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Craig Manson,

Assistant Secretary for Fish and Wildlife and Parks.

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AI50

Endangered and Threatened Wildlife and Plants; Withdrawal of Proposed Rule To List *Lepidium papilliferum* (Slickspot Peppergrass) as Endangered

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule; withdrawal.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), withdraw the proposed rule, published in the **Federal Register** on July 15, 2002 (67 FR 46441), to list *Lepidium papilliferum* (slickspot peppergrass) as endangered. This withdrawal is based on our conclusion that there is a lack of strong evidence of a negative population trend, and the conservation efforts contained in formalized plans have sufficient certainty that they will be implemented and will be effective such that the risk to the species is reduced to a level below the statutory definition of endangered or threatened. Therefore, we are withdrawing the proposed determination to list *L. papilliferum* as endangered.

ADDRESSES: The supporting record for this rule is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Snake River Fish and Wildlife Office, 1387 S. Vinnell Way, Room 368, Boise, ID 83709.

FOR FURTHER INFORMATION CONTACT: Jeff Foss, Field Supervisor, Snake River Fish and Wildlife Office (see **ADDRESSES** section) (telephone 208/378-5243; facsimile 208/378-5262).

SUPPLEMENTARY INFORMATION:

Background

Biological Overview and Survey History

Lepidium papilliferum is a herbaceous annual or biennial plant that occurs exclusively in sagebrush-steppe (*Artemisia* spp.) ecosystem at approximately 2,200 feet (ft) (670 meters (m)) to 5,400 ft (1,645 m) elevation in southwestern Idaho. This species is

found along the Snake River Plain and Owyhee Plateau in Ada, Canyon, Gem, Elmore, Payette, and Owyhee Counties, Idaho. Efforts have been made to determine whether or not suitable habitat occurs in eastern Oregon. The Bureau of Land Management (BLM) determined that the only suitable habitat available for the species in Oregon was in the Succor Creek area of the Vale District of the BLM. Surveys were conducted in the spring of 2003 in Succor Creek (J. Findley, BLM, botanist, *in litt.* 2003). Based on these surveys and a review of the habitat, it was determined that the species does not occur nor does suitable habitat exist for this species in Oregon (Findley, *in litt.* 2003). BLM has also conducted limited surveys for *L. papilliferum* to the east of the current known range of the species within the Shoshone and Burley Field Office areas that have yielded no observations of plants (BLM, *in litt.* 2000).

Plant Characteristics and Life History Traits

Lepidium papilliferum was originally described as *L. montanum* var. *papilliferum* in 1900 by Louis Henderson. It was included as a distinct species in a recent review of taxa in the mustard family (*Brassicaceae*) (Rollins 1993). Rollins (1993) based his justification on difference in physical features between the two species such as: (1) *L. papilliferum* has trichomes (hairlike structures) occurring on the filaments of stamens (part of flower that produces pollen), but *L. montanum* does not; (2) all the leaves on *L. papilliferum* are pinnately divided, whereas *L. montanum* has some leaves that are not divided; (3) the shape of the siliques (seed capsule) of *L. papilliferum* is different from that of *L. montanum*; and (4) the siliques of *L. papilliferum* has no wings, or even vestiges of wings, at its apex (end of the capsule), unlike that of *L. montanum* (Moseley 1994). A recent review of the taxonomic status by R. Lichvar (*in litt.* 2002) concluded that, using classic morphological features and study of herbarium specimens, *L. papilliferum* has distinct features that may warrant species recognition. Also Meyer *et al.* (*in press*) concluded that the ecological and life history features of *L. papilliferum* are distinct from those of *L. montanum* and argued for the preservation of *L. papilliferum* as a distinct taxon.

Lepidium papilliferum is a taprooted annual or biennial plant that reaches 4 to 12 inches (in) (10 to 30 centimeters (cm)) in height. The species is a monocarpic plant that displays two life cycles. The annual life form matures,

reproduces by setting seed, and dies in one growing season, whereas the biennial life form initiates growth in the first year, and does not produce seed and die until the second year. Leaves and stems are pubescent (covered with fine, soft hairs), and the divided leaves have linear segments (Moseley 1994). Numerous small, white 4-petaled flowers terminate the branches. This species produces small, orbicular (spherical) fruits, which are approximately 0.1 in (3 millimeters) long.

Lepidium papilliferum is mainly visited and pollinated by bees (*Anthophoridae*, *Apidae*, *Colletidae*, *Chrysidae*, *Formicidae*, *Halictidae*, *Sphecidae*, and *Vespidae* families), flies (*Bombyliidae*, *Syrphidae*, and *Tachinidae* families), and some beetle species (*Cerambycidae*, *Chrysomelidae*, *Dermestidae* and *Melyridae* families). Limited visitation has also been observed by butterflies (*Gelechiidae* family) and bugs (*Miridae* family) (Robertson and Klemish 2003). Bees appear to be the most significant pollinators of *L. papilliferum*, with the highest pollen loads of all species observed (Robertson and Klemish 2003). Insect visitations have been shown to be essential for *L. papilliferum* pollination and fruit production (Robertson and Klemish 2003). The possibility of wind-mediated self- or cross-pollination is remote given that the structure of *L. papilliferum* flowers and pollen grains are not consistent with those of wind pollinated species (Robertson and Klemish 2003).

The primary seed dispersal mechanism for *Lepidium papilliferum* has not been definitively identified. Belnap (*in litt.* 2002) stated that, "dispersal mechanisms cannot be established based on size, weight, or appendages of seeds, and it is not known how readily this plant can colonize new habitats." Animal transport, water, and wind may play a minor role, but the seed lacks structures to facilitate dispersal by animals, wind, or water (Moseley 1994). Due to the high winds at Juniper Butte and the weight of *L. papilliferum* seeds, it has been hypothesized that *L. papilliferum* is dispersed by wind (U.S. Air Force, *in litt.* 2002b) (Air Force). The weight of 100 *L. papilliferum* seeds ranges from 0.035 to 0.05 grams (Air Force, *in litt.* 2002b).

Like many short-lived plants growing in arid environments, the above-ground number of *Lepidium papilliferum* individuals at any one site can naturally fluctuate widely from one year to the next, depending primarily on seasonal precipitation patterns (Mancuso and

Moseley 1998; Mancuso 2001; Meyer *et al.*, in press). Above-ground plants represent only a portion of the population, with the seed bank (a reserve of dormant seeds, generally found in the soil) contributing the remainder, and apparently the majority, in many years (Mancuso and Moseley 1998). A seed bank includes all of the seeds in a population and generally covers a larger area than the extent of observable plants seen in a given year (Given 1994). The number and location of standing plants (the observable plants) in a population varies annually due to a number of factors, including the amount and timing of rainfall, temperature, soil conditions, and the extent and nature of the seed bank. Therefore, estimates of above-ground plants do not reflect actual population levels because the majority of the population exists in the seed bank (Moseley 1994). The extent of seed bank reserves is variable from occurrence to occurrence, and large fluctuations in the number of standing plants at a given site may occur from one year to the next. Depending on individual plant vigor, which is largely determined by the amount and timing of annual precipitation, and the effectiveness of pollination, dozens, if not thousands of seeds could be produced (Quinney 1998; Meyer *et al.* in press; M. Mancuso, Idaho Conservation Data Center (ICDC), pers. comm. 2003). Individual biennial plants generally produce a much greater number of seeds than individual annual plants, depending on the site (Robertson 2003; Meyer *et al.* in press). Because annual plants typically are more numerous than biennial plants, the total amount of seed produced by all successfully reproducing biennial plants in any given year is low in relation to the total amount of seed produced by all annual plants in the same year. Seeds produced in a given year may remain viable in the soil for up to 12 years (D. Quinney, Idaho Army National Guard (IDARNG), *in litt.* 2002; Meyer *et al.*, in press).

Meyer *et al.* (in press) concluded that *Lepidium papilliferum* cannot succeed with an annual life history strategy within its variable habitat without a persistent seed bank. The majority of *L. papilliferum* seeds that are contributed to the seed bank in any given year are produced by annual plants rather than biennial plants because the survival of biennial plants through the dry summer conditions is low (Meyer *et al.*, in press). Generally, seeds produced in a given year do not germinate that same year, and are dormant for at least a full year before any germination takes place.

A constant proportion (approximately 6 percent) of seeds produced from a given preceding year germinate annually. Depending on the timing and amount of annual precipitation, these young plants may or may not survive to flower and produce seed (Meyer *et al.*, in press). Population modeling of stochastic (naturally and randomly occurring) events for *L. papilliferum* demonstrates the importance of years with above-average precipitation in restocking the seed bank. The model predicts that if yearly annual precipitation over a 100-year period meets or is below average precipitation levels, the population would not persist (Meyer *et al.*, unpublished manuscript). Two research projects that further examine *L. papilliferum* seed banks and slickspot soils are currently being pursued by IDARNG and Air Force (Meyer *et al.* *in litt.* 2002, Air Force 2002c).

Research on other species (as well as theoretical models) has shown that species exhibiting wide population fluctuations, such as *L. papilliferum*, are more at risk of extinction than those with stable populations (S. Novak, Boise State University, *in litt.* 2002). Such species that experience wide population fluctuations can be entirely lost due to the process of demographic stochasticity (chance events that lead to the loss of individuals) in years when their numbers are at low levels. Seed banks are adaptations for survival in a "risky environment," as they buffer a species from stochastic impacts such as lack of soil moisture, which could result in no seed production for a population in a given year (Baskin and Baskin 2001). The *L. papilliferum* seed bank and seed viability of up to 12 years are examples of such adaptations (Meyer *et al.*, in press).

Habitat Features

Associated native species in the sagebrush-steppe habitat include *Artemisia tridentata* ssp. *wyomingensis* (Wyoming big sagebrush), *A. tridentata* ssp. *tridentata* (basin big sagebrush), *Agropyron spicatum* (bluebunch wheatgrass), *Stipa thurberiana* (Thurber's needlegrass), *Poa secunda* (Sandberg's bluegrass), and *Sitanion hystrix* (bottlebrush squirreltail). Nonnative species frequently associated with *L. papilliferum* include *Bromus tectorum* (cheatgrass), *Sisymbrium altissimum* (tumble mustard), *Ranunculus testiculatus* (bur buttercup), *Lepidium perfoliatum* (clasping pepperweed), *Agropyron cristatum* (crested wheatgrass), and *Kochia prostrata* (forage kochia) (Moseley 1994; Mancuso and Moseley 1998; Meyer *et al.*, in press).

Lepidium papilliferum is associated with small areas known as slickspots which are interspersed within the larger sagebrush-steppe habitat. Slickspots are also called mini-playas or nartic sites (sites containing a subsurface horizon, characterized by a sharp increase in clay, columnar or prismatic structure, and high alkalinity). Slickspots are small, natural soil inclusions that exhibit unique physical characteristics in relation to the surrounding matrix of non-nartic soils. These sparsely vegetated microsites are very distinct from the surrounding shrubland vegetation; slickspots are characterized by a near-surface distribution of soluble sodium salts, thin vesicular (small cavity) surface crusts, and shallow well-developed argillic (relating to clay mineral) horizons or layers (Fisher *et al.* 1996) that are impermeable when wet (A. Harkness, Natural Resource Conservation Service (NRCS), pers. comm. 2003).

Recent studies in 2002 and 2003 by the IDARNG and NRCS conducted at the Orchard Training Area in southwestern Idaho, have shown that slickspots are distinguishable from the surrounding soils by higher percent clay content below the first 0.8 in (2 cm) of soil. For example, at one site the percent of clay changed from 5.0 percent at 0 to 0.8 in (0 to 2 cm) (the first horizon) to 27.8 percent at 0.8 to 5.5 in (2 to 14 cm) (second horizon) (National Soil Survey Laboratory, *in litt.* 2003). The large shift in clay content is indicative of heavy soils, and the change from the first horizon to the second is an indication of the presence of a clay pan and a change in permeability (Harkness, pers. comm. 2003). All three horizons sampled also indicated a high level of sodium ranging from 10 to 31 percent. Soils with greater than 15 percent sodium are considered nartic soils (Harkness, pers. comm. 2003). Soils in the surrounding environment had a clay content of 7.4 percent at a depth of 0 to 1.6 in (0 to 4 cm) in the first horizon, and a percent sodium of 2 (National Soil Survey Laboratory, *in litt.* 2003). In the winter, spring, and after thundershowers, slickspots often contain some surface water (Fisher *et al.* 1996; J. Klott, BLM, pers. comm. 2000). According to NRCS (unpublished report, 2001), the drainage class of slickspots is "well-drained with frequent ponding in winter and early spring." Slickspots are further described in this soil survey as small, low areas that stay moist a few weeks longer than the surrounding soils. As the soil surface dries, the slickspot argillic soil layer contracts, creating cracks that

allow roots of plants such as *L. papilliferum* to extend deep into the underlying soil (A. Harkness, pers. comm. 2003). Compared to surrounding habitat areas, slickspots also have reduced levels of organic matter and nutrients, due to the lower biomass production (Fisher *et al.* 1996). The majority of slickspots range in size from less than 10 square feet (ft^2) (1 square meter (m^2)) to about 110 ft^2 (10 m^2) and occur within communities dominated by other plants. Some slickspot complexes may range up to 1,076 ft^2 (100 m^2) (Mancuso *et al.* 1998).

Rangewide, *Lepidium papilliferum* is associated with slickspots that cover a relatively small cumulative area within the larger sagebrush-steppe ecosystem. For example, it is estimated that only 1 to 4 percent of slickspots are occupied by above-ground *L. papilliferum* plants in the Inside Desert (an interior portion of the Bruneau Desert) area of southwest Idaho (Popovich 2002). A slickspot is considered to be occupied if above-ground *L. papilliferum* plants are observed during the year of survey. Slickspots that do not contain above-ground plants during surveys may contain viable seeds; therefore, several years of surveys may be necessary to determine if slickspots are occupied. *L. papilliferum* has occasionally been documented as occurring on disturbed soils such as those along graded roadsides or adjacent to animal burrows. These appear to be uncommon situations, and the vast majority of plants documented over 10 years of surveys and monitoring for this species are associated with slickspots. For example, in 2002, a complete census of an 11,070-acre (ac) (4,480-hectare (ha)) area recorded approximately 56,500 slickspots (Air Force, *in litt.* 2003), of which approximately 2,450 (about 4 percent) were occupied by *L. papilliferum* plants (Bashore, pers. comm. 2003). Of the approximately 11,300 *L. papilliferum* plants documented during the survey effort, only 11 plants were documented outside of slickspots (Air Force 2002a). Similarly, in 3 years of annual surveys, *L. papilliferum* was only detected within 4 slickspots in 2002 (63 plants), and within 2 slickspots in 2003 (36 plants) along the same 39 miles (62.7 kilometers) of road rights of way in the Inside Desert subsequent to widening and improvement of the road (CH2MHill 2003). No plants were observed during the 2001 survey effort. The restricted and scattered distribution of *L. papilliferum* is likely a product of (a) the limited availability of these extremely localized, specific slickspot

soil conditions, (b) the fragmentation of the sagebrush-steppe ecosystem in southwestern Idaho from agricultural and urban development, and (c) the conversion to annual, nonnative grasslands.

Documented Occurrences

An "occurrence" or "element occurrence" as defined by the ICDC represents a specific geographical location containing a species (or some other "element") of conservation concern. It is the standard database record used throughout the Natural Heritage Program/Conservation Data Center network (ICDC 2002), of which ICDC is part (Mancuso and Moseley 1998). Occurrences of *Lepidium papilliferum* are comprised of one to many slickspot microsites documented to contain the plant. The area delineated by an occurrence contains slickspots known to be occupied by *L. papilliferum* interspersed within a matrix of unoccupied sagebrush-steppe habitat. Therefore, an occurrence includes slickspot habitat directly occupied by *L. papilliferum*, as well as part of the surrounding landscape not directly occupied. In many cases, this leads to only a small fraction of an occurrence area being directly occupied by *L. papilliferum*.

Occurrence boundaries are based on estimates delineating the extent of occupied *Lepidium papilliferum* habitat in an area. Occurrences may be depicted as a point (small occurrences comprised of only one or a few clustered occupied slickspots); a single polygon (occurrences comprised of occupied slickspots scattered over a more or less contiguous area); or of multiple polygons (occurrences comprised of two or more discrete areas having occupied slickspots). Occurrences range in size from less than 1 ac (0.40 ha) to 8,970 ac (3,630 ha) based on information provided by the ICDC (2003). The total estimated area of all extant occurrences as of February 2003 was approximately 20,500 ac (8,300 ha). Of this estimated total area, approximately 91 percent (18,655 ac (7,550 ha)) occurred on Federal land; 3 percent (615 ac (249 ha)) on private land; and 6 percent (1,230 ac (498 ha)) on State land.

