

**Annual Progress Report:  
Implementation of the  
Flat-tailed Horned Lizard Rangelwide Management Strategy**

**January 1, 2005- December 31, 2005**

Prepared by the  
Flat-tailed Horned Lizard Interagency Coordinating Committee

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DRAFT

## **Executive Summary**

The flat-tailed horned lizard (FTHL) Rangewide Management Strategy (RMS) continues to be implemented throughout the Management Areas (MAs) and Research Areas (RAs) and FTHL habitat by the cooperating agencies. Regular coordination between the participating agencies continues through the Management Oversight Group (MOG) and Interagency Coordination Committee (ICC). The participating agencies believe the FTHL Conservation Agreement and RMS continue to provide a viable management focus to conserve FTHL habitat throughout its range. During the past year the aggressive implementation of the RMS has been a positive benefit for FTHL conservation. Outreach efforts continue to include the general public and other agencies, such as the U.S. Border Patrol and Mexican agencies as active participants in implementing the RMS. CEDO, the Alto Golfo and Pinacate Reserves are already working closely with agencies in the U.S. on research and conservation efforts to benefit the FTHL. Authorized surface impacts have remained low in MAs.

The listing status of the FTHL changed in 2005. The U.S. District Court for the District of Arizona set aside the January 3, 2003 withdrawal of the proposed rule to list the flat-tailed horned lizard as a threatened species. On December 7, 2005 the U.S. Fish and Wildlife Service published a Federal Register Notice vacating the January 2003 withdrawal and restoring proposed status to the flat-tailed horned lizard (70 FR 72776). The Conservation Agreement remains in effect today, and the RMS continues to be implemented by all Conservation Agreement signatory agencies. The majority of the tasks outlined by the RMS are anticipated to be completed on schedule. Only a few of the tasks outlined by the RMS are behind schedule.

Population inventories and monitoring of trends continue, as does research in MAs, RAs, and other areas of suitable habitat. This information is useful in developing future management actions and in being able to make better decisions in implementing projects. Acquiring new lands within the range of FTHL continues to be a priority of the MOG and ICC. Research to better understand the FTHL and impacts to its habitat are also continuing.

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**Introduction**

On June 7, 1997, a Conservation Agreement was signed by several federal and state agencies to implement the *Flat-tailed Horned Lizard Rangewide Management Strategy* (RMS). The RMS is a plan of action to conserve the flat-tailed horned lizard (*Phrynosoma mcallii*) in the United States. The flat-tailed horned lizard (FTHL) is a small horned lizard that inhabits creosote flats, sand dunes, and mud hills in southeastern California, southwestern Arizona, and northwestern Mexico. Much of the FTHL's historic habitat (possibly as much as 50%) in the United States has been lost due to agricultural and residential development. The RMS and the Conservation Agreement are a long-term agreement among signatory agencies to ensure persistence of the species. A revision of the RMS, with minor changes, was published in 2003.

The listing status of the FTHL changed in 2005. On August 30, 2005, the U.S. District Court for the District of Arizona set aside the January 3, 2003 withdrawal of the proposed rule to list the flat-tailed horned lizard as a threatened species on the grounds that the withdrawal failed to determine whether the lost historical habitat for the flat-tailed horned lizard is a significant portion of the range for this species and thereby violated the Endangered Species Act. On December 7, 2005 the U.S. Fish and Wildlife Service (USFWS) published a Federal Register Notice vacating the January 2003 withdrawal and restoring proposed status to the flat-tailed horned lizard (70 FR 72776). The Conservation Agreement remains in effect today, and the RMS continues to be implemented by all Conservation Agreement signatory agencies.

The RMS requires that an annual report be prepared by the Interagency Coordinating Committee (ICC) to monitor plan compliance (Planning Action 9.2.4). This is the seventh annual report and covers the period January through December 2005.

The following agencies are signatories to the Conservation Agreement:

- Anza-Borrego Desert State Park (ABDSP)
- Arizona Game and Fish Department (AGFD)
- Bureau of Land Management - Palm Springs, El Centro, and Yuma Field Offices (BLM)
- Bureau of Reclamation (BR)
- California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division, Ocotillo Wells District. (CDPR)
- U.S. Fish and Wildlife Service (USFWS)
- Marine Corps Air Station, Yuma (MCAS Yuma)
- Naval Air Facility, El Centro (NAF El Centro)
- California Department of Fish and Game (CDFG)

The U.S. Border Patrol (BP) at times participates as guests in the Management Oversight Group (MOG) and the Interagency Coordinating Committee (ICC). BP has decided not to become a signatory to the RMS. However, BP continues to work closely with BLM staff in the El Centro Field Office.

Plan actions accomplished or initiated during this period are summarized below.

**Planning Action 1. Delineate and designate Management Areas.**

An Environmental Assessment proposing an amendment the California Desert Conservation Area Plan to officially adopt the East Mesa, West Mesa, and Yuha Management Areas (MAs) was released for public comment on November 19, 2004. This release was followed by a 30 day public protest period that ended December 18, 2004. No public protests were received. BLM California State Director, Mike Pool, signed a Decision Record on February 1, 2005 that amended the California Desert Conservation Area Plan and formally adopted all three management areas in the El Centro area.

MCAS Yuma developed an Integrated Natural Resource Management Plan (INRMP), which also fully incorporates and implements the RMS. Boundaries for the designated FTHL management area within Anza-Borrego Desert State Park have been delineated in the Borrego Badlands and Clark Dry Lake areas.

Figures one through six below show each Management Area or Research Area defined by the RMS.

**Planning Action 2. Define and implement management actions necessary to minimize loss or degradation of habitat.**

The habitat impacts authorized by managing agencies within the period are shown in Table 1. A narrative for each participating agency follows Table 1.

The ICC and MOG coordinated with BP to assess methods to reduce the amount of vehicle traffic illegally crossing the border into the Yuma Desert. The MOG approved the use of \$400,000 of compensation funds from the ASH to help fund the construction of a vehicle barrier along the border through the Yuma Desert; however, this funding will not be necessary since the Department of Homeland Security was able to secure independent funding for this project.

Drug smuggling, illegal immigration, and associated law enforcement activities continue to impact habitat along the international border, particularly the Yuma Desert MA. Outreach efforts to inform and educate enforcement personnel on FTHL issues continue.

