

the Management Strategy is to provide a framework for conserving sufficient habitat to maintain several viable populations of the flat-tailed horned lizard throughout the range of the species in the United States. The Management Strategy was developed by an interagency working group over a two-year period. As part of the CA, agencies delineated specific areas under their jurisdiction as Management Areas (MAs). Approximately 181,100 ha (447,600 ac) of the remaining flat-tailed horned lizard habitat managed by signatories of the CA exists within five MAs, which occur in the Borrego Badlands, West Mesa, Yuha Desert, East Mesa, and the Yuma Desert. These managed areas are believed to represent approximately 35 percent of flat-tailed horned lizard habitat remaining in the United States.

The five MAs were designed to identify large areas of public land where flat-tailed horned lizards have been found, as well as to include most flat-tailed horned lizard habitat identified as key areas in previous studies (Turner *et al.* 1980, Turner and Medica 1982, Rorabaugh *et al.* 1987, Foreman 1997). MAs were proposed based on accepted principles of good preserve design, utilizing the best information available at the time (FTHL-ICC 2002). Furthermore, the MAs were delineated to include areas as large as possible, while avoiding extensive, existing and predicted management conflicts (e.g., OHV open areas). The MAs are meant to be the core areas for maintaining self-sustaining populations of flat-tailed horned lizards in the U.S. (FTHL-ICC 2002).

The flat-tailed horned lizard commonly occurs in additional areas outside of the MAs. These areas include the Ocotillo Wells State Vehicle Recreation Area (Ocotillo Wells SVRA), Coachella Valley, the areas adjoining the Algodones Dunes, and east of the Algodones Dunes between Ogilby and the Mexican border (Norris 1949, Turner *et al.* 1980, Turner and Medica 1982). The Ocotillo Wells SVRA is currently a Research Area under the Management Strategy, and studies on the flat-tailed horned lizard have been encouraged and funded by the California Department of Parks and Recreation (CDPR) Division of Off-Highway Motor Vehicle Recreation (Foreman 1997).

The majority of the potential flat-tailed horned lizard habitat is within and adjacent to the Algodones Dunes is within the Imperial Sand Dunes Recreation Area. Over 47,754 ha (118,000 ac) of the Imperial Sand Dunes Recreation Area is used as an OHV open area. The majority of the Algodones

Dunes north of Highway 78 is a designated wilderness area.

The Coachella Valley has been developed to a much larger extent than any other geographic area within the flat-tailed horned lizard's current range, and does not have nearly as much Federal land as the other areas in which the MAs were established. There are only about 16,610 ha (41,040 ac) of flat-tailed horned lizard habitat remaining, representing 19 percent of the approximately 86,820 ha (214,540 ac) of historical habitat in the Coachella Valley (Katie Barrows, pers. comm. 2002), about 3 percent of the current habitat rangewide in the U.S., and roughly 1 percent of the species range overall, including Mexico (we derive these figures using Hodges' 1997 figure for current habitat within the U.S., and Johnson and Spicer's [1985] estimate of overall range). Of the remaining habitat in the Coachella Valley, only about 2,150 ha (5,314 ac) of suitable flat-tailed horned lizard habitat is estimated to be protected as part of the Coachella Valley Fringe-Toed Lizard Preserve System (Coachella Valley Mountains Conservancy 2001).

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. An area with the largest amount of remaining habitat outside the fringe-toed lizard preserve system is the Big Dune area between Palm Springs and Indian Wells, south of I-10. However, this area is fragmented with major roads and new development (e.g., residential housing, shopping centers, Agua Caliente Casino, and California State University of San Bernardino Extension) and is increasingly subject to new development because of its central location within the Coachella Valley.

Signatories of the CA, which include the Service, Bureau of Reclamation (BOR), BLM, U.S. Marine Corps, U.S. Navy, Arizona Game and Fish Department (AGFD), California Department of Fish and Game (CDFG), and CDPR, committed to implementation of conservation measures for the species over the life of the CA. These measures included: (1) Continued monitoring of lizard populations and new surface disturbance within MAs; (2) limitation of new surface-disturbing projects within MAs to 1 percent of the area of MAs between 1997–2002; (3) collection of compensation fees from project proponents who conduct activities within and outside of MAs; (4) reduction in off-highway vehicle (OHV = all vehicles used off-road, including

automobiles, dune buggies, motorcycles, all-terrain-cycles, four-wheelers, etc.) routes within MAs; (5) prohibition of off-highway competitive events within MAs; (6) support of continued flat-tailed horned lizard monitoring and research; (7) mitigation for surface-disturbing activities in lizard habitat; and (8) attempting to acquire all private inholdings within MAs. An Interagency Coordination Committee (ICC) and a Management Oversight Group, composed of biologists and managers from CA signatory agencies, respectively, were established to formulate and oversee implementation of the Management Strategy. The signatories agreed to review the CA and its effectiveness annually to determine whether it should be revised. Within a year of completing the tasks identified in the implementation schedule, the involved parties shall review the CA and either modify, renew, or terminate it. The CA may at any time be amended, extended, modified, supplemented, or terminated by mutual concurrence. Participation in the CA/Management Strategy is voluntary, and agencies may withdraw from participation with 60 days' notice. The Management Strategy is currently being revised.

A flat-tailed horned lizard Population Viability Analysis (PVA) was conducted by a conservation team convened both to share research results involving this species and to evaluate the Management Strategy. The preliminary PVA provided no estimate of the minimum viable population size and did not determine whether populations contained within the MAs were viable, due to a lack of population demographic and stochastic (*i.e.*, random events relevant to a population) information. However, the analysis illustrated the sensitivity of flat-tailed horned lizard population viability to certain factors, particularly changes in mortality and fecundity. Recommendations in the PVA report included controlling activities that result in mortality of flat-tailed horned lizards and degradation of their habitat. Large management areas were found to be desirable as a conservative approach to ensuring the long-term population persistence.

Based on information obtained since the withdrawal of the proposed listing rule in 1997 and information documented in the proposed rule, we have identified potential threats to the flat-tailed horned lizard, including the following: urban development, agricultural development, OHV activity, energy developments, military activities, introduction of non-native plants, pesticide use, and habitat degradation due to Border Patrol and