The largest occurrence is located on the Air Force's Juniper Butte Training Range. In 1998, the Air Force acquired BLM land to establish the Juniper Butte ETR, under the Juniper Butte Range Withdrawal Act (PL 105-261), which provided for the withdrawal and management of this area by the Air Force for military activities (Air Force 2000). Juniper Butte ETR is approximately 12,000 ac (4,856 ha) in

size, and the landscape is a mosaic of sagebrush-steppe and nonnative plant communities, some of which has been impacted by past wildfire and subsequent conversion from the native sagebrush-perennial grassland vegetation to nonnative perennial or annual grasslands (Air Force 2000).

Slickspot habitat and *Lepidium papilliferum* plants have been observed scattered throughout the Juniper Butte ETR, and this single large occurrence constitutes 44 percent of the total known *L. papilliferum* occurrence area (ICDC 2003). Due to its expansive area and large numbers of plants, this occurrence has high conservation value for *L. papilliferum*. The value of this occurrence could be further enhanced through restoration of sagebrush-steppe habitat within the area. A very thorough field inventory within the Juniper Butte Training Range in 2002 found that of the 11,070 ac (4,480) surveyed, approximately 1 percent (109 ac (44.1 ha)) consisted of slickspot microsite habitat; however, only 4 percent of this slickspot habitat was occupied by *L. papilliferum* (Air Force 2002a). This makes the total amount of occupied slickspot habitat within this large occurrence approximately 4 ac (1.6 ha) at the time it was surveyed.

The ICDC database contains a total of 93 *Lepidium papilliferum* occurrences. Of this total, 75 are extant (exist), 5 are historical, and 13 are considered extirpated (ICDC 2003). Historical occurrences are those based on collections made between 1911 and 1974, but which have not been relocated in more recent years. In most cases, the collections have vague location information, making their relocation problematic. The historical category has an implied expectation that the occurrences may be relocated in the future. Occurrences are considered extirpated if the native vegetation has been converted to cropland or urban/commercial uses, or the habitat is so severely modified that it is no longer capable of supporting *L. papilliferum* (ICDC 2003). As of February 2003, and since publication of the proposed rule in (67 FR 46441; July 15, 2002), the number of extant occurrences has increased by 5 (from 70 to 75), as a result of recent field survey efforts. The five new *L. papilliferum* occurrences total approximately 50 ac (20 ha). New *L. papilliferum* occurrences have been discovered in the Inside Desert on BLM lands during survey efforts in 2003 (Vision Air Research 2003). The new *L. papilliferum* locations identified during the 2003 field season have not yet been incorporated into the ICDC database at

the time of publication of this rule, and so are not reflected in the discussion of *L. papilliferum* occurrences or area.

Forty-nine of the 75 extant occurrences (65 percent) are located completely on Federal land managed by the BLM or Air Force, and 6 occur completely on private land (8 percent). Three occurrences (4 percent) are located completely on either county or city lands. The 17 remaining occurrences (23 percent) encompass areas of multiple land ownership, representing a mixture of Federal, State, and/or private lands.

Ranking of Occurrence Quality

Sixty of the 75 extant occurrences of *Lepidium papilliferum* have been ranked by ICDC using 4 definitions, A through D, with A representing sites with the greatest number of above-ground plants, best quality habitat, and highest probability of long-term survivability (Moseley 1994). In general, the number of *L. papilliferum* individuals at each extant occurrence can range from 1 to greater than 10,000 (M. Mancuso, pers. comm. 2003a; ICDC 2003); however, the majority (42) of the 60 ranked extant occurrences contain less than 200 individuals. The total area of all ranked occurrences is approximately 20,131 ac (8,147 ha). The remaining 15 of the 75 extant occurrences are not yet ranked by ICDC due to a lack of information on habitat characteristics (S. Cooke, pers. comm. 2003). The total area of the unranked occurrences is approximately 366 ac (148 ha), with an average size of approximately 24 ac (10 ha) (ICDC 2003).

While we recognize the inherent limitations of this occurrence quality ranking methodology as not being quantitative and difficult to replicate, we believe it to represent the best available tool in which to examine and rank *Lepidium papilliferum* occurrences and habitat quality. As a result, we have used it as a tool in our analysis for this final determination.

"A"-ranked occurrences, as defined by ICDC, "consist of those with large population numbers occurring in high-quality sagebrush-steppe communities. The occurrences also tend to be large in area, consisting of many slickspots spread over a contiguous area. 'A'-ranked populations generally consist of populations with greater than 1,000 above-ground individuals in sagebrush stands consisting mostly of native perennials; these sites generally have not burned and do not support exotic annuals" (Moseley 1994). Of the 60 extant ranked occurrences, 7 (12 percent) are considered "high-quality"

or "A"-ranked. The 7 "A"-ranked occurrences are estimated to encompass approximately 6,596 ac (2,669 ha), which is 33 percent of the total estimated acreage of all ranked occurrences. Approximately 4,430 ac (1,793 ha), or 67 percent, of this "A"-ranked area is located within 2 occurrences on the IDARNG's Orchard Training Area (OTA) (ICDC 2003).

"B"-ranked occurrences, as defined by ICDC, range from "about 400 to 2,000 individuals," however, the "average" occurrence of this rank consists of several hundred plants in good-to high-quality sites. "B"-ranked occurrences can include sites containing 400 to 600 individual plants (low end of the range) occurring in high-quality habitat and/or thousands of individuals (high end of the range) that occur in fair-to low-quality sites (burned-over cheatgrass stands or crested wheatgrass seedlings) (Moseley 1994). Nine (15 percent) of the 60 ranked extant occurrences are "B"-ranked. The 9 "B"-ranked occurrences total approximately 10,683 ac (4,323 ha), or 53 percent of the total area of all ranked occurrences. Approximately 8,970 ac (3,630 ha) of this 10,683 ac area is located within one large occurrence on the Air Force's Juniper Butte Training Range. This single large occurrence was assigned a "B"-ranking (the proposed rule erroneously identified this as a "C"-ranking) because much of the habitat within this occurrence has been degraded by wildfires and subsequent seedings of crested and intermediate wheatgrass prior to the land being withdrawn for Air Force management (Air Force 2002b; ICDC 2003). The average size of the "B"-ranked occurrences is approximately 1,187 ac (480 ha).

"C"-ranked occurrences, as defined by ICDC, "consist of as few as 25 to greater than 1,000 individuals." The "average" "C"-ranked occurrence consists of 100 to 200 individuals in fair-to low-quality habitat. The occurrences with smaller numbers of above-ground plants occur in large tracts of high-quality habitat, while occurrences at the high end of the range of the numbers of above-ground plants are in severely disturbed habitats or those that are adjacent to recent developments and are not expected to remain viable (Moseley 1994). Of the 60 extant ranked occurrences, 21 (35 percent) are "C"-ranked. The 21 "C"-ranked occurrences total approximately 731 ac (296 ha), or 3 percent of the total area of all ranked occurrences. The average size of the 21 "C"-ranked occurrences is approximately 35 ac (14 ha) (ICDC 2003).

"D"-ranked occurrences, as defined by ICDC, "consist of generally less than 50 individuals (often less than 25) occurring as isolated populations in degraded habitats," and are not expected to remain viable (Moseley 1994). Eighteen (30 percent) of the 60 extant ranked occurrences are "D"-ranked. The 18 "D"-ranked occurrences total approximately 1,890 ac (765 ha), or 9 percent of the acreage of all ranked occurrences, with an average size of approximately 105 ac (43 ha). The average size of the "D"-ranked occurrences is biased by a single 1,495-ac (605-ha) occurrence. The average size of the "D"-ranked occurrences is reduced to approximately 23 ac (9 ha) if this single 1,495-ac (605-ha) occurrence is excluded from the calculation.

Five of the 60 extant ranked occurrences have been categorized by ICDC as intermediate between the 4 defined ranks. Four (7 percent) are identified as "B/C"-ranked, and total approximately 208 ac (84 ha), or 1 percent of the area of all ranked occurrences. The 4 "B/C"-ranked occurrences have an average size of approximately 52 ac (21 ha). The remaining ranked occurrence is identified as "C/D"-ranked. The single "C/D"-ranked occurrence totals approximately 23 ac (9 ha), and constitutes 1 percent of the area of all ranked occurrences (ICDC 2003). Given the definition of rankings by ICDC, approximately 27 percent of all ranked occurrences or approximately 86 percent of the estimated area of all ranked occurrences are ranked as A or B, populations considered to have a high to moderate probability of long-term survival.

Over the period from 1994 through the 2002 field season, 13 of the extant *Lepidium papilliferum* occurrences have decreased in quality. Because of the effects of habitat degradation and fragmentation, 1 declined to a "B" rank and 12 declined to a "C" or "D" rank (ICDC 2003). The total area of occurrences documented as declining in rank is approximately 3,278 ac (1,326 ha), 16 percent of the total area of all ranked occurrences. Decreases in rank as documented from evaluation of ICDC data reflect additional impacts to the habitat quality or habitat defensibility beyond those in the original ranking of the occurrence (ICDC 2003).

During the same period, 8 (10 percent of) documented *L. papilliferum* occurrences have increased in quality because of the acquisition of better information from subsequent surveys since their original 1994 ranking: four increased to an "A" rank, three

increased to a "B" rank, and one increased to a "C" rank (ICDC 2003). The total area of occurrences documented as increasing in rank is approximately 3,251 ac (1,316 ha), 16 percent of the total area of all ranked occurrences. Increases in rank as documented from evaluation of ICDC data are attributed to expansion of known occurrences (greater area documented as containing plants, or greater numbers of plants) due to increased survey effort and do not reflect an improvement in the habitat quality or defensibility (ICDC 2003).

Some disagreement as to the accuracy of some *L. papilliferum* locations, area extent, and rankings within the ICDC database has been raised. ICDC has indicated that review and update of the ICDC database for *L. papilliferum* is a priority for 2004 section 6 funding (ICDC, *in. litt.* 2003). In any event, the current ICDC database constitutes the best available scientific information on *L. papilliferum* location and occurrence quality.

Habitat Integrity Index Monitoring of Occurrences

To provide a consistent monitoring methodology for use by management agencies, the ICDC in 1997 initiated a collaborative effort that included participation by the IDARNG, BLM, Air Force, and the Service. The result of this effort was development of a habitat integrity index (HII) for use in assessing and monitoring occupied *Lepidium papilliferum* habitat in southwestern Idaho (Mancuso and Moseley 1998). Index methodology is commonly used in ecological monitoring, and the HII protocol has been used since 1998 by ICDC, BLM, Air Force, and IDARNG to collect data on slickspot microsites and surrounding habitats. Effective monitoring of an annual plant species with a long-lived seed bank is often difficult, so use of a monitoring method that focuses on habitat condition may be more successful than monitoring of the above-ground expression of the seed bank (Elzinga *et al.* 1998).

The HII data represents the best available site-specific data for the occurrences of *L. papilliferum*. The HII data has its limitations, including a relatively short survey period of 5-years, not all occurrences are sampled each year, and the qualitative or subjective nature of some of its determinations. HII provides valuable information about occurrences of *L. papilliferum* and its habitat, but it was not designed to be a scientifically rigorous methodology that lends itself to statistical analysis.

The abundance of above-ground plants may fluctuate significantly from

year to year due to site-specific microclimate conditions, especially precipitation. HII was developed to assess the overall habitat condition that includes those attributes associated with the slickspot microsite and the sagebrush-steppe habitat, and to assess the prospects that an occurrence will persist over time, including factors affecting the viability and defensibility (degree of protection from human-caused impacts) of the occurrence (Mancuso 2001). This HII monitoring protocol consists of four components: (1) Sampling along a transect to acquire specific slickspot microsite and adjacent habitat information; (2) vegetation plot sampling; (3) photo points; and (4) an Occurrence Viability scorecard.

Monitoring of fixed transects using HII has taken place annually since 1998. A core set of 38 transects were monitored annually over the period 1998–2001 with some years including monitoring of transects beyond the core set of 38. HII results illustrate how the number of *Lepidium papilliferum* counted at any one site can fluctuate from year to year. For example, in 1998, approximately 16,000 *L. papilliferum* plants were counted along 45 transects situated within 40 occurrences monitored by Mancuso (2000). In 1999, only 3,060 *L. papilliferum* plants were counted along these same transects and 2 additional transects. Mancuso (2001) continued his monitoring of these transects in 2000, documenting approximately 7,100 *L. papilliferum* plants. In 2001, approximately 4,045 *L. papilliferum* plants were observed on 48 transects, including core set of 38 occurrences (Mancuso 2002). The core set of 38 occurrences monitored using HII represent 51 percent of the 75 extant occurrences and 94 percent (approximately 19,243 ac (7,787 ha)) of the total known area occupied by *L. papilliferum*. In 2002, approximately 372 *L. papilliferum* were counted along 27 transects situated within 21 occurrences, representing the lowest cumulative total recorded for this set of transects in 5 years (Mancuso 2003).

In summary, ICDC HII monitoring results from 1998 through 2001 revealed there has not been a dramatic, rapid, widespread decline in the condition of slickspot peppergrass habitat (Mancuso 2002). It also shows habitat improvement is limited to a few sites. The pattern the past four years has been a slow, but steady decline, affecting a few occurrences each year. For example, after the 2001 monitoring season conditions did not seem too much different or worse than the 2000 monitoring season (Mancuso 2002). HII monitoring results for the 2002 field

season revealed no transects with an overall improving trend, two transects showed decline, and the remaining 15 transects were either stable or showed no clear upward or downward trend (Mancuso 2003).

Previous Federal Action

Federal Government actions for the plant began in 1990 when this species (*Lepidium montanum* var. *papilliferum*) was designated as a category 2 candidate in the February 21, 1990 (55 FR 6184), Notice of Review. Category 2 candidates were those for which information in our possession indicated that proposing to list as endangered or threatened was possibly appropriate, but sufficient data to support proposed rules were not currently available. This taxon was retained as a category 2 candidate in the September 30, 1993 (58 FR 51144), Notice of Review. Upon publication of the February 28, 1996, Notice of Review (61 FR 7596), we ceased using candidate category designations. *Lepidium papilliferum* was not included as a candidate species in this notice. We reinstated the species as a candidate species, with a listing priority number of 2, in the October 25, 1999, Notice of Review (64 FR 57534). The species was again listed as a candidate in the October 30, 2001, Notice of Review (66 FR 54808).

On April 9, 2001, we received a petition dated April 4, 2001, from the Committee for Idaho's High Desert, the Western Watersheds Project, the Wilderness Society, and the Idaho Conservation League (Petitioners) requesting emergency listing of *Lepidium papilliferum* as threatened or endangered. The petition included information on threats to the species, including: competition with nonnative annual and perennial vegetation, incompatible livestock grazing practices, incompatible herbicide application, inbreeding depression, and fire rehabilitation. We responded to the Petitioners with a letter dated April 27, 2001, stating that the species was already identified as a candidate, and we do not publish petition findings separately on candidate species because we have already determined that their listing is warranted (Service, *in litt.* 2001). We also stated that our initial review of their petition did not indicate an emergency action was warranted.

On November 6, 2001, the Petitioners filed a complaint for our failure to emergency list *Lepidium papilliferum* as threatened or endangered, and our failure to proceed with a proposed rule to list *L. papilliferum* as endangered or threatened on a nonemergency basis

(Committee for Idaho's High Desert and Western Watersheds Project v. Anne Badgley, et al. (Case No. CV 01-1641-AS)). On April 2, 2002, based on a settlement agreement with the Petitioners, the U.S. District Court for the District of Oregon signed an order requiring us to submit for publication in the **Federal Register** a proposal to list the species by July 15, 2002, and a final determination by July 15, 2003.

On July 15, 2002, we published a proposed rule to list *Lepidium papilliferum* as an endangered species (67 FR 46441). The initial 60-day public comment period closed on September 13, 2002. Legal notices of the proposed rule were published in the Mountain Home News in Elmore County on July 17, 2002, The Idaho Statesman in Ada County on July 18, 2002, and The Owyhee Avalanche in Owyhee County on July 24, 2002. These published legal notices invited the public to comment and to attend a public hearing in Boise, Idaho, on August 28, 2002. On July 22, 2002, we received a congressional request to have additional public hearings. Following that request, we published additional notices of the proposed rule, comment period, and modified hearing schedule in The Owyhee Avalanche, the Independent-Enterprise in Payette County, and the Emmett Messenger-Index in Gem County on August 14, 2002. On August 29, 2002, we held a public hearing on the proposal in Grand View, Idaho. On September 25, 2002, we reopened the comment period for an additional 60 days to allow additional time for all interested parties to submit written comments on the proposal (67 FR 60206). The second comment period closed on November 25, 2002.

