

as a "small business" under the Regulatory Flexibility Act. In the case of other small businesses, small organizations, and small governmental units which purchase light trucks, the standard will not affect the availability of fuel efficient light trucks or have a significant effect on the overall cost of purchasing and operating light trucks.

D. Impact of Federalism

This action has been analyzed in accordance with the principles and criteria contained in Executive Order 12612, and it has been determined that the MY 1995 standard will not have sufficient Federalism implications to warrant the preparation of a Federalism Assessment.

E. Department of Energy Review

In accordance with section 502(i) of the Cost Savings Act, NHTSA submitted a pre-publication copy of the NPRM to the Department of Energy (DOE) for review. While NHTSA did not receive any comments from DOE before the NPRM was published, that Department did submit a comment one week after publication. DOE stated that it continues to view improvements in light truck fuel economy as critical to improving transportation efficiency and reducing oil consumption in the United States. It indicated that it had reviewed the NPRM and accompanying PRIA and was "concerned that the short lead time available to manufacturers considerably restricts their actions, especially for model years 1995 and 1996." DOE recommended that NHTSA proceed with the proposed ranges for the standards for MY 1995-96 but suggested that MY 1997 be handled in a separate rulemaking to be initiated as soon as possible in 1993.

In accordance with section 502(j) of the Cost Savings Act, NHTSA also submitted this final rule to DOE for review. That Department stated that it concurs with the establishment of 20.6 mpg as the light truck CAFE standard for MY 1995. It also recommended that the Department of Transportation initiate a new rulemaking that includes model years 1996 through 2000. DOE stated that by setting the CAFE standards in a timely fashion and including model years beyond those for which manufacturers had already completed their product plans, the Department of Transportation will have considerably greater scope in estimating "technological feasibility" and "economic practicability" in determining maximum feasible average fuel economy levels. DOE stated that through this approach, it believes the

CAFE law can be used to achieve its maximum social benefit.

List of Subjects

49 CFR Part 523

Classification, Motor vehicles.

49 CFR Part 525, 533, and 537

Energy conservation, Motor vehicles.

In consideration of the foregoing, 49 CFR parts 523, 525, 533, and 537 are amended as follows:

PART 523—[AMENDED]

1. The authority citation for part 523 is revised to read as follows:

Authority: 15 U.S.C. 2002; 49 CFR 1.50.

2. Sections 523.5(b)(2) (iv) and (v) are revised to read as follows:

§ 523.5 Light truck.

- (b) * * *
- (2) * * *
- (iv) Running clearance of not less than 20 centimeters.
- (v) Front and rear axle clearances of not less than 18 centimeters each.

PART 525—[AMENDED]

1. The authority citation for part 525 is revised to read as follows:

Authority: 15 U.S.C. 2002; 49 CFR 1.50.

2. Section 525.7(e)(4) is revised to read as follows:

§ 525.7 Basis for petition.

- (e) * * *
- (4) Basic engine, displacement, and SAE rated net power, kilowatts;

PART 533—[AMENDED]

1. The authority citation for part 533 is revised to read as follows:

Authority: 15 U.S.C. 2002; 49 CFR 1.50.

3. Table III in § 533.5(a) is revised to read as follows:

§ 533.5 Requirements.

- (a) * * *

Table III

| Model Year | Combined standard | |
|------------|-------------------|-------|
| | Captive imports | Other |
| 1992 | 20.2 | 20.2 |
| 1993 | 20.4 | 20.4 |
| 1994 | 20.5 | 20.5 |
| 1995 | 20.6 | 20.6 |

* * * * *

2. Section 533.4(b)(2) is amended by revising the definition of *4-wheel drive, general utility vehicle* to read as follows:

§ 533.4 Definitions.

- (b) * * *
 - (2) * * *
- 4-wheel drive, general utility vehicle* means a 4-wheel drive, general purpose automobile capable of off-highway operation that has a wheelbase of not more than 280 centimeters, and that has a body shape similar to 1977 Jeep CJ-5 or CJ-7, or the 1977 Toyota Land Cruiser.

PART 537—[AMENDED]

1. The authority citation for part 537 is revised to read as follows:

Authority: 15 U.S.C. 2005; 49 CFR 1.50.

2. Sections 537.7(c)(4) (iii), and (iv) are revised to read as follows:

§ 537.7 Pre-model year and mid-model year reports.

- (c) *Model type and configuration fuel economy and technical information.*
- (4) * * *
- (iii) Engine displacement, liters;
- (iv) SAE net rated power, kilowatts;

Issued: April 1, 1993.

Howard M. Smolkin,
Executive Director.