**Figure 1: East Mesa MA**

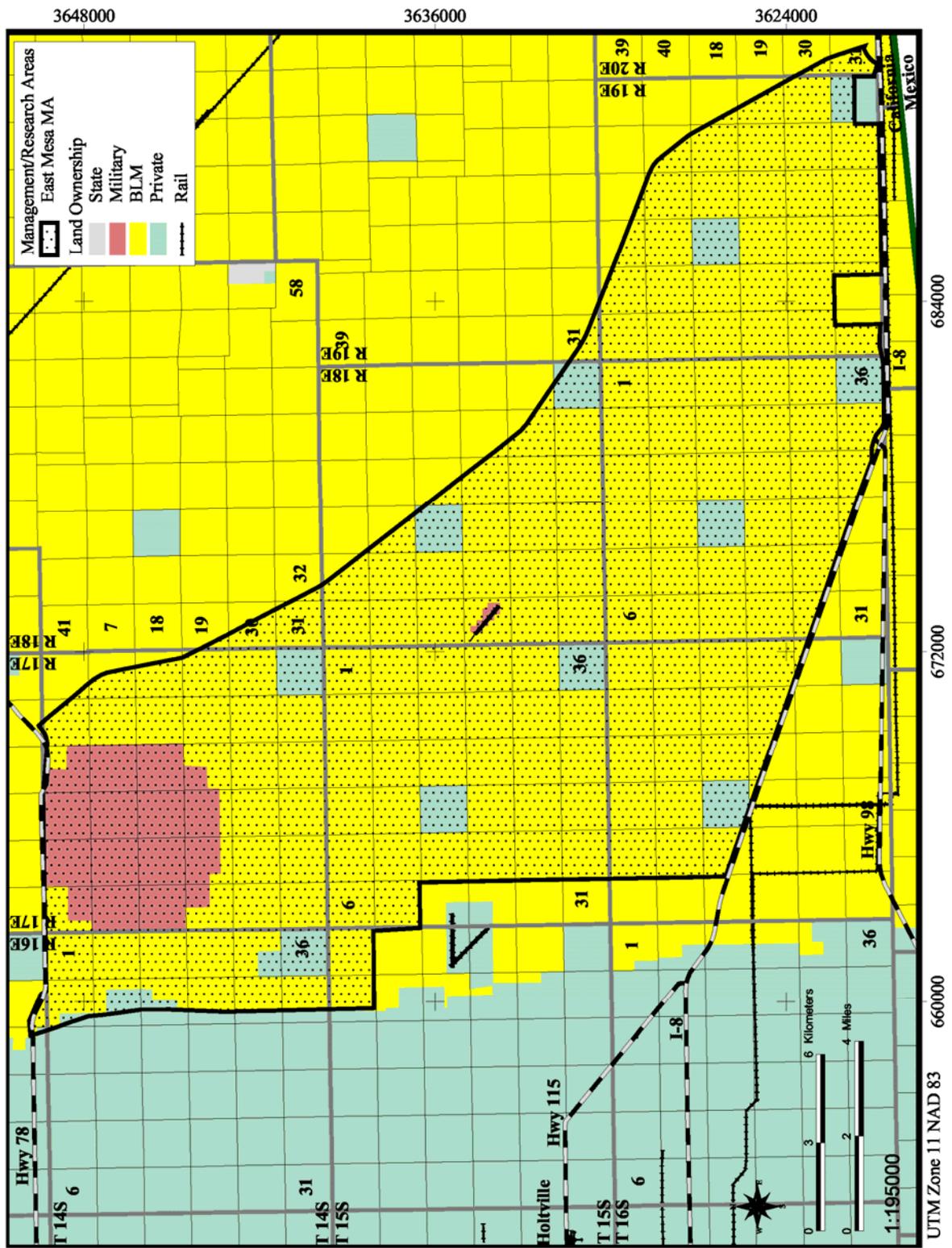


Figure 2: West Mesa MA

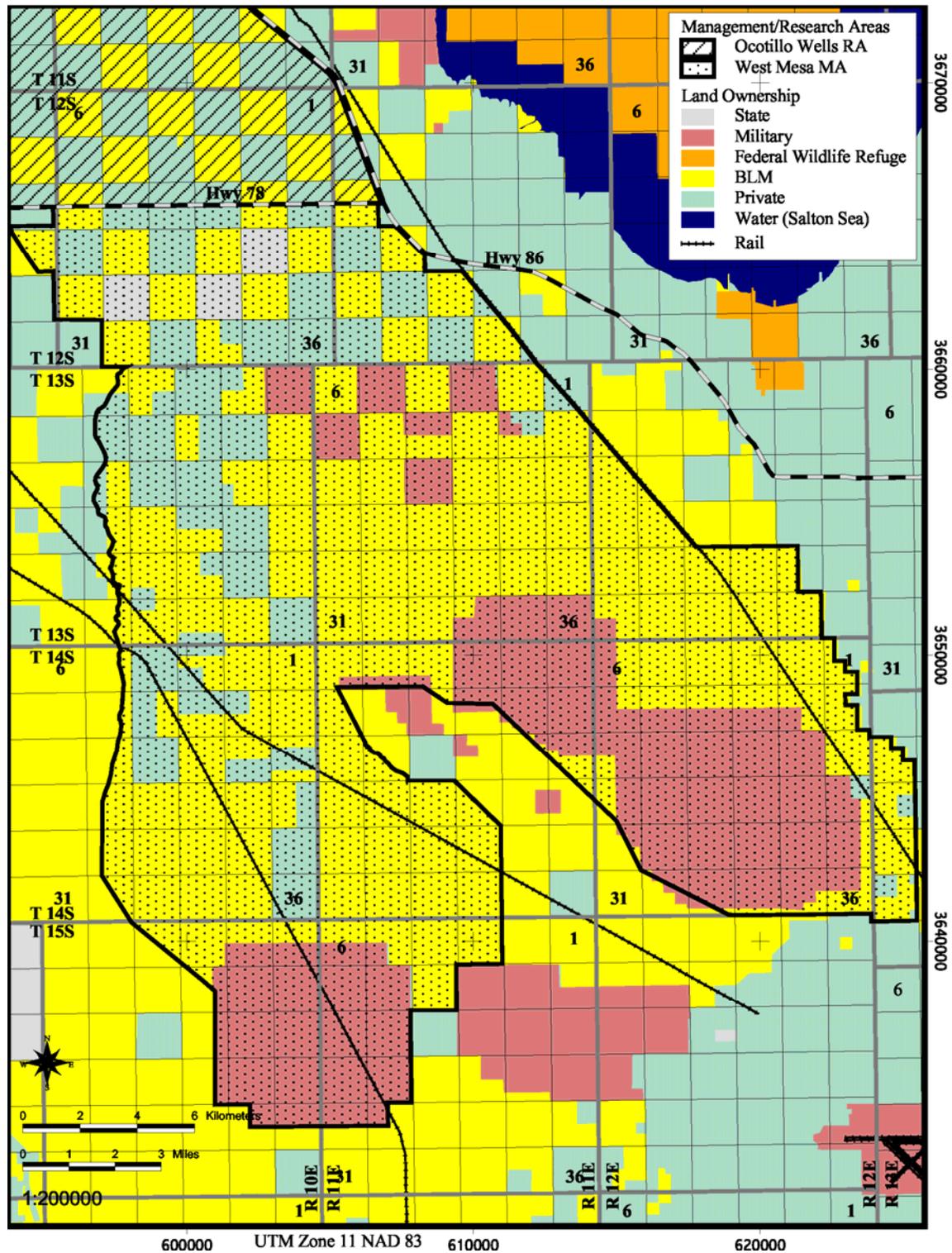


Figure 3: Yuhua Desert MA



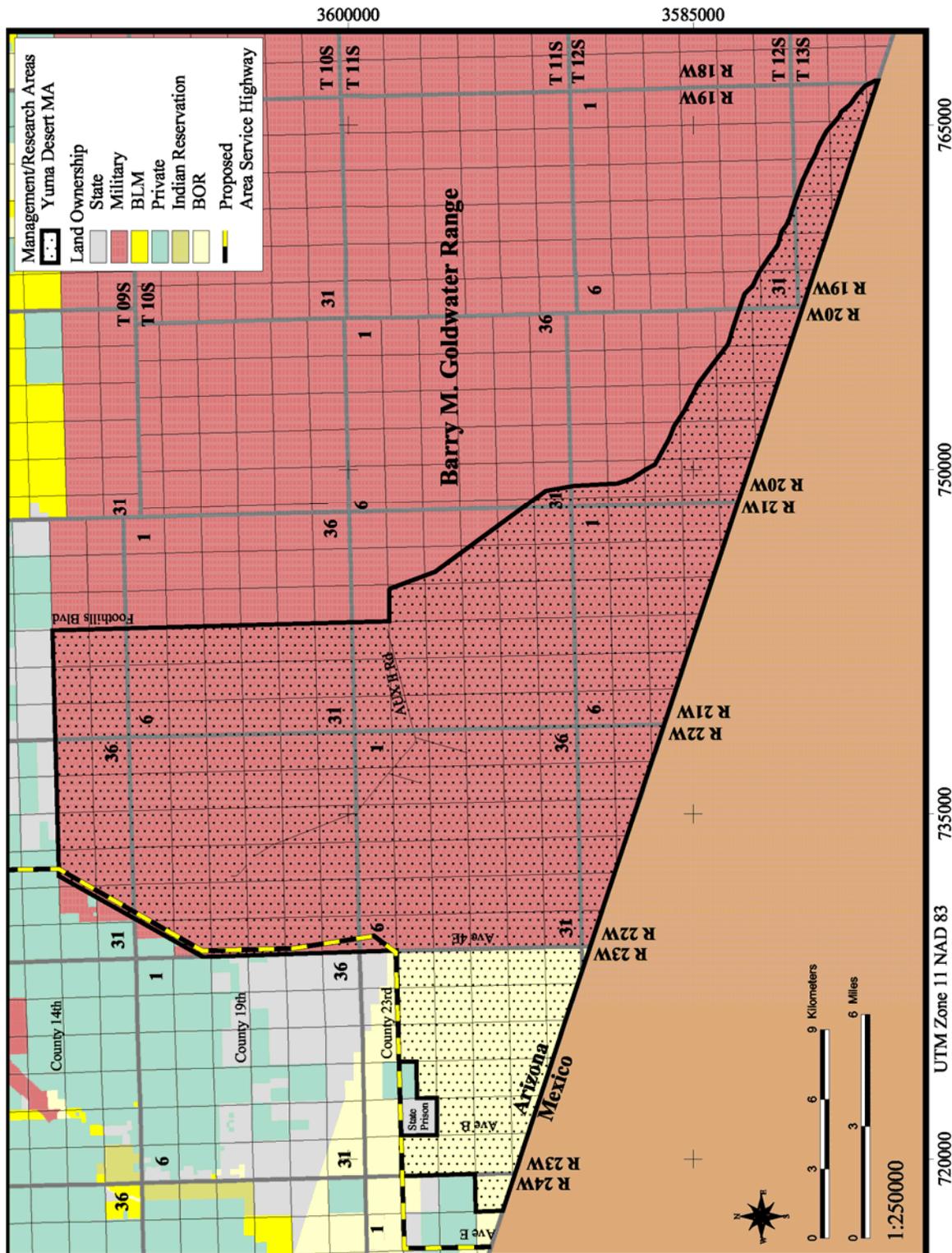


Figure 5: Borrego Badlands MA

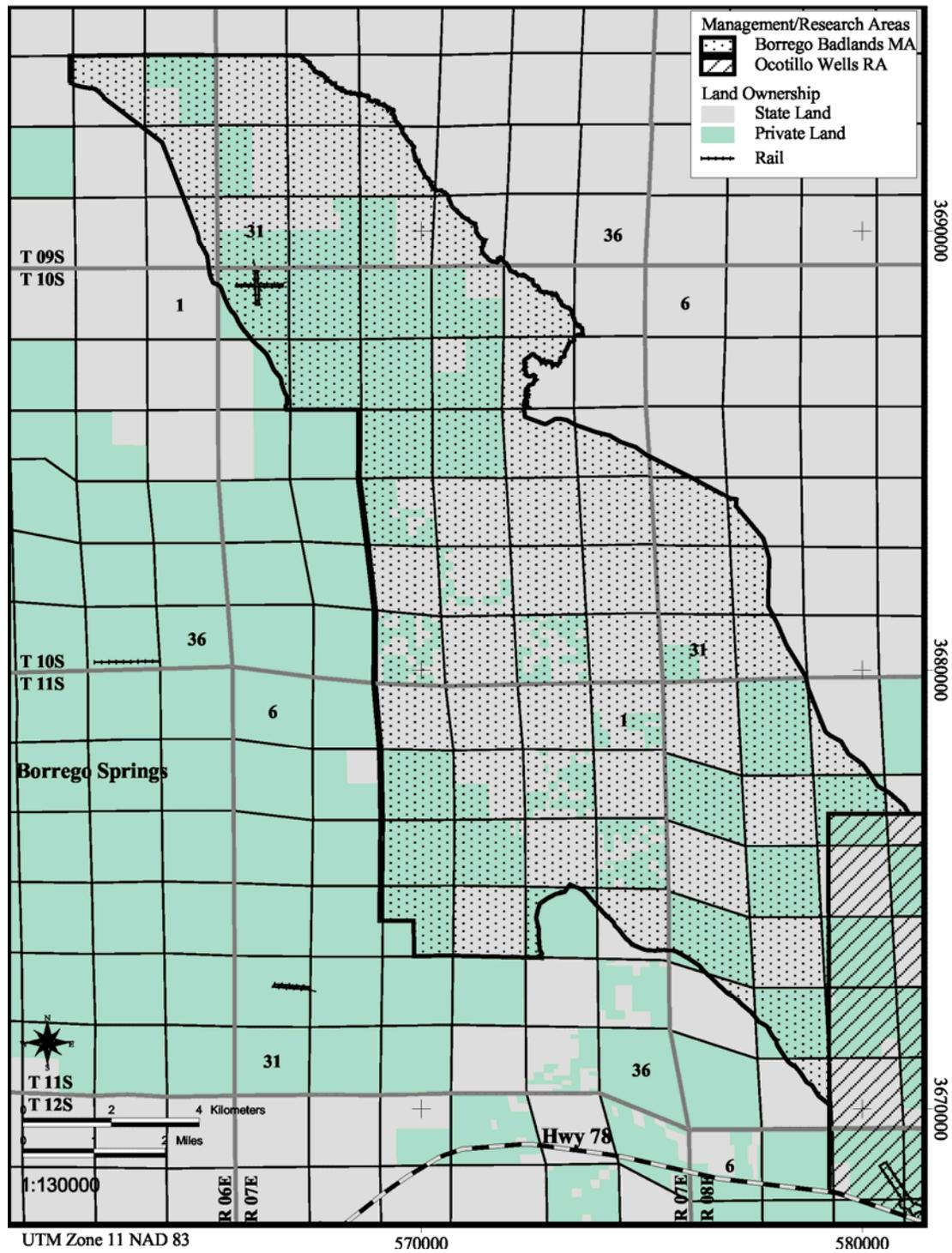


Figure 6: Ocotillo Wells RA

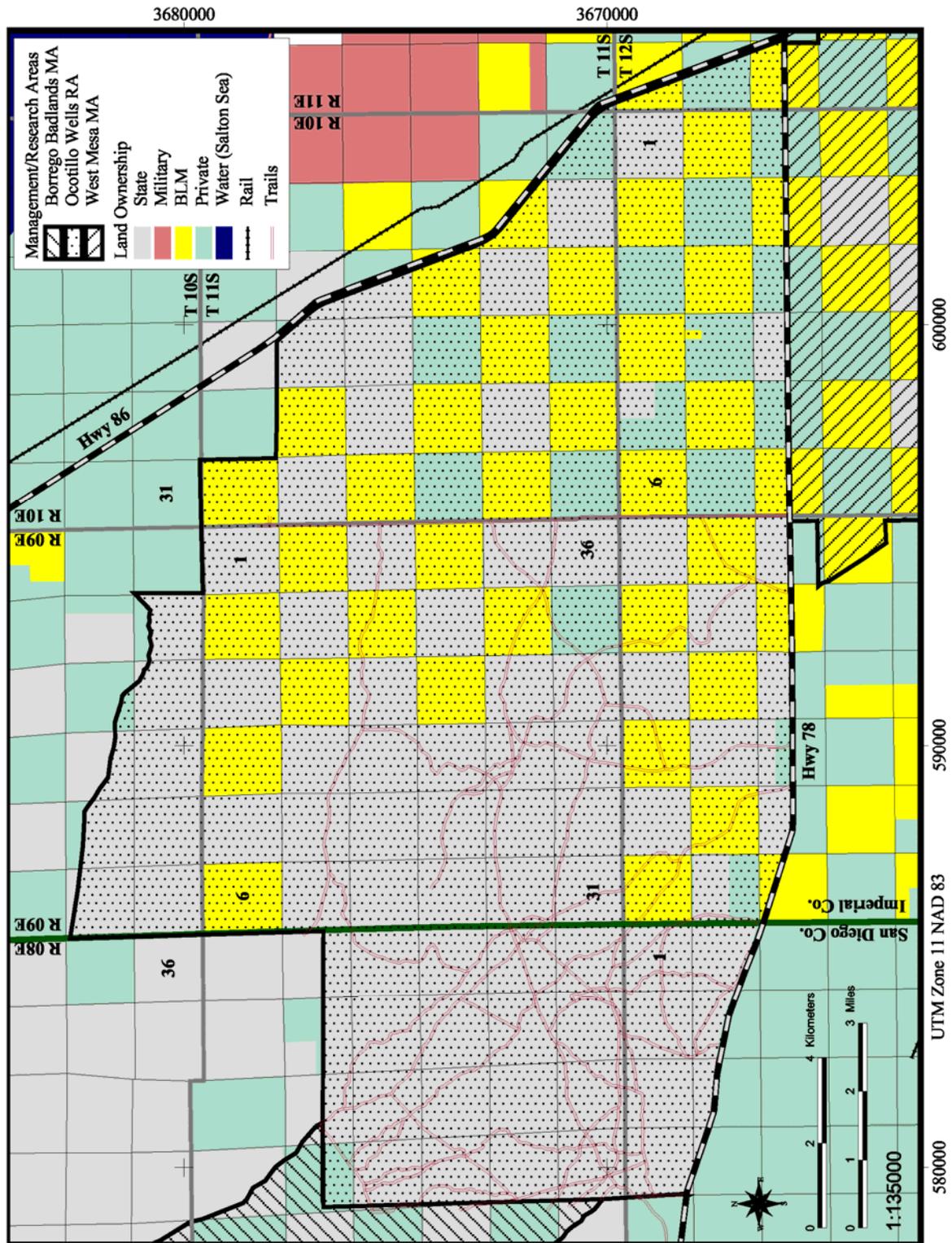


Table 1. Acres of flat-tailed horned lizard habitat authorized for impact by RMS

**signatories from January to December 2005, and cumulative acres of impacts within the MAs**

Agency	Within MA		Outside MA (acres)	Total Acres	Acres Impacted to Date in MAs	
	MA	Acres			Total	Percent
Palm Springs BLM	*	0	0	0	*	
El Centro BLM	East Mesa	0	0	0	93.9	0.09
	West Mesa	0	10	10	117.11	0.14
	Yuha Desert	0	0	0	87.7	0.15
Yuma BLM	*	0	6.23 <sup>1</sup>	6.23	*	
NAF, El Centro	East Mesa	0	0	6.0	1.0	0.01
	West Mesa	6.0			6.0	0.02
MCAS, Yuma	Yuma Desert	0	0	0	10.15	0.01
Anza-Borrego Desert State Park	Borrego Badlands	0	0	0	0	0.00
Ocotillo Wells State Vehicular Recreation Area	*	0	0	0	*	
Bureau of Reclamation	Yuma Desert	14.0	0	14.0	15.8	0.10
<b>Total Acres</b>		<b>20.00</b>	<b>6.23</b>	<b>36.23</b>	<b>331.66</b>	<b>0.07</b>

\* No land administered within an MA.

<sup>1</sup> Unauthorized disturbance outside of established ROW.

**Acreages within MAs:**

El Centro BLM; 99,900 in East Mesa, 83,200 in West Mesa, 57,200 in Yuha Desert

NAF El Centro; 8,500 in East Mesa, 29,800 in West Mesa

MCAS Yuma; 114,800 in Yuma Desert

ABDSP; 36,500 in Borrego Badlands

BR; 16,200 acres in Yuma Desert

TOTAL; 446,100

The following is a summary, by signatory agency, of management actions implemented during 2005:

**BLM - Palm Springs South Coast Field Office.**

BLM - Palm Springs, South Coast Field Office didn't authorize any impacts in FTHL habitat during 2005. BLM-Palm Springs continued to enforce the Windy Point vehicle closure to protect FTHL, should they still be present in this area. BLM-Palm Springs acquired fence material to fence off the western border of Windy Point and are completing an Environmental Assessment for this project. BLM rangers also patrol the 1000 Palms Preserve to keep out OHVs that may damage FTHL habitat.

### **BLM - El Centro Field Office.**

Universal Pictures constructed a temporary set for filming the movie Jarheads in March 2005. The project consisted of disturbance of approximately 10 acres of FTHL habitat outside the West Mesa MA. The disturbed area was located within the Superstition Open OHV area which was previously disturbed by OHV activity. Universal was charged compensation at a rate of 200 dollars per acre with a 30 dollar per acre acquisition fee for a total of 230 dollars per acre.

BLM-El Centro has been actively implementing the Western Colorado (WECO) route designation plan (signed on January 31, 2003). All routes within the Yuha MA have been signed. Almost all routes within the West Mesa MA have been signed (only 2 routes remaining). Signing for East Mesa is mostly complete and should be finished in spring 2006. BLM-El Centro rangers updated 12 interpretive kiosks within the Yuha and West Mesa MAs with new maps, rider, and lizard information in September 2006, and BLM-El Centro continues to provide regular outreach by producing and distributing maps of the WECO area. BLM-El Centro continues law enforcement patrol of the Yuha MA and surrounding areas and makes regular public enforcement and education contacts.

### **Marine Corps Air Station - Yuma.**

No FTHL habitat within lands administered by MCAS (MCAS lands, Yuma Desert MA, and Barry M. Goldwater Range) were affected by construction of roads, camps, powerlines or any other development authorized by MCAS. MCAS initiated their Integrated Natural Resources Management Plan (INRMP) in 2005. This INRMP will help minimize impacts to FTHL throughout the portion of the Barry M. Goldwater Range (BMGR) managed by MCAS. Additionally, MCAS continues standardized FTHL briefings for newcomers to the range. Planning for road closure and rehabilitation as part of the BMGR INRMP began in 2005.