After review of public comments and additional information received during the second comment period, we determined there was substantial disagreement regarding the sufficiency or accuracy of the available data relevant to the proposed listing rule, making it necessary to solicit and evaluate additional data to address this disagreement. On July 18, 2003, we published a finding (68 FR 42666) announcing a 6-month extension of the deadline for a final listing determination for *L. papilliferum*. In accordance with section 4(b)(6)(B)(i) of the Act, the 6-month extension of the deadline for our final determination on whether to list *L. papilliferum* was used to solicit and evaluate additional data to further address the sufficiency or accuracy of the available data. A third public comment period was opened for 30 days on July 18, 2003, and closed on August 18, 2003. During the 6-month extension

period, we updated the best available scientific information on *L. papilliferum*, using information received during the two 60-day comment periods, and the subsequent 30-day comment period associated with the extension. We also employed additional techniques (e.g., science panel review) for organizing the data for further analysis and evaluation of the status of the species and the risks it faces.

In addition to soliciting data and conducting further analysis to address the disagreement in the sufficiency and accuracy of the available data, we worked with the Air Force and IDARNG to update their Integrated Natural Resource Management Plans (INRMPs) and to further address the conservation needs of *L. papilliferum*. We reviewed and commented on the INRMPs and we also provided technical assistance on policy and science to several partner agencies and affected private individuals in their development of the Candidate Conservation Agreement for Slickspot Peppergrass (*Lepidium papilliferum*) (Idaho Office of Species Conservation 2003) (CCA). The CCA was developed between July and December 2003 by the Idaho Governor's Office of Species Conservation (OSC), the Idaho Department of Agriculture, the Idaho Department of Fish and Game, the Idaho Department of Lands, the IDARNG, the BLM, and several private property owners who hold grazing permits on BLM-managed and maintained lands, collectively referred to as Cooperating Parties. The purpose of the CCA is to join the BLM, State of Idaho, and IDARNG with nongovernmental cooperators to implement conservation measures for slickspot peppergrass. The goal of the CCA is to conserve the species and its habitat while protecting the long-term sustainability of predictable levels of land use in southern Idaho. We attended meetings and provided technical assistance and guidance in the development of the CCA.

On October 30, 2003, we published a notice announcing the availability of, and soliciting review and comment on the draft CCA and our document, "Best Available Information on *Lepidium papilliferum*" (68 FR 61821). Both documents contained information we planned to utilize in making a final listing determination for the species. This 14-day public comment period closed November 14, 2003. Comments received on both documents were received and taken into consideration in the development of this final determination. Further, comments received on the CCA were made

available to the Idaho Governor's Office of Species Conservation (OSC) and their Cooperating Parties so that they could evaluate and incorporate them into the final CCA as appropriate.

Summary of Comments and Recommendations

Summary of Public Comments on Proposed Rule

Following the publication of the proposed rule on July 15, 2002 (67 FR 46441), we contacted and provided copies of the proposal to Federal, State, and local agencies, county governments, elected officials, scientific organizations, and other interested parties and asked that they comment. We requested comments and any additional data and information that might assist us in making a final decision on our proposal to list *Lepidium papilliferum*. During 120 nonconsecutive days of open comment periods in 2002, we received input from 39 commenters. Six commenters submitted duplicate comments, either by submitting a written comment and also testifying at a hearing, or by testifying at two separate hearings. Each of these duplicate comments was tallied only once. Of the 39 unique comments, 26 opposed the listing action, 9 were supportive, and 4 indicated no preference. Comments were received from Federal, State, and county agencies and government offices, industry and environmental organizations, researchers, and private citizens.

Another public comment period was opened for 30 days from July 18, 2003, to August 18, 2003, during the 6-month extension of the deadline for our final determination (68 FR 42666). Due to substantial disagreement among interested parties over the sufficiency or accuracy of our available data on *L. papilliferum*, we solicited comments on biological, commercial trade, or other relevant data concerning any threat (or lack thereof) to this species; the location of any additional populations; additional information concerning the range, distribution, and population size of the species; and current or planned activities within the range of the species and the possible impacts on the species.

We prepared a summary document entitled, "Primary Issues of Disagreement Regarding the Status and Threats to *Lepidium papilliferum*," and distributed it to 25 experts identified by the Service, BLM, Air Force, and OSC including the 12 peer reviewers discussed herein who were asked for comments on the proposed rule and made it available to the public on our website. The 25 experts were identified

upon our request to the State of Idaho, BLM, and Air Force and included the peer reviewers for the proposed rule of July 2002. The purpose of this document was to provide the public with information we had about the issues of scientific disagreement that were identified and to request that reviewers provide us with any additional data, information, and comments relevant to the issues, especially information pertaining to potential threats to the species and their relationship to the status, distribution, and likely survival of the species.

Peer Review

In accordance with our July 1, 1994, Interagency Cooperative Policy on Peer Review (59 FR 34270), we requested the expert opinions of 12 independent specialists regarding pertinent scientific or commercial data and assumptions relating to supportive biological and ecological information in the proposed rule. The purpose of such a review is to ensure that the listing decision is based on scientifically sound data, assumptions, and analyses, including input of appropriate experts and specialists.

The 12 reviewers we requested to review the proposed rule were selected on the basis of their expertise on *Lepidium papilliferum* natural history and ecology. We requested that they review the proposed rule and provide any relevant scientific data relating to taxonomy, distribution, population status, or the supporting biological and ecological data used in our analyses of the listing factors. Five of the 12 scientific reviewers provided us comments during the initial peer review process. All five provided information meant to correct, clarify, or support statements contained in the proposed rule. We have incorporated their comments into the final determination, as appropriate.

Some of the comments received during the public comment periods suggested that the proposed rule inappropriately extrapolated beyond the limited data available and thus drew unsupported, possibly erroneous conclusions about the effects of various environmental factors. Additionally, the Service accepted scientific review comments from the Air Force. The Air Force comments were a compilation of reviews conducted by five Ph.D. scientists and one research agronomist. The Air Force comments raised substantial concerns about the certainty of the information we had relied upon to propose the species as endangered. In addition, the Department of Defense filed an Information Quality Act

petition challenging the Service's use and interpretation of available information used in the proposed rule. Information focusing specifically on *Lepidium papilliferum* is limited to surveys, unpublished reports, and a few publications in regional journals. Data are lacking from which to draw strong inferences about population trends across the entire range. On the other hand, a large body of scientific information documents the changing community ecology of the sagebrush steppe ecosystem, in which *L. papilliferum* is endemic. It is reasonable, therefore, to assess the risk of *L. papilliferum* extinction from the threat of these ecosystem changes. After reviewing all comments received we determined that it would be appropriate to reevaluate the level of risk faced by *L. papilliferum*. Thus, on July 18, 2003, we published a notice explaining that we would take six months, in accordance with section 4(b)(6)(B)(i) of the Act, to collect new information and reassess the status of the species.

At issue were the likelihood of *Lepidium papilliferum* becoming extinct and the process of assessing this extinction risk given the limited information available on the species. We decided to perform a risk analysis through structured solicitation of expert opinion as another resource to use in our final determination process. We convened a panel of six experts in plant community ecology, *L. papilliferum* ecology, plant population biology, range management and livestock behavior to participate in this facilitated assessment of risk.

The experts participated only in a biological assessment of extinction risk. Following the biological panel, the Service held a session, attended exclusively by Service employees, to assess whether *Lepidium papilliferum* meets the definition of threatened or endangered under the Act. The Service's assessment used all available information on record including, but not limited to, the biological risk assessment which did not introduce any new information but rather focused on the major threat factors previously discussed in the proposed rule, and extinction risk for *L. papilliferum*.

During the risk assessment we asked each expert to analyze risk to *Lepidium papilliferum* under two hypothetical futures, one with continuation of status quo management and one with revised management as described in the INRMPs and conservation agreement. The panel participated in a series of facilitated exercises and discussions that addressed factors that affect *L. papilliferum* and the level of certainty of

knowledge about the occurrence and biological consequences of these factors. At the conclusion of the analyses under the two hypothetical futures the experts described gaps in knowledge and other areas of uncertainty, which, if resolved, could influence the distribution or reduce variance in their estimates of extinction risk.

Finally, panelists discussed ongoing and hypothetical research programs that could resolve some of the uncertainty about what the future holds for *Lepidium papilliferum*. In some cases, rough experimental designs, costs, and times for completion were discussed and recorded.

In one exercise the panelists evaluated the various threat factors. Non-native annual grasses and the related effects of fire were, by far, the most important extinction factors. Other relatively high-ranking threats were livestock, drill-seeding and the forage species planted in fire rehabilitation, and vehicles. Other factors such as the herbicides used in fire rehabilitation, climate variables, and herbivory were less important. While there has been no previous attempt to rank these factors, the rankings more or less conform to the levels of emphasis placed on these factors in the proposed rule.

The expert's estimates of risk also conform to the Service's conclusion that, over the next few decades, the likelihood of extinction is more probable for *Lepidium papilliferum* without the proposed conservation measures.

Comments and Our Responses

We received 32 comments from Federal, State, and county agencies and government offices, industry and environmental organizations, researchers, and private citizens. These comments are summarized with the other public comments in the comments section. We assembled these comments and other new information we had received in a document entitled "Best Available Information on *Lepidium papilliferum*." A notice of availability for this document was published in the **Federal Register** on October 30, 2003. Comments received on this document have also been summarized with the other public comments and changes have been incorporated within this final determination.

This final determination reflects the comments and information we received during the three public comment periods on the proposed listing rule, and the one comment period on the "Best Available Information on *Lepidium papilliferum*" document. Since comments were solicited on two

different documents, they will be summarized separately. For all public comments received, substantive comments and new information were either incorporated into or addressed directly in the final determination, where appropriate, or have been addressed below. Comments are grouped together by issue below for the purpose of this summary, along with our response to each.

Comments on the Proposed Rule and "Primary Issues of Disagreement Regarding the Status and Threats of *Lepidium Papilliferum*"

Issue 1: Several commenters, including the Idaho Transportation Department (ITD), were concerned that listing and designation of critical habitat for *Lepidium papilliferum* under the Act would threaten family ranching by restricting use of public and private lands, and could ultimately impact local economies. A few commenters inquired whether the economic impact of listing *Lepidium papilliferum* or its critical habitat had been analyzed. Several commenters, including the OSC, were concerned that the processes associated with listing species under the Act would impact efforts to conduct research and hinder management of the sagebrush-steppe ecosystem (e.g., fire suppression, range management, and fire rehabilitation). Others opposed using the Act to acquire private property for conservation of the species.

Our Response: The listing of *Lepidium papilliferum* as an endangered or threatened species would result in regulatory protections for the plant on federally managed lands, but would not likely lead to greater or increased restrictions on privately owned property. For endangered plant species, section 9 of the Act provides prohibitions from activities that "remove, cut, dig up, or damage or destroy any [endangered plant] species" in knowing violation of any law or regulation of any state or in the course of any violation of a state criminal trespass law." Because our current action is to withdraw the proposal to list the species as endangered, these provisions of section 9 and concerns regarding economic and other impacts are not applicable. In any event, the Act prohibits us from considering economic impacts in listing determinations, so we have excluded economic consideration from this determination.

Issue 2: Several commenters stated that the management of *Lepidium papilliferum* on public lands is politically influenced, and the only alternative to ensure the conservation of the species is to list it under the Act.

Additionally, several commenters, including the Air Force, Idaho Office of Attorney General (OAG), OSC, and ITD suggested that our listing process was not based on the best available scientific information, and that there is inadequate data to indicate that listing *L. papilliferum* is warranted. One commenter stated that our use of some references does not meet definition of transparency in our Information Quality Guidelines (44 U.S.C. 3502, 67 FR 8452; February 22, 2002) and, therefore, these references should not be used to justify listing of the species. Some commenters, including the OAG, believed that opportunities for public involvement in the listing process had been inadequate. Finally, some commenters asserted that the information gathered through the process associated with the Air Force appeal under the Data Quality Act should be made available to the public.

Our Response: The Act requires us to make listing decisions based solely on the best scientific and commercial information available at the time the decision is being made (section 4(b)(1)(A)). We thoroughly reviewed all available scientific and commercial data in preparing the proposed and final listing determination. We sought and reviewed historical and recent publications and unpublished reports concerning *Lepidium papilliferum* and sagebrush-steppe habitat of southwestern Idaho. We also convened a panel of scientific experts to review the scientific information available to us pertaining to *L. papilliferum*. Finally, we produced the document "Best Available Information on *Lepidium papilliferum*" and solicited public comment on additional scientific information pertaining to the species. We followed our Information Quality Guidelines in preparing this final determination.

Our evaluation of the significance of these numerous ongoing threats across the range of *L. papilliferum* is discussed in the "Summary of Factors Affecting the Species" section of this final determination. This analysis includes looking at the adequacy of existing regulatory mechanisms, including public land management practices. During the listing process, we provided three public comment periods that were open for a total of 150 nonconsecutive days, and also held two public hearings so that the public would have an adequate opportunity to provide us comments on our proposal to list the species.

We have received new information since the proposed rule specific to *Lepidium papilliferum*. This information ranged from additional

ICDC survey data to slickspot soils information. While the body of available information specific to this species is limited, we have a legal obligation to make a final listing determination and we must act based on the best available information.

Issue 3: Some commenters, including ITD, said past survey efforts did not provide adequate population and range data to support a listing decision for *Lepidium papilliferum*, while others thought past survey efforts were adequate. Some commenters questioned the validity of the methodologies used for *L. papilliferum* surveys, and a few asserted that further research is needed before a listing determination can be made. One commenter indicated that ICDC data documents an 84 percent increase in *L. papilliferum* occurrences since 1994 in spite of alleged threats, weakening the case for listing the species. Comments, including those from the OSC, noted that a comprehensive inventory of *L. papilliferum* throughout its range has never been conducted; that there are significant amounts of potential habitat on private and State lands that have not been inventoried; and that there appears to be sampling bias in that most occurrences are near roads. Others commented that despite the numerous *L. papilliferum* surveys conducted throughout most of the species' range, and the discovery of a few new sites, the known range of *L. papilliferum* has not been expanded.

Our Response: As discussed in Issue 2 above, the Act requires us to make listing decisions based solely on the best scientific and commercial information available at the time the decision is being made (section 4(b)(1)(A)). We thoroughly reviewed all available scientific and commercial data in preparing the proposed rule and this final listing determination. We sought and reviewed historical and recent publications and unpublished reports concerning *Lepidium papilliferum* and sagebrush-steppe habitat of southwestern Idaho. We agree that undiscovered sites occupied by *Lepidium papilliferum* likely exist and there may be other areas where *L. papilliferum* and suitable habitat may occur. For example, inventories for *L. papilliferum* have not been completed on the majority of private lands within its range due to restricted access to these areas. We must base our status review for *L. papilliferum* not only on the plant's current known population status, but also the known condition of its habitat and on the current factors affecting the species, along with ongoing conservation efforts, as described in the

Summary of Factors Affecting the Species section of this final determination.

Increased survey efforts by ICDC and BLM since Moseley produced his 1994 status review have resulted in an increase in the number of known *Lepidium papilliferum* occurrences and total habitat acreage (Moseley 1994; ICDC 2003). A total of 36 occurrences with a cumulative area of 10,251 ac (4,148 ha) have been located between 1995 and present, essentially doubling the 1994 documented occupied area. However, these survey efforts did not result in an expansion of the currently known range of the species. Approximately 8,971 ac (3,630 ha) (87 percent) of this 10,251-ac (4,148-ha) increase in *L. papilliferum*-occupied habitat represent the location of a single large occurrence on the Air Force's Juniper Butte ETR. In addition, 24 of these 36 recently discovered occurrences (67 percent) are less than 20 ac (8 ha) in size, and only 3 of the 36 occurrences (8 percent) are greater than 100 ac (40 ha) in size.

Surveys for species such as *Lepidium papilliferum* are conducted according to agency survey methodologies for special interest species developed for inventories of large blocks of land. We have expanded and clarified the discussion of the monitoring survey protocol utilized by the ICDC in the Background section of this final determination. In addition, BLM conducts extensive site-specific botanical surveys for proposed management projects. While roads may have been used as part of the methodology for some *L. papilliferum* inventories, the use of roads in surveys is not a standard survey procedure in all situations. For example, Popovich (2002) surveyed over 52,300 ac (21,165 ha) of BLM land for *L. papilliferum* using linear 1-mi-long (1.6-km-long) transects located 0.25 mi (0.40 km) apart that were independent of the location of roads in the Inside Desert.

We agree that further research and continued surveys and monitoring will provide additional information to benefit management of this species. The CCA and the two INRMPs provide for this important future work to be accomplished. Although there is some disagreement as to the accuracy of some *L. papilliferum* locations and the current information regarding the total occupied range of *L. papilliferum* is incomplete, we believe we have sufficient information to support our determination not to list the species at this time.

