

Annual Progress Report:
Implementation of the
Flat-tailed Horned Lizard Rangewide Management Strategy
January 1, 2011 - December 31, 2011

Prepared by the
Flat-tailed Horned Lizard Interagency Coordinating Committee
Linden Piest, Secretary

Final draft, March 11, 2013

EXECUTIVE SUMMARY

The flat-tailed horned lizard is a small horned lizard that inhabits a narrow range within southeastern California, southwestern Arizona, and northwestern Mexico. Much of the species' historic habitat in the United States has been lost due to agricultural and residential development. A Conservation Agreement was signed by several federal and state agencies in 1997 to implement the Flat-tailed Horned Lizard Rangelwide Management Strategy. The Strategy is a long-term plan of action among signatory agencies to ensure persistence of the species. It continues to be implemented by the signatory agencies throughout the Management Areas, the Research Area, and other areas of flat-tailed horned lizard habitat.

Implementation activities during 2011 included regular coordination among the participating agencies through the Management Oversight Group and Interagency Coordinating Committee. Authorized surface impacts remained low in Management Areas. Outreach efforts continued to include the general public and other agencies, such as the U.S. Border Patrol and several Mexican agencies, as active participants in implementing the Strategy. Agencies conducted population inventories, trend monitoring, and research. New lands were acquired within the East Mesa and West Mesa Management Areas and the Anza-Borrego Desert State Park Management Area. Continued attempts will be made in 2012 to acquire additional lands in the California Management Areas.

Biologists from the Alto Golfo Preserve in northern Sonora (Mexico) continue to be involved with the ICC. They have begun the process of creating a management strategy for FTHL in northern Mexico. They accomplished considerable outreach, education, and coordination during 2011 with various community groups, ejidos, government agencies, schools, off-road clubs, and ecotourism groups.

The participating agencies believe the Flat-tailed Horned Lizard Rangelwide Management Strategy as designed and implemented by the signatories of the Conservation Agreement continues to provide an effective management focus to conserve flat-tailed horned lizard habitat throughout its range. The majority of the tasks outlined by the Strategy are being completed on schedule.

TABLE OF CONTENTS

Introduction

Implementation Progress in 2011

Planning Action 1 - Delineate and designate five FTHL MAs and one FTHL RA

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

Planning Action 3 - Within the MAs, rehabilitate damaged and degraded habitat, including closed routes and other small areas of past intense activity

Planning Action 4 - Attempt to acquire through exchange, donation, or purchase from willing sellers all private lands within MAs

Planning Action 5 - Maintain or establish effective habitat corridors between naturally adjacent populations

Planning Action 6 - Coordinate activities and funding among the signatory agencies with Mexican agencies

Planning Action 7 - Promote the Strategy through law enforcement and education

Planning Action 8 - Encourage and support research that will both promote the conservation of FTHL or desert ecosystems and provide information needed to define and implement necessary management actions effectively

Planning Action 9 - Continue inventory and monitoring

Conclusions

RMS Implementation Progress to Date

Appendix A: Report Abstracts

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

INTRODUCTION

On June 7, 1997, a long-term 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*) (FTHL) in the United States. The 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. A revision of the RMS, with minor changes, was completed in 2003.

The following agencies are signatories to the Conservation Agreement:

- U.S. Fish and Wildlife Service (USFWS), Region 8
- USFWS, Region 2
- Bureau of Land Management (BLM), California State Office
- BLM, Arizona State Office
- Bureau of Reclamation (Reclamation), Lower Colorado Region
- Marine Corps Air Station, Yuma (MCAS-Yuma)
- Naval Air Facility, El Centro (NAF-El Centro)
- Arizona Game and Fish Department (AGFD)
- California Department of Fish and Game (CDFG)
- California Department of Parks and Recreation (CDPR)

The U.S. Border Patrol (BP) at times participates as guests in the Management Oversight Group (MOG) and the Interagency Coordinating Committee (ICC). BP elected not to sign the Conservation Agreement, but they continue to work closely with staff at BLM-El Centro.

The Conservation Agreement remains in effect today, and the RMS continues to be implemented by all Conservation Agreement signatory agencies. The RMS requires the ICC to prepare an annual report to monitor plan compliance (Planning Action 9.2.4). This is the 13th annual report and covers the period from January through December 2011.

The FTHL has been the subject of considerable activity within the Endangered Species Act and the federal courts. The 2003 Revision of the RMS summarized that activity through early 2003. Later that year, the Tucson Herpetological Society and others filed suit challenging the 2003 withdrawal to list the FTHL as a threatened species. In 2005, the U.S. District Court for the District of Arizona ruled in favor of the plaintiffs and set aside the 2003 withdrawal on the grounds that the withdrawal failed to determine whether the lost historical habitat for the FTHL is a significant portion of the range for this species and thereby violated the Endangered Species Act. On December 7, 2005, the USFWS published a Federal Register Notice vacating the 2003 withdrawal and restoring proposed status to the FTHL (70 FR 72776). The comment period was reopened on March 2, 2006, for two weeks (71 FR 10631) and on April 21, 2006, for two weeks (71 FR 20637). On June 28, 2006, USFWS published a notice in the Federal Register

withdrawing the proposed rule, based on the conclusion that the lost habitat is not a significant portion of the range of the FTHL (71 FR 36745). A lawsuit was filed by Defenders of Wildlife and others on December 11, 2006, in the Arizona District Court challenging the 2003 and 2006 decisions to withdraw the proposed rules to list the FTHL as threatened. The court granted summary judgment in favor of the USFWS. This ruling, however, was appealed to the Court of Appeals for the Ninth Circuit which, on May 18, 2009, reversed the District Court's ruling. The court in this case ruled that the administrative record did not support the USFWS's conclusion that flat-tailed horned lizard populations were stable and viable throughout most of its current range. In November 2009, they ordered the USFWS to reinstate the 1993 proposal to list the species as threatened. The USFWS reinstated the proposal on March 2, 2010 (75 FR 9379) and subsequently solicited public comment and held public meetings. The listing determination was due to be issued in November, 2010, but was postponed by the USFWS because of other priorities. On March 15, 2011, the USFWS once again published a notice in the Federal Register to withdraw the proposed rule, based on the conclusion that threats to the species as identified in the 1993 proposed rule are not as significant as earlier believed, and available data do not indicate the threats to the species and its habitat are likely to endanger the species in the foreseeable future. The withdrawal rule also concluded that implementation of the RMS is an important conservation effort that reduces threats in the US and benefits the FTHL throughout its range (76 FR 14210).

IMPLEMENTATION PROGRESS IN 2011

Progress toward implementation of Planning Actions within the RMS during this period is summarized below.

Planning Action 1. Delineate and designate five FTHL Management Areas and one FTHL Research Area.

The 1997 Conservation Agreement designates 5 Management Areas (MAs) and one Research Area (RA) and precisely described their boundaries. Maps and boundary descriptions are available in the 2003 RMS. All MAs and a portion of the RA were formally adopted within agency environmental and planning documents (see also Planning Action 6) as a result of the actions listed below. All agencies had applied RMS provisions to these areas prior to the formal adoption.

- Yuma Desert MA: In 2007, MCAS Yuma finalized an Integrated Natural Resource Management Plan (INRMP) that fully incorporates the RMS for its portion of the Yuma Desert MA. In 2004, Reclamation completed a Five-Mile Zone Resource Management Plan that incorporates the RMS for its portion of this MA.
- East Mesa, West Mesa, and Yuha Desert MAs: An Environmental Assessment (EA) proposing an amendment to the California Desert Conservation Area Plan to officially adopt these three MAs received no public protests and was signed on February 1, 2005.