[FR Doc. 93-8136 Filed 4-2-93; 2:39 pm]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN: 1018-AB42

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for *Argyroxiphium Kauense* (Ka'u Silversword)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) determines a plant, *Argyroxiphium Kauense* (Ka'u Silversword), to be endangered pursuant to the Endangered Species Act of 1973, as amended (Act). This species is known only from 2 populations on the Island of Hawaii, totaling an estimated 540 individuals. The greatest threat to the survival of this species is the small

number of populations with its limited gene pool, depressed reproductive vigor, and population structure heavily skewed toward immature individuals. That is compounded by a requirement for cross-pollination and single flowering within the lifetime of an individual plant. Expansion of the populations beyond protective fencing is limited by predation and habitat degradation by feral animals. Because browsing differentially affects more mature plants and results in reduced seed viability, reproductive success in this species depends on continued protection of the populations against feral ungulates. With just two extant populations, the species also risks stochastic extinction from events such as lava flows and associated wildfires. This rule implements the protection and recovery provisions provided by the Act for this plant.

EFFECTIVE DATE: May 7, 1993.

ADDRESSES: The complete file for this rule is available for public inspection, by appointment, during normal business hours at the Pacific Islands Office, U.S. Fish and Wildlife Service, 300 Ala Moana Boulevard, room 6307, Honolulu, Hawaii 96813.

FOR FURTHER INFORMATION CONTACT: Robert P. Smith, Field Supervisor, at the above address (808/541-2749).

SUPPLEMENTARY INFORMATION:

Background

Argyroxiphium kauense was first collected above Kapapala on the south slope of Mauna Loa by Charles N. Forbes in 1911. That and another collection were both sterile and identified as *A. sandwicense* var. *macrocephalum* Gray by David D. Keck. After the first flowering and fruiting material were collected in 1956, *A. sandwicense* var. *kauense* was described by Joseph F. Rock and Marie C. Neal (1957), who named the plant after the Kau District, where it grows. Later that year, Otto and Isa Degener (1957) elevated the new variety to species rank.

All subsequent collections and confirmed sightings are from three areas: off Powerline Road in Upper Waiakea Forest Reserve (South Hilo District), at Ke a Pohina on Kahuku Ranch (Kau District), and in the general vicinity of Ainapo Trail in both Kapapala Forest Reserve (Kau District) and Kahuku Ranch. *Argyroxiphium kauense* is known to be extant at the first two of those three localities. The Ainapo population has not been seen since 1986, despite a search of the area in 1990 (William Paty, Hawaii Board of Land and Natural Resources, *in litt.*, 1990; Charles Wakida, Hawaii Division

of Forestry and Wildlife (Hawaii DOFAW), *in litt.*, 1990; Steve Bergfeld, Hawaii DOFAW, pers. comm., 1992; Jack Lockwood, U.S. Geological Survey, pers. comm., 1990). The species occurs on State and privately owned land. Due to insufficient material, the identity of an historic collection from Hualalai cannot be confirmed; it could possibly be *A. kauense* (Carr 1985, 1990; Elizabeth Powell, University of Nevada, *in litt.*, 1990; E. Powell, pers. comm., 1990).

Argyroxiphium kauense is a rosette shrub, usually single-stemmed, its vegetative stems about 3 to 70 centimeters (cm) (1 to 24 inches (in)) long, and flowering stems about 0.7 to 2.5 meters (m) (2 to 8 feet (ft)) long. The leaves are very narrowly sword-shaped, 3- to 4-angled in cross section, about 20 to 40 cm (8 to 16 in) long and 0.5 cm (0.2 in) wide at the middle, nearly covered with dense, silky, silvery gray hairs. The flowering stalk as many branches, each with a flowering head of 3 to 11 ray flowers each about 1 cm (0.4 in) long, and 50 to 200 disk flowers each about 0.6 cm (0.2 in) long. The white or yellow to wine-red flowers bloom in August and September. The fruits are dry and black. *Argyroxiphium kauense* is distinguished from closely related species by its narrower leaves, hairs not completely covering the leaf surface, and fewer ray flowers per head (Carr 1985, 1990).

Argyroxiphium kauense grows primarily in moist forest openings or bogs at about 1,600 to 2,320 m (5,300 to 7,600 ft) elevation, although plants also occur on well-drained substrates in relatively dry sites (Carr 1990; Rick Warshauer, U.S. Fish and Wildlife Service, *in litt.*, 1979; J. Lockwood, pers. comm., 1990). The substrate is 'a'a or pahoehoe lava, sometimes with wet humus, on flat to steep and irregular ground (Degener *et al.* 1976, Meyrat 1982). The vegetation is most typically dry scrub or scrub forest dominated by *Metrosideros polymorpha* ('ohi'a) with such associates as *Styphelia tameiameia* (pukiawe), *Coprosma ernodeoides* ('aiakanene), *Dodonaea viscosa* ('a'ali'i), *Geranium cuneatum* (nohoanu), and *Vaccinium reticulatum* ('ohelo) (Hawaii Heritage Program 1991; Donald Reeser, National Park Service, *in litt.*, 1974; R. Warshauer, *in litt.*, 1979). The open bog site shares those associates but is dominated by sedges (*Oreobolus furcatus*, *Rhynchospora chinensis* ssp. *spiciformis* (kuolohia), and *Carex montis-eeka*) (Clarke 1982).