Issue 4: Some commenters suggested that, rather than listing, that an

alternative course of action be used for conservation of the species. Several commenters, including the OSC, thought Federal land management agencies are currently managing the land to conserve *Lepidium papilliferum* through regulatory and mitigation efforts to minimize significant impacts from management activities, while others questioned the adequacy of current land management practices to conserve the species. Suggestions, including those made by the OSC, for alternative courses of action included: (1) Development of a *L. papilliferum* conservation strategy by us in collaboration with other agencies and stakeholders in lieu of listing; (2) development of best management practices for *L. papilliferum*; and (3) delaying listing until additional research, inventories, and conservation efforts can be implemented. The OSC also questioned why we discontinued our participation in the development of a conservation agreement with IDARNG and BLM for *L. papilliferum* in 1997. During the third comment period, some commenters stated that a conservation agreement would allow agencies to gain further knowledge about *L. papilliferum*, while other commenters stated that a conservation agreement would not constitute an effective tool of conservation of the species.

Our Response: We strongly support utilizing a collaborative conservation effort to address the threats to species such that the need to list them is precluded. Prior to the July 18, 2003, 6-month extension, we worked with various agencies and individuals to assess the status of *Lepidium papilliferum*, and also to identify and implement conservation actions. Since February 2000, we have been an active participant in an interagency group of biologists and stakeholders to share data and coordinate conservation actions for *L. papilliferum*.

This species is already afforded some level of protection due to the fact that the majority of known *Lepidium papilliferum* occurrences are either completely or partially on Federal land managed primarily by the BLM and Air Force, and 91 percent of the total area of occupied *L. papilliferum* habitat is located on Federal land. While some Federal land management practices include measures that promote conservation of *L. papilliferum*, other management practices and activities may affect its persistence (see Summary of Factors Affecting the Species section).

We began working with IDARNG and BLM in 1996 and 1997 to develop a conservation strategy for *Lepidium papilliferum* on BLM lands, a portion of

which is used by IDARNG for military training activities (OTA). We had to suspend our participation with respect to this agreement for the OTA in 1997 due to budget shortfalls and staff restructuring. A conservation agreement was drafted but never finalized. We have been working with BLM and IDARNG actively since 1997 to manage and conserve *L. papilliferum*. IDARNG, BLM, and the Service have been active members of the *L. papilliferum* interagency technical team, which has met 22 times between January 2000 and December 2003.

We believe the development of conservation agreements for *Lepidium papilliferum* that address threats and implement conservation actions for the species can provide significant and immediate benefits to the species, thus precluding the need to list. From July 2003 through December 2003, we provided technical assistance on policy and science issues in an advisory capacity to several partner agencies and affected private individuals in their development of the CCA for *L. papilliferum*. This CCA has research and adaptive management components that will improve our understanding of *L. papilliferum* ecology and conservation needs. We believe the implementation of the CCA and the Air Force and IDARNG INRMPs adequately conserves *L. papilliferum* and precludes the need to list the species.

Issue 5: A few commenters disagreed with our statement in the proposed rule that the designation of critical habitat could delay publication of the final determination listing the species if they were done concurrently. The commenters asserted that much of the analysis needed to draft a critical habitat proposal had already been completed. Several commenters even identified specific areas that should be included in a critical habitat designation. Additionally, commenters provided input on species' conservation criteria for consideration in the recovery planning and critical habitat processes.

Our Response: Critical habitat is no longer an issue, because we are withdrawing the proposed rule to list *Lepidium papilliferum*.

Issue 6: Many commenters, including OSC, thought that wildfire constitutes the greatest threat to *Lepidium papilliferum* and its habitat, and some indicated that the proposed rule did not adequately address the negative effects of fire on the species and its habitat. Some also believed that wildfire impacts are more severe where grazing is not utilized to remove excess fuel loads, thus resulting in more severe fires. One commenter stated that current

research does not support historical and current fire frequencies. Other commenters, including OSC, were concerned that listing *L. papilliferum* would limit flexibility to manage nonnative annuals, fuel loads, and fire-suppression activities. Some commenters stated that research data suggest fire does not decrease, and may in fact enhance, *L. papilliferum* density and cover. Some commenters asserted that the conversion of native shrub-steppe to nonnative annual plants increases fire frequency and intensity, resulting in negative impacts to slickspot habitats and *L. papilliferum*.

Our Response: The proposed rule and this determination of withdrawal state that wildfire is a factor affecting all known *Lepidium papilliferum* occurrences throughout the species' range. However, we have expanded and reorganized the final determination to clarify the significance of threats, including wildfire, to *L. papilliferum*. Current research indicates fire frequency in the sagebrush-steppe ecosystem throughout the range of *L. papilliferum* has increased from a historic average interval of 60 to 110 years to less than 5 years at many sites, due to the invasion of nonnative annuals such as cheatgrass (Whisenant 1990). See Summary of Factors Affecting the Species section for a more complete discussion.

Issue 7: A number of comments, including those from OSC, focused on wildfire rehabilitation activities and their impacts to *Lepidium papilliferum* and its habitat, including mitigation efforts that can be taken to reduce the risk of irreversible alteration of slickspots from reseeding actions such as drill seeding. Some commenters, including OSC, asserted that the potential impacts to *L. papilliferum* associated with the use of nonnative perennials in fire rehabilitation activities should be balanced with potential impacts to *L. papilliferum* associated with invasion of nonnative annuals following wildfire. One commenter questioned the conclusion in the proposed rule that the use of the herbicide Oust (sulfometuron methyl) is a threat to *L. papilliferum* in light of Scholten (2000). Another commenter asserted that the presence of nonnative perennial forage species does not impact *L. papilliferum* because these species do not grow well on slickspots, and the real impact to *L. papilliferum* is associated with disturbance from drill seeding.

Our Response: Use of nonnative forage grass species (such as crested wheatgrass and Russian wildrye (*Elymus junceus*)) can result in successful establishment of perennial

plants, ultimately reducing and diminishing the impacts of cheatgrass and its attendant accelerated fire frequency. As clarified in this final determination, we agree that use of nonnative species that closely mimic the biology and ecological function of species native to the area may be a necessary first step in restoration of a site following wildfire if native seed cannot be used due to limited availability or prohibitive cost.

Fourteen (19 percent) of the known *Lepidium papilliferum* occurrences are located within wildfire rehabilitation projects and crested wheatgrass seedings. As stated in both the proposed and this final determination, although some *L. papilliferum* may temporarily persist in spite of these restoration seedings, most occurrences support lower numbers of plants, and data are not available to determine long-term persistence (Mancuso and Moseley 1998).

Herbicides such as Oust are one of a number of tools available for the control of nonnative invasive plants. Scholten (2000) reports that, while Oust did not impact germination of seeds within the seed bank in the year following application, it reduced input into the seed bank by reducing *Lepidium papilliferum* plant density and seed production in the year of application. In addition, Scholten *et al.* (2002) conclude that the results of their study show evidence that Oust and drill seeding may have some long-term effects on *L. papilliferum* plants, although the cause of the effect is not known, and the extent seems to be minimal and highly tied to climatic conditions. Currently, BLM has a moratorium on the use of Oust on all BLM-managed lands, and it has not been used in *L. papilliferum* habitat since the spring of 2001 (BLM, *in litt.* 2002b). The BLM, Air Force, and IDARNG avoid herbicide spraying for noxious weed control near occupied *L. papilliferum* habitat (BLM, *in. litt.* 2003; Air Force 2003; IDARNG 2003). Additionally, BLM policy requires that areas affected by wildfire are rested from land use activities to meet rehabilitation management objectives (CCA 2003).

Some occupied slickspots have been permanently impacted following drill-seedings, but it is often not clear whether fire, seeding, or the combination of the two disturbances caused the disappearance of the species or the slickspot. See a more complete discussion on the effects of the herbicide Oust and the effects of drill seeding in the Summary of Factors Affecting the Species section.

Issue 8: Some commenters, including OSC, thought the discussion of cattle grazing in the proposed rule was not based on research demonstrating the positive and negative effects of cattle grazing, and suggested there is need for additional research to determine the effects of livestock management practices on *Lepidium papilliferum*. The commenters thought the proposed rule overemphasized the livestock grazing threats to *L. papilliferum* relative to other threats. One commenter indicated that some disturbance of the soil surface by livestock hoof action is actually beneficial in covering seeds with soil and breaking the crust so seedlings can emerge. Another stated that grazing reduction or elimination may actually have an adverse impact on *L. papilliferum* by increasing vegetation biomass, and subsequently increasing the spread and intensity of wildfires. Some commenters stated that livestock management activities encourage the invasion of nonnative annuals that has led to increased fuel loads and fires and further decreases in native bunchgrasses. Other commenters said livestock grazing could be used as a tool to control invasion of nonnative annuals.

Our Response: Grazing currently occurs at 56 (75 percent) of the 75 known *Lepidium papilliferum* occurrences, which include approximately 19,373 ac (7,840 ha) (96 percent) of the total area of extant occurrences (20,500 ac (8,300 ha)). We identified cattle grazing as a threat because it may result in trampling of plants in slickspots, especially when it occurs during wet periods when slickspots are most vulnerable to disturbance, or when it occurs at levels that allow for the spread of invasive nonnative annual plants. We have no information that indicates that disturbance of the soil surface by livestock hoof action is beneficial to *L. papilliferum*. Livestock grazing, at an appropriate level and season, may be compatible with the conservation of *L. papilliferum*. However, such appropriate levels are not known at this time and the effects of direct impacts must be determined by more study. In addition, as part of the CCA, BLM has agreed to change the terms and conditions of all grazing permits to reflect and include the conservation measures for each management unit. See the Summary of Factors Affecting the Species section for more detailed information.

Limited data are currently available regarding threshold management levels from livestock management activities for *Lepidium papilliferum*. We have found

it difficult to establish impact (or effect) thresholds with any degree of certainty given the lack of data. Adaptive management techniques in areas occupied by *L. papilliferum* could incorporate new information from ongoing and proposed livestock grazing studies and monitoring conservation efforts for the species. We anticipate that additional information regarding *L. papilliferum* and livestock grazing, such as research currently underway by the Idaho Department of Agriculture, Air Force, and Idaho Cattle Association, will be available for use in species conservation.

Issue 9: Some commenters, including the OSC, stated that the status of *Lepidium papilliferum* was a symptom of the current ecological condition of the sagebrush-steppe ecosystem, and others do not think that there is likely a connection. OSC believed that we need to consider the broader implications to other sagebrush-steppe obligate species by listing *L. papilliferum* at this time. Some commenters, including OSC, stated that habitat fragmentation of the sagebrush-steppe ecosystem negatively impacts *L. papilliferum*, while others indicated that there are no data to suggest that habitat fragmentation impacts it.

Our Response: *Lepidium papilliferum* is one of several species found only in sagebrush-steppe ecosystem that are affected by habitat loss and degradation. The fragmentation and degradation of the sagebrush-steppe habitat has been well documented (Yensen 1980; Billings 1990; Whisenant 1990; Moseley 1994; Miller *et al.* 1999; Noss *et al.* 1995; Mancuso 2002). There is a general lack of information about the effects of habitat fragmentation on *L. papilliferum*. See the Summary of Factors Affecting the Species section for more detailed information.

Issue 10: Some commenters indicated that training activities, facilities, and land management practices on military managed lands impact *Lepidium papilliferum*. Other commenters stated that there are no data to indicate that military training significantly impacts *L. papilliferum*. IDARNG suggested that listing of *L. papilliferum* as a threatened species could be detrimental to future military training activities, including ground and aerial training maneuvers. One commenter indicated that military training activities could be conducted in a manner that would not significantly impact recovery of *L. papilliferum*. The ITD indicated that it was unknown if the impacts of listing *L. papilliferum* would be compatible with national defense and/or Homeland Security.

Our Response: Some military training activities have been identified as potential factors affecting *Lepidium papilliferum* and its habitat. Occurrences of *L. papilliferum* are located within the boundaries of lands designated for military training activities by the Air Force and IDARNG. *L. papilliferum* located on the Air Force's Juniper Butte ETR are considered to encompass one large occurrence as defined by ICDC. This occurrence constitutes 44 percent (approximately 8,970 ac (3,630 ha)) of the total known extant occurrence area across the range of the species according to ICDC data, with approximately 109 ac (44.1 ha) of this area slickspot microsite type habitat and only 4 ac (1.6 ha) of occupied habitat. However, the Air Force intends to use only 300 ac (121 ha) or 3.3 percent of the entire Juniper Butte ETR as the actual bombing impact area (Air Force 2000). This 300-ac (121-ha) area contains only 1.5 percent of the 20,500-ac (8,300-ha) total known occupied *L. papilliferum* habitat. It is also anticipated that a small amount of ordnance will be dropped outside the primary ordnance impact area, but the potential impact to *L. papilliferum* would likely be minimal. As a result, the threats to *L. papilliferum* by Air Force training activities are expected to be minimal (see Factor A in "Summary of Factors Affecting the Species" section for further discussion on military activities).

On the OTA, IDARNG has implemented a variety of actions to meet the conservation needs of *Lepidium papilliferum* over the past 12 years, while still providing for military training activities. These actions include intensive fire suppression efforts, and restricting ground operated military training to where the plants are not found. We believe it is possible to conduct military training activities in a manner compatible with the conservation of *L. papilliferum*, and we do not anticipate significant impediments to the Air Force and IDARNG in conducting ongoing military training activities in southwest Idaho as a result of implementing conservation measures for this species.

As we believe that the majority of potential military impacts to *Lepidium papilliferum* have been reduced through avoidance or mitigation as described in the Air Force and IDARNG INRMPs, we believe that potential impacts of conserving this species to Homeland Security would also be minimal.

Issue 11: Miscellaneous threats to *Lepidium papilliferum* were discussed by some commenters, such as impacts from off-road vehicle (ORV) use in *L.*

papilliferum habitats, and potential impacts of insects and wildlife. One commenter questioned whether the large infestation of Mormon crickets (*Anabrus simplex*) over the last two years might have impacted *L. papilliferum* through vegetative depredation. Another commenter stated there are no data to support the statement that herbivory by beetles is a threat to the species. Several commenters, including OSC, stated that drought should be considered as a threat to *Lepidium papilliferum* within the rule. One commenter stated that the increase of nominate plants in the sagebrush-steppe ecosystem is likely impacting the abundance of insect pollinators of *L. papilliferum*.

Our Response: We have discussed ORV use and potential impacts of insects and wildlife in the Summary of Factors Affecting the Species section.

Also, we are unaware of any specific studies documenting foraging on *Lepidium papilliferum* by Mormon crickets, although, as indicated in our proposed rule, herbivory by beetles has been observed on *L. papilliferum* plants (M. Mancuso, *in litt.* 1998).

Regarding drought, there was no specific information pertaining to potential drought effects to *L. papilliferum*. We have added a discussion of the insect pollinators of *L. papilliferum* and potential impacts to them from conversion of sagebrush-steppe habitats to nonnative annual grasslands.

Issue 12: Some commenters, including ITD, stated that the taxonomic status for *Lepidium papilliferum* is problematic and warrants further evaluation, while others asserted that *L. papilliferum* is a distinct species.

Our Response: As discussed in our proposed rule, *Lepidium papilliferum* was originally described as *L. montanum* var. *papilliferum* but was included as a distinct species in a recent review of the mustard family (Brassicaceae) by Rollins (1993). An independent review by Lichvar of the taxonomic status of *Lepidium papilliferum* as presented in Rollins (1993) stated that *L. papilliferum* "has distinct morphological features that warrant species recognition," and, "until a final taxonomic determination is done in the future, Dr. Rollins' decision to place it at the species level makes sense for now (*in litt.* 2002)". Please refer to the Background section of this rule for more detailed information and clarification as to the taxonomic status of this species.

Issue 13: One commenter stated that we do not have the authority to protect *Lepidium papilliferum* under the Act

because the species occurs in only one State and is not an article of interstate commerce.

Our Response: Federal courts have repeatedly held that the Federal government has the authority under the Commerce Clause of the U.S. Constitution to protect species that are endemic to one State, and that are not articles of interstate commerce. See *Rancho Viejo, LLC v. Norton*, 323 F.3d 1062 (D.C. Cir. 2003); *National Association of Home Builders v. Babbitt*, 130 F.3d 1041 (D.C. Cir. 1997). The Federal government also has the authority under the Property Clause of the Constitution to protect this species. *Lepidium papilliferum* occurs primarily on Federal lands. If this species were to become extinct, the diversity of plant life on these Federal lands would be diminished. The courts have long recognized Federal authority under the Property Clause to protect Federal Resources in such circumstances. See *Kleppe v. New Mexico*, 429 U.S. 873 (1976); *United States v. Alford*, 274 U.S. 264 (1927); *Camfield v. United States*, 167 U.S. 518 (1897); *United States v. Lindsey*, 595 F.2d 5 (9th Cir. 1979). This is no longer an issue as we are withdrawing the proposed rule to list *L. papilliferum*.

Comments on the “Best Available Information on *Lepidium papilliferum*” and the Draft Candidate Conservation Agreement for Slickspot Peppergrass (*Lepidium papilliferum*).