- Borrego Badlands MA: In 2004, the Anza-Borrego Desert State Park’s (ABDSP) General Plan was unanimously approved by the California State Parks and Recreation Commission providing long-range guidance and planning to the 600,000 acre park and acknowledging the FTHL RMS. A Natural Resources Management Plan to be completed in the near future will more specifically address FTHL management. Boundaries for the Borrego Badlands MA within ABDSP have been delineated in the Borrego Badlands and Clark Dry Lake areas.
- Ocotillo Wells RA: In 2003, the BLM portion of the Ocotillo Wells State Vehicular Recreation Area (OWSVRA) RA was designated in an amendment to the Western Colorado Desert Ecosystem Plan. The California State Parks owns a portion of the RA that has not been incorporated into planning documents. The RMS requires no management conservation measures in the RA. The RMS does require “vehicle-oriented recreation in compliance with current regulations” in Section 2.5.1. A General Plan process was initiated in 2009 for OWSVRA and, as of October 2010, incorporated the southeastern portion of the former Freeman Property as part of OWSVRA. The General Plan for Heber Dunes (HDSVRA) has been completed and adopted by the OHV Commission in December, 2011. It does not include a possible relocation project. HDSVRA will continue to be managed outside the purview of the ICC.
- Coachella Valley: BLM-Palm Springs continues to participate in the Coachella Valley Multiple-Species Habitat Conservation and Natural Communities Conservation Plan (CVMSHCP) that incorporates conservation, monitoring, and management for the FTHL in CVMSHCP conservation areas. The CVMSHCP uses an ecosystem/habitat approach to identify natural communities and sensitive species known or expected to occur in the Plan area. The Plan is designed to ensure the long-term viability of sensitive-species populations within the Coachella Valley, including the FTHL.

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

The international boundary pedestrian fence that was completed in 2008 along the entire border of the Yuma Desert appears to have greatly reduced impacts to FTHL habitat in the Yuma MA resulting from drug smuggling, illegal immigration, and associated law enforcement activities. Outreach efforts to inform and educate enforcement personnel on FTHL issues continue.

The habitat impacts authorized by managing agencies within the period are shown in Tables 1 and 2. Included in the remainder of this section is a narrative for each participating agency. For reference, the amount of land owned by each agency in the various MAs is shown in Table 3.

BLM - El Centro Field Office

Authorizations for renewable project transmission line right-of-ways during 2011 in the Yuha Basin included C Solar South and C Solar West Transmission Projects. The acreages authorized were 3.12 and 13.7 acres, respectively, within the Yuha Desert MA. Co-location of projects on Gen-tie lines may reduce the actual acreages of impact. The Centinela solar project was authorized for a disturbance of 13.3 acres in the Yuha Desert MA. The Ocotillo Express project impacted 128.77 acres of habitat outside the Yuha Desert MA.

Currently, renewable projects with potential transmission or generation facility impacts to MAs under review are the Dixieland, Campo, Silverleaf, and Ocotillo Sol projects.

An authorization for Oat Pit on East Mesa was approved on September 01, 2011. This authorization to a private company was for 43.08 acres, 18.72 of which were within the East Mesa MA and 25.08 were outside. The initial proposal for 240 acres was substantially reduced during the course of the environmental assessment. This surface disturbance is in a previously authorized and mined area for sand and gravel. The authorization will eventually result in reclamation of the site that otherwise would not have been accomplished. For this reason, and because the site had been previously disturbed, these acreages will not be reported as disturbed.

There have been no new disturbances by Ormat geothermal in the last 2 years. There were 31 Geothermal Sundry Notices in 2011 for routine maintenance work. These were all within existing well pads and previously disturbed land. Ormat continues to cooperate with BLM on implementing conservation measures for FTHL.

In 2009, BLM-El Centro authorized 46.41 acres of impacts in the Yuha Basin MA for a right-of-way grant to San Diego Gas and Electric (SDG&E) for the construction of the Sunrise Powerlink transmission line project. The transmission line construction was completed within the Yuha Basin MA during 2011. From April through November 2011, SDG&E monitors reported 47 FTHL observations, 103 FTHL relocated, and 25 mortalities for all Sunrise Powerlink project areas in FTHL habitat.

In the Yuha Basin MA, 92.9 acres were authorized in 2010 for impact by Tessara Imperial Valley Solar for a transmission line. However, the projects owners requested relinquishment of the right-of-way in early 2012.

Imperial Irrigation District (IID) requested reauthorization for an existing 100-acre sand and gravel mine operation in the Yuha Basin MA immediately adjacent to the Border. However, they decided not to pursue their request following a meeting with BLM and Border Patrol.

BLM Law Enforcement Officers regularly patrol the MAs but are encouraged to reduce impacts. Illegal use and route proliferation continue to occur in Limited Use Areas. BLM continues to conduct signing, education, and dedicate groups of interns for restoration of illegal incursions in order to reduce these impacts.

BLM – Palm Springs South Coast Field Office

No projects were authorized on FTHL habitat administered by BLM-Palm Springs.

BLM – Yuma Field Office

AGFD has submitted a proposal for expansion of their facility, which is leased from BLM and is within historic FTHL habitat, and facility alterations. Elsewhere, one trespass on FTHL habitat was found and compensation collected.

Marine Corps Air Station – Yuma

Projects described in the EIS for the Yuma Training Range Complex of 1995 are not subject to the RMS (Planning Action 2.2.1).

As reported last year, the Department of the Navy has approved construction of an F-35B Joint Strike Fighter (JSF) Expeditionary Airfield (EAF) on BMGR-West within the Yuma Desert MA. A mitigation study for this project is described under Planning Action 8.

NAF-El Centro

No disturbance occurred within MAs managed by NAF-El Centro in 2011.

Anza-Borrego Desert State Park

Inside the Borrego Badlands MA, 3.73 acres were identified for a temporary paleoseismic study, only a fraction of which was actually excavated and refilled. This project has been implemented for a temporary impact of 3.73 acres. No FTHL were encountered while monitoring this project. Outside of the MA, 3.84 acres were permitted for a project to restore land damaged by an illegal trespass of construction equipment by an adjacent land owner several years earlier. As of 2011, this project had not yet been implemented.

Bureau of Reclamation – Yuma

No new projects that impacted FTHL habitat were authorized in 2011.

Ocotillo Wells State Vehicular Recreation Area

Construction of an obstacle course that impacted approximately 30 acres of FTHL habitat was begun in late 2010 with the bulk of the work being done in 2011, and was officially opened on March 5, 2011. The course was constructed on a mud hill with no dune characteristics and very sparse perennial vegetation. There were no incidental observations of FTHL in the specific location of the obstacle course, but surrounding occupancy plots within 1 mile have had positive detections. Approximately 4 acres within the project area were permanently set aside for

resource protection and fenced to allow rehabilitation.

Table 1. Authorized projects with impacts to habitat within Flat-tailed Horned Lizard Management Areas, 1997-present (acres in parenthesis indicate either temporary disturbance or the project was subsequently withdrawn and no impacts occurred).