### **NAF-El Centro.**

NAF-El Centro disturbed approximately 6 acres within the West Mesa management area. This disturbance was the result of range maintenance. A surface clean up of expended munitions was performed in the area surrounding the bull's-eye at target 101 and 103.

### **BLM - Yuma Field Office.**

BLM- Yuma collected \$1781.78 in compensation from the City of Yuma when 6.23 acres of FTHL habitat was mistakenly cleared outside of an authorized ROW. City of Yuma was conducting road and pipe work for the Desert Dunes Wastewater Treatment plant in Yuma.

**Anza-Borrego Desert State Park.**

No FTHL habitat was lost or degraded due to approved projects conducted or authorized by State Parks within the ABDSP FTHL management area. An illegal sand and gravel mining operation on a private in-holding parcel adjacent to Clark Dry Lake began operation in 2005. The access road to this in-holding property passes through ABDSP property within the FTHL management area. There have been attempts by the mine operator to expand this dirt access road. ABDSP rangers have halted this road grading and have documented the illegal activity. Documentation has been sent to the Code Enforcement Division of the County of San Diego to have them stop the illegal mining activity until such time as a full environmental review can be conducted.

**Bureau of Reclamation - Yuma.**

BR briefed the ICC and the MOG on a proposed new water regulating reservoir (Drop 2 Storage Reservoir) to be built near the All American Canal (AAC) on a site near Drop 2 of the ACC. The Drop 2 Storage Reservoir is located adjacent to the East Mesa MA and the inlet canal will be located on BR lands within the East Mesa MA. Geotechnical Studies that began in December 2004 on portions of the East Mesa MA were concluded in January 2005. BR followed the RMS mitigation recommendations for temporary impacts, including monitoring of testing, drilling, and excavation activities. BR also granted a license to the Department of Homeland Security (BP) for a 90-foot wide easement north of the existing border zone along the U.S./Mexico international border. The easement extends from Avenue H to Avenue C and encompasses 14 acres. The easement is for the construction of a border vehicle barrier, patrol road, and fences. BR required BP to comply with the mitigation provisions of the RMS for construction within the Yuma Desert MA portion of the easement. Additionally, BR authorized consultant contractors working for the Department of the Army, U.S. Corps of Engineers, Fort Worth, TX to monitor for FTHL during clearing and grubbing actions along the border in the BP easement. BR assessed \$1563 in mitigation fees for FTHL, paid to the Yuma BLM office. BP also announced intentions to seek a similar easement for the border east of Avenue C; however, action on this is not anticipated until 2006.

**Ocotillo Wells State Vehicular Recreation Area.**

No FTHL habitat has been affected by projects or activities this reporting period.

**Total Habitat Disturbance from January through December 2005.**

During this reporting period, 36.23 acres were reported disturbed. Of these, 20.00 acres were within MAs.

### **Planning Action 3: Rehabilitation of MAs.**

Through a series of multiple year grants from the California OHV Motor Vehicle Commission, BLM is continuing work on an ambitious restoration program. BLM hired a Student Conservation Association crew with expertise in restoration and is systematically restoring the Yuha MA, working from the east to the west on the MA. BLM has also applied for OHV grant money to fund archaeological surveys in the West Mesa and perform restoration in this area as well. The archaeological surveys must be completed prior to the start of restoration work.

Approximately 6 acres of mesquite dune habitat and two acres of mudhill habitat within the Ocotillo Wells Research Area were fenced and monitored for rehabilitation.