On October 30, 2003, we published a notice of document availability for review and public comment, which opened a 14-day public comment period through November 14, 2003 (68 FR 61821). We solicited public comment on our document “Best Available Information on *Lepidium papilliferum*,” which contained information we planned to utilize in making a final listing determination for the species. We also accepted public comments on a document entitled “Draft Candidate Conservation Agreement for the Slickspot Peppergrass (*Lepidium papilliferum*)” (Idaho Office of Species Conservation, *in litt.* 2003). We received 18 comments, many of them from parties that had previously commented on *L. papilliferum*. Of the 18 comment letters, 4 commented on the “Best Available Information of *Lepidium papilliferum*,” 8 commented on the CCA, and 6 commented on both documents. Since our role in development of the CCA was only advisory to the Cooperating Parties of the CCA, we collected the comments for these parties as a courtesy and provided the comments to them at the close of the

comment period. The Cooperating Parties of the CCA reviewed, analyzed, and incorporated the public comments into the CCA as they deemed appropriate.

Issue 1: One commenter provided us with additional scientific information regarding the chemical characterization of the upper three soil horizons of representative slickspots.

Our Response: We have incorporated the additional information into the description of slickspots in the Background section of the final determination.

Issue 2: One commenter suggested revision of the data representing element occurrence acreages on the Air Force’s Juniper Butte ETR. Specifically, that the Service should revise the element occurrence size for the ETR to 1,098 ac (445 ha) instead of the 8,970 ac (3630 ha).

Our Response: We have incorporated information regarding the question of occurrence area and delineations into the Background section of this final determination. We have requested that the ICDC review and update the ICDC in 2004 including an evaluation and possible revision to the extent of acreage and number of element occurrences on the Juniper Butte ETR.

Issue 3: Some additional miscellaneous threats to *Lepidium papilliferum* were discussed by some commenters, such as the impacts of Mormon crickets and grasshoppers. We also received suggestions for management of insects to provide conservation benefits to *L. papilliferum*. Pursuant to CCA 2003, Conservation Measure 34, “the BLM in cooperation with the U.S. Department of Agriculture (USDA) Plant Protection and Quarantine (PPQ) will aggressively work to minimize the risk of insect (*i.e.*, Mormon crickets and grasshoppers) herbivory when outbreaks occur that may threaten existing element occurrences.”

Our Response: The issue of the threat from Mormon crickets has been raised in previous comment periods, and is addressed under Issue 11 above. We are unaware of any specific studies documenting foraging on *Lepidium papilliferum* by grasshoppers, although, as indicated in our proposed rule, herbivory by beetles has been observed on *L. papilliferum* plants (M. Mancuso, *in litt.* 1998).

Suggestions of possible measures to eliminate harmful insects, as well as measures to increase potential pollinators for *L. papilliferum*, were shared with cooperators developing the Candidate Conservation Agreement.

Issue 4: Some commenters questioned several aspects of our discussion of impacts to slickspots, including grazing impacts, such as hoofprint penetration of slickspots, and deposition of soils into slickspots.

Our Response: Much of the issues related to grazing activities are addressed in our responses to Issues 7 and 8 above. We have updated our discussion of the chemical and physical characteristics of slickspots (see also Issue 1 under the “Best Available Information on *Lepidium papilliferum*” section) in the Background section. We have included a discussion of soil erosion and deposition resulting from wildfire and livestock grazing in Summary of Factors Affecting the Species Factor A of this final determination.

Summary of Factors Affecting the Species

Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for adding species to the Federal list of endangered and threatened species. 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. The following analysis examines the listing factors, their application to *Lepidium papilliferum*, and evaluates conservation measures that act to reduce present and future threats to the species. The Service’s Policy for Evaluation of Conservation Efforts When Making Listing Determinations (68 FR 15100; March 28, 2003) (PECE) identifies criteria we will use in determining whether formalized conservation efforts that have yet to be implemented contribute to making listing a species as threatened or endangered unnecessary. The PECE policy applies to several of the conservation agreements that we have considered in this analysis.

A Candidate Conservation Agreement was completed in December 2003, by the BLM, the State of Idaho, IDARNG, and holders of BLM livestock permits. In conjunction with the CCA, several private landowners entered into Memorandum of Understandings (MOUs) with the State of Idaho committing to conservation efforts on approximately 17,000 acres of private land. The IDARNG has operated the Orchard Training Range (OTA) under their INRMP for several years and has committed under the conservation agreement to additional conservation actions. The Air Force has recently updated their INRMP to strengthen conservation measures for the species. These conservation plans have

contributed to reducing the overall threats to the species. The five factor analysis below will examine that contribution, and following that analysis is the application of the PECE policy to this listing determination.

A. The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range. Several categories of activities have potential to affect the sagebrush-steppe ecosystem and slickspot microsite habitat to which *Lepidium papilliferum* is an obligate species, including increased frequency and intensity of wildfires; wildfire management; wildfire rehabilitation; habitat invasion by nonnative plant species; cattle and sheep grazing activities that are incompatible with *L. papilliferum* conservation; residential and agricultural development; ORV use; gravel mining; and certain military training activities (Moseley 1994; Mancuso and Moseley 1998; Interagency *L. papilliferum* Group (ILPG), *in litt.* 1999).

This section of the rule presents information for each of the factors affecting *L. papilliferum* and its habitat, followed by a summary of how formalized conservation efforts eliminate or reduce adverse effects.

Wildfire

The proposed rule stated that “* * * wildfire is a threat to all known *Lepidium papilliferum* occurrences throughout its range” (67 FR 46441) and may represent one of the principal factors affecting the species and the sagebrush-steppe ecosystem. The effects of wildfire can be both locally severe and long term. Data on the specific direct effects to *L. papilliferum* are often difficult to interpret due to the lack of sufficient long-term monitoring data, although there have been numerous studies and reports related to the effect of wildfire on the sagebrush-steppe ecosystem.

Wildfire effects on *Lepidium papilliferum* encompass several categories below, most of which are interrelated and difficult to isolate from each other. For example, the invasion of nonnative annual grasses increases the amount and continuity of fine fuels across the landscape, which in turn increases the likelihood of frequent and intense fires within the range of *Lepidium papilliferum*.

Wildfire Frequency, Intensity, and Management

Historically, fires in sagebrush-steppe communities occurred infrequently, tended to burn small areas, and required hotter, drier conditions to burn

(Whisenant 1990; Billings 1990). Although wildfire may have been an important factor in sagebrush-steppe habitat (Miller *et al.* 1999) where *Lepidium papilliferum* evolved, activities following European settlement have greatly altered the historical native vegetation and associated fire regimes in the sagebrush-steppe ecosystem (Brandt and Rickard 1994; D'Antonio and Vitousek 1992; Miller *et al.* 1999; Moseley 1994; Whisenant 1990; Wright and Bailey 1982; Young *et al.* 1976; Young and Evans 1978). Due to the invasion of nonnative plant species such as cheatgrass and medusahead that increase the amount and continuity of fine fuels across the landscape, the fire frequency has been increased from between 60 to 110 years to less than 5 years in many sites of the sagebrush steppe ecosystem (Whisenant 1990; Wright and Bailey 1982; West and Young 2000; Billings 1990; USGS, *in litt.* 1999). These uncharacteristic fires tend to be larger and burn more uniformly, resulting in fewer patches of remnant unburned vegetation than naturally occurred, which also impacts post-fire recovery of native sagebrush-steppe vegetation (Whisenant 1990). The result of this altered fire regime has been the conversion of vast areas of the former sagebrush-steppe ecosystem into nonnative annual grasslands (USGS, *in litt.* 1999).

Frequent fires can also promote soil erosion (Bunting *et al.* 2003; K. Sanders, University of Idaho, *in litt.* 2000) in arid environments such as the sagebrush-steppe ecosystem. Increased sedimentation due to soil erosion into slickspots from surrounding areas after a fire may allow weedy species to invade slickspots (DeBolt 1999, as cited in Air Force 2000). Approximately 43 percent of the area within the known range of *L. papilliferum* is located within a wildfire mosaic that burned at least once between 1957 and 2002 (BLM 2003). Presently, 58 (77 percent) of the 75 known *L. papilliferum* occurrences are documented as being wholly or partially burned (ICDC 2003).

Wildfire Management

Ground disturbance associated with fire control, such as establishment of fire lines (areas with vegetation removed to bare soil to break fuel continuity), establishment of fire camps and staging areas, and use of fire suppression vehicles can also impact existing *Lepidium papilliferum* occurrences and damage slickspot habitat (ILPG, *in litt.* 1999; BLM, *in litt.* 2001). The practice of “green-stripping” or converting native sagebrush-steppe habitat to nonnative plant species that are

considered more fire resistant also has occurred (Moseley 1994). “Green-stripping” using noninvasive plant species that are fire resistant may limit the overall potential for adverse effects of wildfire on *L. papilliferum* habitat (BLM, *in litt.* 2002b), although implementing “green-stripping” in an inappropriate location and/or using an invasive plant species can adversely affect *L. papilliferum*.

Good fire management practices can reduce the threat of fire and result in improved conservation status for the *Lepidium papilliferum*. The military has a number of current, ongoing efforts to address fire suppression. Since the late 1980s, the policies of the Army National Guard included immediate fire suppression during military activities to prevent damage to intact sagebrush steppe and *Lepidium papilliferum* sites within the Orchard Training Area (IDARNG 2003). Seven occurrences of *L. papilliferum* occur within this area. These occurrences include two of the A-ranked occurrences, one of which is the largest (2,500 acres) A-ranked occurrence (ICDC 2003). Since 2002, the Air Force has also instituted a high-level rapid response for fire suppression on the Juniper Butte ETR (Air Force 2004). The Air Force also addresses fire prevention through reducing standing fuels and weeds, planting fire-resistant vegetation in areas with a higher potential for ignition sources, such as areas along roads, and using fire indices to determine when to restrict activities when fire hazard rating is extreme (Air Force 2004). The BLM and IDARNG are continuing their mutual support agreement for wildfire suppression in the Snake River Birds of Prey National Conservation Area (IDARNG 2003).

Wildfire Rehabilitation

In the proposed rule, we stated that post-fire range restoration efforts can also threaten *Lepidium papilliferum* (67 FR 46441). Drill seeding is the process of seeding an area using a rangeland drill that plants and covers seed simultaneously in furrows. It is designed to give the seeds moisture and temperature advantages that will enhance their competitive fitness, and consequently, their success rate (Scholten and Bunting 2001). Drill-seeding may have less severe impacts on slickspot habitat than disking the soil, but the success of fire rehabilitation efforts at maintaining slickspots and *L. papilliferum* varies considerably. Some occupied slickspots have been negatively impacted following drill-seeding, but it is often not clear whether fire, drill-seeding, or the combination of the two disturbances

caused the disappearance of the species or the slickspot. Agency resource specialists have observed that in some cases slickspots can reform following a disturbance such as a drill seeding event (Moseley 1994; A. Martin, Air Force, pers. comm. 2003). It is unknown whether a reformed slickspot would maintain the structural soil characteristics necessary to support *L. papilliferum* (A. Harkness, pers. comm. 2003), or whether the *L. papilliferum* seed bank would remain viable until such time that a slickspot reforms (Air Force 2000). Preliminary results after 5 years of an ongoing 6-year study examining the effects of drill seeding on *Lepidium papilliferum* indicate that the density of above-ground *L. papilliferum* plants was lower on drilled slickspots than on non-drilled sites (Scholten and Bunting 2001; Scholten *et al.* 2002), although effects of drill-seeding on the *L. papilliferum* seed bank were not examined in this study.

The benefits of post-fire revegetation, and subsequent recovery of soil surfaces conducive to germination and establishment of perennial grass and shrub communities, may outweigh the initial short-term disturbance associated with drill seeding (Hilty *et al.* 2003; Young and Allen 1996; Bunting *et al.* 2003). In 2001, the BLM modified its rangeland drills used in fire rehabilitation to reduce the seeding depths so the drills would be less damaging to above-ground *L. papilliferum* plants, the seed bank, and slickspot habitat. Establishment of seeded grasses, forbs, and shrubs following drill seeding conducted in 2001 using depth bands was observed to be at acceptable levels during a BLM field review in September 2002 (B. Heslin, Service, pers. comm. 2002).

Conservation measure 08 of the CCA commits BLM to use seeding techniques that minimize soil disturbance such as no-till drills and rangeland drills equipped with depth bands when rehabilitation and restoration projects have the potential to impact occupied and suitable habitat. Rehabilitation and restoration standard operating procedures for *Lepidium papilliferum* were issued in an Instruction Memorandum in January 2004.

Since 1987, the Army National Guard has had policies in place for fire rehabilitation activities that avoid the use of drill seeding and require the use of native plant species for reseeding fire-impacted areas on the OTA (IDARNG 2003). Both the BLM and Air Force have "slickspot-friendly" rehabilitation measures in place, for example, forage kochia are not to be used for revegetation in *L. papilliferum* habitat.

Nonnative Perennial Plants

Activities associated with seeding burned areas with highly competitive nonnative perennial plants, including crested wheatgrass, have resulted in the destruction of at least two *Lepidium papilliferum* sites (Moseley 1994; A. DeBolt, *in litt.* 2002). Crested wheatgrass, a forage species, is a strong competitor and its seedlings are better than some native species at acquiring moisture at low temperatures (Lesica and DeLuca 1998, Pyke and Archer 1991; Marlette and Anderson 1986; Bunting *et al.* 2003).

Although the use of native plant species for fire rehabilitation is preferable, there have been problems with the availability and high cost of native seed (Jirik 1999; Brooks and Pyke 2001). One alternative may be to focus revegetation programs on establishing functional groups of nonnative plant species that maintain ecosystem processes (Jones 1999; Masters and Sheley 2001).

Intermediate wheatgrass (*Agropyron intermediate*) and forage kochia are two additional nonnative perennial species that have been used to rehabilitate sagebrush-steppe habitat after a fire event (Moseley 1994; Mancuso 2002; Popovich 2002). Post-fire monitoring over a 6-year period following aerial seeding with forage kochia in one study area showed eventual loss of *L. papilliferum* along the monitoring transect and a dramatic increase in forage kochia (A. DeBolt, *in litt.* 2002), indicating that forage kochia may be a strong competitor with *L. papilliferum* (Meyer *et al.*, *in press*). Under current policies, the BLM no longer uses forage kochia as a fire rehabilitation species in *L. papilliferum* habitat (BLM *in litt.* 2002b). Additionally, in the future, the BLM will emphasize the use of native plants, including forbs, in seed mixes and avoid the use of invasive nonnative species (CCA *in litt.* 2003). BLM issued in January 2004, an Instruction Memorandum to its employees to comply with the CCA's requirements for emergency stabilization and fire rehabilitation activities. The Air Force also now uses only non-invasive plant materials and will not use forage kochia, intermediate wheatgrass, and salt-tolerant species such as four-wing saltbush, according to its revised INRMP.

Invasive Annual Plants

The past conversion of vast areas of the sagebrush-steppe ecosystem to annual grasslands has reduced suitable remaining habitat for, and invaded some, *Lepidium papilliferum*

occurrences. An estimated 5 to 6 million ac (2 to 2.43 million ha) of sagebrush-steppe in the western Snake River basin has been converted to nonnative annual vegetation dominated by cheatgrass and medusahead (Noss *et al.* 1995), a portion of which includes *L. papilliferum* occurrences. *L.*

papilliferum typically declines or is extirpated following the replacement of sagebrush-steppe habitat by nonnative annuals (Moseley 1994). Invasion by nonnative annual plants leads to increasing habitat fragmentation and isolation of extant occurrences (through interspersion of unsuitable annual grasslands habitat (Moseley 1994)). Fifty-seven of the 75 known *L. papilliferum* occurrences are documented as containing some level of nonnative annual (mainly cheatgrass) invasion (ICDC 2003). The subsequent increase in frequency of fire and the associated invasion of weedy annual plants are threats to the long-term integrity of *L. papilliferum* habitat and population viability (M. Mancuso, *in litt.* 1998).

The BLM has agreed in the future to emphasize the use of native plants and avoid the use of invasive nonnative species (CCA *in litt.* 2003). CCA conservation measure number 12 on page 25 of the CCA states that the BLM will use forbs in seed mixes to increase diversity and pollen sources for insect pollinators. Conservation measure 10 on page 25 of the CCA states that the BLM will use native plant materials and seed if available during restoration and rehabilitation activities unless use of non-native, non-invasive species would contribute beneficially to maintenance and protection of occupied and suitable *L. papilliferum* habitat. Recent BLM Instruction Memoranda formalize these measures and approximately 30 others as policy and assigns lead management responsibility for CCA conservation measures.

The Air Force and IDARNG have also developed similar measures (Air Force 2004; IDARNG 2003). Page 6–30 of the Air Force INRMP required use of only non-invasive plant materials and use of native plants to the maximum extent practicable. The IDARNG has implemented a similar policy for the past several years.

