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Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Taylor's Checkerspot Butterfly and Threatened Status for the Streaked Horned Lark; Final Rule

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R1–ES–2012–0080; 4500030113]

RIN 1018–AY18

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Taylor's Checkerspot Butterfly and Threatened Status for the Streaked Horned Lark

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), determine endangered status for the Taylor's checkerspot butterfly (*Euphydryas editha taylori*) and threatened status for the streaked horned lark (*Eremophila alpestris strigata*) under the Endangered Species Act of 1973 (Act), as amended. This final rule adds these species to the List of Endangered and Threatened Wildlife and implements the Federal protections provided by the Act for these species. This rule also establishes a special rule under section 4(d) of the Act to exempt certain activities from the take prohibitions of the Act and our regulations in order to provide for the conservation of the streaked horned lark.

DATES: This rule is effective November 4, 2013.

ADDRESSES: This final rule is available on the Internet at *http://www.regulations.gov* and *http://www.fws.gov/wafwo/TCBSHL.html*. Comments and materials received, as well as supporting documentation used in the preparation of this rule, will be available for public inspection, by appointment, during normal business hours at: U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, 510 Desmond Drive SE., Suite 102, Lacey, WA 98503–1263; 360–753–9440 (telephone); 360–753–9008 (facsimile).

FOR FURTHER INFORMATION CONTACT: Ken Berg, Manager, U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, 510 Desmond Drive, Suite 102, Lacey, WA 98503–1263; by telephone 360–753–9440; or by facsimile 360–753–9405. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why We Need To Publish a Rule

On October 11, 2012 (77 FR 61938), we published a proposed rule to list the Taylor's checkerspot butterfly (*Euphydryas editha taylori*) as an endangered species, and the streaked horned lark (*Eremophila alpestris strigata*) as a threatened species. In this final rule, we are finalizing our proposed determinations for these species under the Act. The Act requires that a final rule be published in order to add species to the List of Endangered and Threatened Wildlife to provide protections under the Act. Elsewhere in today's **Federal Register**, we are finalizing designation of critical habitat for these species under the Act. The final critical habitat designations and supporting documents are published under Docket No. FWS–R1–ES–2013–0009. The table below summarizes our determination for each of these species:

TABLE 1—SUMMARY OF THE STATUS AND RANGE OF THE TAYLOR'S CHECKERSPOT BUTTERFLY AND THE STREAKED HORNED LARK

Species	Present range	Status
Taylor's checkerspot butterfly—*Euphydryas editha taylori*.	British Columbia, Canada; Clallam, Pierce, and Thurston Counties, WA; and Benton County, OR.	Endangered.
Streaked horned lark—*Eremophila alpestris strigata*.	Grays Harbor, Mason, Pacific, Pierce, Thurston, Cowlitz, and Wahkiakum Counties, WA; Benton, Clackamas, Clatsop, Columbia, Lane, Linn, Marion, Multnomah, Polk, Washington, and Yamhill Counties, OR.	Threatened.

This rule:

- Lists the Taylor's checkerspot butterfly as an endangered species under the Act because it is currently in danger of extinction throughout the species' range.
- Lists the streaked horned lark as a threatened species under the Act because it is likely to become endangered within the foreseeable future throughout the species' range due to continued threats.
- Establishes a special rule under section 4(d) of the Act to exempt certain airport maintenance activities and operations, agricultural activities, and noxious weed control activities from the take prohibitions of the Act and our regulations in order to provide for the conservation of the streaked horned lark.

The Basis for Our Action

Under the Act, we can determine that a species is an endangered or threatened species based on any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.

We have determined that these species are impacted by one or more of the following factors to the extent that the species meets the definition of an endangered or threatened species under the Act:

- Habitat loss through conversion and degradation of habitat, particularly from agricultural and urban development, successional changes to grassland habitat, military training, and the spread of invasive plants;
- Predation (streaked horned lark);
- Inadequate existing regulatory mechanisms that allow significant threats such as habitat loss;
- Other natural or manmade factors, including low genetic diversity, small or isolated populations, low reproductive success, and declining population sizes;
- Aircraft strikes and training at airports (streaked horned lark); and
- Pesticide use (potential threat for the Taylor's checkerspot butterfly).

Peer Review and Public Comment

We sought comments from independent specialists to ensure that our determination is based on scientifically sound data, assumptions, and analyses. We invited these peer reviewers to comment on our listing proposal. We also considered all comments and information we received during the comment periods and the public hearing.

Background

It is our intent to discuss only those topics directly relevant to the listing determinations for the Taylor's checkerspot butterfly and the streaked horned lark in this final rule. A summary of topics relevant to this final rule is provided below. Additional information on both species may be found in the proposed rule, which was published October 11, 2012 (77 FR 61938).

Previous Federal Action

Candidate History

We first identified the Taylor's checkerspot butterfly and the streaked horned lark as candidates for listing in our 2001 candidate notice of review (CNOR) (66 FR 54808; October 30, 2001). Each candidate species is assigned a listing priority number (LPN) that is based on the immediacy and magnitude of threats and taxonomic status. In 2001, both of these species were assigned an LPN of 6, which reflects threats of a high magnitude that are not considered imminent.

In 2004, based on new information, we determined that the Taylor's checkerspot butterfly faced imminent threats of a high magnitude, and we assigned it an LPN of 3 (69 FR 24876; May 4, 2004). In 2006, the streaked horned lark was also assigned an LPN of 3, based on a review indicating that the continued loss of suitable lark habitat, risks to the wintering populations, and plans for development, hazing, and military training activities were imminent threats to the species (71 FR 53756; September 12, 2006). The candidate status, with an LPN of 3 for each species, for the Taylor's checkerspot butterfly and the streaked horned lark was most recently reaffirmed in the November 21, 2012, CNOR (77 FR 69994). The U.S. Fish and Wildlife Service (Service) completed action plans for the Taylor's checkerspot butterfly and the streaked horned lark and set conservation targets and identified actions to achieve those targets over the next 5 years. These plans can be found on the Service's Web site at: *http://ecos.fws.gov/docs/action_plans/doc3089.pdf* (Taylor's checkerspot butterfly) and *http://www.fws.gov/wafwo/pdf/STHL_Action%20Plan_Sept2009.pdf* (streaked horned lark).

On October 11, 2012, we published a proposed rule in the **Federal Register** to list the Taylor's checkerspot butterfly as endangered and the streaked horned lark as threatened, and to designate critical habitat for these two species (77 FR 61938). This proposed rule also contained a proposed special rule under section 4(d) of the Act for the streaked horned lark. The 60-day comment period on that proposed rule closed on December 10, 2012. On April 3, 2013, we published a document making available the draft economic analysis of the proposed critical habitat designations for the Taylor's checkerspot butterfly and the streaked horned lark, and an amended required determinations section of the proposed designations (78 FR 20074). We additionally announced three public information workshops and a public hearing, held in April 2013, on the proposed rule to list the species and the associated critical habitat designations. The public comment period was reopened for 30 days, ending on May 3, 2013. The final rule designating critical habitat for these two species is published elsewhere in today's **Federal Register**.

Species Information—Taylor's Checkerspot Butterfly

Taylor's checkerspot butterfly is a medium-sized, colorfully marked butterfly with a checkerboard pattern on the upper (dorsal) side of the wings (Pyle 2002, p. 310). Their wings are orange with black and yellowish (or white) spot bands, giving them a checkered appearance (Pyle 1981, p. 607; Pyle 2002, p. 310). The Taylor's checkerspot butterfly was historically known to occur in British Columbia, Washington, and Oregon, and its current distribution represents a reduction from over 80 locations rangewide to 14.

Taxonomy and Species Description

Taylor's checkerspot butterfly is a subspecies of Edith's checkerspot butterfly (*Euphydryas editha*). The Taylor's checkerspot butterfly was originally described by W.H. Edwards (1888) from specimens collected from Beacon Hill Park in Victoria, British Columbia (BC). *Euphydryas editha taylori* is recognized as a valid subspecies by the Integrated Taxonomic Information System (ITIS 2012a). It is one of several rare and threatened subspecies of Edith's checkerspot butterfly, including the Bay checkerspot (*E. e. bayensis*) from the San Francisco Bay area and the Quino checkerspot (*E. e. quino*) from the San Diego, California, region; both are federally listed under the Act. For further information, see the proposed rule published on October 11, 2012 (77 FR 61938).

Distribution

Historically, the Taylor's checkerspot butterfly was likely distributed throughout grassland habitat found on prairies, shallow-soil balds (a bald is a small opening on slopes in a treeless area, dominated by herbaceous vegetation), grassland bluffs, and grassland openings within a forested matrix in south Vancouver Island, northern Olympic Peninsula, the south Puget Sound, and the Willamette Valley. The historical range and abundance of the subspecies are not precisely known because extensive searches for the Taylor's checkerspot butterfly did not occur until recently. Northwest prairies were formerly more common, larger, and interconnected, and would likely have supported a greater distribution and abundance of the Taylor's checkerspot butterflies than prairie habitat does today. According to Dr. Robert Pyle (2012, *in litt.*):

> ''*Euphydryas editha taylori* was previously more widely distributed and much denser in occurrence than is presently the case on the Puget Prairies. The checkerspot was abundant on the Mima Mounds Natural Area Preserve (NAP) and surrounding prairies in 1970. In the mid-eighties, Taylor's checkerspot butterfly flew by the thousands on Rock Prairie, a private farm property west of Tenino. All of these sites have since been rendered unsuitable for *E. e. taylori* through management changes, and Taylor's checkerspot butterfly has dropped out of them; meanwhile, many other colonies have disappeared in their vicinity through outright development or conversion of the habitat. The same is true for bluff-top colonies I knew in the early '70s at Dungeness. The ongoing loss and alteration of habitat in the western Washington grasslands has without question led to the shrinkage of Taylor's checkerspot occurrences from a regional constellation to a few small clusters.''

Before the recent declines observed over roughly the last 10 or 15 years, the Taylor's checkerspot butterfly was known from an estimated 80 locations: 24 in British Columbia, 43 in Washington, and 13 in Oregon (Hinchliff 1996, p. 115; Shepard 2000, pp. 25–26; Vaughan and Black 2002, p. 6; Stinson 2005, pp. 93–96, 123–124). These sites included coastal and inland prairies on southern Vancouver Island and surrounding islands in the Straits of Georgia, British Columbia and the San Juan Island archipelago (Hinchliff 1996, p. 115; Pyle 2002, p. 311), as well as open prairies on post-glacial gravelly outwash and shallow-soil balds in Washington's Puget Trough (Potter 2010, p. 1), the north Olympic Peninsula (Holtrop 2010, p. 1), and grassland habitat within a forested matrix in Oregon's Willamette Valley (Benton County 2010, Appendix N, p. 5).

The 1949 field season summary for North American lepidoptera (Hopfinger 1949, p. 89) states that an abundant

distribution of the Taylor's checkerspot butterfly was known from the south Puget Sound prairies: ''*Euphydryas editha* (*taylori*), as usual, appeared by the thousands on Tenino Prairie.'' By 1989, Pyle (p. 170) had reported that there were fewer than 15 populations remaining rangewide. Surveys in 2001 and 2002 of the three historical locations on Hornby Island, British Columbia, failed to detect any the Taylor's checkerspot butterflies; the last observation of the Taylor's checkerspot butterfly from this location was 1995 (Committee on the Status of Endangered Wildlife in Canada (COSEWIC) 2011, p. 15). By fall 2002, only six populations were known to occur rangewide, four from the south Puget Sound region in Washington, one from San Juan County, Washington, and one from the Willamette Valley of Oregon (USFWS 2002a).

Current Range and Distribution

Nearly all localities for the Taylor's checkerspot butterflies in British Columbia have been lost; the only location currently known from British Columbia was discovered in 2005 (COSEWIC 2011, p. iv). In Oregon, although many surveys have been conducted at a variety of historical and potential locations within the Willamette Valley, many of those have failed to detect the species; the number of locations occupied by Taylor's checkerspot butterflies in Oregon has declined from 13 to 2 (Ross 2011, *in litt.,* p. 1). In Washington State, more than 43 historical locales were documented for the Taylor's checkerspot butterfly. In 2012, there were 11 documented locations for the Taylor's checkerspot butterflies with only 1 of the localities harboring more than 1,000 individuals, and the majority of known sites have daily counts of fewer than 100 individual butterflies.

Due to the limited distribution and few populations of the Taylor's checkerspot butterfly, surveys for this subspecies are quite thorough, generally consisting of a minimum of 3 days of visits during the flight period, and occasionally numbering up to 10 or 12 days of counts. Multiple days of counts during the annual flight period greatly increase the reliability of abundance data for butterflies; thus, we believe the data on numbers of the Taylor's checkerspot butterflies to be highly reliable.

Canada—After years of surveys (2001 through 2004) at historical population sites in British Columbia that failed to detect the Taylor's checkerspot butterflies (COSEWIC 2011, pp. 15–16), a population was discovered on Denman Island in 2005. Denman Island is located approximately 106 miles (170 km) north of Victoria, British Columbia, along the eastern shores of Vancouver Island in the Straits of Georgia. The Taylor's checkerspot butterfly records from British Columbia date from 1888 through 2011, when the last survey was conducted. Surveys are regularly conducted on Vancouver Island and other historical locations (Page *et al.* 2009, p. iv). In 2008, a single Taylor's checkerspot butterfly was detected on Vancouver Island in the Courtney-Comox area, where they had not been observed since 1931 (COSEWIC 2011, pp. 15–16). Additional surveys were conducted at this location, and only the single butterfly was observed. It is likely that this single adult had dispersed from the Denman Island population located approximately 0.3 mi (0.5 km) away. As of 2012, the only currently known occurrence of the Taylor's checkerspot butterfly in Canada is on Denman Island (Page *et al.* 2009, p. 2; COSEWIC 2011, p. iv).

Washington—In Washington, surveys have been conducted annually for Taylor's checkerspot butterflies in currently and historically occupied sites. Surveys on south Puget Sound prairies have been conducted from 1997 through 2011, by the Washington Department of Fish and Wildlife (WDFW), Washington Department of Natural Resources (WDNR), Center for Natural Lands Management (previously The Nature Conservancy of Washington), and personnel from the Wildlife Branch of Joint Base Lewis-McChord (JBLM; formerly known as Fort Lewis Army Base and McChord Air Force Base, respectively). In 1994, a report from Char and Boersma (1995) indicated the presence of Taylor's checkerspot butterflies on the 13th Division Prairie on JBLM; no additional locations have been reported since 1999, when a handful of Taylor's checkerspot butterflies were observed by WDFW (Hays *et al.* 2000, p. 13). Surveys have been conducted annually on the 13th Division Prairie since 2000; however, no Taylor's checkerspot butterflies have been detected during the spring flight period (Ressa 2003, pp. 7, 14; Gilbert 2004, p. 5; Linders 2012c, *in litt.*). Taylor's checkerspot butterflies are believed to be extirpated from the 13th Division Prairie at JBLM (Linders 2012c, *in litt.*).

Four other sites in Thurston County (Glacial Heritage, Scatter Creek north and south units, and Rocky Prairie NAP) had Taylor's checkerspot butterflies present in 1997. No Taylor's checkerspot butterflies were observed during surveys conducted in 1998 and 1999 at these locations (Hays *et al.* 2000, p. 13; Stinson 2005, p. 95). Subsequent annual surveys at Glacial Heritage and Scatter Creek, south unit, have not detected Taylor's checkerspot butterflies until reintroduction through translocation to these sites resulted in occupation (Linders and Olson 2011, slide number 17; Bidwell 2012, pers. comm.). We did not count these sites as occupied in 2012, but after 3 years of positive survey data, we tentatively consider them occupied.

Four historical locales for Taylor's checkerspot butterflies were permanently lost in the south Puget Sound region to development (Dupont, JBLM Training Area 7S, Spanaway, and Lakewood in Pierce County) or conversion to agriculture (Rock Prairie in Thurston County) (Stinson 2005, pp. 93–96). In addition, several older Washington specimens are labeled with general or imprecise locality names on their collection labels (e.g., Olympia 1893; Tenino 1929; Shelton 1971; Dungeness 1999) (Stinson 2005, pp. 94–95). Some of these site names may refer to unknown or currently occupied locales, but due to the imprecise nature of their collection data, the actual location of these collection sites has not been determined.

Surveys of 15 prairies within the south Puget Sound landscape in 2001 and 2002 located Taylor's checkerspot butterflies on only 4 sites in Thurston and Pierce Counties (Stinson 2005, pp. 93–96). Three of the four sites were found in the Bald Hill landscape in southeast Thurston County. Taylor's checkerspot butterflies were documented at the Bald Hills through 2007, but there have been no detections since, despite regular and thorough surveying from 2001 through 2011 (Potter 2011, p. 3). This number has declined substantially in recent years as habitat has become increasingly shaded and modified by encroaching trees, nonnative grasses, and the invasive, nonnative shrub Scot's broom (*Cytisus scoparius*). Potter (2010, p. 1) reported multiple site visits to conduct redundant surveys in formerly occupied bald habitat during the 2008–2010 flight period with no Taylor's checkerspot butterflies observed. The subspecies is presumed to be extirpated from this location.

The 91st Division Prairie is located on JBLM and encompasses approximately 7,600 acres (ac) (3,075 hectares (ha)) of native grassland. Taylor's checkerspot butterflies are documented at two locations within 91st Division Prairie, Range 50–51, and Range 72–76. The only extant, naturally occurring population of the Taylor's checkerspot

butterfly within the south Puget Sound is located here, and has served as the source population for the collection of eggs and adult butterflies for captive propagation for reintroduction efforts. This is the largest population of the Taylor's checkerspot butterfly, and it occurs in several small, discrete patches of habitat. Maximum daily counts from surveys conducted at this site between 2005–2012 ranged from 70 to 2,070 (Randolph, unpub. data, p. 79; Wolford 2006; Olson and Linders 2010; Linders 2011b; Linders 2012d, p. 27).

In the course of conducting surveys for another rare grassland-associated butterfly found in Washington, the island marble (*Euchloe ausonides insulanus*), over 150 potential grassland locations where historical locales for Taylor's checkerspot butterflies exist (Pyle 1989, p. 170) were surveyed for the Taylor's checkerspot butterfly in the north Puget Sound region during spring of 2005 through the spring of 2011 (Miskelly 2005; Potter *et al.* 2011). Although the flight periods and habitat of both butterflies overlap, no Taylor's checkerspot butterflies were found during these surveys.

Several historical sites with potentially suitable habitat were surveyed on the north Olympic Peninsula (Clallam County) during spring 2003. The Taylor's checkerspot butterfly was found to occupy five locations in this geographic area in 2003. At one historical site near the mouth of the Dungeness River, only a few individuals were detected. However, no Taylor's checkerspot butterflies were detected at this location during surveys from 2005 through 2009 (McMillan 2007, pers. comm.; Potter 2012, pers. comm.). The other four populations were found on grassy openings on shallow-soiled bald habitat west of the Elwha River. Two of these sites were estimated to support at least 50 to 100 adult Taylor's checkerspot butterflies (Dan Kelly Ridge and Eden Valley), and just a few individuals were found at the two other bald sites (Striped Peak and Highway 112) (Hays 2011, p. 1). Subsequent surveys at the latter two sites, Striped Peak and Highway 112, from 2004–2011, have failed to relocate or detect any Taylor's checkerspot butterflies.

In 2006, a population was discovered near the town of Sequim. Taylor's checkerspot butterflies have since been detected annually at this location from 2006–2011 (Hays 2009, pers. comm.; Hays 2011, p. 29). At this site, Taylor's checkerspot butterflies inhabit approximately 5 ac (2 ha) of estuarine, deflation plain (or back beach), a road with restricted use, and farm-edge habitat. In 2010, a maximum count of 568 Taylor's checkerspot butterflies was recorded on a single day (April 3, 2010); normally peak daily counts from this location range from 50 to 240 individuals (Hays 2011, p. 29).

Since 2007, three new Taylor's checkerspot butterfly populations have been found in Clallam County on Olympic National Forest lands. All three sites are located in the Dungeness River watershed: Bear Mountain, Three O'Clock Ridge, and Upper Dungeness (Holtrop 2009, p. 2). The U.S. Forest Service (Forest Service) and WDFW are currently monitoring butterfly numbers at these sites annually. As of 2012, a total of six occupied sites are known from Clallam County: Sequim, Eden Valley, Dan Kelly Ridge, Bear Mountain, Three O'Clock Ridge, and Upper Dungeness.

Oregon—All of the 13 historical locales within the Willamette Valley of western Oregon have been surveyed regularly by local lepidopterists (McCorkle 2008, pers. comm.; Ross 2005; Stinson 2005, p. 124; Benton County 2010, p. 13; Potter 2012, pers. comm.). Taylor's checkerspot butterflies were formerly reported to exist in large numbers (''swarms on the meadows beside Oak Creek'') on the upland prairies of the Willamette Valley in Lane, Benton, and Polk Counties (Dornfeld 1980, p. 73). Now only remnant populations exist in Oregon. In 1999, Taylor's checkerspot butterflies were discovered along the Bonneville Power Administration (BPA) right-of-way corridor in an area known as Fitton Green-Cardwell Hill in Benton County. In 2004, surveys for the Taylor's checkerspot butterfly were expanded in the Willamette Valley, where a second population was discovered on grassland openings within the Beazell Memorial Forest in Benton County. These two locations for the Taylor's checkerspot butterfly are currently the only occupied patches known from Oregon.

Summary—Based on historical and current data, the distribution and abundance of Taylor's checkerspot butterflies have declined significantly rangewide, with the majority of local extirpations occurring from approximately the mid-1990s in Canada (COSEWIC 2011, p. 15), 1999–2004 in south Puget Sound, and around 2007 at the Bald Hills location in Washington. Several new locations harboring Taylor's checkerspot butterflies have been rediscovered on historical sites on WDNR lands (USFWS 2004, pp. 3–4; USFWS 2007, p. 5) and have also been found at new locations on natural and manipulated balds within the Dungeness River watershed on the north Olympic Peninsula in Washington. Currently 14 individual locations are considered occupied by the Taylor's checkerspot butterfly rangewide: Denman Island (British Columbia, Canada); Eden Valley, Dan Kelly Ridge, Sequim, Bear Mountain, Three O'Clock Ridge, and Upper Dungeness (north Olympic Peninsula, Washington); Range 72–76, Range 50–51, Pacemaker Training Area 14 (JBLM, Washington); Scatter Creek, and Glacial Heritage (south Puget Sound, Washington); and Beazell Memorial Forest, and Fitton Green-Cardwell Hill (Oregon).

Habitat

Taylor's checkerspot butterfly occupies open grassland habitat found on prairies, shallow-soil balds (Chappell 2006, p. 1), grassland bluffs, and grassland openings within a forested matrix in south Vancouver Island, British Columbia; the north Olympic Peninsula and the south Puget Sound, Washington; and the Willamette Valley, Oregon. The recently discovered population on Denman Island in Canada, discovered in May 2005, occupies an area that had been clear-cut harvested, and is now dominated by, and maintained as, grass and forb vegetation (for details, see 77 FR 61938; October 11, 2012). In British Columbia, Canada, Taylor's checkerspot butterflies were historically known to occupy coastal grassland habitat on Vancouver Island and nearby islands, not forests that were converted to early successional conditions by clear-cutting. In Washington, Taylor's checkerspot butterflies inhabit glacial outwash prairies in the south Puget Sound region. Northwest prairies were formerly more common, larger, and interconnected, and would likely have supported a greater distribution and abundance of Taylor's checkerspot butterflies than prairie habitat does today (Pyle 2012, *in litt.*). On the northeast Olympic Peninsula they use shallow-soil balds and grasses within a forested landscape, as well as roadsides, former clear-cut areas within a forested matrix, and a coastal stabilized dune site near the Strait of Juan de Fuca (Stinson 2005, pp. 93–96). The two Oregon sites are on grassland hills in the Willamette Valley within a forested matrix (Vaughan and Black 2002, p. 7; Ross 2008, p. 1; Benton County 2010, Appendix N, p. 5).

Biology

Taylor's checkerspot butterflies produce one brood per year. They overwinter (diapause) in the fourth or fifth larval instar (developmental) phase and have a flight period as adults of 10

to 14 days, usually in May, although depending on local site and climatic conditions, the flight period begins in late April and extends into early July, as in Oregon, where the flight season has been documented as lasting up to 45 days (Ross 2008, p. 2). All nontropical checkerspot butterflies, including the Taylor's checkerspot butterfly, have the capability to reenter diapause prior to metamorphosis during years that weather is extremely inhospitable or when the larval food resources are restricted (Ehrlich and Hanski 2004, p. 22). It is important to note that while Taylor's checkerspot butterflies are obvious while on the wing during the flight period, they are present and relatively sedentary throughout the rest of the year while in their larval form; we consider them a resident subspecies year-round and especially vulnerable to many forms of disturbance while in the life-history stages prior to metamorphosis.

Female Taylor's checkerspot butterflies and their larvae utilize plants that contain defensive chemicals known as iridoid glycosides, which have been recognized to influence the selection of oviposition sites by adult nymphalid butterflies (butterflies in the family Nymphalidae) (Murphy *et al.* 2004, p. 22; Page *et al.* 2009, p. 2), and function as a feeding stimulant for some checkerspot larvae (Kuussaari *et al.* 2004, p. 147). As maturing larvae feed, they accumulate these defensive chemical compounds from their larval host plants into their bodies. According to the work of Bowers (1981, pp. 373–374), this accumulation appears to deter predation. These larval host plants include members of the Broomrape family (Orobanchaceae), such as *Castilleja* (paintbrushes) and *Orthocarpus,* which is now known as *Triphysaria* (owl's clover), and native and nonnative *Plantago* species, which are members of the Plantain family (Plantaginaceae) (Pyle 2002, p. 311; Vaughan and Black 2002, p. 8). The recent rediscovery in 2005 of Taylor's checkerspot butterflies in Canada led to the observation that additional food plants (*Veronica serpyllifolia* (thymeleaf speedwell) and *V. beccabunga* ssp. *americana* (American speedwell)) were being utilized by Taylor's checkerspot butterfly larvae (Heron 2008, pers. comm.; Page *et al.* 2009, p. 2). Taylor's checkerspot butterfly larvae had previously been confirmed feeding on *Plantago lanceolata* (narrow-leaf plantain) and *P. maritima* (sea plantain) in British Columbia (Guppy and Shepard 2001, p. 311), narrow-leaf plantain and *Castilleja hispida* (harsh paintbrush) in Washington (Char and Boersma 1995, p. 29; Pyle 2002, p. 311; Severns and Grosboll 2011, p. 4), and exclusively on narrow-leaf plantain in Oregon (Dornfeld 1980, p. 73; Ross 2008, pers. comm.; Severns and Warren 2008, p. 476). In 2012, the Taylor's checkerspot butterfly was documented preferentially ovipositing on the threatened *Castilleja levisecta* (golden paintbrush) in studies conducted in Washington, and in 2013, *Castilleja levisecta* was subsequently observed being utilized as a larval host plant in both Washington and Oregon (Kaye 2013; Aubrey 2013, *in litt.*), as originally hypothesized by Dr. Robert Pyle (Pyle 2002, p. 311; Pyle 2007, pers. comm.).

Species Information—Streaked Horned Lark

Streaked horned lark is endemic to the Pacific Northwest (historically found in British Columbia, Washington, and Oregon; Altman 2011, p. 196) and is a subspecies of the wide-ranging horned lark (*Eremophila alpestris*). Horned larks are small, ground-dwelling birds, approximately 6–8 inches (in) (16–20 centimeters (cm)) in length (Beason 1995, p. 2). Adults are pale brown, but shades of brown vary geographically among the subspecies. The male's face has a yellow wash in most subspecies. Adults have a black bib, black whisker marks, black ''horns'' (feather tufts that can be raised or lowered), and black tail feathers with white margins (Beason 1995, p. 2). Juveniles lack the black face pattern and are varying shades of gray, from almost white to almost black with a silver-speckled back (Beason 1995, p. 2). The streaked horned lark has a dark brown back, yellowish underparts, a walnut brown nape, and yellow eyebrow stripe and throat (Beason 1995, p. 4). This subspecies is conspicuously more yellow beneath and darker on the back than almost all other subspecies of horned lark. The combination of small size, dark brown back, and yellow underparts distinguishes this subspecies from all adjacent forms.

Taxonomy and Species Description

The horned lark is a bird found throughout the northern hemisphere (Beason 1995, p. 1); it is the only true lark (Family Alaudidae, Order Passeriformes) native to North America (Beason 1995, p. 1). There are 42 subspecies of horned lark worldwide (Clements *et al.* 2011, entire). Twenty-one subspecies of horned larks are found in North America; 15 subspecies occur in western North America (Beason 1995, p. 4). Subspecies of horned larks are based primarily on differences in color, body size, and wing length. Molecular analysis has further borne out these morphological distinctions (Drovetski *et al.* 2005, p. 875). Western populations of horned larks are generally paler and smaller than eastern and northern populations (Beason 1995, p. 3). The streaked horned lark was first described as *Otocorys alpestris strigata* by Henshaw (1884, pp. 261–264, 267–268); the type locality was Fort Steilacoom, Washington (Henshaw 1884, p. 267). There are four other breeding subspecies of horned larks in Washington and Oregon: pallid horned lark (*E. a. alpina*), dusky horned lark (*E. a. merrilli*), Warner horned lark (*E. a. lamprochroma*), and Arctic horned lark (*E. a. articola*) (Marshall *et al.* 2003, p. 426; Wahl *et al.* 2005, p. 268). None of these other subspecies breed within the range of the streaked horned lark, but all four subspecies frequently overwinter in mixed species flocks in the Willamette Valley (Marshall *et al.* 2003, pp. 425–427).

Drovetski *et al.* (2005, p. 877) evaluated the genetic distinctiveness, conservation status, and level of genetic diversity of the streaked horned lark using the complete mitochondrial ND2 gene. Streaked horned larks were closely related to the California samples and only distantly related to the three closest localities (alpine Washington, eastern Washington, and Oregon). There was no evidence of immigration into the streaked horned lark's range from any of the sampled localities. Analyses indicate that the streaked horned lark population is well-differentiated and isolated from all other sampled localities, including coastal California, and has ''remarkably low genetic diversity'' (Drovetski *et al.* 2005, p. 875).

Streaked horned lark is differentiated and isolated from all other sampled localities, and although it was ''. . . historically a part of a larger Pacific Coast lineage of horned larks, it has been evolving independently for some time and can be considered a distinct evolutionary unit'' (Drovetski *et al.* 2005, p. 880). Thus, genetic analyses support the subspecies designation for the streaked horned lark (Drovetski *et al.* 2005, p. 880), which has been considered a relatively well-defined subspecies based on physical (phenotypic) characteristics (Beason 1995, p. 4). The streaked horned lark is recognized as a valid subspecies by the Integrated Taxonomic Information System (ITIS 2012c). For more information on taxonomy, see the proposed rule published on October 11, 2012 (77 FR 61938).

Distribution

Historical Range and Distribution

Streaked horned lark's breeding range historically extended from southern British Columbia, Canada, south through the Puget lowlands and outer coast of Washington, along the lower Columbia River, through the Willamette Valley, the Oregon coast and into the Umpqua and Rogue River Valleys of southwestern Oregon.

British Columbia—Streaked horned lark was never considered common in British Columbia, but local breeding populations were known on Vancouver Island, in the Fraser River Valley, and near Vancouver International Airport (Campbell *et al.* 1997, p. 120; COSEWIC 2003, p. 5). The population declined throughout the 20th century (COSEWIC 2003, pp. 13–14); breeding has not been confirmed since 1978, and the streaked horned lark is considered to be extirpated in British Columbia (COSEWIC 2003, p. 15). A single streaked horned lark was sighted on Vancouver Island in 2002 (COSEWIC 2003, p. 16).

Washington—The first report of the streaked horned lark in the San Juan Islands, Washington, was in 1948 from Cattle Point (Goodge 1950, p. 28). There are breeding season records of streaked horned larks from San Juan and Lopez Islands in the 1950s and early 1960s (Retfalvi 1963, p. 13; Lewis and Sharpe 1987, pp. 148, 204), but the last record dates from 1962, when seven individuals were seen in July on San Juan Island at Cattle Point (Retfalvi 1963, p. 13). The WDFW conducted surveys in 1999, in the San Juan Islands (Rogers 1999, pp. 3–4). Suitable nesting habitat was visually searched and a tape recording of streaked horned lark calls was used to elicit responses and increase the chance of detections (Rogers 1999, p. 4). In 2000, MacLaren and Cummins (in Stinson 2005, p. 63) surveyed several sites recommended by Rogers (1999), including Cattle Point and Lime Kiln Point on San Juan Island. No larks were detected in the San Juan Islands during either survey effort (Rogers 1999, p. 4; Stinson 2005, p. 63).

There are a few historical records of streaked horned larks on the outer coast of Washington near Lake Quinault, the Quinault River and the Humptulips River in the 1890s (Jewett *et al.* 1953, p. 438; Rogers 2000, p. 26). More recent records reported larks at Leadbetter Point and Graveyard Spit in Pacific County in the 1960s and 1970s (Rogers 2000, p. 26). Surveys conducted between 1999 and 2004 found larks at Leadbetter Point, Graveyard Spit, Damon Point and Midway Beach on the Outer Coast (Stinson 2005, p. 63).

There are scattered records of streaked horned larks in the northern Puget Trough, including sightings in Skagit and Whatcom Counties in the mid-20th century (Altman 2011, p. 201). The last recorded sighting of a streaked horned lark in the northern Puget Trough was at the Bellingham Airport in 1962 (Stinson 2005, p. 52).

Over a century ago, the streaked horned lark was described as a common summer resident in the prairies of the Puget Sound region in Washington (Bowles 1898, p. 53; Altman 2011, p. 201). Larks were considered common in the early 1950s ''in the prairie country south of Tacoma'' and had been observed on the tide flats south of Seattle (Jewett *et al.* 1953, p. 438). By the mid-1990s, only a few scattered breeding populations existed on the south Puget Sound on remnant prairies and near airports (Altman 2011, p. 201).

There are sporadic records of streaked horned larks along the Columbia River. Sightings on islands near Portland, Oregon, date back to the early 1900s (Rogers 2000, p. 27). A number of old reports of streaked horned larks from the Columbia River east of the Cascade Mountains have been re-examined, and have been recognized as the subspecies *Eremophila alpestris merrilli* (Rogers 2000, p. 27; Stinson 2005, p. 51). On the lower Columbia River, it is probable that streaked horned larks breed only as far east as Clark County, Washington, and Multnomah County, Oregon (Roger 2000, p. 27; Stinson 2005, p. 51).

Oregon—Streaked horned lark's historical range extends south through the Willamette Valley of Oregon, where it was considered abundant and a common summer resident over a hundred years ago (Johnson 1880, p. 636; Anthony 1886, p. 166). In the 1940s, the streaked horned lark was described as a common permanent resident in the southern Willamette Valley (Gullion 1951, p. 141). By the 1990s, the streaked horned lark was called uncommon in the Willamette Valley, nesting locally in small numbers in large open fields (Gilligan *et al.* 1994, p. 205; Altman 1999, p. 18). In the early 2000s, a population of more than 75 breeding pairs was found at the Corvallis Municipal Airport, making this the largest population of streaked horned larks known (Moore 2008, p. 15).

Streaked horned lark, while occasionally present, was never reported to be more than uncommon on the Oregon coast. The streaked horned lark was described as an uncommon and local summer resident all along the coast on sand spits (Gilligan *et al.* 1994, p. 205); a few nonbreeding season records exist for the coastal counties of Clatsop, Tillamook, Coos, and Curry (Gabrielson and Jewett 1940, p. 403). Small numbers of streaked horned larks were known to breed at the South Jetty of the Columbia River in Clatsop County, but the site was abandoned in the 1980s (Gilligan *et al.* 1994, p. 205). There are no recent occurrence records from the Oregon coast.

In the early 1900s, the streaked horned lark was considered a common permanent resident of the Umpqua and Rogue River Valleys (Gabrielson and Jewett 1940, p. 402). The last confirmed breeding record in the Rogue Valley was in 1976 (Marshall *et al.* 2003, p. 425). There are no recent reports of streaked horned larks in the Umpqua Valley (Gilligan *et al.* 1994, p. 205; Marshall *et al.* 2003, p. 425).

Current Range and Distribution

Breeding Range—Streaked horned lark has been extirpated as a breeding subspecies throughout much of its range, including all of its former range in British Columbia, the San Juan Islands, the northern Puget Trough, the Washington coast north of Grays Harbor, the Oregon coast, and the Rogue and Umpqua Valleys in southwestern Oregon (Pearson & Altman 2005, pp. 4–5).