Year	Authorizing agency	Project	Acres
East Mesa			
1998	NAF-El Centro	Weapons Impact Scoring Set ¹	1.0
1999	BLM-El Centro	Observation wells	8.77
2001	BLM-El Centro	Level 3 Communications	7.6
2001	BLM-El Centro	Granite Construction sand and gravel	1.0
2002	BLM-El Centro	BLM mining (API & Oat Pit)	82.3
2002	BLM-El Centro	BLM geothermal piping	1.0
2003	BLM-El Centro	BLM API sand and gravel and Ormat	2.8
2008	BLM-El Centro	Drop 2 Reservoir	285
TOTAL			389.47
West Mesa			
2001	BLM-El Centro	Imperial Irrigation District R Line	31.42
2001	BLM-El Centro	Imperial Irrigation District L Line	75.69
2004	NAF-El Centro	NAF cleanup of targets 101 and 103	6.0
2010	NAF-El Centro	Navy geothermal exploratory test well	1.76
TOTAL			114.87
Yuha Desert			
1998	BLM-El Centro	Imperial Irrigation District dike (“S” line transmission)	2.0
2001	BLM-El Centro	Caltrans ditching along Hwy. 98	16.1
2001	BLM-El Centro	Border Patrol blading of staging areas	14.0
2001	BLM-El Centro	Border Patrol maintenance of berms	2.1
2002	BLM-El Centro	Border Patrol cameras	0.6
2002	BLM-El Centro	La Rosita powerline	53.0
2004	BLM-El Centro	Powerpoles to Border Patrol camera	0.46
2008	BLM-El Centro	Powerpoles to Comsite T-line to IID communication	1.4
2008	BLM-El Centro	T-line to IID communication site	1.4
2000s	BLM-El Centro	Border Patrol: disturbance to bridges	3.0
2009	BLM-El Centro	Sunrise Powerlink transmission line	46.41
2010	BLM-El Centro	Tessara Imperial Valley Solar transm. line	(92.9)
2011	BLM-El Centro	C Solar South	3.12
2011	BLM-El Centro	C Solar West	13.7
2011	BLM-El Centro	Centinela	13.3
TOTAL			170.59

(Table 1 continued on next page)

Table 1 (continued). Authorized projects with impacts to habitat within Flat-tailed Horned Lizard Management Areas, 1997-present.

Year	Authorizing agency	Project	Acres
Borrego Badlands			
2011	ABDSP	Paleoseismic study	3.73
TOTAL			3.73
Yuma Desert			
1999	MCAS-Yuma	Harrier jet crash (temporary disturbance)	(6)
2001	MCAS-Yuma	Rifle range and runway repair	2
2001	Reclamation	Prison right-of-way and monitoring wells	1.3
2002	Reclamation	Reclamation observation wells	0.5
2003	MCAS-Yuma	Weapons familiarization training	2
2004	MCAS-Yuma	Dust control and ammo supply point	10.15
2005	Reclamation	Border easement	14
2010	MCAS-Yuma	Joint Strike Fighter airfield	126.7
TOTAL			156.65

¹ This had previously been mistakenly reported for West Mesa.

Table 2. Acres of flat-tailed horned lizard habitat authorized for impact by RMS signatories from January to December 2011, and cumulative acres of impacts within the management areas.

Agency	Within MA		Outside MA (acres)	Total Acres	Acres Impacted to Date in MAs	
	MA	Acres			Total	Percent**
BLM-El Centro	East Mesa	0	0	0	388.47	0.38
	West Mesa	0	0	0	107.11	0.12
	Yuha Desert	30.12	128.77	158.89	170.59	0.30
NAF-El Centro	East Mesa	0	0	0	1.0	0.01
	West Mesa	0	0	0	7.76	0.02
Anza-Borrego Desert State Park	Borrego Badlands	3.73	3.84	7.57	3.73	0.01
Ocotillo Wells State VRA	*	*	30	30	*	
BLM-Palm Springs	*	0	0	0	*	
MCAS-Yuma	Yuma Desert	0	0	0	140.85	0.12
Reclamation	Yuma Desert	0	0	0	15.80	0.10
BLM-Yuma	*	0	0	0	*	
Total Acres		33.85	162.61	196.46	836.31	0.18

* No land administered within an MA.

** Based on the MA acreage for each agency, including acquisitions (see Table 3).

Total Habitat Disturbance from January through December 2011

As reported, BLM-El Centro authorized disturbance of 30.12 acres in the Yuha Desert MA and 128.77 acres outside, ABDSP authorized disturbance of 3.73 acres in the Borrego Badlands MA and 3.84 acres outside, and OWSVRA authorized approximately 30 acres of disturbance within the RA.

Planning Action 3: Within the MAs, rehabilitate damaged and degraded habitat, including closed routes and other small areas of past intense activity.

BLM-El Centro has been actively implementing the Western Colorado (WECO) route designation plan signed on January 31, 2003. Signage for the Yuha Desert, East Mesa, and West Mesa MAs is complete. BLM rangers and restoration crews make routine checks on signs and replace them as necessary. BLM-El Centro continues to update 12 interpretive kiosks within the Yuha Desert and West Mesa MAs with new maps, rider, and lizard information. In addition, BLM-El Centro continues to provide regular outreach by producing and distributing maps of the WECO route of travel designations. Finally, BLM-El Centro continues law enforcement patrol of all MAs under their jurisdiction and makes regular public enforcement and education contacts.

Through a series of multiple-year grants from the California OHV Motor Vehicle Commission, BLM is continuing work on an ambitious restoration program. BLM is contracting either the Student Conservation Association (SCA) or American Conservation Experience (ACE) to engage youth in conducting restoration activities in the Yuha Desert, West Mesa, and East Mesa MAs. Groups of interns improve authorized routes and place dead standing vegetation or cover vehicle tracks from incursions outside the authorized routes of travel. Archaeological surveys are necessary before implementing restoration and are ongoing, concurrent with restoration.

Planning Action 4: Attempt to acquire through exchange, donation, or purchase from willing sellers all private lands within MAs.

See Table 3. In-holdings within the Yuma Desert MA were purchased previously and all land remains federally owned.

In Anza-Borrego Desert State Park, land acquisitions within FTHL habitat continue in coordination with the Anza-Borrego Foundation (ABF). ABF seeks to acquire private in-holdings within ABDSP including acres within the FTHL MA.

BLM-El Centro continues to use compensation funding for acquisition of private lands in FTHL MAs. This year, they purchased 320 acres of private land within the East Mesa MA.

Reclamation's Lower Colorado River Multi-Species Conservation Program purchased 240 acres of private land adjacent to the Yuha Desert MA, within the ACEC. The two parcels, 80 acres and 160 acres, were immediately transferred to the BLM for FTHL protection.

Table 3. Ownership of lands within Flat-tailed Horned Lizard Management Areas.

Management Area	Initial acreage (1997) ¹			Acres acquired since 1997			Current acreage
	Signatory	Non-sig.	Total	Previous	2011	Total	
East Mesa							
BLM	99,741						102,990
NAF	8,455						8,455
Private		7,339		3,249	320	3,569 ²	3,770
TOTAL	108,196	7,339	115,535				115,535
West Mesa							
BLM	78,787						86,125
NAF	33,056						33,056
State		2,678					2,678
Private		21,784		7,338		7,338 ²	14,446
TOTAL	111,843	24,462	136,305				136,305
Yuha Desert							
BLM	57,341						57,341
Private		2,958					2,958
TOTAL	57,341	2,958	60,299				60,299
Borrego Badlands							
State Parks	38,228						40,980
Private		4,253		2,752		2,752 ³	1,501
TOTAL	38,228	4,253	42,481				42,681
Yuma Desert							
MCAS	99,300						114,800
Reclamation	16,200						16,200
State		15,500		15,500		15,500 ⁴	0
TOTAL	115,500	15,500	131,000				131,000

¹Estimates of initial acreages in 1997 for MAs in California were revised by BLM-EC in 2010.

²Purchased by, and transferred to BLM.

³Includes 1,064 acres acquired by the Anza-Borrego Foundation; remainder purchased by California State Parks; entire acreage transferred to California State Parks.

⁴Purchased and administered by MCAS.

Seek funds for land acquisitions in MAs

See previous section.

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

The development of the Desert Renewable Energy Conservation Plan has considered and provided provisions to address corridors between FTHL MAs.

No activities or projects have been permitted within the California MAs or Ocotillo Wells RA this year that would prevent or obstruct FTHL movement between adjacent populations in the MAs or RA.

Planning Action 6: Coordinate activities and funding among the participating agencies and Mexican agencies.

Management Oversight Group

The MOG is comprised of managers from 12 signatory agency offices. It meets as necessary each year to coordinate implementation of the Conservation Agreement in response to ICC recommendations. The MOG met on the following dates during 2011:

11 March (MOG/ICC; BLM-Yuma)

14 October (BLM-El Centro)

Major items discussed by the MOG during 2011 were analysis of recent monitoring data, the development of a conservation plan in Mexico, proposals for various development projects, and tracking disturbance in relation to the 1% cap.