### **Planning Action 4: Acquisition of Lands within MAs.**

For this annual report period, Ocotillo Wells Research Area did not acquire any private inholdings. All land within the Yuma Desert MA remains federally owned. ABDSP continues to purchase private inholdings within FTHL habitat. During 2005, approximately 20 acres of private land was acquired within the Borrego Badlands MA by the Anza-Borrego Foundation. These lands will be transferred to ABDSP in the future, but their conservation is currently assured.

The BLM El Centro Field Office has inspected and prioritized parcels for acquisition in the East Mesa MA. Prioritization was conducted in order to facilitate land acquisitions on a larger scale. To develop this priority list, BLM developed the following scoring system for 3 main criteria for land acquisition:

- FTHL habitat. **good=1, fair=2, poor=3**
- Purchasing difficulty based on land value (estimation based on location) cleanup or other issues creating potential difficulty. **1=little difficulty, 2=medium, 3=great difficulty**
- Protection value. How well will this parcel work towards protection of the MA from potential threats to FTHL **1=protection from many threats, 2=medium, 3=protection from few threats.**

BLM then totaled the score for each parcel. The resulting score can be used to develop the priorities. The lower the score means a higher priority. BLM El Centro's recommendations are summarized below in Figure 7.

### **Seek funds for land acquisitions in MAs.**

Compensation funds collected in California and Arizona continue to be collected for future acquisition of FTHL habitat. BLM El Centro currently has an account balance of \$130,845.52 in compensation funds from the East account and \$59,095.63 from the West account. BLM Yuma currently has an account balance of \$230,414.94 from the Yuma Management Area.

BLM El Centro did not purchase any lands in 2005. BLM is currently working with the Resource Legacy Fund Foundation to acquire lands through the Conservation Fund to acquire lands within the West Mesa MA. BLM is also working with ADOT and the Riverside Land Conservancy to acquire mitigation lands within the East Mesa MA.

The MOG and ICC decided that since there is no land remaining to purchase in the Yuma Desert MA, compensation funds collected in Arizona may be used for habitat protection in Arizona and habitat acquisition in California, particularly in the East Mesa and Yuha MAs.

### **Planning Action 5: Maintain or establish effective habitat corridors between adjacent populations.**

The MOG and ICC continue to encourage and emphasize the maintenance of habitat connectivity throughout all MAs. Additionally, on-going activities continue to maintain connectivity across the U.S.-Mexico border.

### **Planning Action 6: Coordinate activities and funding among Conservation Agreement signatory agencies and Mexican agencies.**

#### **Management Oversight Group.**

The MOG, a consortium of managers from the signatory agencies, meets three times each year to coordinate implementation of the Conservation Agreement in response to recommendations from the ICC. The MOG met on the following dates during the reporting period:

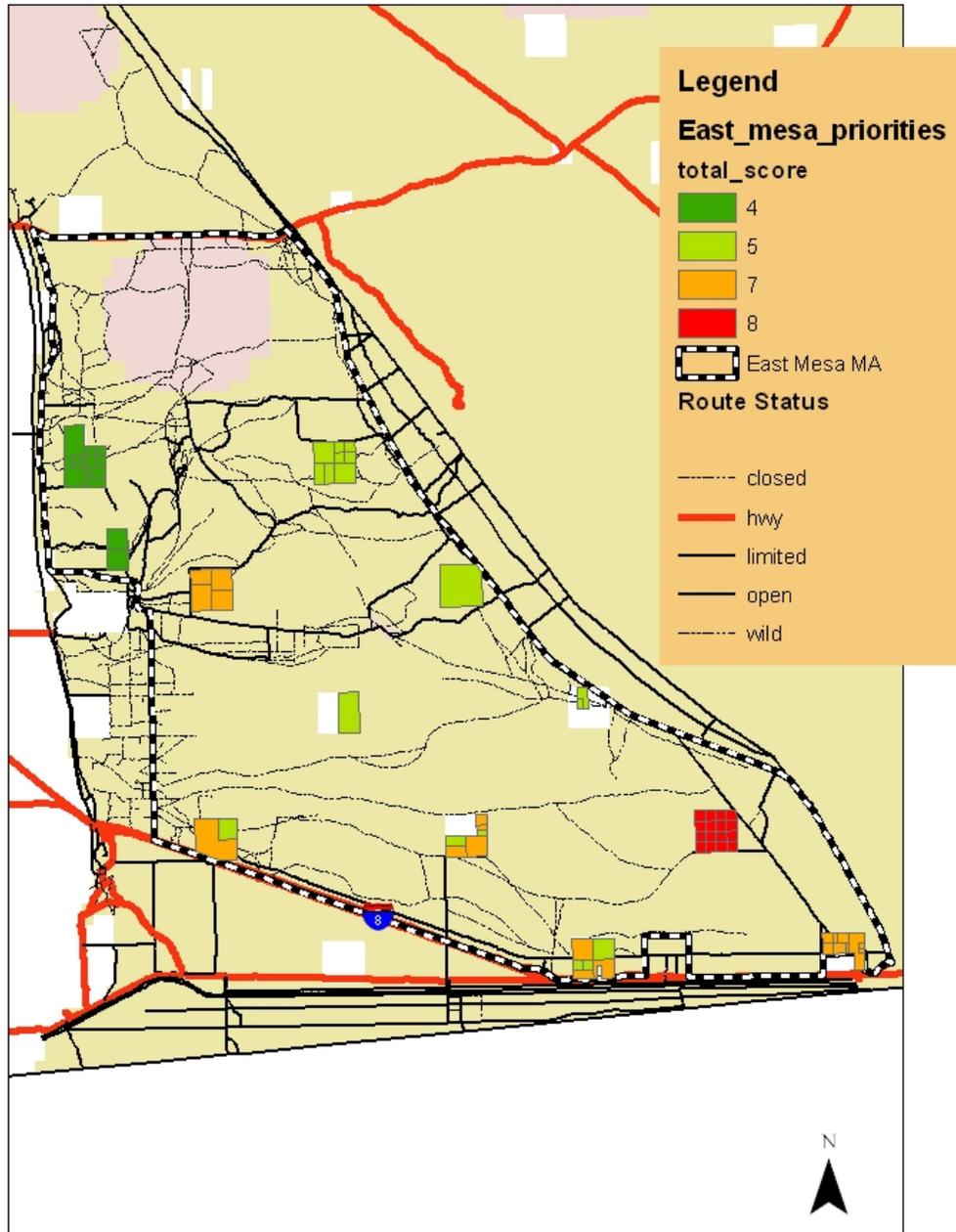
21 April 2005 (BLM, El Centro)

21 September 2005 (U.S. Navy, El Centro)

The MOG also has held conference calls between meetings, when needed.

**Figure 7: Priority of Parcels to be Purchased with Mitigation Funds in the East Mesa MA.**

### Total Score



Lower score values means higher priority for purchase.

Interagency Coordinating Committee.

The ICC is responsible for compiling information for incorporation into the annual ICC report, which outlines accomplishments under the RMS. The ICC met on the following dates and locations during the reporting period:

25 January 2005 (BOR, Yuma)  
21 April 2005 (BLM, El Centro)  
16 August 2005 (BLM, El Centro)  
7 December 2005 (U.S. Navy, El Centro)

During the reporting period, the ICC corresponded on monitoring efforts, RMS implementation, issues, and challenges. The ICC discussed implementation of mitigation plans for the Arizona State Highway construction in Yuma and making an educational video for border patrol and the public.

### **Conservation Agreement.**

Nine agencies are signatories to the Conservation Agreement to implement the FTHL RMS:

- Anza-Borrego Desert State Park (ABDSP)
- Arizona Game and Fish Department (AGFD)
- Bureau of Land Management - Palm Springs, El Centro, and Yuma Field Offices (BLM)
- Bureau of Reclamation (Reclamation)
- California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division, Ocotillo Wells District. (CDPR)
- U.S. Fish and Wildlife Service (FWS) – Phoenix, Arizona and Carlsbad, California.
- Marine Corps Air Station, Yuma (MCAS Yuma)
- Naval Air Facility, El Centro (NAF El Centro)
- California Department of Fish and Game (CDFG)

AGFD and USFWS (Arizona Ecological Services Office) met with staff from the Alto Golfo Biosphere Reserve to discuss issues of common concern. Among items discussed were a new highway that is being constructed between El Golfo and Puerto Penasco, passing through FTHL habitat and providing access for tourists, including off-highway vehicle enthusiasts, to the dunes of the Gran Desierto and the beaches on the Gulf. The Reserve director was able to work with the designers of the road to keep it to a 2-lane highway that avoids some sensitive areas, but there will still be effects to the FTHL and its habitat which need to be monitored. Brochures and other interpretive materials are needed to inform visitors of the sensitivity of the area and regulations to protect the environment, including the FTHL. It was also agreed that special management areas, equivalent to the Management Areas in the U.S., also need to be identified and managed as such. Additional signage and interpretive materials would be needed in support

of these areas. Meetings of the MOG and/or ICC need to be held specifically to discuss management and research needs in Mexico and projects to support those needs. The meetings should ideally be held in Sonora, but must include representatives from the Alto Golfo and Pinacate Biosphere Reserves. A Spanish version of the 2003 Rangewide Management Strategy would be useful.

The WECO Route of Travel Plan, prepared by the BLM El Centro office and signed in January 2003, incorporates the guidelines of the RMS, as BLM is managing its lands under those guidelines. As previously mentioned, the El Centro Field office wrote an Environmental Assessment to Amend the California Desert Conservation Area Plan to officially designate the FTHL MAs in 2004. The EA was signed on February 1, 2005, thus formally establishing all three MAs in the El Centro area.

BR continues to implement the 5-mile Zone Resource Management Plan (RMP), adopted March 18, 2004, for withdrawn lands along the five-mile zone that parallels the international border which incorporated the RMS. This RMP is described further in the 2004 Annual FTHL Report.

In addition to funding studies described below in Sections 8 and 9, MCAS Yuma completed an Integrated Natural Resource Management Plan (INRMP), which also fully incorporates and implements the RMS.

### **Border Patrol.**

A contract was awarded to Environmental Media to produce two educational videos, one for use for BP training and the other for general public education. A subcommittee of the ICC was formed to provide guidance for this production, which will be completed in 2006. The Border Patrol video is intended to instill a greater respect for the desert among agents and will emphasize techniques they can use to minimize their impacts on FTHL habitat. Compensation funds were used to fund these videos. Guided by the BLM-Yuma and AGFD, Environmental Media completed their first shoot in the Yuma area in 2005. Another shoot was scheduled to occur in January 2006, with completion of the project expected in mid-2006.

The El Centro Field Office of the BLM holds monthly coordination meetings with three BP offices and holds regular FTHL orientation sessions with the BP to reduce impacts to FTHL habitat along the international border. This coordination is viewed as a model nationally because of its positive effect on BLM's and BP's ability to accomplish their missions. Because of BP's increased understanding of FTHL and its habitat needs, they are completing their mission while minimizing impacts in FTHL habitat. During summer 2005 BLM El Centro held a one day field workshop to train their border patrol liaison in finding FTHL, and how to minimize impacts on the species for various projects. AGFD provided training to new recruits at the Yuma BP office regarding FTHL issues.

