

Species		Historic range	Family	Status	When listed	Critical habitat	Special rules
Scientific name	Common name						
* <i>Osmoxylon mariannense</i> .	* None .....	* Western Pacific Ocean—U.S.A. (Commonwealth of the Northern Mariana Islands).	* Araliaceae .....	* E	* .....	* NA	* NA
* Tabernaemontana rotensis.	* None .....	* Western Pacific Ocean—U.S.A. (Commonwealth of the Northern Mariana Islands and Guam).	* Apocynaceae .....	* E	* .....	* NA	* NA
* 	* 	* 	* 	* 	* 	* 	* 

Dated: May 2, 2000.

**Jamie Rappaport Clark,**

Director, Fish and Wildlife Service.

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## DEPARTMENT OF THE INTERIOR

### Fish and Wildlife Service

#### 50 CFR Part 17

#### RIN 1018-AGO4

### Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for the Buena Vista Lake Shrew

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Proposed rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), propose to list the Buena Vista Lake shrew, *Sorex ornatus relictus*, as endangered pursuant to the Endangered Species Act of 1973, as amended (Act). Prior to 1986, this subspecies had not been observed since it was first described in 1932. In 1986, three Buena Vista Lake shrews were observed at a permanent pond located within a former preserve, approximately 26 kilometers (km) (16 miles (mi)) south of Bakersfield, CA. No more than 38 individuals have been observed since they were rediscovered in 1986. The only known extant Buena Vista Lake shrew population is threatened primarily by agricultural activities, modifications and potential impacts to local hydrology, uncertainty of water delivery, possible toxic effects from selenium poisoning, and random naturally occurring events. This proposal, if made final, would implement the Federal protection and

recovery provisions afforded by the Act for the Buena Vista Lake shrew.

**DATES:** We must receive comments from all interested parties by July 31, 2000. Public hearing requests must be received by July 17, 2000.

**ADDRESSES:** Send your comments and materials concerning this proposal to the Field Supervisor, Sacramento Fish and Wildlife Office, U.S. Fish and Wildlife Service, 2800 Cottage Way, Rm W-2605, Sacramento, California 95825. Comments and materials received, as well as the supporting documentation used in preparing the rule, will be available for public inspection, by appointment, during normal business hours at the above address.

**FOR FURTHER INFORMATION CONTACT:** Dwight Harvey, Sacramento Fish and Wildlife Office (see **ADDRESSES** section) (telephone 916/414-6600; facsimile 916/414-6710).

#### **SUPPLEMENTARY INFORMATION:**

##### **Background**

The Buena Vista Lake shrew, *Sorex ornatus relictus*, is one of nine subspecies within the ornate shrew *Sorex ornatus* species complex known to occur in California (Hall 1981; Owen and Hoffmann 1983; Maldonado 1992). *Sorex ornatus* belongs to the order Insectivora and family Soricidae, subfamily Soricinae, and the tribe Soricini, with three subgenera (Owen and Hoffmann 1983; Junge and Hoffmann 1981).

*Sorex ornatus relictus* are primarily insectivorous mammals that are the approximate size of a mouse. They have a long snout, tiny bead-like eyes, ears that are concealed, or nearly concealed, by soft fur, and five toes on each foot (Ingles 1965; Burt and Grossenheider 1964). *Sorex ornatus relictus* are active day or night. When they are not sleeping, they are searching for food.

These shrews eat more than their own weight each day (Burt and Grossenheider 1964) to withstand starvation and maintain their body weight at high rates of metabolism (McNab 1991). *Sorex ornatus relictus* can have an impact on surrounding plant communities by consuming large quantities of insects, slugs, and other invertebrates that can influence such things as plant succession and control the irruptions of pest insects (Maldonado 1992; Williams 1991). *Sorex ornatus relictus* also may be an important prey species for raptors, snakes, and carnivores (Maldonado 1992).

Grinnell (1932) was the first to describe *Sorex ornatus relictus*. According to Grinnell's description, the Buena Vista Lake shrew's back is predominantly black with a buffy-brown speckling pattern, its sides are more buffy-brown than the upper surface, and its underside is smoke-gray. The tail is faintly bicolor and blackens toward the end both above and below. The Buena Vista Lake shrew weighs approximately 4 grams (g) (0.14 ounces (oz)) (Kathy Freas, Stanford University, pers. comm. 1994) and has a total length ranging from 98 to 105 millimeters (mm) (3.85 to 4.13 inches (in.)) with a tail length of 35 to 39 mm (1.38 to 1.54 in.) (Grinnell 1932). The Buena Vista Lake shrew differs from its geographically closest subspecies, the ornate shrew *Sorex ornatus* spp. *ornatus*, by having darker, grayish-black coloration, rather than brown. In addition, *S. o. ssp. relictus* has a slightly larger body size; shorter tail; skull with a shorter, heavier rostrum; and a higher and more angular brain-case in dorsal view than *S. o. ssp. ornatus* (Grinnell 1932).

Ornate shrews, on the average, rarely live longer than 12 months, and evidence indicates that the normal

lifespan does not exceed 16 months (Rudd 1955). In montane woodlands, shrews have a well-defined reproductive season that lasts from mid-May through August (Williams 1991). They give birth to up to two litters per year containing four to six young. The number of litters depends on how early or late in the year the young are born and can become sexually active (Owen and Hoffmann 1983). The Buena Vista Lake shrew has a breeding season that begins in February or March, and may either extend later in the year, based on habitat quality and availability of water, or end with the onset of the dry season in May or June (Jesus Maldonado, University of California-Los Angeles, pers. comm. 1998).