The greatest threat to the survival of this species is the small number of populations with a limited gene pool, depressed reproductive vigor, and

population structure heavily skewed toward immature individuals. That is compounded by a dependency on cross-pollination, and single flowering within the lifetime of an individual plant.

Expansion of the populations is limited by predation and habitat degradation by feral animals. Pigs (*Sus scrofa*) and goats (*Capra hircus*) were introduced to the island over a century ago. Mouflon sheep (*Ovis musimon*) and pigs have greatly reduced this species' numbers in the Ke a Pohina population over the past two decades. Outside protective fencing, feral pigs prevent seedling establishment, and pigs and mouflon sheep prevent the plants from reaching maturity (E. Powell, *in litt.*, 1985). Because browsing differentially affects more mature plants and results in reduced seed viability (E. Powell, pers. comm., 1992; pers. observation, 1991), the reproductive success of this species is dependent on continued protection of the population against feral ungulates. With just two extant populations, the species also risks stochastic extinction from events such as lava flows and associated wildfires (Kimura and Nagata 1980; Powell 1986; Linda Cuddihy, National Park Service, *in litt.*, 1990; E. Powell, pers. comm., 1990).

Federal action on this species began as a result of section 12 of the Act, which directed the Secretary of the Smithsonian Institution to prepare a report on plants considered to be endangered, threatened, or extinct in the United States. This report, designated as House Document No. 94-51, was presented to Congress on January 9, 1975. On July 1, 1975, the Service published a notice in the **Federal Register** (40 FR 27823) of its acceptance of the Smithsonian report as a petition within the context of section 4(c)(2) (now section 4(b)(3)) of the Act, and giving notice of its intention to review the status of the plant taxa named therein. *Argyroxiphium kauense* was included in that notice as endangered. As a result of that review, on June 18, 1976, the Service published a proposed rule in the **Federal Register** (41 FR 24523) to determine endangered status pursuant to section 4 of the Act for approximately 1,700 vascular plant species. The list of 1,700 plant taxa was assembled on the basis of comments and data received by the Smithsonian Institution and the Service in response to House Document No. 94-51 and the July 1, 1975, **Federal Register** publication.

General comments received in response to the 1976 proposal are summarized in an April 26, 1978, **Federal Register** publication (43 FR

17909). In 1978, amendments to the Act required that all proposals over 2 years old be withdrawn. A 1-year grace period was given to proposals already over 2 years old. On December 10, 1979, the Service published a notice in the *Federal Register* (44 FR 70796) withdrawing that portion of the June 16, 1976, proposal that had not been made final, along with four other proposals that had expired. The Service published a notice of review for plants on December 15, 1980 (45 FR 82479), September 27, 1985 (50 FR 39525), and February 21, 1990 (55 FR 6183). In these notices, *Argyroxiphium kauense* was treated as a Category 1 candidate for Federal listing. Category 1 species are those for which the Service has on file substantial information on biological vulnerability and threats to support preparation of listing proposals.

Section 4(b)(3)(B) of the Act requires the Secretary to make findings on certain pending petitions within 12 months of their receipt. Section 2(b)(1) of the 1982 amendments further requires all petitions pending on October 13, 1982, be treated as having been newly submitted on that date. On October 13, 1983, the Service found that the petitioned listing of *Argyroxiphium kauense* was warranted, but precluded by other pending listing actions, in accordance with section 4(b)(3)(B)(iii) of the Act; notification of this finding was published on January 20, 1984 (49 FR 2485). Such a finding requires the petition to be recycled, pursuant to section 4(b)(3)(C)(i) of the Act. The finding was reviewed in October of 1984, 1985, 1986, 1987, 1988, and 1989.

On August 6, 1990, the Service published in the *Federal Register* (55 FR 31860) a proposal to list *Argyroxiphium kauense* as endangered. The proposal was based primarily on information supplied by Dr. Elizabeth Powell and observations by botanists and naturalists. The Service now determines *Argyroxiphium kauense* to be endangered with the publication of this rule.

Summary of Comments and Recommendations

In the August 6, 1990, proposed rule and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final listing decision. The public comment period ended on October 5, 1990. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. A newspaper notice was published in The

Hawaii Tribune-Herald on August 17, 1990, which invited general public comment.