BLM El Centro implemented an ambitious education strategy with BP to reduce impacts to FTHL habitat. This includes Detailer and Post Academy Orientation. Detailed staff and new employees assigned to the El Centro Sector of the BP are given a 1-2 hour presentation on the location of MAs, desert ecology, sensitive species, archeology, and wilderness. Detrimental effects of off-route travel on FTHL habitat is discussed relating to prey, ecology, and habits of the FTHL. This information is provided to all new field agents in the El Centro and Calexico BP stations as part of their new employee orientation. BLM recommends, and will assist with, similar training for enforcement staff in other MAs (e.g. Yuma Desert).

**Planning Action 7: Promote the purposes of the RMS through law enforcement and public education.**

**Law Enforcement.**

BLM El Centro has continued to increase law enforcement patrols in the FTHL habitat in Imperial County (see description under Planning Action 3 above). Law enforcement reports that the majority of recreational users in the MAs are now following the route designation requirements of staying on approved routes and camping in appropriate areas.

The Ocotillo Wells District of CDPR continues to distribute the FTHL information brochure to park visitors and enforce applicable provisions of the agreement. As previously mentioned, ABDSP law enforcement acted in 2005 to stop illegal grading within FTHL habitat by an illegal mining operation, and forwarded evidence to the County of San Diego for enforcement action.

MCAS and AGFD conducted ORV patrols within the Yuma Desert MA and adjacent habitat.

**Public Information.**

These education programs were completed by agency staff during this reporting period:

Information brochures addressing the FTHL continue to be prepared by staff from the OWSVRA, printed in both English and Spanish, and distributed to other agencies, their staff, and the public. Brochure printing and binding was funded by BR and BLM. Ocotillo Wells District continues to distribute the FTHL information brochure to park visitors and enforce applicable provisions of the agreement.

BLM and the National Park Service are preparing an interpretive brochure discussing important resource values in the Yuha basin, such as FTHL. BLM El Centro continues to maintain informational kiosks and continues to distribute the WECO route of travel area map, which encompasses the Yuha, West Mesa and East Mesa MAs. Furthermore, BLM El Centro continues public contacts and information dissemination using Park Rangers and the Student

Conservation Association crew. BLM El Centro is extending these contacts into the West Mesa MA and has also partnered with the Desert Protective Council in their securing of a grant to produce and distribute an interpretive brochure of the Yuha area. Additionally, BLM El Centro has expanded the environmental outreach program in the Imperial Sand Dunes. New interpretive panels that have information about FTHL and other wildlife in the dunes have been placed in the Cahuilla Ranger station. Five new kiosks will be placed in various locations around the dunes. These will have panels that are designed to be removed and moved from location to location so that returning visitors will get to see a variety of information. While there is not yet a panel for FTHL, one will be made available in the future.

As mentioned above, a contract was awarded for the production of two FTHL educational videos aimed at Border Patrol and the general public. The general public video is intended to provide information about issues of concern to FTHL and its habitat. Upon completion, it will be distributed to schools, OHV groups, conservation groups, civic groups, and will be provided to the public by the signatory agencies.

MCAS provides FTHL briefings to new range users and is working to obtain a FTHL training video. Additionally, MCAS provided FTHL for the educational videos described above.

## **Planning Action 8: FTHL research.**

### **Research Permitting and Funding**

AGFD issued nine permits for collecting or handling FTHL during 2005. Several studies were funded by Signatory (MOG/ICC) agencies or other sources during this reporting period:

BLM El Centro Field Office, with some additional funding from BR, supported a Masters Degree project for Tyler Grant of Colorado State University. This research project evaluated the potential for crushing from vehicular impacts on FTHL. Transmitters were applied to FTHL near the East Mesa and West Mesa MAs using transmitters, which track the location of FTHL during their hibernation period. This type of information is very useful to BLM in planning future management actions in FTHL habitat. The project was completed in 2005 and the results have been published (Appendix A).

In 2005, Ocotillo Wells Research Area self-funded a Mark-Recapture study to replicate those plots utilized in 2003. The primary purpose of this field season was to apply the methods of Wright and Grant (2002) to compare the population estimation of 2003 to 2005 and continue to compile a baseline with the addition of more plots in the Ocotillo Wells State Vehicular Recreation Area. While the primary purpose was to implement a monitoring protocol, the collection of mark/recapture data was organized in a manner such that ecological questions related to habitat and off-road vehicle use could be pursued at the same time.

Young Environmental Consulting completed and distributed their report from work in 2004, which was to evaluate the effects of development on adjacent populations of FTHL. Their final abstract appears at the end of this report. Through a grant from the Federal Highway Administration, ADOT provided funding to AGFD to evaluate FTHL use of experimental culverts. AGFD built a testing facility with six 40-foot long culverts. MCAS provided AGFD with captive FTHL (from the MCAS enclosure) for this study. Preliminary trials were conducted in 2005 with more work scheduled for next year. The abstract from the 2005 progress report appears at the end of this report.

AGFD, along with MCAS, continued to provide funding to the University of Arizona (UA) to analyze microsatellite genetic variation in FTHL throughout its range. This study uses nuclear DNA to expand on mitochondrial DNA analyses that were done previously by Utah State University. The UA researchers collected tissue samples from FTHL in Arizona and Mexico during 2005. This was the final year of fieldwork for this project and the results will be reported in 2006.

USFWS-Carlsbad continued to fund studies related to the impacts of OHVs on FTHL in California.

### **Planning Action 9: Continue Inventory and Monitoring.**

Observations of FTHL during the course of biannual reptile surveys and any other incidental sightings in the Ocotillo Wells Research Area are recorded in the CDFG CNDDDB and archived with GPS equipment. FTHL observations by staff during archeological surveys, ranger patrols, or in the course of maintenance activities are noted. Some individual lizards continue to be outfitted for radio-telemetry by the district ecologist as part of an ongoing study of possible effects of off-road vehicle activity on movement and home ranges of FTHL.

With funding from MCAS and BR (contracted through AGFD), Young Environmental Consulting was contracted to conduct monitoring in the Yuma Desert. They used mark/recapture blocks and presence/absence plots as in previous years. They found it very difficult to find FTHL in most areas because of the abundance of vegetation and tracks from other animals, both of which were a result of plentiful winter rains. After it became apparent that capture rates on the small 1-ha plots would be insufficient to derive reasonable population estimates, they established larger plots in areas of high density and good tracking conditions to see if they could at least get a density estimate in those areas. Capture rates were much higher in those areas. In one plot, they marked 62 individual lizards, including 9 hatchlings and had 109 total captures and recaptures. It was a good year for reproduction, with hatchlings first observed in mid-June. Further analysis is pending and a draft report was not available in time for this annual report.

MCAS continues to give FTHL briefings for minor projects and made FTHL part of the MCAS Yuma range users briefings. Additionally, MCAS continues to study FTHL in a MCAS enclosure. Seven FTHL were observed in the enclosure in October 2005. Just as in past years, FTHL have been provided by MCAS for educational purposes, including the Yuma Birding and Nature Festival, as well as monitoring activities. Road surveys were continued in 2005.

NAF El Centro funded a FTHL presence/absence survey with Utah State University. Additionally, NAF-El Centro partially funded a project with Colorado State University that included a population size estimate, the effects off-highway vehicles, and a natural history study.

The BLM Palm Springs office conducted mark-capture surveys for the flat-tailed horned lizard within the Dos Palmas Area of Critical Environmental Concern (ACEC) during the spring and summer of 2005. Eight plots were completed between May 16 and August 31, 2005. The Dos Palmas ACEC (total acres= 15,157) has a wide diversity of vegetation types and substrates. The ACEC was stratified by vegetation type and surveyed within the creosote bush scrub (total acres= 6,254). FTHL were found on three of the eight plots (total number of adults= 7, total recaptures= 3), and desert horned lizards on three other plots. All the FTHL plots were located in the southeastern part of the ACEC (east of the powerline and south of the railroad) which seemed to have the best substrate (sandy) for the lizards. Desert horned lizards were found on plots in the western and northwestern portions of the ACEC which had rockier substrates. Much of the predicted habitat from the CVMSHCP flat-tailed habitat model lies within sink scrub/silty substrates, and leaves out the sandy substrates on the southeastern portions of the ACEC where we actually found FTHL. An occupancy study similar to the 2005 West Mesa study would be valuable to better delineate the range of the FTHL within the Dos Palmas ACEC.

Research by Tyler Grant revealed some difficulties in mark-recapture sampling (namely the problem of wide confidence intervals due to low sample size and capture probabilities). During summer 2005 BLM El Centro performed occupancy monitoring for FTHL in the West Mesa MA. This type of monitoring was chosen because the lizard population in West Mesa proved too low to obtain valid results through standard mark-recapture analysis. Occupancy estimation is used to better determine the probability that a particular area (and possibly habitat type with adequate sampling) will be occupied by a FTHL. This type of monitoring will provide recruitment and extinction rates for the management areas over time. This monitoring has the benefit of being much less labor intensive thus enabling BLM to survey more area (Appendix A).

Table 2 below summarizes the FTHL population estimates for each MA over the last six years.

**Table 2. FTHL Population Estimates by MA**

MA	2000	2001	2002	2003	2004	2005
East Mesa	NA	NA	NA	20,959 <sup>1</sup> 42,619 <sup>2</sup>	NA	NA
West Mesa	NA	NA	NA	2,946 <sup>3</sup> 10,849 <sup>2</sup>	NA	NA
Yuha	NA	NA	17,772 <sup>4</sup> 25,514 <sup>2</sup>	NA	56,993 <sup>5</sup> 73,017 <sup>2</sup>	NA
Yuma Desert	NA	NA	NA	16,328 <sup>6</sup> 25,855 <sup>7</sup>	NA	NA
Borrego Badlands	NA	NA	NA	NA	NA	NA
OWSVRA	NA	NA	NA	19,222 <sup>8</sup>	NA	NA

1 using mark/recapture (95% CI. 15,924-25,995)

2 revised estimate calculated by Tyler Grant

3 using mark/recapture (too few FTHL to est. pop. with MARK program)

4 using mark/recapture (95% CI. 16,748-19,066)

5 no method data (95% C.I. 14,597-90,298)

6 using trapping webs (95% C.I. 8,378-31,794)

7 using mark/recapture (95% CI. 16,390-43,951)

8 no method data (95% C.I. 18,870-26,752)

## CONCLUSIONS

Signatory agencies continue close cooperation and execution of their respective responsibilities.