The Buena Vista Lake shrew was originally described by Grinnell (1932) as a new subspecies, *Sorex ornatus relictus*, based on the type specimen and two other specimens collected around the old Buena Vista Lake bed. On October 21, 1909, a single specimen of *S. o. ssp. relictus* was collected at Buttonwillow, a town approximately 40 km (25 mi) northwest of Buena Vista Lake (Williams 1986; Doug Long, California Academy of Sciences, pers. comm. 1998). Grinnell (1932) noted evidence that integration between the subspecies *Sorex ornatus ornatus* and *S. o. ssp. relictus* occurred in areas of geographic overlap. This integration prompted Freas (1990) to question the legitimacy of the Buena Vista Lake shrew's status as a distinct subspecies. Currently, the entire *Sorex ornatus* complex (consisting of eight subspecies in California and one in Baja California) is undergoing additional genetic and morphological evaluation (J. Maldonado, pers. comm. 1998). Preliminary results from strictly morphological measurements for this group were equivocal throughout California. However, mitochondrial DNA and micro-satellite nuclear sequences and allozyme data have aided in determining subspecies ranges. From these data, researchers determined that the Buena Vista Lake shrew is a distinct subspecies from other *S. ornatus* subspecies; it is unlike any other sampled throughout the southern San Joaquin Valley (J. Maldonado, pers. comm. 1998).

Based on Grinnell's (1933) records in the Museum of Vertebrate Zoology at Berkeley (three museum specimens and related field notes), the distribution of the Buena Vista Lake shrew was historically limited to the marshlands of the southern San Joaquin Valley south from approximately where the waters of the Kings River divide toward the San Joaquin River and bed of Tulare Lake,

with the animals living in the swampy margins of Kern, Buena Vista, Goose, and Tulare Lakes. However, by the time the shrew was discovered, Grinnell stated that the beds of these lakes were already dry and mostly cultivated with only sparse remnants of the original fauna (Grinnell 1932). Williams (1986) stated that nearly all of the valley floor in the Tulare Basin is cultivated and that most of the lakes and marshes had been drained and cultivated.

The Buena Vista Lake shrew was likely historically distributed in the marshlands of the San Joaquin Valley throughout most of the Tulare Basin (Grinnell 1933; U.S. Fish and Wildlife Service 1997). The Buena Vista Lake shrew occurs on property owned by the J.R. Boswell Company (Company), formerly known as the Kern Lake Preserve (Preserve), on the old Kern Lake bed, in Kern County, California (California Natural Diversity Data Base (CNDDB) 1986). This property totals about 33.5 hectares (ha) (83 acres (ac)), and the only known viable population of Buena Vista Lake shrews inhabits a small 1.2-ha (3-ac) wetland area that exists there. Although the Preserve has remained relatively unchanged since the Buena Vista Lake shrew was detected at this site in 1986, the future management of the Preserve and the future existence of this subspecies is uncertain.

Water is a necessary component of the Buena Vista Lake shrew's environment. Moisture is required to support a diverse insect fauna, which is the primary food source needed to maintain the shrew's high metabolism. During surveys conducted on the Preserve in 1988 and 1990, Freas (1990) found a clear trend in preference of moderately moist (mesic) habitats over drier (xeric) habitats by the shrew, with 25 animals being captured in the mesic environments and none in xeric habitat. Maldonado (1992) also acknowledged this type of habitat preference, stating that the shrew is closely associated with dense, riparian understories that provide food, cover, and moisture.

The permanent pond where the subspecies occurs is located within the Preserve, called Gator Pond, which is not an artesian system. It is dry for many years, filling only when there is adequate flood runoff, or as in 1986, when the Company used the area for storage of excess water (The Nature Conservancy (TNC) *in litt.* 1986; Rick Hewett, TNC, *in litt.* 1987). The Rim Ditch forms the southern border of the Preserve, and another ditch was installed by the Company to convey irrigation flows to agricultural land north of the Rim Ditch. The land in and around the pond has a high (perched)

water table because it is underlined with a natural hardpan soil layer that is somewhat impervious to water. In the past, this hardpan soil layer kept the area very wet and prevented it from being productively farmed. In 1982, the company installed a system of perforated tile line (drain pipes), which drains water from west to east under the Preserve, then northeast to the South Sump. Within 1 year, the perched water table began to subside, and the pond remained dry for the next 3 years (CNDDB 1986). As a result of the installation of the tile line, the areas northeast of the pond and southwest of the South Sump became arable allowing wheat and sorghum to be grown in these areas (TNC, *in litt.* 1986). The land west of the pond has never been farmed, but weeds are cleared off once a year. The land around the pond was disked annually until 1985, when TNC signed a lease and took over the management of the 33.5-ha (83-ac) Preserve. Only about 12 ha (30 ac) around the pond is now suitable habitat for the shrew (J. Maldonado, pers. comm. 1994).

All water that runs north from the Rim Ditch into the tile lines ends up in the South Sump. The water, referred to as tail water, is pumped back to the Rim Ditch. The Company agreed they could supply the excess tail water to the Preserve in the early fall for the TNC leased area. June through August are the critical irrigation months for the Company's cotton and alfalfa production. During that period, all available water is presumably used for these purposes. In 1986, the Company allowed TNC to install a separate pipe from the Rim Ditch directly to the pond as a way of providing water to this area. Three Buena Vista Lake shrew were discovered during the digging of a ditch for this pipe. (CNDDB 1986).