Interagency Coordinating Committee

The ICC is comprised of biologists from 13 signatory agency offices. It meets quarterly to exchange information on research results, develop proposals, and discuss technical and management issues. The ICC is responsible for compiling information for the annual ICC report which outlines accomplishments under the RMS, lists issues regarding management of the MAs and RAs, and details planned actions for the upcoming year. The ICC met on the following dates during 2011:

16-17 February (monitoring workshop; BLM-El Centro)

11 March (MOG/ICC; BLM-Yuma)

24 June (BLM-Yuma)

9 September (BLM-Yuma)

10 December (BLM-El Centro)

Major items that the ICC discussed in 2011 included maintaining a centralized database for monitoring data, analyzing recent monitoring data, revising the monitoring protocols, purchasing land in California MAs, development of a conservation strategy in Mexico, various projects that could impact FTHL habitat, the results of monitoring and research, updating the research and monitoring list, and training of FTHL monitors.

Coordination with Mexico

Staff of the Alto Golfo de California Biosphere Reserve (AGCBR) continued to participate in the ICC and to discuss the development of a Mexican management strategy and other issues of common concern. In 2007, a bi-national working group was formed to address FTHL conservation activities in Mexico and the development of a conservation management strategy. Rob Lovich, Natural Resources Specialist with the Department of Navy, headed a sub-team to facilitate coordination through the ICC and Mexico representatives. A funding agreement was initiated in 2008 that would transfer funding to Mexico to assist with the development of a conservation management strategy. AGCBR hired Alejandra Calvo Fonseca in 2008 to lead a project to “Promote the flat-tailed horned lizard conservation through involvement of the communities of the Upper Gulf of California and Colorado River Delta Biosphere Reserve”.

Special management areas, equivalent to the MAs in the U.S., need to be identified and managed as such. Additional signage and interpretive materials would be needed in support of these areas. In addition, MOG and/or ICC need to meet to focus management and research needs in Mexico and projects to support those needs. Ideally, the meetings should be held in Sonora and include representatives from AGCBR and El Pinacate y Gran Desierto de Altar Biosphere Reserves. Also, the final Mexican Rangeland Management Strategy is under development, and should be completed by 2013. A Spanish version of the RMS would be useful.

Conservation Agreement

The 10 agencies that are signatories to the Conservation Agreement to implement the FTHL RMS are listed in the introduction.

Incorporate RMS actions in ecosystem plans

See also Planning Action 1.

In January 2003, the BLM-El Centro Field Office completed the Western Colorado Routes of Travel Designation (WECO). This designated routes as open, closed, or limited. WECO specifically incorporates the guidelines of the RMS, and the BLM is managing its land under those guidelines. BLM-El Centro wrote an Environmental Assessment to amend the California Desert Conservation Area Plan to officially designate the FTHL MAs. The EA was signed on February 1, 2005, thus formally establishing all three MAs in the El Centro area.

Reclamation continues to implement the Five-Mile Zone Resource Management Plan, adopted March 18, 2004, for withdrawn lands along this zone that parallels the international border. This RMP incorporated the RMS and was further described in the 2004 FTHL Annual Report.

MCAS-Yuma continues to implement the INRMP (see Planning Action 1), which fully incorporates and implements the RMS.

BLM-Palm Springs continues to participate in the CVMSHCP.

Staff from the BLM El Centro, Department of Fish and Game Region 6, and Fish and Wildlife Service Region 8 submitted comments on the draft Desert Renewable Energy Conservation Plan's (Plan) preliminary conservation strategy map to incorporate areas of potential connectivity between the Yuha and West Mesa MA's consistent with planning action #5. Additionally, FTHL MA's have been identified on the preliminary conservation strategy map as areas with high biological value. This will ensure the management and conservation goals identified in the RMS are incorporated into the Plan.

Border Patrol

BLM-El Centro coordinates monthly meetings with 3 BP offices and sponsors regular FTHL orientation sessions to reduce BP impacts to FTHL habitat along the international border. In 2008, BP initiated fence construction in all flat-terrain and lowland areas for the entire California-Mexico border and portions along the Arizona-Mexico border. Several types of fencing (i.e., pedestrian and vehicular) were constructed. BLM conducts regular troop briefings to ensure they are aware of FTHL concerns in the desert. This coordination is viewed as a national model because it allows both the BLM and BP to accomplish their missions. BP is completing its mission while minimizing impacts in FTHL habitat as a result increased understanding of the FTHL and its habitat needs.

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 BP's El Centro Sector are given a 1-2 hour presentation on MA locations, desert ecology, sensitive species, archeology, and wilderness. Detrimental effects of off-route travel on FTHL habitat is discussed in relation to prey, ecology, and FTHL habits. This information is provided to all new BP field agents in the El Centro and Calexico 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 goals of the Strategy through law enforcement and public education.

Law Enforcement

BLM-El Centro has continued to increase law enforcement patrols in FTHL habitat in Imperial County, particularly within the East Mesa MA (see description under Planning Action 3 above). Law enforcement officers report that the majority of recreational users in the MAs are now complying with the route designation requirements by staying on approved routes and camping in appropriate areas.

MCAS conducts daily ORV patrols within the Yuma Desert MA and adjacent habitat.

Public Information

BLM-El Centro continues to maintain informational kiosks and update and distribute the WECO area road map, which encompasses the Yuha Desert, and 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 has extended these contacts into the West Mesa MA and has partnered with the Desert Protective Council in 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. The 5 new kiosks locations include: Cahuilla Ranger station, Gecko Road, Wash Road, Buttercup Ranger station, and Dunebuggy Flats. These panels will rotate among the various kiosks to allow returning visitors see a variety of information. A FTHL panel is not currently on display but one will be made available in the future.

Recreation is allowed within a limited area of the MCAS portion of the Yuma Desert MA. MCAS has published a recreational use map depicting closed areas which is supported with on-the-ground signage. The Range Wardens and Facility Control monitor Range access in real-time for natural resource preservation, including the FTHL MA. In addition, MCAS includes a FTHL presentation to DOD, academic, and private contractors who will be accessing the BMGR via in person and online Range Briefs. Finally, MCAS provides BP with a FTHL brief prior to Weapons Tactics Instruction (WTI) training twice a year and in quarterly law enforcement meetings.

Planning Action 8: Encourage and support research that will promote the conservation of FTHLs or desert ecosystems and will provide information needed to define and implement necessary management actions effectively.

MCAS-Yuma contracted with the University of Arizona's School of Natural Resources and the Environment to evaluate the effects of the proposed Joint Strike Fighter project and the effectiveness of proposed mitigation measures. An annual report for fieldwork was completed for May-October 2011. This report covered Year 1 of a planned 4-year study and is currently under review by MCAS-Yuma and Navy Facilities Engineering Command. A brief summary is included in the Abstracts portion of this report.

MCAS-Yuma entered into a cooperative agreement with the University of Arizona and U.S. Geological Service to acquire, classify, and provide analysis of human-related disturbances on the BMGR-West. In 2009, MCAS-Yuma contracted an aerial photography and photogrammetry company to collect 1-ft resolution aerial photography (color and infrared), elevation data (2-ft contour maps from LiDAR) and digitized planimetric maps describing authorized and unauthorized road networks. These datasets will be used to provide a geospatial background with which to inventory, assess and analyze existing and potential impacts of anthropogenic activities within the BMGR-West. The project will use geospatial techniques to a) identify the

type and location of anthropogenic impacts, b) examine changes of these impacts over time, and c) model areas of BMGR-West where resources are most vulnerable to the impacts. The project will retrospectively map transportation networks using 1992 and 1996 high-resolution aerial imagery (USGS Digital Ortho Quarter Quads) in order to identify areas of BMGR-West with high levels of use and disturbance between 1992 and 2009.