The FTHL RMS is being implemented throughout the MAs and FTHL habitat by the cooperating agencies. Regular coordination between the participating agencies continues through the MOG and ICC. The participating agencies believe the FTHL Conservation Agreement and RMS continue to provide a viable management focus to conserve FTHL habitat throughout its range. During the past year the aggressive implementation of the RMS has been a positive benefit for FTHL conservation. Outreach efforts continue to include the general public and other agencies, such as the U.S. Border Patrol and Mexican agencies as active participants in implementing the RMS. CEDO, the Alto Golfo and Pinacate Reserves are already working closely with agencies in the U.S. on research and conservation efforts to benefit the FTHL. Authorized surface impacts have remained low in MAs.

The MOG and ICC continue to support the 2004 agreement that compensation money can be shared among MAs, regardless of source state, since there is no available land for purchase in the Yuma MA. The major focus of this decision continues to be the purchase available land in any MA prior to private development and secondly to use compensation funds to restore MAs after there is no additional land available for purchase in a MA. Some signatory participants have been able to secure funding for rehabilitation efforts from non-compensation funds. This supplements the compensation funds in providing management capability in implementing the RMS.

Population inventories and monitoring of trends continue, as does research in MAs and habitat areas. This information is useful in developing future management actions and in being able to make better decisions in implementing projects.

Outreach, including providing education and information to the public is an on-going activity. Public understanding of the FTHL, its habitat needs, and authorized activities is necessary to fully implement the RMS.

The 2003 updated version of the FTHL RMS continues to be a platform to move participating agencies into more effective management and conservation of FTHL in the upcoming years.

**RMS Implementation Progress to Date**

The following table displays the priority, responsible agency, estimated cost, and schedule for completing each Planning Action. The priorities indicated in the table are assigned the following definitions:

**Priority 1:** An action that must be taken in the near term to conserve the species and prevent irreversible population declines.

**Priority 2:** An action that must be taken to prevent significant declines in population or habitat quality.

**Priority 3:** All other actions necessary to meet the goals and objectives of this RMS.

The following abbreviations and symbols are used in the implementation schedule:

- ABDSP.....Anza-Borrego Desert State Park
- AGFD.....Arizona Game and Fish Department
- BLM.....Bureau of Land Management
- BOR.....Bureau of Reclamation
- ICC.....Interagency Coordinating Committee
- CDFG.....California Department of Fish and Game
- OWSVRA.....Ocotillo Wells State Vehicular Recreation Area
- USFWS.....U.S. Fish and Wildlife Service
- USMC.....U.S. Marine Corps
- USN.....U.S. Navy
- ☑.....Task completed since 1997
- ☐.....Task not completed
- ⇒, ∪.....Task ongoing, on schedule
- ➡, ∪.....Task ongoing, not on schedule

RMS Implementation Progress												
Status	Priority	Action number	Planned action	Duration (yrs)	Responsible agency	Total cost (\$000)	Cost estimates (\$000)					
							FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	
		<b>1.</b>	<b>Delineate and designate FTHL MAs</b>									
<input checked="" type="checkbox"/>	1		Designate Yuma Desert MA	2	BR USMC	1	0	0	0	0	0	
<input checked="" type="checkbox"/>	1		Designate East Mesa MA	2	BLM USN	1	0	0	0	0	0	
<input checked="" type="checkbox"/>	1		Designate West Mesa MA	2	BLM USN	1	0	0	0	0	0	
<input checked="" type="checkbox"/>	1		Designate Yuha Desert MA	2	BLM	1	0	0	0	0	0	
<input checked="" type="checkbox"/>	1		Designate Borrego Badlands MA	2	ABDSP	1	0	0	0	0	0	
<input checked="" type="checkbox"/>	3		Designate Ocotillo Wells RA	1	BLM OWSVRA ABDSP	1	0	0	0	0	0	
<input checked="" type="checkbox"/>	1		Designate conservation areas in Coachella Valley	2	BLM USFWS CDFG	1	0	0	0	0	0	
		<b>2.</b>	<b>Define and implement actions necessary to minimize loss or degradation of habitat</b>									
<input type="checkbox"/>	1		Apply mitigation measures	∞	ALL	5	1	1	1	1	1	
<input type="checkbox"/>	1		Require compensation	∞	ALL	25	5	5	5	5	5	
<input type="checkbox"/>	1		Limit discretionary land uses authorizations and rows to 10 acres and 1% total per MA	∞	ALL	5	1	1	1	1	1	
<input type="checkbox"/>	1		Do not dispose of lands in MAs	∞	ALL	0	0	0	0	0	0	
<input type="checkbox"/>	3		Continue maintenance in existing ROWS	∞	ALL	0	0	0	0	0	0	
<input type="checkbox"/>	2		Require fencing along Yuma Desert MA boundary road	∞	ALL	50	0	50	0	0	0	
<input type="checkbox"/>	2		Limit surface disturbance from mineral activities in MAs	∞	ALL	5	1	1	1	1	1	
<input checked="" type="checkbox"/>	2		Reduce new roads to a minimum in MAs	2	ALL	5	1	1	1	1	1	
<input checked="" type="checkbox"/>	1		Designate routes "open," "closed, or limited." Give route signing a priority	2	BLM USMC BR	200	50	90	20	20	20	
<input type="checkbox"/>	1		Reduce route density in MAs		See 2.4.2							
<input type="checkbox"/>	1		Coordinate with U.S. BP	∞	ALL	20	4	4	4	4	4	
<input type="checkbox"/>	3		Allow OHV recreation in RA	∞	OWSVRA	0	0	0	0	0	0	
<input type="checkbox"/>	1		No competitive recreational events in MAs	∞	ALL	0	0	0	0	0	0	
<input type="checkbox"/>	2		Allow non-motorized recreational activities in MAs, but no new recreational facilities	∞	ALL	0	0	0	0	0	0	
<input type="checkbox"/>	2		Limit camping in MAs	∞	BLM USMC	20	10	10	5	5	5	

RMS Implementation Progress											
Status	Priority	Action number	Planned action	Duration (yrs)	Responsible agency	Total cost (\$000)	Cost estimates (\$000)				
							FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
⇒	2		No new long-term visitor areas in MAS	∞	ALL	0	0	0	0	0	
⇒	3		Authorize limited use of flora in MAS	∞	ALL	5	1	1	1	1	
⇒	1		Allow military maneuvers and encampments only in designated sites in MAS	∞	USN USMC	5	1	1	1	1	
⇒	3		Suppress fires in MAS using limited fire suppression methods in MAS	∞	ALL	5	1	1	1	1	
⇒	1		Prohibit pesticide treatments in MAS	∞	ALL	5	1	1	1	1	
⇒	3		Limit other activities consistent with above	∞	ALL	5	1	1	1	1	
		<b>3.</b>	<b>Rehabilitate damaged and degraded habitat</b>								
⇒	2		Rehabilitate damaged and degraded habitat in MAS	∞	BLM BR ABDSP USMC USN	200	40	40	40	40	
		<b>4.</b>	<b>Bring all lands within MAS into public management</b>								
☑	3		Maintain prioritized list of parcels for acquisitions; and respect private rights	1	ALL	5	1	1	1	1	
⇒	3		Procure funds for land acquisitions in MAS (37,600 acres of private lands in California MAS at \$250 per acre)	∞	BLM CDFG ABDSP OWSVRA	9,400	1880	1880	1880	1880	
⇒	3		Use compensation funds to acquire key lands in MAS	∞	BLM CDFG ABDSP OWSVRA	20	4	4	4	4	
⇒	3		Exchange lands opportunistically	∞	BLM	20	4	4	4	4	
		<b>5.</b>	<b>Maintain or establish effective habitat corridors between naturally adjacent populations</b>								
⇒	2		Limit or mitigate activities in movement corridors	∞	ALL	25	5	5	5	5	
⇒	3		Coordinate with Mexico and INS	∞	ALL	10	2	2	2	2	
		<b>6.</b>	<b>Coordinate activities and funding among the participating agencies and Mexican agencies</b>								
☑	2		Establish FTHLMOG	∞	ALL	5	1	1	1	1	
⇒	2		Hold semi-annual ICC meetings	∞	ALL	5	1	1	1	1	
⇒	3		Establish forum for discussions with agencies and individuals in Mexico	∞	ALL	5	1	1	1	1	
☑	1		Develop Conservation Agreement	1	ALL	10	2	2	2	2	

RMS Implementation Progress											
Status	Priority	Action number	Planned action	Duration (yrs)	Responsible agency	Total cost (\$000)	Cost estimates (\$000)				
							FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
<input checked="" type="checkbox"/>	2		Incorporate actions in Western Colorado Desert ecosystem plan (Note: other state and local agencies will fill key roles)	3	ALL	10	2	2	2	2	2
<input checked="" type="checkbox"/>	2		Incorporate actions in CVMSHCP (Note: other state and local agencies will fill key roles)	3	BLM CDFG USFWS	60	30	20	10	0	0
<input type="checkbox"/>	2		Incorporate actions in Western Colorado Desert Route Designation	∞	BLM	10,000	4	4	4	4	4
<input type="checkbox"/>	1		Coordinate with U.S. BP and develop mutual agreements	2	BLM BR USMC	6	2	2	2	0	0
<input type="checkbox"/>	2		Encourage use of techniques to minimize BPOHV activity	∞	BLM BR USMC	5	1	1	1	1	1
<input type="checkbox"/>	2		Prepare educational briefing for BP agents	1	BLM BR	5	1	1	1	1	1
		<b>7.</b>	<b>Promote the purposes of the RMS through law enforcement and public education</b>								
<input type="checkbox"/>	1		Provide adequate law enforcement	∞	BLM CDFG AGFD USMC	750	150	150	150	150	150
<input checked="" type="checkbox"/>	3		Provide public information and education	∞	ALL	25	5	5	5	5	5
		<b>8.</b>	<b>Conduct research necessary to effectively define and implement necessary management actions</b>								
<input type="checkbox"/>	3		Require permits for research	∞	ALL	5	1	1	1	1	1
<input type="checkbox"/>	2		OWSVRA shall continue to fund research	∞	OWSVRA	200	40	40	40	40	40
<input type="checkbox"/>	2		Test trapping as a population census technique	2	ALL	200	40	40	40	40	40
<input type="checkbox"/>	2		Test direct counting methods	2	ALL		Included in 8.2 and 8.3.1				
<input type="checkbox"/>	2		Determine life history and demographic data	2	ALL		Also included in 8.2 and 8.3.1				
<input type="checkbox"/>	2		Determine effects of conflicting activities	5	ALL	300	60	60	60	60	60
<input type="checkbox"/>	3		Determine genetic variation in population	5	ALL	30	5	5	5	5	5
<input type="checkbox"/>	3		Determine effects of non-natural barriers	∞	ALL	30	5	5	5	5	5
<input type="checkbox"/>	3		Determine effects of natural barriers	5	ALL	15	3	3	3	3	3
<input type="checkbox"/>	3		Determine effectiveness of mitigation measures	5	ALL	20	4	4	4	4	4
		<b>9.</b>	<b>Continue inventory and monitoring</b>								

RMS Implementation Progress											
Status	Priority	Action number	Planned action	Duration (yrs)	Responsible agency	Total cost (\$000)	Cost estimates (\$000)				
							FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
⇒	2		Continue inventories	∞	ALL	125	25	25	25	25	25
⇒	2		Monitor implementation	∞	ICC	40	8	8	8	8	8
⇒	2		Monitor population trends	∞	ALL (USMC) [BLM]	320 (70) [350]	70 [100]	105 [100]	70 [50]	105 [50]	70 [50]
⇒	1		Document habitat disturbance and loss	∞	ALL	40	8	8	8	8	8
⇒	1		Conduct aerial reconnaissance and analysis of surface disturbance on the five MAs every five years	∞	ALL	50	10	10	10	10	10
⇒	2		Prepare annual monitoring/implementation report	∞	ICC	20	4	4	4	4	4
⇒	1		Use new inventory, monitoring, and research data in evaluations and proposed changes	∞	ALL	10	2	2	2	2	2

## Appendix A: Report Abstracts

### Abstract:

Grant, T.J. 2005. Flat-tailed Horned Lizards (*Phrynosoma mcallii*): Population Size Estimation, Effects of Off-highway Vehicles, and Natural History. M.S. Thesis. Colorado State University, Fort Collins.