The Company originally supplied sufficient water to maintain the marshes on the Preserve. This water was sold to TNC through a lease agreement (Company, *in litt.* 1995). The Company committed to supplying water only during the years when quantities would be available in excess of that required for other corporate uses, primarily agriculture. Without this supplemental water supply, the remaining marshlands will dry up (J. Maldonado, pers. comm. 1994). In 1994, the Fish and Wildlife Service asked the Company to commit to a conservation agreement that would support the long-term maintenance of the Preserve and the survival of the Buena Vista Lake shrew, but the Company declined. (Edward Gierman, J.G. Boswell Company, *in litt.* 1995). TNC was concerned about the long-term health of the Preserve, but considered it

a "non-defensible parcel" because the land surrounding the Preserve has been converted to cotton (Reed Tollefson, TNC, pers. comm. 1994). Water diverted away from the Preserve for agricultural purposes has caused a drop in the already shallow water table, thereby eliminating most of the habitat that historically supported the shrew (R. Hewett, *in litt.* 1987). TNC staff estimated that proper management of the Preserve would require 1.9–2.5 hectare-meters (15–20 acre-feet) of water per year (R. Tollefson, pers. comm. 1995). Without a reliable water source, TNC declined to renew the lease and terminated their arrangement with the Company to maintain the Preserve (Sabin Phelps, TNC, pers. comm. 1995).

Since the rediscovery of the Buena Vista Lake shrew at the Preserve, the subspecies has been found only three other times. In 1992, one shrew was found alive under a sprinkler cover, and another was found dead in a manager's residence at the Kern National Wildlife Refuge (Refuge), Kern County, California (Morgan Cook, Service, pers. comm. 1995). One additional shrew was found dead in 1994 within the same residence on the Refuge. This residence is currently the Refuge headquarters and is one of two buildings located on a 4-ha (10-ac) compound surrounded by lawns and trees (Jack Allen, Service, pers. comm. 1998). The Refuge is located approximately 80 km (50 mi) northwest of the Preserve (Joseph Engler, Service, *in litt.* 1994).

Water management practices at the Refuge have focused on waterfowl, and riparian habitat has not received adequate water over the years to maintain riparian diversity (J. Engler, *in litt.* 1994). If *Sorex ornatus relictus* still exists, it would probably be found around a 323-ha (800-ac) marsh unit located on the south side of the Refuge where emergent vegetation, such as willows and cottonwoods exist. The marsh unit also remains moist longer than most other marshes on the Refuge (J. Allen, pers. comm. 1998). The constant lawn, shrub, and tree watering and the ponds at the Refuge headquarters may be sufficient to maintain any potential shrew populations (J. Engler, *in litt.* 1994).

Recent genetic data have confirmed that the shrews found at the Refuge were Buena Vista Lake shrews (J. Maldonado, pers. comm. 1998). No additional Buena Vista Lake shrews, nor any other shrew species, have been found at the Refuge.

The elimination of most of the riparian vegetation with associated marsh habitat that once occurred in the southern San Joaquin Valley has

drastically reduced the amount of suitable habitat available to the shrew, and may have restricted the animal to the Preserve. Rapid agricultural, urban, and energy developments since the early 1900s have severely reduced and fragmented native habitats. Historically, the Tulare Basin, including the former Tulare, Buena Vista, Goose, and Kern Lakes with their respective overflow marshes, provided 19 percent of the Tulare Basin valley floor habitat (Werschkull *et al.* 1992). Around the turn of the 20th century, the Tulare Basin had 104,890 ha (259,189 ac) of valley fresh water marsh, 177,005 ha (437,388 ac) of valley mixed riparian forests, and 105,333 ha (260,283 ac) of valley sink scrub, making a total of 387,229 ha (956,860 ac) of potentially suitable Buena Vista Lake shrew habitat. By the early 1980s, the combined total had been reduced to 19,019 ha (46,996 ac), less than 5 percent of the original habitat (Werschkull *et al.* 1992). As of 1995, intensive irrigated agriculture comprised 1,239,961 ha (3,064,000 ac) or about 96 percent of the total lands within the Tulare Basin. Cotton, grapes, and alfalfa represented the top three crops (California Department of Water Resources (DWR) 1998).

All of the natural plant communities in the Tulare Basin have been affected by the transformation of this area to production of food, fiber, and fuel at the expense of the natural biological diversity (Spiegel and Anderson 1992; Griggs *et al.* 1992). As more canals were built, and more water was diverted for irrigation of the floodplains of the major rivers of the southern San Joaquin Valley, less water was available to keep the riparian forests alive, and less water reached the lakes. By the early 1930s, the former Tulare, Buena Vista, Goose, and Kern Lakes were virtually dry and open for cultivation (Griggs 1992).

Irrigation, combined with subsurface drainage, have caused naturally occurring selenium to be leached from agricultural soils in the San Joaquin Valley. Elevated concentrations of selenium are believed to have caused major wildlife mortalities in places like the Kesterson National Wildlife Refuge (Kesterson) (Moore *et al.* 1989). The leaching of selenium has increased in recent times due to the increased supply of irrigation water for the cultivation of crops in the Tulare Basin. In 1984, elevated selenium levels in the blood and liver were measured in several small and large mammals from Kesterson (Clark 1987; Clark *et al.* 1989). Ornate shrews captured around Kesterson showed selenium concentrations (parts per million (ppm) dry weight) 3 to 25 times greater than

those found for any other small mammal at the same site (Clark 1987). As with other forms of wildlife, selenium toxicity represents a serious threat to the continued existence of the Buena Vista Lake shrew.