Comments were received from three parties: one from a conservation organization that noted it had no information to add to the proposed rule; one from a private individual in support of listing the species, but offering no additional information; and one from a private party not favoring listing, commenting on the proposed rule, and correcting information presented in the proposed rule.

The latter respondent indicated that the Service overstated the threat of grazing by mouflon in the Ke a Pohina population, and suggested that a blight could be responsible for damage to leaf tips. This respondent also indicated that no browsing, grazing, or rooting by feral herbivores has occurred within the fenced area of the Ke a Pohina population. However, as described in Factor C under "Summary of Factors Affecting the Species," mouflon have damaged the *Argyroxiphium kauense* plants both in and out of the fenced area. One fenced population is not enough to be assured of long-term survival of a species. The numbers of plants and populations of this species are sufficiently small that, given its threats, it must still be considered endangered. The correction provided by the latter respondent has been incorporated into this final rule. The Service did not receive any information indicating that the species is more widespread or under lesser threat than previously thought.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Argyroxiphium kauense* should be classified as an endangered species. Procedures and criteria prescribed by Section 4 of the Endangered Species Act (16 U.S.C. 1533) and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be an endangered species due to one or more of the five factors described in section 4(a)(1) of the Act. These factors and their application to *Argyroxiphium kauense* (Rock & Neal) Degener & I. Degener (Ka'u silversword) are as follows:

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

Feral and domesticated animals (goats, pigs, sheep (*Ovis aries*), and cattle (*Bos taurus*)) have altered and

degraded the vegetation of much of Hawaii, including the areas where *Argyroxiphium kauense* may have formerly grown, and where it still exists (Mitchell 1981; Scott *et al.* 1986; Tomich 1986; E. Powell, *in litt.*, 1985). The former range of this species may have extended in a band around the southern and southeastern flanks of Mauna Loa at about 1,830 m (6,000 ft) in elevation, as well as its northeastern flank, and possibly also included Hualalal (E. Powell, *in litt.*, 1985, 1990; E. Powell, pers. comm., 1990). The territorial government apparently built "the Kau fence" on Mauna Loa's southeast flank in the 1930s in order to keep feral goats of the lava uplands from invading the lower forests, indicating that these animals probably did impact the range of *A. kauense* (Tomich 1986). Although no specific documentation indicates that feral animals reduced the former range of this species, recent observations show that feral mouflon sheep, pigs, and goats damage and consume *A. kauense*, and mechanically disturb the adjacent ground (Clarke 1982; Stone 1985; E. Powell, *in litt.*, 1985; D. Reeser, *in litt.*, 1974; R. Warshauer, *in litt.*, 1979; pers. obs., 1991). Mouflon sheep and pigs have reduced this species' numbers considerably over the past 2 decades (Carr 1990; Clarke 1982; E. Powell, *in litt.*, 1985; E. Powell, Lani Stemmermann, University of Hawaii, and Kaoru Sunada, private florist, pers. comms., 1990).

When rooting, feral pigs knock over and uproot plants. That caused a decrease in the (then unfenced) Powerline Road population from about 1,000 plants of all size classes in 1975, to 20 plants, all immature, in 1984 (E. Powell, *in litt.*, 1985). The fence erected at that site for the Upper Waiakea Bog Plant Sanctuary did not enclose the entire population (Carolyn Corn, Hawaii DOWFA, L. Cuddihy, and L. Stemmermann, pers. comms., 1990). Pigs have severely disturbed the remainder of the bog, destroying all but one unfenced *Argyroxiphium kauense* plant (E. Powell, pers. comms., 1990, 1992). Pig rooting has thus destroyed former habitat and continues to destroy potential habitat of this species (J. Lockwood and E. Powell, pers. comms., 1990). In contrast, within the fenced Sanctuary, the population has increased from 20 to nearly 200 individuals in 8 years (E. Powell, *in litt.*, 1990; E. Powell, pers. comm., 1992). Pigs have also uprooted seedlings of *A. kauense* at the Ke a Pohina population, and have uprooted other native species at all three recently known populations (E.

Powell, *in litt.*, 1985; R. Warshauer, *in litt.*, 1979). Signs of pigs were noted at and near the Ke a Pohina population in 1991 and 1992 (S. Bergfeld, pers. comm., 1992, pers. obs., 1991). Although abundant seedlings of *A. kauense* have been noted at sites where pigs rooting has occurred (C. Wakida, pers. comm., 1990), subsequent rooting up of seedlings outweighs the extent to which pigs temporarily provide sites for seedling establishment (E. Powell, *in litt.*, 1985, 1990).