An improved, comprehensive analysis of BLM mark-recapture data was performed in program MARK. Population estimates were generated for the Yuha Basin MA in 2002 and 2004, the East Mesa MA in 2003, and the West Mesa MA in 2003. Using a variance components analysis in program MARK, number of ant colonies and percent sand coverage were found to explain most of the variation in abundance on plots. Distance sampling was tested for this species. It was found that one of the primary assumptions was violated and working around this assumption is difficult.

A manipulative study was performed to test the effect of off-highway vehicle recreation on hibernating flat-tailed horned lizards. Twelve hibernating lizards were subject to a heavy OHV treatment, 12 were subject to a light treatment, and 12 were control subjects. No lizards were killed or suffered apparent injury. Effects of OHVs on active lizards should be assessed, as should effects of OHVs on habitat quality. During my work I also documented variance in hibernation and demographic characteristics as well as probable rain-harvesting.

### Abstract:

Young, K.V., and A.T. Young. 2005. Indirect Negative Effects of Human Activity on the Flat-tailed Horned Lizard. Final report submitted to AZ Game and Fish Dept., Yuma. 40 pp.

We assessed indirect effects of human activity on adjacent populations of flat-tailed horned lizards by sampling plots at increasing distances from agricultural or urban development that abutted undeveloped flat-tailed horned lizard habitat. Surveys consisted of one-hour presence/absence searches on one-hectare plots centered at 50, 250, 450, and 650 meters from disturbance. Detection rates were low, and horned lizard scats were used to indicate presence when lizards were not found. The data were analyzed using logistic regression analysis. Distance to disturbance was found to be a highly significant factor in whether or not flat-tailed horned lizards were present. Probability of presence increased significantly with increasing distance from disturbance, indicating a negative indirect effect to at least 450 m away from agricultural or urban areas. We suspect the impact is mainly due to increased predator density near human activity. Harvester ants, the main prey of flat-tailed horned lizards, were not diminished near agriculture. We did not evaluate presence of invasive species but discuss this as another risk associated with human development.

**Abstract:**

Painter, M.L. and M. Ingraldi. 2005. Use of simulated highway underpass crossing structures by flat-tailed horned lizards (*Phrynosoma mcallii*). Progress report, Research Branch, Arizona Game and Fish Department, Flagstaff, Arizona.

This interim report documents the results of one season of data collection from our simulated highway crossing structure experiment on flat-tailed horned lizards (*Phrynosoma mcallii*). Our objectives were to 1) determine if flat-tailed horned lizards would pass through culverts of sizes commonly used in highway construction, and 2) compare and describe the characteristics of culverts used by flat-tailed horned lizards to those not used. We built a testing facility with six culverts, including three dimension types and two interior lighting options. All six culverts were 40 feet long; the three types included 24-in diameter steel tubes, 36-in diameter steel tubes, and 4-ft tall by 8-ft wide box culverts. One of each type of culvert was lit with skylights, and one of each type of culvert had only natural light from the ends. Flat-tailed horned lizards were released in the center of the testing enclosure where all six culverts were equally available for selection. Of 12 flat-tailed horned lizards tested, three used the culverts. Preliminary results indicated that flat-tailed horned lizards neither selected nor avoided large or small, dark or light culverts typically used in highway construction. However, we emphasize that these preliminary results are not statistically valid, and should be used with caution. Pending approval, we plan to follow this pilot season with a second season of research, and expect to obtain more explicit results in 2006.

**Abstract:**

Bureau of Land Management El Centro Field Office. Flat-Tailed Horned Lizard Monitoring Report 2005.

The Bureau of Land Management El Centro Field Office continued monitoring Flat-tailed Horned Lizard (FTHL) in 2005 through occupancy estimation. Occupancy estimation is a method of determining the rate at which various habitats are occupied by a species. It has an advantage over mark-recapture in that the plots require much less time to survey, thus we can cover more plots which helps us deal with low density populations. The Bureau selected 69 plots in the West Mesa FTHL Management Area in a stratified random sample. Each plot was visited by 2 independent observers who recorded presence of FTHL, their scat, and measured various aspects of the habitat. The habitat types were divided into 6 categories Gravely-Flat, Gravely-Hardpan, Hardpan-Flat, Mud Hills, Sandy-Flat, Sandy-Wash. The data was analyzed with program Mark to determine the probability of detection ( $p$ ) and the presumed occupancy rate ( $\Psi$ ). We attempted to run the analysis for FTHL observations, however, they were only observed on 5 of the 65 plots which was too low of an encounter rate to be analyzed by Mark. Instead we ran the analysis for FTHL habitat use which we defined as FTHLs, or their scat found on a plot with no other species whose scat could be confused with FTHLs present. We ran four different estimation models to determine which best fit the data. The model that best fit was  $p(\cdot)$

Psi (.). This model lumps all of the habitat types together to give an occupancy rate for the entire West Mesa Management Area. This shows the detection probability for FTHL habitat use at about 60% and the use rate at about 42%. Occupancy estimation was a very cost effective monitoring strategy and had great potential for showing the relative importance of different habitat types, but this will require either larger sample sizes, or adjustments to the sample area.

### **SUMMARY OF RESEARCH FINDINGS FOR THE COACHELLA VALLEY, CALIFORNIA IN 2005, Cameron Barrows, Center for Natural lands Management, Center for Conservation Biology, U.C. Riverside**

Flat-tailed horned lizards (FTHL) were surveyed in the Coachella Valley, CA each year between 2002 and 2005 on conservation lands within that historical distribution. In 2002 surveys included 12 sites (clusters) with a total of 80, 10 m x 100 m belt transects. In 2003 that effort included 18 sites with a total of 116 transects; in 2004 there were 22 clusters including 134 transects, and in 2005 there were 17 clusters totaling 106 transects. Methods to survey FTHL potentially include mark-recapture, distance sampling, counts dependent on sightings and counts dependent on tracking. Surveys were repeated on each transect six times between late May and mid July. Surveys were conducted as early in the morning as the lizards became active (usually by 0800 hrs, and when the temperature 1 cm above the sand reached 35° C), and were concluded by 1100 hrs when the high angle of the sun reduced track definition. No FTHL were detected outside the Thousand Palms Preserve during any surveys. Further west, on habitats previously occupied by FTHL, there has been an ephemeral loss of much of the aeolian sand, making the substrate more suitable for the desert horned lizard, *P. platyrhinos*.

A steady decline in FTHL abundance has occurred from a mean of 0.875 track ways per transect in 2002, to 0.175 track ways per transect in 2005 in the open sand hummock habitat. Ant populations were surveyed and a parallel decrease in native ant abundance was documented. An edge effect from 100 meters to 150 meters with the boundary of the Coachella valley preserve was also noted and appears to be related to avian predators such as loggerhead shrikes and American kestrels.

## **Appendix B: 2006 Annual Work Plan for the Flat-tailed Horned Lizard Interagency Coordinating Committee**

### **1. Delineate and designate flat-tailed horned lizard MAs and a RA.**

**1.1-1.6.** BLM-El Centro will designate the Yuha, West Mesa, and East Mesa MAs.

**1.7. Encourage development of a MA in the Coachella Valley.** Signatories decided to support creation and management of the CVMSHCP instead. BLM-Palm Springs will continue to participate in the development of the CVMSHCP.

### **2. Define and implement management actions necessary to minimize loss or degradation of habitat.**

**2.1. Mitigate and compensate project impacts through humane and cost-effective measures.**

**2.1.1. Apply mitigation measures.** Appropriate mitigation measures will be enforced for all authorized projects that impact FTHLs or their habitat.

**2.1.2. Require compensation for residual impacts.** Agencies will continue to require compensation for projects that have residual impacts to FTHL habitat.

**2.2. Limit authorizations that would cause surface disturbance in MAs.**

**2.2.1. Attempt to locate projects outside MAs; limit discretionary land use authorizations and ROWs to 10 acres and 1% total per MA.** These limits will be observed.

**2.2.2. Federally owned lands in the MAs shall be retained in federal ownership.** No disposal of federal lands within MAs will occur.

**2.2.3. Maintenance in existing ROWs may continue.** No action required.

**2.2.4. Require fencing along Yuma Desert MA boundary road.** Agencies in Arizona will continue to coordinate with ADOT to ensure that they are committed to provide and maintain lizard barrier fencing along the Area Service Highway, when and if it is constructed.

**2.3. Limit surface disturbance in MAs from minerals actions.**

**2.3.1. Allow approved minerals actions while applying applicable mitigation and compensation.** Applicable mitigation and compensation will continue to be applied.

**2.4. Limit vehicle access and route proliferation in MAs.** The BLM-El Centro will continue to rehabilitate illegal routes and sign designated routes.