AGFD funded an on-going study to evaluate the potential impacts of Sahara Mustard (*Brassica tournefortii*, BRTO) on the FTHL. BRTO is an invasive winter annual plant that may threaten FTHL by reducing the density of native annual plants, whose seeds are the major diet of desert harvester ants (genus *Pogonomyrmex* and *Messor*), which in turn are the main diet of FTHL. The study will assess BRTO's effects on the richness and abundance of both desert winter annual plants and desert harvester ants. In addition, the study will assist in predicting BRTO impacts on FTHL populations. A summary of this year's results appears in the Abstracts portion of this report.

AGFD issued 17 permits for collecting or handling FTHL during 2011. CDFG issued no new scientific collecting permits during 2011; 48 Letters of Concurrence were issued to monitoring trainees.

Bio-monitoring workshop. BLM-El Centro, in cooperation with CDFG and AGFD, partnered with Southwest Partners in Amphibian and Reptile Conservation (SW PARC) to organize and conduct 2 biomonitor training workshops for the FTHL consisting of about 3-4 hours of field training and 2 hours of classroom debriefing. The high-demand workshops were conducted June 19-20 to train biologists, mostly private consultants, who may work as monitors on projects that impact FTHL. ICC agencies provided staff as experts to assist with the training to certify approximately 60 FTHL monitors who saw up to 14 FTHL per day. This was a worthwhile effort for all who participated in the organization, training, and follow-up. The majority of the feedback in regard to the quality of the workshop was extremely positive. The ICC hopes that the Southwest Partners in Amphibian and Reptile Conservation continue to manage future training sessions.

Planning Action 9: Continue Inventory and Monitoring.

Implementation of variations of the current monitoring protocols began in 2002. Techniques were refined over subsequent years, culminating in a FTHL Monitoring Plan that was developed by the ICC in 2008. This plan described 2 types of standardized monitoring methods. Occupancy surveys are large-scale efforts to document the presence ("occupancy") of FTHL among numerous survey plots broadly distributed within each MA. The purpose is to estimate the proportion of sites occupied, which could be used as a reasonable indicator of population status both in MAs and rangewide. The 2008 plan recommended at least 120 4-ha plots per MA, surveyed simultaneously for one hour by 4 observers working independently. In 2011, this protocol was revised (see below). Demographic surveys are localized intensive efforts within only a few (usually 2) 9-ha selectively chosen plots within each MA. Plots are surveyed by a team of 4-6 observers for 10 consecutive days. All FTHL GPS locations are recorded, a range of

measurements are taken, and FTHL with snout-vent length greater than 55mm are PIT-tagged. Demographic results are intended to provide more-detailed assessments of FTHL abundance, density, survivorship, and recruitment within purportedly higher-quality habitats within each MA.

The ICC completed a critical analysis of the data that had been collected using the 2008 protocol, and convened a workshop to review the results and discuss potential revisions. They modified the occupancy protocol such that plots will be 2 ha, there should be at least 50 plots per MA, 2 observers will survey a plot simultaneously, and each plot will be visited at least 6 times. Another modification was that a survey would end upon discovery of a FTHL instead of continuing for the entire allotted time. The ICC determined that data from the demographic surveys were sufficiently robust and the 2008 protocols did not require revision.

BLM-El Centro surveyed 45 occupancy plots with 6 replicate surveys each in the Yuha Desert MA, and continued demographic surveys on the East Mesa, Yuha, and West Mesa MAs. In cooperation with FWS-Carlsbad and AGFD, BLM-El Centro spent considerable effort improving the FTHL monitoring database and created a Sharepoint website. BLM-El Centro coordinated with FWS-Carlsbad on data entry, working, and quality control using the new database. Several program glitches were remedied and recommendations were made to improve data quality.

BLM-El Centro implemented use of the new standardized form, database, and protocol established in early 2011. Interns entered data within 10 days of surveys for both datasets.

OWSVRA surveyed 80 occupancy plots 6 times each during 2011.

AGFD, MCAS, and Reclamation completed surveys on 2 demographic plots that were established in the Yuma Desert MA. One plot lies within the Reclamation portion and the other within the BMGR portion. AGFD, MCAS, and Reclamation completed surveys on 75 occupancy plots in the Yuma Desert MA.

Summaries of 2011 monitoring results from occupancy plots are given in Table 4 and from demographic plots in Table 5. Summaries of all monitoring results from 2002-present are given in Tables 6 and 7.

Table 4. Number of occupancy plots surveyed in 2011 and percent that were found to be occupied.

Management Area	Number of Plots	Naïve Occupancy Estimate
Yuma Desert	75	88.0%
Yuha Desert	45	-
Ocotillo Wells	80	85.0%
Borrego Badlands	40	15.0%

Table 5. Summary of flat-tailed horned lizard captures on demographic plots in 2011 (juveniles < 60mm SVL).

Plot	Location Description	MA	Adults Captured	Juveniles Captured
BMG (=YD1)	BMG Range	Yuma Desert	54	4
BOR (=YD2)	Reclamation 5-Mile Zone	Yuma Desert	40	6
315 (=EM1)	East of geothermals	East Mesa	- ¹	- ¹
486 (=YU1)	Pinto Wash	Yuha Basin	- ¹	- ¹
156 (=WM1)	SW of Superstition Mtn	West Mesa	- ¹	- ¹
WM2	On Navy target	West Mesa	Discontinued	
WM3		West Mesa	- ¹	- ¹
Squaw Peak	Near Squaw Peak	OWSVRA	Discontinued in 2009	
Mudhills	Mudhill area	OWSVRA	Discontinued in 2009	

¹Data not available.

Table 6. Summary of monitoring estimates on Flat-tailed Horned Lizard Management Areas, with 95% confidence intervals. Estimates are of the total population in the Management Area (except where noted) or the probability of occupancy of lizards (L), scat (S), or both (B) on plots in the Management Area. Population estimates were based on mark-recapture data, except one case where trapping webs were used (TW) in 2003 in the Yuma MA.

	Yuma Desert	East Mesa	West Mesa	Yuha Basin	OWSVRA	Borrego Badlands
2002	-	-	-	25,514 (12,761-38,970)	-	-
2003	16,328 (TW) (8,378-31,794) 25,855 (16,390-43,951)	42,619 (19,704-67,639)	10,849 (3,213-23,486)	-	19,222 (18,870-26,752)	-
2004	-	-	-	73,017 (4,837-163,635)	-	-
2005	22,120 ¹ (19,962-25,357)	-	0.06 (0.02-0.14) L 0.48 (0.31-0.79) S	-	24,345 (14,329-69,922)	-
2006	-	0.44 (0.28-0.69) L 0.83 (0.76-0.89) S	-	-	1.00 (no CI) L 0.56 (0.43-0.72) S	-
2007	-	-	-	-	1.00 (no CI) L 0.74 (0.52-1.00) S	-
2008	16,185 ¹ (12,840-20,285)	-	-	0.56 (0.29-1.00) L 1.00 (no CI) S	0.66 (0.42-1.00) L 0.74 (0.64-0.83) S	-
2009	19,422 ¹ (13,703-24,925)	-	0.86 (0.53-1.00) L 0.87 (0.75-0.99) S	-	0.75 (0.50-1.00) L 0.88 (0.82-0.94) S	-
2010	27,946 ¹ (24,871-31,183) 0.91 (0.39-0.99) L 1.00 (0.98-1.01) B	0.75 (0.22-0.97) L 0.83 (0.70-0.91) B	-	-	0.85 (0.49-0.97) L 0.90 (0.84-0.94) B	-
2011	0.88 (0.78-0.94) L					

¹ Estimates are only for areas of optimal habitat, approximately 10% of the MA.

Table 7. Flat-tailed horned lizard demographic plot density estimates (adults) with 95% confidence intervals calculated from Huggins closed-capture abundance estimates and mean maximum distance moved (Wilson and Anderson 1985).