#### Previous Federal Action

The September 18, 1985, Notice of Review (50 FR 37958), included the Buena Vista Lake shrew as a category 2 candidate species for possible future listing as threatened or endangered. Category 2 candidates were those taxa for which listing as threatened or endangered might be warranted, but for which adequate data on biological vulnerability and threats were not available to support issuance of listing proposals.

We received a petition dated April 18, 1988, from Ms. Doris Dixon of The Interfaith Council for the Protection of Animals and Nature to list the Buena Vista Lake shrew and three additional shrew species as endangered species. We determined that the petition presented substantial information indicating that the requested action may be warranted. We announced this finding in the **Federal Register** on December 30, 1988 (53 FR 53030). The Buena Vista Lake shrew remained a category 2 candidate in the January 6, 1989, Notice of Review (54 FR 554). In the November 21, 1991, Notice of Review (56 FR 58804), the Buena Vista Lake shrew was elevated to category 1 status based on new information received by us. Category 1 taxa were those taxa for which we had on file sufficient information on biological vulnerability and threats to support preparation of a listing proposal.

The processing of this proposed rule conforms with our listing priority guidance published in the **Federal Register** on October 22, 1999 (64 FR 57114). This guidance clarifies the order in which we will process future rulemakings. The highest priority is processing emergency listing rules for any species determined to face a significant and imminent risk to its well-being (Priority 1). The second priority (Priority 2) is processing final determinations on proposed additions to the lists of endangered and threatened wildlife and plants. The third priority is processing new proposals to add species to the lists. The processing of administrative petition findings (petitions filed under section 4 of the Act) is the fourth priority. This proposed rule ranks as a Priority 3 action.

### Summary of Factors Affecting the Species

Section 4 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1533 *et seq.*), and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal List of Endangered and Threatened Wildlife. A species may be determined to be endangered or threatened based on one or more of the five factors described in section 4(a)(1) of the Act. These factors and their application to the Buena Vista Lake shrew, *Sorex ornatus relictus*, are as follows:

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

The amount of suitable habitat for the Buena Vista Lake shrew has been significantly reduced over time due to the systematic drainage of land and shallow lakes for the purpose of agricultural crop production. As a result, over 95 percent of the riparian vegetation and associated marsh habitat of the southern San Joaquin Valley has been eliminated. The Buena Vista Lake shrew appears to be restricted to the Preserve location.

Clark *et al.* (1982) were unsuccessful in capturing any Buena Vista Lake shrews in suitable habitat found on TNC's Paine Wildflower Preserve or at the Voice of America site west of Delano. The Paine Wildflower Preserve is about 13 km (8 mi) south of the Kern National Wildlife Refuge and 72 km (45 mi) northwest of the Preserve. The Voice of America site is located 40 km (25 mi) due east of the Kern Refuge and 80 km (50 mi) north of the Preserve. No Buena Vista Lake shrews were found after conducting surveys for small mammals along the Kern River Parkway in 1987 (Beedy *et al.* 1992). This area supports 68 ha (168 ac) of riparian woodlands, as well as 9 ha (22 ac) of freshwater marshes, and it is located 30 km (19 mi) due north of the Preserve. In 1991, surveys were conducted in suitable habitat on the Tule Elk State Reserve, 32 km (20 mi) northwest of the Preserve. No shrews were captured in these surveys (Maldonado 1992). In a 1995 survey at the Preserve, a total of 10 individuals were trapped (Maldonado 1998).

The only known remaining population of Buena Vista Lake shrews exists on the Preserve. Water delivery to maintain the Preserve and support the Buena Vista Lake shrew habitat cannot be assured because the natural water table has been lowered by past and

present agricultural practices on and around the Preserve. Despite available water supplies, the Company supplies water to the Preserve only during years of high runoff, at times when excess water is available at the end of the growing season, and after commercial crop needs are met. This process occurs through an informal agreement between the Company and the lease holder of the property. Without a dependable water supply of approximately 1.9–2.5 hectare-meters (15–20 acre-feet) required to maintain the Preserve's marshes, the continued existence of the Buena Vista Lake shrew is unlikely.

Other remnant patches of suitable habitat that might support the Buena Vista Lake shrew include areas within the Buena Vista Lake Aquatic Recreation Area, the Buena Vista Golf Course, and along the Buena Vista Slough, Goose Lake Slough, and the Kern River west of Bakersfield, CA (Maldonado 1994; J. Maldonado, pers. comm. 1998; U.S. Fish and Wildlife Service 1997). Additional areas of suitable moist locations that might provide remnant shrew habitat occur within the Pixley National Wildlife Refuge west of the former Tulare Lake bed, as well as around the former Goose Lake bed. However, small habitat patches within these areas are marginal at best and would not likely support a significant number of animals (J. Maldonado, pers. comm. 1998). In addition, these areas represent highly disjunct and fragmented habitat that may not be reconnected in the foreseeable future.

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

The subspecies has no known commercial or recreational value. The only known extant population of the Buena Vista Lake shrew is on private property.