The current range of the streaked horned lark can be divided into three regions: (1) The south Puget Sound in Washington; (2) the Washington coast and lower Columbia River islands (including dredge spoil deposition sites near the Columbia River in Portland, Oregon); and (3) the Willamette Valley in Oregon.

In the south Puget Sound, the streaked horned lark is found in Mason, Pierce, and Thurston Counties, Washington (Rogers 2000, p. 37; Pearson and Altman 2005, p. 23; Pearson *et al.* 2005a, p. 2; Anderson 2009, p. 4). Recent studies have found that streaked horned larks currently breed on six sites in the south Puget Sound. Four of these sites (13th Division Prairie, Gray Army Airfield, McChord Field, and 91st Division Prairie) are on JBLM. Small populations of larks also breed at the Olympia Regional Airport and the Port of Shelton's Sanderson Field (airport) (Pearson and Altman 2005, p. 23; Pearson *et al.* 2008, p. 3).

On the Washington coast, there are four known breeding sites: (1) Damon Point; (2) Midway Beach; (3) Graveyard Spit; and (4) Leadbetter Point in Grays Harbor and Pacific Counties. On the lower Columbia River, streaked horned larks breed on several of the sandy

islands downstream of Portland, Oregon. Recent surveys have documented breeding streaked horned larks on Rice, Miller Sands Spit, Pillar Rock, Welch, Tenasillahe, Whites/Browns, Wallace, Crims, and Sandy Islands in Wahkiakum and Cowlitz Counties in Washington, and Columbia and Clatsop Counties in Oregon (Pearson and Altman 2005, p. 23; Anderson 2009, p. 4; Lassen 2011, *in litt.*). The Columbia River forms the border between Washington and Oregon; some of the islands occur wholly in Oregon or Washington, and some are bisected by the State line. Larks also breed in Portland (Multnomah County, Oregon) at suitable sites near the Columbia River. These include an open field at the Rivergate Industrial Complex and the Southwest Quad at Portland International Airport; both sites are owned by the Port of Portland, and were created with dredged materials (Moore 2011, pp. 9–12).

In the Willamette Valley, streaked horned larks breed in Benton, Clackamas, Lane, Linn, Marion, Polk, Washington, and Yamhill Counties. Larks are most abundant in the southern part of the Willamette Valley. The largest known population of larks is resident at Corvallis Municipal Airport in Benton County (Moore 2008. p. 15); other resident populations occur at the Baskett Slough, William L. Finley, and Ankeny units of the Service's Willamette Valley National Wildlife Refuge Complex (Moore 2008, pp. 8–9) and on Oregon Department of Fish and Wildlife's (ODFW's) E.E. Wilson Wildlife Area (ODFW 2008, p. 18). Breeding populations also occur at municipal airports in the valley (including McMinnville, Salem, and Eugene) (Moore 2008, pp. 14–17). Much of the Willamette Valley is private agricultural land, and has not been surveyed for streaked horned larks, except along public road margins. There are numerous other locations on private and municipal lands on which streaked horned larks have been observed in the Willamette Valley, particularly in the southern valley (Linn, Polk, and Benton Counties) (eBird 2013, ebird.org). In 2008, a large population of streaked horned larks colonized a wetland and prairie restoration site on M–DAC Farms, a privately owned parcel in Linn County; as the vegetation at the site matured in the following 2 years, the site became less suitable for larks, and the population declined (Moore and Kotaich 2010, pp. 11–13). This is likely a common pattern, as breeding streaked horned larks opportunistically shift sites as habitat becomes available among private agricultural lands in the Willamette Valley (Moore 2008, pp. 9–11).

Wintering Range—Pearson *et al.* (2005b, p. 2) found that the majority of streaked horned larks winter in the Willamette Valley (72 percent) and on the islands in the lower Columbia River (20 percent); the rest winter on the Washington coast (8 percent) or in the south Puget Sound (1 percent). In the winter, most streaked horned larks that breed in the south Puget Sound migrate south to the Willamette Valley or west to the Washington coast; streaked horned larks that breed on the Washington coast either remain on the coast or migrate south to the Willamette Valley; birds that breed on the lower Columbia River islands remain on the islands or migrate to the Washington coast; and birds that breed in the Willamette Valley remain there over the winter (Pearson *et al.* 2005b, pp. 5–6). Streaked horned larks spend the winter in large groups of mixed subspecies of horned larks in the Willamette Valley, and in smaller flocks along the lower Columbia River and Washington Coast (Pearson *et al.* 2005b, p. 7; Pearson and Altman 2005, p. 7). During the winter of 2008, a mixed flock of over 300 horned larks was detected at the Corvallis Municipal Airport (Moore 2011a, pers. comm.).

Population Estimates and Current Status

Data from the North American Breeding Bird Survey (BBS) indicate that most grassland-associated birds, including the horned lark, have declined across their ranges in the past three decades (Sauer *et al.* 2012, pp. 7–9). The BBS can provide population trend data only for those species with sufficient sample sizes for analyses. There is insufficient data in the BBS for a rangewide analysis of the streaked horned lark population trend (Altman 2011, p. 214); however, see below for additional analysis of the BBS data for the Willamette Valley. An analysis of recent data from a variety of sources concludes that the streaked horned lark has been extirpated from the Georgia Depression (British Columbia, Canada), the Oregon coast, and the Rogue and Umpqua Valleys (Altman 2011, p. 213); this analysis estimates the current rangewide population of streaked horned larks to be about 1,170–1,610 individuals (Altman 2011, p. 213).

In the south Puget Sound, approximately 150–170 streaked horned larks breed at 6 sites (Altman 2011, p. 213). Recent studies have found that larks have very low nest success in Washington (Pearson *et al.* 2008, p. 8); comparisons with other ground-nesting birds in the same prairie habitats in the south Puget Sound showed that streaked horned larks had significantly lower values in all measures of reproductive success (Anderson 2010, p. 16). Estimates of population growth rate (λ, lambda) that include vital rates from nesting areas in the south Puget Sound, Washington coast, and Whites Island in the lower Columbia River indicate streaked horned larks have abnormally low vital rates, which are significantly lower than the vital rates of the arctic horned lark (Camfield *et al.* 2010, p. 276). One study estimated that the population of streaked horned larks in Washington was declining by 40 percent per year ($\lambda = 0.61 \pm 0.10$ SD), apparently due to a combination of low survival and fecundity rates (Pearson *et al.,* 2008, p. 12). More recent analyses of territory mapping at 4 sites in the south Puget Sound found that the total number of breeding streaked horned lark territories decreased from 77 territories in 2004, to 42 territories in 2007, a decline of over 45 percent in 3 years (Camfield *et al.* 2011, p. 8). Pearson *et al.* (2008, p. 14) concluded that there is a high probability of south Puget Sound population loss in the future given the low estimates of fecundity and adult survival along with high emigration out of the Puget Sound.

On the Washington coast and Columbia River islands, there are about 120–140 breeding larks (Altman 2011, p. 213). Data from the Washington coast and Whites Islands were included in the population growth rate study discussed above; populations at these sites appear to be declining by 40 percent per year (Pearson *et al.* 2008, p. 12). Conversely, nest success appears to be very high at the Portland industrial sites (Rivergate and the Southwest Quad). In 2010, nearly all nests successfully fledged young (Moore 2011, p. 13); only 1 of 10 monitored nests lost young to predation (Moore 2011, pp. 11–12).

There are about 900–1,300 breeding streaked horned larks in the Willamette Valley (Altman 2011, p. 213). The largest known population of streaked horned larks breeds at the Corvallis Municipal Airport; depending on the management conducted at the airport and the surrounding grass fields each year, the population has been as high as 100 breeding pairs (Moore and Kotaich 2010, pp. 13–15). In 2007, a large (580-ac (235-ha)) wetland and native prairie restoration project was initiated at M–DAC Farms on a former rye grass field in Linn County (Cascade Pacific RC&D 2012, p. 1). Large, semipermanent wetlands were created at the site, and the prairie portions were burned and

treated with herbicides (Moore and Kotaich 2010, pp. 11–13). These conditions created excellent quality ephemeral habitat for streaked horned larks, and the site was used by about 75 breeding pairs in 2008 (Moore and Kotaich 2010, p. 12), making M–DAC the second-largest known breeding population of streaked horned larks that year. M–DAC had high use again in 2009, but as vegetation at the site matured, the number of breeding larks has declined, likely shifting to other agricultural habitats (Moore and Kotaich 2010, p. 13).

We do not have population trend data in Oregon that is comparable to the study in Washington by Pearson *et al.* (2008, entire); however, research on breeding streaked horned larks indicates that nest success in the southern Willamette Valley is higher than in Washington (Moore 2011b, pers. comm.). The best information on trends in the Willamette Valley comes from surveys by the Oregon Department of Fish and Wildlife (ODFW); the agency conducted surveys for grassland-associated birds, including the streaked horned lark, in 1996 and again in 2008 (Altman 1999, p. 2; Myers and Kreager 2010, p. 2). Point count surveys were conducted at 544 stations in the Willamette Valley (Myers and Kreager 2010, p. 2); over the 12-year period between the surveys, measures of relative abundance of streaked horned larks increased slightly from 1996 to 2008, according to this report. Both detections at point count stations and within regions showed moderate increases (3 percent and 6 percent, respectively) (Myers and Kreager 2010, p. 11). Population numbers decreased slightly in the northern Willamette Valley and increased slightly in the middle and southern portions of the valley (Myers and Kreager 2010, p. 11).

Data from the BBS may provide additional insight into the trend of the streaked horned lark population in the Willamette Valley. Although the BBS does not track bird counts by subspecies, the streaked horned lark is the only subspecies of horned lark that breeds in the Oregon portion of the Northern Pacific Rainforest Bird Conservation Region (BCR); therefore it is reasonable to assume that counts of horned larks from the breeding season in the Willamette Valley are actually counts of the streaked horned lark. The BBS data regularly detect horned larks on several routes in the Willamette Valley, and counts from these routes show that horned larks in this BCR have been declining since 1960s, with an estimated annual trend of −4.6 percent (95 percent confidence intervals −6.9, −2.4) (Sauer *et al.* 2012, p. 4). The U.S. Geological Survey (USGS), which manages the BBS data, recommends caution when analyzing these data due to the small sample size, high variance, and potential for observer bias in the raw BBS data.

The BBS data from the Willamette Valley indicate that horned larks (as mentioned above, the BBS tracks only the full species) have been declining for decades, which is coincident with the restrictions on grass seed field burning imposed by the Oregon Department of Agriculture (Oregon Department of Environmental Quality and Oregon Department of Agriculture 2011, p. 1). Prior to 1990, about 250,000 ac (101,170 ha) of grass seed fields in the Willamette Valley were burned each year. Public health and safety issues led the Oregon legislature to order gradual reductions in field burning beginning in 1991. By 2009, field burning was essentially banned in the Willamette Valley (Oregon Department of Environmental Quality and Oregon Department of Agriculture 2011, p. 1). We believe that some of the observed declines lark detections in the BBS data are attributable to the reduction of highly suitable burned habitats due to the field burning ban. Since the ban is now fully in effect, the decline in BBS observations of streaked horned larks is not expected to continue at the previously noted rate.

We do not have conclusive data on population trends throughout the streaked horned lark's range, but the rapidly declining population on the south Puget Sound suggests that the range of the streaked horned lark may still be contracting.

Range Contraction

Streaked horned lark has experienced a substantial contraction of its range; it has been extirpated from all formerly documented locations at the northern end of its range (British Columbia, and the San Juan Islands and northern Puget Trough of Washington), the Oregon coast, and the southern edge of its range (Rogue and Umpqua Valleys of Oregon). The streaked horned lark's current range appears to have been reduced to less than half the size of its historical range in the last 100 years. The pattern of range contractions for other Pacific Northwest species (e.g., western meadowlark (*Sturnella neglecta*)) shows a loss of populations in the northern part of the range, with healthier populations persisting in the southern part of the range (Altman 2011, p. 214). The streaked horned lark is an exception to this pattern—its range has contracted from both the north and the south simultaneously (Altman 2011, p. 215).

Habitat

Historically, nesting habitat was found on grasslands, estuaries, and sandy beaches in British Columbia; in dune habitats along the coast of Washington; in western Washington and western Oregon prairies; and on the sandy beaches and spits along the Columbia and Willamette Rivers. Today, the streaked horned lark nests in a broad range of habitats, including native prairies, coastal dunes, fallow and active agricultural fields, wetland mudflats, sparsely vegetated edges of grass fields, recently planted Christmas tree farms with extensive bare ground, fields denuded by overwintering Canada geese, gravel roads or gravel shoulders of lightly traveled roads, airports, and dredge deposition sites in the lower Columbia River (Altman 1999, p. 18; Pearson and Altman 2005, p. 5; Pearson and Hopey 2005, p. 15; Moore 2008, pp. 9–10, 12–14, 16). Wintering streaked horned larks use habitats that are very similar to breeding habitats (Pearson *et al.* 2005b, p. 8).

Habitat used by larks is generally flat with substantial areas of bare ground and sparse low-stature vegetation primarily comprised of grasses and forbs (Pearson and Hopey 2005, p. 27). Suitable habitat is generally 16–17 percent bare ground, and may be even more open at sites selected for nesting (Altman 1999, p. 18; Pearson and Hopey 2005, p. 27). Vegetation height is generally less than 13 in (33 cm) (Altman 1999, p. 18; Pearson and Hopey 2005, p. 27). Larks eat a wide variety of seeds and insects (Beason 1995, p. 6), and appear to select habitats based on the structure of the vegetation rather than the presence of any specific food plants (Moore 2008, p. 19). A key attribute of habitat used by larks is open landscape context. Our data indicate that sites used by larks are generally found in open (i.e., flat, treeless) landscapes of 300 ac (120 ha) or more (Converse *et al.* 2010, p. 21). Some patches with the appropriate characteristics (i.e., bare ground, low stature vegetation) may be smaller in size if the adjacent areas provide the required open landscape context; this situation is common in agricultural habitats and on sites next to water. For example, many of the sites used by streaked horned larks on the islands in the Columbia River are small (less than 100 ac (40 ha)), but are adjacent to open water, which provides the open landscape context needed. Streaked horned lark populations are found at many airports within the subspecies'

range, because airport maintenance requirements provide the desired open landscape context and short vegetation structure.

Although streaked horned larks use a wide variety of habitats, populations are vulnerable because the habitats used are often ephemeral or subject to frequent human disturbance. Ephemeral habitats include bare ground in agricultural fields and wetland mudflats; habitats subject to frequent human disturbance include mowed fields at airports, managed road margins, agricultural crop fields, and disposal sites for dredge material (Altman 1999, p. 19). It is important to note the key role of anthropogenically maintained landscapes in the process of creating and maintaining habitat for the streaked horned lark; without large-scale, manmade disturbance (e.g., burning, mowing, cropping, and deposition of dredge spoils), available habitat would decrease rapidly, but these same activities can threaten individuals when they are at sensitive life-history stages.

Biology

Horned larks forage on the ground in low vegetation or on bare ground (Beason 1995, p. 6); adults feed mainly on grass and forb seeds, but feed insects to their young (Beason 1995, p. 6). In the Puget lowlands in Washington, streaked horned larks have been observed selectively foraging on the spore capsules of *Polytrichum juniperinum* (juniper haircap moss) during the time before grasses and forbs have set seed and insects become plentiful (Martin 2013, in litt.; Wolf 2013, in litt.). A study of winter diet selection found that streaked horned larks in the Willamette Valley eat seeds of introduced weedy grasses and forbs, focusing on the seed source that is most abundant (Moore 2008b, p. 9). In this Willamette Valley study, a variety of grasses (*Digitaria sanguinalis* (large crabgrass), *Panicum capillare* (witchgrass), and *Sporobulus* sp. (dropseed)), unidentified grasses (Poaceae), and forbs (*Chenopodium album* (common lambsquarters), *Amaranthus retroflexus* (redroot pigweed), *Trifolium arvense* (rabbitfoot clover) and *Kickxia* sp. (cancerweed)) were common in the winter diet of the streaked horned lark (Moore 2008b, p. 16).

Streaked horned larks have a strong affinity for recently burned habitats. An experimental study at JBLM found that larks had a highly significant preference for burned versus unburned fields, and in the breeding season following a fire, lark abundance was significantly higher on the burned plots (Pearson *et al.* 2005a, p. 14). The decline of the streaked horned lark population in the Willamette Valley is correlated with the reduction in agricultural field burning. Prior to the mid-1980s, as much as 250,000 ac (101,000 ha) of grass seed fields were burned each year in the Willamette Valley; in the 1990s, the State imposed progressive reductions in field burning, until in 2012, virtually no burning was allowed (Oregon Department of Environmental Quality and Oregon Department of Agriculture 2011, p. 1).

Horned larks form pairs in the spring (Beason 1995, p. 11). Altman (1999, p. 11) used a small sample (n=3) of streaked horned lark territories in the Willamette Valley to give a mean territory size of 1.9 ac (0.77 ha) with a range of 1.5 to 2.5 ac (0.61 to 1.0 ha). Horned larks create nests in shallow depressions in the ground and line them with soft vegetation (Beason 1995, p. 12). Nest sites are selected from suitable locations within male mating territories, which are typically sparsely vegetated, are rockier, and have more annual grasses than nearby areas (Pearson and Hopey 2005, p. 19). Female horned larks construct the nest without help from the male (Beason 1995, p. 12). Streaked horned larks establish their nests in areas of extensive bare ground, and nests are almost always placed on the north side of a clump of vegetation or another object such as root balls or soil clumps (Pearson and Hopey 2005 p. 23; Moore and Kotaich 2010, p. 18). Studies from Washington sites (the open coast, Puget lowlands, and Columbia River islands) have found strong natal fidelity to nesting sites—that is, streaked horned larks return each year to the place they were born (Pearson *et al.* 2008, p. 11).

The nesting season for streaked horned larks begins in mid-April and ends in late August (Pearson and Hopey 2004, p. 11; Moore 2011, p. 32; Wolf 2011, p. 5). Clutches range from 1 to 5 eggs, with a mean of 3 eggs (Pearson and Hopey 2004, p. 12). After the first nesting attempt in April, streaked horned larks will often re-nest in late June or early July (Pearson and Hopey 2004, p. 11). Young streaked horned larks leave the nest by the end of the first week after hatching, and are cared for by the parents until they are about 4 weeks old, when they become independent (Beason 1995, p. 15).

Nest success studies (i.e., the proportion of nests that result in at least one fledged chick) in streaked horned larks report highly variable results. Nest success on the Puget lowlands of Washington is low, with only 28 percent of nests successfully fledging young (Pearson and Hopey 2004, p. 14; Pearson and Hopey 2005, p. 16). According to reports from sites in the Willamette Valley, Oregon, nest success has varied from 23 to 60 percent depending on the site (Altman 1999, p. 1; Moore and Kotaich 2010, p. 23). At one site in Portland, Oregon, Moore (2011, p. 11) found 100 percent nest success.

Summary of Comments and Recommendations

In the proposed rule published on October 11, 2012 (77 FR 61938), we requested that all interested parties submit written comments on the proposal by December 10, 2012. We also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. Newspaper notices inviting general public comment were published in the Olympian in Washington and in the Statesman Journal in Oregon during the reopening of the public comment period following our **Federal Register** publication that made available the draft economic analysis for the proposed critical habitat designations (April 3, 2013; 78 FR 20074). As also announced in that April 3, 2013, document, we held a public hearing in Olympia, Washington, on April 18, 2013, and held public informational workshops in Lacey, Washington, on April 16, 2013 (two workshops), and in Salem, Oregon, on April 17, 2013.

During the two comment periods for the proposed rule, we received nearly 100 comment letters addressing either the proposed listing or the proposed critical habitat (or both) for the Taylor's checkerspot butterfly and the streaked horned lark. During the April 18, 2013, public hearing, 34 individuals or organizations made comments on the proposed rule. All substantive information provided during comment periods has either been incorporated directly into this final determination or is addressed below.

Peer Review

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinion from four knowledgeable individuals with scientific expertise that included familiarity with the Taylor's checkerspot butterfly and its habitats, biological needs, and threats, and from three knowledgeable individuals with scientific expertise that included familiarity with the streaked horned lark and its habitats, biological needs, and threats. We received responses from two of the peer reviewers on the proposed listing of the Taylor's checkerspot

butterfly. Both peer reviewers felt that the proposed rule was a thorough description of the status of the Taylor's checkerspot butterfly and commented that they considered the proposed rule well researched and well written, and one commenter stated that the rule comprehensively represented the current scientific knowledge for the taxon. Both peer reviewers had several substantive comments on the proposed listing of the Taylor's checkerspot butterfly, which we address below. We received responses from three of the peer reviewers on the proposed listing of the streaked horned lark. Two of the peer reviewers felt that the proposed rule was a thorough description of the status of the streaked horned lark, and stated that we had used the best available science in reaching our conclusions; one peer reviewer felt that we had failed to use available information on the trend in population numbers of the streaked horned lark in the Willamette Valley (available from the Breeding Bird Survey database), and provided that data for our consideration. Two peer reviewers had several substantive comments on the proposed listing of the streaked horned lark, which we address below. Our requests for peer review are limited to a request for review of the merits of the scientific information in our documents; if peer reviewers have volunteered their personal opinions on matters not directly relevant to the science of our status assessment, we do not respond to those comments here.

Comments From Peer Reviewers

Taylor's Checkerspot Butterfly

(1) *Comment:* One peer reviewer stated that the taxonomy section of the proposed rule was incomplete with regard to its description of the full species *Euphydryas editha* (Edith's checkerspot butterfly). He states the taxonomy of the full species *E. editha* is more complicated than we summarized. However, the peer reviewer added that despite the incomplete taxonomic treatment for the full species *E. editha,* the taxonomic treatment of *E. editha taylori* in the proposed rule is consistent with the most recent literature.

Our response: For the purpose of a listing document, we provide a non-technical physical and biological description of the species, and a taxonomic description of the entity we intend to list, which is subspecies *Euphydryas editha taylori* in this case. We typically do not describe the full species from which the subspecies was derived.

(2) *Comment:* One peer reviewer stated that, because of the discontinuous distribution of *E. editha taylori,* further taxonomic evaluation utilizing molecular genetics techniques would better determine the amount of genetic divergence within and between known populations.

Our response: The Service agrees that having a complete genetic evaluation is beneficial when determining differences within and between broadly distributed species. We are currently collaborating with U.S. Forest Service geneticists and their Genetics Laboratory (Placerville, California), and other conservation partners on collecting tissues and using established genetic markers to analyze the genetic structure of the Taylor's checkerspot butterfly and its closely related subspecies. The objective is to determine the genetic identity of the Taylor's checkerspot butterfly. At this time, the Taylor's checkerspot butterfly is a declining taxon found only on a few declining habitat patches throughout the subspecies' range, and the statute directs us to make our listing determination based upon the best scientific data available at the time of our evaluation.

(3) *Comment:* One peer reviewer mentioned that during mild winters the adult flight season for the Taylor's checkerspot butterfly can begin as early as March 31 (as in 2005, although this was an early season outlier). For example, the peer reviewer states that he personally observed an adult on March 31, and that adults were still in flight in late April in Oregon that year (2005).

Our response: We agree and consider the adult flight period for the subspecies to be variable from year to year, primarily dependent upon the local annual weather patterns during the late winter, and early spring of the specific flight year. We discuss in this final rule an example of adult Taylor's checkerspot butterflies in flight as late as the first week of July at the Olympic Peninsula sites, which are located at higher elevation than any other location within the subspecies' range.

(4) *Comment:* One peer reviewer commented that the Taylor's checkerspot butterfly most likely exhibited and persisted as a metapopulation composed of large and small populations that interacted within a larger landscape context, with frequent extinction and colonization events.

Our response: We agree with the concept of a metapopulation structure for Taylor's checkerspot butterfly. Small populations known only from small habitat patches may become extirpated; however, in a metapopulation structure, other closely situated populations may expand at the same time others are failing. By allowing recolonization of habitat patches where extirpation has taken place, metapopulation structure supports the presence of the (sub)species on a larger landscape, while they are still found in distinct separate patches of habitat. Without metapopulation structure, the Taylor's checkerspot butterfly will likely become extirpated at several of the locations where it is currently is found.

(5) *Comment:* One peer reviewer supports our ideas about active management to maintain early seral conditions in occupied habitats and about the maintenance of dispersal corridors between areas having the most dense populations of the Taylor's checkerspot butterfly. The peer reviewer cautions that management treatments to remove encroaching tree, shrubs, and nonnative grasses still does not guarantee the persistence of the subspecies on areas designated as critical habitat. He states that populations of *E. editha* are well known to appear and disappear over large areas without any obvious explanation.

Our response: We agree with the importance of active management, and that without regular management activities to sustain ecosystem processes, we would quickly lose small populations where we are working to enhance and maintain Taylor's checkerspot butterfly habitat. As noted in this rule, the lack of active management, or the ecosystem processes to maintain early seral conditions, is a threat to the subspecies through the loss of habitat, which is quickly rendered unsuitable and becomes unavailable for the butterfly's use, leading to extirpation.

(6) *Comment:* One peer reviewer took issue with our use of the word ''collection'' of butterflies for scientific studies. He suggests there is no evidence that collection of specimens has contributed to the decline of the Taylor's checkerspot butterfly.

Our response: We agree that we inappropriately used this term when we meant to discuss ''capture'' as it is directly related to ''mark, release, and recapture'' studies. We have made this change in this final rule, and replaced any mention of the term ''collection'' with ''capture,'' except where we are discussing a collection of specimens.

(7) *Comment:* One peer reviewer expressed concern about the violations of section 9 of the Act that prohibit, ''Unauthorized collecting, handling, possessing, selling, delivering, carrying or transporting of the species, including

export and import across state lines and international boundaries, except for properly documented antique specimens of these taxa at least 100 years old, as defined by section 10(h)(1) of the Act.'' Given the need for genetic and molecular phylogenetic studies of *E. editha taylori,* he disagreed with the idea of restricting the movement of specimens that are less than 100 years old. He questions how specimens that have been legally collected as vouchers and preserved for the purpose of future genetic, molecular, and morphological studies would become illegal if the species were to be listed as endangered. He strongly encourages the Service to allow the act of possessing and transporting specimens legally obtained prior to the listing of the species in 2013, in order to facilitate and contribute to the scientific study of the subspecies.

Our response: The proposed rule overstated the prohibitions in section 9 of the Act. After listing takes effect, mere possession of a specimen, provided the specimen was not collected in violation of the Act, is not prohibited, and interstate transportation of such a specimen for the purpose of genetic testing is not prohibited as long as it does not occur in the course of a commercial activity. This description of the prohibitions has been corrected in this final rule.

(8) *Comment:* One peer reviewer suggested that we include additional information in our section on the nectar foods used in Oregon by the Taylor's checkerspot butterfly. However, the peer reviewer incorrectly stated we should better describe the use of *Fraxinus* (Oregon ash), as the primary nectar source available to the Taylor's checkerspot butterfly in Oregon. We believe the reviewer mistakenly used the term *Fraxinus,* when meaning to describe *Fragaria virginiana* (wild strawberry). Another commenter pointed out that Taylor's checkerspot butterflies have been observed using dandelion (*Taraxacum officinale*) as a nectar source, which he believes is an indicator of more general habitat requirements of this subspecies.

Our response: We did correctly discuss the use of *Fragaria virginiana,* not *Fraxinus,* as it is the most widespread of nectar resources in Oregon, and *Fragaria virginiana* is readily used by the Taylor's checkerspot butterfly at all locations in Oregon. We have added *Plectritis congesta, Amelanchier alnifolia,* and *Calochortus tolmiei* as nectar resources at sites where each are found, with *C. tolmiei* found only in Oregon. Not all nectar sources potentially used by the Taylor's checkerspot butterfly are equal. Although some adult butterflies may be observed using what appears to be a general nectar source (e.g., dandelion), it may not be the optimal resource, only what is available. Individual butterflies may be relegated to using a less-than-optimal nectar source because that source now dominates a particular site. It is unknown whether the Taylor's checkerspot butterfly could survive solely on dandelion as a nectar source. Additionally, nectar sources are only one determinant in characterizing the overall habitat requirements for this subspecies.

(9) *Comment:* One peer reviewer commented that the Service should consider the increased disease pressure on populations of the Taylor's checkerspot butterfly during overwintering due to the predicted increase in winter precipitation. The reviewer stated that increased precipitation as a general rule may have deleterious impacts to lepidopteran (butterfly) larvae. The commenter also stated that there appears to be no information available on the incidence of disease and its impacts to phenology among *E. e. taylori* larvae.

Our response: We agree with both of these comments. We did not consider increased pressure, or an increase in the incidence of disease due to the predicted increase in winter precipitation, in our threats analysis. We observed examples of the impacts of late winter inundation or frost events in occupied Taylor's checkerspot butterfly habitat as having a direct mortality effect to some populations, and how anecdotally, the population counts during those years (2009, 2010) at those population centers were lower.

(10) *Comment:* One peer reviewer commented on how larvae of *Euphydryas* spp. are known to be able to respond to adverse environmental conditions by delaying development when host plants are limited or of poor quality, as the larvae may re-enter diapause for an additional 12 months. The reviewer stated that this is an adaptation to surviving in unreliable environments and will serve to mitigate against ''phenological mismatch'' of the larvae and host plants.

Our response: We agree that during poor weather years, populations of the Taylor's checkerspot butterfly appear lower compared to other years, and we presume that *E. e. taylori* larvae have likely re-entered diapause. We have addressed re-entering diapause in the section of this final rule discussing the biology of the subspecies.

Streaked Horned Lark

(11) *Comment:* One peer reviewer and several other commenters disagreed with our assessment of the status of the streaked horned lark as threatened rather than endangered. In our proposed rule, we stated that there was insufficient data in the Breeding Bird Survey (BBS) data to estimate a rangewide trend for the streaked horned lark. The peer reviewer referenced the trend analysis that is available via the BBS Web site for the Northern Pacific Rainforest Bird Conservation Region (BCR) for the horned lark; although data are not available at the subspecies level, he makes the assumption that as the streaked horned lark is the only breeding subspecies of the horned lark in western Oregon, and that horned lark counts from that BCR can be reasonably interpreted as counts of the streaked horned lark. From his analysis of the BBS data, he concludes that the Willamette Valley population of the streaked horned lark is declining at a rate of about 5 percent per year.

In addition, the peer reviewer conducted his own analysis of five individual BBS routes in the Willamette Valley. He found that two routes had increasing trends (Scio and Salem), and three had declining trends (Adair, Dayton, and McMinnville). He states that larks were first detected on BBS routes in the Willamette Valley in 1971, and their numbers began declining in 1989. He used a 5-year moving average to show a ''smoothed out'' presentation of the data. He particularly focused on the Adair BBS route, which had the most significant declining trend; in three 5-year periods in the Adair BBS route data, the route had high numbers of larks in the 1970s, lower numbers in the late 1980s through early 1990s, and then substantially lower numbers in the 2000s. The peer reviewer concluded that the streaked horned lark population in the Willamette Valley has been declining steadily since the early 1990s.

The peer reviewer asserted that our failure to examine the BBS data is highly relevant because one of the key factors used in the determination of threatened rather than endangered status was the perceived stability of lark populations in the Willamette Valley, based on the repeated ODFW roadside surveys in 1996 and 2008, and studies of lark populations at ''protected'' sites (William L. Finley National Wildlife Refuge and Corvallis Municipal Airport).

Our response: In order to evaluate this new analysis of the Breeding Bird Survey data, we requested assistance from scientists at the USGS Patuxent

Wildlife Research Center, which manages the BBS data. USGS agreed with the assertion that the BBS analysis includes all subspecies of horned larks in the Northern Pacific Rainforest BCR, and consequently, with no other horned larks breeding in the area, that the trends for this BCR are equivalent to the trends for the streaked horned lark. However, in general, USGS indicated that the peer reviewer failed to acknowledge the high level of uncertainty of his conclusions given the small sample sizes, high variance, and potential for observer bias in the raw BBS data. USGS noted that the peer reviewer correctly described the patterns of population change shown in the BBS data, but USGS urges caution in the interpretation of trends with small sample sizes such as that available for the Northern Pacific Rainforest BCR. The BBS Web site guidelines for credibility indicate that this should be noted as a deficiency. USGS also pointed out that there is an indication of observer bias in the Adair route data, which the peer reviewer used as the strongest indicator of declining population. USGS notes that there is indeed a decline in numbers, but that the most dramatic declines occurred during the transition between the second and third observer on the route; when observer #3 took over after a gap of 14 years (1992–2006), markedly fewer streaked horned larks were observed. Given this information, it is difficult to ascertain how much of the observed decline is real, and how much of the apparent decline may be biased by a change in observers. Therefore, although the peer reviewer has provided us with an analysis that raises some questions about the population trend of the streaked horned lark in the Willamette Valley, we do not feel these data are sufficiently reliable to alter our conclusion regarding the status of the subspecies.

We also note that the peer reviewer's analysis of the steady decline in streaked horned lark detections since the early 1990s correlates with the beginning of the field burning restrictions implemented by the Oregon Department of Agriculture, which we noted earlier in this document. Prior to 1990, about 250,000 ac (101,170 ha) of grass seed fields in the Willamette Valley were burned each year. Public health and safety issues (triggered by a catastrophic traffic accident on Interstate 5 caused by smoke from field burning that obscured the road, resulting in 7 deaths and 38 injuries) resulted in a decision by the Oregon legislature to order gradual reductions in field burning beginning in 1991. By 2009, field burning was essentially banned in the Willamette Valley, with the exception of a limited area in the northeastern portion of the valley, where the practice is allowed only for specific types of perennial grasses, or fields on highly erodible steep lands (Oregon Department of Environmental Quality and Oregon Department of Agriculture 2011, p. 1). Another peer reviewer commented on the affinity of larks for burned areas, as evidenced by use of recently burned habitats at JBLM. We will pursue this issue in recovery planning for the streaked horned lark. We believe that some of the observed declines lark detections in the BBS data are attributable to the reduction of highly suitable burned habitats due to the field burning ban. As the ban is now fully in effect, the rate of decline as noted in BBS observations of streaked horned larks is not expected to continue at the previously noted rate.

In summary, the peer reviewer presented new information about the declining population of streaked horned larks in the Willamette Valley, and we appreciate the reviewer's efforts to present us with an alternative analysis of the available data. This information provides a more complete picture of the status of the subspecies, but based upon our evaluation, with assistance from scientists at USGS who are expert in analysis of BBS data, we believe the streaked horned lark still meets the definition of threatened rather than endangered. The Act defines a threatened species as one which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. An endangered species is defined as any species which is in danger of extinction throughout all or a significant portion of its range. Given that streaked horned larks still occur in many locations across a large area of the Willamette Valley, and that some of these sites harbor large populations, we agree that the streaked horned lark has declined and may be continuing to decline, but listing as threatened remains appropriate, as the best available scientific and commercial data do not indicate that extinction of the species is imminent.

(12) *Comment:* One peer reviewer suggested that it would be useful to discuss the potential reasons that the Washington population of streaked horned larks appears to be declining and the Oregon population appears more stable. The peer reviewer noticed that three of the areas proposed as critical habitat in Oregon are on National Wildlife Refuges where they benefit from active management, and asked if there might also be some other sites in Oregon that are being managed for other species in a way that benefits streaked horned larks.

Our response: We have augmented the discussion of the population trends in Oregon and Washington in the text of this final rule. As to the issue of why there are more streaked horned larks, or if the population trend is different in Oregon versus Washington, we do not have any additional information at this time to answer those questions. It may be that there is simply more open land in the Willamette Valley in Oregon, and the valley's large agricultural industry provides the frequent disturbance regime that creates the habitat structure needed by larks. We will evaluate these issues during the recovery planning process for the streaked horned lark.

(13) *Comment:* One peer reviewer and one other commenter believed our approach to listing the streaked horned lark would not result in sufficient protections to acheive recovery. In particular, the peer reviewer believed that the combination of threatened status, our promulgation of a special rule for agricultural activities and wildlife hazard management at airports, and a somewhat limited critical habitat designation would result in inadequate protection for the streaked horned lark. The commenter stated that he believes we put too much effort put into alleviating potential conflicts with land managers rather than focusing on measures to ensure conservation of the streaked horned lark, and that this approach will be inadequate to move the species on a trajectory away from the need for listing.