Use of Herbicides in Fire Control

Another potential threat to *Lepidium papilliferum* related to wildfire is the use of herbicides in fire rehabilitation. Oust is a nonspecific herbicide toxic to plants in the mustard family that is absorbed by both roots and foliage of the plants when it is applied. Oust has been used over large areas for rehabilitation in

the past on BLM lands that contain *L. papilliferum* habitat. Currently, BLM has a moratorium on the use of Oust on all BLM-managed lands, and it has not been used in *L. papilliferum* habitat since the spring of 2001 (BLM, *in litt.* 2002b). The BLM, Air Force, and Idaho Army National Guard avoid herbicide spraying for noxious weed control near occupied *L. papilliferum* habitat (BLM, *in litt.* 2003; Air Force 2004; IDARNG 2003). Additionally, BLM policy requires that areas affected by wildfire are rested from land use activities to meet rehabilitation management objectives (CCA, *in litt.* 2003).

Summary

Existing conservation measures designed to reduce the adverse effects of wildfire, including those implemented through the Candidate Conservation Agreement (CCA), Air Force INRMP and IDARNG INRMP, apply to approximately 97 percent of *Lepidium papilliferum*-occupied range. For example, the IDARNG, Air Force, and BLM will continue their rapid response or mutual support agreement for fire control, and will not use forage kochia for revegetation within occupied *L. papilliferum* habitat. The CCA implements aggressive suppression objectives aimed at reducing wildfire risks, particularly for priority occurrences. BLM has targeted suppression of 90 percent of fires to less than 100 ac (40.5 ha), in most CCA management areas they administer. This represents roughly a doubling of past suppression efforts. The BLM has committed to creating and maintaining fuel breaks where frequent fires can threaten occupied and suitable *L. papilliferum* habitat. Implementation of these more restrictive wildfire management goals and prevention measures will benefit *L. papilliferum* and the sagebrush-steppe habitat, and substantially reduce the threats to the species from fire and subsequent habitat conversion.

The INRMPs and CCA implement minimum impact suppression tactics to mitigate the impacts of suppression. Additionally, the BLM and Air Force will distribute maps to fire crews and provide training so they are aware of element occurrences to avoid ground disturbance impacts to *L. papilliferum* habitat.

An additional 17,000 acres (6,880 ha) of private land are covered in MOUs with the State of Idaho, where landowners will implement actions to avoid ground disturbance impacts in the vicinity of slickspots and coordinate fire suppression activities with the BLM to avoid ground disturbance impacts to *L.*

papilliferum habitat. The duration of these agreements is for 2 years with the possibility of extending this time. Due to the limited area private land constitutes of the *L. papilliferum*'s total range we do not significantly rely on these areas in this withdrawal determination.

As evidenced by the healthy condition of the occurrences on the Orchard Training Area (two A-ranked occurrences), it has been demonstrated that diligent efforts to suppress fire and the use of native species with minimal ground-disturbing fire rehabilitation activities can be effective in reducing the wildfire threat. In addition, the IDARNG already does not drill seed in occupied *L. papilliferum* habitat and uses native plants for reseeding efforts. BLM, the Air Force, and IDARNG avoid spraying herbicides near occupied habitat (CCA, *in litt.* 2003). The BLM, Air Force, and IDARNG all either avoid ground disturbance during rehabilitation or use no-till drills or rangeland drills with depth bands to reduce soil impacts.

We believe that the ongoing and recently implemented conservation measures, while not preventing future wildfire, will reduce both short-term and long-term effects of wildfire in the foreseeable future within the range of the species. Given the inherent difficulties for wildfire prevention, the conservation measures may not be completely effective in preventing the adverse effects of a landscape-level wildfire event. In the event of landscape-level wildfire affecting occurrences, an effective adaptive management strategy to account for changed circumstances as identified in the CCA and INRMPs will be critical to ensure the conservation of *L. papilliferum*.

The CCA on page 117 describes the role of the Slickspot Peppergrass Conservation Team (SPCT) in implementing adaptive management. In addition to the CCA cooperators, the Service is a member of the SPCT. One important component of the adaptive management process is how the SPCT will address the significance of changed conditions in response to developing appropriate adaptive management. Figure 4 (CCA 2003; page 118) outlines the implementation framework and feedback loop. The SPCT will need to address the significance of the changed conditions promptly after the changed condition is discovered (CCA 2003; page 119). The CCA describes in detail the process of adaptive management and assigns the responsibility to the SPCT.

Livestock Grazing Management

The threat of livestock grazing encompasses the effects of trampling, especially during wet periods, and the continued spread of nonnative species that exacerbates wildfire risk. Currently, livestock grazing potentially affects up to 96 percent of the extant occurrences of *Lepidium papilliferum*. While livestock grazing has had direct and long-term indirect impacts to the sage-steppe ecosystem, *Lepidium papilliferum* remains extant in numerous occurrences within its range.

The direct effects of livestock grazing on *L. papilliferum* result primarily from trampling on *L. papilliferum* plants in the spring when soils are moist (Mancuso 2001). Potential indirect effects include trampling damage to occupied slickspots, nonnative plant dispersal, increased organic matter from livestock feces, pollinator impacts, changes in vegetation composition, and increased wildfire. There is a lack of data on the specific direct and indirect effects of grazing to *L. papilliferum*. Available data have limitations due to the lack of sufficient long-term monitoring data.

Grazing currently occurs at 56 of the 75 known *Lepidium papilliferum* occurrences, which includes approximately 19,373 ac (7,840 ha) (96 percent) of the total acreage of extant occurrences (20,500 ac (8,300 ha)).

Beginning in 2000, the BLM initiated conservation efforts to mitigate livestock grazing impacts to *Lepidium papilliferum* on land it manages. The BLM has moved some water troughs to attract livestock outside of areas containing *L. papilliferum*, and also constructed fence enclosures in three areas containing the species to protect it from livestock impacts (BLM, *in litt.* 2002b; ICDC 2003).

In the CCA, BLM has agreed to change the terms and conditions of all grazing permits to reflect and include the conservation measures for each management unit. Each BLM management unit has unit-specific conservation measures for the multiple element occurrences located within it. The conservation measures for the management unit are designed to eliminate, reduce or mitigate the impacts of site specific activities and threats and to maintain or restore the sagebrush-steppe habitat.

Additionally, the BLM has changed the season of grazing use from spring to fall on some allotments to protect flowering annuals from effects of grazing, although this does not protect the biennial form of *L. papilliferum* from impacts such as livestock

trampling in the fall. Under conservation actions proposed in the CCA, one element occurrence (number 50) will receive no livestock grazing in the future. The BLM continues to conduct annual surveys for *L. papilliferum*, and over 52,300 ac (21,165 ha) were surveyed in the Jarbidge Resource Area alone in 2002 (Popovich 2002). Surveys conducted by the BLM in the Inside Desert in 2000 through 2002 resulted in the designation of 12 new occurrences by ICDC (ICDC 2003).

The Air Force established three fenced areas (80 ac (32 ha), 12 ac (4.9), and 20 ac (8.1 ha)) in 2002 with the purposes of promoting *L. papilliferum* research and seed collection (Rose, pers. comm. 2003; Air Force, *in litt.* 2002a). Fencing is not always effective at prohibiting livestock entry into fenced areas depending upon fence maintenance and other circumstances. For example, in 2003, cattle were observed in one of the three fenced areas (The Environmental Company, Inc., *in litt.* 2003). Air Force contract biological survey personnel immediately repaired the fence.

Research to examine the relationship between livestock grazing and *L. papilliferum* was initiated in 2002 by the State of Idaho and the Air Force in cooperation with the Service and is being continued by the University of Idaho (Bunting, pers. comm. 2003) (Air Force, *in litt.* 2002a; K. Crane, Idaho Department of Agriculture, pers. comm. 2003). This is the first study of its kind that will focus specifically on livestock grazing and *L. papilliferum*. Results of this study will provide a basis for either validating existing conservation measures or adjusting conservation measures through the adaptive management approach outlined in the conservation documents (CCA, *in litt.* 2003).

We acknowledge that the short- and long-term effects of livestock grazing on *Lepidium papilliferum* have not been adequately evaluated to date, and it is not possible to make definitive cause and effect determinations with any degree of certainty. Lacking this information, we extrapolated research from similar situations and studies of the sagebrush-steppe habitat in general which we used to make informed judgments about how grazing might affect *L. papilliferum* and its habitat.

Summary

The conservation documents (CCA, USAF-INRMP, IDARNG-INRMP) implement numerous measures to avoid, mitigate, and monitor effects of grazing on the species. Livestock grazing conservation measures implemented in

the CCA and the Air Force INRMP apply to all federally managed lands within the occupied range of *Lepidium papilliferum*. Avoidance measures in the conservation documents include closing areas to grazing, maintaining existing enclosure fencing, prohibit trailing cattle through element occurrences when soils are saturated, placing salt or feed supplements so as to avoid slickspot trampling, adjusting seasons use to avoid impacts when slickspot soils are most likely to be saturated and susceptible to heavy trampling effects, and prohibiting the use of off road areas for vehicle travel.

Conservation measures implemented by the CCA include minimum distances for placement of salt and water troughs away from occurrences of the species. The CCA also implements measures to reduce trampling during wet periods, including trailing restrictions and restrictions to prevent penetrating trampling of slickspots. More restrictive conservation measures have been implemented in the CCA for priority occurrences, such as no early spring grazing, fencing to exclude livestock, and delaying turnout when soils are saturated.

Efforts described in many of the CCA conservation measures (CCA, *in litt.* 2003) reduce the extent and depth of trampling slickspots by livestock. Though little data is available regarding this potential impact, we consider breaking of the slickspot restrictive layer as having the most potential for damaging the integrity of the slickspots. One source of information regarding trampling of slickspots is from studies at the IDARNG's OTA. A significant reduction in above-ground *L. papilliferum* plant numbers at a site on the OTA was documented for a 6-year period (1996 to 2002) following an intensive livestock trampling event that occurred in the spring of 1996 (Meyer *et al.*, *in press*), and population modeling indicated that this reduction could not be explained as a possible consequence of weather patterns.

In addition to the conservation measures implemented by CCA cooperators, several private landowners representing 17,000 ac (6,880 ha) of private land have entered into MOUs with the State of Idaho to conserve the species. These private landowners have agreed to implement measures from the CCA pertaining to minimum distances for placement of salt blocks away from slickspots, minimum distances for water trough placement away from slickspots, and avoiding trailing of livestock when soils are saturated, and restricting their vehicle travel to existing roads and tracks. At least one landowner will

include 160 acres (64.7 ha) of private land into an enclosure to protect an occurrence from grazing. The duration of these agreements is for 2 years with the possibility of extending this time. Due to the limited area private land constitutes of the *Lepidium papilliferum*'s total range we do not significantly rely on these areas in this withdrawal determination.

Under the revised INRMP, the Air Force will continue to use livestock grazing throughout the majority of the Juniper Butte ETR to reduce the amount of standing grass biomass to in turn reduce wildfire risk (Air Force 2000, 2002b, 2004). The grazing component plan for the INRMP states that livestock grazing will occur annually for up to 60 days and coincides with the shutdown of the range for clean-up and target maintenance. The shutdown period lasts a maximum of 60 days within a 90-day period, from April 1 through June 30. Since grazing is compressed into this 60-day time period, intensive livestock management on Juniper Butte ETR by the Air Force has the potential to impact *Lepidium papilliferum* through increased trampling of slickspot habitats, individual plants, and the seed bank, especially when slickspot soils are wet (Service, *in litt.* 2002) (see also discussion of tramping above).

The Air Force's INRMP focuses on avoiding grazing when slickspots are wet in order to avoid this potential for trampling slickspot habitats. Project 3 of the grazing component plan in the Air Force's INRMP provides guidance for annual monitoring of slickspot soil moisture to determine livestock turnout dates for Juniper Butte ETR. Monitoring of pastures and evaluation of 50 slickspots within each occupied area will be evaluated to determine the level of wetness. A soil penetrometer is used to determine the load rate the slickspot can support before imprintation occurs. The turnout date for livestock will be established when the slickspot surface in 75 percent of slickspots examined is strong enough to support the age and weight class of the cattle to be turned out on the range.

We believe that the conservation measures outlined in the conservation documents (CCA, USAF-INRMP, IDARNG-INRMP) reduce the risk of direct impacts of livestock grazing in the short-term and in the foreseeable future. We also believe that efforts to establish exclosures to protect some *L. papilliferum* areas from grazing impacts represent further reduction in the threat. Effects associated with increased organic matter from livestock feces and pollinator impacts from grazing are not addressed in the conservation

documents but their significance is difficult to assess given the lack of specific studies on these factors for *L. papilliferum*. Further, measures to reduce grazing in sensitive periods for slickspots and to improve fire management will mitigate these potential threats.

Military Training Activities

Military training activities may result in soil disturbance as a result of vehicle maneuvers, increased fire hazards, and continued invasions of nonnative plants. Currently military training affects less than 2 percent of the known *Lepidium papilliferum*-occupied habitat and does not represent a principal factor in the viability of the species and the sagebrush ecosystem. While the effects of soil disturbance from military training activities can have serious local effects on slickspots, conservation measures that have been in place on the Orchard Training Area appear to have essentially eliminated this threat from *L. papilliferum* occurrences on the Training Area. The Air Force has implemented measures to reduce the adverse effects of military training to achieve its conservation goals for this species. We also believe that conservation measures currently in place on both the OTA and Air Force facilities to rapidly suppress fires and provide wash spots for vehicles to avoid continued invasions of nonnative plants greatly reduce the threat of wildfire and nonnative plant invasion impacts and provide for the long-term protection of the species from the effects of military training activities.

Lepidium papilliferum occurs on BLM lands within the OTA where the IDARNG has been conducting its military training exercises since 1953 under a Memorandum of Understanding between the two agencies (Quinney 2000). Other activities, including livestock grazing, are managed within the OTA directly by BLM. Over the past 12 years, the IDARNG has proactively implemented actions to address the conservation needs of *L. papilliferum* and has conducted extensive monitoring and research on the species, while still providing for military training activities. These actions include intensive fire suppression efforts, and restriction of ground-operated military training and facility construction to areas where *L. papilliferum* is not found. IDARNG has implemented restrictions that require all military training activities to avoid sites with *L. papilliferum* and intact sagebrush steppe habitat (IDARNG 2003) on Orchard Training Area. IDARNG is currently updating the OTA INRMP that proposes to continue

numerous conservation measures for *L. papilliferum* associated with IDARNG's military training activities (IDARNG 2003), including restricting training exercises in occupied habitat and active fire suppression. We are not considering these additional conservation measures in this withdrawal determination due to the revised INRMP not being finalized. IDARNG continues to annually monitor *L. papilliferum* both independently and in conjunction with ICDC HII monitoring (IDARNG 2003).

In 2002, the Air Force conducted a complete census of all slickspots and *Lepidium papilliferum* on the Juniper Butte ETR, with the exception of an area approximately 667 ac (270 ha) that included the primary ordnance impact zone (Air Force 2002a). Of the approximately 56,500 slickspots recorded during this census (Air Force, *in litt.* 2003), approximately 2,450 slickspots were documented as containing *L. papilliferum* plants (Bashore, pers. comm. 2003). Approximately 11,300 *L. papilliferum* plants were observed during this census. Only 11 *L. papilliferum* plants were documented as occurring outside of slickspots. ICDC has categorized Juniper Butte ETR as one large *L. papilliferum* occurrence based on administrative boundaries and convenience of record-keeping. This single large occurrence, which constitutes 84 percent of the total acreage of all "B"-ranked occurrences, is currently categorized as a "B"-ranking due to the large number of plants observed within fair-to-low quality habitat (ICDC 2003). The Air Force has created permanent monitoring transects at Juniper Butte Range in 2003, which will be monitored to detect changes in *Lepidium papilliferum* over time (Air Force 2003).

In the proposed rule, we noted that the Air Force has implemented conservation measures to reduce the potential threat to *Lepidium papilliferum* from military training activities (67 FR 46441). During the spring, the Air Force (2000, 2002b) suspends training in the 300-ac (121-ha) primary ordnance impact area to remove and clean up inert training ordnance dropped from jets during training exercises. Soil and vegetation disturbance due to this activity would be greatest during spring, due to the higher probability that slickspot soils would be wet during this period from spring rainstorms. To mitigate adverse effects, the Air Force uses lightweight, maneuverable all-terrain vehicles for ordnance cleanup activities outside of the primary ordnance impact zone to minimize impacts to slickspot habitat

(Air Force 2000). The proposed rule noted that it is expected that direct impacts due to construction and training activities will result in the loss of *L. papilliferum* within the 300-ac (121-ha) primary ordnance impact zone. At this point there is no major construction remaining in the primary ordnance impact zone and operational impacts are mitigated through the INRMP.

Although not likely to frequently occur, sparks generated from inert ordnance hitting the ground or heat from the use of vehicles and other mechanized equipment may also provide an ignition source for wildfire, which could impact *L. papilliferum*. The Air Force has identified fire management as a high priority at Juniper Butte ETR, and fire fighters are stationed on the range during periods of high fire danger (Air Force 2002b). The Air Force has also worked to conserve *L. papilliferum* on the Juniper Butte ETR by moving the proposed locations of several industrial complex buildings associated with their military training mission prior to construction to avoid slickspots.