#### C. Disease or Predation

Although there are no documented cases of disease related to Buena Vista Lake shrews, the possibility of disease and associated threats exists. The small population size and restricted distribution increases their vulnerability to epidemic diseases. Buena Vista Lake shrews, like most small mammals, are host to numerous internal and external parasites, such as round worms, mites, ticks, and fleas, that may infest individuals and local populations in varying degrees with varying adverse effects (J. Maldonado, pers. comm. 1998). However, the significance of the threat of disease and parasites to the Buena Vista Lake shrew is not known.

Most carnivores of the Tulare Basin, such as coyotes, foxes, weasels, raccoons, feral cats and dogs, as well as certain avian predators such as hawks, owls, herons, jays and egrets, are all known predators of small mammals (Ingles 1965; J. Maldonado, pers. comm. 1998).

#### D. The Inadequacy of Existing Regulatory Mechanisms

The primary cause of decline of the Buena Vista Lake shrew is the loss and fragmentation of habitat due to human activities. Federal, State, and local laws have not been adequate in preventing destruction of the limited Buena Vista Lake shrew habitat.

Under section 404 of the Clean Water Act (33 U.S.C. 1344 *et seq.*), the U.S. Army Corps of Engineers (Corps) regulates the discharge of fill material into waters of the United States, including wetlands. Section 404 regulations require applicants to obtain a permit for projects that involve the discharge of fill material into waters of the United States. However, many farming activities do not require a permit due to their exemption under the Clean Water Act (53 FR 20764; R. Wayland III, Environmental Protection Agency (EPA), *in litt.* 1996). Projects that are subject to regulation may qualify for authorization to place fill material into headwaters and isolated waters, including wetlands, under several nationwide permits. Moreover, these projects can normally be permitted with minimal environmental review by the Corps. An individual permit may be required by the Corps if a project otherwise qualifying under a nationwide permit would have greater than minimal adverse environmental impacts. No activity that is likely to jeopardize the continued existence of a threatened or endangered species, or that is likely to destroy or adversely modify the critical habitat of such species, is authorized under any nationwide permit.

However, the Corps typically confines its evaluation of impacts only to those areas under its jurisdiction (*i.e.*, wetlands and other waters of the United States). Impacts to uplands and mitigation for upland habitat losses are not typically addressed by the Corps unless such actions affect a listed species. More importantly, the termination of water sales to the Preserve does not fall under Corps jurisdiction. The lack of a guaranteed water supply is one of the major reasons TNC determined that the habitat on the Preserve could not remain viable and led to TNC's refusal to renew the lease

and manage the Preserve (S. Phelps, pers. comm. 1995).

The California Environmental Quality Act (CEQA) (Public Resources Code § 21000–21177) requires a full disclosure of the potential environmental impacts of proposed projects. The public agency with primary authority or jurisdiction over a project is designated as the lead agency and, therefore, is responsible for conducting a review of the project and consulting with the other agencies concerned with the resources affected by the project. Section 15065 of the CEQA Guidelines, as amended, requires a finding of significance if a project has the potential to “reduce the number or restrict the range of a rare or endangered plant or animal.” Once significant effects are identified, the lead agency has the option to require mitigation for effects through changes in the project or to decide that overriding considerations make mitigation infeasible (CEQA § 21002). In the latter case, projects may be approved that cause significant environmental damage, such as destruction of listed endangered species and/or their habitat. Protection of listed species through CEQA is, therefore, dependent upon the discretion of the agency involved.

#### *E. Other Natural or Manmade Factors Affecting Its Continued Existence*

As stated previously, selenium toxicity represents a serious threat to the continued existence of the Buena Vista Lake shrew. No cases of widespread selenium poisoning (selenosis) among native mammals in nature have been well documented. The lowest dietary threshold for mammalian toxicity was 1.4 parts per million (ppm) (dry weight) as associated with sublethal effects from lifetime exposure in rats (Eisler 1985). Longevity was reduced at 3 ppm in the lifetime diet. Olson (1986) reports a minimum dietary exposure associated with reproductive selenosis in rats of 3 ppm. Although stomach content data for the Buena Vista Lake shrew is lacking, aquatic insects such as brine flies *Diptera ephydriidae*, damselflies *Odonata zygoptera*, and midge flies *Diptera chironomidae*, have been found in the stomachs of other shrew species (Churchfield 1991), and could be a dietary source for the highly insectivorous Buena Vista Lake shrew. Selenium concentrations have been measured in the above species of flies collected at agricultural drainage evaporation ponds throughout the Tulare Basin (Moore *et al.* 1989). Concentrations of selenium have been measured from 1.4 to 26.9 ppm (dry weight) in these flies from six

evaporation ponds located a few miles west of the Preserve to the northern border of the Kern National Wildlife Refuge (Moore *et al.* 1989). The potential dietary selenium concentration levels are well within the known range that is toxic to small mammals (Olsen 1986), and could potentially adversely affect the Buena Vista Lake shrew. Such effects could include, but may not be limited to, reduced reproductive output or premature death (Eisler 1985).

Some of the highest selenium levels (greater than 200 parts per billion) have been measured from ground water throughout the historic range of the Buena Vista Lake shrew within the Tulare Basin, and specifically, in evaporation ponds within the agricultural lands immediately surrounding the only known population of shrews at the Preserve (DWR 1997). The increased supply of imported water and little or no exported drain water has resulted in the raising of the ground water table throughout the Tulare Basin (DWR 1997). Water table levels have been measured at 1.5 to 3 m (5 to 10 ft) beneath the Preserve and have steadily moved upwards since 1988 (DWR 1997). As selenium and other dissolved salts move upward with the elevated water table (perched water table), the surface vegetation takes up selenium with the water via root transpiration and enters the food chain of the shrew by becoming concentrated in insects that forage on the vegetation or reside in aquifers that concentrate these salts (Saiki and Lowe 1987; Moore *et al.* 1989).

