimates are that there is approximately 700-800 acres of disturbed and native grassland of available habitat for the Oregon silverspot butterfly at Clatsop Plains. Including the acreage managed at Camp Rilea, only approximately 10 percent of available habitats at Clatsop Plains receive management at this time. Many areas of unmanaged habitat exhibit indications of encroaching woody vegetation and/or exotic grasses.

The acreage managed at Camp Rilea represents a significant portion of managed Oregon silverspot butterfly habitats at Clatsop Plains at present time. However, the habitats at Camp Rilea represent only approximately 10 percent or less of available habitats for the Oregon silverspot butterfly. Additional efforts are being made to work with private landowners to expand conservation efforts, and a few conservation agreements have been completed in recent years. However, these additional efforts include less than 2 percent of available suitable habitats in the Clatsop Plains area at this time. While the condition of habitats at Camp Rilea and small private parcels with conservation agreements is anticipated to be stable to improving as a result of management, based upon current trends, habitat quality and availability of currently suitable habitat areas is anticipated to continue to decline over time without management.

In 1988, Paul Hammond estimated that 6-10 silverspot butterflies were present in the Camp Rilea area. With the end of mid-summer mowing in the 24 acres of prime habitat, butterfly numbers increased to an estimated 40-50 individuals in 1991. Since then, numbers were reduced to an

estimated 20-40 individuals in 1992 and 15-30 individuals in 1993 and 1994. An abrupt decline in butterfly numbers on Camp Rilea during favorable weather years between 1994 and 1996 was noted. Though the cause is speculative, the low population estimates suggest that the population may have experienced a response to threats associated with it's small population size. Genetic variation and inbreeding depression has also been suggested as a possible cause.

The response of Scotch broom, violets, silverspot butterflies, and nectar flowers to management actions have been monitored during the period of management at Camp Rilea from 1991 to 1997. Scotch broom, orchard grass (*Dactylis glomerata*), velvet grass (*Holcus lanatus*), tall fescue grass (*Festuca arundinacea*), and wild carrot (*Daucus carota*), and bent grass (*Agrostis alba*) are species at Clatsop Plains and Camp Rilea which cause problems with native vegetation through competition when present in management areas. Area 5 has been the one area which has maintained a high quality native meadow community since the start of management activities in 1991. Nine out of ten management areas have significant threats from one or more of these exotic species. Without management, Scotch broom and/or exotic grasses are likely to shade out or outcompete native vegetation. The Plan indicates that without management Scotch broom would cover all available habitat areas by year 2020.

The general condition of many of the habitat management areas is presently improved from conditions in 1991 as a result of management activities. High quality habitat and improving densities of violets and goldenrods have been observed in several management areas as a result of the proposed mowing regime. Areas 3, 4, 5, 7, and 9 currently have habitat in prime condition while Areas 1,2, 6, 8, and 10 have been undergoing renovation management since 1990. Dramatic increases in violets and nectar flowers were noted within Area 1 during 1992 and 1993. Though renovation of Areas 2, 6 and 8 continue to show steady increases in both violets and nectar flower, butterfly use continues to be minimal. Bent grass has been particularly difficult to control, and Areas 3, 4 and 9 have needed a regular annual mowing to control bent grass.

In general, a sharp drop in Oregon silverspot butterfly numbers was seen in 1992 and 1993, attributed to the El Nino drought of 1992 and the cold, rainy summer of 1993. While population estimates are imprecise, estimates for the period between 1991 and 1994 have numbered less than 100 individuals and number of observations indicate declining trends.

At Camp Rilea, Oregon silverspot butterfly numbers have been declining each year since the peak in 1991. Poor weather conditions in 1992 and 1993 may have been a factor for declines during those years, but 1994 and 1995 were similar to 1991 with favorable weather conditions. The continuing decline at Camp Rilea probably reflects the decline of the overall Clatsop Plains population over these years. The pattern of decline in response to unfavorable weather conditions has been evident in other Oregon silverspot butterfly populations in Oregon, although larger remnant population sizes may be providing the resiliency for these populations to recover in numbers during more favorable conditions.