Our response: Our determination that the streaked horned lark is threatened rests on our application of the scientific data to the Act's definition of a threatened species, and not on our expectations about the best means to conserve the species. Regarding the reviewer's comment with respect to the proposed 4(d) special rule and proposed critical habitat, we believe it is important to recognize that listing, critical habitat designation, and section 4(d) of the Act are part of the suite of tools that the Service has available to conserve listed species, but do not in and of themselves conserve the species. Once a species is listed as either endangered or threatened, the Act provides many tools to advance the conservation of listed species; available tools include recovery planning under section 4 of the Act, interagency cooperation and consultation under section 7, grants to the states under section 6, and safe harbor agreements

and habitat conservation plans under section 10. The streaked horned lark is an unusual case in that nearly all of its existing habitats have been created by industrial land uses (*e.g.,* agriculture, airport maintenance, dredge spoil disposal), in which creation of lark habitat is not the intended purpose. Long experience in working with commercial and industrial partners have shown us that a more collaborative approach, rather than a strictly regulatory one, will be more effective in recovering streaked horned larks on private lands. We expect that the conservation program for the streaked horned lark will take advantage of all of the creativity and flexibility offered by the Act.

(14) *Comment:* One peer reviewer and several other commenters stated that the proposed 4(d) rule for streaked horned lark is too broad, particularly the portion that exempts take associated with routine agricultural activities on non-federal lands in the Willamette Valley. The commenters felt that this exemption is inappropriate and does not contribute to conservation of the species. The commenters suggested that we should eliminate the special rule, and instead use other regulatory mechanisms (*e.g.,* candidate conservation agreements with assurances, habitat conservation plans, and safe harbor agreements) to ensure the creation of habitat for larks on agricultural lands.

Our response: The purpose of the 4(d) special rule is to recognize the larger conservation value of maintaining existing farmland habitats that support streaked horned larks, even though some farming activities may adversely affect the species. Activities likely to occur in those landscapes, should ongoing agricultural activities cease, such as suburban development or transition to orchards and nursery stock, would permanently remove habitat essential to the streaked horned lark. We believe that exempting take as the result of agricultural activities described in the special rule is necessary and advisable to provide for the conservation of streaked horned larks by helping to ensure the maintenance of those beneficial land uses that provide habitat used by the subspecies.

In the 40 years since the passage of the Act, the Service has learned that relying on regulation alone is not an effective means for engaging private landowners in endangered species conservation. On the agricultural lands in the Willamette Valley, habitat for streaked horned larks would not exist but for the activities of private landowners. We believe that, in certain instances, easing the general take prohibitions on non-federal agricultural lands may encourage continued land uses that provide an overall benefit to the species. We also believe that such a special rule will promote the conservation efforts and private lands partnerships critical for species recovery (Bean and Wilcove 1997, pp. 1–2). We believe that it is appropriate to use the flexibility offered by the Act to recognize the important contributions made by the agricultural community to the creation of suitable habitat for streaked horned larks, and to encourage them to continue to do so, rather than to see them switch to other crops or land uses to avoid the real or perceived burden of the regulations associated with listed species. We acknowledge that the agricultural activities covered in the 4(d) rule are broad. We modeled this special rule on the similar special rules promulgated for the California tiger salamander (*Ambystoma californiense*) (69 FR 47212; August 4, 2004) and California red-legged frog (*Rana aurora draytonii*) (71 FR 19244; April 13, 2006), two species which also depend on the availability of agricultural lands for habitat in large portions of their ranges. As we stated in the proposed rule, we believe that in the long term, it is a benefit to the streaked horned lark to maintain those aspects of the Willamette Valley's agricultural landscape that can aid in the recovery of the species. We believe the special rule will further conservation of the species by discouraging conversions of the agricultural landscape into crops or other land uses unsuitable for the streaked horned lark; our objective is to allow landowners to continue managing the landscape in ways that meet the needs of their operations while simultaneously providing suitable habitat for the streaked horned lark. It is important to note, however, that the 4(d) special rule is just one tool we will use to maintain habitat for larks on agricultural lands in the Willamette Valley. We hope to engage the agricultural community in education and outreach efforts; we will also use a variety of other incentive programs to engage private landowners who are willing to do more to conserve streaked horned larks on their lands.

(15) *Comment:* One peer reviewer asked us to modify the proposed 4(d) special rule to include timing restrictions on covered activities to minimize disturbances to nesting streaked horned larks.

Our response: Our purpose in promulgating a special rule to exempt take associated with activities that inadvertently create habitat for the streaked horned lark is to allow landowners to continue those activities without additional regulation. We believe that imposing a timing restriction would likely reduce the utility of the special rule for land managers, and could have the unintended side effect of causing landowners to discontinue their habitat creation activities. Accordingly, we have not modified the special rule to include timing restrictions; however, we intend to offer education and assistance to landowners to help them protect and increase the populations of larks on their lands, if they are amenable.

Comments From States

Comments we received from States regarding the proposal to list the Taylor's checkerspot butterfly and the streaked horned lark are addressed below. We received comments from Washington Department of Fish and Wildlife (WDFW), Washington Department of Natural Resources (WDNR), and Washington State Department of Transportation (WSDOT) related to biological information, threats, critical habitat exclusions, the inadequacy of regulatory mechanisms, and recommendations for the management of habitat.

The agencies provided a number of recommended technical corrections or edits to the proposed listing of the Taylor's checkerspot butterfly and the streaked horned lark. We have evaluated and incorporated this information into this final rule when and where appropriate to clarify this final listing rule. In instances where the Service may have disagreed with an interpretation of the technical information that was provided, we have responded to the State directly.

(16) *Comment:* WDFW encouraged the Service to assist the State with alternative methods of achieving the conservation and recovery of the species, including programmatic safe harbor agreements, habitat conservation plans, conservation banks, or other incentive-based partnerships.

Our response: The Service appreciates our strong conservation partnership with the State of Washington, and will give full consideration to these ideas as we develop the recovery plans for the Taylor's checkerspot butterfly and the streaked horned lark. Such conservation measures are outside of the scope of the present rulemaking, however, which is restricted to the question of whether the species meet the definition of an endangered or threatened species, and should be listed under the authority of the Act.

(17) *Comment:* WDFW was concerned that allowing any timeframe for mowing in Taylor's checkerspot butterfly habitat could crush butterfly larvae as well as their host plants.

Our response: It is our understanding that when larvae are in diapause they are usually deep in the vegetation, or within the soil itself. At the time larvae are in diapause, most of the host plant (except narrow-leaf plantain) and nectar food resources are dormant. It is possible to do considerable management on prairies without harm to the target conservation species. Our recommendation for habitat management in occupied Taylor's checkerspot butterfly habitat is to mow high during diapause to avoid harm to larvae and to avoid destruction to larval host plants, including *Plantago.* For more information on recommended best prairie management practices, please contact the Washington Fish and Wildlife Office of the U.S. Fish and Wildlife Service for a copy of the Prairie Landowner Guide for Western Washington (see **ADDRESSES**).

(18) *Comment:* WDNR recommended that we consider promulgating a 4(d) special rule to exempt take of the Taylor's checkerspot butterfly associated with habitat restoration and maintenance activities.

Our response: Under section 4(d) of the Act, a special rule may be promulgated only for threatened species. Our review of the best scientific and commercial data available indicates that the Taylor's checkerspot butterfly is in danger of extinction throughout its range, and we are listing the Taylor's checkerspot butterfly as endangered; therefore, a 4(d) special rule is not an available option for this subspecies. There are many other tools provided by the Act that we can use to work with landowners interested in habitat restoration for the Taylor's checkerspot butterfly, including safe harbor agreements, section 7 consultation, and habitat conservation plans. We will work with WDNR and other partners to assess the full array of conservation tools available and determine those that may be most appropriate for the particular circumstance under consideration.

(19) *Comment:* WDNR expressed concern that the safe use of pesticides to control nonnative, invasive insects, such as gypsy moths, may be impacted by the listing of and designation of critical habitat for the Taylor's checkerspot butterfly.

Our response: We do not see the use of pesticides use in general to be an adverse impact to Taylor's checkerspot butterflies unless the subspecies is directly exposed to the pesticides. The Service does not anticipate the need for pesticide spraying on habitat occupied by Taylor's checkerspot butterflies. However, if pesticide were to be sprayed in areas where pesticide drift would expose Taylor's checkerspot butterflies to the pesticide(s), then we would be concerned with their application in these situations. The Service acknowledges the use of pesticides as harmful to the Taylor's checkerspot butterfly at all life stages. We specifically discourage the use of insecticides such as *Bacillus thuringiensis* var. *kurstaki* (BtK) in forested areas adjacent to Taylor's checkerspot butterfly habitat. This insecticide, which is used for harmful defoliators like gypsy moth and spruce budworm, has been implicated in the loss of three populations of the Taylor's checkerspot butterfly in Pierce County, Washington, during the early 1990s, when it was applied adjacent to Taylor's checkerspot butterfly habitat.

(20) *Comment:* WSDOT requested that we expand the coverage offered by the special rule for the streaked horned lark to include roadside management activities that are similar to those proposed for airports and agricultural operations. They specifically requested coverage for vegetation management of roadside rights-of-way, including mechanical mowing, weed control, and woody vegetation control; the commenter stated that these vegetation management activities are consistent with the activities covered on airports and agricultural lands, and would provide suitable streaked horned lark habitat along highways and roadside rights-of-way.

Our response: We are currently unaware of any substantial lark use along road right-of-ways with the exception of those bordering agricultural areas. Roadside management activities present a variety of site-specific issues, which are better addressed at the individual site level. For actions with a Federal nexus, we believe review and coverage of incidental take under section 7 is more appropriate. For activities along State highways that could cause take of streaked horned larks, other programs would be appropriate to provide incidental take coverage, such as a habitat conservation plan (HCP) under section 10 of the Act. While encouraging the utilization of conservation programs such as development of HCPs, the final rule includes a provision for coverage of incidental take under the 4(d) special rule during activities aimed at the control of noxious weeds (See: *Noxious Weed Control on Non-Federal Lands*).

Comments From Federal Agencies

(21) *Comment:* The Natural Resources Conservation Service asked how the special rule would affect farmers who are already implementing conservation practices on their lands. In addition, the Oregon Farm Bureau asked for more specific information on the agricultural activities covered in the special rule, and requested that we make the rule more consistent with Oregon farming practices as described by the Oregon State Legislature. These commenters asked for definitions of the terms used in the draft special rule, including: (1) ''routine'' as it applies to seasonal farming and ranching activities, (2) ''normally acceptable and established levels of livestock grazing,'' and (3) the scope of the term ''irrigation.''

Our response: The special rule for routine agricultural practices is intended to promote land uses that are compatible with the conservation of streaked horned larks on private lands with no Federal agency involvement. If a landowner wishes to participate in any of the wildlife conservation incentive programs, such as those offered by the Natural Resources Conservation Service, then those activities would need to be reviewed in interagency consultation under section 7 of the Act between the Service and the Federal action agency involved in the conservation program if the action may affect streaked horned larks. If a private landowner wishes to implement conservation actions for streaked horned larks without Federal agency involvement, and if those activities have a net benefit to the streaked horned lark, then incidental take associated with the action may be authorized through a safe harbor agreement.

The special rule to exempt common agricultural activities is intended to promote land use practices that are compatible with the creation of suitable habitat for streaked horned larks. We recognize that farming is a dynamic process, which requires the ability to adapt to changing environmental and economic conditions. We have revised the language in the special rule to conform to farming standards established by the Oregon State Legislature in the Oregon Revised Statutes dealing with agricultural practices (ORS section 30.930). We have clarified the language in the special rule, and revised the list of covered activities. Activities covered include, but are not limited to: Planting, harvesting, rotation, mowing, tilling, discing, burning, and herbicide application to crops; normal transportation activities, and repair and

maintenance of unimproved farm roads and graveled margins of rural roads; livestock grazing according to normally acceptable and established levels; hazing of geese or predators; and maintenance of irrigation and drainage systems. These activities are those that are routinely implemented on farm lands in the Willamette Valley, and inadvertently provide conservation benefits to the streaked horned lark. The agricultural activities listed in this document are merely examples of practices that we consider to be routine to managing an active farming operation. Our intention is not to limit activities that may be necessary to the operation of a farm, but to clarify that ''take'' of the listed species is not prohibited when engaging in the identified activities. For further discussion, see the Special Rule section below.

Comments From the Public

(22) *Comment:* Several commenters provided minor technical corrections or edits to the proposal, and in some cases additional or updated information regarding the Taylor's checkerspot butterfly and the streaked horned lark.

Our response: We have evaluated and incorporated this information into this final rule when and where appropriate to clarify the final rule. In instances where the Service may have disagreed with an interpretation of the technical information that was provided, we have responded under separate comments.

(23) *Comment:* One commenter disagreed with our description of the flight period for the Taylor's checkerspot butterfly. We state that the flight period extends into early July and the commenter believes it should only be into June.

Our response: The flight period for the Taylor's checkerspot butterfly varies widely over its occupied range. On occupied sites located on the north Olympic Peninsula the observed adult flight period for the Taylor's checkerspot butterfly extends into July (Severns and Grossball 2011, p. 71).

(24) *Comment:* One commenter stated that just because habitat is suitable for the species of concern does not mean that the entire prairie was historically occupied. Another commenter asked whether we should even try to reverse the loss of historical prairie habitat available for the Taylor's checkerspot butterfly and the streaked horned lark given that the ecosystem is now changed and implementing restoration efforts would potentially impact other species that now occupy these habitats.

Our response: The proportion of prairie habitat lost (greater than 90 percent) and the fragmentation of what remains has created the necessity for the conservation of lands that can presently support the recovery of the Taylor's checkerspot butterfly and the streaked horned lark. The goal of the Service is to conserve suitable habitat in a landscape context that will lead to the recovery of the listed species. As discussed in our response to Comment 13, the Act provides a suite of various conservation tools to achieve this goal. It is not a reasonable assumption to consider the entire prairie landscape at any given prairie would be completely occupied by the Taylor's checkerspot butterfly or by the streaked horned lark. In the case of the Taylor's checkerspot butterfly, because of their sedentary nature and their ability to form metapopulation structure on large landscapes, we would be inclined to believe that, even on large landscapes, available habitat would be used disproportionately, leading to a patchy distribution of the subspecies. We employ a comprehensive approach to recovery planning, and do consider the needs of other species beyond the subject listed species in the process of crafting recovery strategies.

(25) *Comment:* One commenter suggested the Service should provide blanket, enduring authorization for incidental take for the streaked horned lark on non-federal land, such as through a safe harbor agreement between the Service and State field offices, with zero baseline and no requirements for participation.

Our response: The 4(d) special rule addresses those categories of activities for which the Service believes a broad exemption from the take prohibitions under the Act is necessary and advisable for the conservation of the streaked horned lark. Any other incidental take authorizations will be addressed through future permitting processes under section 10 of the Act. As noted in earlier responses, we encourage our conservation partners to take advantage of the full suite of conservation tools available to aid in the recovery of listed species.

(26) *Comment:* One commenter argued that the observed contraction of the streaked horned lark's range justifies listing as endangered. Another commenter suggested the streaked horned lark should not be listed because we should consider the full range of potential habitat for the subspecies.

Our response: Consideration of the current and historical range of a species is only one aspect that is considered in the analysis to determine if a species should be listed as an endangered or a threatened species; the imminence and magnitude of threats acting on the species are more important to the assessment of a species' status. We acknowledge that the streaked horned lark's range has contracted substantially over the last century. However, although we consider the loss of historical range to be informative to our determination, we base our conclusion on whether a species is presently in danger of extinction or likely to become so within the foreseeable future on the status of the species at the time of our determination. We have good information that the streaked horned lark population is declining in Washington, but the population in Oregon is relatively large, has abundant habitat, and appears to be either relatively stable or declining far more slowly than the population in Washington, indicating that listing as threatened is most appropriate. Many species occupy only a portion of their historical ranges, but the Act does not require that species be restored to their entire historical ranges to be considered secure or recovered; delisting requires only that the species no longer meets the definition of an endangered or a threatened species under the Act.

(27) *Comment:* One commenter stated that the streaked horned lark meets the International Union for the Conservation of Nature (IUCN) standard for endangered (fewer than 2,500 mature individuals, and either a decline of at least 20 percent within 5 years or continuing decline, and no subpopulation estimated to contain more than 250 mature individuals). The commenter pointed out that the population in Washington is clearly declining and the largest known subpopulation at the Corvallis Municipal Airport consists of fewer than 250 individuals.

Our response: The Service does not use a one-size-fits-all standard for determination of endangered or threatened status, and the IUCN standard of endangered does not pertain to the definition provided under the Act. The Act directs us to consider the range of threats a species faces, and to make a determination of status based on the total impact of those threats. Based upon our evaluation of the threats to the streaked horned lark, we have determined it is a threatened species as defined by the Act.

(28) *Comment:* One commenter stated that the streaked horned lark does not deserve special protections in Oregon, and listing as threatened is not warranted, citing our statements about the apparent stability of the population in the Willamette Valley. The commenter believes we failed to

demonstrate that the streaked horned lark is declining or that such declines are likely to occur.

Our response: Our analysis of the best scientific and commercial data available indicates that the streaked horned lark is declining throughout its range. The decline is most apparent in the Puget lowlands of Washington, but the population in Oregon is also declining, though at a less pronounced rate. In this final rule, we have clarified the information regarding the status of the streaked horned lark in the Willamette Valley, and why we believe the subspecies warrants listing as a threatened species under the Act across its range.

(29) *Comment:* One commenter stated that we should have been clearer regarding the limits of the recent surveys for streaked horned larks in the Willamette Valley. The commenter suggested that most of the suitable habitat on private lands in the Willamette Valley has been surveyed only from public rights-of-way, and that few, if any, large blocks of private farmland have been adequately surveyed for larks.

Our response: We acknowledge in this final rule that most surveys for streaked horned larks on private lands in the Willamette Valley have been conducted from roadsides. The sites that have been well surveyed are those in public ownership or private lands with conservation easements. We have clearly stated that we do not have a complete picture of the streaked horned lark's distribution or habitat use. However, the Act requires us to use the best scientific and commercial data available, and we have used the best available data to support our determination that the streaked horned lark meets the definition of a threatened species under the Act.

(30) *Comment:* One commenter suggested that the Service needs to evaluate recreation and its associated effects (attraction of potential predators) as a threat to the streaked horned lark.

Our response: As discussed in the proposed rule, recreational activities can pose both direct and indirect threats to streaked horned larks. Activities such as horseback riding, boating, biking, dog walking, ATV use, and model airplane flying can result in the loss of nests through crushing of chicks or eggs and nest abandonment associated with disturbance of adults. Indirect effects of recreational activities include increased risk of nest failure when incubating or when brooding adults are flushed from nests and human activities (such as leaving trash and food on site) attract corvids to nesting areas. Corvids have been routinely documented depredating nests of streaked horned larks and are considered significant nest predators. The Service is working with resource staff at JBLM to reduce recreational impacts to the streaked horned lark at several prairies on base by limiting civilian access during the nesting season and by posting signs restricting public access at several prairies and nesting areas along the Washington Coast. Because enforcement of seasonal closures and monitoring of recreational activities at sites that are not posted (e.g., boating and camping on the Columbia River islands, ATV use on port properties, and dispersed recreational activities in open areas) is difficult and often ineffective, recreational activities are a potential threat to the streaked horned lark.

(31) *Comment:* One commenter stated that we failed to show that Oregon's regulatory mechanisms are inadequate to protect the streaked horned lark. The commenter believes that the threat of loss of suitable habitats is not likely to be realized because Goals 3 and 5 of Oregon's Statewide Planning Program protect agricultural lands and open spaces, and these mechanisms will be sufficient to provide adequate habitat for streaked horned larks on agricultural lands in the Willamette Valley.

Our response: Oregon has a strong Statewide program for land use planning, which established 19 goals to protect various aspects of Oregon's environment. Goal 3 addresses preservation of agricultural lands; Goal 5 directs local governments to adopt programs to protect natural resources and conserve scenic, historic, and open space resources. Most of the goals are accompanied by guidelines, which are suggestions about how a goal may be applied; however, these guidelines are purely voluntary and not mandatory. Goal 3 has been effective in preserving agriculture in the Willamette Valley, but the guidelines merely direct counties to preserve farmland and open space, but do not specifically call for the maintenance of existing agricultural crops. Transition from grass seed fields to other agricultural types, such as nursery stock or wheat, would be consistent with Goal 3, and yet would result in habitat loss for the streaked horned lark. Similarly, Goal 5 promotes the protection and conservation of open space and wildlife habitats, but does not specifically require the maintenance of existing land use types that support the streaked horned lark. We conclude that Oregon's Statewide planning goals and guidelines contribute to protecting habitats for larks in the Willamette Valley, but are not sufficient to protect or maintain habitat on agricultural lands for the long-term sustainability of streaked horned lark populations.

(32) *Comment:* One commenter stated that our analysis of Factor E (other natural and manmade factors affecting the subspecies' existence), particularly the status of the small population of streaked horned larks on the Puget prairies, supports an endangered listing.

Our response: As we acknowledge in this final rule, populations of the streaked horned lark in the State of Washington are small and declining at a faster rate than those in Oregon. However, we evaluated the status of the streaked horned lark at the scale of the subspecies as a whole, and as we stated in our analysis, the population of the streaked horned lark in the Willamette Valley is larger, has more habitat available, and appears to be more secure than the small population in Washington. Thus, although the status of the subspecies is not stable and secure, we do not consider the subspecies in its entirety to be in danger of extinction at this time, as we anticipate the persistence of the streaked horned lark in some portions of its range, at least for the foreseeable future. Threats acting upon the subspecies across its range are, however, such that if they were to continue unabated, we anticipate the streaked horned lark would become in danger of extinction within the foreseeable future. Given that the subspecies is not presently in danger of extinction (endangered), but is likely to become so with the foreseeable future, we conclude that consideration of all of these factors together with the data that show a declining population on the Puget prairies warrants a threatened determination for the streaked horned lark. In addition, as described in this final rule, we considered whether the Washington population of the streaked horned lark may constitute a separate distinct population segment (DPS) or a significant portion of the range. We concluded that the Washington population does not constitute a valid DPS under our DPS policy, and furthermore that the Washington population does not represent a significant portion of the range of the subspecies. Based on these analyses, we conclude that threatened status is most appropriate for the streaked horned lark.

(33) *Comment:* One commenter stated that the economic and social factors driving conversion of Willamette Valley farmland to vineyards are likely to continue in the foreseeable future, and may accelerate as large California wineries are reportedly investing in Willamette Valley farmlands as a hedge

against global climate change. As a result, the likelihood of a changing agricultural landscape should be recognized in the listing and critical habitat designation for the streaked horned lark.

Our response: The Service does not consider the acquisition of lands by the viticulture industry to be a threat to streaked horned lark breeding and nesting habitat. We contacted Dr. William Boggess at Oregon State University's Oregon Wine Research Institute who described the ideal lands for viticulture as being 300–800 feet (90–240 m) in elevation, on a slope with a southern or western aspect. These optimal viticulture soils are shallow and nutrient poor, above the flood plain or on eroded rocky soils. These ideal conditions for grapes are not similar in characteristic to habitats preferred by the streaked horned lark. As such, we do not consider viticulture a current or future threat to the streaked horned lark.

(34) *Comment:* One commenter stated that the streaked horned lark faces continued threats to habitats and populations, including conversion of prairie and grassland, continued dumping of dredged spoils, military operations, airport development, and off-road vehicle recreation.

Our response: As we discussed in the text of this final rule, many of these activities have the potential to both benefit and pose a threat to the streaked horned lark. Many of the issues the commenter cites as threats to the streaked horned lark's habitat may actually be essential to the continued creation of habitat for the bird, depending on how they are conducted; the natural processes that formerly created habitat for the streaked horned lark no longer operate, and so these industrial activities create almost the only usable habitats available to the bird. Without the presence of dredge spoil islands, military reserves, agriculture, and airports, there would be virtually no habitat left for the streaked horned lark. The challenge will be to work with landowners to ensure these activities are implemented in ways that benefit the subspecies as well as work for the landowner as we work to recover the streaked horned lark. See also our response to Comment 13.

(35) *Comment:* Several commenters asked that the Service fully consider the effect of the 20-year old Washington State Growth Management Act (GMA) with respect to both direction and growth into urban areas while protecting rural areas. Commenters believed the GMA protects threatened species and habitat through comprehensive regulations and planning that are integrated with the other mandates of the law. One commenter suggested that listings under the Act compel counties to identify critical areas and conserve habitat for listed species in order to receive monetary incentives, and work against existing local and State requirements such as the GMA.

Our response: The Service fully considered the effect of the Washington State GMA in reviewing the potential inadequacy of existing regulatory mechanisms. The GMA provides landscape-scale planning and conservation policies and tools, while the Act focuses on protection for species and the ecosystems upon which they depend. Each authority plays an important role in achieving our shared goals for prairie habitat and species conservation; however, in this case, implementation to date of the GMA alone has not provided enough certainty of future conservation for the species to fully address the threats identified in the proposed rule, and this final rule, to list the Taylor's checkerspot butterfly and the streaked horned lark under the Act. The application of the GMA is not uniform across the State and as such does not supply protection adequate to preclude the listing of the Taylor's checkerspot butterfly or the streaked horned lark. The Service works with not only counties, but a broad range of entities, using a wide variety of incentive-based programs to balance the conservation needs of listed species with the objectives of entities that voluntarily choose to work with us. We work with these partners to meet the conservation needs for federally listed species while striving to be consistent with existing State or local requirements, such as Washington State's GMA.

(36) *Comment:* One commenter said that streaked horned larks are insufficiently protected by existing regulatory mechanisms, and the proposed 4(d) special rule substantially weakens protections for the streaked horned lark.

Our response: In our analysis of Factor D (the inadequacy of existing regulatory mechanisms), we found that existing regulatory mechanisms are not sufficient to protect the streaked horned lark. However, we believe that promulgation of a special rule under section 4(d) of the Act is necessary and advisable to provide for conservation of the subspecies because its habitat is inadvertently created by airport managers and agricultural landowners. One of our goals for recovering listed species on private lands is to find ways to help landowners view these species on their lands as an asset rather than a legal or economic liability. This is especially important when dealing with an early-successional dependent (sub)species such as the streaked horned lark that exhibits a temporary or intermittent presence on those lands, and when those lands require discretionary management treatments by the landowner to maintain their suitability or attractiveness for the streaked horned lark. The continued availability of these habitats on private lands is essential to the persistence of the streaked horned lark. With the special rule, we are seeking to encourage private landowners to be willing to accommodate or attract streaked horned larks, and to discourage any landowner's desire to avoid having streaked horned larks on their property, and managing the property for the benefit of the streaked horned lark.

(37) *Comment:* One commenter expressed concern that some activities covered under the proposed special rule for airports and agricultural lands could be carried to the point that they eliminate streaked horned larks on a site, for example, intensive mowing or hazing by falcons.

Our response: Our purpose in developing the special rule for airports and agricultural lands is to encourage the continuation of practices that inadvertently create habitat for the streaked horned lark. We acknowledge that some of those activities may take larks, which is why a special rule is needed, but the availability of the 4(d) special rule should eliminate the incentive to remove larks from airports or agricultural lands to avoid violation of the Act. However, the concern that land managers could inadvertently eliminate streaked horned larks from a site is valid, and we will work with land managers to identify opportunities to conserve larks on sites and for activities that are covered by the special rule.

(38) *Comment:* One commenter recommended that the proposed special rule for the streaked horned lark be expanded to cover the actions of non-federal entities engaged in dredging operations that deposit materials that create upland lark habitat on the lower Columbia River.

Our Response: Under the 4(d) special rule, take of the streaked horned lark caused by routine agricultural activities, wildlife hazard management programs at civilian airports, and noxious weed control activities is exempt from the prohibitions of section 9 of the Act. The purpose of exempting these activities is to encourage activities by non-Federal entities that inadvertently create lark habitat. Dredge disposal clearly has the

potential to create habitat for larks, but any action that involves dredging in the Columbia River would have a Federal nexus because it requires authorization from the U.S. Army Corps of Engineers (Corps). Under section 7(a)(2) of the Act, it is the responsibility of all Federal agencies to insure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. Since the Corps will be required to consult with the Service under section 7 of the Act for dredging operations that may affect the streaked horned lark, those activities and any associated take of streaked horned larks will be appropriately addressed in section 7 consultation between the Corps and the Service.

(39) *Comment:* Some commenters asked for a special rule under section 4(d) of the Act for restoration actions, including landfill closure and maintenance. The commenters stated that without a 4(d) special rule allowing active habitat management, agencies and land stewards would not be able to maintain needed habitat conditions at sites that could support streaked horned larks. The commenters requested coverage in a special rule for activities including, but not limited to: Seeding and planting, haying, mowing, tilling, disking, harrowing, and herbicide application; prescribed burning; hydrologic management; livestock grazing; routine management and maintenance of infrastructure, such as gates, fences, water control structures, property boundary markers, and property surveys; monitoring of vegetation and animals; and applied or other research, such as vocal attraction experiments, vegetation manipulations, predator surveys, and other work.

Our response: The purpose of the 4(d) special rule for agriculture, airports, and noxious weed control is to allow take of streaked horned larks for activities that inadvertently create habitat for the birds. Our logic in developing this special rule is that, without the exemption from take offered by the 4(d) special rule, these landowners might decide not to take actions that create or maintain important habitat for streaked horned larks, in order to avoid the potential violation of the Act. The restoration and habitat creation activities discussed in the comment above would be implemented specifically to enhance habitat for streaked horned larks or other prairie species. We believe it is appropriate to work with these agencies and land stewards using other programs offered by the Act (section 7 consultation, safe harbor agreements, and section 10(a)(1)(B) habitat conservation plans) to maximize the conservation efforts in these programs, and to offer exemptions from incidental take through options other than a special rule.

(40) *Comment:* One commenter requested a special rule under section 4(d) of the Act for park management activities at M. James Gleason Memorial Boat Ramp and Broughton Beach in Portland; the special rule would include coverage for any take of streaked horned larks resulting from repair and maintenance of existing infrastructure, and facility improvements that are underway now. The commenter also asked for a special rule that allows take associated with recreational use of the site by the public, including events such as the Polar Bear Plunge, fishing from boats and from shore, picnicking, hiking, dog walking, bird watching, and other customary passive recreation.

Our response: As we stated earlier, we have used the option to promulgate a special rule under section 4(d) of the Act specifically for activities that inadvertently create habitat for streaked horned larks (i.e., wildlife hazard management at airports, activities on agricultural lands in the Willamette Valley, and noxious weed control on non-federal lands). The activities listed in the comment do not create habitat for the streaked horned lark or otherwise benefit the species, and are more appropriately covered under other programs of the Act that result in exemptions from incidental take of a listed species, including consultation pursuant to section 7 or permitting pursuant to section 10, if take of larks as a result of these activities is anticipated.

(41) *Comment:* One commenter asked us to include an offer of landowner assistance and education in the special rule.

Our response: These activities (landowner assistance and education) do not cause take, and so are not included in the special rule exempting certain activities from the prohibitions on taking; we have therefore not amended the special rule to include them. We acknowledge, however, that outreach to landowners will be an important component of streaked horned lark conservation and recovery, and we will offer landowner assistance and education to airport managers and agricultural landowners through the various conservation tools and incentive programs offered by the Act.

(42) *Comment:* Numerous commenters asked us to add to the activities covered under the 4(d) special rule for airports on non-federal lands, or to allow more flexibility in the activities covered. Commenters essentially asked for coverage for all routine activities at airports, and specifically asked for the 4(d) special rule to cover the following activities: Low-level military training operations; pest and invasive species control; stockpiling and staging areas for construction projects; vehicle access routes; management and operations of storm water conveyance, treatment facilities, and flow-control facilities, including grass seeding, irrigation, mowing, soil augmentation, and drainage control; spill and other environmental emergency response and associated remediation, including equipment deployment, product recovery, and soil removal; anti-icing and de-icing of aircraft and pavements, including chemical and physical methods; application of herbicides, pesticides, insecticides and other chemical treatment methods; noxious weed control; airport rescue and fire-fighting activities; control and removal of foreign object debris; airfield taxiway and services; road maintenance, including pavement repair and replacement, and paint or rubber removal; management of all marking, signs, and lighting; maintenance of meteorological instruments; management of obstructions to aircraft operations; and protection and maintenance of navigational aids.

Our response: Airports provide important habitat for streaked horned larks throughout their range. We developed the 4(d) special rule specifically to cover routine actions that inadvertently create suitable conditions for larks at airports. The purpose of the special rule is to encourage the continuation of the practices that have created suitable habitats for the species. The activities in the list above may be essential for safe airport operations, but do not generally create habitat for the streaked horned lark. We understand that airports must perform many of these activities, and some of them may affect larks; however, the Act provides other appropriate mechanisms for addressing those activities, and exempting any associated take. For activities at airports with a Federal nexus (*e.g.,* drainage projects requiring a permit from the Corps under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*)), section 7 consultation can provide the needed coverage for incidental take. For activities without a Federal nexus that may result in incidental take of the streaked horned lark, we will work with the airports to

cover the activities under section 10 of the Act.

We also note here that we have amended the 4(d) special rule to include noxious weed control on non-Federal lands. We added this activity to the 4(d) special rule in response to public comments requesting an exemption from take prohibitions for actions that restore habitats used by the streaked horned lark, but this component of the 4(d) special rule may also be applicable to some activities at non-Federal airports. The specific weed control activities covered in the 4(d) special rule are: mowing, herbicide and fungicide application, fumigation and burning. See the 4(d) special rule at the end of this document for a complete description of the take exemptions for noxious weed control.

(43) *Comment:* One commenter stated that the proposed 4(d) special rule for the streaked horned lark is unlawful because it does not provide for the conservation of the species. The commenter stated that the Service's authority to promulgate a 4(d) special rule is constrained by the requirement that the measures in the special rule be ''necessary and advisable'' to provide for the survival and recovery of the species. The commenter also argued that, for more than 30 years, it has been the policy and practice of the Service to extend the full protections against take in section 9 to threatened species. Any departure from this long-standing position must have a valid conservation purpose.

Our response: We developed the 4(d) special rule for the streaked horned lark consistent with the Act's requirements that any special rule be necessary and advisable to provide for the conservation of a species. The rationale for promulgating the special rule is that, throughout most of its range, streaked horned lark habitat has been inadvertently created and maintained by industrial land uses. The purpose of the 4(d) special rule is to encourage landowners to continue to manage lands in a way that creates or maintains habitat for the streaked horned lark, rather than switch to other land uses or practices that will not support the subspecies. The 4(d) special rule for the streaked horned lark is consistent with the Service's long-standing practice to use all the flexibility offered by the Act under section 4(d) for threatened species.

(44) *Comment:* One commenter stated that the 4(d) special rule appears to be geared more toward airport safety than streaked horned lark conservation; the commenter said, ''At its core, the [4(d)] rule has nothing to do with streaked horned lark conservation.''

Our response: We disagree. The reality is that airports' wildlife hazard management programs (which are implemented to create a safe conditions for aviation) inadvertently create suitable habitat for streaked horned larks. The safe operation of aircraft requires the same wide-open landscape context needed by streaked horned larks; the wildlife hazard management practices at airports create the specific habitat characteristics (low-stature vegetation) desired by larks, as well as a reduced level of predatory species. We believe that development of a 4(d) special rule to allow the practices that create or maintain suitable habitat for larks is necessary and advisable to provide for streaked horned lark conservation.

(45) *Comment:* One commenter stated that, in the special rule, the Service acknowledges that some management actions taken at airports are generally beneficial to larks, but noted that this implies that some activities are not beneficial, and should not be covered in the rule. For example, the Service fails to explain how ''management, repair, and maintenance of roads and runways'' benefits larks, or how hazing hazardous wildlife benefits larks.

Our response: Certain activities covered in the 4(d) special rule are likely neutral with respect to impacts to streaked horned larks, and these include maintenance and repair of roads and runways. We included these activities in the list of covered activities in the special rule so that airport managers would not be confused about their ability to implement routine maintenance activities and which activities are exempted from the take prohibitions of the Act. Other activities, such as habitat management and hazing of hazardous wildlife, clearly benefit the streaked horned lark. Hazing is often directed at larger, more hazardous wildlife, such as hawks and geese; hazing these species away from airfields benefits the streaked horned lark by reducing the abundance of predators (such as hawks) that would otherwise prey on eggs and nestlings.

(46) *Comment:* One commenter believes the 4(d) special rule for the streaked horned lark is not an appropriate application of that section of the Act. The commenter stated that the Act requires section 4(d) to be used to issue regulations to conserve threatened species; the commenter further points out that the Act defines conservation as all activities associated with scientific resource management, including research, census, law enforcement, habitat acquisitions and maintenance, propagation, live trapping, and transplantation. The commenter does not believe that the special rule fits within the rubric of scientific resource management activities.