Due to the hardpan soil layer beneath the Preserve, the water table is high and frequently floods despite the installation of tile drains. In dry years, the water supply is controlled by a single ditch or small pipe. These unpredictable variables limit the maintenance of suitable moist habitat for this population of Buena Vista Lake shrews. These conditions restrict alternative land management practices for shrews on the Preserve in the event of drought, flooding, harsh winter conditions, or human-induced environmental impacts.

The only known population of Buena Vista Lake shrews is vulnerable to the risks associated with small, restricted populations. Impacts to species populations that can lead to extinction include the loss or alteration of essential elements, such as habitat or food, the introduction of limiting factors into the environment, such as poison or predators, and catastrophic random changes or environmental perturbations, such as floods, droughts, or disease (Gilpin and Soule 1986). Many extinctions are the result of a severe

reduction of population size by some deterministic event, followed by a random natural event that extirpates the species. The smaller a population is, the greater its vulnerability to such perturbations (Terbough and Winter 1980; Gilpin and Soule 1986; Shaffer 1987). The elements of risk that are amplified in very small populations include: (1) The impact of high death rates or low birth rates; (2) the effects of genetic drift (random fluctuations in gene frequencies) and inbreeding; and (3) deterioration in environmental quality (Gilpin and Soule 1986). When the number of individuals in the sole population of a species or subspecies is sufficiently low, the effects of inbreeding may result in the expression of deleterious genes in the population (Gilpin 1987). Deleterious genes reduce individual fitness in various ways, most typically by decreasing survivorship of young. Genetic drift in small populations decreases genetic variation due to random changes in gene frequency from one generation to the next. This reduction of variability within a population limits the ability of that population to adapt to environmental changes.

One scenario where loss of habitat may lead to extinction is when the species is a local endemic (because of its isolation and restricted range) (Gilpin and Soule 1986). The Buena Vista Lake shrew is a limited local endemic subspecies (Williams and Kilburn 1992), which has never been found to be locally abundant, and lives in very restricted areas of marshy wetland habitat (Bradford 1992). Because the sole population is small (only 10 known individuals as of 1995) and occurs in a single small location (12 ha (30 ac)), the Buena Vista Lake shrew is extremely vulnerable to natural or human-caused environmental impacts. No known viable populations of Buena Vista Lake shrews exist outside the former Kern Lake Preserve for recolonization if a catastrophic event were to occur at this site. While the subspecies still occurs within its limited range, whether the population is declining, how habitat conditions may be affecting the population, or how small population size may be affecting genetic and behavioral stability is unknown. Based on the vulnerability of this small population in its limited range and the extremely limited potential for suitable habitat outside this range, we believe that threats to currently occupied or potential habitat and individuals put this subspecies at a high risk for extinction.

In developing this proposed rule, we have carefully assessed the best

scientific and commercial information available regarding the past, present, and future threats facing this subspecies. The Buena Vista Lake shrew is threatened primarily by agricultural activities, modifications and potential impacts to local hydrology, uncertainty of water delivery to the Preserve, possible toxic effects from selenium poisoning, and by random naturally occurring events. Only one known population exists, and any decrease in its numbers could result in decreased genetic variability. Because of the high potential that these threats, if realized, will result in the extinction of the Buena Vista Lake shrew, the preferred action is to list the subspecies as endangered. Not listing the subspecies or listing it as threatened would not provide adequate protection and would not be consistent with the Act.

### Critical Habitat

Critical habitat is defined in section 3 of the Act as: (i) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection and; (ii) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. "Conservation" means the use of all methods and procedures needed to bring the species to the point at which listing under the Act is no longer necessary.

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, we designate critical habitat at the time the species is determined to be endangered or threatened. Our regulations (50 CFR 424.12(a)(1)) state that the designation of critical habitat is not prudent when one or both of the following situations exist—(1) the species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of threat to the species, or (2) such designation of critical habitat would not be beneficial to the species.

We propose that critical habitat is prudent for *Sorex ornatus relictus*. In the last few years, a series of court decisions have overturned Service determinations regarding a variety of species that designation of critical habitat would not be prudent (e.g., *Natural Resources Defense Council v.*

*U.S. Department of the Interior* 113 F. 3d 1121 (9th Cir. 1997); *Conservation Council for Hawaii v. Babbitt*, 2 F. Supp. 2d 1280 (D. Hawaii 1998)). Based on the standards applied in those judicial opinions, we believe that designation of critical habitat would be prudent for *Sorex ornatus relictus*.

In the absence of a finding that critical habitat would increase threats to a species, if any benefits would result from critical habitat designation, then a prudent finding is warranted. In the case of this species, designation of critical habitat may provide some benefits. The primary regulatory effect of critical habitat is the section 7 requirement that Federal agencies refrain from taking any action that destroys or adversely modifies critical habitat. While a critical habitat designation for habitat currently occupied by this species would not be likely to change the section 7 consultation outcome because an action that destroys or adversely modifies such critical habitat would also be likely to result in jeopardy to the species, in some instances, section 7 consultation might be triggered only if critical habitat is designated. Examples could include unoccupied habitat or occupied habitat that may become unoccupied in the future. Designating critical habitat may also provide some educational or informational benefits. Therefore, we find that critical habitat is prudent for the Buena Vista Lake shrew.