Effects of the Action

The reduction of suitable breeding habitat appears to be the major factor limiting the range and distribution of the silverspot butterfly. Maintaining the remaining breeding meadow habitat in productive condition is of paramount concern. Therefore, manipulating the vegetation with mowing of 68 acres or 45.55 habitat acres (from Table 17 of the Plan) within habitat management areas will set back plant succession (mimic fire), control the spread of invasive exotic vegetation, and restore the grassland-violet meadows to a condition which may be used by the Oregon silverspot butterfly. With continued habitat management, the quality of habitat, e.g., violet and nectar densities, is anticipated to gradually increase in management areas. Available reports indicate that the management has resulted in maintaining violets and increased one of the butterfly's preferred late season nectar sources, *Solidago spathulata*. The transect data indicate that there have been decreases in some management areas in some years. It is unknown whether or not the variation is due to management actions or natural variation in violet populations. Data collection methods utilized limit the conclusions which may be drawn. Modifications to improve the quality of data collected and to provide a better information base upon which to make management decisions is warranted.

The proposed mowing may result in harassment of larvae and has a potential for harm to larvae particularly if done beyond May 1 and before mid-October. Due to variation in weather conditions and vegetation response, this May 1 date may vary into early June in some years. The killing of larval butterflies due to maintenance mowing of the meadow is unlikely if mowing is done late fall to early spring when the larvae are dormant (diapause) between mid-October and May 31, and at the base of meadow vegetation. If disturbed but unharmed, Oregon silverspot butterfly larvae may drop to the soil where they may return to violets after mowers have passed. The monitoring of Oregon silverspot butterfly oviposition and use in the fall is probably most useful in determining what areas have a high risk for take in the following year. Therefore, continuation of annual monitoring and collection of this information would be useful in planning or adjustment of activities planned for the following year and may be viewed as a reasonable and prudent measure for reducing incidental take.

Mowing for renovation of historic breeding habitat (Areas 2 and 10) by eliminating tall, rank growing exotic grasses and Scotch broom will require a summer mowing schedule into the 3rd week of June for 3 or 4 years. In these renovation areas (totaling about 20.5 acres), initially, it is unlikely that summer mowing will harm Oregon silverspot butterfly larvae because they would not be present in areas with low densities or absence of western blue violets. As the short meadow vegetation and violets recolonize the renovation area, the potential for harm of silverspot butterfly larvae will increase. Monitoring of habitat conditions in response to management by a qualified professional will be needed to determine when alterations of the mowing schedule of the existing breeding meadow and renovation areas at Camp Rilea will be needed to minimize the potential for harm to larvae.

Mowing has resulted in goldenrod plants which do not reach their full height potential. Goldenrod is one of the species' preferred fall nectar plants. It is not known whether the mowing has a negative influence on the availability or quality of nectar or flowers. While goldenrod plants in mowed renovated meadows appear to be shorter in stature, the mowed plants are still observed to produce flowers and therefore nectar which is then available during the fall to the returning egg-laying females. With the availability of flowers on nectar species in the meadow and nectar plants in adjacent unmowed areas, mowing is not anticipated to be a limiting factor to nectar availability at this time.

Scotch broom removal may result in trampling of habitat areas and potentially eggs of the Oregon silverspot butterfly. Removal is timed during the flight period of the butterfly. However, areas of scotch broom are areas of poor habitat which are not likely to have eggs or larvae present. The greatest risk from trampling may be if persons removing Scotch broom must drag the shrubs and traverse over higher quality habitats. Scotch broom removal generally proceeds rapidly over the course of a few days, so any harassment will likely be limited in duration.

Repeated and thorough seed collection may result in depleting the habitat management area of its source of seed needed for continual maintenance and recruitment within the source area. Care needs to be taken so that collections employ conservation measures to assure an adequate seed bank remains on site each year or every two or three years. Periodic monitoring of native species presence should be tracked to make sure native components persist over time with seed collection efforts.

Troop training activities in areas adjacent to habitat management areas should not pose any threat of direct harm to adult butterflies. Feeding adults may be displaced from nectar plants by training activities outside of designated habitat management areas, but such levels of impact are not likely to harm or significantly impair behavioral patterns. Approximately 15 acres of meadow containing violets lie outside of designated habitat management areas. This acreage may receive incidental management in conjunction with ongoing training activities. Three dense concentrations of violets are observed outside of the habitat management areas. Together these three areas comprise less than one acre. One of these three areas is the is the 0.01 acres which will be transplanted to Area 10. The second area is a 30-foot diameter patch of violets along Pacific Road north of the sewage lagoons. This area will be mowed only. The third area is approximately 30 feet by 100 feet and is part of the firing range. This area will not be mowed and trampling in this area is likely to be limited to monitoring and limited habitat management activities, such as selective removal of Scotch broom. In general, the majority of the 15 acres contain violets in low densities and approximately 13 of the 15 acres are mowed. Nectar sources are present which may be used by adult Oregon silverspot butterflies.

