

Arizona and California, expressed that the designated MAs and the current protective measures are adequate, and the species does not warrant Federal listing as threatened. This reviewer stated that the main reason that the species does not warrant Federal listing is that even without population estimates for the MAs, it is reasonable to believe there are large, viable, self-sustaining populations that are being protected in the MAs.

We respectfully disagree with the two reviewers who recommended listing the flat-tailed horned lizard rangewide, because we do not feel the available data indicate that the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. While one reviewer stated that critical demographic data necessary to demonstrate population stability are still lacking, reliable demographic data showing population declines are also lacking.

Summary of Factors Affecting the Species

Section 4 of the Act (16 U.S.C. 1531 *et seq.*) and the regulations (50 CFR part 424) that implement the listing provisions of the Act set forth the procedures for adding species to the Federal list of endangered and threatened species. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act. These factors and their application to the flat-tailed horned lizard rangewide are discussed below.

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

United States

There were some threats of habitat loss and modification identified in the 1993 proposed rule that have been reduced since 1993 or for which we have limited new information since 1993. The proposed rule stated that 95 percent of the remaining optimal habitat in California is threatened by one or more impacts, and that urban growth is an important component of these threats. At this time, habitat loss due to urbanization does not appear to be a significant threat in the foreseeable future, due to Federal and State land ownership of most of the remaining habitat, with the exception of that in the Coachella Valley and Borrego Valley. The Imperial Valley has been developed up against the borders of MAs, and additional BLM lands on both sides of

the Imperial Valley largely prevent further urban and agricultural development. The proposed rule also mentioned gold mining as a potential threat. There are currently no gold mines in flat-tailed horned lizard habitat, and gold mines are not expected to become a threat in the foreseeable future.

The relative abundance index that was used in the 1993 proposed rule to document a decline in the Yuha Desert has since been found to be based on erroneous assumptions and inconclusive data. The information on population trends presented in the proposed rule was derived in part from scat count data collected between 1979 and 1991. The use of scat counts for this purpose has problems that were previously mentioned in the Background section of this rule, and therefore we do not consider scat counts scientifically reliable as indicators of population abundance. At this time, the available data do not indicate that populations of flat-tailed horned lizard are declining or threatened in any of the geographic areas, with the exception of the Coachella Valley, discussed later.

The distribution of the flat-tailed horned lizard was described by Turner and Medica (1982) as the desert areas of southeastern California and southwestern Arizona and adjoining portions of Sonora and Baja California Norte, Mexico. The historical distribution of the flat-tailed horned lizard in California was arguably connected to an unknown extent from the Imperial Valley north through the Coachella Valley. Locality records report flat-tailed horned lizards occurring within the Imperial Valley in the towns of Westmorland, Seeley, and Holtville (Klauber 1932). Bryant (1911) reported locality records from Mecca (southern end of Coachella Valley) and "Salton Lake." The development of the Imperial Valley and southern half of the Coachella Valley for agriculture and urbanization, and the filling up of the Salton Sea, have essentially fragmented the range of the flat-tailed horned lizard in California into the following disjunct areas: (1) Coachella Valley, (2) west side of Salton Sea and Imperial Valley, and (3) the east side of the Imperial Valley. Additionally, the Colorado River separates the Arizona population of flat-tailed horned lizards from populations in California. Consequently, we will further analyze Factor A using the four disjunct areas within the United States: (1) Coachella Valley, (2) west side of Salton Sea/Imperial Valley, (3) east side of Imperial Valley, and (4) Arizona.

Coachella Valley (California)

There has been substantial loss and fragmentation of flat-tailed horned lizard habitat within the Coachella Valley. We use the term fragmentation to refer to the breaking up of a habitat or ecosystem into smaller parcels (Foreman 1997). Fragmentation stems from Interstate 10 (I-10), which runs through the middle of the Coachella Valley; an associated network of roads south of I-10; and associated urban and agricultural development. An important effect of habitat fragmentation is the decreased movement of a species (*i.e.*, the flat-tailed horned lizard) across a landscape. Some highways, such as I-10, act as complete barriers to movement of flat-tailed horned lizards. Other roads may decrease the probability that flat-tailed horned lizards will cross the road, or may result in increased mortality rates for flat-tailed horned lizards within an unknown distance of roads. The decrease in movement of flat-tailed horned lizards due to roads can have negative impacts to local populations, including: (1) Decreased dispersal rates of juveniles, (2) decreased likelihood for rescue of small populations due to immigration, (3) decreased genetic flow between local populations, and (4) other unknown impacts to a population's spatial structure.

The amount of contiguous and total habitat remaining in the Coachella Valley is far less than that found in the other three geographic areas. There are about 16,610 ha (41,040 ac) remaining, which represent 19 percent of the approximately 86,820 ha (214,540 ac) of historical habitat in the Coachella Valley (Barrows, pers. comm. 2002), and about 3 percent of the current habitat rangewide in the U.S. (We derive these figures using Hodges 1997 figure for current habitat within the U.S.) Approximately 75 percent of the flat-tailed horned lizard habitat in the Coachella Valley is either private or Tribal land and subject to development in the near future. The remainder is either in Federal or State ownership. Between 1996 and 2002, an estimated 2,428 ha (6,000 ac) of flat-tailed horned lizard habitat was developed in the Coachella Valley (Kim Nicol, CDFG biologist, pers. comm. 2002).

The largest patch of habitat is on the Coachella Valley Preserve and consists of about 1,480 ha (3,660 ac). In total, there are about 2,150 hectares (5,314 acres) of suitable flat-tailed horned lizard habitat that are protected as part of the Coachella Valley Fringe-Toed Lizard Preserve System (Coachella Valley Mountains Conservancy 2001).