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

Illegal collecting for scientific or horticultural purposes or excessive visits by individuals interested in seeing rare plants could result from increased publicity, and potentially threatens the Powerline Road population of *Argyroxiphium kauense*. The species is of some horticultural and ornamental interest (now growing at Kew Gardens), and in the past, seed was collected for propagation (Degener *et al.* 1976). However, such activity is now minimal.

C. Disease or Predation

Feral mouflon sheep, pigs, and goats are known to feed on *Argyroxiphium kauense* (Clarke 1982; E. Powell, *in litt.*, 1985; D. Reeser, *in litt.*, 1974; Gerald Carr, University of Hawaii, and K. Sunada, pers. comms., 1990). Grazing by mouflon either kills plants or causes them to resprout with multiple stems and greatly reduced vigor (E. Powell, *in litt.*, 1985). The Ke a pohina population of *A. kauense* declined markedly over the past 2 decades, apparently as a result of the activities of a herd of mouflon. The original 8 mouflon released by the landowner in 1968 increased to approximately 2,000 animals by 1992 (Eugene Yap, South Point Safaris, pers. comm., 1992). Although the landowner is now controlling their numbers, mouflon are still present adjacent to the Ke a Pohina population (S. Bergfeld, pers. comm., 1992; pers. obs., 1991).

In 1974, the Ke a Pohina population of *A. kauense* numbered thousands of plants, including 250 mature, flowering individuals with rosettes up to 1 m (3 ft) in diameter (Degener *et al.* 1976; K. Asherman, *in litt.*; 1985; L. Stemmermann, pers. comm., 1990). Two years later, 2,071 plants with a diameter over 8 cm (3 in) were counted at this population (Charles Lamoureux, University of Hawaii, pers. comm., 1990). In 1984, there were about 2,000 plants, but only 1 was in flower and less than 5 percent of the plants were larger than 25 cm (10 in) in diameter (E.

Powell, *in litt.*, 1985, 1990). Almost all larger (mature) plants were dead, and grazing damage was evident on plants as small as 5 cm (2 in) in diameter, even within the fence erected by the landowner to protect this species (E. Powell, *in litt.*, 1985, 1990). Mouflon had eaten the growing tips of nearly all large individuals, greatly reducing this population's potential for regeneration (G. Carr and L. Stemmermann, pers. comms., 1990). By 1991, the population had declined to approximately 340 individuals, with 4 plants in flower and less than 1 percent of the plants larger than 25 cm (10 in) in diameter (pers. obs., 1991). Browsing damage by mouflon was again evident on a number of individuals (pers. obs., 1991). *Argyroxiphium kauense*, *Machaerina*, and *Astelia* were the only species showing signs of browse damage (E. Powell, *in litt.*, 1990; pers. obs., 1991).

Only two plants are known to grow outside the fence in the Ke a Pohina area (E. Yap, pers. comm., 1992; pers. obs., 1991). Seed would be expected to blow outside the fence and germinate, as the habitat is similar on either side of the fence (pers. obs., 1991). Predation pressure from mouflon very likely confines this population to the fenced exclosure. The landowner has initiated a policy of removing mouflon from the area of the Ke a Pohina population. Because animal densities are typically very low there, game control personnel monitor the site infrequently (E. Yap, pers. comm., 1992).

Grazing damage by pigs on the leaves and stems of *Argyroxiphium kauense* and grazing damage on leaves that had regrown following grazing are documented for the Powerline Road population (Clarke 1982). Since evidence of pigs has been reported at Ke a Pohina (S. Bergfeld, pers. comm., 1992; pers. obs., 1991), predation by pigs is a potential threat to both populations of *A. kauense*. The landowner and Hawaii DOWAF completed improvements to the fence at Ke a Pohina in 1992 (S. Bergfeld, pers. comm., 1992). Therefore, feral ungulates may currently be excluded from the fenced portion of both remaining populations of this species. The degree of future threat by feral ungulates to *A. kauense* depends heavily on maintenance of fencing.

The widely scattered, unfenced Ainapo population was most likely destroyed by predation by feral goats (J. Lockwood, pers. comm., 1990). Heavy browsing damage by feral goats to the apex and lateral leaves of *Argyroxiphium kauense* was documented in 1974 at that population (D. Reeser, *in litt.*, 1974). Goats are a

potential threat to the two remaining populations of *A. kauense* (L. Cuddihy, E. Powell, C. Wakida, pers. comms., 1990).

Despite claims that alien insects threaten this species, only native pollinators and native non-pollinating insects have been confirmed as damaging seed, and only to a minor extent (Degener *et al.* 1976; Kimura and Nagata 1980; E. Powell, pers. comm., 1990). Most of the seed collections examined by Powell (*in litt.*, 1990) had negligible seed parasitism. *Tephritis* (fly) larvae primarily consume inviable seed, so that even the few collections with appreciable seed parasitism did not impact the seed set negatively (E. Powell, *in litt.*, 1990). No significant threats to *Argyroxiphium kauense* from disease are known.