Our response: When Congress enacted the Endangered Species Act in 1973, it provided no prohibitions on take of threatened species. However, section 4(d) of the Act applies to threatened species and was included in the Act to set prohibitions for these species that are necessary and advisable to provide for their conservation. Such regulations are intended to encourage activities that will promote conservation of species and prohibit take as a result of those actions that are not conducive to species conservation. Our promulgation of a special rule for the streaked horned lark is consistent with this aspect of the Act, and is necessary to conserve the streaked horned lark given the unique situation of its dependence on actively managed, industrial landscapes.

(47) *Comment:* One commenter stated that the 4(d) special rule for activities at airports would not benefit the streaked horned lark, because even control and management of vegetation at airports can harm larks if the activities occur during the breeding season.

Our response: We agree that some of these activities can harm larks, and will result in take, which is why a special rule to exempt take as the result of certain activities is appropriate. These activities (i.e., control and management of vegetation) clearly benefit the streaked horned lark by creating the appropriate habitat conditions for breeding. The best evidence of this fact is that, with their existing management practices, airports currently support larks. Maintenance of these conditions, which must be done during the bird's breeding season to ensure aircraft safety, will entail some take of the species; thus the 4(d) special rule allows take in the act of creating and maintaining suitable habitat for the streaked horned lark.

(48) *Comment:* One commenter asked us to amend the 4(d) special rule to include a re-evaluation of the special rule after 5 years to ensure that it is not contributing to the decline of the streaked horned lark.

Our response: All of our rulemakings are subject to revision, if necessary and appropriate. In the recovery program for the streaked horned lark, we will track the population trend, and if the data suggest that the special rule is not benefitting the species, we would re-evaluate it at that time. In addition, as required by section 4(c)(2) of the Act, we conduct a review of the status of listed species every 5 years. The reviews

assess each endangered and threatened species to determine whether its status has changed since the time of its listing or its last status review and whether it should be classified differently or delisted.

(49) *Comment:* One commenter stated that the proposed listing of the streaked horned lark could potentially have adverse impacts on aviation safety, and therefore should be subjected to a formal safety risk assessment in accordance with established FAA policies and procedures, notably those outlined in FAA Order 5200.11, FAA Airports (ARP) Safety Management System. They further stated a risk assessment should consider both the direct hazard posed to aircraft operations at and near airports by the streaked horned lark and the induced hazards associated with larger predatory wildlife species that the streaked horned lark may attract to the vicinity of the airport, as well as airfield maintenance activities that could be limited due to a listing.

Our response: FAA policies, including FAA Order 5200.11, do not apply to our administration of the Act. FAA Order 5200.11, by its own terms, applies only to airports and FAA personnel. We have no authority under the Act to choose not to list a bird species that otherwise warrants listing on the grounds that the species poses a threat to aviation safety. In any event, streaked horned larks are already present on many of the airports within the range of the species and have been there for some time. The subspecies occurs on airports largely because management to control hazardous wildlife has incidentally created and maintains suitable habitat for the streaked horned lark. FAA regulations require airports to take immediate action to alleviate wildlife hazards whenever they are detected (14 CFR 139.337). This requirement to maintain airfields free of wildlife hazards will limit the potential for populations of all birds, including streaked horned larks, to increase to levels that pose a risk to aviation. The 4(d) special rule for wildlife hazard management at airports will ensure that airports are not in violation of the Act when implementing appropriate safety measures. The FAA Order referenced went into effect on June 1, 2011, and provides guidance for airports to complete safety risk management plans or approaches by certain timelines. The Service is willing to assist the FAA and individual airports in determining what, if any, adjustments need to be made to the safety risk assessments as a result of the listing of the subspecies.

(50) *Comment:* One commenter stated that larks do not harm airplanes when they are struck.

Our response: The commenter's assumption is not supported by the facts. A recent report verified that an F–15C military aircraft at Portland International Airport struck a streaked horned lark and the plane sustained damage to an engine (Dove *et al.* 2013, p. 1). The bird also died, of course.

(51) *Comment:* One commenter argued that the special rule for airports and agriculture would not advance the conservation of the streaked horned lark, but is designed to allow airports and agricultural landowners to continue to operate without obtaining a permit for take under section 10. The commenter stated that the provisions in the special rule should be used for section 10 permits, and that the Service should work with airports throughout the range of the streaked horned lark to create a regional habitat conservation plan for airports, and work with farmers to develop safe harbor agreements.

Our response: We developed the 4(d) special rule for the streaked horned lark consistent with the Act's requirements that any special rule be necessary and advisable to provide for the conservation of a species. We believe that the special rule appropriately uses the flexibility of section 4(d) of the Act to allow take of a threatened species. The foundation of the special rule is that, throughout most of the subspecies' range, streaked horned lark habitat is inadvertently created by industrial or agricultural land uses. The purpose of the 4(d) special rule is to encourage landowners to continue to manage lands in ways that create habitat for the streaked horned lark, rather than switch to other land uses practices that will not support the subspecies. The safety issue at airports is unique, and airport managers likely have little room to maneuver in terms of the management they do; negotiating a section 10 permit with a regional habitat conservation plan is unlikely to result in greater conservation of larks at airports than can be achieved through the special rule. In regard to the recommendation to develop safe harbor agreements with farmers, those agreements are entirely voluntary, and are likely to benefit fewer streaked horned larks than the 4(d) special rule that would apply to all agricultural activities automatically. Furthermore, the 4(d) special rule does not preempt the Service from working with landowners interested in pursuing safe harbor agreements addressing activities either directly or indirectly associated with agricultural pursuits, especially any activities intended to attract streaked horned larks to their properties.

(52) *Comment:* One commenter said that National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) review is required to evaluate alternatives to the 4(d) special rule for the streaked horned lark.

Our response: The courts have ruled that NEPA does not apply to listing decisions under section 4(a) of the Act, nor to 4(d) special rules issued concurrent with listing. See *Pacific Legal Foundation* v. *Andrus,* 657 F.2d 829 (6th Cir. 1981); and *Center for Biological Diversity* v. *U.S. Fish and Wildlife Service,* No. 04–4324, 2005 WL 2000928, at *12 (N.D. Cal. Aug. 19, 2005).

(53) *Comment:* One commenter stated that the Service must consult under section 7 of the Act on the effects of the 4(d) special rule on the streaked horned lark to ensure that the special rule will not jeopardize the continued existence of the subspecies. The commenter pointed out that the National Marine Fisheries Service has conducted formal section 7 consultations on the issuance of 4(d) special rules for listed fish.

Our response: The Service believes that section 7 does not apply to the promulgation of 4(d) special rules. The Service's determination that a 4(d) special rule is necessary and advisable to provide for conservation of the species necessarily subsumes a determination that the rule will not jeopardize the species or adversely modify its critical habitat. Hence, applying the section 7 consultation procedures to such rulemaking would be a redundant exercise in paperwork. See *Cf. Pacific Legal Foundation* v. *Andrus,* 657 F.2d 829 (6th Cir. 1981) (NEPA inapplicable to listing decision under section 4 of the Act, because listing action furthered purposes of NEPA); *Douglas County* v. *Babbitt,* 48 F.3d 1495 (9th Cir. 1995) (NEPA inapplicable to designation of critical habitat under section 4 of the Act, because designation furthers goals of NEPA). Moreover, even if section 7 did apply to the promulgation of a 4(d) special rule, in this case the subspecies is not yet listed, so the only relevant provision would be section 7(a)(4), which requires an action agency to confer on any action that is likely to jeopardize, or destroy or adversely modify the proposed critical habitat of, a species proposed for listing. The Service has determined that this 4(d) special rule is not likely to jeopardize the streaked horned lark, nor is it likely to destroy or adversely modify its proposed critical habitat, so a

conference under section 7(a)(4) of the Act is not required.

(54) *Comment:* One commenter noted dredge material placement sites are human-made or managed features and not ''naturally occurring habitat,'' and these sites are specifically created and managed for the placement of dredge materials. The commenter further raised concern about the presence of streak horned larks limiting full access to dredge material sites. Another commenter said that placement of dredge materials should not be considered a threat given the long-term benefit of creation and maintenance of dredge islands.

Our response: Streaked horned larks commonly use human-made or managed areas that provide the right conditions and are not limited to ''naturally occurring habitats.'' Upland dredge spoil deposit sites, agricultural fields, gravel roads/shoulders, undeveloped industrial sites, and areas where vegetation is sparse or maintained (such as at airports) provide suitable conditions and the landscape context that larks need. The presence of a listed species on these sites does not preclude entities such as airports from doing business or continuing operations. One option may be for potentially affected entities to work with the Service on the development of a habitat conservation plan under section 10 of the Act. A habitat conservation plan authorizes incidental take and provides landowners long-term assurances from activities that could affect the species or suitable habitat.

In the absence of trend data, we cannot know whether unmanaged dredge spoils deposition has had a net positive or negative effect on streaked horned lark population numbers. While creation and maintenance of these dredge islands is critical to the perpetuation of the subspecies, streaked horned lark population numbers are in decline, and nest failure due to unregulated dredge deposition is a threat to the subspecies.

(55) *Comment:* The Port of Olympia asserted that the listing overstates the threats posed by potential airport development to the streaked horned lark. An interlocal agreement with WDFW required the airport to set aside areas to be preserved as lark habitat, and also includes measures to minimize development, retain open space, and avoid mowing in lark nesting areas and during lark breeding seasons. The airport does not anticipate development in lark nesting areas over the next 20 years.

Our response: We recognize and appreciate the cooperative effort on the part of the Port of Olympia to craft the interlocal agreement with WDFW. The interlocal agreement provides a framework for how development impacts will be addressed and offset, but it does not address the pace and extent of future development at the Olympia Airport and does not necessarily provide protection from development in the foreseeable future.

(56) *Comment:* One commenter said that we should acknowledge the threats to streaked horned larks and their habitats from government programs, such as the Conservation Reserve Enhancement Program, that encourage tree planting in open areas.

Our response: We do not currently have information to suggest that government tree planting programs pose a threat to the streaked horned lark. However, the purpose of section 7 of the Act is to ensure that Federal agencies do not fund, authorize, or carry out activities that that could jeopardize the continued existence of listed species or destroy or adversely modify their designated critical habitat. After this rule is effective (see **DATES**), we will work with the Farm Service Agency (the Federal agency that implements the Conservation Reserve Enhancement Program) to ensure that their actions do not jeopardize the continued existence of the streaked horned lark.

(57) *Comment:* One commenter stated that Corvallis Municipal Airport has been declared as ''shovel-ready'' for commercial development, and that the analysis of listing factors should include an assessment of the extent to which the proposed commercial development at Corvallis Airport will impinge upon critical habitat for the streaked horned lark.

Our response: As we discuss in the final critical habitat designation for the streaked horned lark, published elsewhere in the **Federal Register** today, we have excluded non-Federal airport lands from the designation. However, we agree that future development at the Corvallis Airport could affect the population of streaked horned larks that breed at the site. We have added a brief discussion of the issue under Factor A, below.

(58) *Comment:* Several commenters asked us to amend the special rule to include take of streaked horned larks resulting from aircraft strikes.

Our response: The fundamental purpose of wildlife hazard mitigation programs at airports is the minimization of wildlife-aircraft strikes. Streaked horned larks are paradoxically attracted to the habitat that has been created and maintained at airports as a result of those management activities to deter other more dangerous wildlife; some aircraft strikes of larks are probably unavoidable. This take of larks from routine aviation activities at airports is appropriately exempted under the 4(d) special rule, and we have therefore modified this final rule accordingly.

(59) *Comment:* One commenter requested that, under the proposed 4(d) special rule for the streaked horned lark, we consider covering comparable municipal government activities. In particular, consideration should be given to the continuing operation and maintenance, and to (if necessary due to fire or other unforeseen events) the reconstruction and restoration of, public facilities such as stormwater facilities, water supply sites (wellheads and springs), and active recreation parks (including athletic fields utilized by cities but owned by school districts). Such operation and maintenance should encompass sporting events, planting and mowing, fence and security maintenance, herbicide and fertilizer application, and similar activities.

Our response: We are not aware of any streaked horned larks nesting on lands owned and managed by the Cities of Olympia, Lacey, or Tumwater, or on school properties, stormwater facilities, water supply sites, or active recreational parks. These types of areas do not provide suitable habitat (size, landscape context, and vegetation do not meet habitat definition) for this subspecies. The 4(d) special rule for streaked horned lark exempts take under section 9 of the Act associated with routine maintenance conducted at airports, farming on agricultural lands, and noxious weed control activities to provide for the conservation of the streaked horned lark.

Summary of Changes From Proposed Rule

We fully considered comments from the public and the peer reviewers on the proposed rule to develop this final listing of the Taylor's checkerspot butterfly and the streaked horned lark. This final rule incorporates changes to our proposed listing based on the comments that we received that are discussed above. We received additional distribution and trend data for the streaked horned lark, but this information did not alter the conclusion of our analysis. We made some technical corrections and reevaluated threats to both subspecies from vehicular mortality. Although our analysis of these potential threats is different from that in our proposed rule, none of the information changed our determination that the Taylor's checkerspot butterfly meets the

definition of an endangered species and the streaked horned lark meets the definition of a threatened species under the Act.

We revised the 4(d) special rule for the streaked horned lark based on public comments and information we received. The Service has determined that exempting specified agricultural operations in the Willamette Valley of Oregon, rather than rangewide, as proposed, from the prohibition of take under section 9 of the Act encourages landowners to continue managing the remaining landscape in ways that meet the needs of their operation while simultaneously providing for the conservation of the streaked horned lark. The application of the 4(d) special rule exempting specific agricultural operations applies only to the Willamette Valley in Oregon because there is no record of the streaked horned lark utilizing agricultural lands in Washington State, despite thorough surveys by WDFW.

We revised the 4(d) special rule in response to comments from the public, which helped us refine the covered farming activities. We have clarified the definition of ''normal farming practices'' and ''normal transportation activities'' to be consistent with relevant Oregon State laws. We also amended the list of covered activities to address specific agricultural practices in the Willamette Valley that may affect the streaked horned lark. Based on feedback from agricultural interests, we deleted several activities from the 4(d) special rule (i.e., routine management and maintenance of stock ponds and berms to maintain livestock water supplies; routine maintenance or construction of fences for grazing management; placement of mineral supplements; and irrigation of agricultural crops, fields, and livestock pastures) and added others (i.e., hazing of geese and predators; and maintenance of irrigation and drainage systems).

In response to comments from the FAA and airport operators, we revised the 4(d) special rule for airports on non-Federal lands by referencing applicable FAA regulations and circulars addressing safety, and by including a take exemption for streaked horned lark airstrikes at airports, which are an occasional unavoidable result of continuing aviation operations.

We also amended the 4(d) special rule to include some management of noxious weeds on non-Federal lands, as these actions facilitate the preservation of streaked horned lark habitat on the landscape.

In addition, we found some typographical errors in the Proposed Regulation Promulgation section of our proposed rule (October 11, 2012; 77 FR 61938), specifically in the proposed amendments to 50 CFR 17.11(h), the List of Endangered and Threatened Wildlife (see 77 FR 62006). In the table at § 17.11(h), the historic range for the streaked horned lark was correctly identified as British Columbia, Canada, and the States of Washington and Oregon, although based on the presentation of that information, it may have appeared as if all of the historic range for the streaked horned lark was within the United States. For the Taylor's checkerspot butterfly, British Columbia, Canada, was mistakenly omitted from the subspecies' historic range, which additionally includes the States of Washington and Oregon. For both the Taylor's checkerspot butterfly and the streaked horned lark, the ''vertebrate population where endangered or threatened'' was mistakenly identified as only within the State of Washington in the United States. As described in the text of the proposed rule, it was our determination and intent to list each subspecies throughout its entire range. All of these errors have been corrected in the Regulation Promulgation section of this final rule.

Summary of Factors Affecting the Species

Section 4 of the Act and its implementing regulations (50 CFR 424) set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination. Each of these factors is discussed below.

In considering what factors might constitute threats, we must look beyond the mere exposure of the species to the factor to determine whether the species responds to the factor in a way that causes actual impacts to the species. If there is exposure to a factor, but no response, or only a positive response, that factor is not a threat. If there is exposure and the species responds negatively, the factor may be a threat and we then attempt to determine how significant a threat it is. If the threat is significant, it may drive or contribute to the risk of extinction of the species such that the species warrants listing as an endangered or threatened species as those terms are defined by the Act. This does not necessarily require empirical proof of a threat. The combination of exposure and some corroborating evidence of how the species is likely impacted could suffice. The mere identification of factors that could impact a species negatively is not sufficient to compel a finding that listing is appropriate; we require evidence that these factors are operative threats that act on the species to the point that the species meets the definition of an endangered or threatened species under the Act.

We considered and evaluated the best available scientific and commercial information in evaluating the factors affecting each of the species under consideration in this rule.

Factor A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Under this factor, the primary long-term threats to the Taylor's checkerspot butterfly and the streaked horned lark are the loss, conversion, and degradation of habitat, particularly as a consequence of agricultural and urban development, successional changes to grassland habitat, and the spread of invasive plants.

The prairies of south Puget Sound and western Oregon are part of one of the rarest ecosystems in the United States (Noss *et al.* 1995, p. I–2; Dunn and Ewing 1997, p. v). Dramatic changes have occurred on the landscape over the last 150 years, including a 90 to 95 percent reduction in the spatial distribution of the prairie ecosystem. In the south Puget Sound region, where most of western Washington's prairies historically occurred, less than 10 percent of the original prairie persists, and only 3 percent remains dominated by native vegetation (Crawford and Hall 1997, pp. 13–14). In the remaining prairies, many of the native bunchgrass communities have been replaced by nonnative pasture grasses (Rogers 2000, p. 41), which larks avoid using for territories and nest sites (Pearson and Hopey 2005, p. 27). In the Willamette Valley, Oregon, native grassland has been reduced from the most common vegetation type to scattered parcels intermingled with rural residential development and farmland; it is estimated that less than 1 percent of the native grassland and savanna remains in Oregon (Altman *et al.* 2001, p. 261).

Development

Native prairies and grasslands have been severely reduced throughout the range of the Taylor's checkerspot butterfly and the streaked horned lark as a result of human activity due to conversion of habitat to residential and commercial development and agriculture. Prairie habitat continues to be lost, particularly to residential development (Stinson 2005, p. 70) by removal of native vegetation and the excavation and grading of surfaces and conversion to non-habitat (buildings, pavement, other infrastructure). Residential development is associated with increased infrastructure such as new road construction, which is one of the primary causes of landscape fragmentation (Watts *et al.* 2007, p. 736). Activities that accompany low-density development are correlated with decreased levels of biodiversity, mortality to wildlife, and facilitated introduction of nonnative, invasive species (Trombulak and Frissell 2000, entire; Watts *et al.* 2007, p. 736). In the south Puget Sound lowlands, the glacial outwash soils and gravels underlying the prairies are deep and valuable for use in construction and road building, which leads to their degradation and destruction.

Since the 1850s, much of the Willamette Valley of Oregon has been altered by development (agricultural and urban). About 96 percent of the Willamette Valley is privately owned, and it is both the fastest growing area in Oregon and the most densely populated. The Willamette Valley provides about half of the State's agricultural sales, and 16 of the top 17 private sector employers (manufacturing, high technology, forest products, agriculture, and services) are located there. The population projected for 2050 is approximately 4 million, or nearly double the current population (Oregon Department of Fish and Wildlife 2006, p. 237). The increase in population will result in increased building construction and road development, further impacting the remaining prairies and oak woodlands.

Taylor's Checkerspot Butterfly—The habitat of the Taylor's checkerspot butterfly is highly fragmented across the region due to agricultural and low-density residential development. Fragmentation due to residential and associated road development has led to a reduction of native larval host plants and adult nectar plants as introduced invasive plant species, primarily Mediterranean grasses and shrubs such as Scot's broom, increasingly dominate the landscape and outcompete native plant species (see discussion below, under ''Loss of Ecological Disturbance Processes, Invasive Species, and Succession''). Construction directly destroys habitat, as does conversion, and may kill any sessile (immobile) or slow-moving organism in the construction footprint (Trombulak and Frissell 2000, p. 19). Unlike many other species of butterflies, the Taylor's checkerspot butterflies spend approximately 50 weeks of their life cycle as sedentary eggs, larvae, or pupae with only a brief window of time (approximately 1–2 weeks) as mobile, winged adults (Stinson 2005, p. 78). As a result, commercial and residential development, construction of related infrastructure including roads, and conversion of habitat to incompatible uses such as gravel mining directly affect the Taylor's checkerspot butterfly eggs, larvae, and pupae by killing individuals and destroying habitat.

When in flight, butterflies become subject to mortality from collision with vehicles on roads associated with residential development, which is commonly known to affect animals of all sizes, but especially insects (Trombulak and Frissell 2000, p. 20). Since the short flight season of Taylor's checkerspot butterflies directly corresponds with their reproductive period, death of gravid (egg-carrying) females could lead to population declines;, however, it is unlikely that failure of the entire population would occur based on this alone. These sorts of traffic-collision related deaths may disproportionately affect Taylor's checkerspot butterflies in comparison to other butterflies, as many other kinds of butterflies are in flight for periods much longer than just their reproductive window. Additionally, because female Taylor's checkerspot butterflies oviposit in clusters (lay many eggs in one place), vehicle traffic can adversely affect the subspecies by crushing whole clutches of eggs or large numbers of larvae, which cluster together in the early instar periods.

Four historical locales for Taylor's checkerspot butterflies in the south Puget Sound region were lost to development or conversion. Dupont, Spanaway, and Lakewood were all converted to urban areas, and JBLM Training Area 7S became a gravel pit (Stinson 2005, pp. 93–96).

In summary, the threat of development and conversion of the prairie ecosystem to other uses has a significant impact on Taylor's checkerspot butterflies due to the effect of development on the habitat features that are required (short-statured vegetation communities with specific larval and adult food resources) by the subspecies to complete its life stages and become a reproductive adult butterfly.

Streaked Horned Lark—Horned larks need expansive areas of flat, open ground to establish breeding territories. The large, flat, treeless areas that airports necessarily require and maintain have become attractive alternative breeding sites for streaked horned larks as native prairies and scoured river banks in the Pacific Northwest have declined. Five of the six streaked horned lark nesting sites remaining in the Puget lowlands are located on or adjacent to airports and military airfields (Rogers 2000, p. 37; Pearson and Hopey 2005, p. 15). At least four breeding sites are found at airports in the Willamette Valley, including the largest known population at Corvallis Municipal Airport (Moore 2008, pp. 14–17). Stinson (2005, p. 70) concluded that if large areas of grass had not been maintained at airports, the streaked horned lark might have been extirpated from the south Puget Sound area.

Although routine mowing to meet flight path regulations helps to maintain grassland habitat in suitable condition for nesting streaked horned larks, the timing of mowing is critical to determining whether this activity is harmful or beneficial to larks. Mowing during the active breeding season (mid-April to late July) can destroy nests or flush adults, which may result in nest failure (Pearson and Hopey 2005, p. 17; Stinson 2005, p. 72). Some of the airports in the range of the streaked horned lark have adjusted the frequency and timing of mowing in recent years to minimize impacts to streaked horned larks (Pearson and Altman 2005, p. 10). In 2011, McChord Air Field at JBLM agreed to a mowing regime that would provide protections to the streaked horned lark during their nesting period. Unfortunately, in years with wet spring weather when grass grows extremely rapidly, this strategy cannot always be implemented, as mowing must occur to maintain safe conditions for aviation. WDFW coordinates mowing schedules at the Olympia Airport to reduce impacts to streaked horned larks.

In 2008, the Port of Olympia prepared an interlocal agreement with the WDFW that outlines management recommendations and mitigation for impacts to State-listed species from development at the airport. In December 2010, a white paper and supplemental planning memorandum was developed as part of the Airport Master Plan Update (Port of Olympia 2010, pp. 7–12). This document, which is outlined in Appendix 2 of the Master Plan

Update, outlines management recommendations for the protection of critical areas and priority species, including the streaked horned lark. The recommendations include minimizing development, retaining open or bare ground, and avoiding mowing during the nesting season (March 15 through August 15) in known or potential lark nesting areas. Although the Port does not anticipate any development to occur in streaked horned lark nesting areas within the next 20 years, the agreement is not a regulatory document that would preclude future development, which is a primary source of revenue for the Port.

Airport expansions could result in further losses of some populations. At the Olympia Airport, hangars were built in 2005, on habitat used by streaked horned larks for foraging, resulting in a loss of grass and forb-dominated habitat, which could result in a smaller local population due to reduced habitat availability for breeding and wintering larks (Pearson and Altman 2005, p. 12). Based on discussions with staff at Sanderson Field in Shelton, future development plans do not include impacts to streaked horned lark habitat at this time. The majority of the proposed development at Sanderson Field will occur in areas already impacted (between existing buildings). The West Ramp at Gray Army Air Field on JBLM was expanded in 2005, into areas previously used by breeding streaked horned larks, resulting in a loss of available breeding habitat (Stinson 2005, p. 72).

At Portland International Airport, streaked horned larks nest in an area called the Southwest Quad; this is an area that was filled with dredged material between 1987 and 2005, to create a site for future airport development. The Port of Portland, which owns the airport, may propose to develop the Southwest Quad to accommodate future expansion, though there is no current plan in place (Green 2012, *in litt.*). The future development of the Southwest Quad would result in the loss of at least 33 ac (13 ha) of habitat and three breeding territories (Moore 2011, p. 12). Land at the Corvallis Airport Industrial Park is included in the Benton-Corvallis Enterprise Zone (City of Corvallis Public Works Department 2011, p. 6); the site is intended for development of new industries and could result in loss of breeding and wintering habitat for streaked horned larks. The date and extent of the habitat loss is uncertain however, as no leases have been granted for the site at this time.

The 13th Division Prairie at JBLM is used for helicopter operations (paratrooper practices, touch-and-go landings, and load drop and retrievals) and troop training activities. Foot traffic and training maneuvers that are conducted during streaked horned lark breeding season likely are a contributing factor to nest failure and low nest success at 13th Division Prairie. Recently, a streaked horned lark nest was destroyed at 13th Division Prairie by a porta-potty service vehicle (Linders 2012b, *in litt.*). Artillery training, off-road use of vehicles, and troop maneuvers at the 91st Division Prairie are also conducted in areas used by streaked horned larks during the nesting season. Because access into this training area is limited and streaked horned lark surveys are only conducted opportunistically, we do not know if or how many lark nests are lost due to military activities at 91st Division Prairie.

Industrial development has also reduced habitat available to breeding and wintering streaked horned larks. The Rivergate Industrial Park, owned by the Port of Portland, is a large industrial site in north Portland near the Columbia River; the site is developed on a dredge spoil field, and still has some large areas of open space between the industrial buildings (Moore 2010a, pp. 12–13). Rivergate has been an important breeding site for streaked horned larks, and a wintering site for large mixed flocks of up to five horned lark subspecies (including the streaked horned lark). In 1990, the field used by streaked horned larks at Rivergate measured more than 260 ha (650 acres) of open sandy habitat (Dillon 2012, pers. comm.). In the years since, new industrial buildings have been constructed on the site; now only one patch of 32 ha (79 acres) of open dredge spoil field remains (Moore 2011, p. 9) and the breeding population has dropped from 20 pairs to 5 pairs in this time (Moore 2011, p. 10).

For the reasons described here, we find that encroaching development and conversion to incompatible uses of occupied and potentially suitable areas contributes to the ongoing reduction of nesting and overwintering habitat for the streaked horned lark and, as such, is a threat to the subspecies.

Loss of Ecological Disturbance Processes, Invasive Species, and Succession

The suppression and loss of natural and anthropogenic disturbance regimes, such as fire and flooding, across vast portions of the landscape has resulted in altered vegetation structure in the prairies and meadows and has facilitated invasion by nonnative grasses and woody vegetation, rendering habitat unusable for Taylor's checkerspot butterflies and streaked horned larks. The basic ecological processes that maintain prairies, meadows, and scoured river banks have disappeared from, or have been altered on, all but a few protected and managed sites. Roadside verges and margins can have both positive and negative impacts to the Taylor's checkerspot butterfly. Periodic disturbance of road margins, verges, and road cuts may contribute to habitat creation due to construction and vehicle use, both of which result in frequent disturbance and create conditions conducive to colonization by the important larval host plant, the narrow-leaf plantain. Creation of habitat features suitable to the Taylor's checkerspot butterfly occurs only when the site is allowed to rest after it is disturbed. This sequence of events allows the host plant to be available to the butterfly, and the butterfly to be able to safely use the created habitat without being crushed. However, frequently disturbed areas also present a threat and may adversely affect the Taylor's checkerspot butterfly if the timing of vehicle use coincides with larval feeding and basking. In the latter case, the created habitat may act as a mortality sink, which attracts the butterfly to habitat that latter becomes a threat to the subspecies if vehicle use crushes food plants or the larvae themselves.

Historically, the prairies and meadows of the south Puget Sound region of Washington and western Oregon are thought to have been actively maintained by the native peoples of the region, who lived there for at least 10,000 years before the arrival of Euro-American settlers (Boyd 1986, entire; Christy and Alverson 2011, p. 93). Frequent burning reduced the encroachment and spread of shrubs and trees (Boyd 1986, entire; Chappell and Kagan 2001, p. 42; Storm and Shebitz 2006, p. 264), favoring open grasslands with a rich variety of native plants and animals. Following Euro-American settlement of the region in the mid-19th century, fire was actively suppressed on grasslands, allowing encroachment by woody vegetation into the remaining prairie habitat and oak woodlands (Franklin and Dyrness 1973, p. 122; Boyd 1986, entire; Kruckeberg 1991, p. 287; Agee 1993, p. 360; Altman *et al.* 2001, p. 262).

Fires on the prairie create a mosaic of vegetation conditions, which serve to maintain native prairie forbs like *Camassia quamash* (common camas), *Achillea millefolium* (yarrow), and *Lomatium* spp. (desert parsley or biscuit

root), which are adult nectar foods for the Taylor's checkerspot butterfly. Stands of native perennial grasses (*Festuca idahoensis* ssp. *roemeri* (Roemer's fescue)) are also well adapted to regular fires and produce habitat favorable to the Taylor's checkerspot butterfly. In some prairie patches, fires will reset succession back to bare ground, creating early successional vegetation conditions suitable for both Taylor's checkerspot butterflies and streaked horned larks (Pearson and Altman 2005, p. 13). The historical fire return frequency on prairies has been estimated to be 3 to 5 years (Foster 2005, p. 8).

The result of fire suppression has been the invasion of the prairies and oak woodlands by native and nonnative plant species (Dunn and Ewing 1997, p. v; Tveten and Fonda 1999, p. 146), notably woody plants such as the native Douglas-fir (*Pseudotsuga menziesii*) and the nonnative Scot's broom, and nonnative grasses such as *Arrhenatherum elatius* (tall oatgrass) in Washington and *Brachypodium sylvaticum* (false brome) in the Willamette Valley of Oregon. This increase in woody vegetation and nonnative plant species has resulted in less available prairie habitat overall, and habitat that is avoided by Taylor's checkerspot butterflies and streaked horned larks (Tveten and Fonda 1999, p. 155; Pearson and Hopey 2005, pp. 2, 27; Olson 2011a, pp. 12, 16). Most butterflies avoid densely forested areas, as they are unable to generate enough heat from their own metabolism to provide them with the heat and energy they need to fly in shaded conditions. Streaked horned larks prefer areas that afford long sight lines and have low vegetation; both of which are impeded by the presence of trees.

On tallgrass prairies in midwestern North America, fire suppression has led to degradation and the loss of native grasslands (Curtis 1959, pp. 296, 298; Panzer 2002, p. 1297). On northwestern prairies, fire suppression has allowed Douglas-fir to encroach on and outcompete native prairie vegetation for light, water, and nutrients (Stinson 2005, p. 7). On JBLM alone, over 16,000 acres (6,477 ha) of prairie has converted to Douglas-fir forest since the mid-19th century (Foster and Shaff 2003, p. 284). Where controlled burns or direct tree removal are not used as a management tool, this encroachment will continue to cause the loss of open grassland habitats for the Taylor's checkerspot butterfly.

Restoration in some of the south Puget Sound grasslands in Washington has resulted in temporary control of Scot's broom and other invasive, nonnative plants through the careful and judicious use of herbicides, mowing, grazing, and prescribed fire. Prescribed fire has been used as a management tool to maintain native prairie composition and structure and is generally acknowledged to improve the health and composition of grassland habitat by providing a short-term nitrogen addition, which results in a fertilizer effect to vegetation, thus aiding grasses and forbs as they resprout.

Unintentional fires ignited by military training burns patches of prairie grasses and forbs on JBLM on an annual basis. These light ground fires create a mosaic of conditions within the grassland, maintaining a low vegetative structure of native and nonnative plant composition, and patches of bare soil. Because of the topography of the landscape, fires create a patchy mosaic of areas that burn completely, some areas that do not burn, and areas where consumption of the vegetation is mixed in its effects to the habitat. One of the benefits to fire in grasslands is that it tends to kill regenerating conifers, and reduces the cover of nonnative shrubs such as Scot's broom, although Scot's broom seed stored in the soil can be stimulated by fire (Agee 1993, p. 367). Fire also improves conditions for many native bulb-forming plants, such as *Camassia* sp. (camas) (Agee and Dunwiddie 1984, p. 367). On sites where regular fires occur, such as on JBLM, there is a high complement of native plants and fewer invasive species. These types of fires promote the maintenance of the native, short-statured vegetation communities (Severns and Warren 2008, p. 476) favored by the Taylor's checkerspot butterflies for larval and nectar food resources. Fire management to maintain or restore native vegetation is essential to maintaining suitable habitat for the Taylor's checkerspot butterfly, but the timing of the management activity is important, as improperly timed prescribed fire can destroy larvae, eggs, or adult butterflies.

Management practices such as intentional burning and mowing require expertise in timing and technique to achieve desired results. If applied at the wrong season, frequency, or scale, fire and mowing can be detrimental to the restoration of native prairie species. For example, during a prescribed fire event that was implemented in an adjacent training area on JBLM in late summer 2011, fire occurred in an area containing Taylor's checkerspot butterfly habitat that was under a protection agreement. This burn was inconsistent with the prescribed burn plan and eliminated a large area of Taylor's checkerspot butterfly larval host and nectaring plants on the 91st Division Prairie. Repeated and high intensity burning can result in a lack of vegetation or encourage regrowth to nonnative grasses. Where such burning has occurred over a period of more than 50 years on the artillery ranges of the JBLM, prairies are covered by nonnative forbs and grasses instead of native perennial bunchgrasses (Tveten and Fonda 1999, pp. 154–155).

Taylor's Checkerspot Butterfly—On JBLM, the 91st Division Prairie is frequently ignited through routine training exercises involving ordnance, which prevents invasive shrubs and nonnative grasses and native Douglas-fir from encroaching onto the prairie, and sustains high-quality habitat (larval host and adult nectar food plants) for Taylor's checkerspot butterflies and the generally high-quality condition of the prairie. Vegetation at this site remains in an early successional stage that is dominated by native grasses and forbs, such as *Balsamorhiza deltoidea* (deltoid balsamroot), which is an important Taylor's checkerspot butterfly nectar plant. Fires on grassland (prairie) habitat generally have low fuel content and produce regular, short-duration fires (Agee 1993, p. 354; Chappell and Kagan 2001, p. 43), which restricts the establishment of invasive plants and encroaching trees and helps to maintain native grasses and forbs. Swales and overall topographic heterogeneity prevent the entire grassland landscape from being consumed by fire, as grassland fires tend to be patchy in their distribution, creating a mosaic of conditions. On a patch of this large prairie, nonnative grasses have invaded many sites occupied by Taylor's checkerspot butterflies (Severns and Warren 2008, p. 476). Several hundred acres (more than 40 ha) of tall oatgrass is currently encroaching upon the largest Taylor's checkerspot butterfly population in Washington (JBLM's 91st Division Prairie).

Bald habitat at the Forest Service and WDNR sites where Taylor's checkerspot butterflies are found were created due to the shallow soil conditions or they may have been formerly forested. On bald habitat that was formerly forested, these areas appear to have been colonized by the Taylor's checkerspot butterfly shortly after they were cleared. At the time the trees were harvested from each of these balds they were reforested with conifers to comply with the Washington State forest practices rules. The establishment and growth of the conifers, and the establishment and expansion of *Acer macrophyllum* (bigleaf maple), *Holodiscus discolor*

(oceanspray), and other shrubs has resulted in shaded habitat that has replaced habitat occupied by the Taylor's checkerspot butterfly. Sites that currently have Taylor's checkerspot butterflies present will quickly become unsuitable if trees and shrubs are not removed and if the site is not managed specifically for the long-term conservation of the Taylor's checkerspot butterfly or the maintenance of bald habitat. This is the case for several balds recently occupied by the Taylor's checkerspot butterfly but no longer supporting the subspecies, including Bald Hills NAP in Thurston County of south Puget Sound, and Highway 112 and Striped Peak in Clallam County, on the north Olympic Peninsula.