There is a potential for harassment and trampling of larvae and harassment of adult feeding butterflies associated with military training, monitoring, transplanting and other management activities. The potential for conflict with military training activities is low because of the limited

availability of violets, small patch sizes, and isolated, fragmented nature of this areas. Female butterflies are not likely to lay their eggs within violet areas where densities are too low. Since there are three areas of concentrated violets, take could be minimized by timing any transplant activities to a year when it had been determined females have not laid eggs or have not made use of concentrated violet areas the prior fall. This would require monitoring area of high violet concentration for ovipositioning females.

Plans to utilize the present baseball field for future construction and relocation of some facilities will result in ground disturbances to habitat. The proposed action will result in short-term losses of habitat with the potential for no losses long-term. Nectar and violet transplants into Area 10 will affect approximately 0.1 acre. If successful, the transplanted nectar resources will enhance the value of Area 10 and mitigate impacts of ground disturbing activities. Measures to transplant meadow sod will help determine if transplantation is an option for maintaining nectar sources and habitat values. Any larvae which may be present within or adjacent to the material to be removed for transplanting may be harassed or trampled during the operation.

Future construction of utility lines, flagpole walk and grenade range along the roadsides may destroy violets and nectar plants and incidentally take Oregon silverspot butterflies. Approximately 2.82 acres may be impacted from these construction related activities. The use of construction easements comprises 1.31 acres of the 2.82 acres of impact to Oregon silverspot butterfly habitat and any butterflies or larvae which may occur in this area. This activity may create the potential for weeds to colonize the area. However, only 0.72 acres of this area has a high probability of disturbance during future construction projects if the side of the road opposite habitat is used wherever possible near Areas 1, 4W and 5N. The collection of native hay and seed for placement in disturbed areas will help minimize these construction impacts, aid revegetation of disturbed areas to native species, and reduce the potential for weeds to colonize disturbed areas. If successful, any impacts will be temporary. Disturbances will need to be kept to a minimum width so that plants from adjacent habitat will have a greater chance for quick reestablishment before weeds colonize the area, and the reestablishment of vegetation will need to be monitored to assure native species are established.

When the Hand Grenade Range is removed, approximately a dozen 10-foot by 20-foot bunker structures would be removed. This construction disturbance will affect Area 6, but this action should impact these small areas only a single year. Due to their small size, the affected areas are anticipated to revegetate without intensive planting efforts and result in improve the quality of the habitat. Revegetation progress will need to be monitored and remedial actions taken if invasion by exotics is detected.

Improvement and maintenance activities are proposed for the KD Range adjacent to Areas 5 and 7. Gravel will be placed on the existing road and parking lot to define vehicle use areas more clearly, so that vehicles do not inadvertently traverse over habitat areas. Fill may be brought into

the area to elevate firing positions, but will be placed in non-habitat areas. These improvement and maintenance activities should not adversely affect habitat.

Monitoring may contribute to trampling of habitat and potentially larvae. The duration of, and extent of, area covered by monitoring will be limited, and therefore the magnitude of any impact is likely to be very small to negligible.

In summary, implementation of the Plan will contribute to securing and managing habitat over 68 acres of habitat specifically for the conservation of the Oregon silverspot butterfly and possible incidental management of an additional 15 acres of poor quality habitat. This level of management will not in itself be sufficient to provide for a viable population of Oregon silverspot butterfly at Clatsop Plains, but secures management for approximately 10 percent or less or available habitats needed for the conservation of the species at Clatsop Plains. Implementation of the habitat management and monitoring activities in the Plan may result in harassment and killing (primarily through trampling) of Oregon silverspot butterfly larvae and feeding adults over the acres to be managed and adjacent areas. Specific number of individuals may be variable from year to year dependent upon a variety of factors including population numbers, habitat quality, weather conditions, and a variety of other environmental and mortality factors potentially affecting insect populations at various life stages. For this reason, numbers taken cannot be estimated.