D. The Inadequacy of Existing Regulatory Mechanisms

One population of *Argyroxiphium kauense* is located on private land. The other population is in a plant sanctuary within a State forest reserve. There are no State laws or existing regulatory mechanisms at the present time to protect or prevent further decline of these plants on private land. However, Federal listing would automatically invoke listing under Hawaii State law, which prohibits taking and encourages conservation by State government agencies. State regulations prohibit the removal, destruction, or damage of plants found on State lands. However, the regulations are difficult to enforce because of limited personnel. Hawaii's Endangered Species Act [HRS, Sect. 195D-4(a)] states, "Any species of aquatic life, wildlife, or land plant that has been determined to be an endangered species pursuant to the [Federal] Endangered Species Act shall be deemed to be an endangered species under the provisions of this chapter * * *". Further, the State may enter into agreements with Federal agencies to administer and manage any area required for the conservation, management, enhancement, or protection of endangered species [HRS, Sect. 195D-5(c)]. Funds for these activities could be made available under section 6 of the Federal Act (State Cooperative Agreements). Listing of *A. kauense* therefore activates and reinforces the protection available under State law. The Act also offers additional protection because it is a violation of the Act for any person to remove, cut, dig up, damage, or destroy any endangered plant in an area not under Federal jurisdiction in knowing violation of State law or regulation or in the course

of any violation of a State criminal trespass law.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

The small number of populations (two) increases the potential for extinction from stochastic events. A single human-caused or natural environmental disturbance could destroy a significant percentage of the known extant individuals, or the limited gene pool may further depress reproductive vigor.

Two aspects of the reproductive system of *Argyroxiphium kauense* further exacerbate this problem: individual plants flower only once and then die, and flowers must be cross-pollinated from a different plant (Powell 1986; E. Powell, *in litt.*, 1990). If too few plants flower at the same time, or if flowering plants are too widely separated for pollination by insects, no seed will be set. The survival of these relatively small, isolated populations with already depressed reproductive vigor is therefore threatened.

The present demography of the populations, heavily skewed toward immature individuals, is of concern. Only about 3 percent of the plants in the Ke a Pohina population were of probable reproductive maturity in 1991; 66 percent of the population had a rosette diameter under 8 cm (3 in), a size far from reproductive maturity (E. Powell, pers. comm., 1992; pers. obs., 1991). An estimated 12 percent of the Powerline Road population was reproductively mature in 1992 (E. Powell, pers. comm., 1992). Powell's research on the closely related taxon, *Argyroxiphium sandwicense* ssp. *sandwicense* (Mauna Kea silversword), indicates that an estimated minimum of 20 mature plants is necessary for successful reproduction in a population (i.e., 2 individuals flowering simultaneously) (E. Powell, pers. comm., 1992). The Ke a Pohina population currently has approximately 10 individuals of probable reproductive maturity (pers. obs. 1991), putting it at risk of gradual extinction until more individuals reach maturity and reproduce successfully.

The Powerline Road population, with 25 reproductively mature plants (E. Powell, pers. comm., 1992), is only marginally above the estimated minimum level for successful reproduction. Powell's research on *A. sandwicense* ssp. *sandwicense* indicates that the abundance of large pre-flowering plants is far more critical to the survival of the population than the number of young plants (E. Powell, *in litt.*, 1990). In that taxon, a loss of 20

percent of the mature individuals can tip the balance against the survival of a population (E. Powell, pers. comm., 1992). In *A. kauense*, as with most plant species, smaller individuals have a higher natural rate of mortality than larger plants. Since larger individuals are preferentially browsed by feral animals, ensuring the reproductive success of *A. kauense* relates directly to continued protection against feral ungulates.

Ground rooted up by feral animals, as discussed in Factor A, also provides sites for invasion by more aggressive non-native plant species. Alien plants are common at the Powerline Road population and may be spreading in response to pig rooting, as is the case in other Hawaiian bogs (where weeds often spread at the expense of a related species of *Argyroxiphium*) (Clarke 1982; Loope *et al.* 1991; Medeiros *et al.* 1991; L. Cuddihy, pers. comm., 1990). While alien plants pose a potential threat, they are not a serious threat to *A. kauense* at present (Karen Asherman, The Nature Conservancy, *in litt.*, 1985; L. Cuddihy and E. Powell, pers. comms., 1990).