The dropping of inert bombs within the 300-ac (121-ha) primary ordnance impact zone at Juniper Butte ETR during military training exercises could also impact *Lepidium papilliferum* by disturbing slickspot soils and crushing individual plants. A 2002 survey of the primary ordnance impact zone and associated buffer areas located 147 *L. papilliferum* plants (CH2MHill 2002). Potential impacts to *L. papilliferum* from dropping of bombs on slickspots are considered to be localized and minimal as the Air Force intends to use only 300 ac (121 ha), or 2.5 percent of the entire 12,000-ac (4,856-ha) Juniper Butte ETR, as the actual bombing impact area (Air Force 2000).

Summary

Currently the threat of military training activities does not represent a principal factor in the viability of the species and the sagebrush ecosystem in the foreseeable future. Both the IDARNG and Air Force are implementing various conservation measures to avoid or reduce adverse effects of military training on the species and its habitat. We believe that these measures will continue to mitigate adverse effects in the foreseeable future associated with military training and consider this threat to be localized and minimal, with little significance across the range of the species.

Residential and Agricultural Development

Residential and agricultural development threatens slickspot habitat through habitat conversion, increased nonnative plant invasions, increased wildfire. Currently the threat affects less than 5 percent of the known occupied *Lepidium papilliferum* habitat and does not represent a principal factor affecting the species. While the effects of the direct loss of slickspot habitat can be locally severe, we believe that this represents a small portion of the total known range of the species. There are currently two conservation agreements for *L. papilliferum* on non-Federal lands in addition to those discussed in this final determination.

In the proposed rule, we noted the long-term viability of some *Lepidium papilliferum* occurrences on private land was threatened due to the continuing expansion of residential developments in and around Boise (67 FR 46441). However, only 3 percent of the total known occupied *L. papilliferum* habitat occurs on private land totaling 626 ac (253 ha) (Moseley 1994; ICDC 2003).

Development of adjacent private land may also threaten at least four *Lepidium papilliferum* occurrences on BLM land (Mancuso 2000). However, the CCA provides for requirements that right-of-way holders contact the BLM before undertaking land disturbing activities in occupied and suitable habitat. BLM is also increasing patrols to improve adherence to access management requirements and to discourage trespass (CCA, *in litt.* 2003). Specific area requirements include avoiding all occupied habitat and disturbance to suitable habitat in ground moving projects, constructing temporary and permanent project fencing, and requiring rehabilitation and restoration to suitable habitat in ground-moving projects (CCA 2003; page 35).

Summary

Residential and agricultural development potentially affects only 3 percent of the known occupied *Lepidium papilliferum* habitat. While the direct impact of residential and agricultural development may be locally significant, they are a minor threat over the species' range. We believe that the conservation measures identified in the CCA (2003) will reduce the effects road development and maintenance on public lands from associated future development of private lands.

Gravel or Cinder Mining

Gravel and cinder mining may encourage increased nonnative plant

invasions due to increased access of Off-Highway Vehicles and mining equipment. Currently gravel or cinder mining operations affect approximately 3 percent of the known *Lepidium papilliferum*-occupied habitat and do not represent a principal factor in the status of the species.

Summary

The CCA identifies conservation actions for element occurrences 21 and 51 to address restoration of slickspot habitat if degradation is found to be associated with authorized uses, including the rehabilitation associated with cinder and gravel mining operation (CCA, *in litt.* 2003; page 109). BLM will increase the frequency of compliance inspections associated with land use permits in occupied and suitable habitat areas (CCA, *in litt.* 2003; Conservation Measure 25), and the BLM and law enforcement cooperators will increase law enforcement patrols to discourage trespass (CCA, *in litt.* 2003; Conservation Measure 26). Other conservation measures on Federal and State lands through the CCA will reduce future direct and indirect (*i.e.*, nonnative plant invasion) effects of mining on the species. Overall this factor can be locally significant but it is considered of minor importance across the species' range given the conservation measures in place.

Recreational Use

The threat of recreational activities encompasses nonnative plant invasions, increased wildfires, and direct soil disturbance. Recreational activities occur across most of the range of *Lepidium papilliferum*. An exception is Juniper Butte ETR, which is protected from recreational activities due to existing military installation restrictions. The direct effects of recreational activities are relatively minor due to the small percent of habitat affected by these activities. The indirect effects of Off-Highway Vehicle use, such as nonnative plant invasions and wildfire, are more significant (see discussion of wildfire above).

Operation of motorized vehicles off established roads and trails has been identified as a potential threat to *Lepidium papilliferum* and slickspot habitats (ILPG, *in litt.* 1999). Examples of such vehicles include ORVs such as recreational all-terrain vehicles and motorcycles, pickup trucks, vehicles associated with fire suppression activities, water-hauling trucks, and military training vehicles. Vehicles may spread nonnative plant seeds (Gelbard and Belnap 2003) by transporting them in tire treads or vehicle undercarriage

from weed-infested areas to slickspots containing *L. papilliferum*. Motorized vehicles may also disturb slickspot soils and damage *L. papilliferum* habitat and seed banks, particularly when these areas are wet (ILPG, *in litt.* 1999). In dry periods, heat generated from vehicle operation may ignite fine fuels such as cheatgrass, causing wildfires that could impact *L. papilliferum* (ILPG, *in litt.* 1999).

Summary

The conservation measures in the CCA (*in litt.* 2003) include BLM actions to provide additional educational resources to recreationists on invasive weeds, provide voluntary OHV wash points to prevent the further spread of invasive weeds, and increase OHV compliance inspections, among other requirements. The conservation measures reduce the threat of future non-native plant invasions and direct soil disturbance to slickspots as a result of recreational activities.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes. The plant is not a source for human food, nor is it currently of commercial horticulture interest. There is no evidence that commercial, recreational, scientific, or educational harvest or use of *Lepidium papilliferum* represents a significant threat to the species. Overutilization was not identified in the proposed rule as a specific threat to *L. papilliferum* (67 FR 46441), and is not considered to be a threat at this time.

C. Disease or Predation. The threat of disease or predation is extremely low for this species. Consumption of *Lepidium papilliferum* by livestock appears to be low, and also appears to be infrequent by other herbivores (Popovich 2001). An Air Force survey documented limited observations of cattle herbivory on a few *L. papilliferum* plants; however, this has not been confirmed (Air Force 2002a). Spring-grazing sheep have been observed to uproot *L. papilliferum* plants on the OTA. Since *L. papilliferum* is apparently unpalatable, sheep rarely consume the plants but simply pull them from the ground incidentally while foraging, killing the plants (D. Quinney and J. Weaver, pers. comm. 1998). Animals kept from grazing for relatively long periods, such as during transport, may consume *L. papilliferum* after they have been turned out (OSC, *in litt.* 2002).

Herbivory by rodents and beetles has been observed on *Lepidium papilliferum* plants. For example, numerous plants did not survive to set seed at one *L. papilliferum* occurrence

due to high levels of rodent damage (BLM, *in litt.* 2002a). At another location, some plants were nearly defoliated and may have been killed by beetle herbivory (M. Mancuso, *in litt.* 1998; Robertson 2003). We are unaware of any specific studies documenting foraging on *Lepidium papilliferum* by Mormon crickets. We do not consider herbivory by rodents or insects to be a major threat to the species at this time. Impacts to *L. papilliferum* from large native ungulates such as elk or antelope have not been documented.

There is insufficient information to indicate that disease or predation represents a threat to *Lepidium papilliferum*. Disease or predation were not identified in the proposed rule as a threat to the species (67 FR 46441), and is not considered a threat at this time.

D. The Inadequacy of Existing Regulatory Mechanisms. While inadequate protection by way of existing regulatory mechanisms was a significant factor in our decision to propose this species for listing, developments since our proposal have addressed many of these inadequacies. The section "Certainty of Implementation" further discusses the conservation efforts that are underway or are expected to occur as a result of the conservation agreements and plans that have been entered into by various parties. These efforts contribute significantly to the adequacy of existing regulatory mechanisms.

Lepidium papilliferum is considered to be rare and imperiled at the global and State scale (G2/S2 rating) by the Idaho Natural Heritage Program (ICDC 2002). Idaho has no endangered species legislation that protects threatened or endangered species.

Lepidium papilliferum is considered a sensitive species by the BLM (ICDC 2002). BLM typically surveys proposed project areas for special status species, including *Lepidium papilliferum*, within habitats capable of supporting the species as part of the NEPA process for actions that may impact the species or its habitat. The CCA entered into by BLM puts into place many additional measures to conserve the species on BLM lands. In any area that could support *L. papilliferum* BLM will strive to conserve remaining stands of sagebrush or native vegetation in making land management and project level decisions (CCA, *in litt.* 2003; Conservation Measure 26), train permittees on species and habitat recognition (CCA, *in litt.* 2003; Conservation Measure 30), conduct periodic compliance inspections during soil disturbance projects and increased inspections during use periods to

prevent impacts on occupied and suitable habitat (CCA, *in litt.* 2003; Conservation Measure 31), require that all authorizations contain weed control measures (CCA, *in litt.* 2003; Conservation Measure 19), complete botanical surveys for the species and its habitat prior to authorizing herbicide use (CCA, *in litt.* 2003; Conservation Measure 24), increase the frequency of compliance inspections associated with land use permits (CCA, *in litt.* 2003; Conservation Measure 20), require that new renewing or amending right of way holders establish 40–60 percent perennial cover after all ground disturbing activities (CCA, *in litt.* 2003; Conservation Measure 27), require new, renewing or amending right of way holders to contact BLM before conducting ground disturbing activities (CCA, *in litt.* 2003; Conservation Measure 28), and authorize organized recreational activities only in areas outside occupied or suitable habitat. These commitments will significantly increase the regulatory protection offered to *Lepidium papilliferum* and its habitat.

The Air Force has recently updated Integrated Resource Management Plans that contain specific conservation measures for *L. papilliferum*, further improving the adequacy of existing regulatory mechanisms. Compliance with conservation measures in the INRMP is mandatory for all Air Force and contractor personnel, including lessees. The INRMP contains such measures as use restrictions for herbicides, protect habitat by restricting OHV use, restrict activities to reduce fire hazards, implement fire management strategies to reduce impacts to slickspots, use only noninvasive plant materials, use native plants to the maximum practical extent, use drill seeders equipped with depth bands to avoid unnecessary disturbance, control noxious weeds, avoid gathering and trailing cattle when soils are wet, delay turn out until soils are firm, delay movement between pastures when soils are wet, avoid livestock use inside enclosures, use existing roads for grazing-associated activities, use adaptive management to adjust the grazing system.

Conservation measures implemented through the CCA and INRMP, together with the measures being implemented by the IDARNG, which currently manages to conserve the species, apply to approximately 97 percent of the *Lepidium papilliferum*-occupied habitat. These conservation measures significantly reduce the threat of inadequate regulatory mechanisms.

E. Other natural or manmade factors affecting its continued existence. Because the majority of *Lepidium papilliferum* occurrences are extremely small, local extirpation of isolated and scattered occurrences is a factor affecting this species.

The proposed rule stated that less than 5,550 ac (2,246 ha) of high quality (with "A"-ranked occurrences) potential habitat existed for this species which may not be adequate to ensure long term persistence of *L. papilliferum*. New data and new conservation measures since the proposed rule have led us to a different conclusion. First, the estimate of A-ranked occurrences is now 6,596 ac (2,669 ha), which represents an increase over the acreage estimate in the proposed rule which is attributed mostly to the upgrading of occurrence 58 from "B"-ranked to "A"-ranked in the 2002 field season. Second, implementation of new conservation measures, primarily through the CCA, reduce threats with a special emphasis on those occurrences that are considered priority. These priority occurrences which we believe are most important to the long term viability of the species include many of the "A"-ranked occurrences that have more aggressive conservation measures to promote long-term persistence, and they are well distributed across the range of the species.

Approximately 67 percent of all "A"-ranked occurrences are located within two occurrences on the Orchard Training Area, where management is ongoing to conserve the species. Further, the amended Air Force INRMP addresses approximately 3630 ha (8970 ac) on the Juniper Butte Range. This occurrence is ranked as a B quality habitat. The proposed rule erroneously identified this area as having a C ranking (CCA, *in litt.* 2003). Additional conservation measures for this area resulting from the revised INRMP allow us to conclude that this area can effectively contribute to the conservation of *Lepidium papilliferum*, and therefore sufficient habitat likely does exist for the long-term persistence of the species.

Summary

There is a general lack of information about the effects of habitat fragmentation, on *L. papilliferum*. The conservation documents address this in part by requiring all cooperators to use native species in seed mixes during wildfire rehabilitation. Likewise, the adaptive management strategies for the conservation efforts provide means to adjust land uses and/or conservation measures as appropriate to address

other issues that affect the ability of *L. papilliferum* to replenish its seedbank.

Certainty of Implementation of Formalized Conservation Efforts

There are numerous formalized conservation efforts, within 5 different formalized plans, designed to reduce threats and promote the long-term viability of *Lepidium papilliferum* and its habitat. The primary formalized plan discussed below, the CCA, was completed in December of 2003 by the BLM, State of Idaho, IDARNG, and livestock permittees. As part of the CCA, several private landowners entered into MOUs with the State of Idaho committing to conservation efforts on approximately 17,000 acres of private land. The conservation efforts contained within the CCA were considered in our analysis of the status of the *L. papilliferum*. In recent years the BLM has initiated efforts to conserve the species and the recent CCA represents a major commitment on behalf of this federal land manager that accounts for approximately 50 percent of the known range of the species. We are confident in the interest and commitment of all parties to the CCA and the Air Force INRMP.

The IDARNG has operated the OTA under its INRMP for several years and also committed to conservation measures as outlined in the CCA. As IDARNG is party to the CCA, IDARNG's responsibilities in implementation of the CCA are considered in this analysis of certainty of implementation and effectiveness. In addition, the IDARNG is in the process of updating its existing INRMP, to strengthen the conservation measures for the species. The conservation efforts under the existing INRMP are considered in the following analysis of the certainty of implementation or effectiveness as they have already been implemented and shown to be effective. However, the update to the INRMP has not yet been formalized. Therefore, those updates will not be considered as contributing to the improved status of the species.

The Air Force has managed the Juniper Butte Training Range under the Mountain Home Air Force Base INRMP since establishment of the range in 2000. The Air Force recently completed the update to its INRMP to strengthen the conservation efforts for the species. The revised INRMP, in Appendix A, contains component plans including a plan for vegetation and grazing. The vegetation component plan is new in this revised INRMP and describes additional details about long-term monitoring of vegetation, rehabilitation after fire, fuel build-up prevention

methodology, noxious weed identification and control, and *Lepidium papilliferum* survey and monitoring for permanent plots. Thus, its INRMP is considered in our analysis of the status of *L. papilliferum*.

Many of the provisions in both the Air Force and IDARNG INRMPs are continuations or upgrades to existing conservation programs. Therefore a funding, regulatory, and implementation framework already exists for implementation of measures on lands covered by INRMPs. Both the Air Force and IARNG have demonstrated commitment to conserving the species as they have been implementing their INRMPs since 2000 and 1987, respectively. The Air Force manages approximately 44 percent of the known species occurrence acreage and the IDARNG manages approximately 19 percent of the known species range.

Considering the formalized conservation efforts as outlined in the CCA and the Air Force INRMP, we used the following criteria from PECE to direct our determination of the certainty that the conservation efforts will be implemented. As there are hundreds of conservation efforts described in these formalized plans, the following is a summary of information contained within the plans.

1. The conservation effort, the parties to the agreement or plan that will implement the effort, and the staffing, funding level, funding source, and other resources necessary to implement the effort are identified. The parties to the CCA are clearly described in chapter 1 of the CCA. The parties include BLM, State of Idaho, IDARNG, and livestock permittees. As part of the CCA, several private landowners entered into MOUs with the State of Idaho committing to conservation efforts on private land. The Implementation Schedule for Conservation Measures, table 2, in chapter 20 of the CCA outlines the cost for each conservation measure and identifies those that are ongoing and part of base funding.

The Air Force INRMP has been implemented since 2000 has a demonstrated successful implementation of conservation measures. Chapter 6 of the INRMP identifies the parties necessary to implement each of the conservation measures and a January 9, 2004, memorandum to the Service states that "compliance with conservation measures in the INRMP are mandatory for all Air Force and contractor personnel, including lessees (Air Force 2004 in. litt.)." The memorandum also states "Air Combat Command has

funded conservation measures for fiscal year 2004 and has validated our conservation budget requirements for fiscal years 2005–2011." Of the 80 conservation efforts specific to *Lepidium papilliferum* conservation in the INRMP, 78 are on-going and considered already funded and implemented. The remaining two measures were developed explicitly for the 2004 INRMP. The Air Force memorandum of January 9, 2004 (Appendix P to the INRMP) identifies INRMP projects by fiscal year, required funding, and headquarters validation of funding high priority for all conservation measures.