Implementation of construction activities may result in the loss or degradation of approximately 3 acres of habitat and harassment and killing of Oregon silverspot butterfly larvae. Of this acreage, 0.01 acre will constitute a permanent loss of habitat and the remaining acres of disturbed habitat may be considered a temporary loss if transplant and revegetation efforts are successful. A worst case analysis of the effect of take to the population at Clatsop Plains associated with this level of habitat loss and degradation assumes the presence of a viable adult population at Clatsop Plains, full occupation of available habitats at Camp Rilea and impact to habitat of good to excellent quality. Based upon past observations of Oregon silverspot butterfly and their use of Clatsop Plains habitats, it is assumed that one acre of good quality habitat is needed to produce and support enough larvae to produce an average of one adult butterfly. Given these assumptions, it is estimated that the proposed construction activities would pose a potential loss of 2-3 adult butterflies to the adult population. Given current low population numbers at Clatsop Plains and the probability that habitat disturbance would not all occur at the same time, this estimate may be high at this time.

Cumulative Effects

Cumulative effects are defined in the implementing regulations of section 7 of the Act as those effects of future State, local, or private actions, not involving Federal activities, that are reasonably certain to occur within the action area (50 CFR 402.2). The cumulative effects of

future Federal actions will be considered during the section 7 consultations required for those actions and, therefore, are not considered cumulative to the proposed action.

When conducting the cumulative effects analysis for the project, the Service considered all foreseeable State and private lands in the action area. The majority of Oregon silverspot butterfly habitat in the Clatsop Plains is in private ownership without a management plan. Larger tracts of contiguous grassland once used for agriculture purposes continue to be fragmented by subdivision, road development, and utility line placement. Many private land actions do not require external review by the County or other regulatory agency, therefore the extent of changing land use practices is difficult to quantify. Long-range plans among private landowners with larger tracts of habitat are unknown at this time, although past information suggests that development has been considered. Current land use practices on these areas are more apt than not to contribute to declining conditions for the Oregon silverspot butterfly. The pattern of development, habitat fragmentation, changing land uses and spread of exotic vegetation which has been the dominant trend in the Clatsop Plains in recent years is likely to continue and contribute to the continuing loss and degradation of currently suitable and potential habitats for the Oregon silverspot butterfly.

Oregon silverspot butterflies are subject to mortality from crossing roads at two of six population centers, Clatsop Plains and Rock Creek/Big Creek. At Clatsop Plains, nectar sources dry up during August, requiring Oregon silverspot butterflies to seek nectar sources across a major two-lane highway. U.S. Highway 101 separates breeding meadows from nectar plant sources in the vicinity of Cullaby Lake. Female butterflies which cross the highway must return across the highway to lay eggs. Because of high vehicle speeds, the highway is a greater source of mortality to migrating adults than other roads in the area. Further development will increase automobile traffic and road mortality of Oregon silverspot butterflies. At Big Creek in Lane County, the Oregon Department of Transportation estimated that only 11 to 17 percent of dispersing silverspot butterflies survive a round trip flight across U.S. Highway 101.

While four of the six populations of Oregon silverspot butterfly populations are considered viable, the Clatsop Plains population has been at particular risk to extirpation for the last several years despite efforts at Camp Rilea. Much of the decline over the last decade may be attributable to the cumulative effects of changes in the species habitat at Clatsop Plains combined with a series of poor weather years and problems associated with low population numbers. Of the four viable Oregon silverspot butterfly populations, three sites are being managed to maintain habitat availability and quality for the Oregon silverspot butterfly. While these other sites may also be experiencing declines in recent years due to weather-induced environmental conditions, managed sites have a greater potential to help Oregon silverspot butterfly populations rebound when conditions become favorable.

One of the four viable population centers is on private lands managed by The Nature Conservancy (TNC). In 1998, TNC initiated a multi-year prescribed burn project to enhance

Oregon silverspot butterfly habitat. A limited area of habitat will be burned in any given year to minimize impacts on the population and preserve a substantial area of occupied habitat.

The Washington Department of Fish and Wildlife manages approximately 50 acres of Oregon silverspot butterfly habitat at Longbeach. Longbeach is one of the sites where absence of sightings in recent years has raised concerns regarding this population's viability. Currently, management activities consist of maintaining and enhancing native prairie community species, and augmenting *Viola adunca* populations. In the future, an augmentation or reintroduction project may be planned.