A large portion of the existing, occupied Taylor's checkerspot butterfly habitat on Denman Island in British Columbia, Canada, resulted from timber harvest. After the area was logged, Taylor's checkerspot butterflies colonized the disturbed area from nearby suitable habitat. Currently, *Alnus rubra* (red alder), bigleaf maple, and Douglas-fir trees are expanding onto the site, which will directly threaten the Taylor's checkerspot butterfly habitat there (COSEWIC 2011, p. 18). As the forest becomes reestablished on the property, it will produce shade and the trees will outcompete the host plants for the Taylor's checkerspot butterfly for space, water, light, and nutrients. The population of Taylor's checkerspot butterfly is expected to decline significantly within the next 10 years at this sole Canada site if the current habitat on Denman Island is not managed for the subspecies (COSEWIC 2011, p. 31).

We conclude that the loss of ecological disturbance processes; the occurrence of invasive, nonnative species; and the natural succession of vegetation communities separately and collectively continue to be a threat to Taylor's checkerspot butterflies. Changes to the structure and composition of the native prairie plant communities contributes to the loss of function of the prairie ecosystem and threatens the Taylor's checkerspot butterfly's capability to successfully complete its life stage requirements and quickly leads to extirpation of the subspecies from specific prairie patches.

Streaked Horned Lark—Prior to the construction of dams on the Columbia River, annual flooding and scouring likely created nesting and wintering habitat for streaked horned larks on sandy islands and beaches along the river's edge (Stinson 2005, p. 67). Once the dams were in place, *Salix* spp. (willows), *Populus trichocarpa* (black cottonwood), and other vegetation established broadly on the sandbars and banks (Rogers 2000, pp. 41–42), resulting in unsuitable habitat for larks. Loss of these habitats may have been partially ameliorated by the formation of dredge spoil islands that have been established as part of the Corps' shipping channel maintenance (Stinson 2005, p. 67).

The streaked horned lark currently uses sand islands in the lower Columbia River for both breeding and wintering habitat; these islands are a mosaic of Federal, State, and private lands, but there are no management or conservation plans in place to protect larks or these important habitats. The Corps has a dredging program to maintain the navigation channel in the Columbia River. In 2002, the Corps established a deeper navigation channel in the river, a regular maintenance dredging program, and a plan for disposition of dredge material on the islands in the lower Columbia River (USFWS 2002b, pp. 1–14). In this plan, the Corps addressed the disposition of dredge material in the lower Columbia River, which has the potential to both benefit and harm streaked horned larks, depending on the location and timing of deposition. Recent studies by Anderson (2010a, p. 29) on the islands in the lower Columbia River have shown that fresh dredge material stabilizes and develops sparse vegetation suitable for larks nesting approximately 3 years after deposition, and can be expected to remain suitable for approximately 2 years before vegetation becomes too dense (although larks were found to use habitats that did not precisely fit this model, and more analysis is underway). Deposition of dredge material at the wrong time, however (e.g., during the nesting season), can destroy nests and young or degrade suitable habitat. Thus, deposition of dredge material can be both a tool for habitat creation and a threat for the streaked horned lark.

Destruction of occupied lark habitat through the deposition of dredge materials has been documented several times on the lower Columbia River islands (Stinson 2005, p. 67; Pearson and Altman 2005, p. 11; Pearson *et al.* 2008, p. 14). In 2006, dredge spoils were deposited on Whites Island while larks were actively nesting. All nests at this site were apparently destroyed (Pearson 2012a, pers. comm.). This site had at least 21 nests and 13 territories during the 2005 nesting season (Pearson *et al.* 2008, p. 21). In a similar situation on Rice Island, singing males were observed on Rice Island in June 2000, but dredge spoil was placed on the site in July 2000, which destroyed nesting habitat during the breeding season (MacLaren 2000, p. 3). In 2004 on Miller Sands Spit, the Corps deposited dredge material on lark breeding habitat, which likely resulted in nest failure (Pearson and Altman 2005, p. 10). The Corps recently began working with the Center for Natural Lands Management to coordinate dredge spoil depositions with timing of lark breeding season (Anderson 2011, *in litt.*).

Dredge spoil deposition also creates habitat for Caspian terns (*Sterna caspia*), a native bird species that nests in very large numbers in the lower Columbia River; these large terns have been shown to eat substantial numbers of salmon smolts, and the reduction of predation by terns on young salmon has been the focus of an interagency effort for the past decade (Lyons *et al.* 2011, p. 2). One aspect of the effort to reduce the numbers of terns in the lower Columbia River has been a program to discourage tern nesting on Rice Island by planting vegetation and placing barrier fencing on open, sandy habitats; these measures have also reduced habitat available to larks on the island and are ongoing (Stinson 2005, p. 73; Roby *et al.* 2011, p. 14).

There is ample evidence that larks respond positively to habitat management that simulates natural processes. From 2001 through 2004, JBLM used nonbreeding season mowing and controlled burns to control Scot's broom (Pearson and Hopey 2005, p. 30). The September 2004 burns resulted in increased lark abundance and a dramatic vegetative response on 13th Division Prairie; relative to the control sites, late summer fire in 2006 resulted in increased use of the burned areas by larks immediately after the fires, and in the breeding season following the fires (Pearson and Hopey 2005, p. 30).

Throughout the year, the streaked horned lark uses areas of bare ground or sparse vegetative cover in grasslands. These grasslands may be native prairies in the Puget lowlands, perennial or annual grass seed fields in the Willamette Valley, or the margins of airport runways throughout the range of the species. All of these habitats receive management to maintain desired structure: prairies require frequent burning or mowing to prevent succession to woodlands; agricultural fields are mowed at harvest or burned to reduce weed infestations; airports mow to maintain low-stature grasses around airfields to minimize attracting hazardous wildlife. Burning and mowing are beneficial to larks in that they maintain the habitat structure required by the bird, but these activities can also harm larks if the activities

occur during the breeding season when nests and young are present (Pearson and Hopey 2005, p. 29). In the nesting seasons from 2002 to 2004, monitoring at the Puget lowlands sites (Gray Army Airfield, McChord Field, and Olympia Airport) documented nest failure of 8 percent of nests caused by mowing over the nests, young, and adults (Pearson and Hopey 2005, p. 18). Habitat management to maintain low-stature vegetation is essential to maintaining suitable habitat for the streaked horned lark, but the timing of the management is important, as improperly timed actions can destroy nests and young.

We conclude that the loss of natural disturbance that historically created habitat for the streaked horned lark continues to be a threat to the subspecies due to encroachment of plant species (e.g., trees and beach grasses) that reduce available habitat. The Service has developed timing recommendations for other forms of manmade disturbance including burning, mowing, and dredge spoil deposition. Where a Federal nexus exists, the Service has partnered with other agencies to implement avoidance strategies for occupied streaked horned lark nesting areas. When the recommended timing restrictions are observed, we consider the benefit of habitat creation through burning, mowing, and dredge spoil deposit outweighs the negative impact of these activities, such that, if implemented appropriately, we do not consider such manmade disturbance to pose a threat to the subspecies.

Military Training and Associated Activities

Populations of Taylor's checkerspot butterflies and streaked horned larks occurring on JBLM are exposed to differing levels of training activities on the base. The Department of Defense's (DOD's) proposed actions under the ''Grow the Army'' (GTA) initiative include stationing 5,700 new soldiers, new combat service support units, a combat aviation brigade of 120 helicopters, facility demolition and construction to support the increased troop levels, additional aviation, maneuvers, and live fire training (75 FR 55313; September 10, 2010). The increased training activities will affect nearly all training areas at JBLM, resulting in an increased risk of accidental fires, and habitat destruction and degradation through vehicle travel, dismounted infantry training, bivouac activities, and digging. While training areas on the base have degraded habitat for these subspecies, with implementation of conservation measures, these areas still provide habitat for the Taylor's checkerspot butterfly and the streaked horned lark.

Taylor's Checkerspot Butterfly—Military training on JBLM has resulted in direct mortality of Taylor's checkerspot butterflies and destruction of Taylor's checkerspot butterfly habitat. Vehicle use and soldier foot traffic can crush larvae and damage larval host plants. These actions disrupt intact prairie plant communities by disturbing vegetation and exposing soils, directly introducing invasive plant seeds carried in on tires or boots, and accelerating the rate of establishment of invasive grasses or other nonnative plants that are light-seeded and easily blown onto a site from adjacent areas, like *Cirsium* spp. (thistles), *Senecio* spp. (groundsel), and *Chrysanthemum leucanthemum* (oxeye daisy). For example, in January 2009, an exercise occurred that did not follow the documented training plan, which would have restricted vehicles to established roads in order to protect sensitive habitat. Instead vehicles moved haphazardly across an area known to be occupied by Taylor's checkerspot butterflies and streaked horned larks. Approximately 67 ac (27 ha) of prairie were repeatedly traversed by eight-wheeled, armored personnel carriers known as Strykers. DOD staff later estimated that up to 37.5 ac (15 ha) were highly disturbed (Gruhn 2009, pers. comm.), with much of this acreage scraped to bare soil (Linders 2009b, entire). This impact would have directly affected overwintering larvae by crushing larvae and destroying the larvae plants used by Taylor's checkerspot butterflies.

Taylor's checkerspot butterfly counts were the lowest ever recorded at this site during the following spring (Linders 2009a, entire; Randolph 2009, p. 4; Thomas 2009, pers. obs). Prior to the Taylor's checkerspot butterfly flight season in May 2009, the three brigades of Strykers were dispatched away from JBLM and the prairies were not used for Stryker training during the spring of 2009 or 2010, which corresponds to the Taylor's checkerspot butterfly flight period. This training break allowed Range 74–76 of the 91st Division Prairie to regenerate or recover the vegetative qualities associated with the Taylor's checkerspot butterfly and the streaked horned lark habitat. JBLM has subsequently coordinated with the Service to establish specific conservation measures regarding vehicle use within this training area. Military training also occurs on a specific portion of the 91st Division Prairie known as Range 50, where Taylor's checkerspot butterfly larvae have been translocated during the springs of 2009, 2010, and 2011, and at the proposed Taylor's checkerspot butterfly translocation site at 13th Division Prairie.

Under the GTA initiative, more troops and vehicles will be stationed at JBLM; this is likely to result in increased pressure on Taylor's checkerspot butterfly habitat and larvae, particularly if the Army continues training on 91st Division Prairie. It is likely that a higher number of troops will equate to a higher number of individuals recreating on JBLM in places like Marion and Johnson prairies (this is further discussed under ''Recreation,'' below).

We conclude that the threat of military training continues to have significant, habitat-altering impacts on the Taylor's checkerspot butterfly. All training areas on JBLM that are currently occupied by Taylor's checkerspot butterflies experience regular training, including mounted vehicle training and infantry training, with foot soldiers directly impacting the area where the subspecies is found. We consider military training under present conditions a threat to the short-term and long-term conservation of the Taylor's checkerspot butterfly.

Streaked Horned Lark—Military training, including bombardment with explosive ordnance and hot downdraft from aircraft, has been documented to cause nest failure and abandonment for streaked horned larks at Gray Army Airfield and McChord Field at JBLM (Stinson 2005, pp. 71–72). These activities harass and may kill some streaked horned larks, but the frequent disturbance also helps to maintain sparse vegetation and open ground needed for streaked horned lark nesting.

In the odd-numbered years since 2005, McChord Field has hosted a military training event known as the Air Mobility Rodeo. This international military training exercise is held at the end of July. This event includes aircraft, vehicles, and tents staged on or near lark nesting areas, although the majority of these activities take place on concrete hardstand areas (Geil 2010, *in litt.*). In even-numbered years, McChord Field hosts a public air show known as Air Expo, which is scheduled in mid-July. At the Air Expo, aerial events incorporate simulated bombing and fire-bombing, including explosives and pyrotechnics launched from an area adjacent to the most densely populated streaked horned lark nesting site at this location; these disturbances likely have adverse effects to fledglings of late nests (Stinson 2005, p. 72). Surveys in 2004 detected 31 pairs of streaked horned larks at McChord Field (Anderson 2011,

p. 14). In 2006, the number of lark pairs at McChord Field had dropped by more than half to 14 pairs, and the number of lark pairs has remained low, with just 11 pairs detected in 2011 (Anderson 2011, p. 14). The Rodeo and Air Expo events are scheduled to take advantage of the good weather that typically occurs in the summer on the south Puget Sound; this timeframe also coincides with streaked horned lark nesting season, and the disturbance may continue to cause nest failure and abandonment (Pearson *et al.* 2005a, p. 18). During the airshows, tents, vehicles, and concession stands are set up in the grassy areas along the runways used by streaked horned larks for nesting, and thousands of visitors a day line the runways to view the shows. As military training has been documented to cause nest failure and abandonment, which can lower reproductive success and may adversely affect fledglings, we conclude that these activities are a threat to the streaked horned lark.

JBLM has committed to restrictions both seasonally and operationally on military training areas, in order to avoid and minimize potential affects to the Taylor's checkerspot butterfly and the streaked horned lark. These restrictions include identified nontraining areas, seasonally restricted areas during breeding, and the adjustment of mowing schedules to protect these subspecies. These conservation management practices are outlined in an operational plan that the Service has assisted the DOD in developing for JBLM (Thomas 2012, pers. comm.). While the Service fully supports the implementation of these impact minimization efforts and will continue to collaborate with DOD to address all aspects of training impacts on the subspecies, not all adverse impacts of training on the subspecies are fully addressed. Military training as presently conducted continues to be a threat to the subspecies at this time.

Restoration Activities

Management for invasive species and encroachment of conifers requires control through equipment, herbicides, and other activities. While restoration has conservation value for the Taylor's checkerspot butterfly and the streaked horned lark, management activities to implement restoration may also have inadvertent direct impacts to the subspecies that are the target of habitat restoration.

Taylor's Checkerspot Butterfly—On occupied sites, Taylor's checkerspot butterflies are present throughout the year in some life cycle form. Restoration activities (application of herbicides, use of restoration equipment, and fire) can result in trampling, crushing, and destruction of Taylor's checkerspot butterfly larvae and larval host plants. Mowing to reduce the cover and competition from woody species, if done at the wrong time of year, can crush larval host plants and nectar plants used by adult butterflies on a site or even crush and kill larvae. Mowing activities should be timed to coincide with the diapause period for the subspecies, and mowing should be relatively high above the soil level to avoid any larvae that may not have burrowed into the soil.

We conclude that restoration actions to improve Taylors' checkerspot butterfly habitat or increase the number of checkerspots on specific prairie patches may have short-term adverse impacts to the subspecies and could potentially pose a threat to this resident subspecies because it is present in some life form stage on relatively small habitat patches throughout the entire year. However, any short-term threat posed by restoration actions is outweighed by the positive contributions to the subspecies and its habitat from these actions, such that as currently implemented, we do not consider restoration actions to rise to the level of posing a threat to the subspecies.

Streaked Horned Lark—The introduction of *Ammophila arenaria* (Eurasian beachgrass) and *A. breviligulata* (American beachgrass), currently found in high and increasing densities in most of coastal Washington and Oregon, has dramatically altered the structure of dunes on the outer coast (Wiedemann and Pickart 1996, p. 289). The tall leaf canopy of beachgrass creates areas of dense vegetation, which is unsuitable habitat for streaked horned lark nesting (MacLaren 2000, p. 5). Streaked horned larks require sparse, low-stature vegetation with at least 16–17 percent bare ground; areas invaded by beachgrass are too dense for streaked horned larks. The area suitable for streaked horned lark breeding on the Washington coast has decreased as a result of the spread of beachgrasses (Stinson 2005, p. 65; USFWS 2011a, p. 4–2). In a 10-year period (from 1977 to 1987) at Leadbetter Point on the Willapa National Wildlife Refuge, spreading beachgrass reduced the available nesting habitat for streaked horned larks by narrowing the distance from vegetation to water by 112 feet (34 meters) (WDFW 1995, p. 19). Since 1985, encroaching beachgrasses have spread to cover over two-thirds of Damon Point at Grays Harbor, another lark breeding site on the Washington coast (WDFW 1995, p. 19). At Damon Point, Scot's broom is also encroaching on lark habitat, reducing the area available for nesting (Pearson 2011, *in litt.*). On the Oregon coast, the disappearance of the streaked horned lark has been attributed to the invasion of exotic beachgrasses and the resultant dune stabilization (Gilligan *et al.* 1994, p. 205).

Some efforts have been successful in reducing the cover of encroaching beachgrasses. The Service's Willapa National Wildlife Refuge has restored habitat on Leadbetter Point. In 2007, the area of open habitat measured 84 ac (34 ha); after mechanical and chemical treatment to clear beachgrass (mostly American beachgrass) and spreading oyster shell across 45 ac (18 ha), 121 ac (50 ha) of sparsely vegetated, open habitat suitable for lark nesting was created (Pearson *et al.* 2009, p. 23). The main target of the Leadbetter Point restoration project was the federally listed western snowy plover (*Charadrius alexandrinus nivosus*), but the restoration actions also benefited the streaked horned lark. Before the restoration project, this area had just 2 streaked horned lark territories (Pearson *et al.* 2005a, p. 7); after the project, an estimated 8 to 10 territories were located in and adjacent to the restoration area (Pearson 2012b, pers. comm.).

Disease Impacts to Habitat

Taylor's Checkerspot Butterfly—Until recently disease was not known to be a factor affecting the habitat of the Taylor's checkerspot butterfly. We now have evidence of a plant pathogen (*Pyrenopeziza plantaginis*) known to affect the leaf tissue of the narrow-leaf plantain, the primary larval food for the Taylor's checkerspot butterfly at several locations, and the exclusive larval food plant at all sites known from Oregon. At some locations on the north Olympic Peninsula, Taylor's checkerspot butterflies select harsh paintbrush as the primary larval food plant and select narrow-leaf plantain as the secondary larval host. *Pyrenopeziza plantaginis* is active in late winter through early spring, and contributes to the mortality of leaf tissue at a time when post-diapause larvae are feeding on narrow-leaf plantain. Narrow-leaf plantain is an exotic but widely distributed, invasive, European weed in North America (Wolff and Schaal 1992, pp. 326, 330). Although the pathogen is common in Europe, it has only recently been reported in North America (Severns 2011, *in litt.;* Stone *et al.* 2011, p. 1). Severns and Warren (2008. p. 476) identified the pathogen on leaves of narrow-leaf plantain from remnant prairies in Benton County, Oregon,

where Taylor's checkerspot butterflies are known to occur and where they feed exclusively on narrow-leaf plantain. Similar instances of leaf mortality were previously attributed to frost damage on prairies of south Puget Sound, Washington. Recently, *P. plantaginis* has been identified on narrow-leaf plantain at Scatter Creek Wildlife Area in Thurston County, and at the 91st Division Prairie on JBLM, in Pierce County; both sites are in Washington.

Uncertainty exists regarding how *Pyrenopeziza plantaginis* affects Taylor's checkerspot butterfly larvae. The pathogen has been identified locally in Washington at sites where Taylor's checkerspot butterfly larvae feed on narrow-leaf plantain. The pathogen kills leaf tissue in late winter and early spring, coinciding with the time post-diapause larvae are feeding (Severns 2011, *in litt.*), which would lead to declining food resource to support Taylor's checkerspot butterfly larvae. If the food resource is killed by this pathogen, it may affect the ability of Taylor's checkerspot butterfly larvae to survive through the critical larval feeding period prior to emergence as an adult butterfly.

Pyrenopeziza plantaginis may be a threat to the larval foods utilized by the Taylor's checkerspot butterfly and, subsequently, may indirectly affect the Taylor's checkerspot butterfly. At this time, we have evidence of the presence of this pathogen at Scatter Creek Wildlife Area in Washington, where the pathogen appears common and its effect to *Plantago* is severe (Severns 2011, *in litt.*) This threat may affect populations if the pathogen were to become widespread on sites occupied by the Taylor's checkerspot butterfly; however, because we are uncertain of its potential as a population-level threat, we conclude that disease is not a threat to the Taylor's checkerspot butterfly habitat at this time, and we have no evidence to suggest that it is likely to become a threat within the near future.

Streaked Horned Lark—Disease is not known to be a threat to the habitats of the streaked horned lark.

Transient Agricultural Habitat

Taylor's Checkerspot Butterfly—The Taylor's checkerspot butterfly is not affected by transient agricultural habitat.

Streaked Horned Lark—Roughly half of all the agricultural land in the Willamette Valley is devoted to grass seed production fields (Oregon Seed Council 2012, p. 1). Grasslands—both rare native prairies and grass seed fields—are important habitats for streaked horned larks in the Willamette Valley; open areas within the grasslands are used for both breeding and wintering habitat (Altman 1999, p. 18; Moore and Kotaich 2010, p. 11; Myers and Kreager 2010, p. 9). About 420,000 ac (170,000 ha) in the Willamette Valley are currently planted in grass seed production fields. Demand for grass seed is declining in the current economic climate (Oregon Department of Agriculture 2011, p. 1); this decreased demand for grass seed has resulted in farmers switching to other agricultural commodities, such as wheat or nurseries and greenhouses (U.S. Department of Agriculture–National Agricultural Statistical Service Oregon Field Office 2009, p. 3; Oregon Department of Agriculture 2011, p. 1). The continued decline of the grass seed industry in the Willamette Valley will likely result in conversion from grass seed fields to other agricultural types; this will result in fewer acres of suitable breeding and wintering habitat for streaked horned larks.

Another potential threat related to agricultural lands is the streaked horned lark's use of ephemeral habitats. In the breeding season, streaked horned larks will move into open habitats as they become available, and as the vegetation grows taller over the course of the season, larks will abandon the site to look for other open habitats later in the season (Beason 1995, p. 6). This ability to shift locations in response to habitat changes is a natural feature of the streaked horned lark's life-history strategies, as breeding in recently disturbed habitats is part of their evolutionary history. In the Willamette Valley, some habitats in agricultural fields are consistently available (e.g., on the margins of gravel roads), while other patches of suitable habitat shift from place to place as fields are burned, mowed, or harvested. Other suitable sites appear when portions of grass fields perform poorly, inadvertently creating optimal habitat for larks. The shifting nature of suitable habitat is not in itself a threat; the potential threat is in the overall reduction of compatible agriculture, which would reduce the area within which streaked horned lark habitat could occur.

Summary of Factor A

Taylor's Checkerspot Butterfly—Taylor's checkerspot butterflies face threats from loss of habitat due to conversion of native grasslands to agriculture, and permanent loss when prairies are developed for residential or commercial purposes. This decline is exemplified by the reduction of populations for the subspecies rangewide, including a reduction from over 40 populations to fewer than 10 populations in Washington, from 13 populations to 2 populations in Oregon, and from 24 populations to 1 population known from Canada. Taylor's checkerspot butterflies also face threats from changes in vegetation structure and composition of native grassland-dominated plant communities. Changes to vegetation structure and composition can occur through conversion to agriculture, through natural succession processes, and through invasion by nonnative species (Agee 1993, p. 345; Chappell and Kagan 2001, p. 42). In addition to the loss of grasslands from development, conversion to agriculture, and other uses, as well as plant succession, these plant communities are faced with degradation due to invasion of the grassland habitat that remains by native conifers and nonnative pasture grasses, shrubs, and forbs. As grasslands have been converted, the availability of Taylor's checkerspot butterfly larval host plants and adult nectar plants has declined. We consider the negative impacts to the Taylor's checkerspot butterfly from the loss and degradation of its native grassland habitats to pose a threat to the subspecies.

We conclude that disease, specifically *Pyrenopeziza plantaginis,* may pose a potential threat to the larval food plant of the Taylor's checkerspot butterfly, and therefore a potential indirect threat to the subspecies. However, we have no information to suggest that it is currently a threat to the Taylor's checkerspot butterfly. Any threat of disease to the larval food plant for this subspecies has the potential to become a threat in the future due to the small number of remaining populations of the Taylor's checkerspot butterfly. However, based on our review of the best available information, we have no data at this point to suggest that it is likely to become a widespread threat in the future.

The current threats to Taylor's checkerspot butterflies are similar to those identified at the time the subspecies was determined to be a candidate for listing in 2001. Since then, the threat from invasive species and their impacts on native vegetation have increased. Other threats, particularly the threat to develop Taylor's checkerspot butterfly habitat, have increased on Denman Island, Canada; in south Puget Sound, Washington; and in the Willamette Valley, Oregon (IAE 2010, p. 1). Moreover, prior to entering two wars in 2003, military training (DOD, Army, JBLM) on occupied Taylor's checkerspot butterfly habitat was lower in intensity and duration. The only remaining high-quality native habitat occupied by the Taylor's checkerspot butterfly within

the south Puget Sound region is found on the 91st Division Prairie of JBLM, a site of highly active training that can inadvertently result in the destruction of larval host plants and crushed larvae.

Based on negative impacts to the Taylor's checkerspot butterfly from current projected development and impacts to habitat, the loss of historically occupied locations, military training, recreation, the limited distribution of the subspecies, existing and future habitat fragmentation, habitat disturbance (including fire), and land use changes associated with agriculture and long-term fire suppression, we conclude that there are current and ongoing threats to the Taylor's checkerspot butterfly and its habitat that are expected to continue into the future. At all locations presently occupied by the Taylor's checkerspot butterfly, the combined threats to the subspecies through the degradation or destruction of its habitat are severe, pervasive, and ongoing, including: (1) Conversion of habitat to agriculture, or permanent loss of habitat to development; (2) military training that has destroyed habitat and led to mortality by crushing eggs and larvae; (3) invasion of habitat by native and nonnative woody vegetation; (4) loss of natural disturbance processes that otherwise would maintain early seral conditions; (5) a restricted and disjunct range of the subspecies (see Factor E discussion, below); and (6) small populations throughout the subspecies' range (see Factor E discussion, below). The continued decline and degradation of Taylor's checkerspot butterfly habitat has resulted in isolated populations occupying small habitat patches within degraded prairies, which may lead to further population declines or to complete loss and may decrease the geographic distribution of the the Taylor's checkerspot butterfly. We conclude that the current and ongoing threats to the Taylor's checkerspot butterfly and its habitat represent significant effects to the subspecies and its habitat and will continue into the future.

Streaked Horned Lark—The streaked horned lark population decline in Washington indicates that the observed range contraction for this subspecies may be continuing, and the subspecies may disappear from that region in the near future. There are many other ongoing threats to streaked horned lark's habitat throughout its range, including: (1) Conversion to agriculture and industry; (2) loss of natural disturbance processes, such as fire and flooding; (3) encroachment of woody vegetation; (4) invasion of coastal areas by nonnative beachgrasses; and (5) incompatible management practices. The continued loss and degradation of streaked horned lark habitat may result in smaller, more isolated habitats available to the subspecies, which could further depress the rangewide population or reduce the geographic distribution of the streaked horned lark. We conclude that the current and ongoing threats to streaked horned lark habitat are resulting in a significant impact to the subspecies and its habitat and will continue into the future.

Factor B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Overutilization of species results when the number of individuals removed from the system exceeds the ability of the population of the species to sustain its numbers or reduces populations of the species to a level such that it is vulnerable to other influences (threats) upon its survival. This overutilization can result from removal of individuals from the wild for commercial, recreational, scientific, or educational purposes.

Taylor's Checkerspot Butterfly—Populations of Taylor's checkerspot butterflies have declined dramatically during the past decade. We know of no overutilization of the Taylor's checkerspot butterfly for commercial, recreational, or educational purposes. However, scientific studies may have inadvertently negatively affected Taylor's checkerspot butterfly populations at the 13th Division Prairie on JBLM (Vaughan and Black 2002). Over 7,000 individuals were observed as recently as 1997, but only 10 adults were observed during surveys in 2000, and no Taylor's checkerspot butterflies have been observed since (Stinson 2005, p. 94; Linders 2012c, *in litt.*). Mark-recapture studies were conducted at this site for several years during this timeframe, and the study methods involved capturing all adults and moving them to a single release location. This action likely influenced the population demographics, but because no simultaneous population monitoring was conducted, it is impossible to know whether there was an effect. According to McGarrahan (1997), mark, release, and recapture studies of the Bay Edith's checkerspot (*Euphydryas editha bayensis*) were considered a contributing factor in the extirpation of this population from Stanford's Jasper Ridge Preserve. There are no current Taylor's checkerspot butterfly ''mark, release and recapture studies'' in progress. Capture of butterflies for study is a potential threat at this time, and the trampling, or crushing of eggs, larvae, and pupae associated with scientific studies continue to be a potential threat to the subspecies, although likely a minor one.

Streaked Horned Lark—Overutilization for commercial, recreational, scientific, or educational purposes is not known to be a threat to the streaked horned lark.

Summary of Factor B

In summary, although there is some evidence of historical mortality from overutilization for the Taylor's checkerspot butterfly and there may have been recent mortality from scientific studies of the Taylor's checkerspot butterfly, we have no reason to believe that current levels of utilization, or the potential impacts from scientific studies of the subspecies, have caused or will cause the Taylor's checkerspot butterfly to be vulnerable to other threats. Based on the best scientific and commercial data available, we have no information to suggest that overutilization for commercial, educational, recreational, or scientific purposes is now a threat or will become a threat to the Taylor's checkerspot butterfly in the future.

In addition, there is no evidence that commercial, recreational, scientific, or educational use is now a threat or will become a threat to the streaked horned lark in the future.

Factor C. Disease or Predation

Disease

Most healthy ecosystems include organisms such as viruses, bacteria, fungi, and parasites that cause disease. Healthy wildlife and ecosystems have evolved defenses to fend off most diseases before they have devastating impacts. An ecosystem with high levels of biodiversity (diversity of species and genetic diversity within species) is more resilient to the impacts of disease because there are greater possibilities that some species and individuals within a species have evolved resistance, or if an entire species is lost, that there will likely be another species to fill the empty niche.

Where ecosystems are not healthy, due to a loss of biodiversity and threats such as habitat loss, climate change, pollutants, or invasive species, wildlife and ecosystems are more vulnerable to emerging diseases. Diseases caused by or carried by invasive species are particularly severe threats, as native wildlife may have no natural immunity to them (National Wildlife Federation 2012).

Our review of the best available scientific and commercial data found no

evidence to indicate that disease is a threat to the Taylor's checkerspot butterfly or the streaked horned lark. We conclude that disease is not a threat to the Taylor's checkerspot butterfly or the streaked horned lark now, nor do we anticipate it to become a threat in the future.

Predation

Predation is a process of major importance in influencing the distribution, abundance, and diversity of species in ecological communities. Generally, predation leads to changes in both the population size of the predator and that of the prey. In unfavorable environments, prey species are stressed or living at low population densities such that predation is likely to have negative effects on all prey species, thus lowering species richness. In addition, when a nonnative predator is introduced to the ecosystem, negative effects on the prey population may be higher than those from co-evolved native predators. The effect of predation may be magnified when populations are small, and the disproportionate effect of predation on declining populations has been shown to drive rare species even further towards extinction (Woodworth 1999, pp. 74–75).

Predation has an impact on populations of the Taylor's checkerspot butterfly and the streaked horned lark. The degree of threat to the Taylor's checkerspot butterfly from predation is not as pronounced as with the streaked horned lark due to the concentration of defensive plant compounds within the larvae and adults that make them distasteful to predators.

Taylor's Checkerspot Butterfly—Generally, butterflies exhibit some protective mechanisms to avoid predation, and this is true for the Taylor's checkerspot butterfly. Larvae of the Taylor's checkerspot butterfly sequester iridoid glycosides (plant defensive chemicals) during consumption of their larval host plants, narrow-leaf plantain and paintbrush species. These compounds are distasteful to predators (COSEWIC 2011, p. 36), and generalist predators such as insects and spiders avoid checkerspot larvae (Kuussaari *et al.* 2004, p. 140). Taylor's checkerspot butterfly larvae also tend to be brightly colored, which makes them highly visible and signals the presence of noxious compounds to predators, including birds and some invertebrate predators that avoid Taylor's checkerspot butterfly larvae (Kuussaari *et al.* 2004, p. 139). However, birds are known to attack and consume adult butterflies. Bowers *et al.* (1985, p. 101) found avian predation to be a significant factor in mortality of adult variable checkerspot butterflies (*Euphydryas chalcedona*); they also found sex bias in selection of prey as the avian predator ate more female variable butterflies (less bright red) than male variable checkerspot butterflies, adding support to the idea that brightly colored insects are avoided (Bowers 1985 p. 100). This is likely a naturally occurring predation event, and we conclude that at this time it is currently not a threat, nor do we expect it to become a threat to the Taylor's checkerspot butterfly in the future.

Streaked Horned Lark—Predation on adult streaked horned larks has not been identified as a threat, but it is the most frequently documented source of mortality for eggs and young larks. In most studies of streaked horned lark nesting ecology, predation has been the primary documented source of nest failure (Altman 1999, p. 18; Pearson and Hopey 2004, p. 15; Pearson and Hopey 2005, p. 16; Pearson and Hopey 2008, p. 1; Moore and Kotaich 2010, p. 32). Sixty-nine percent of nest failures were caused by predation at four south Puget Sound study sites (Gray Army Airfield, 13th Division Prairie, Olympia Airport, and McChord Field) in 2002–2004 (Pearson and Hopey 2005, p. 18). Anderson (2006, p. 19) suggests that the primary predators of streaked horned lark eggs and young were avian, most likely American crows (*Corvus brachyrhynchos*), although garter snakes (*Thamnophis* spp.) and western meadowlarks have also been documented preying on eggs and young in the region (Pearson and Hopey 2005, p. 16; Pearson and Hopey 2008, p. 4). On the Washington coast and lower Columbia River islands, 46 percent of nest failures were caused by predation at three study sites (Midway Beach, Damon Point, and Puget Island) in 2004 (Pearson and Hopey 2005, p. 18). A study of five sites in the Willamette Valley (Corvallis Airport, M–DAC Farms, and William L. Finley, Baskett Slough, and Ankeny National Wildlife Refuges) determined that 23 to 58 percent of all streaked horned lark nests were lost to predation (Moore and Kotaich 2010, p. 32).

Video cameras were used to identify predators in this Willamette Valley study; documented predators include: Red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), great-horned owl (*Bubo virginianus*), and rats and mice (Family Cricetidae) (Moore and Kotaich 2010, p. 36). Streaked horned larks are ground-nesting birds and are vulnerable to a many other potential predators, including domestic cats and dogs, coyotes (*Canis latrans*), raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), red foxes (*Vulpes vulpes*), long-tailed weasels (*Mustela frenata*), opossums (*Didelphis virginiana*), meadow voles (*Microtus pennsylvanicus*), deer mice (*Peromyscus maniculatus*), and shrews (*Sorex* spp.) (Pearson and Hopey 2005, p. 17; Stinson 2005, p. 59).

Predation is a natural part of the streaked horned lark's life history, and in stable populations, the effect of predation would not be considered a threat to the subspecies. However, in the case of the streaked horned lark, the effect of predation may be magnified when populations are small, and the disproportionate effect of predation on declining populations has been shown to drive rare species even further towards extinction (Woodworth 1999, pp. 74–75). It is also possible that predation rates are higher now than in the past, due to the proximity of human developments and their associated predator attractions near lark habitats. We consider the effect of predation on streaked horned lark populations, particularly in the south Puget Sound, to be a threat to the species.

The one area where predation does not appear to be a threat to nesting streaked horned larks is in Portland at Rivergate Industrial Complex and the Southwest Quad at Portland International Airport. In 2009 and 2010, nesting success was very high, and only a single predation event was documented at these sites (Moore 2011, p. 11). The reason for the unusually low predation pressure may be that the two industrial sites have few predators because both sites are isolated from other nearby natural habitats.

Predation may have contributed to the extirpation of streaked horned larks on the San Juan Islands. Streaked horned larks were last documented on the islands in 1962 (Lewis and Sharpe 1987, p. 204). The introduction of several exotic animal species, including feral ferrets (*Mustela putorius*) and red foxes, to the island roughly coincides with the disappearance of streaked horned lark. These introduced predators may have significantly affected ground nesting birds and played a role in the eventual extirpation of streaked horned larks (Rogers 2000, p. 42).

Summary of Factor C

Disease—Based on our review of the best scientific and commercial data available, we conclude that disease is not a threat to the Taylor's checkerspot butterfly or streaked horned lark now,

nor do we expect it to become a threat in the future.

Predation—We found only one study with evidence to indicate that predation from avian predators may be a threat to the Taylor's checkerspot butterfly. While predation does occur on the Taylor's checkerspot butterfly, it does not appear to be occurring beyond expected natural levels; therefore, we do not consider it to be a threat to the Taylor's checkerspot butterfly now, nor do we expect it to become a threat in the future.