- 2.4.1. Reduce new roads to a minimum in MAs.** The BLM-El Centro will sign all designated routes within the MA's. MCAS-Yuma completed their INRMP in 2005. The INRMP restricts new road development.
- 2.4.2. Designate routes "open", "closed", or "limited". Give route signing a priority.** BLM-El Centro completed route designation for the Western Colorado Desert. All vehicle routes on BLM managed lands in Imperial County were designated as open, closed, or limited. BLM has successfully secured hundreds of thousands of grant dollars to implement this designation through signing and enforcing open and limited routes and closing and rehabilitating closed routes. As soon as the Record of Decision is signed, MCAS-Yuma's INRMP will be in effect, including a comprehensive effort to sign routes.
- 2.4.3. Reduce route density in MAs.** BLM-El Centro completed route designation for the Western Colorado Desert. All vehicle routes on BLM managed lands in Imperial County were designated as open, closed, or limited. BLM has successfully secured hundreds of thousands of grant dollars to implement this designation through signing and enforcing open and limited routes and closing and rehabilitating closed routes. The MCAS-Yuma INRMP includes most of the YUMA MA and calls for closure of redundant routes.
- 2.4.4. Coordinate with USBP to ensure cooperation and enforcement of vehicle regulations.** ICC members regularly hold FTHL orientation sessions with BP agents in the El Centro sector to reduce impacts to FTHL habitat along the International Border.
- 2.5. Limit impacts of recreational activities in MAs.** Recreational Camping is limited in the Yuha MA to designated camping areas. The MCAS-Yuma INRMP closes the portion of the Yuma MA on the Barry M. Goldwater Range closed to all forms of recreation.
- 2.5.1. Allow vehicle-oriented recreation in RA.** No action required.
- 2.5.2. Permit no competitive recreation events in MAs.** Competitive races will not be permitted in MAs.
- 2.5.3. Allow non-motorized recreational activities in MAs, but limit new recreational facilities.**
- 2.5.4. Limit camping in MAs.** Recreational Camping is limited in the Yuha MA to designated camping areas. The MCAS-Yuma INRMP closes the portion of the Yuma MA on the Barry M. Goldwater Range closed to camping.
- 2.5.5. No long-term camping areas shall be developed in MAs.** None will be developed.
- 2.6. Allow limited use of plants in MAs.** No plant sales, commercial collecting, or grazing will be allowed.

- 2.7. Allow military maneuvers and encampments only in designated sites in MAs.** Military training areas in the Yuma Desert MA are fenced or marked to identify their locations and limits so that adjacent areas will not be impacted.
- 2.8. Suppress fires in MAs and BLM lands in the RA using allowable methods.**
- 2.9. No pesticide treatments shall be applied within MAs.** No pesticide treatments will occur in MAs, except for specifically targeted herbicides. Herbicides are used on tamarisk removal projects, which improve FTHL habitat.
- 2.10. Within MAs, other activities not consistent with the RMS shall not be approved.** None will be approved.
- 3. Rehabilitate damaged and degraded habitat in MAs.** Several years of extensive habitat rehabilitation is planned and has begun for the Yuha, West Mesa, and East Mesa MAs
- 4. Attempt to acquire all private lands within MAs.**
  - 4.1 Maintain prioritized list of parcels for acquisitions.** Lists identifying parcels for acquisition will be maintained by the California OHV Division office headquarters in Sacramento and by BLM-El Centro. Ocotillo Wells District, through OHMVRD, will continue to acquire private inholdings. ABDSP will continue to acquire private inholdings within the park.
  - 4.2. Seek funding to acquire key parcels in MAs.** Compensation funds collected in California will be banked for habitat acquisition.
  - 4.3. Using compensation and other funds, acquire key lands in MAs.** Key lands in MAs will be acquired as opportunities arise. Compensation funds collected in Arizona may be used for habitat acquisition in the East Mesa MA in California. The ICC and MOG will continue to develop a more comprehensive approach regarding the use of funds.
  - 4.4. Participate in exchanges to acquire key parcels in MAs.** This will occur as opportunities arise. At the moment, the primary tool for land acquisition is through purchases rather than land exchanges.
- 5. Maintain or establish effective habitat corridors between naturally adjacent populations.**
  - 5.6. Limit or mitigate activities in movement corridors.**
  - 5.7. Coordinate with Mexico and INS to ensure movement across the border.**
- 6. Coordinate activities and funding among the participating agencies and Mexican agencies.**
  - 6.1.1. Maintain a FTHL MOG.** The MOG will continue to meet as needed to coordinate implementation of the conservation agreement in response to recommendations

from the ICC. Meeting minutes will be provided to all MOG and ICC members to facilitate effective coordination.

**6.1.2. Hold semi-annual meetings of the ICC.** The ICC has met quarterly since the inception of the RMS and will continue to do so to discuss implementation of Planning Actions under the RMS and issues and challenges regarding this implementation. In addition to ICC meetings, subgroups of the ICC may meet on occasion to discuss specific issues.

**6.1.3. Develop a forum for discussions with agencies and individuals in Mexico.**

AGFD will use their periodic coordination meetings with the Alto Golfo Biosphere Reserve to promote the involvement of Reserve staff in the ICC and MOG. AGFD will continue to assist with coordination with Mexican agencies for a research project designed to evaluate genetic variation across the range of FTHL.

**6.2 Develop a conservation agreement.** The 2003 revision of the RMS has been finalized, printed, and distributed to all involved agencies and interested parties. The RMS may be revised as necessary to reflect new information.

**6.3.1. Incorporate actions into the Western Colorado Desert Coordinated Management Plan.** In 2005, the California Desert Conservation Area Plan was amended to formally adopt the Strategy and the FTHL MAs. This plan will continue to be implemented in 2006.

**6.3.2. Incorporate actions into the CVMSHCP.** BLM-Palm Springs will continue to participate in the development of the CVMSHCP.

**6.3.3. Incorporate actions into the Western Colorado Desert Route Designation.** See 2.4.2.

**6.4. Coordinate with U.S. BP to develop mutual agreements.** BP will continue to be invited to MOG meetings. ICC agencies will finalize the production of the BP training and education video and distribute it to BP offices for use in their training programs.

**7. Promote the purposes of the RMS through law enforcement and public education.**

**7.1. Provide sufficient law enforcement.** MCAS and AGFD will continue to conduct ORV patrols within the Yuma Desert MA and adjacent habitat. BLM-El Centro has aggressively moved ahead to fill vacant law enforcement positions and apply for grants to add additional rangers.

**7.2. Provide public information and education about the MAs and RA.** All users of BMGR will receive a briefing that includes information on the FTHL, slides, pictures and/or descriptions. BLM-El Centro will continue to distribute FTHL brochures and maps to land users. An ICC member will present one-hour seminars on the biology and conservation of the FTHL at the 2006 Yuma Birding

and Nature Festival, and will host field trips to the Yuma Desert MA. FTHL ecology and habitat, the conservation agreement, and cooperative efforts of the participating agencies will be highlighted during the seminars and field trips. Agencies on both sides of the border will continue to distribute the FTHL brochure that was developed by the Centro Intercultural de Estudios de Desiertos y Océanos. ICC agencies will finalize the production of the general public information video and distribute it to appropriate groups.

**8. Encourage and support research to promote conservation of FTHL and desert ecosystems.**

**8.1. Require permits for research.** AGFD and CDFG will continue to require scientific collecting permits for any person who collects or handles FTHL.

**8.2. OWSVRA shall continue to budget for research.** Ocotillo Wells District will fund Environmental Resource Intern positions for research at OWSVRA during the 2006 season. CDFG and USFWS will seek funding for a proposed study to determine the direct effects of OHV use on FTHL.

**8.3. Continue to refine cost-effective techniques for assessing FTHL abundance.**

**8.3.1. Test trapping and other techniques to enumerate FTHLs directly.**

**8.3.2. Determine effectiveness of relative enumeration techniques and scat counts as an index of relative abundance.**

**8.4. Determine life history and demographic data.** At each of two 8-ha plots in the Coachella Valley Preserve, FTHL will continue to be permanently marked using unique combinations of colored beads sewn into the base of their tails with surgical wire. Home range size, movements, reproductive success relative to habitat/ant populations and rainfall, and growth rates of juveniles relative to the same variables will continue to be recorded.

**8.5. Determine effects of conflicting activities.**

**8.6. Determine genetic variation among populations and effects of barriers.** AGFD, along with MCAS, will continue to fund a study to evaluate genetic variation across the range of FTHL.

**8.6.1. Determine genetic variation in MAs.** AGFD will assist with coordination with Mexican agencies for a research project designed to evaluate genetic variation across the range of FTHL.

**8.6.2. Determine effects of human-created barriers.**

**8.6.3. Determine effects of natural barriers.**

**8.7. Determine effectiveness of mitigation measures.** AGFD will conduct a research study to test the effectiveness of culvert designs intended to allow crossing by FTHL using funding from the Federal Highways Administration. AGFD will

assist MCAS with telemetry monitoring of FTHL that are displaced and relocated from the ASH to determine survival and effects on resident FTHL.

## **9. Continue Inventory and Monitoring.**

**9.1. Continue inventories.** BLM-Yuma will determine the presence/absence of FTHL within some of BLM-managed land. BLM El Centro will continue to monitor lizard populations in the MAs using the mark recapture method. Additionally, BLM El Centro will also try to incorporate occupancy estimation to determine recruitment and extinction rates for the MAs depending on staff and budget needs. Data will examine potential fragmentation effects on FTHL populations. In the Coachella Valley Preserve, 7 transect clusters of 7 transects (100 m x 10 m) will continue to be surveyed by the Center for Natural Lands Management to determine if edge effects are present, with 2 transect clusters in core areas to act as controls. Using the distinctive tracks of the FTHL, the 100 m x 10 m transects will be used to measure occurrence. FTHL tracks are distinguishable from other lizard species on the Preserve and no other horned lizard species occur in this Aeolian sand habitat. Radio-telemetry and Home Range Analysis will continue.

Mark/Recapture in OWSVRA or Borrego Badlands may proceed depending on staff and budget needs. California BLM will conduct population estimations in the West Mesa MA as well as on the Superstition OHV area.

**9.2. Monitor habitat quality and population trends in the MAs.** BLM El Centro has conducted disturbance and vehicle track surveys and the Student Conservation Crew conducting restoration in the Yuha MA is evaluating the level of disturbance within the MA before, during and after the restoration.

**9.2.1. Monitor implementation of the RMS.** The 2006 work plan describes how the 2003 RMS will be implemented. At the end of the year, the ICC will report accomplishments and significant deviations.

**9.2.2. Monitor population trends.** Funding to implement a study to evaluate detection by dogs will be sought. Observations of FTHL during the course of biannual reptile surveys at OWSVRA will be recorded as part of regular monitoring. FTHL observations by staff during archeology surveys, ranger patrol, or in the course of maintenance duties will be noted. MCAS-Yuma will continue its long-term surveys of the Auxiliary 2 road to assess the number of road kills and to monitor population trends. BLM El Centro continues to gather population trend data using the mark recapture method. Arizona agencies will develop a scope of work for monitoring in the Yuma Desert MA in 2006; implementation will be dependent on funding. Additionally, BLM-Palm Springs will conduct survey/monitoring in Dos Palmas.

**9.2.3. Document habitat disturbance and loss.** All authorized habitat impacts will be reported in the 2006 ICC annual report. BLM-El Centro, AGFD, and USFWS

will continue to quantify the level of vehicular impacts to FTHL habitat using a step-point method.

- 9.2.4. Prepare an annual report of monitoring results and implementation progress.** An annual report will be produced that summarizes monitoring and RMS implementation during 2006. The report will include a schedule of activities to be accomplished in 2007, budget needs for 2007, and outyear budget needs for major projects. The report shall also include a summary of monitoring results and a discussion of the likely causes of any noted declines.
- 9.2.4. New data shall be used in evaluations of the RMS and in assessing proposed changes.** New information resulting from ongoing research will be used to revise the RMS.