The reproductive potential of *Argyroxiphium kauense* is also limited by the low viability of seed from vegetatively branched individuals. Inflorescences on branched individuals are greatly reduced in comparison with those on unbranched plants. Seed collected from a number of branched plants at the Ke a Pohina population had a viability of 0 to 0.6 percent (G. Carr, pers. comm., 1991; E. Powell, pers. comm., 1992). Branched individuals account for about 50 percent of the larger individuals at the Ke a Pohina population, and all of the individuals flowering there in 1991 (pers. obs.). At the Powerline Road population, about 5 percent of the plants in 1990 were branched (E. Powell, pers. comm., 1992). In older accounts, branched individuals of *A. kauense* were reported to be very rare (Degener *et al.* 1976). Predation is known to cause branching in silverswords. The high proportion of branching in the Ke a Pohina population is very likely due to browsing by mouflon prior to fencing improvements (E. Powell, pers. comm., 1992; pers. obs., 1991). Improving the reproductive potential of *A. kauense* depends on continued protection of the two populations against feral ungulates.

Lava flows and the wildfires they ignite are a serious potential threat to both populations of *Argyroxiphium kauense* (Degener *et al.* 1976; Kimura and Nagata 1980; L. Cuddihy, *in litt.*, 1990; E. Powell, pers. comm., 1990). The larger Ke a Pohina population is located within a half mile of a 1950 flow

from the active southwest rift of Mauna Loa. In 1984, a lava flow approached the Powerline Road population, where fire is a potential threat to *A. kauense* in dry years (E. Powell, *in litt.*, 1990; L. Stemmermann, pers. comm., 1990).

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to issue this final rule. Based on the Service's evaluation, the preferred action is to list *Argyroxiphium kauense* as endangered. The small number of populations and limited distribution make this species particularly vulnerable to extinction and/or reduced reproductive vigor from stochastic events. Expansion of the populations is limited by predation and habitat degradation by feral animals. Because browsing differentially affects more mature plants and results in reduced seed viability, reproductive success in this species is dependent on continued protection of the populations against feral ungulates. The low remaining number of individuals, poor species reproductive potential, population structure skewed toward immature individuals, and vulnerability to destruction by lava flows and wildfires indicate that the species is in danger of extinction throughout all or a significant portion of its range; it therefore fits the definition of endangered as defined in the Act. The determination of endangered status for this species thus appears warranted. Critical habitat is not being designated for this species for reasons discussed in the "Critical Habitat" section of this rule.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not presently prudent for this species. Such a determination would result in no known benefit to *Argyroxiphium kauense*.

One of the two extant populations is on State land; State agencies can be alerted to the presence of the plant without the publication of critical habitat descriptions and maps. As discussed under Factor B in the Summary of Factors Affecting the Species, *Argyroxiphium kauense* could be threatened by taking. The publication of precise maps and descriptions of critical habitat in the *Federal Register* and local newspapers as required in a proposal for critical habitat would

increase the degree of threat to this plant from take or vandalism and, therefore, could contribute to its decline and increase enforcement problems. The listing of this species as endangered publicizes the rarity of the plant and, thus, can make it attractive to researchers, curiosity seekers, or collectors of rare plants. All involved parties and landowners have been notified of the importance of protecting the habitat of this species.

Protection of the species' habitat will be addressed through the recovery process. There are no Federal activities within the currently known habitat of this plant. Therefore, the Service finds that designation of critical habitat for *Argyroxiphium kauense* is not prudent at this time, because such designation would increase the degree of threat from vandalism, collecting, or other human activities and because it is unlikely to aid in the conservation of the species.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain activities. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the State and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to insure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. No Federal involvement is known that would affect this species, as all known populations are on State or privately owned land.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 for endangered plants set forth a series of general prohibitions and exceptions that apply to all endangered plant species. With respect to *Argyroxiphium kauense*, all trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61, apply. These prohibitions, in part, make it illegal with respect to any endangered plant for any person subject to the jurisdiction of the United States to import or export; transport in interstate or foreign commerce in the course of a commercial activity; sell or offer for sale this species in interstate or foreign commerce; remove and reduce to possession the species from areas under Federal jurisdiction; maliciously damage or destroy the species on any area under Federal jurisdiction; or remove, cut, dig up, damage, or destroy the species on any other area in knowing violation of any State law or regulation or in the course of any violation of a State criminal trespass law. Certain exceptions apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered plant species under certain circumstances. It is anticipated that few trade permits would ever be sought or issued because *Argyroxiphium kauense* is uncommon in cultivation and is very rare in the wild.

Requests for copies of the regulations concerning listed plants and inquiries regarding prohibitions and permits may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Room 432, Arlington, Virginia 22203-3507 (703/358-2104; FAX 703/358-2281).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment or Environmental Impact Statement, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the *Federal Register* on October 25, 1983 (48 FR 49244).

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Author

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50167, Honolulu, Hawaii 96850 (808/541-2749).

