

Southern California salt marsh shrew,
Sorex ornatus salicornicus
Paul W. Collins

Description: von Bloeker (1932b), based on ten specimens, described this taxon as a small (85-102 mm TL), dark shrew with a relatively short (29.5-42 mm), bicolored tail; drab gray ventrum; and small, flattened skull. *S. o. salicornicus* has a darker dorsal pelage than the sympatric *S. o. ornatus*, which has a more grayish brown pelage and occurs in more upland habitats (von Bloeker 1932b). Compared to other subspecies of ornate shrews, *S. o. salicornicus* is smaller, has a shorter tail, and a smaller, more flattened skull (the latter character discernable only in prepared skeletons).

Taxonomic Remarks: von Bloeker (1932b) described this taxon as having a smaller skull than any other previously named subspecies of *Sorex ornatus*, and suggested that it was intermediate in color and external characters between *californicus* and *relictus*. Pelage color that is darker than that of sympatric *S. o. ornatus* has also been described for other marsh-dwelling subspecies (*relictus* and *sinuosus*) (Owen and Hoffmann 1983). A taxonomic review of this and other subspecies of ornate shrews is underway, using morphologic and genetic data, and may result in consolidation of some of the weakly differentiated subspecies with *S. o. ornatus* (J. Maldonado pers. comm.).

Distribution: The Southern California salt marsh shrew is confined to coastal salt marshes in Los Angeles, Orange, and Ventura counties (Williams 1986). Historically, it was reported from Point Mugu marsh in Ventura County south to the vicinity of Naples in Los Angeles County (von Bloeker 1932b, Grinnell 1933). Since its original description, additional records ascribed to the subspecies have extended its range south to salt marshes around Anaheim and Newport bays, Orange County (Williams 1986, Feldmeth et al. 1989). Surveys during the 1980s and 1990s reported small populations at Point Mugu marsh (C. Drost pers. comm., J. Maldonado pers. comm.), Ballona Wetlands near Playa Del Rey (Friesen et al. 1981), and Seal Beach National Wildlife Refuge and Bolsa Chica Ecological Reserve in Anaheim Bay (Feldmeth et al. 1989). Based on specimen records, the altitudinal range of this taxon is at or near sea level (Grinnell 1933).

Life History: The natural history of the southern California salt marsh shrew is not well known. However, it is expected to be similar to other marsh-dwelling ornate shrews such as *S. o. salicornicus*, which subsist on a diet composed largely of amphipods, isopods, insects and other invertebrates (Williams 1986, Friesen et al. 1981).

Habitat: Grinnell (1933) described the species' habitat as *Salicornia* marshes. At the Seal Beach National Wildlife Refuge it occurred in salt marsh dominated by *Salicornia virginica*; at Bolsa Chica Ecological Reserve, it occurred in dense *Salicornia* and salt grass (Feldmeth et al. 1989). Its occurrence in association with dense willow (*Salix* spp.) and bulrush (*Scirpus* sp.) thickets near Point Mugu (J. Maldonado pers. comm.) suggests it occurs in a broader range of wetland habitats than first thought. The habitat characteristics of southern California salt marsh shrews may be similar to those which Johnston and Rudd (1957) recorded for other salt marsh-inhabiting populations of ornate shrew: dense vegetative ground cover, protected nesting sites above mean high tide which are free from inundation, and moist surroundings.

Status: Class II. The southern California salt marsh shrew has been impacted by habitat loss and fragmentation as a result of dredging for harbors, channelizing and diking for flood control, and urban development. These activities have also eliminated transitional upland habitat around the margins of remaining coastal salt marshes, which are used as refuge sites to escape flooding during high tides and periodic storms (Williams 1986). Predation by feral and domestic cats and introduced

red foxes is another factor which is adversely affecting southern California salt marsh shrews.

No range-wide surveys have been undertaken to determine the population status of *S. o. salicornicus*. It is possible, however, to assess its status based on survey efforts during the past two decades at salt marshes within its historic range. Survey results from 1989 to 1993 indicate that *S. o. salicornicus* occurs in low numbers at Ballona Wetlands, the Seal Beach National Wildlife Refuge and the Bolsa Chica Ecological Reserve, and Point Mugu Duck Club (Feldmeth et al. 1989, Friesen et al. 1981 (J. Maldonado pers. comm., C. Drost pers. comm.)).

Available data indicate that there may be as few as six disjunct patches of salt marsh habitat remaining, and only two populations. The species may be Threatened or Endangered; however, its recommended status is as a species of Special Concern because of the need for additional information. Results of the recommended additional field studies may result in the need to list.

Management Recommendations: A status survey is needed to determine the extent of remaining habitat for this taxon and the presence/absence of the species in these patches. A better understanding is also needed on the species' habitat relations and requirements and natural history. The localities to be surveyed include Point Mugu and the Ventura and Santa Clara River estuaries in Ventura County, Ballona Wetlands and Malibu Lagoon in Los Angeles County, and salt marshes in Orange County at Seal Beach National Wildlife Refuge, Bolsa Lagoon, and Upper Newport Bay. Studies are underway on the systematics of *S. o. salicornicus* (J. Maldonado pers. comm.). These studies should address levels of genetic variability within the subspecies, and evaluate whether there has been genetic subdivision (e.g., drift) among the small populations.

S. CALIFORNIA SALT MARSH SHREW

Sorex ornatus salicornicus



- Locations verified by authors
(captures, observations, museum records)

■ CNDDDB 1978 and before