MA	Yuma Desert		East Mesa	West Mesa		Yuha Basin	OWSVRA	
Plot	YD1 (=BMG)	YD2 (=BOR)	EM1 (=315)	WM1 (=156)	WM2/ WM3 ²	YU1 (=486)	Squaw Peak	Mudhills
2007	-	-	1.62 (1.26 – 1.97)	0.83 (0.48 – 1.18)	-	1.15 (0.88 – 1.43)	- ¹	- ¹
2008	2.24 (1.75 – 2.78)	0.98 (0.82 – 1.26)	1.23 (0.89 – 1.56)	0.33 (0.20 – 0.45)	2.34 (1.86 – 2.82)	1.11 (0.83 – 1.38)	- ¹	- ¹
2009	3.36 (2.41 – 4.24)	1.83 (1.24 – 2.41)	3.31 (2.64 – 3.98)	1.19 (0.83 – 1.55)	3.40 (2.71 – 4.08)	2.70 (2.13 – 3.27)	-	-
2010	5.54 (5.11 – 6.00)	4.82 (4.11 – 5.56)	5.54 (4.87 – 6.22)	2.02 (1.47 – 2.58)	6.26 (5.24 – 7.27)	5.16 (4.24 – 6.07)	-	-
2011 ³								

¹Surveys were conducted in 2007 and 2008 but sample sizes were too small for statistical analysis.

²Surveys were conducted on WM2 in 2008-2009 and on WM3 beginning in 2010.

³Data not available.

Figure 1 is a summary of monitoring in the Coachella Valley conducted by the Center for Conservation Biology, University of California, Riverside. Surveys were conducted on 34 (stabilized sand field) and 15 (active dune) randomly located plots within the Thousand Palms Preserve from 2002-2011. The plots are 10 m × 100 m (0.1 ha) and each is surveyed six times between mid May and mid July. FTHL detections are made by identifying genus-specific tracks in areas where the only known horned lizards are FTHL. Elsewhere in the Coachella Valley, when evaluating lands for the presence of FTHL, tracking is always coupled with sightings to avoid confusion with desert horned lizards. An additional 18 (ephemeral sand field) and 17 (stabilized dune) plots are surveyed in the western Coachella Valley using the same methodology and while desert horned lizards are detected with some regularity, no FTHL have been found there.

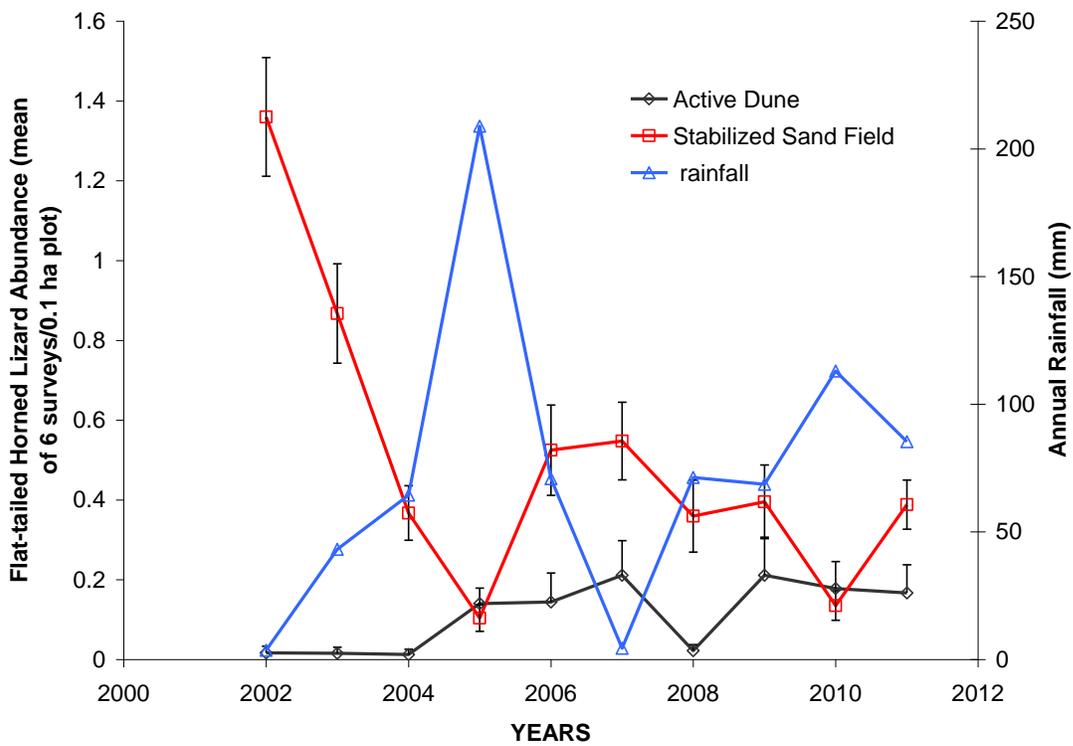


Figure 1. Results of monitoring in the Coachella Valley. Error bars indicate one standard error.

TREASURY REPORT

Table 8. Expenditures and balances for compensation fund accounts through Nov. 2011.

	Yuma MA ² (17.3% INC)	AZ ASH intermediate acquisitions costs ³ (19% INC)	AZ ASH land purchase cost ⁴ (19% INC)	East Mesa MA ⁵ (% INC)	West Mesa MA ⁶ (% INC)	Reclamation Drop 2 ⁷	Sunrise Powerlink ⁸
carryover	120,988.18	304,296.82	647,100.92	61,213.52	53,520.43	485,873.81	12,373.66
Additions	11,799.00						
Obligations	12,773.86	173,453.88	46,117.80		41,095.00	722.33	1,215.54
				0			
TOTALS	120,013.3 2	130,842.94	600,983.12	61,213.5 2	12,425.43	485,151.78	11,158.12

²AZ 320 7122 5701: LVTFA0957010

³AZ 320 7122 5808: LVTFA0958080

⁴AZ 320 7122 6974: LVTFA0969740

⁵CA 670 7122 6712: LVTFB0967120

⁶CA 670 7122 6713: LVTFB0967130

⁷LRORBX901700

⁸LVTFB10649L0: fixed

Table 9. Treasurer's report to the MOG as of August 31, 2012.

Yuma MA		As of 8/31/12	New Budget Authority	Carry-Over (Field)	Consumable Budget	Commitments	Unliquidated Obligations	Total Expenditures	Total Obligations (Incl. Comm)	Current Available Funds
Funds Center	FA Budget Activity	Funded Program		\$	\$					\$
LLAZC02000	L7122	LVTF5701AZ00		1,308.77	1,308.77					1,308.77
LLAZC02000	L7122	LVTFA0957010		120,013.32	120,013.32	0.00	20,658.00	10,202.57	30,860.57	89,152.75
Overall Result										90,461.52

E. Mesa			New Budget Authority	Carry-Over (Field)	Consumable Budget	Commitments	Unliquidated Obligations	Total Expenditures	Total Obligations (Incl. Comm)	Current Available Funds
Funds Center	FA Budget Activity	Funded Program		\$	\$					\$
LLCA000000	L7122	LVTFB0967120		61,213.52	61,213.52					61,213.52

W. Mesa			New Budget Authority	Carry-Over (Field)	Consumable Budget	Commitments	Unliquidated Obligations	Total Expenditures	Total Obligations (Incl. Comm)	Current Available Funds
Funds Center	FA Budget Activity	Funded Program		\$	\$					\$
LLCA000000	L7122	LVTFB0967130		12,425.43	12,425.43					12,425.43

(cont.)