Because the populations of streaked horned larks are declining and small, we find that effect of the threat of predation is likely magnified and resulting in a significant impact on the subspecies. Therefore, based on our review of the best scientific and commercial data available, we conclude that predation is a threat to the streaked horned lark now and will continue to be a threat into the future.

Factor D. The Inadequacy of Existing Regulatory Mechanisms

Under this factor, we examine whether existing regulatory mechanisms are inadequate to address the threats to the species discussed under the other factors. Section 4(b)(1)(A) of the Act requires the Service to take into account ''those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species. . . .'' In relation to Factor D under the Act, we interpret this language to require the Service to consider relevant Federal, State, and tribal laws, regulations, and other such mechanisms that may minimize any of the threats we describe in threat analyses under the other four factors, or otherwise enhance conservation of the species. We give strongest weight to statutes and their implementing regulations and to management direction that stems from those laws and regulations. An example would be State governmental actions enforced under a State statute or constitution, or Federal action under statute.

The following section includes a discussion of Federal, State, or local laws, regulations, or treaties that apply to the Taylor's checkerspot butterfly or streaked horned lark. It includes legislation for Federal land management agencies and State and Federal regulatory authorities affecting land use or other relevant management.

Canadian Laws and Regulations

In British Columbia, the Taylor's checkerspot butterfly and streaked horned lark are on the Conservation Data Centre's Red List. The Red List includes ecological communities, indigenous species, and indigenous subspecies that are extirpated, endangered, or threatened in British Columbia; placing taxa on the Red List flags them as being at risk and requiring investigation, but does not confer any protection (British Columbia Ministry of Environment 2012, p. 1).

In 2003, the Taylor's checkerspot butterfly, and in 2005, the streaked horned lark, were determined to be endangered under the Canadian Species at Risk Act (SARA) (Environment Canada 2007, p. iii). SARA makes it an offense to kill, harm, harass, capture, or take an individual of a listed species that is endangered or threatened; possess, collect, buy, sell, or trade an individual of a listed species that is extirpated, endangered, or threatened, or its part or derivative; and damage or destroy the residence of one or more individuals of a listed endangered or threatened species or of a listed extirpated species if a recovery strategy has recommended its reintroduction.

For many of the species listed under SARA, the prohibitions on harm to individuals and destruction of residences are limited to Federal lands, but this limitation is inapplicable to migratory birds protected under the Migratory Birds Convention Act, including streaked horned lark (Statutes of Canada (S.C). ch. 29, sec. 34). Hence, SARA protects streaked horned larks, where present, from harm and destruction of their residences, not only on Federal lands, but also on provincial and private lands, where most of the remaining habitat for the species occurs. Moreover, SARA mandates development and implementation of a recovery strategy and action plans (S.C. ch. 29, secs. 37, 47). Invertebrate species assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as endangered will be protected by the British Columbia Wildlife Act and Wildlife Amendment Act, once these regulations are finalized (COSEWIC 2011, p. 44).

The horned lark (all subspecies) is also protected under Canada's Federal Migratory Birds Convention Act, 1994 (MBCA) (S.C. ch. 22), which is their domestic legislation similar to the United States' Migratory Bird Treaty Act of 1918 (MBTA; 16 U.S.C. 703 *et seq.*). The MBCA and its implementing regulations prohibit the hunting of migratory nongame birds and the possession or sale of ''migratory birds, their nests, or eggs'' (S.C. ch. 22, secs. 5, 12).

Although British Columbia has no stand-alone endangered species act, the provincial Wildlife Act protects virtually all vertebrate animals from direct harm, except as allowed by regulation (e.g., hunting or trapping). Legal designation as endangered or threatened under the Wildlife Act increases the penalties for harming a species, and also enables the protection of habitat in a Critical Wildlife Management Area (British Columbia Wildlife Act 1996, accessed online). The streaked horned lark is not listed under Canada's provincial Wildlife Act as an endangered or threatened species.

To date, there is no finalized recovery strategy for the Taylor's checkerspot butterfly in Canada (COSEWIC 2011, p. 44). A majority (97 percent) of the known populations observed in Canada occur on private land on Denman Island, which is not protected from development by individual landowners; approximately 1,173 ac (475 ha) of this private land has been officially transferred to the government and will become a Provincial Park or Ecological Reserve (COSEWIC 2011, p. 45). A final recovery strategy for the streaked horned lark was released in 2007 (COSEWIC 2011, p. 40); the streaked horned lark is essentially extirpated in Canada, and the recovery goal for this subspecies is to reestablish a breeding population of at least 10 breeding pairs at a minimum of 3 sites within its historical breeding range in Canada (Environment Canada 2007, p. iv). Based on our evaluation, we have determined that SARA provides protections for both the Taylor's checkerspot butterfly and streaked horned lark given their limited occurrences in British Columbia, and, additionally, the streaked horned lark is afforded protections under the MBCA.

U.S. Federal Laws and Regulations

There are no Federal laws in the United States that specifically protect the Taylor's checkerspot butterfly. The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 *et seq.*) is the only Federal law in the United States currently providing specific protection for the streaked horned lark due to its status as a migratory bird. The MBTA prohibits the following actions, unless permitted by Federal regulation:

> to ''pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured.''

There are no provisions in the MBTA that prevent habitat destruction unless direct mortality or destruction of active nests occurs (for example, as was described in Factor A, above, for dredge spoil disposal in the breeding season), nor does the MBTA require any planning to recover declining species or provide funding to protect individuals or their habitats. Therefore, we conclude that the MBTA does not address threats to the streaked horned lark from further population declines associated with habitat loss or inappropriate management.

The Sikes Act (16 U.S.C. 670) authorizes the Secretary of Defense to develop cooperative plans with the Secretaries of Agriculture and the Interior for natural resources on public lands. The Sikes Act Improvement Act of 1997 requires Department of Defense installations to prepare integrated natural resources management plans (INRMPs) that provide for the conservation and rehabilitation of natural resources on military lands consistent with the use of military installations to ensure the readiness of the Armed Forces. INRMPs incorporate, to the maximum extent practicable, ecosystem management principles and provide the landscape necessary to sustain military land uses. While INRMPs are not technically regulatory mechanisms because their implementation is subject to funding availability, they can be an added conservation tool in promoting the recovery of endangered and threatened species on military lands.

On JBLM in Washington, several policies and an INRMP are in place to provide conservation measures to grassland associated species that occupy training lands on the military base. JBLM in partnership with local agencies and nongovernmental organizations has provided funding to conserve these species through the acquisition of new conservation properties and management actions intended to improve the amount and distribution of habitat for these species. JBLM has also provided funding to reintroduce declining species (e.g., the Taylor's checkerspot butterfly) into suitable habitat on and off military lands. In June 2011, representatives from DOD (Washington, DC, office) met with all conservation partners to assess the success of this program and make decisions as to future funding needs. Support from the Garrison Commander of JBLM and all partners resulted in an increase in funding for habitat management and acquisition projects for these species on JBLM.

The Service has worked closely with the DOD to develop protection areas within the primary habitat for the Taylor's checkerspot butterfly on JBLM. These include areas where no vehicles are permitted on occupied habitat, where vehicles will remain on roads only, and where foot traffic is allowed.

JBLM policies include Army Regulation 420–5, which covers the INRMP, and AR–200–1. This is an agreement between each troop and DOD management that actions taken by each soldier will comply with restrictions placed on specific training areas, or range lands. Within the INRMP, the wildlife branch of the DOD developed updated endangered species management plans (ESMPs) that provide site-specific management and protection actions that are taken on military lands for the conservation of the Taylor's checkerspot butterfly and streaked horned lark. The ESMPs provide assurances of available funding, and an implementation schedule that determines when certain activities will occur and who will accomplish these actions. ESMPs require regular updates to account for dispersal of animals, or for activities to enhance habitat for animals that may have been translocated to a new habitat patch. INRMPs also have a monitoring component that would require modifications, or adaptive management, to planning actions when the result of that specific action may differ from the intent of the planned action. Based on the military's efforts, we conclude that although military actions may continue to harm individuals of the species, through the Sikes Act, the JBLM's INRMP includes provisions that will promote protection and conservation practices to support the Taylor's checkerspot butterfly and streaked horned lark, and prevent further population declines associated with habitat loss or inappropriate management on JBLM properties. However, even with the above mitigating efforts implemented by the military, we conclude that the regulatory mechanisms in place at JBLM are not sufficient to ameliorate the threats to the Taylor's checkerspot butterfly rangewide.

The National Park Service Organic Act of 1916, as amended (16 U.S.C. 1 *et seq.*), states that the National Park Service (NPS) ''shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations . . . to conserve the scenery and the national and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.'' The NPS management policies indicate that the Park Service will meet its obligations under the National Park Service Organic Act and the Endangered Species Act to both proactively conserve listed species and prevent detrimental effects on these species. This includes working with the Service and undertaking active management programs to inventory, monitor, restore, and maintain listed species habitats, among other actions.

The National Forest Management Act (16 U.S.C. 1600 *et seq.*)) has required the U.S. Department of Agriculture's (USDA) Forest Service to incorporate standards and guidelines into land and resource management plans, including provisions to support and manage plant and animal communities for diversity and for the long-term, rangewide viability of native species (see 16 U.S.C. 1604(g)(3)(B)). The regulations at 36 CFR 219 provide a framework to guide the collaborative and science-based development, amendment, and revision of land management plans. This framework is designed to promote healthy, resilient, diverse, and productive national forests and grasslands with a range of social, economic, and ecological benefits now and for future generations. In the face of changing environmental conditions and stressors, such as a changing climate, the regulations require plans to include plan components to: (1) Maintain and restore ecosystem and watershed health and resilience (ecological integrity); (2) protect key resources on the unit, including water, air, and soil; and (3) address water quality and riparian area protection and restoration.

The regulations at 36 CFR 219 contain a strong implementation approach to provide for the diversity of plant and animal communities and the persistence of native species in the plan area. This approach requires that plans use a complementary ecosystem and species-specific approach to maintaining the diversity of plant and animal communities and the persistence of native species in the plan area. The intent is to provide the ecological conditions (habitat) necessary to keep common native species common, contribute to the recovery of endangered and threatened species, conserve proposed and candidate species, and maintain viable populations of each species of conservation concern within the plan area. The regulations require that plans provide the ecological conditions necessary to contribute to the recovery of endangered and threatened species, and to conserve candidate and proposed species. In addition, the

requirements for restoration and ecological sustainability are intended to reduce the risk that species will become listed as endangered or threatened in the future.

On USDA Forest Service lands, management for listed and candidate species, as well as species of concern, follow Forest Service Sensitive Species policy (Kerwin and Huff 2007, p. 6). For the Forest Service, these policies require the agency to maintain viable populations of all native and desired nonnative wildlife, fish, and plant species in habitats distributed throughout their geographic range on National Forest System lands. Management ''must not result in a loss of species viability or create significant trends toward Federal listing'' for any identified Sensitive Species (Kerwin and Huff 2007, p. 6).

The Olympic National Forest is in the process of developing site management plans for each location where the Taylor's checkerspot butterfly is known to occur. This planning document will call for restoration actions to removed encroaching conifers and shrubs, nonnative plant removal and control, road management, and possibly planting or seeding of larval host plants (Holtrop 2010, p. 7). Because this planning process is not finished, however, we do not rely on it in our assessment of the adequacy of Forest Service regulatory mechanisms. While a Federal candidate species, and following implementation of this final rule (see **DATES**), as a federally listed species, the Taylor's checkerspot butterfly receives support from the Forest Service Interagency Special Status and Sensitive Species Program (Huff, 2011, pers. comm.). Based on our review, we conclude that the Taylor's checkerspot butterfly and streaked horned lark are protected from further population declines associated with habitat loss or incompatible management on Forest Service lands.

The National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 668dd *et seq.*) establishes the protection of biodiversity as the primary purpose of the National Wildlife Refuge (NWR) system. This has led to various management actions to benefit the federally listed species including development of a comprehensive conservation plans (CCP) on NWRs. CCPs typically set goals and list needed actions to protect and enhance populations of key wildlife species on refuge lands. The Taylor's checkerspot butterfly is not known to occur on any NWR. However, streaked horned larks occur on the Willapa NWR on the Washington coast and in the Willamette Valley Complex on the William L. Finley, Ankeny, and Baskett Slough NWRs. The CCPs for the Willapa NWR and all the units in the Willamette Valley Complex contain habitat conservation measures to address threats such as habitat degradation and benefit streaked horned larks; measures include surveys, habitat enhancement, and removal of invasive plants (USFWS 2011a, p. 2–34; USFWS 2011b, pp. 2–47—2–48). The joint CCP for the Lewis and Clark and Julia Butler Hansen NWRs in the lower Columbia River states that streaked horned larks do not occur on the refuges, although they do occur on suitable habitats near the refuge parcels (USFWS 2010, p. 4–37). The joint CCP identifies actions to benefit streaked horned larks on off-refuge lands (but that are within the refuge acquisition boundary), including working with the Corps to manage the dredge spoil deposition program to benefit larks (USFWS 2010, pp. 2–29—2–30).

CCPs detail program planning levels that are sometimes substantially above current budget allocations, and as such, are primarily used for strategic planning and priority setting; inclusion of a project in a CCP does not guarantee that the project will be implemented. The CCPs at the Willapa and Willamette Valley NWRs specifically provide for the conservation of the streaked horned lark, and implementation of the conservation measures in the refuge CCPs could benefit as many as 10 nesting pairs of larks at Willapa NWR (USFWS 2011a, pp. 4–44—4–45) and likely more than 50 pairs at the three Willamette Valley NWRs (Moore 2009, pp. 5–9). These actions may improve the status of streaked horned larks on the refuges. Therefore based on our review, we conclude that streaked horned lark is protected from further population declines associated with habitat loss or incompatible management on NWR lands.

State Laws and Regulations

Although there is no State endangered species act in Washington, the Washington Fish and Wildlife Commission has authority to list species (Revised Code of Washington (RCW) 77.12.020). State-listed species are protected from direct take, but their habitat is not protected (RCW 77.15.120). The Taylor's checkerspot butterfly and streaked horned lark are listed by the WDFW and are listed as critically imperiled (S1) by the Washington Natural Heritage Program. State listings generally consider only the status of the species within the State's borders, and do not depend upon the same considerations as a potential Federal listing. Unoccupied or unsurveyed habitat is not protected unless by County prairie ordinances or other similar rules or laws.

The Taylor's checkerspot butterfly and streaked horned lark are Priority Species under WDFW's Priority Habitats and Species Program (WDFW 2008, pp. 19, 80, 120). As Priority Species, the Taylor's checkerspot butterfly and streaked horned lark may benefit from some protection of their habitats under environmental reviews of applications for county or municipal development permits (Stinson 2005, pp. 46, 70). For the Taylor's checkerspot butterfly, WDFW has developed a recommended approach to protect the species on private property. Their approach is non-regulatory and encourages landowners to engage in cooperative efforts to protect and conserve Taylor's checkerspot butterfly habitat. However, State regulatory mechanisms appear to be insufficient to protect these species in areas where permits are not required or requested. We therefore conclude that Washington State regulatory mechanisms are inadequate to protect the Taylor's checkerspot butterfly and streaked horned lark and do not protect these species from further population declines associated with habitat loss or inappropriate management.

Under the Washington State Forest Practices Act (RCW 76.09, accessed online 2012), WDNR must approve certain activities related to growing, harvesting, or processing timber on all local government-owned, State-owned, and privately owned forest lands. WDNR's mission is to protect public resources while maintaining a viable timber industry. The primary goal of the forest practices rules is to achieve protection of water quality, fish and wildlife habitat, and capital improvements while ensuring that harvested areas are reforested. Presently, the Washington State forest practices rules do not specifically protect Taylor's checkerspot butterflies or streaked horned larks; only the Taylor's checkerspot butterfly actually occurs within areas where forest practices rules might apply. Landowners have the option to develop a management plan for the species if it resides on their property, or if landowners choose to not develop a management plan for the species with WDFW, their forest practices application will be conditioned to protect this public resource. If this approach does not provide the required protections for the Taylor's checkerspot butterfly, then WDFW and WDNR may request the Forest Practice Board to initiate rulemaking, and possibly, an emergency

rule would be developed (Whipple 2008, pers. comm.).

The WDNR also manages approximately 66,000 ac (26,710 ha) of lands as Natural Area Preserves (NAP). NAPs provide the highest level of protection for excellent examples of unique or typical land features in Washington State. Based on their proactive management, these NAPs provide protection for the Taylor's checkerspot butterfly on WDNR lands.

Oregon has a State Endangered Species Act (ESA), which was last updated in 1998. The streaked horned lark is not State-listed, and the State does not protect invertebrates like the Taylor's checkerspot butterfly under the State ESA (Oregon ESA 2004, p. 3). The list of endangered and threatened species tracked by the Oregon Department of Fish and Wildlife does not include insects, and does not classify the streaked horned lark with any conservation status. When an Oregon ''native wildlife'' species is federally listed as endangered or threatened, it is not automatically included as a State-listed species. The Oregon Fish and Wildlife Commission may review the available information and make a finding regarding State listing; when a species is State-listed in Oregon, it receives some protection and management, primarily on State-owned or managed lands (OAR 635–100–0100 to OAR 635–100–0180; ORS 496.171 to ORS 496.192).

The Oregon Forest Practices Act (ORS 527.610 to 527.992 and OAR Chapter 629, Divisions 600 to 665) lists protection measures specific to private and State-owned forested lands in Oregon. These measures include specific rules for resource protection, including endangered and threatened species; riparian areas along lakes, streams, springs, and seeps; and wetlands. Compliance with the forest practice rules does not substitute for or ensure compliance with the Federal Endangered Species Act of 1973, as amended (Act). Landowners and operators are advised that Federal law prohibits a person from taking certain endangered or threatened species that are protected under the Act (OAR 629–605–0105). Neither the Taylor's checkerspot butterfly nor the streaked horned lark are forest-dependent species; therefore neither species is likely to be directly affected by the Oregon Forest Practices Act.

Local Laws and Regulations

The Washington State Growth Management Act of 1990 (GMA) requires all jurisdictions in the State to designate and protect critical areas. The State defines five broad categories of critical areas, including: (1) Wetlands; (2) areas with a critical recharging effect on aquifers used for potable water; (3) fish and wildlife habitat conservation areas; (4) frequently flooded areas; and (5) geologically hazardous areas. *Quercus garryana* (Oregon white oak) habitat and prairie both predominantly fall into the category of fish and wildlife habitat conservation areas, although due to the coarse nature of prairie soils and the presence of wet prairie habitat across the landscape, critical area protections for crucial aquifer recharge areas and wetlands may also address prairie habitat protection.

Within counties, the County Areas Ordinance (CAO) applies to all unincorporated areas, but incorporated cities are required to independently address critical areas within their urban growth area. The incorporated cities within the range of the Taylor's checkerspot butterfly and streaked horned lark are: (1) Shelton (Mason County); and (2) Olympia, Lacey, Tumwater, Tenino, and Yelm (Thurston County), all in the State of Washington.

In 2009, the Thurston County Board of Commissioners adopted Interim Ordinance No. 14260, which strengthened protections for prairie and Oregon white oak habitat in consideration of the best available science. The County worked with the Service and WDFW to include an up-to-date definition of prairie habitat and to delineate soils where prairie habitat is likely to occur. In July 2010, the ordinance was renewed and amended, including revisions to the prairie soils list and changes to administrative language. Since July 2010, the interim prairie ordinance has been renewed on a 6-month basis and is currently in place. Several prairie species, including the Taylor's checkerspot butterfly and streaked horned lark, were also included as important species subject to critical areas regulation (Thurston County 2012, p. 1).

County staff use the known presence or historical locations of the Taylor's checkerspot or streaked horned lark to determine whether these species may be present at a site and impacted by the land use activity. After a field review, if one of these species is found on the site, the County requires a habitat management plan (HMP) to be developed, typically by a consultant for the landowner, in accordance with WDFW's management recommendations. This HMP specifies how site development should occur, and assists developers in achieving compliance with CAO requirements to minimize impact to the prairie habitat and species. The HMPs typically include onsite restoration and enhancement activities. Mitigation for prairie impacts may also be required, on-site or off (Thurston County 2012, p. 2).

In Clallam, Pierce, and Mason Counties, specific critical area ordinances have not been identified for the Taylor's checkerspot butterfly or streaked horned lark. However, prairie habitats and species garner some protection under Fish (or Aquatic) and Wildlife Habitat Conservation Areas (Mason County 2009, p. 64; Clallam County 2012, Part Three, entire; Pierce County 2012, pp. 18E.40–1–3). All developments within these areas are required to: Preserve and protect habitat adequate to support viable populations of native wildlife (Clallam County 2012, Part Three, entire); achieve ''no net loss'' of species and habitat where, if altered, the action may reduce the likelihood that these species survive and reproduce over the long term (Pierce County 2012, p. 18E.40–1); and support viable populations and protect habitat for Federal or State listed fish or wildlife (Mason County 2009, p. 63). While these regulations are likely adequate for the management of species with stable populations and large ranges, the loss of individual animals can have a cumulative impact deleterious to species facing a wide range of other threats and that already have decreased numbers of individuals or populations, such as the Taylor's checkerspot butterfly or streaked horned lark.

County-level CAOs do not apply to incorporated cities within county boundaries; thus, the incorporated cities of Olympia, Lacey, Tumwater, Yelm, and Tenino that overlap the range of the Taylor's checkerspot butterfly and streaked horned lark do not provide the same specificity of protection for these taxa as the Thurston County CAO. Below, we address the relevant city ordinances that overlap these species' ranges. We conclude below with a summary of whether we deem these existing city ordinances inadequate for the conservation of the Taylor's checkerspot and streaked horned lark.

The City of Olympia—The City of Olympia's municipal code states that ''The Department [City] may restrict the uses and activities of a development proposal which lie within one thousand feet of important habitat or species location,'' defined by Washington State's Priority Habitat and Species (PHS) Management Recommendations of 1991, as amended'' (Olympia Municipal Code (OMC) 18.32.315 B). When development is proposed within

1,000 feet of habitat of a species designated as important by Washington State, the Olympia CAO requires the preparation of a formal ''Important Habitats and Species Management Plan,'' unless waived by the WDFW (OMC 18.32.320).

The City of Lacey—The City of Lacey CAO includes in its definition of critical area any area identified as habitat for a Federal or State endangered, threatened, or sensitive species or State-listed priority habitat and calls these ''habitat conservation areas'' (HCAs) (Lacey Municipal Code (LMC) 14.33.060). These areas are defined through individual contract with qualified professional biologists on a site-by-site basis as development is proposed. The code further states that ''No development shall be allowed within a habitat conservation area or buffer [for a habitat conservation area] with which state or federally endangered, threatened, or sensitive species have a primary association'' (LMC 14.33.117).

The City of Tumwater—The City of Tumwater CAO outlines protections for ''habitat critical areas'' and for ''habitats and species of local importance.'' Tumwater's habitat critical areas are established on a case-by-case basis by a ''qualified professional'' as development is proposed, and the habitat critical areas are required to be consistent with the ''recommendations issued by the Washington State Department of Fish and Wildlife'' (Tumwater Municipal Code (TMC) 16.32.60). Species of local importance are defined as locally significant species that are not State-listed as endangered, threatened, or sensitive, but live in Tumwater and are of special importance to the citizens of Tumwater for cultural or historical reasons, or if the city is a critically significant portion of its range (TMC 16.32.055 A). Tumwater is considered a ''critically significant portion of a species' range if the species' population would be divided into nonviable populations if it is eliminated from Tumwater'' (TMC 16.32.055 A2). Species of local importance are further defined as State monitor or candidate species where Tumwater is a significant portion of its range such that a significant reduction or elimination of the species from Tumwater would result in changing the status of the species to that of State endangered, threatened, or sensitive (TMC 16.32.055 A3).

The City of Yelm—The municipal code of Yelm states that it will, ''regulate all uses, activities, and developments within, adjacent to, or likely to affect one or more critical areas, consistent with the best available science'' (Yelm Municipal Code/(YMC) 14.08.010 E4f) and mandates that ''all actions and developments shall be designed and constructed to avoid, minimize, and restore all adverse impacts.'' Further, it states that ''no activity or use shall be allowed that results in a net loss of the functions or values of critical areas'' (YMC 14.08.010 G) and ''no development shall be allowed within a habitat conservation area or buffer which state or federally endangered, threatened, or sensitive species have a primary association, except that which is provided for by a management plan established by WDFW or applicable state or federal agency'' (YMC 14.080.140 D1a). The City of Yelm municipal code states that by ''limiting development and alteration of critical areas'' it will ''maintain healthy, functioning ecosystems through the protection of unique, fragile, and valuable elements of the environment, and . . . conserve the biodiversity of plant and animal species'' (17.08.010 A4b) .

The City of Tenino—The City of Tenino municipal code gives development regulations for critical areas and natural resource lands that include fish and wildlife habitat areas (Tenino Municipal Code (TMC) 18D.10.030 A) and further ''protects unique, fragile, and valuable elements of the environment, including critical fish and wildlife habitat'' (TMC 18D.10.030 D). The City of Tenino references the DNR critical areas fish and wildlife habitat areas, stream typing map and the WDFW PHS program and PHS maps as sources to identify fish and wildlife habitat (TMC 18D.10.140 E1, 2). The City also defines critical fish and wildlife species habitat areas as those areas known to support or have, ''a primary association with State or Federally listed endangered, threatened, or sensitive species of fish or wildlife (specified in 50 CFR 17.11, 50 CFR 17.12, WAC 232–12–011) and which, if altered, may reduce the likelihood that the species will survive and reproduce over the long term'' (TMC 18D.40.020A, B).

The City of Shelton—The CAO for the city of Shelton (Mason County) specifies compliance with the PHS through designation of habitat conservation areas (HCAs) (Shelton Municipal Code (SMC) 21.64.300 B1), indicating that where HCAs are designated, development will be curtailed (SMC 21.64.010 B), except at the discretion of the director (city), who may allow single-family development at such sites without a critical areas assessment report if development is not believed to directly disturb the components of the HCA (SMC 21.64.360 B).

Summary of Local Laws and Regulations

Each city's CAO has been crafted to preserve the maximum amount of biodiversity while at the same time encouraging high-density development within their respective urban growth areas. Each city requires that potential fish and wildlife habitat be surveyed by qualified professional habitat biologists as development is proposed. A habitat conservation area (HCA) is determined according to the WDFW priority habitat and species list. If an HCA is identified at a site, the development of the parcel is then subject to the CAO regulations. Mitigation required by each city's CAO prioritizes reconsideration of the proposed development action in order to avoid the impact to the HCA.

For the Taylor's checkerspot butterfly and streaked horned lark, only known or historical locations are considered prior to applying the CAOs. There are currently no WDFW priority habitat and species recommendations for these species, and no surveys are completed for these species in suitable habitats that may be affected by development or site disturbance.

Connectivity of populations, abundance of resources (prey species or food plants), and undisturbed habitat are three primary factors affecting plant and animal populations. The piecemeal pattern that development unavoidably exhibits is difficult to reconcile with the needs of the Taylor's checkerspot butterfly and streaked horned lark within a given urban growth area. Further, previously common species may become uncommon due to disruption by development, and the fragmentary protection of small pockets of habitat is unlikely to prevent extirpation of some species without intensive species management, which is beyond the scope of these individual CAOs. The Taylor's checkerspot butterfly and streaked horned lark have been affected by habitat loss through development and conversion. Protective measures undertaken during development of lands may provide benefits for these species; however, based on our review of the Washington County, State, and city regulatory mechanisms, we conclude that these measures are currently inadequate to protect the Taylor's checkerspot butterfly and streaked horned lark from further population declines associated with habitat loss, inappropriate management, and loss of connectivity. Because neither the Taylor's checkerspot nor the streaked horned lark has a widespread distribution, we are unable to invoke the WDFW priority

habitat and species recommendations as land is developed and habitat lost in areas not currently occupied by either subspecies, and therefore we conclude these regulatory mechanisms are inadequate for the purpose of conserving these subspecies.

In Oregon, the Land Conservation and Development Commission in 1974 adopted ''Goal 5,'' a broad Statewide planning goal that covers more than a dozen resources, including wildlife habitats and natural areas. Goal 5 and related Oregon administrative rules (Chapter 660, Divisions 16 and 23) describe how cities and counties are to plan and zone land to conserve resources listed in the goal.

Goal 5 and its rules establish a five-step planning process for Oregon's cities and counties: (1) Inventory local occurrences of resources listed in Goal 5 and decide which ones are important; (2) identify potential land uses on or near each resource site and any conflicts that might result; (3) analyze economic, social, environmental, and energy consequences of such conflicts; (4) decide whether the resource should be fully or partially protected, and justify the decision; and (5) adopt measures such as zoning to put that policy into effect. This five-step Goal 5 process was established by rules adopted in 1982, and revised in 1996. The revisions tailored the process to the individual resources covered by Goal 5.

Local governments identify conflicting uses that exist, or could occur, with regard to significant Goal 5 resource sites. A local government may determine that one or more significant Goal 5 resource sites are conflicting uses with another significant resource site. Local governments analyze the consequences that could result from decisions to allow, limit, or prohibit a conflicting use. The local government determines the level of protection for each significant site. Local governments determine whether to allow, limit, or prohibit identified conflicting uses for significant resource sites. A local government may decide that the conflicting use should be allowed fully, notwithstanding the possible impacts on the resource site.

In summary, Goal 5 is a required planning process that allows local governments to make decisions about land use regulations and whether to protect the individual resources based upon potential conflicts involving economic, social, environmental, and energy consequences. It does not require minimum levels of protections for natural resources, but does require weighing the various impacts to resources from land use. Based on our review of Oregon State regulatory mechanisms, we conclude that they are inadequate to protect the Taylor's checkerspot butterfly or streaked horned lark from further population declines associated with habitat loss or inappropriate management, because the program recommends, but does not require, that local governments make planning decisions that result in protection of sensitive resources.

Summary of Factor D

In summary, the existing regulatory mechanisms described above are not sufficient to significantly reduce or remove the existing threats to the Taylor's checkerspot butterfly and streaked horned lark. The Canadian recovery strategy is a positive forward step for streaked horned lark, although, as the species is thought to be extirpated from Canada, it is unlikely to result in a change in the streaked horned lark's downward trend across its range. Lack of essential habitat protection under State laws leaves these species at continued risk of habitat loss and degradation in Washington and Oregon. National Wildlife Refuges provide important protections for streaked horned lark habitat in Washington and Oregon.

On JBLM, regulations and recently developed ''training range standard operating procedures'' applying to the Taylor's checkerspot butterfly and streaked horned lark are covered by the current INRMP and ESMP. We find that the military training, as it currently occurs, causes direct mortality of individuals and impacts habitat for the Taylor's checkerspot butterfly and streaked horned lark in all areas where training and the subspecies overlap. We must therefore conclude that military training, despite the policies and regulations in place on JBLM, will continue to result in mortality events and loss and destruction of occupied Taylor's checkerspot butterfly habitat patches; thus our conclusion is that existing regulatory mechanisms are inadequate on JBLM lands.

The Washington CAOs and Oregon's planning process Goal 5 generally provide conservation measures to minimize habitat removal and direct effects to the the Taylor's checkerspot butterfly and streaked horned lark. However, habitat removal and degradation, direct loss of individuals, increased fragmentation, decreased connectivity, and the lack of consistent regulatory mechanisms to address the threats associated with these effects are not prohibited under these State processes, and adverse effects to these species continue to occur.

Based upon our review of the best commercial and scientific data available, we conclude that the existing regulatory mechanisms are inadequate to reduce the threats to the Taylor's checkerspot butterfly and streaked horned lark now or in the future.

Factor E. Other Natural or Manmade Factors Affecting Its Continued Existence

Low Genetic Diversity, Small or Isolated Populations, and Low Reproductive Success

Most species' populations fluctuate naturally, responding to various factors such as weather events, disease, and predation. Purvis (2000, p. 3), however, suggested that these factors have less impact on a species with a wide and continuous distribution. Populations that are small, fragmented, or isolated by habitat loss or modification of naturally patchy habitat, and other human-related factors, are more vulnerable to extirpation by natural, randomly occurring events, to cumulative effects, and to genetic effects that plague small populations, collectively known as small population effects. These effects can include genetic drift (loss of recessive alleles), founder effects (over time, an increasing percentage of the population inheriting a narrow range of traits), and genetic bottlenecks leading to increasingly lower genetic diversity, with consequent negative effects on evolutionary potential.

Taylor's Checkerspot Butterfly—Although the genetic diversity and population structure of the Taylor's checkerspot butterfly is unknown, a loss of genetic diversity may have occurred as a result of geographic isolation and fragmentation of habitat patches across the distribution of the existing populations. Dispersal of individuals directly affects the genetic composition of populations and possibly the abundance of individuals in a population (Hellmann *et al.* 2004, p. 59). For other subspecies of Edith's checkerspot and their closely related European relative *Melitaea,* small populations led to a high rate of inbreeding (Boggs and Nieminen 2004, p. 98). The Service is currently partnering with WDFW to explore questions of genetic relatedness in the subpopulations of Taylor's checkerspot butterflies. Due to its small population size and fragmented distribution, we conclude that these negative factors associated with small population size, as well as the potential historical loss of genetic diversity, may contribute to further population declines for the

Taylor's checkerspot butterfly. Therefore, we consider small population size and the potential loss of genetic diversity to be a threat to the Taylor's checkerspot butterfly.

Streaked Horned Lark—Genetic analysis has shown that streaked horned larks have suffered a loss of genetic diversity due to a population bottleneck (Drovetski *et al.* 2005, p. 881), the effect of which may be exacerbated by continued small total population size. In general, decreased genetic diversity has been linked to increased chances of inbreeding depression, reduced disease resistance, and reduced adaptability to environmental change, leading to reduced reproductive success (Keller and Waller 2002, p. 235).

Recent studies in Washington have found that streaked horned larks have lower fecundity and nest success than other northwestern horned lark subspecies (Camfield *et al.* 2010, p. 277). In a study on the south Puget Sound, all measures of reproductive success were lower for streaked horned larks than for other ground-nesting birds at the same prairie sites (Anderson 2010, p. 15). Streaked horned lark's egg hatching rate at these sites is extremely low (i.e., 44 percent at 13th Division Prairie) (Anderson 2010, p. 18). Comparisons with savannah sparrows (*Passerculus sandwichensis*), a bird with similar habitat requirements that nests on the same prairies, found that streaked horned lark fecundity was 70 percent lower (Anderson 2010, p. 18). If streaked horned lark's very low reproductive success was caused by poor habitat quality, other ground-nesting birds at the study sites would be expected to show similarly low nest success rates; that other bird species have much higher nest success in the same habitat suggests that inbreeding depression may be playing a role in the decline of streaked horned larks in the south Puget Sound (Anderson 2010, p. 27). Other factors consistent with hypothesized inbreeding depression in the south Puget Sound population include two cases of observed mother-son pairings (Pearson and Stinson 2011, p. 1), and no observations of immigration from other sites into the Puget lowland breeding sites (Pearson *et al.* 2008, p. 15).

Estimates of population growth rate (λ) that include vital rates from all of the nesting areas in Washington (south Puget Sound, Washington Coast, and one lower Columbia River island) indicate that streaked horned larks in Washington are declining by 40 percent per year, apparently due to a combination of low survival and fecundity rates (Pearson *et al.* 2008, pp. 10, 13; Camfield *et al.* 2011, p. 7). Territory mapping at 4 sites on the south Puget Sound found that the total number of breeding streaked horned lark territories decreased from 77 territories in 2004 to 42 territories in 2007—a decline of over 45 percent in 3 years (Camfield *et al.* 2011, p. 8). The combination of low genetic variability, small and rapidly declining nesting populations, high breeding site fidelity, and no observed migration into the Puget lowlands populations suggests that the south Puget Sound population could become extirpated in the near future (Pearson *et al.* 2008, pp. 1, 14, 15).

In 2011, a project was initiated to increase genetic diversity in the south Puget Sound streaked horned lark population. Twelve eggs (four three-egg clutches) were collected from streaked horned lark nests in the southern Willamette Valley and were placed in nests at the 13th Division Prairie site at JBLM (Wolf 2011, p. 9). At least five young successfully fledged at the receiving site; if even one of these birds returns and successfully breeds in future years, it will likely increase genetic diversity in the receiving population, resulting in improved fitness and reduced extinction risk for the south Puget Sound larks (Wolf 2011, p. 9). In 2012, one fledgling that originated from an Oregon translocated clutch in 2011 survived its first winter, and returned to 13th Division Prairie; it did not breed successfully, but the return indicates that the project is likely to meet its objective to increase the genetic diversity of the streaked horned larks that breed in the south Puget Sound (Wolf 2012, p. 9). Based on our consideration of these factors, we conclude that the loss of genetic diversity, the current number of small and isolated populations (particularly in Washington State), and the subspecies' low reproductive success are likely to combine to result in continued population declines for the streaked horned lark, and thus pose a threat to the subspecies.