Under their INRMP, the IDARNG has been successfully implementing actions benefiting *Lepidium papilliferum* since 1991 and is a cooperator in the CCA. Staffing needs for the CCA are sufficiently addressed by the INRMP. Appendix 7.6 lists specific projects required to implement the INRMP, and also includes requested funding for these activities. Many of the *L. papilliferum* conservation measures in the INRMP are ongoing and already funded through base funding.

2. The legal authority of the parties to the agreement or plan to implement the formalized conservation effort, and the commitment to proceed with the conservation effort are described. All authorities of all parties to the CCA and Air Force INRMP are spelled out. The CCA under chapter 1 outlines authorities for the Office of Species Conservation, Idaho Department of Fish and Game, Idaho Department of Lands, IDARNG, and the BLM to implement the agreement, including the following. Title 67, section 818 of the Idaho Code provides the Office of Species Conservation the authority to negotiate and enter into conservation agreements between the State and Federal governments and private entities. Title 18, section 3913 of the Idaho Code grants the Idaho Department of Fish and Game the authority to protect plants of conservation concern, such as *Lepidium papilliferum*. The Idaho Constitution provides the Department of Lands the authority to manage State lands. The Federal Land Policy and Management Act (FLPMA, 43 U.S.C. 1737) provides the BLM with the authority to manage and conserve BLM-administered lands and allows the BLM to participate in conservation agreements. The IDARNG currently has the authority to implement the CCA through their existing INRMP as required by the Sikes Act (16 U.S.C. 670). In addition, Army Regulation (AR) 200–3 further provides IDARNG the authority for implementing the CCA and encourages the

development of candidate management plans and to participate in conservation agreements with the Service.

Likewise, the INRMP for the Air Force specify various legal authorities to implement their plans, including the following. The Sikes Act provides for cooperation by the Departments of Interior and Defense with State agencies in planning, development and maintenance of fish and wildlife resources on military reservations throughout the United States. Section 9 of the Sikes Act Improvement Amendments states that the INRMP shall reflect the "mutual agreement" of the Service and State fish and wildlife agency.

In addition the legal authorities described above, implementing regulations and policies further describe State and Federal authorities for implementing the conservation efforts described in the CCA (chapters 1 and 9) and Air Force INRMP (Chapter 1).

3. The legal procedural requirements necessary to implement the effort are described, and information is provided indicating that fulfillment of these requirements does not preclude commitment to the effort. The conservation efforts that require additional procedure requirements prior to implementation, such as environmental review and compliance with National Environmental Policy Act (NEPA), are spelled out in the CCA Chapter 20, Table 2. The majority of the 207 conservation actions do not require additional environmental review. However, the CCA in the Implementation Schedule for Conservation Measures describes approximately 50 conservation actions out of 207 that will have environmental review through NEPA prior to implementation.

The rangewide conservation measures provide the most conservation coverage of the conservation measures in the CCA. Only one of the rangewide conservation measures, establish firebreaks, requires NEPA compliance before implementation. The remainder of the conservation measures within the CCA that require NEPA compliance are for changes to allotment plans or grazing management. These changes will be reviewed under NEPA. However, grazing related measures such as conservation measure 5.14, no trailing cattle through element occurrences within the management area when soils are saturated, are implemented within the confines of existing grazing permits and does not require NEPA compliance. The vast majority of the conservation measures in the Air Force INRMP are on-going actions that have been either

previously reviewed under NEPA or do not require NEPA compliance or related environmental review.

4. Authorizations necessary to implement the conservation effort are identified, and a high level of certainty is provided that the parties to the agreement or plan that will implement the effort will obtain these authorizations. The Explanation of Conservation Measures (chapter 9) and the Implementation Schedule (chapter 20, table 2) within the CCA describe the procedural requirements and schedule to complete the procedural requirements necessary to implement individual conservation efforts. Most of these procedural requirements have been completed. For instance, the BLM in January 2004, distributed various instruction memoranda as called for in the CCA establishing requirements for activities including general management requirements for activities in *Lepidium papilliferum* habitat and emergency stabilization and fire rehabilitation requirements for activities in *Lepidium papilliferum* habitat. The CCA schedules additional BLM instruction memoranda to be issued by May 2004. Several of these are rangewide conservation measures to be addressed in the upcoming instruction memoranda, such as measures .01, .03., and .05 (chapter 9 of the CCA, *in litt.* 2003), that are already being implemented by the BLM. In addition, Congress has urged BLM to implement the CCA, see H.R. 2673, 108th Cong. (2003). The Air Force does not need to complete any additional procedural requirements for implementation of their INRMP and have commenced implementation of its conservation efforts.

5. The type and level of voluntary participation necessary to implement the conservation effort is identified, and a high level of certainty is provided that the parties to the agreement or plan that will implement the conservation effort will obtain that level of voluntary. Though a specific level of landowner participation is not needed to ensure success of the CCA, currently, several BLM livestock permittees have already agreed to implement conservation measures as identified in the CCA. As of December 2003, there are six enrolled private land owners have signed MOUs with the State of Idaho implementing conservation efforts on their private property. The MOUs are the vehicle by which the private entities participate in the CCA. Given the dedication of landowners in collaborating in development of the CCA, we expect full implementation of those efforts.

The expected benefits of participating in CCA implementation are described in chapter 11 of the CCA. The BLM has the authority via grazing permits to assure compliance with the associated conservation measures detailed in the CCA, regardless of participation by the permittee in the CCA. In addition, the private entities participate in implementation of the CCA through other actions such as, report survey information to CDC (see chapter 20 of the CCA, *in litt.* 2003). The necessary voluntary participation will take place as described in the CCA given the understood benefits and the commitment expressed by the private landowners.

Implementation of the Air Force INRMP does not require voluntary participation. A memorandum from the Air Force to the Service, dated January 9, 2004, states that compliance with the conservation efforts in their INRMP is mandatory.

6. Regulatory mechanisms necessary to implement the conservation effort are in place. No additional regulatory mechanisms, beyond what is currently in place, are necessary to implement the conservation efforts in the CCA or the Air Force INRMP.

7. A high level of certainty is provided that the parties to the agreement or plan that will implement the conservation effort will obtain the necessary funding. Of the 207 Management Area conservation measures, 132 are funded through state or BLM base funding, will have no additional cost associated with it, or will be funded by a seasonal user/permit holder. Thus, securing additional funding will not be needed to implement those measures. The remaining conservation measures, specifically those concerning BLM, the agency has requested funding through its out-year programming as stated in a December 11, 2003 memorandum from the Office of Species Conservation on behalf of the CCA Steering Committee. Moreover, BLM, OSC, and Idaho Department of Fish and Game, Conservation Data Center, have entered into a challenge cost share proposal for monitoring existing occurrences for the 2004 fiscal year. The BLM's appropriation language for fiscal year 2004 stated that the BLM will implement the measures contained in the CCA [H.R. 2673, 108th Cong. 2003]. The BLM has submitted funding requests for 2005 through the budget planning system and have ranked implementation of the CCA as high. The parties have fully described the resources necessary to implement the conservation measures and that funding is either already in place or has been

requested according to the CCA and the Air Force INRMP such that implementation of the conservation efforts is proceeding.

8. An implementation schedule for the conservation effort is provided. The implementation schedule is provided in chapter 20 of the CCA. The schedule discusses project coordination and funding, and specifically lays out a description of the action, the responsible party, and year-by-year cost projections out to the year 2008. The Air Force INRMP has specific objectives with dates identified in many cases, while keeping the focus on implementation and effectiveness monitoring of those actions than on quantitative incremental objectives. The Air Force memorandum of January 9, 2004 (Appendix P to the INRMP) outlines validated and funded projects by fiscal year through 2011.

9. The conservation agreement or plan, which includes the conservation effort, is approved by all parties to the agreement or plan. As of December 5, 2003, all parties to the CCA have signed the agreement. The Air Force signed their INRMP on January 15, 2004.

Summary

As evidenced by actions underway and expected by the parties to the CCA and Air Force INRMP, we have received sufficient assurance that the long term viability of *Lepidium papilliferum* has improved since the proposed rule. In addition, in an Instruction Memorandum dated January 8, 2004, the BLM District Manager directs compliance with all requirements of the CCA. A memorandum from the Air Force to the Service, dated January 9, 2004, states that compliance with the conservation efforts in their INRMP is mandatory for all Air Force and contractor personnel, including lessees. Thus, we have been provided the assurance that these conservation efforts will be implemented.

Certainty of Effectiveness of Formalized Conservation Efforts

Considering the formalized conservation efforts as outlined in the CCA and the Air Force INRMP, we used the following criteria from PECE to direct our determination of the certainty that the conservation efforts will be effective. Our analysis of the effectiveness of the conservation efforts is reflected above in the "Summary of Factors Affecting the Species." As there are hundreds of conservation efforts described in these formalized plans, the following is a summary of information contained within the plans.

1. The nature and extent of threats being addressed by the conservation effort are described, and how the conservation effort reduces the threats is described. The CCA and Air Force INRMP address the nature and extent of threats including wildfire, livestock grazing, recreational use, mining, military training activities, residential and agricultural development. These conservation plans apply a variety of conservation actions and provide descriptions about how the action reduces the threat. For example, the CCA requires BLM to implement a variety of actions to reduce the risk of wildfire ranging from fuel breaks to increased fire suppression crews and resources. How each threat is specifically addressed by the conservation efforts, is described in detail in the above "Summary of Factors Affecting the Species."

We have sufficient assurance that the conservation efforts have reduced threats over most of the range of the species. We believe that the conservation efforts will reduce the risk of fires in the foreseeable future within the range of the species. It will be important to implement the adaptive management strategy to ensure the conservation of *Lepidium papilliferum*, to account for changing circumstances, and improve the conservation measures, as further studies are conducted. We also believe that measures related to the threat of livestock trampling lead to a reduction of this threat. Nonnative plant invasions of the sagebrush steppe ecosystem will be mitigated by the conservation efforts but not eliminated as they will likely continue to be a part of the ecosystem given the inherent difficulties of reversing this trend.

2. Explicit incremental objectives for the conservation effort and dates for achieving them are stated. The conservation efforts take variable approaches in the development and accomplishment of objectives. For example, chapter 20 of the CCA outlines expected benefits of the conservation measures and provides a detailed implementation schedule with dates for when actions will be accomplished. The Air Force INRMP has specific objectives with dates identified in many cases. Given the long-term nature of these plans and the ongoing actions identified in the INRMP, the focus is on implementation of the specific actions and effectiveness monitoring of those actions.

3. The steps necessary to implement the conservation effort are identified in detail. Both the CCA (chapter 9) and the Air Force INRMP detail the steps necessary for the accomplishment of

conservation actions. In general, the conservation documents outline objectives to be accomplished, actions necessary to accomplish objectives, monitoring strategies, and adaptive management to ensure that the conservation efforts are responsive to new information and changed circumstances.

4. Quantifiable, scientifically valid parameters that will demonstrate achievement of objectives, and standards for these parameters by which progress will be measured, are identified. Given the limited scientific data available for *Lepidium papilliferum*, the conservation efforts take a reasonable approach to measuring progress towards achievement of objectives. In general, the conservation efforts are designed to incorporate new research findings, which will provide the basis for establishing quantifiable, scientifically valid parameters as more is learned about plant and its habitat. Chapter 21 of the CCA describes its adaptive management commitments, including implementation of measures specifically designed to achieve conservation objectives.

5. Provisions for monitoring and reporting progress on implementation and effectiveness of the conservation effort are provided. In general, the CCA and the Air Force INRMP identify how implementation monitoring will occur and how results of monitoring will be used to evaluate effectiveness of the efforts in conserving *Lepidium papilliferum*. The CCA provides very detailed implementation schedules in chapter 20, table 2. The effectiveness of conservation actions at achieving desired outcomes is determined through monitoring. For example, the effectiveness monitoring table (chapter 21, table 5) in the CCA describes performance metrics for evaluating conservation actions and describes quantitative triggers and an associated management response that will occur if conservation actions are not achieving desired outcomes. For some conservation actions in the CCA, development of quantitative triggers will require additional technical analysis and will be completed by June 2004.

The Air Force INRMP, page A-10, describes Project 5, "Slickspot Peppergrass Monitoring of Permanent Plots." The purpose of monitoring permanent plots is to provide data for adaptive management of the species. Five permanent *Lepidium papilliferum* plots were established on Juniper Butte Training Range in 2003. Transects were sited to help monitor the effect of two large scale land uses on the site:

biomass removal for fire prevention by grazing and delivery of training ordnance. Transects will be monitored annually to assess changes in habitat conditions and *L. papilliferum* count changes as influenced by management techniques, natural processes, and other biotic and non-biotic influences. A weather station has been established on the site to more fully understand the role weather plays in *L. papilliferum* biology. The Air Force INRMP states that more accurate weather data and better interpretation of monitoring results will aid in adaptive management decisions. Project 3 of the Air Force INRMP, "Noxious Weed Control and Monitoring", also addresses annual surveys and monitoring to prevent noxious and invasive species spread. Project 2 of the INRMP, "Rehabilitation after Fire/Fuel Build-up Prevention Methodology", states that adaptive management and monitoring techniques are used to help determine the optimal blend of fire control and biodiversity management practices necessary to meet overall goals, including *L. papilliferum*. This more general approach is not considered problematic for assuring success in accomplishing conservation of *L. papilliferum*.

6. Principles of adaptive management are incorporated. Principles of adaptive management are incorporated to varying degrees with the CCA describing in the most detail the how new information and changed circumstances will be addressed. The CCA describes the adaptive management pathway: (1) Triggers to determine if there is a significant difference between expectations and results; (2) an evaluation of relevance of the differences; (3) an evaluation of causal linkage; and (4) development and implementation of a management response thus completing the feedback loop. The adaptive management in the Air Force INRMP, as largely contained in Appendix A, describes monitoring and feedback loops necessary to ensure success in accomplishing conservation for *Lepidium papilliferum*.

Summary

We have sufficient assurances that the conservation efforts have reduced threats over most of the range of the

species. We believe that the conservation efforts will reduce the risk of fires in the foreseeable future within the range of the species. It will be important to implement the adaptive management strategy to ensure the conservation of *Lepidium papilliferum*, to account for changing circumstances and improve the conservation measures, as further studies are conducted. We also believe that measures related to the threat of livestock trampling lead to a reduction of this threat. Nonnative plant invasions of the sagebrush steppe ecosystem will be mitigated by the conservation efforts given the inherent difficulties of reversing this trend.

Finding and Withdrawal

Based on a thorough additional analysis of the best available scientific and commercial information available on *Lepidium papilliferum*, and recent advancements in formalized conservation efforts for the species, particularly those implemented through the CCA, we have changed our conclusion about the risk to the species. As a result, we believe that the species no longer is in danger of extinction throughout all or a significant portion of its range, nor is it likely to become endangered within the foreseeable future.

Conservation measures implemented through the CCA and existing INRMPs apply to approximately 97 percent of the *Lepidium papilliferum* occupied habitat. In addition, the Air Force recently updated their INRMP to contain additional conservation measures and monitoring specifics (vegetation, *Lepidium papilliferum*, grazing, noxious weed and invasive species) for *L. papilliferum*, further reducing threats to the species. In addition the CCA and INRMPs have research and adaptive management components that will improve our understanding of *L. papilliferum* ecology and its conservation needs in the future and provide a mechanism for adjusting management to account for changed circumstances. This information will better help in our future conservation efforts for *L. papilliferum*.

Furthermore, since the proposed rule to list *Lepidium papilliferum* as endangered was published, information

from the ICDC indicates that the total area of habitat containing slickspots known to be occupied by *L. papilliferum* and interspersed with surrounding unoccupied sagebrush-steppe habitat is approximately 20,500 ac (8,300 ha). This represents an increase of 8,154 ac (3,300 ha) from the area of occupied habitat reported in the proposed rule. Area estimates in the proposed rule were based on ocular (by eyesight) estimates of the area of known occurrences, while area estimates in this final determination are based on high-precision GIS data provided by ICDC. In addition, five new occurrences of *L. papilliferum* have been documented within the range of the species since the proposed rule was published.

This withdrawal of the proposed rule to list *Lepidium papilliferum* as endangered is based on our conclusion that there is a lack of strong evidence of a negative population trend, and the conservation efforts contained in formalized plans have sufficient certainty that they will be implemented and will be effective such that the risk to the species is reduced to a level below the statutory definition of endangered or threatened. Therefore, we are withdrawing the proposed determination to list *L. papilliferum* as endangered.

References Cited

A complete list of all references cited herein, as well as others, is available upon request from our Snake River Fish and Wildlife Office (see **ADDRESSES** section).

Author(s)

The primary author of this final determination is U.S. Fish and Wildlife Service, Snake River Fish and Wildlife Office (see **ADDRESSES** section).

Authority

The authority for this action is section 4(b)(6)(B)(ii) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.).

Dated: January 15, 2004.

Steve Williams,

Director, Fish and Wildlife Service.

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