As explained in detail in the Final Listing Priority Guidance for FY 2000 (64 FR 57114), our listing budget is currently insufficient to allow us to immediately complete all of the listing actions required by the Act. We plan to employ a priority system for deciding which outstanding critical habitat designations should be addressed first. We will focus our efforts on those designations that will provide the most conservation benefit, taking into consideration the efficacy of critical habitat designation in addressing the threats to the species, and the magnitude and immediacy of those threats. Deferral of the critical habitat designation for the Buena Vista Lake shrew will allow us to concentrate our limited resources on higher priority critical habitat and other listing actions, while allowing us to put in place protections needed for the conservation of the Buena Vista Lake shrew without further delay. We will make the final critical habitat determination with the final listing determination for the shrew. If this final critical habitat determination is that critical habitat designation is prudent, we will develop a proposal to designate critical habitat

for the Buena Vista Lake shrew as soon as feasible, considering our workload priorities.

### Available Conservation Measures

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

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 in 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with us.

Federal agency actions that may require conference and/or consultation as described in the preceding paragraph include the U.S. Army Corps of Engineers and their authorization of projects such as the construction of drainage diversions, roads, bridges, and dredging projects subject to section 404 of the Clean Water Act.

The Buena Vista Lake shrew has been included as a candidate species in the Recovery Plan for Upland Species of the San Joaquin Valley of California (Recovery Plan) (U.S. Fish and Wildlife Service 1998). Historically, the Buena Vista Lake shrew was most common in wetland habitat, and all of its extant and potential habitat is included within the habitats of the listed species that use alkali sink and associated communities. Because the subspecies is not federally listed as endangered or threatened, the recovery actions are identified as conservation actions and are designed to ensure long-term conservation. The recovery actions include additional surveys in areas of potentially suitable

habitat, habitat restoration and creation on private as well as public lands, and study of the feasibility of reintroduction at the Tule Elk State Reserve near Tupman, California. Also identified as needed conservation actions are population genetic studies, as well as the continuous monitoring of the only known viable population at the Preserve.

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

Permits may also be issued to carry out otherwise prohibited activities involving endangered wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.22 and 17.23. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities.

As published in the **Federal Register** on July 1, 1994 (59 FR 34272) our policy, to identify to the maximum extent practicable at the time a species is listed those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a proposed listing on proposed and ongoing activities within a species' range.

We believe that, based on the best available information, the following actions will not likely result in a violation of section 9, provided these actions are carried out in accordance with any existing regulations and permit requirements:

(1) Actions that may affect the Buena Vista Lake shrew that are authorized, funded, or carried out by a Federal agency, when the action is conducted in accordance with a biological opinion issued by us pursuant to section 7 of the Act; and

(2) Actions that may affect the Buena Vista Lake shrew when the action is a part of an approved habitat conservation

plan and conducted in accordance with an incidental take permit issued by us pursuant to section 10(a)(1)(B) of the Act.

Activities that we believe could likely result in a violation of section 9 include, but are not limited to:

(1) Actions not authorized under section 7 or 10 of the Act that lead to the destruction or alteration of occupied Buena Vista Lake shrew habitat through the discharge of fill material, draining, ditching, tiling, pond construction, rock removal, stream channelization, or diversion of ground water flow into or out of riparian habitat of this subspecies that are associated with activities such as the construction or installation of roads, impoundments, discharge or drain pipes, and storm water detention basins;

(2) Burning, cutting, or mowing of riparian vegetation that results in death of injury to Buena Vista Lake shrews or that results in degradation of their occupied habitat;

(3) Application of pesticides that results in death of or injury to Buena Vista Lake shrews; and

(4) Discharging or dumping toxic chemicals or other pollutants (such as sewage, oil, or gasoline) that results in death of or injury to Buena Vista Lake shrews.

Direct your questions regarding whether specific activities may constitute a violation of section 9 to the Field Supervisor of the Sacramento Fish and Wildlife Office (see **ADDRESSES** section). Requests for copies of the regulations concerning listed wildlife and general inquiries regarding prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Ecological Services, Endangered Species Permits, 911 NE. 11th Avenue, Portland, Oregon 97232-4181 (telephone 503/231-2063; facsimile 503/231-6243).

#### Public Comments Solicited

We intend that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this proposed rule are hereby solicited. We will follow our current peer review policy (59 FR 34270) in the processing of this rule. Comments are sought particularly concerning:

(1) Biological, commercial, or other relevant data concerning any threat (or lack thereof) to the Buena Vista Lake shrew;

(2) The location of any additional populations of this subspecies and habitat association (including specific vegetation and soil type), and the reasons why any habitat should or should not be determined to be critical habitat as provided by section 4 of the Act;

(3) Additional information concerning the range, distribution, and population size and genetics of this subspecies;

(4) Current or planned activities in the subject area and their possible impacts on this subspecies; and

(5) Additional relevant information concerning the life-history, habits, and dispersal of this subspecies.

A final determination for this subspecies will take into consideration the comments and any additional information received by us. Such communications may lead to a final determination that differs from this proposal.