Climate Change

Our analyses under the Act include consideration of ongoing and projected changes in climate. The terms ''climate'' and ''climate change'' are defined by the Intergovernmental Panel on Climate Change (IPCC). The term ''climate'' refers to the mean and variability of different types of weather conditions over time, with 30 years being a typical period for such measurements, although shorter or longer periods also may be used (IPCC 2007a, p. 78). The term ''climate change'' thus refers to a change in the mean or variability of one or more measures of climate (e.g., temperature or precipitation) that persists for an extended period, typically decades or longer, whether the change is due to natural variability, human activity, or both (IPCC 2007a, p. 78).

Scientific measurements spanning several decades demonstrate that changes in climate are occurring, and that the rate of change has been faster since the 1950s. Examples include warming of the global climate system, and substantial increases in precipitation in some regions of the world and decreases in other regions. (For these and other examples, see IPCC 2007a, p. 30; and IPCC 2007d, pp. 35–54, 82–85). Results of scientific analyses presented by the IPCC show that most of the observed increase in global average temperature since the mid-20th century cannot be explained by natural variability in climate, and is ''very likely'' (defined by the IPCC as 90 percent or higher probability) due to the observed increase in greenhouse gas (GHG) concentrations in the atmosphere as a result of human activities, particularly carbon dioxide emissions from use of fossil fuels (IPCC 2007a, pp. 5–6 and figures SPM.3 and SPM.4; IPCC 2007d, pp. 21–35). Further confirmation of the role of GHGs comes from analyses by Huber and Knutti (2011, p. 4), who concluded it is extremely likely that approximately 75 percent of global warming since 1950 has been caused by human activities.

Scientists use a variety of climate models, which include consideration of natural processes and variability, as well as various scenarios of potential levels and timing of GHG emissions, to evaluate the causes of changes already observed and to project future changes in temperature and other climate conditions (e.g., IPCC 2007c, entire; Ganguly *et al.* 2009, pp. 11555, 15558; Prinn *et al.* 2011, pp. 527, 529). All combinations of models and emissions scenarios yield very similar projections of increases in the most common measure of climate change, average global surface temperature (commonly known as global warming), until about 2030. Although projections of the extent and rate of warming differ after about 2030, the overall trajectory of all the projections is one of increased global warming through the end of this century, even for the projections based on scenarios that assume that GHG emissions will stabilize or decline. Thus, there is strong scientific support for projections that warming will continue through the 21st century, and that the scope and rate of change will be influenced substantially by the extent of

GHG emissions (IPCC 2007a, pp. 44–45; IPCC 2007c, pp. 760–764 and 797–811; Ganguly *et al.* 2009, pp. 15555–15558; Prinn *et al.* 2011, pp. 527, 529). (See IPCC 2007b, p. 8, for a summary of other global projections of climate-related changes, such as frequency of heat waves and changes in precipitation. Also see IPCC 2011(entire) for a summary of observations and projections of extreme climate events.)

Various changes in climate may have direct or indirect effects on species. These effects may be positive, neutral, or negative, and they may change over time, depending on the species and other relevant considerations, such as interactions of climate with other variables (e.g., habitat fragmentation) (IPCC 2007e, pp. 214–246). Identifying likely effects often involves aspects of climate change vulnerability analysis. Vulnerability refers to the degree to which a species (or system) is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the type, scope, and rate of climate change and variation to which a species is exposed, its sensitivity, and its adaptive capacity (IPCC 2007a, p. 89; see also Glick *et al.* 2011, pp. 19–22). There is no single method for conducting such analyses that applies to all situations (Glick *et al.* 2011, p. 3). We use our expert judgment and appropriate analytical approaches to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change.

As is the case with all stressors that we assess, even if we conclude that a species is currently affected or is likely to be affected in a negative way by one or more climate-related impacts, it does not necessarily follow that the species meets the definition of an ''endangered species'' or a ''threatened species'' under the Act. If a species is listed as endangered or threatened, knowledge regarding the vulnerability of the species to, and known or anticipated impacts from, climate-associated changes in environmental conditions can be used to help devise appropriate strategies for its recovery.

Global climate projections are informative, and, in some cases, the only or the best scientific information available for us to use. However, projected changes in climate and related impacts can vary substantially across and within different regions of the world (e.g., IPCC 2007a, pp. 8–12). Therefore, we use ''downscaled'' projections when they are available and have been developed through appropriate scientific procedures, because such projections provide higher resolution information that is more relevant to spatial scales used for analyses of a given species (see Glick *et al.* 2011, pp. 58–61, for a discussion of downscaling). With regard to our analysis for the Taylor's checkerspot butterfly and streaked horned lark, downscaled projections are available.

The ranges of the Taylor's checkerspot butterfly and streaked horned lark extend from the southern edge of the Georgia Basin, Canada, down through the Puget Sound trough in Washington State, and south to the Willamette Valley, Oregon. Downscaled climate change projections for this ecoregion predict consistently increasing annual mean temperatures from 2012 to 2095, using the IPCC's medium (A1B) emissions scenario (IPCC 2000, p. 245). Using the General Circulation Model (GCM) that most accurately predicts precipitation for the Pacific Northwest, the Third Generation Coupled Global Climate Model (CGCM3.1) under the medium emissions scenario (A1B), annual mean temperature is predicted to increase approximately 1.8 °Fahrenheit (F) (1 °Celsius (C)) by the year 2020, 3.6 °F (2 °C) by 2050, and 5.4 °F (3 °C) by 2090 (Climatewizardcustom 2012). This analysis was restricted to the ecoregion encompassing the overlapping range of the species of interest and is well supported by analyses focused only on the Pacific Northwest by Mote and Salathé in their 2010 publication, Future Climate in the Pacific Northwest (Mote and Salathé 2010, entire). Employing the same GCM and medium emissions scenario, downscaled model runs for precipitation in the ecoregion project a small (less than 5 percent) increase in mean annual precipitation over approximately the next 80 years. Most months are projected to show an increase in mean annual precipitation. May through August are projected to show a decrease in mean annual precipitation, which corresponds with the reproductive season for both species of interest in this final rule (Climatewizardcustom 2012).

The potential impacts of a changing global climate to the Taylor's checkerspot butterfly and streaked horned lark are presently unclear. Projections localized to the Georgia Basin—Puget Sound Trough—Willamette Valley Ecoregion suggest that temperatures are likely to increase approximately 5 °F (2.8 °C) at the north end of the region by the year 2080, based on an average of greenhouse gas emission scenarios B1, A1B, and A2 and all Global Circulation Models employed by Climatewizard (range = 2.6 °F to 7.6 °F; 1.4 °C to 4.2 °C). Similarly, the mid region projection predicts an increase an average of 4.5 °F (range = 2.1 °F to 7.1 °F) (average of 2.5 °C with a range of 1.2 °C to 3.9 °C) and the southern end to increase by 4.5 °F (range = 2.2 °F to 7.1 °F) (average of 2.5 °C with a range of 1.2 °C to 3.9 °C). Worldwide, the IPCC states it is very likely that extreme high temperatures, heat waves, and heavy precipitation events will increase in frequency (IPCC 2007c, p. 783).

Taylor's Checkerspot Butterfly—Because the Taylor's checkerspot butterfly occupies a relatively small area of specialized habitat, it may be vulnerable to climatic changes that could decrease suitable habitat or alter food plant seasonal growth patterns (phenology). However, while it appears reasonable to assume that the Taylor's checkerspot butterfly may be affected, as detailed below, we lack sufficient certainty to know specifically how climate change will affect the Taylor's checkerspot butterfly.

The relationship between climate change and survival for the *Euphydryas editha* complex is driven more by the indirect effects of the interaction between seasonal growth patterns of host plants and the life cycle of the checkerspot butterfly than by the direct effects of temperature and precipitation (Guppy and Fischer 2001, p. 11; Parmesan 2007, p. 1868; Singer and Parmesan 2010, p. 3170).

Predicting seasonal growth patterns of butterfly host plants is complicated, because these patterns are likely more sensitive to moisture than temperature (Cushman et al 1992, pp. 197–198; Bale *et al.* 2002, p. 11), which is predicted to be highly variable and uncertain in the Pacific Northwest (Mote and Salathé 2010, p. 31). Climate models for the Georgia Basin—Puget Sound Trough—Willamette Valley Ecoregion consistently predict a deviation from the historical monthly average precipitation, with the months of January through April projected to show an increase in precipitation across the region, while June through September are predicted to be much drier than the historical average (Climatewizard 2012).

During the active season of pre-diapause larvae (early spring), the Taylor's checkerspot butterfly feeds primarily on plants of the family Scrophulariaceae (snapdragon family, including species of *Castilleja* and *Triphysaria*) and Plantaginaceae (plantain family) (Stinson 2005, p. 88). Available information suggests that if climate change disrupts seasonal growth patterns of food plants, it is conceivable that an adult Taylor's checkerspot butterfly may be able to use alternative food plants that occur within its range

(Singer and Wee 2005, pp. 353–355; Singer *et al.* 1992, pp. 17–18). The larval stage of the Taylor's checkerspot butterfly is more limited in terms of potential host plant species. Nevertheless, we have no information indicating that any of these changes (e.g., in availability of food plants) is likely to occur in the near future.

It is likely that the overlap of seasonal growth patterns between these primary larval host plants and the Taylor's checkerspot butterfly will display some level of stochasticity due to climatic shifts in precipitation and increased frequency of extreme weather events. For the Edith's checkerspot (*Euphydryas editha*), Parmesan (2007, p. 1869) reported that a lifecycle mismatch can cause a shortening of the time window available for larval feeding, causing the death of those individuals unable to complete their larval development within the shortened period, citing a study by Singer (1972, p. 75). In that study, Singer documented routine mortality of greater than 98 percent in the field due to phenological mismatches between larval development and senescence of their annual host plant *Plantago erecta* (California plantain). When mismatches such as these form the 'starting point,' insects may be highly vulnerable to small changes in synchrony with their hosts (Parmesan 2007, p. 1869).

Predicting future population dynamics and distributions is complex for animals such as butterflies that have two very different physiological stages (larva and adult) (for example, see Bale *et al.* 2002, p. 5). Moreover, forecasting the responses of butterflies and other insects to elevated temperatures or variable precipitation is largely based on field and laboratory studies (Hellmann 2002, pp. 927–929). However, the relationship between these changing environmental conditions and the Taylor's checkerspot butterfly has not been explicitly studied, though the extirpation of populations in British Columbia is attributed to drought conditions and the encroachment of woody vegetation into formerly suitable habitat (Guppy 2012, *in litt.*). One of the two primary host plants for the Taylor's checkerspot butterfly is ubiquitous across the entire range of the subspecies and extends well beyond areas where Taylor's checkerspot butterfly populations persist. This suggests that there is potential for range shifting, if the Taylor's checkerspot butterfly had the capacity to disperse across the landscape.

Uncertainty about climate change impacts does not mean that impacts may or may not occur; it means that the risks of a given impact are difficult to quantify (Schneider and Kuntz-Duriseti 2002, p. 54; Congressional Budget Office 2005, entire; Halsnaes *et al.* 2007, p. 129). The interplay between host plant distribution, larval and adult butterfly dispersal, and female choice of where to lay eggs will ultimately determine the population response to climate change (Singer and Parmesan 2010, p. 3164). However, determining the long-term responses to climate change from even well-studied butterflies in the genus *Euphydryas* is difficult, given their ability to switch to alternative larval food plants in some instances (Singer and Thomas 1996, pp. S33–34; Hellmann 2002, p. 933; Singer *et al.* 1992, pp. 17–18). Attempts to analyze the interplay between climate and host plant growth patterns using predictive models or general State-wide assessments and to relate these to the Taylor's checkerspot butterfly are equally complicated (Murphy and Weiss 1992, p. 8). Despite the potential for future climate change in Western Washington, as discussed above, we have not identified, nor are we aware of any data on, an appropriate scale to evaluate habitat or population trends for the Taylor's checkerspot butterfly or to make predictions about future trends and whether the subspecies will be significantly impacted. Based on these considerations, at this time, we do not consider the effects of climate change to be a threat to the subspecies.

Streaked Horned Lark—Sea level on the Pacific Coast of Washington and Oregon is predicted to rise according to expected values generated by an ensemble mean of models of relative sea-level rise (Tebaldi 2012, p. 4). At Toke Point, Willapa Bay, Washington, near occupied nesting habitat for streaked horned lark, sea level is predicted to rise 3.9 in (9.9 cm) by 2030, and 9.8 in (0.25 cm) by 2050 (Tebaldi 2012, p. 4). Streaked horned larks are attracted to breeding sites where there are long sight lines and sparse vegetation, making sandy islands and shorelines ideal habitats for nesting. Sea-level rise is not currently projected to reach the height of streaked horned lark nesting habitat on the beaches. If these projections underestimate sea-level rise and nesting habitat is infringed upon by rising waters, streaked horned larks will likely respond by moving to up shore or to other breeding habitats.

The indirect effects of climate change are primarily associated with changes in habitat, such as succession from a sparsely vegetated condition to a shrubby or forested state, which would make habitat unsuitable for nesting. These negative impacts may be offset by other, potentially positive effects and continued management of occupied habitats. On the ocean beaches, an increase in the frequency of winter storm surges may improve upshore nesting habitat for larks by disturbing or killing encroaching vegetation. Many islands used for nesting in the Columbia River are likely to continue receiving dredge spoil deposits, perpetuating the conditions of early primary succession that streaked horned larks seek for nesting. Primary management on most of the currently occupied breeding sites on the mainland of Washington and Oregon is for agricultural, industrial, or military uses. Such management attracts streaked horned larks through the reduction of standing vegetation; thus conversion to unsuitable habitat due to shifts in climate is less likely in these areas. As a result, we have not identified nor are we aware of any data on an appropriate scale to evaluate habitat or populations trends for the streaked horned lark or to make predictions about future trends and whether the subspecies will be significantly impacted. Habitat changes to streaked horned lark habitat due to the effects of climate change may provide some benefit to the subspecies and as such is not currently considered a threat.

Stochastic Weather Events

Stochasticity of extreme weather events may impact the ability of endangered and threatened species to survive. Vulnerability to weather events can be described as being composed of three elements: exposure, sensitivity, and adaptive capacity.

The small, isolated nature of the remaining populations of the Taylor's checkerspot butterfly and streaked horned lark increases the subspecies' vulnerability to stochastic (random) natural events. When species are limited to small, isolated habitats, they are more likely to become extinct due to a local event that negatively affects the population. While a population's small, isolated nature does not represent an independent threat to the species, it does substantially increase the risk of extirpation from the effects of all other threats, including those addressed in this analysis, and those that could occur in the future from unknown sources.

Taylor's Checkerspot Butterfly—Environmental threats exacerbated by small population size and weather can be a factor in the Taylor's checkerspot butterfly's breeding success. Poor weather conditions, such as cool temperatures and rainy weather, reduce the number of days in the flight period for several early spring flying butterflies,

including the Taylor's checkerspot butterfly. A shorter flight season reduces the number of opportunities for oviposition (egg laying) for female butterflies, thus affecting the emergence of adult butterflies in the future. Peterson (2010, *in litt*) provided climate and butterfly abundance data that indicated cold winter temperature may affect the timing of butterfly emergence and the size of populations in years when winters are severe. Late emergence of adults may directly impact the mortality of larval stages if larvae are unable to complete their life cycle before their host plants senesce, or the larvae may return to diapause.

Butterflies, including the Taylor's checkerspot butterfly, may experience increased mortality or reduced fecundity if the timing of plant development does not match the timing of larval or adult butterfly development (Peterson 1997, p. 167), and large fluctuations in population sizes have been observed based on local weather patterns (Hellmann *et al.* 2004, p. 45). During 2010 and 2011, the emergence of Taylor's checkerspot butterfly adults was approximately 3 weeks later than ''normal'' due to wet and cool spring weather. In addition, it has been reported that both drought and deluge may interrupt the insect-plant interaction, resulting in decreased populations (Hellmann *et al.* 2004, p. 45). The effects of drought have been shown to deleteriously affect populations of Edith checkerspot butterflies in California (Hellmann *et al.* 2004, p. 45). Based on our review, we conclude that stochastic weather events are a potential threat to the Taylor's checkerspot butterfly due to the vulnerability of isolated, small populations.

Streaked Horned Lark—There are estimated to be fewer than 1,600 streaked horned larks rangewide (Altman 2011, p. 213). During the breeding season, small populations of larks are distributed across the range; in the winter, however, streaked horned larks concentrate mainly on the lower Columbia River sites and in the Willamette Valley. Such concentration exposes the wintering populations to potentially disastrous stochastic events, such as ice storms or flooding, that could kill individuals or destroy limited habitat; a severe weather event could wipe out a substantial percentage of the entire subspecies (Pearson and Altman 2005, p. 13). It is also possible that, as extreme weather events become more frequent, streaked horned larks may be less able to adapt to loss of nests given the relatively long period between nesting attempts. We have not documented the occurrence of these threats to date, but the small and declining population of streaked horned larks is certainly at risk of random environmental events that could have catastrophic consequences. Based on our review, we conclude that the effects of stochastic weather events are a potential threat to the streaked horned lark.

Aircraft Strikes and Activities at Civilian Airports

Taylor's Checkerspot Butterfly—The Taylor's checkerspot butterfly is not known to be impacted by aircraft strikes and aircraft activities at airports. Habitat management activities at these sites are covered under Factor A.

Streaked Horned Larks—Streaked horned larks are attracted to the flat, open habitats around airports throughout their range. Horned lark strikes are frequently reported at military and civilian airports throughout the country, but because of the bird's small size, few strikes result in significant damage to aircraft (Dolbeer *et al.* 2011, p. 48; Air Force Safety Center 2012, p. 2). A recent report, however, used mtDNA analysis to document that a streaked horned lark was struck by an F–15C military aircraft at Portland International Airport in October 2012, and caused damage to the aircraft's #1 engine (Dove *et al.* 2013, p. 2). Most of the specific information available for threats to streaked horned larks at airports comes from the monitoring program at the Department of Defense's JBLM on the south Puget Sound; similar threats to streaked horned larks may exist at other airports, but without focused monitoring, the threats to the birds have not been documented. Information provided from monitoring at McChord Field is used here as a surrogate for civilian airport information, where information on bird strikes may not have been fully reported. McChord Field has had seven confirmed streaked horned lark strikes from 2002 through 2010; the streaked horned larks were killed in the strikes, but the strikes resulted in only minimal cost or damage to the aircraft (Elliott 2011, pers. comm.). Aircraft strikes have been documented as a source of adult mortality for streaked horned larks at McChord Field. Surveys in 2010 at McChord Field detected up to 26 individuals at the site (Linders 2011a, p. 3); loss of even 1 adult (and possibly more, since some strikes may not be noticeable given the small mass of a horned lark) per year could remove up to 4 percent of the population each year. Recent modeling has shown that adult survival has the greatest influence on population growth rates for streaked horned larks (Pearson *et al.* 2008, p. 13; Camfield *et al.* 2011, p. 10), so consistent loss of adult streaked horned larks to aircraft strikes could negatively impact this population.

The annual Olympic Air Show takes place in June at the Olympia Regional Airport; the events at the air show include low-level aerobatic flying (Olympic Flight Museum 2012, p. 1). The events do not occur on lark habitat, but parking and staging for the event may occur on the streaked horned lark's breeding grounds (Tirhi 2012b, *in litt.*). As the air show occurs during the streaked horned lark's breeding season, the level of human activity at the site could cause nest abandonment, exposure of young to predators, or actual nest destruction.

The Corvallis Municipal Airport is the site of the largest known streaked horned lark population. The airport hosts training exercises for police departments on the airport grounds (Moore and Kotaich 2010, p. 25); intensive training sessions have destroyed nests, and the disturbance may also cause streaked horned larks to delay breeding activity (Moore and Kotaich 2010, p. 25).

Both military and civilian airports routinely implement a variety of approaches to minimize the presence of hazardous wildlife on or adjacent to airfields and to prevent wildlife strikes by aircraft. McChord Field uses falcons to scare geese and gulls off the airfield, and also uses two dogs for this purpose; the falcons and dogs are part of McChord Field's integrated bird/wildlife aircraft strike hazard program and are designed to minimize aircraft and crew exposure to potentially hazardous bird and wildlife strikes (Geil 2010, *in litt.*). The falcons and dogs cause streaked horned larks to become alert and fly (Pearson and Altman 2005, p. 12), which imposes an energetic cost to adults and could expose nests to predation. Portland International Airport uses a variety of hazing and habitat management tools to minimize wildlife hazards. Raptors and waterfowl pose the greatest danger to aircraft operations, but the airport's wildlife hazard management plan aims to reduce the potential for any bird strikes (Port of Portland 2009, pp. 5–6). Streaked horned larks are not known to nest near the runways at Portland International Airport, but foraging individuals from the nearby Southwest Quad could be harassed by the hazing program, which could impose resulting energetic costs.

Given the small size of streaked horned lark populations, we conclude that disturbance associated with

training and other activities at airports are threats to the subspecies that may have significant population impacts. Although aircraft strikes can remove individual birds from streaked horned lark populations at airports, there is currently only limited information on one airport (McChord Field) to suggest aircraft strikes may be a potential population level threat at some sites. However, the overall impact of the loss of individual birds from aircraft strikes to the status of populations on other (non-military) airports is believed to be low, as indicated by the continued presence of populations under the current habitat conditions maintained at these airports.

Pesticides and Herbicides

Taylor's Checkerspot Butterfly—In the south Puget Sound region, currently occupied Taylor's checkerspot butterfly sites are found in a matrix of rural agricultural lands and low-density development. In this context, herbicide and insecticide use may have direct effects on nontarget plants (butterfly larval and nectar hosts) and arthropods such as butterflies (Stark *et al.* 2012, p. 23).

The application of the pesticide *Bacillus thuringiensis* var. *kurstaki* (Btk) for control of the Asian gypsy moth (*Lymantria dispar*) likely contributed to the extirpation of three historical locales for Taylor's checkerspot butterflies in Pierce County, Washington, in 1992 (Vaughan and Black 2002, p. 13). Spraying of Btk is known to have adverse effects to nontarget lepidopteran species (butterflies and moths) (Severns 2002, p. 169). Severns (2002) sampled butterfly diversity, richness, and abundance (density) for 2 years following a Btk application at Schwarz Park in Lane County, Oregon. Diversity, richness, and density were found to be significantly reduced for 2 years following spraying of Btk (Severns 2002, p. 168). Species like Taylor's checkerspot butterflies, which have a single brood per year, are active in the spring and their larvae are active during the spray application period. Most lepidopterans are more susceptible to Btk than the target species (Asian gypsy moth) (Haas and Scriber 1998). For nontarget lepidoptera, the early instar stages of larvae are the most susceptible stage (Wagner and Miller 1995, p. 21).

The application of pesticides is usually restricted to a short period of the year. However, if the target species is active at the same time as larvae and adult Taylor's checkerspot butterflies, the effect could be significant. Spraying of Btk still occurs in Pierce County for gypsy moths during the time of year when Taylor's checkerspot larvae are active, and the threat of pesticide drift onto the prairies of Pierce County cannot be discounted. At this time, however, we have no evidence that Btk has been sprayed in any locations where Taylor's checkerspot butterflies are known to occur.

Organophosphate-based insecticides are used in a number of agricultural applications including black fly and mosquito control; spraying of vegetable, nut, and fruit crops; and treatment of seed, although they are now banned from residential use. One of these insecticides, Naled (Dibrom), has been determined to have broad impacts on a wide array of butterfly families (Bargar 2011, p. 888) and direct effects to the larvae and adults of a closely related species of a federally listed threatened butterfly, the Bay checkerspot (*Euphydryas editha bayensis*) (EPA 2010, p. 23), if exposed. The extent to which these insecticides are used in the Taylor's checkerspot butterfly's range is currently unknown, and current data were not available from the USDA.

In conclusion, we recognize that the use of pesticides would kill all life stages of the Taylor's checkerspot butterfly if pesticides were sprayed such that habitat occupied by the subspecies was impacted (for example, if pesticide were to drift from application in adjacent forested areas). As noted earlier, the application of pesticide was implicated in the extirpation of three historical locales for Taylor's checkerspot butterflies in Pierce County, Washington, in 1992 (Vaughan and Black 2002, p. 13). Although we are not aware of any present overlap of exposure to pesticide use and the distribution of the butterfly, based on the high degree of mortality that would result as a consequence of pesticide exposure and past suspected extirpations of entire populations of the subspecies as a likely result of pesticide use, we conclude that pesticide use is a potential threat to the Taylor's checkerspot butterfly.

Streaked Horned Lark—The streaked horned lark is not known to be impacted by pesticides or herbicides directly, but may be impacted by the equipment used to dispense them. These impacts are covered under Factor A.

Recreation

Taylor's Checkerspot Butterfly—Recreational foot traffic may be a threat to the Taylor's checkerspot butterfly, as trampling will crush larvae if they are present underfoot. The incidence of trampling is limited to the few locations where Taylor's checkerspot butterflies and recreation overlap. For example, foot traffic is relatively common at Scatter Creek Wildlife Area in Washington, where plants and butterfly habitat have been trampled by horses during specialized dog competitions in which dogs are followed by observers on horseback (Stinson 2005, p. 6), and by foot traffic using the trail system to access the meadows of Beazell Memorial Forest (Park) in Oregon. Recreation by JBLM personnel and local individuals occurs on and near the 13th Division Prairie. Trampling by humans and horses, as well as people walking dogs on the 13th Division Prairie, is likely to crush some larvae, as well as the larval and nectar prairie plant communities that are restored and managed for in this area.

Larvae have been crushed on Dan Kelly Ridge, on the north Olympic Peninsula by vehicles that access the site to maintain a cell tower on the ridge. Also, recreational off-road vehicle (ORV) traffic on Dan Kelly Ridge, and on Eden Valley, has damaged larval host plants. The ORV damage on Dan Kelly Ridge occurs despite efforts by WDNR to block access into the upper portions of the road system through gating of the main road. Based on our review, we conclude that ground-disturbing recreational activities are a threat to the Taylor's checkerspot butterfly and where the population is depressed may constitute a serious threat to the long-term conservation of the subspecies.

Streaked Horned Lark—There are documented occurrences of adverse effects to larks from recreation. Recreation at coastal sites is a common threat to rare species; activities such as dog walking, beachcombing, ORV use, and horseback riding in coastal habitats may indirectly increase predation, nest abandonment, and nest failure for streaked horned larks (Pearson and Hopey 2005, pp. 19, 26, 29). One nest (of 16 monitored) at Midway Beach on the Washington coast was crushed by a horse in 2004 (Pearson and Hopey 2005, pp. 18–19). Open sandy beaches (e.g., dredge spoil sites on the lower Columbia islands) make good camping areas for kayakers and boaters, and nests could be lost due to accidental crushing. During western snowy plover surveys conducted between 2006 and 2010 at coastal sites in Washington, human-caused nest failures were reported in 4 of the 5 years (Pearson *et al.* annual reports, 2007, p. 16; 2008, p. 17; 2009, p. 18; 2010, p. 16). Because streaked horned larks nest in the same areas as snowy plovers along the Washington Coast, it is highly likely that human-caused nest failures also occur due to recreational activities at these sites. Good communication between

researchers and landowners has resulted in some positive actions to reduce the adverse effects of recreation. In 2002, JBLM restricted recreational activity at the 13th Division Prairie to protect lark nesting; JBLM prohibited model airplane flying, dog walking, and vehicle traffic in the area used by streaked horned larks (Pearson and Hopey 2005, p. 29).

Although restrictions to recreational use were placed on the 13th Division Prairie by JBLM, it is a difficult area to patrol and enforce restrictions of this type. This area, adjacent to where streaked horned larks nest, is scheduled for a release of captive-bred and translocated Taylor's checkerspot butterfly larvae during March 2012. Based on our review, we conclude that activities associated with recreation are threats to the streaked horned lark.

Nest Parasitism

Taylor's Checkerspot Butterfly—The Taylor's checkerspot butterfly is not known to be impacted by nest parasitism.

Streaked Horned Lark—Nest parasitism by brown-headed cowbirds (*Molothrus ater*) is a potential, though little documented, threat to streaked horned larks. Cowbirds are common in grasslands and urban areas throughout North America; female cowbirds lay their eggs in the nests of other songbirds (Lowther 1993, p. 1). Upon hatching, young cowbirds compete for food with the young of the host species, and may result in lower reproductive success for the host pair (Lowther 1993, p. 11). In a study in Kansas, brown-headed cowbird parasitism of horned lark nests reduced the larks' nest success by half in those nests that were parasitized (from 1.4 young larks fledged per nest in non-parasitized nests to 0.7 young larks produced per nest with cowbird parasitism (Hill 1976, pp. 560–561)). Cowbirds are native to the open grasslands of central North America, but apparently only expanded into Oregon and Washington in the 1950s, as a result of human clearing of forested habitats (Lowther 1993, p. 2). Brown-headed cowbirds have been noted at all streaked horned lark study areas, and fledgling cowbirds have been observed begging for food from adult streaked horned larks on the Columbia River island sites (Pearson and Hopey 2005, p. 17). Extensive nest monitoring of streaked horned lark nests in the Willamette Valley has not identified cowbird brood parasitism as a threat in this area (Moore 2009, entire; Moore and Kotaich 2010, entire). Streaked horned larks have had just 50 years of exposure to brown-headed cowbirds, and as such, have not coevolved with this nest parasite. We, therefore, conclude that the effect of cowbird brood parasitism is not currently a threat; however, it may become a threat in the future if it further depresses nest success of the declining streaked horned lark population on the south Puget Sound.

Vehicle Mortality

Taylor's Checkerspot Butterfly—See discussion under Factor A, Development.

Streaked Horned Lark—There is some evidence that streaked horned larks are killed by cars on rural roads (Moore 2010b, p. 6). In the Willamette Valley, larks often breed on the margins of gravel roads, and, as they flush in response to passing cars, they may be killed. The magnitude of this threat is unknown, but we have no data to suggest that mortality from vehicle strikes is resulting in population-level impacts to the subspecies. We do not consider vehicle mortality to currently be a threat to the streaked horned lark.

Summary of Factor E

Based upon our review of the best commercial and scientific data available, the loss, degradation, and fragmentation of prairies has resulted in smaller population sizes, loss of genetic diversity, reduced gene flow among populations, destruction of population structure, and increased susceptibility to local population extirpation for the Taylor's checkerspot butterfly and the streaked horned lark from a series of threats including pesticide use, crushing and trampling from recreational activities, and aircraft strikes and collisions, as summarized for each subspecies below.

Taylor's Checkerspot Butterfly—The degradation of habitat from recreational trampling and crushing produced by humans, dogs, and horses has killed larvae at several sites occupied by Taylor's checkerspot butterflies. In addition, the use of the insecticide BtK is suspected to be responsible for the extirpation of three historical populations in Pierce County, Washington, in 1992 (Stinson 2005). We have also determined that the loss of genetic diversity through inbreeding depression due to habitat fragmentation and the isolation of the subspecies is likely an ongoing active threat. We consider the negative impacts from recreation and pesticide use to pose potential threat to the Taylor's checkerspot butterfly, particularly given its inherent vulnerability due to small population sizes and isolation of small populations.

Streaked Horned Lark—Genetic analysis has shown that streaked horned larks have suffered a loss of genetic diversity due to a bottleneck in population size (Drovetski *et al.* 2005, p. 881), the effect of which may be exacerbated by continued small total population size. The loss of genetic diversity in small populations has been linked to increased chances of inbreeding depression, reduced disease resistance, and reduced adaptability to environmental change, leading to reduced reproductive success. These effects may be apparent in the small breeding population in the south Puget Sound, which exhibits low reproductive success.

Habitat changes to streaked horned lark habitat from climate change may provide some benefit to the subspecies, and as such climate change is not currently considered a threat; however, stochastic weather events may pose a threat to wintering flocks in the Willamette Valley. Death of individual larks caused by aircraft strikes is a threat to the small populations at airports, as the loss of even a single breeding individual can have an adverse effect on the population. Recreation activities can cause the degradation of streaked horned lark habitat and direct mortality to nests and young.

We consider the impacts from the loss of genetic diversity, low reproductive success, stochastic weather events, aircraft strikes, and recreation to pose a threat to the streaked horned lark in combination with the other threat factors identified here, particularly given the inherent vulnerability of streaked horned lark due to small population sizes and isolation of small populations.

Determination

Section 4 of the Act (16 U.S.C. 1533), and its implementing regulations at 50 CFR part 424, set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, we may list a species based on: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination.

Taylor's Checkerspot Butterfly

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the Taylor's checkerspot butterfly. The Taylor's checkerspot butterfly has been lost from most locations in the Canadian portion of its range with just one known population remaining. In Washington, the subspecies was once known from seven Puget Sound counties, and is now known to occur naturally in just two counties, Clallam and Pierce. In Oregon, the range of the Taylor's checkerspot butterfly has been reduced to two small relict grasslands in the foothills of the coast range near Corvallis, in Benton County, Oregon. The distribution of the Taylor's checkerspot butterfly has been reduced from more than 80 populations to the 14 occupied locations with small populations that are known rangewide today. Some of the populations that have been extirpated have disappeared in the past decade, and many declined from robust population sizes of more than 5,000 individual butterflies to zero within a 3-year interval and have not returned. Most remaining populations of Taylor's checkerspot butterflies are very small; 5 of the 14 known populations are estimated to have fewer than 100 individuals. Only 1 population consistently has been estimated to have more than 1,000 individual butterflies, and this population has been severely impacted due to habitat degradation associated with military training.

We have carefully assessed the best scientific and commercial data available regarding the past, present, and future threats to the Taylor's checkerspot butterfly. We find that the threat of development and adverse impacts to habitat from conversion to other uses (agriculture); the loss of historically occupied locations resulting in the present isolation and limited distribution of the subspecies; the impacts of military training and recreation; existing and likely future habitat fragmentation, habitat disturbance, and land use changes associated with agriculture; long-term fire suppression; and the threats associated with the present and threatened destruction, modification, and curtailment of Taylor's checkerspot butterfly habitat are significant. These threats are currently ongoing and will continue into the foreseeable future for Taylor's checkerspot butterflies.

We find that disease may be a threat, but is not currently at a significant level to affect the Taylor's checkerspot butterfly. The threat of disease to the larval host plant of the subspecies may become substantial in the foreseeable future due to the prevalence of small population sizes for the Taylor's checkerspot butterfly. Predation is not a threat to Taylor's checkerspot butterflies at this time. We conclude that existing regulatory mechanisms do not address and reduce the threats to the Taylor's checkerspot butterfly. In contrast, the voluntary protections that have been exercised for private landowners in lieu of rulemaking under Washington State's forest practices regulations have provided protection to the subspecies on private lands adjacent to DNR lands on the north Olympic Peninsula, although this is a small proportion of existing occupied habitat for the subspecies.

The observed habitat fragmentation and the isolation of small populations of the Taylor's checkerspot butterfly suggest that the loss of genetic diversity through inbreeding depression may be a threat. All known locations where the Taylor's checkerspot butterfly is found in Oregon and Washington are sufficiently distant from each other such that exchange of genetic material from a dispersing individual moving from population to population would be unlikely. The threat of extreme weather events (drought and deluge, and overcast, cold springs) affect host plant phenology and adult butterfly emergence, which influences whether the larvae complete their annual life cycle, thus affecting the size of annual populations. The effects of weather events are particularly a threat when they affect one of the few small populations that remain. There is a potential threat of continuing pesticide application, which is suspected to be responsible for the extirpation of some populations of the Taylor's checkerspot butterfly in Pierce County. Recreational activities (off-road vehicles, trampling and crushing from hikers and horses) have been shown to be a threat at several of the sites occupied by Taylor's checkerspot butterflies.

In summary, the combination of several threats that have significant impacts on populations and the ongoing nature of these threats to the few remaining small populations of the Taylor's checkerspot butterfly leads us to conclude that the subspecies is currently in danger of extinction throughout its range. The threats to the survival of the Taylor's checkerspot butterfly occur throughout the subspecies' range and are not restricted to any particular significant portion of that range. Accordingly, our assessment and determination will apply to the subspecies throughout its entire range. The Act defines an endangered species as any species that is ''in danger of extinction throughout all or a significant portion of its range'' and a threatened species as any species ''that is likely to become endangered throughout all or a significant portion of its range within the foreseeable future.'' Because we find that the Taylor's checkerspot butterfly is presently in danger of extinction throughout its entire range, based on the immediacy, severity, and scope of the threats described above, and the fact that the range and population size of the species has already been drastically reduced, a determination of threatened species status for the Taylor's checkerspot butterfly is not appropriate. Therefore, on the basis of the best available scientific and commercial information, we determine that the Taylor's checkerspot butterfly meets the definition of an endangered species in accordance with sections 3(6) and 4(a)(1) of the Act.