Conclusion

After reviewing the current status of the Oregon silverspot butterfly, the environmental baseline for the action area, the effects of the proposed Habitat Management Plan, and the cumulative effects, it is the Service's biological opinion that the action as proposed, is not likely to jeopardize the continued existence of the Oregon silverspot butterfly. The action will not affect designated critical habitat. Critical habitat for this species has been designated in Lane County; however, this action does not affect that area, and no destruction or adverse modification of that critical habitat is anticipated. The proposed action may result in incidental take of Oregon silverspot butterflies. The Service believes that habitat security and management is essential for the continued survival of the species at Clatsop Plains. The Service believes that the need for long-term habitat security and management at this time outweighs the level of incidental take which may result from implementing the proposed action. The Service believes that habitat renovation and maintenance of breeding habitat at Camp Rilea through the implementation of actions contained in the Habitat Management Plan will result in long-term benefits for the Oregon silverspot butterfly and the conservation of its habitat.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, as amended, and regulations issued pursuant to the Act, prohibits the take (harass, harm, pursue, hunt, shoot, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species without special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or the applicant. Under the terms of sections 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking, provided that such taking is in compliance with terms and conditions of this incidental take statement.

The measures described below are non-discretionary. Failure to comply will cause the protective coverage of section 7(o)(2) to lapse.

The Service anticipates the harm, harassment, and killing of Oregon silverspot larvae and harassment of adult Oregon silverspot butterflies incidental to the implementation of this Plan. Larvae may be harmed or killed from disturbance of approximately 3 acres of habitat from construction activities. Take (e.g., harm, harassment, or kill) of Oregon silverspot larvae and harassment of Oregon silverspot butterflies may result from the mowing of 83 acres of grassland and violet meadow to maintain habitat for the Oregon silverspot butterfly. Some harm or killing of larvae may occur through trampling.

The Service anticipates no more than 2-3 adult butterflies may be taken as a result of construction related activities. The incidental take resulting from construction related activities at Camp Rilea will result in the permanent loss of 0.01 acres of Oregon silverspot butterfly habitat and temporary impacts to approximately 2-3 acres of habitat. The permanent and temporary loss of habitat may result in the harm, harassment, or killing of larvae. The amount of larvae which may be affected is not determinable. However, estimates based upon habitat conditions on the Clatsop Plains and past population estimates suggest that as much as 1 acre of habitat may be needed at Clatsop Plains to produce one adult butterfly. The effect to the adult population from loss of larvae as a result of construction activities may be 2-3 butterflies. At this time, the current low numbers of adult butterflies would suggest the effect would be even lower than the 2-3 adult butterflies projected by the Plan.

Reasonable and Prudent Measures

To assist you in implementing your responsibilities to minimize incidental take, we have prepared the following reasonable and prudent measures to be implemented as project features:

1. Any incidental take of the Oregon silverspot butterfly must comply with the procedures and proposed actions contained in the Habitat Management Plan.

2. Conduct permitted activities in a manner which avoids impact to the Oregon silverspot butterfly and high quality habitat areas.

3. Avoid or minimize impacts to areas where Oregon silverspot butterflies have been observed to utilize.

Terms and Conditions

To meet the aforementioned reasonable and prudent measures, we hereby establish the following terms and conditions on incidental take:

To promote compliance with procedures and proposed actions in the Habitat Management Plan:

1) OMD will revise the Habitat Management Plan to address the changes contained in their November 19, 1998, and September 29, 1998, letters by April 1, 1999.
2) OMD will continue to work toward completing a reevaluation of objectives and make improvements on existing data collection methods in coordination with the Service by April 1, 1999.
3) Monitor potential habitats for use by Oregon silverspot butterflies in addition to managed areas. Monitor adult silverspot butterflies in potential habitat areas in late August through early October in the fall prior to planned activities. This will determine or identify if areas are likely to contain larvae concentration or be occupied by larvae in the vicinity of planned activities.
4) OMD will implement the Habitat Management Plan and conservation measures contained within the plan to avoid and minimize impact and take of Oregon silverspot butterfly and manage the habitat.
5) Monitoring shall be conducted by a qualified biologist familiar with the biology, ecology, and conservation of the Oregon silverspot butterfly and management of plant communities upon which the species depends.
6) OMD will provide an annual report to the Service for five years on the results of management and monitoring by January 31 of each calendar year.
7) Monitoring by a qualified professional will be needed to determine the mowing schedule of the existing breeding meadow and renovation areas at Camp Rilea.
8) Construction projects shall be placed on the road opposite habitat in non-habitat areas wherever possible, such as Areas 1, 4W and 5 N.
9) Revegetation of disturbed conservation easement areas and Hand Grenade Area in Area 6 need to be monitored after construction and restoration activities to assure efforts to reestablish native grassland species are successful. If exotics become established in greater densities than adjacent habitats, remedial measures will need to be taken. Such measures may involve additional planting efforts and removal of exotics.
10) Reviews and proposed changes in monitoring will be conducted in consultation with the Service .