The Act provides for one or more public hearings on this proposal, if requested. Requests must be received within 45 days of the date of publication of the proposal in the **Federal Register**. Such requests must be made in writing and addressed to the Field Supervisor, Sacramento Fish and Wildlife Office (see **ADDRESSES** section).

#### National Environmental Policy Act

We have determined that environmental assessments and environmental impact statements, as defined in the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

#### Paperwork Reduction Act

This rule does not contain any new collections of information other than those already approved under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*, and assigned Office of Management and Budget clearance number 1018-0094. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid control number. For additional information concerning permit and associated requirements for endangered species, see 50 CFR 17.21 and 17.22.

#### References Cited

A complete list of all references cited herein is available upon request from the Field Supervisor, Sacramento Fish

and Wildlife Office (see **ADDRESSES** section).

**Author**

The primary author of this proposed rule is Dwight Harvey, U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office (see **ADDRESSES** section).

**List of Subjects in 50 CFR Part 17**

Endangered and threatened species, Exports, Imports, Reporting and

recordkeeping requirements, Transportation.

**Proposed Regulations Promulgation**

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

**PART 17—[AMENDED]**

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

**Authority:** 6 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. Section 17.11(h) is amended by adding the following, in alphabetical order under “MAMMALS,” to the List of Endangered and Threatened Wildlife:

**§ 17.11 Endangered and threatened wildlife.**

\* \* \* \* \*  
(h) \* \* \*

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
MAMMALS							
* Shrew, Buena Vista Lake.	* <i>Sorex ornatus relictus.</i>	* U.S.A. (CA) .....	* Entire .....	* E	* 699	* NA	* NA
*	*	*	*	*	*	*	*

Dated: May 16, 2000.

**Jamie Rappaport Clark,**

*Director, Fish and Wildlife Service.*

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**DEPARTMENT OF COMMERCE**

**National Oceanic and Atmospheric Administration**

**50 CFR Part 622**

[Docket No. 000511131–0131–01; I.D. 021500A]

**RIN 0648–AM75**

**Fisheries of the Caribbean, Gulf of Mexico, and South Atlantic; Coastal Migratory Pelagic Resources of the Gulf of Mexico and South Atlantic; Amendment 12**

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Proposed rule; request for comments.

**SUMMARY:** NMFS proposes to implement Amendment 12 to the Fishery Management Plan for the Coastal Migratory Pelagic Resources of the Gulf of Mexico and South Atlantic (Amendment 12). This rule would extend the current moratorium on the issuance of commercial vessel permits for king mackerel through October 15, 2005. The intended effects of this proposed rule are to prevent speculative entry into the fishery and provide stability in the fishery.

**DATES:** Comments must be received no later than 5 p.m., eastern standard time, on July 3, 2000.

**ADDRESSES:** Written comments on the proposed rule must be sent to Dr. Steve Branstetter, Southeast Regional Office, NMFS, 9721 Executive Center Drive N., St. Petersburg, FL 33702. Comments also may be sent via fax to 727–570–5583. Comments will not be accepted if submitted via e-mail or Internet.

Comments regarding the collection-of-information requirements contained in this rule should be sent to Edward E. Burgess, Southeast Regional Office, NMFS, 9721 Executive Center Drive N., St. Petersburg, FL 33702, and to the Office of Information and Regulatory Affairs, Office of Management and Budget (OMB), Washington, DC 20503 (Attention: NOAA Desk Officer).

Copies of Amendment 12, which includes an environmental assessment and a regulatory impact review (RIR), may be obtained from the Gulf of Mexico Fishery Management Council, Suite 1000, 3018 U.S. Highway 301 North, Tampa, FL 33619; telephone: 813–228–2815; fax: 813–225–7015; e-mail: Gulf.Council@noaa.gov; or from the South Atlantic Fishery Management Council, Southpark Building, One Southpark Circle, Suite 306, Charleston, SC 29407–4699; telephone: 843–571–4366; fax: 843–769–4520; e-mail: Safmc@noaa.gov.

**FOR FURTHER INFORMATION CONTACT:** Dr. Steve Branstetter; telephone: 727–570–5305; fax: 727–570–5583; e-mail: Steve.Branstetter@noaa.gov.

**SUPPLEMENTARY INFORMATION:** The fisheries for coastal migratory pelagic

resources are managed under the Fishery Management Plan for the Coastal Migratory Pelagic Resources of the Gulf of Mexico and South Atlantic (FMP). The FMP was prepared jointly by the Gulf of Mexico Fishery Management Council and the South Atlantic Fishery Management Council (Councils), approved by NMFS, and implemented under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) by regulations at 50 CFR part 622.

**Background**

Amendment 8 to the FMP, implemented in March 1998 (63 FR 10561, March 4, 1998), established a moratorium on commercial king mackerel permits through October 15, 2000. To obtain a king mackerel permit under the moratorium, a vessel owner must have owned a vessel with a commercial vessel permit for king mackerel on or before October 16, 1995, the control date for the king mackerel fishery (60 FR 53576, October 16, 1995). The intent of the moratorium is to prevent further increases in effort, to stabilize the economic performance of current participants, and possibly to reduce the number of permittees in the king mackerel fishery. The Councils noted that the number of commercial vessel permits for mackerel had increased from 1,280 to 2,754 between the 1987–88 and 1997–98 fishing years. As of March 25, 1999, the number of king and Spanish mackerel permits has declined to 2,109.

Under section 303(d)(1)(A) of the Magnuson-Stevens Act, the Councils are