Table 9

Yuma Area Service Highway Land Purchase			New Budget Authority	Carry-Over (Field)	Consumable Budget	Commitments	Unliquidated Obligations	Total Expenditures	Total Obligations (Incl. Comm)	Current Available Funds
Funds Center	FA Budget Activity	Funded Program		\$	\$		\$	\$	\$	\$
LLAZC02000	L7122	LVTFA0969740		600,983.12	600,983.12		0.00	41,582.67	41,582.67	559,400.45

Yuma Area Service Highway Intermediate			New Budget Authority	Carry-Over (Field)	Consumable Budget	Commitments	Unliquidated Obligations	Total Expenditures	Total Obligations (Incl. Comm)	Current Available Funds
Funds Center	FA Budget Activity	Funded Program		\$	\$			\$	\$	\$
LLAZC02000	L7122	LVTFA0958080		126,225.58	126,225.58			-311.67	-311.67	126,537.25
LLCA000000	L7122	LVTFA0958080		4,617.36	4,617.36					4,617.36
Overall Result										131,154.61

BOR Drop II			New Budget Authority	Carry-Over (Field)	Consumable Budget	Commitments	Unliquidated Obligations	Total Expenditures	Total Obligations (Incl. Comm)	Current Available Funds
Funds Center	FA Budget Activity	Funded Program		\$	\$					\$
LLCA000000	L1920	LRORBX901700		485,151.78	485,151.78					485,151.78

CONCLUSIONS

Signatory agencies continue close cooperation and careful execution of their respective responsibilities as described in the 2003 updated version of the FTHL RMS. The signatory and cooperating agencies continue to implement the RMS throughout the MAs and other FTHL habitat. 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 an effective management focus for FTHL habitat conservation. During the past year, the aggressive RMS implementation has positively benefited FTHL conservation. Outreach efforts continue to include the general public, other U.S. agencies (e.g., BP), and Mexican agencies as active participants in RMS implementation. AGCBR and Pinacate Biosphere Reserves are working closely with U.S. agencies on research and conservation efforts to benefit the FTHL in Mexico. Authorized surface impacts have remained low in MAs. However, there is some concern the 1% development cap may be reached, and exceeded, in some MAs due to renewable energy development and navy projects.

The MOG and ICC continue to support the 2004 decision to allow distributing compensation funding among MAs, regardless of source state, since no land is available for purchase in the Yuma MA. This decision continues to focus on purchasing land available in any MA prior to private development. If there is no additional land available for purchase in a MA, the group will continue to use compensation funds for habitat restoration within MAs. Some signatory participants have been successful in securing funding for rehabilitation efforts from non-compensation funds. This supplements the compensation funds in providing management capability for RMS implementation.

Population inventories and the monitoring of trends continue, as does research in MAs and habitat areas. This information is useful in developing future management actions and providing direction on how best to implement current projects.

Public outreach and education continues. The informational videos produced in 2006 for the general public and the BP will help immensely in this effort. Public understanding of the FTHL, its habitat needs, and authorized activities in its habitat areas, is necessary to fully implement the RMS.

The 2003 updated version of the FTHL RMS continues to direct participating agencies towards ever more effective management and conservation of FTHL.

RMS IMPLEMENTATION PROGRESS TO DATE (Updated schedule)

The following table displays the priority level, responsible agency, estimated cost, and schedule for completing each Planning Action. The priority levels 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
Reclamation	.....	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
<input checked="" type="checkbox"/>	Task completed since 1997
<input type="checkbox"/>	Task not completed
⇒, ∪	.....	Task ongoing, on schedule
➡, ∪	.....	Task ongoing, not on schedule

Management Strategy Implementation Schedule, 2008-2012											
Status	Priority	Action Number	Planned action	Duration (yrs)	Responsible agency	Total cost (\$000)	Cost estimates (\$000)				
							FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
		1.	Delineate and designate FTHL MAs								
☑	1	1.1	Designate Yuma Desert MA	2	RECLAMATION USMC	1	0	0	0	0	0
☑	1	1.2	Designate East Mesa MA	2	BLM USN	1	0	0	0	0	0
☑	1	1.3	Designate West Mesa MA	2	BLM USN	1	0	0	0	0	0
☑	1	1.4	Designate Yuha Desert MA	2	BLM	1	0	0	0	0	0
☑	1	1.5	Designate Borrego Badlands MA	2	ABDSP	1	0	0	0	0	0
☑	3	1.6	Designate Ocotillo Wells RA	1	BLM OWSVRA ABDSP	1	0	0	0	0	0
☑	1	1.7	Designate conservation areas in Coachella Valley	2	BLM USFWS CDFG	1	0	0	0	0	0
		2.	Define and implement actions necessary to minimize loss or degradation of habitat								
⇒	1	2.1.1	Apply mitigation measures	∞	ALL	5	1	1	1	1	1
⇒	1	2.1.2	Require compensation	∞	ALL	25	5	5	5	5	5
⇒	1	2.2.1	Limit discretionary land uses authorizations and rows to 10 acres and 1% total per MA	∞	ALL	5	1	1	1	1	1
⇒	1	2.2.2	Do not dispose of lands in MAS	∞	ALL	0	0	0	0	0	0
⇒	3	2.2.3	Continue maintenance in existing ROWs	∞	ALL	0	0	0	0	0	0
⇒	2	2.2.4	Require fencing along Yuma Desert MA boundary road	∞	ALL	50	0	50	0	0	0
⇒	2	2.3.1	Limit surface disturbance from mineral activities in MAS	∞	ALL	5	1	1	1	1	1
⇒	2	2.4.1	Reduce new roads to a minimum in MAS	∞	ALL	5	1	1	1	1	1
⇒	1	2.4.2	Designate routes "open," "closed", or "limited." Give route signing a priority	∞	BLM USMC BR	100	20	20	20	20	20
⇒	1	2.4.3	Reduce route density in MAS		See 2.4.2						
⇒	1	2.4.4	Coordinate with U.S. BP	∞	ALL	20	4	4	4	4	4
⇒	3	2.5.1	Allow OHV recreation in RA	∞	OWSVRA	0	0	0	0	0	0
⇒	1	2.5.2	No competitive recreational events in MAS	∞	ALL	0	0	0	0	0	0
⇒	2	2.5.3	Allow non-motorized recreational activities in MAS, but no new recreational facilities	∞	ALL	0	0	0	0	0	0
⇒	2	2.5.4	Limit camping in MAS	∞	BLM USMC	20	4	4	4	4	4

Management Strategy Implementation Schedule, 2008-2012												
Status	Priority	Action Number	Planned action	Duration (yrs)	Responsible agency	Total cost (\$000)	Cost estimates (\$000)					
							FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	
⇒	2	25.5	No new long-term visitor areas in MAS	∞	ALL	0	0	0	0	0	0	
⇒	3	2.6	Authorize limited use of flora in MAS	∞	ALL	5	1	1	1	1	1	
⇒	1	2.7	Allow military maneuvers and encampments only in designated sites in MAS	∞	USN USMC	5	1	1	1	1	1	
⇒	3	2.8	Suppress fires in MAS using limited fire suppression methods in MAS	∞	ALL	5	1	1	1	1	1	
⇒	1	2.9	Prohibit pesticide treatments in MAS	∞	ALL	5	1	1	1	1	1	
⇒	3	2.10	Limit other activities consistent with above	∞	ALL	5	1	1	1	1	1	
		3.	Rehabilitate damaged and degraded habitat									
⇒	2	3.	Rehabilitate damaged and degraded habitat in MAS	∞	BLM RECLAMATION ABDSP USMC USN	500	100	100	100	100	100	
		4.	Bring all lands within MAS into public management									
☑	3	4.1	Maintain prioritized list of parcels for acquisitions; and respect private rights	1	ALL	5	1	1	1	1	1	
⇒	3	4.2	Procure funds for land acquisitions in MAS (32,178 acres of private lands acres in California MAS)	∞	BLM CDFG ABDSP OWSVRA	22,525	4,505	4,505	4,505	4,505	4,505	
⇒	3	4.3	Use compensation funds to acquire key lands in MAS	∞	BLM CDFG ABDSP OWSVRA	20	4	4	4	4	4	
⇒	3	4.4	Exchange lands opportunistically	∞	BLM	20	4	4	4	4	4	
		5.	Maintain or establish effective habitat corridors between naturally adjacent populations									
⇒	2	5.1	Limit or mitigate activities in movement corridors	∞	ALL	25	5	5	5	5	5	
⇒	3	5.2	Coordinate with Mexico and INS	∞	ALL	10	2	2	2	2	2	
		6.	Coordinate activities and funding among the participating agencies and Mexican agencies									
☑	2	6.1.1	Establish FTHLMOG	∞	ALL	5	1	1	1	1	1	
⇒	2	6.1.2	Hold semi-annual ICC meetings	∞	ALL	5	1	1	1	1	1	
⇒	3	6.1.3	Establish forum for discussions with agencies and individuals in Mexico	∞	ALL	25	5	5	5	5	5	
☑	1	6.2	Develop Conservation Agreement	1	ALL	0						