To avoid impact to high quality Oregon silverspot butterfly habitat areas, comply with the following:

1) When larger Scotch broom plants are cut and removed, avoid dragging cut shrubs through high quality habitat areas to the extent that habitat is repeatedly trampled. Plant removal should be carried out such that brush is removed over routes containing non-habitat or low quality habitats.
2) Disturbances along construction easements shall be kept to a minimum width so that plants from adjacent habitat will have a greater chance for quick reestablishment before weeds colonize the area, and the reestablishment of vegetation will need to be monitored to assure native species are established. Such widths, allowable work and staging areas,

and butterfly areas to be avoided must be clearly communicated and marked in the field for contractors or other parties performing construction work.

3) Transplanting of meadow sod containing violets should be conducted when it is unlikely that larvae are present. Concentrated violet areas proposed for transplanting need to be monitored the fall prior to transplanting activities to determine if females have laid eggs in areas to be affected.

If during the course of the action, the amount or extent of the incidental take limit is exceeded, the Federal agency must reinitiate consultation with the Service immediately to avoid violation of section 9. Operations must be stopped in the period between initiation and completion of the new consultation if it is determined that the impact of the additional taking will cause an irreversible and adverse impact on the species, as per section 402.1(I). The National Guard Bureau or its designee shall prepare a written report with dates, locations, circumstances surrounding the taking and/or explanation of the causes of the taking. Written reports should be directed to the State Supervisor, Attn.: Endangered Species, U.S. Fish and Wildlife Service, 2600 SE 98th Avenue, Suite 100, Portland, Oregon 97266 (phone: 503-231-6179).

Upon locating a dead, injured, or sick endangered or threatened species specimen, initial notification must be made to the nearest Fish and Wildlife Service Law Enforcement Office. Care should be taken in handling sick or injured specimens to preserve biological materials in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered species or preservation of biological materials from a dead animal, the finder has the responsibility to ensure that evidence associated with the specimen is not unnecessarily disturbed. Any Oregon silverspot butterflies found dead or injured should be turned over to Oregon State University's, Department of Entomology, Corvallis, Oregon

Conservation Recommendations

Sections 2(c) and 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. The term "conservation recommendations" has been defined as suggestions of the Service regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information. The Service recommends that the following conservation measures be implemented to further the conservation of the Oregon silverspot butterfly:

1) Cooperate with the Service on recovery projects and surveys for the Oregon silverspot butterfly.
2) Encourage native grassland species wherever possible.
3) Develop objectives for the conservation and ecological monitoring of the native meadow community.
   a) Update information on the distribution of non-native and native plants in habitat management areas of Camp Rilea (Table 2 of the Management Plan)

b) Monitor sensitive plant species, such as Fritillaria, and species diversity.
c) Monitor plant species which may be limiting violet distributions, such as false dandelion (*Hypochaeris radicata)* and common plantain (*Plantago lanceolata*).
d) Incorporate monitoring and native meadow conservation objectives into the Oregon silverspot butterfly Management Plan or into the Natural Resource Management Plan.

4) Monitor adult silverspot butterflies in July and August to determine use areas and in September to monitor health and stability of the population.
5) Encourage native grassland species wherever possible.
6) Determine if it is feasible to modify practices to reduce impact to goldenrods and other nectar sources while maintaining control on exotic vegetation. Determine whether dense patches of goldenrod colonies or other nectar sources may be flagged and left without a third mowing without an adverse response by exotics.

7) Monitor weeds along roadways even in non-habitat areas. Implement programs to reduce or eliminate undesirable noxious weeds which may spread to habitat management areas

Reinitiation Notice

This concludes formal consultation on this project. If the proposal is modified; if new information is learned about this species that could change the conclusions of this Opinion; if a new species occurring in the area is listed; or if the incidental take of Oregon silverspot butterfly exceeds that specified in this Opinion, formal consultation should be reinitiated. Your decision regarding the recommendations presented in this Opinion should be sent to this office.

We appreciate the cooperation expressed by your staff members during the development of your Plan and this consultation.

If you have any questions or concerns regarding this biological opinion, please contact Russell D. Peterson, Diana Hwang, or Rollie White at (503) 231-6179.

Sincerely,

Russell D. Peterson
Field Supervisor

Enclosure
cc: R1 FWE-SE
OES

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