Significant Portion of the Range

Having determined that the Taylor's checkerspot butterfly meets the definition of an endangered species throughout its entire range, we need not further evaluate any significant portion of the range for this subspecies.

Streaked Horned Lark

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the streaked horned lark. The subspecies has disappeared from all formerly documented locations in the northern portions of its range (British Columbia, the San Juan Islands, and the northern Puget trough), the Oregon coast, and the southern edge of its range (Rogue and Umpqua Valleys). The streaked horned lark's range may be continuing to contract, and the number of streaked horned larks in Washington and on the Columbia River islands is declining. This decline taken together with evidence of inbreeding depression on the south Puget Sound indicates that the streaked horned lark's range may contract further in the future.

We have carefully assessed the best scientific and commercial data available regarding the past, present, and future threats to streaked horned lark. We find that the threat of development and adverse impacts to habitat from conversion to other uses (residential or commercial development, agriculture), loss and degradation of habitat due to fire suppression and subsequent invasion of habitat by undesirable native and nonnative plants, dredge spoil deposition timing and placement on Columbia River islands, improperly

timed burning and mowing regimes, military training (use of explosive ordnance, aircraft downdraft, accidental fires, vehicle travel, dismounted training, bivouac activities, digging, Air Mobility Rodeo, Air Expo), and conversion of large grass seed production fields to incompatible agricultural commodities are significant and are expected to continue into the foreseeable future. Many military training impacts are expected to increase under the DOD's Grow the Army initiative, although we expect that JBLM's final ESMPs will provide an overall conservation benefit to the subspecies.

We find that there are likely to be significant, ongoing threats to the subspecies due to predation, which is the most frequently documented source of mortality for eggs and young, and the primary source of nest failure. This is especially a concern in the south Puget Sound area, although streaked horned larks in other areas are also susceptible. In addition, we conclude that significant, ongoing threats to the streaked horned lark may occur due to small population effects (for this subspecies, this includes loss of genetic diversity, low survival, and reduced fecundity and nest success). This is of particular concern in the south Puget Sound area, where such threats in combination with a lack of immigration into that area and high breeding site fidelity could lead to local population extirpations. Other significant, ongoing threats to the streaked horned lark include existing regulatory mechanisms, which are not adequate to address or reduce threats to streaked horned lark; other activities associated with airports (development and aircraft strikes); and recreation (including but not limited to pedestrians, model airplane flying, dog walking, beachcombing, vehicle or ORV use, camping, and horseback riding in areas occupied by streaked horned lark). These threats are expected to continue into the foreseeable future. Potential threats include stochastic weather events, nest parasitism by brown-headed cowbirds, and vehicle mortality, but magnitude and severity of these threats are unknown at this time.

Streaked horned larks face a combination of several high-magnitude threats; the threats are immediate, occur throughout the subspecies' range, and are not restricted to any particular significant portion of the range. Therefore, we assessed the status of streaked horned lark throughout its entire range, and our assessment and determination apply to the subspecies throughout its entire range. For the reasons provided in this rule, we are listing streaked horned lark as threatened throughout its range. The Act defines an endangered species as any species that is ''in danger of extinction throughout all or a significant portion of its range'' and a threatened species as any species ''that is likely to become endangered throughout all or a significant portion of its range within the foreseeable future.'' We find that streaked horned lark is likely to become an endangered species throughout all or a significant portion of its range within the foreseeable future, based on the immediacy, severity, and scope of the threats described above. We do not have information to suggest that the present threats are of such great magnitude that streaked horned lark is in immediate danger of extinction, but we conclude that it is likely to become so in the foreseeable future. Therefore, on the basis of the best available scientific and commercial information, we determine that streaked horned lark meets the definition of threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.

Distinct Vertebrate Population Segment

After finding that streaked horned lark is a threatened species throughout its range, we next consider whether there may be a distinct vertebrate population segment (DPS) that meets the definition of endangered, in accordance with the Service's Policy Regarding the Recognition of Distinct Vertebrate Population Segments under the Endangered Species Act (61 FR 4722; February 7, 1996). The policy identifies three elements that are to be considered regarding the status of a possible DPS. These elements include:

(1) The discreteness of the population segment in relation to the remainder of the species to which it belongs;

(2) The significance of the population segment to the species to which it belongs; and

(3) The population segment's conservation status in relation to the Act's standards for listing (i.e., does the population segment, when treated as if it were a species, meet the Act's definition of endangered or threatened?) (61 FR 4722; February 7, 1996).

The first two elements are used to determine if a population segment constitutes a valid DPS. If it does, then the third element is used to consider whether such DPS warrants listing. In this section, we will consider the first two criteria (discreteness and significance) to determine if any unit of the streaked horned lark's overall population is a valid DPS (i.e., a valid listable entity). Our policy further recognizes that it may be appropriate to assign different classifications (i.e., endangered or threatened) to different DPSs of the same vertebrate taxon (61FR 4722; February 7, 1996).

Discreteness

Under the DPS policy, a population segment of a vertebrate species may be considered discrete if it satisfies either one of the following two conditions:

(1) It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity (separation based on genetic or morphological characters) may provide evidence of this separation;

(2) It is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the Act.

In our evaluation of discreteness under the DPS policy, we primarily considered the information indicating the separation of streaked horned larks during the breeding season into three regions (the south Puget Sound, Washington Coast and Columbia River, and the Willamette Valley). Observation of banded streaked horned larks has shown that the birds show strong site philopatry in the breeding season (i.e., individuals tend to return to the same location to breed each year) (Pearson *et al.* 2008, p. 12), but birds from all regions mix in the winter (Pearson *et al.* 2005, pp. 2–6). In the winter most of streaked horned larks that breed in the south Puget Sound migrate south to the Willamette Valley or west to the Washington coast; streaked horned larks that breed on the Washington coast either remain on the coast or migrate south to the Willamette Valley; birds that breed on the lower Columbia River islands remain on the islands or migrate to the Washington coast; and birds that breed in the Willamette Valley remain there over the winter (Pearson *et al.* 2005b; pp. 5–6). Streaked horned larks spend the winter in large mixed subspecies flocks of horned larks in the Willamette Valley, and in smaller flocks along the lower Columbia River and Washington Coast (Pearson *et al.* 2005b, p. 7; Pearson and Altman 2005, p. 7).

Possible evidence of inbreeding depression (Anderson 2010, p. 27; Pearson and Stinson 2011, p. 1) may suggest that there is a discrete population of streaked horned larks that breed in Washington. Estimates of population growth rate with data from nesting areas in Washington (south

Puget Sound, Washington Coast, and one lower Columbia River island) indicate that the number of streaked horned larks in Washington is declining each year, apparently due to a combination of low survival and fecundity rates (Pearson *et al.* 2008, pp. 10, 13; Camfield *et al.* 2011, p. 7); this trend is not apparent in Oregon (Myers and Kreager 2010, p. 11). The combination of low genetic variability, small and rapidly declining nesting populations, high breeding site fidelity, and no observed migration into the south Puget Sound suggests that streaked horned lark in the south Puget Sound could become extirpated in the near future (Pearson *et al.* 2008, pp. 1, 14, 15). Efforts to reduce this apparent isolation and concomitant genetic consequences have been implemented within the last year.

A project was initiated in 2011 to counteract the apparent decline in the south Puget Sound breeding birds. This genetic rescue effort is aimed at increasing genetic diversity in streaked horned larks breeding in Washington, which could result in increased nest success and an increase in the population. Twelve eggs (four three-egg clutches) were collected from streaked horned lark nests in the southern Willamette Valley and were placed in nests at the 13th Division Prairie site at Joint Base Lewis-McChord (Wolf 2011, p. 9). At least five young successfully fledged at the receiving site; if even one of these birds returns to breed in future years, it will likely increase genetic diversity in the receiving population, resulting in improved fitness and reduced extinction risk for the south Puget Sound streaked horned larks (Wolf 2011, p. 9). This genetic rescue project will likely be continued for the next several years.

With the evidence of extensive mixing that occurs in the winter, and the genetic rescue project to bolster genetic diversity in Washington, which has resulted in genetic mixing between Oregon and Washington populations, there does not appear to be marked separation among streaked horned larks from the three regions. In addition, the evidence of deleterious genetic consequences to the birds breeding in Washington suggests that any possible isolation of this population is not the result of adaptation or natural differentiation of this population, but rather is symptomatic of drastic population declines and loss of connectivity between potentially interbreeding subpopulations. Because we find the potential ''regional populations'' are not markedly separate, we do not consider them to be discrete under the DPS policy.

Evaluation of Discreteness

Our analysis of the apparent level of isolation and evidence of inbreeding depression does not lead to a finding that any subunit of streaked horned larks that nest in Washington, in the south Puget Sound, on the Washington coast, or on the Columbia River islands are discrete; therefore these populations cannot be considered to be a potential DPS. This does not mean that the three breeding regions of streaked horned lark are unimportant and do not have significant conservation value. It simply means that, per our policy, the best available data at this time do not support a marked separation between the breeding streaked horned larks in the three regions, based on information available to us, such that this population would meet the discreteness criterion of our DPS policy.

Significance

Under our DPS Policy, a population must be discrete *and* significant to qualify as a DPS. Since we have determined that no populations of streaked horned larks are discrete, we will not consider whether that population segment is significant.

Conclusion of DPS Analysis for Streaked Horned Lark

On the basis of the best available information, we have determined that there are no discrete populations of the streaked horned lark. As no population segments met the discreteness element, and, therefore, no populations qualify as a DPS under the Service's DPS policy, we will not proceed with an evaluation of the status of the population segment under the Act.

Significant Portion of the Range

In determining whether a species is endangered or threatened in a significant portion of its range, we first identify any portions of the range of the species that warrant further consideration. The range of a species can theoretically be divided into portions an infinite number of ways. However, there is no purpose to analyzing portions of the range that are not reasonably likely to be both (1) significant and (2) endangered or threatened. To identify only those portions that warrant further consideration, we determine whether there is substantial information indicating that: (1) The portions may be significant, and (2) the species may be in danger of extinction there or likely to become so within the foreseeable future. In practice, a key part of this analysis is whether the threats are geographically concentrated in some way. If the threats to the species are essentially uniform throughout its range, no portion is likely to warrant further consideration. Moreover, if any concentration of threats applies only to portions of the species' range that are not significant, such portions will not warrant further consideration.

If we identify portions that warrant further consideration, we then determine whether the species is endangered or threatened in these portions of its range. Depending on the biology of the species, its range, and the threats it faces, the Service may address either the significance question or the status question first. Thus, if the Service considers significance first and determines that a portion of the range is not significant, the Service need not determine whether the species is endangered or threatened there. Likewise, if the Service considers status first and determines that the species is not endangered or threatened in a portion of its range, the Service need not determine if that portion is significant. However, if the Service determines that both a portion of the range of a species is significant and the species is endangered or threatened there, the Service will specify that portion of the range as endangered or threatened under section 4(c)(1) of the Act.

As described above, we have determined that streaked horned lark is likely to become endangered within the foreseeable future throughout all of its range; therefore the subspecies meets the definition of a threatened species under the Act. In the course of this rangewide determination, we considered whether some portion of the full range of the subspecies may face threats or potential threats acting individually or collectively on streaked horned lark to such degree that the subspecies as a whole should be considered endangered. We detail our consideration of that question here.

Although the threats to streaked horned larks in Washington and Oregon are apparently similar in nature (including loss of habitat to development, poor habitat quality due to lack of adequate management to maintain low-stature vegetation, predation, and human disturbance during the breeding season), for reasons unknown, the population trend for streaked horned larks in Washington appears to be markedly different than the trend for the subspecies in Oregon.

Streaked horned larks in Washington occur on the south Puget Sound, on the Washington coast, and on islands and

dredge disposal sites in the lower Columbia River (including two sites in Portland, Oregon). The total estimated population of streaked horned larks in these areas is 270–310 birds (Altman 2011, p. 213). Demographic modeling using data from these sites uniformly shows precipitous population declines. Pearson *et al.* (2008, pp. 3, 12) examined population vital rates (reproductive rates, juvenile survival, and adult survival) at seven sites (four in the south Puget Sound, two on the Washington Coast, and one Columbia River island) over 4 years (2002–2005) and concluded that the Washington population is declining by 40 percent per year. Schapaugh (2009, pp. 9, 15, 18) used both deterministic and stochastic models to analyze the data collected by Pearson *et al.* (2008, p. 3), and projected that, in all cases, streaked horned larks in Washington would likely become extirpated within 25 years.

Camfield *et al.* (2011, p. 4) analyzed the data from the same three local populations considered by Pearson *et al.* (2008) and Schapaugh (2009), described above (the data were collected from about 137 nests over 4 years (2002–2005)). Camfield *et al.* (2011, p. 8) concluded that these populations have reached a point where they are declining towards extinction, and are not sustainable without immigration. The declining trend is probably most pronounced in the south Puget Sound population, where studies have identified apparent inbreeding depression, which is likely a result of the small population size, high site fidelity, and complete absence of breeding season immigration (i.e., no observed immigration of breeding birds from any other sites) (Pearson *et al.* 2008, pp. 14–15).

The population of streaked horned larks in the Willamette Valley of Oregon appears to be more stable. The population in the Willamette Valley is estimated at 900–1,300 birds (Altman 2011, p. 213); no population modeling has been done using data from Oregon, but the apparent trend of the subspecies in the Willamette Valley is stable, based on the Oregon Department of Fish and Wildlife's 1996 and 2008 surveys for streaked horned larks at sites throughout the Willamette Valley (Myers and Kreager 2010, p. 11). Population monitoring at various sites in the Willamette Valley show that several large populations are fairly stable or increasing. Surveys conducted at Baskett Slough NWR from 2006 to 2009 showed a population increase from 18 pairs in 2006, to 35 pairs in 2009 (Moore 2008, p. 8; Moore 2012, *in litt.*). Surveys at William L. Finley NWR found the population increasing from 15 pairs in 2006, to 40 pairs in 2010 (Moore 2008, p. 9; Moore 2012, *in litt.*). Streaked horned lark population at Corvallis Municipal Airport, the site of the largest known population of the subspecies, measured 75 pairs in 2006, 102 pairs in 2007, 80 pairs in 2008, and 85 pairs in 2011 (Moore 2008, p. 16; Moore 2012, *in litt.*).

Although streaked horned larks in the Willamette Valley face many of the same threats as populations in Washington, the data suggest that streaked horned larks in the Willamette Valley are declining at a slower place and have abundant potential habitat on the agricultural lands in the valley. The best available information does not suggest that they are likely to experience significant declines in the foreseeable future, to the degree that this population would be considered in danger of extinction at the present time. The threats in the Willamette Valley are relatively small population size, and likely loss of habitat to future development and incompatible management practices, which leads us to conclude that the subspecies is threatened in the Willamette Valley.

The best available data therefore suggest that, under current conditions, streaked horned larks in Washington (south Puget Sound, Washington coast, Columbia River islands) will likely continue to decline towards extinction within this century. Having already determined that streaked horned lark is threatened throughout its range, we considered whether threats may be so concentrated in some portion of its range that, if that portion were lost, the entire subspecies would be in danger of extinction. In applying this test, we determined that even with the potential loss of the Washington populations, the relatively larger, population in the Willamette Valley of Oregon would likely persist; therefore the subspecies as a whole is not presently in danger of extinction, and therefore does not meet the definition of an endangered species under the Act.

Continued decline of the Washington populations considered in conjunction with the larger populations in the Willamette Valley leads us to the conclusion that, on balance, the subspecies is appropriately defined as a threatened species throughout its range under the Act.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness and conservation by Federal, State, Tribal, and local agencies; private organizations; and individuals. The Act encourages cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Subsection 4(f) of the Act requires the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning includes the development of a recovery outline shortly after a species is listed and preparation of a draft and final recovery plan. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan identifies site-specific management actions that set a trigger for review of the five factors that control whether a species remains endangered or may be downlisted or delisted, and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (comprised of species experts, Federal and State agencies, nongovernment organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our Web site (*http://www.fws.gov/endangered*), or from our Washington Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a

broad range of partners, including other Federal agencies, States, Tribal, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g., restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

Upon listing, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the States of Washington and Oregon will be eligible for Federal funds to implement management actions that promote the protection or recovery of the Taylor's checkerspot butterfly and streaked horned lark. Information on our grant programs that are available to aid species recovery can be found at: *http://www.fws.gov/grants.*

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph include actions to manage or restore critical habitat, actions that require collecting or handling the species for the purpose of captive propagation and translocation to new habitat, actions that may negatively affect the species through removal and conversion or degradation of habitat. Examples of activities authorized, funded, or carried out by Federal agencies that may affect listed species or their habitat include, but are not limited to:

(1) Military training activities and air operations conducted in or adjacent to occupied or suitable habitat on DOD lands;

(2) Activities with a Federal nexus that include vegetation management such as burning, mechanical treatment, and/or application of herbicides/pesticides on Federal, State, private, or Tribal lands;

(3) Ground-disturbing activities regulated, funded, or conducted by Federal agencies in or adjacent to occupied and/or suitable habitat; and

(4) Import, export, or trade of the species.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. The prohibitions of section 9(a)(2) of the Act, codified at 50 CFR 17.21 for endangered wildlife, in part, make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these), import, export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. Under the Lacey Act (18 U.S.C. 42–43; 16 U.S.C. 3371–3378), it is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered and threatened wildlife species under certain circumstances. Regulations governing permits are codified at 50 CFR 17.22 for endangered wildlife, and at 17.32 for threatened wildlife. With regard to endangered wildlife, a permit must be issued for the following purposes: for scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities.

It is our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that will or will not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a listing on proposed and ongoing activities within the range of the listed species. The following activities could potentially result in a violation of section 9 of the Act; this list is not comprehensive:

(1) Unauthorized collecting; sale or offer for sale in interstate or foreign commerce; and delivery, receipt, or transport in interstate or foreign commerce in the course of a commercial activity of the species.

(2) Introduction of nonnative species that compete with or prey upon the Taylor's checkerspot butterfly or the streaked horned lark, such as the introduction of competing, nonnative plants or animals to the States of Washington and Oregon;

(3) The unauthorized release of biological control agents that attack any life stage of these subspecies, for example, Btk release in the range of Taylor's checkerspot butterflies;

(4) Unauthorized modification of the soil profiles or the vegetation components on sites known to be occupied by Taylor's checkerspot butterflies and streaked horned larks; and

(5) Deposition of dredge materials on occupied streaked horned lark breeding habitats, intentional harassment of the subspecies at airports as part of a wildlife hazard reduction program, and mowing or burning of the subspecies' occupied habitats during the breeding season.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Washington Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**). Requests for copies of the regulations concerning listed animals and general inquiries regarding prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Ecological Services, Eastside Federal Complex, 911 NE. 11th Avenue, Portland, OR 97232–4181 (telephone 503–231–6158; facsimile 503–231–6243).

Listing the Taylor's checkerspot butterfly as endangered and the streaked horned lark as threatened under the Act does not automatically invoke the endangered species acts of the State of Oregon (OAR 629–605–0105). In Washington, although there is no endangered species act *per se,* there is a prohibition against take of any species listed by the State regulatory agency (WDFW); however, there is no restriction to loss or modification of habitat. Further, the States may enter into agreements with Federal agencies to administer and manage any area required for the conservation, management, enhancement, or protection of endangered species. Funds

for these activities could be made available under section 6 of the Act (Cooperation with the States) or through competitive application to receive funding through our Recovery Program under section 4 of the Act. Thus, the Federal protection afforded to these subspecies by listing them as endangered or threatened species is reinforced and supplemented by protection under State law.

Special Rule

Under section 4(d) of the Act, the Secretary may publish a special rule that modifies the standard protections for threatened species in the Service's regulations at 50 CFR 17.31, which implement section 9 of the Act, with special measures that are determined to be necessary and advisable to provide for the conservation of the species. As a means to promote conservation efforts by encouraging activities that inadvertently create needed habitat for streaked horned lark, we are issuing a special rule for this species under section 4(d) of the Act. In the case of a special rule, the general regulations (50 CFR 17.31 and 17.71) applying most prohibitions under section 9 of the Act to threatened species do not apply to that species, and the special rule contains the prohibitions necessary and appropriate to conserve that species. Under the special rule, take of streaked horned lark caused by certain common practices by agricultural operations; by wildlife hazard management at airports on State, county, private, or tribal lands; and by noxious weed control conducted on non-federal lands would be exempt from section 9 of the Act. Activities on Federal lands or with any Federal agency involvement will still need to be addressed through consultation under section 7 of the Act.

Wildlife Hazard Management at Airports. Some management actions taken at airports are generally beneficial to streaked horned larks. Streaked horned larks have been documented to breed successfully and to maintain populations at airports in the south Puget Sound and Willamette Valley. Airports routinely implement programs to minimize the presence of hazardous wildlife on airfields, and these activities unintentionally create suitable habitat for streaked horned larks. The special rule for airport management acknowledges the benefits to larks from these activities; covered actions include vegetation management to maintain desired grass height on or adjacent to airports through mowing, discing, herbicide use, or burning; hazing of hazardous wildlife (geese, and other large birds and mammals); routine management, repair, and maintenance of roads and runways; and modification and management of forage, water, and shelter to be less attractive to these hazardous wildlife, as described under the Regulation Promulgation section, below. Many of the activities that benefit the streaked horned lark on non-Federal airports are a result of practices to maintain safe conditions for aviation; we recommend that airport operators follow the guidance provided in Federal Aviation Administration advisory circular 150/5200–33C Hazardous Wildlife Attractants on or Near Airports (FAA 2007, entire), and all other applicable related guidance. We also exempt take associated with accidental aircraft strikes, as these strikes are an unavoidable consequence of creation of habitat for larks on airfields.

The listing of the streaked horned lark imposes a requirement on airport managers where the subspecies occurs to consider the effects of their management activities on this subspecies. It is likely that airport managers would take actions to deter the subspecies from areas where it currently occurs in order to avoid the burden of the resulting take restrictions that would accrue from the presence of a listed species. However, this special rule, which exempts the non-Federal airport activities listed above, and which may otherwise result in take under section 9 of the Act, eliminates the incentive for airports to reduce or eliminate populations of streaked horned larks from the airfields.

Agricultural Practices. The largest area of potential habitat for streaked horned larks is the agricultural land base in the Willamette Valley, Oregon. The wide open landscape context and low vegetation structure in agricultural fields, especially in grass seed fields, attract larks, probably because those working landscapes resemble the natural habitats formerly used by the subspecies when the natural disturbances associated with floods and fires maintained a mosaic of suitable habitats for the subspecies. Habitat characteristics of agricultural lands used by streaked horned larks include: (1) Bare or sparsely vegetated areas within or adjacent to grass seed fields, pastures, or fallow fields; (2) recently planted (0–3 years) Christmas tree farms with extensive bare ground; and (3) wetland mudflats or ''drown outs'' (i.e., washed out and poorly performing areas within grass seed or row crop fields). Currently, there are approximately 420,000 acres (169,968 ha) of grass seed fields in the Willamette Valley, and an additional approximately 500,000 acres (202,343 ha) of other agriculture. In any year, some portion of these roughly 1 million acres (404,685 ha) will have suitable streaked horned lark habitat, but the geographic location of those areas may not be consistent from year to year, nor can we predict their occurrence.

While some agricultural activities may harm or kill individual streaked horned larks, maintenance of extensive agricultural lands in the Willamette Valley is crucial to maintaining the population of streaked horned larks in the valley. Section 9 of the Act provides general prohibitions on activities that would result in take of a threatened species; however, the Service recognizes that routine agricultural activities, even those with the potential to inadvertently take individual streaked horned larks, are necessary components of agricultural operations and create habitat that may provide for the long-term conservation needs of the subspecies. The Service recognizes that in the long term, it is a benefit to streaked horned larks to maintain those aspects of the Willamette Valley's agricultural landscape that can aid in the recovery of the subspecies. We believe this special rule will further conservation of the subspecies by discouraging conversions of the agricultural landscape into habitats unsuitable for the streaked horned lark and encouraging landowners to continue managing the remaining landscape in ways that meet the needs of their operation and provide suitable habitat for the streaked horned lark.

In addition, we believe that, in certain instances, easing the general take prohibitions on non-federal agricultural lands may encourage continued responsible land uses that provide an overall benefit to the subspecies. We also believe that such a special rule will promote the conservation efforts and private lands partnerships critical for species recovery (Bean and Wilcove 1997, pp. 1–2). However, in easing the take prohibitions under section 9, the measures developed in the special rule must also contain prohibitions necessary and appropriate to conserve the species. As discussed elsewhere in this rule, streaked horned larks face many threats. Foremost among these is the scarcity of large, open spaces with very early seral stage vegetation. In the Willamette Valley, large expanses of burned prairie or the scour plains of the Willamette and Columbia Rivers may have provided suitable habitat for streaked horned larks in the past. With the loss of these natural habitats during the last century, alternative breeding and wintering sites, including active agricultural lands, have become critical for the continued survival and recovery

of the streaked horned lark. The unique challenge for conservation of the streaked horned lark on agricultural lands will be to find a way to work with private landowners to voluntarily create habitat for the subspecies rather than allow the habitats on their lands to become unsuitable through inaction. Section 9 of the Act prohibits a range of actions that would take a listed species, including actions that destroy habitats essential to individuals of the species. However, section 9 of the Act does not prohibit *inaction;* thus, a landowner's failure to disturb habitat on a regular basis to maintain the vegetation structure needed by streaked horned larks would not be a violation of section 9 of the Act. If recovery of the streaked horned lark requires the availability of agricultural lands in the Willamette Valley, and we believe it does, then we need to give landowners reasons and incentives to manage their lands in ways that allow larks to thrive on those lands.

While it appears that streaked horned larks may be benefiting from agricultural practices in the Willamette Valley, much remains to be learned about the effects of agricultural activities on the streaked horned lark. We have concluded that developing a conservation partnership with the agricultural community will allow us to answer important questions about the impact of various agricultural practices, and will provide valuable information to assist in the recovery of the subspecies. We further believe that, where consistent with the discretion provided by the Act, implementing policies that promote such partnerships is an essential component for the recovery of listed species, particularly where species occur on private lands. Conservation partnerships can provide positive incentives to private landowners to voluntarily conserve natural resources, and can remove or reduce disincentives to conservation (Knight 1999, p. 224; Brook at al. 2003, p. 1644; Sorice *et al.* 2011, p. 594). The Service will work closely with the farming community in the Willamette Valley to develop ways to monitor impacts on streaked horned larks from routine agricultural activities. We conclude that this commitment is necessary and appropriate, and will provide further insights into land stewardship practices that foster the continued use of the Willamette Valley farm land in ways beneficial to both streaked horned larks and the agricultural community.

In response to public comments received on the proposed rule, we have revised the 4(d) special rule for the streaked horned lark. We have determined that exempting specified agricultural operations in the Willamette Valley of Oregon, rather than rangewide, as originally proposed, from the take prohibitions under section 9 of the Act, is the appropriate scope for the 4(d) special rule for agricultural activities. We are limiting the application of the 4(d) special rule for agricultural activities to the Willamette Valley in Oregon because we have no information to suggest that the streaked horned lark uses agricultural lands in Washington State.

We have also revised the list of agricultural activities that are exempt from the take prohibitions under section 9 of the Act based on feedback from agricultural interests. We are aligning the definition of ''normal farming practices'' and ''normal transportation activities'' to be consistent with relevant Oregon state laws (ORS § 30.930 and § 30.931, respectively). We have also amended the list of covered activities to address specific agricultural practices in the Willamette Valley that may affect the streaked horned lark. Based on feedback from agricultural interests, we deleted several activities from the 4(d) special rule (i.e., routine management and maintenance of stock ponds and berms to maintain livestock water supplies; routine maintenance or construction of fences for grazing management; placement of mineral supplements; and irrigation of agricultural crops, fields, and livestock pastures) and added others (i.e., hazing of geese and predators; and maintenance of irrigation and drainage systems). Please see the Summary of Changes from the Proposed Rule section of this document for a complete list of changes to the 4(d) special rule between the proposed and final rule stages.

We believe that a 4(d) rule for agricultural lands in the Willamette Valley is necessary and advisable to provide for the conservation of streaked horned lark. We therefore exempt take of streaked horned larks resulting from normal farming activities, which are specified below in the Regulation Promulgation section, under section 9 of the Act.

Noxious Weed Control on Non-Federal Lands. Based on public comments, we are adding noxious weed control activities on non-federal lands to the list of activities in the 4(d) special rule that are exempt from take under section 9 of the Act.

Streaked horned larks nest, forage, and winter on extensive areas of bare ground with low-statured vegetation. These areas include native prairies, coastal dunes, fallow and active agricultural fields, wetland mudflats, sparsely vegetated edges of grass fields, recently planted Christmas tree farms with extensive bare ground, moderately to heavily grazed pastures, gravel roads or gravel shoulders of lightly traveled roads, airports, and dredge deposition sites in the lower Columbia River. As mentioned under Factor A, the suppression and loss of ecological disturbance regimes, such as fire and flooding, across vast portions of the landscape have resulted in altered vegetation structure in these habitat types. This has facilitated invasion by nonnative grasses and woody vegetation, including noxious weeds, rendering habitat unsuitable for streaked horned larks.

Habitat management to maintain low-statured vegetation is essential to maintaining suitable nesting, wintering, and foraging habitat for streaked horned larks. Although streaked horned larks are known to eat the seeds of weedy forbs and grasses, and while improperly timed actions can destroy nests and young, removal of noxious weeds wherever they may occur will help to maintain the low-statured vegetation required by nesting and wintering larks. Targeted plants include those on County, State, and Federal noxious weed lists (see State and Federal lists via links at *http://plants.usda.gov/java/noxiousDriver;* Washington State counties each have a noxious weed control Web site, and selected Oregon State counties maintain noxious weed lists). By their nature, noxious weeds grow aggressively and multiply quickly, negatively affecting all types of habitats, including those used by larks. Some species of noxious weeds spread across long distances through wind, water, and animals, as well as via humans and vehicles, thereby affecting habitats far away from the source plants.

Section 9 of the Act provides general prohibitions on activities that would result in take of a threatened species; however, the Service recognizes that removal of noxious weeds, even those with the potential to inadvertently take individual streaked horned larks, is necessary and may in part provide for the long-term conservation needs of the streaked horned lark. The Service recognizes that in the long term, it is a benefit to streaked horned lark to remove noxious weeds wherever they may occur. We believe this special rule will further the conservation of the species by helping to prevent spread of those noxious weeds that may render habitat unsuitable for the streaked horned lark, and by encouraging landowners to manage their lands in ways that meet their property

management needs as well as helping to prevent degradation or loss of suitable habitat for the streaked horned lark. We therefore exempt take of the streaked horned lark under section 9 of the Act resulting from routine removal or other management of noxious weeds, as described under the Regulation Promulgation section, below.

Provisions of the Special Rule

We determine that issuance of this special rule is necessary and advisable to provide for the conservation of the streaked horned lark. We believe the actions and activities discussed above, while they may cause some level of harm to or disturbance of the streaked horned lark, create and improve habitat for the subspecies, and are important elements in the subspecies' conservation and recovery efforts. Exempted activities include existing routine airport practices as outlined above by non-Federal entities on existing airports, agricultural activities, and control of noxious weeds on non-Federal lands.

Required Determinations

National Environmental Policy Act

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*), need not be prepared in connection with listing a species as an endangered or threatened species under the Endangered Species Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

A complete list of all references cited in this rule is available on the Internet at *http://www.regulations.gov* at Docket No. FWS–R1–ES–2012–0080 or upon request from the Field Supervisor, Washington Fish and Wildlife Office (see **ADDRESSES**).

Authors

The primary authors of this document are staff of the Washington and Oregon Fish and Wildlife Offices.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as follows:

PART 17—[AMENDED]

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; 4201–4245, unless otherwise noted.

■ 2. Amend § 17.11(h), the List of Endangered and Threatened Wildlife, as follows:

■ a. By adding an entry for ''Lark, streaked horned'' in alphabetical order under BIRDS; and

■ b. By adding an entry for ''Butterfly, Taylor's checkerspot'' in alphabetical order under INSECTS.

The additions read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
*	*	*	*	*	*		*
BIRDS							
*	*	*	*	*	*		*
Lark, streaked horned.	*Eremophila alpestris strigata*.	U.S.A. (WA, OR), Canada (BC).	Entire	T	824	17.95(b)	17.41(a)
*	*	*	*	*	*		*
INSECTS							
*	*	*	*	*	*		*
Butterfly, Taylor's checkerspot.	*Euphydryas editha taylori*.	U.S.A. (WA, OR), Canada (BC).	NA	E	824	17.95(i)	NA
*	*	*	*	*	*		*

■ 3. Amend § 17.41 by adding paragraph (a) to read as follows:

§ 17.41 Special rules—birds.

(a) Streaked horned lark (*Eremophila alpestris strigata*). (1) *Which populations of the streaked horned lark are covered by this special rule?* The components of this special rule that apply to airport management and noxious weed control cover the rangewide distribution of this bird; the agricultural component applies only to the Willamette Valley in Oregon.

(2) *What activities are prohibited?* Except as noted in paragraphs (a)(3), (4), and (5) of this section, all prohibitions of § 17.31 apply to the streaked horned lark.

(3) *What activities are allowed on airports on non-Federal lands?* (i) Incidental take of the streaked horned lark will not be a violation of section 9 of the Act, if the incidental take results from routine management activities associated with airport operations to minimize hazardous wildlife, consistent with regulations at 14 CFR 139.337.

(ii) Hazardous wildlife is defined by the Federal Aviation Administration as species of wildlife, including feral animals and domesticated animals not under control, that are associated with aircraft strike problems, are capable of causing structural damage to airport facilities, or act as attractants to other wildlife that pose a strike hazard. Routine management activities include, but are not limited to, the following:

(A) Routine management, repair, and maintenance of roads and runways

(does not include upgrades or construction of new roads or runways);

(B) Control and management of vegetation (grass, weeds, shrubs, and trees) through mowing, discing, herbicide application, or burning;

(C) Hazing of hazardous wildlife; and

(D) Habitat modification and management of sources of forage, water, and shelter to reduce the attractiveness of the area around the airport for hazardous wildlife.

(iii) Incidental take of larks caused by accidental aircraft strikes at airports on non-Federal lands is also exempted from the prohibitions of section 9 of the Act.

(4) *What agricultural activities are allowed on non-Federal land in the Willamette Valley in Oregon?* Incidental take of streaked horned lark will not be a violation of section 9 of the Act, if the incidental take results from accepted agricultural (farming) practices implemented on farms consistent with State laws on non-Federal lands.

(i) For the purposes of this special rule, farm means any facility, including land, buildings, watercourses and appurtenances, used in the commercial production of crops, nursery stock, livestock, poultry, livestock products, poultry products, vermiculture products, or the propagation and raising of nursery stock.

(ii) For the purposes of this special rule, an agricultural (farming) practice means a mode of operation on a farm that:

(A) Is or may be used on a farm of a similar nature;

(B) Is a generally accepted, reasonable, and prudent method for the operation of the farm to obtain a profit in money;

(C) Is or may become a generally accepted, reasonable, and prudent method in conjunction with farm use;

(D) Complies with applicable State laws; and

(E) Is done in a reasonable and prudent manner.

(iii) Accepted agricultural (farming) practices include, but are not limited to, the following activities:

(A) Planting, harvesting, rotation, mowing, tilling, discing, burning, and herbicide application to crops;

(B) Normal transportation activities, and repair and maintenance of unimproved farm roads (this exemption does not include improvement or construction of new roads) and graveled margins of rural roads;

(C) Livestock grazing according to normally acceptable and established levels;

(D) Hazing of geese or predators; and

(E) Maintenance of irrigation and drainage systems.

(5) *What noxious weed control activities are allowed on non-Federal lands?* Incidental take of streaked horned lark will not be a violation of section 9 of the Act, if the incidental take results from routine removal or other management of noxious weeds. Routine removal or other management of noxious weeds are limited to the following, and must be conducted in such a way that impacts to non-target plants are avoided to the maximum extent practicable:

(i) Mowing;

(ii) Herbicide and fungicide application;

(iii) Fumigation; and

(iv) Burning.

* * * * *

Dated: September 17, 2013.

Rowan W. Gould,

Acting Director, U.S. Fish and Wildlife Service.

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