List of Subjects in 50 CFR Part 17

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

Regulation Promulgation

Accordingly, part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, is amended as set forth below:

PART 17—[AMENDED]

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

Authority: 16 U.S.C. 1361-1407; 16 U.S.C. 1531-1544; 16 U.S.C. 4201-4245; Pub. L. 99-625, 100 Stat. 3500; unless otherwise noted.

2. Amend § 17.12(h) by adding the following, in alphabetical order, under the family Asteraceae to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.
* * * * *
(h) * * *

| Species | | Historic range | Status | When listed | Critical habitat | Special rules |
|------------------------------|------------------|----------------|--------|-------------|------------------|---------------|
| Scientific name | Common name | | | | | |
| Asteraceae—Aster family: | | | | | | |
| <i>Argyroxiphium kauense</i> | Ka'u Silversword | U.S.A. (HI) | E | 497 | NA | NA |

Dated: March 24, 1993.
Richard N. Smith,
Acting Director, Fish and Wildlife Service.
[FR Doc. 93-8075 Filed 4-6-93; 8:45 am]
BILLING CODE 4310-65-M

50 CFR Part 17
501018-AB75

Endangered and Threatened Wildlife and Plants; *Amaranthus pumilus* (Seabeach Amaranth) Determined To Be Threatened

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Service determines *Amaranthus pumilus* (seabeach amaranth) to be a threatened species under the authority of the Endangered Species Act of 1973, as amended (Act). This annual herb is limited to populations in New York, North Carolina, and South Carolina. *Amaranthus pumilus* is threatened throughout its range by beach stabilization structures, beach erosion and tidal inundation, beach grooming, herbivory by insects and feral animals, and, in certain limited circumstances, by off-road-vehicles (ORVs). This action extends Federal protection under the Act to seabeach amaranth.

EFFECTIVE DATE: May 7, 1993.

ADDRESSES: The complete file for this rule is available for public inspection, by appointment, during normal business hours at the Asheville Field Office, U.S. Fish and Wildlife Service, 330 Ridgefield Court, Asheville, North Carolina 28806.

FOR FURTHER INFORMATION CONTACT: Ms. Nora Murdock at the above address (704/665-1195).

SUPPLEMENTARY INFORMATION:

Background

Amaranthus pumilus, described by C. S. Rafinesque (1808) from material collected in New Jersey, is an annual plant in the Amaranth family. Germination takes place over a relatively long period of time, generally from April to July. Upon germinating, this plant initially forms a small unbranched sprig, but soon begins to branch profusely into a clump, often reaching a foot in diameter and consisting of 5 to 20 branches. Occasionally a clump may get as large as a yard or more across, with a hundred or more branches. The stems are fleshy and pink-red or reddish, with small rounded leaves that are 1.3 to 2.5 cm in diameter. The leaves are clustered toward the tip of the stem, are normally a spinach-green color, and have a small notch at the rounded tip. Flowers and fruits are relatively inconspicuous, borne in clusters along the stems. Flowering begins as soon as plants have reached sufficient size, sometimes as early as June, but more typically commencing in July and continuing until the death of the plant in late fall. Seed production begins in July or August and reaches a peak in most years in September but continues until the death of the plant.

Weather events, including rainfall, hurricanes, and temperature extremes, and predation by webworms have strong effects on the length of seabeach amaranth's reproductive season. As a result of one or more of these

influences, the flowering and fruiting period can be terminated as early as June or July. Under favorable circumstances, however, the reproductive season may extend until January, or sometimes later (Bucher and Weakley 1990, Weakley and Bucher 1991, Radford et al. 1968).

Amaranthus pumilus is endemic to Atlantic coastal plain beaches, where it is currently known from 13 populations in New York, 34 populations in North Carolina, and 8 populations in South Carolina. The species occurs on barrier island beaches, where its primary habitat consists of overwash flats at accreting ends of islands and lower foredunes and upper strands of noneroding beaches. It occasionally establishes small temporary populations in other habitats, including sound-side beaches, blowouts in foredunes, and sand and shell material placed as beach replenishment or dredge spoil. Seabeach amaranth appears to be intolerant of competition and does not occur on well-vegetated sites. The plant acts as a sand binder, with a single large plant being capable of creating a dune up to 6 decimeters high, containing 2 to 3 cubic meters of sand, although most are smaller (Weakley and Bucher 1991). As stated by Weakley and Bucher (1991):

Seabeach amaranth appears to need extensive areas of barrier island beaches and inlets, functioning in a relatively natural and dynamic manner. This allows it to move around in the landscape, as a fugitive species, to occupy suitable habitat as it becomes available.

Historically, seabeach amaranth occurred in 31 counties in 9 States from Massachusetts to South Carolina. Seabeach amaranth has now been