Management Strategy Implementation Schedule, 2008-2012											
Status	Priority	Action Number	Planned action	Duration (yrs)	Responsible agency	Total cost (\$000)	Cost estimates (\$000)				
							FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
⇒	2	6.3.1	Incorporate actions in Western Colorado Desert ecosystem plan (Note: Other state and local agencies will fill key roles)	∞	ALL	50	10	10	10	10	10
☑	2	6.3.2	Incorporate actions in CVM SHCP (Note: Other state and local agencies will fill key roles)	3	BLM CDFG USFWS	0	0	0	0	0	0
⇒	2	6.3.3	Incorporate actions in Western Colorado Desert Route Designation	∞	BLM	20	4	4	4	4	4
⇒	1	6.4	Coordinate with U.S. BP and develop mutual agreements	2	BLM RECLAMATIO N USMC	6	2	2	2	0	0
⇒	2	6.4.1	Encourage use of techniques to minimize BPOHV activity	∞	BLM RECLAMATIO N USMC	5	1	1	1	1	1
⇒	2	6.4.2	Prepare educational briefing for BP agents	1	BLM BR	5	1	1	1	1	1
		7.	Promote the purposes of the RMS through law enforcement and public education								
⇒	1	7.1	Provide adequate law enforcement	∞	BLM CDFG AGFD USMC	750	150	150	150	150	150
⇒	3	7.2	Provide public information and education	∞	ALL	25	5	5	5	5	5
		8.	Conduct research necessary to define and implement necessary management actions effectively								
⇒	3	8.1	Require permits for research	∞	ALL	5	1	1	1	1	1
⇒	2	8.2	OWSVRA shall continue to fund research	∞	OWSVRA	200	40	40	40	40	40
☑	2	8.3.1	Test trapping as a population census technique	2	ALL	0	0	0	0	0	0
⇒	2	8.3.2	Test direct counting methods	2	ALL		Included in 8.2 and 8.3.1				
⇒	2	8.4	Determine life history and demographic data (sentinel plots)	5	BLM MCAS, RECLAMATIO N OWSVRA ABDSP	300 150 150 100	60 30 30 20	60 30 30 20	60 30 30 20	60 30 30 20	
⇒	2	8.5	Determine effects of conflicting activities	5	ALL	300	60	60	60	60	60
⇒	3	8.6.1	Determine genetic variation in population	5	ALL	40	0	20	0	20	0
⇒	3	8.6.2	Determine effects of non-natural barriers	∞	ALL	30	5	5	5	5	5
☐	3	8.6.3	Determine effects of natural barriers	5	ALL	15	3	3	3	3	3

Management Strategy Implementation Schedule, 2008-2012											
Status	Priority	Action Number	Planned action	Duration (yrs)	Responsible agency	Total cost (\$000)	Cost estimates (\$000)				
							FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
⇒	3	8.7	Determine effectiveness of mitigation measures	5	ALL	20	4	4	4	4	4
		9.	Continue inventory and monitoring								
⇒	2	9.1	Continue inventories	∞	ALL	125	25	25	25	25	25
⇒	2	9.2.1	Monitor implementation	∞	ICC	40	8	8	8	8	8
⇒	2	9.2.2	Monitor population trends (occupancy plots)	∞	BLM MCAS RECLAMATION OWSVRA ABDSP	400 180 135 150	100 60 45 50	50	100 60 45 50	50	100 60 45 50
⇒	1	9.2.3	Document habitat disturbance and loss	∞	ALL	50	10	10	10	10	10
⇒	1	9.2.3.1	Conduct aerial reconnaissance and analysis of surface disturbance on the five MAs every five years	∞	ALL	100		100			
⇒	2	9.2.4	Prepare annual monitoring/implementation report	∞	ICC	20	4	4	4	4	4
⇒	1	9.2.5	Use new inventory, monitoring, and research data in evaluations and proposed changes	∞	ALL	10	2	2	2	2	2

Appendix A: Report Abstracts

Frery, V. J., D. J. Abbate, and L. Piest. 2012 draft. Flat-tailed Horned Lizard demographic monitoring within the Yuma Desert Management Area: 2011 progress report submitted to U.S. Bureau of Reclamation, Yuma Area Office. Arizona Game and Fish Department Wildlife Contracts Branch, Phoenix, Arizona. We captured 46 and 58 FTHL individuals (adults and juveniles) within the BR and BMGR survey plots respectively. Of these, 40 adults were captured on the BR plot and we marked 16 with PIT tags. Twenty-three adults were detected on the BR plot for the first time. We encountered 54 total adults on the BMGR plot. Forty-one of these were located on the BMGR plot for the first time in 2011 and marked with PIT tags. We captured 10 juveniles on both plots combined (BR – 6, BMGR – 4). Analysis of 2011 survey results indicate abundance of FTHL decreased since 2010 on both the BR and BMG sampling plots within the Yuma Desert MA. Estimated abundance of adults was similar for both plots, and represents 47% and 40% declines from 2010 estimates at the BR and BMG plots respectively (Table 6). Individual adult captures within the BR plot in 2011 were 25% lower than 2010, but remained 135% and 166% higher than 2009 and 2008 respectively. Adult captures at the BMG plot decreased only slightly from 2010 at 2.0% and remained well above (64% higher) the number of captures (33) for each of 2009 and 2008. We suspect the results from 2011 surveys are closer to average years for this area and the spike observed in 2010 represents an exceptional year due to increased winter rainfall. Limited precipitation in 2011 likely resulted in the reduction or absence of annual plant and seed production which would have decreased the ant prey base available to FTHL, thereby potentially impacting survival as well as reproduction. Observations of captured adults on the BR plot during August 2011 also suggest limited food resources as individuals in hand were noticeably thinner and weight measurements decreased from previous years.

Frery, Vincent, Dennis Abbate, Robert Lovich, Daniel Steward, and Brian Root. 2011. Long-term demographic monitoring of the flat-tailed horned lizard in the Sonoran Desert. Presentation to Southwest Partners in Amphibian and Reptile Conservation conference, Tucson, Arizona. The flat-tailed horned lizard (*Phrynosoma mcalli*) occupies the smallest area of any horned lizard species in the United States, and is found only in southwestern Arizona, southeastern California, and extreme northern Mexico. The species has been a candidate for listing under the Endangered Species Act multiple times during the last several decades, largely due to an apparent contraction of its range to less than one-half of its historical extent. In 1997, a rangewide management strategy was developed by landowners and management agencies, and included specific management actions to conserve the species in the United States. In support of this management strategy, we have conducted demographic monitoring of the flat-tailed horned lizard at four management areas in California and Arizona. We used the results of our demographic monitoring and mark-recapture models to estimate annual abundance, apparent survival, and population growth rate of the species from 2008-2010. Although annual apparent survival was low (2008-2009 range 0.19-0.43, 2009-2010 range 0.25-0.37), the abundance of flat-tailed horned lizards appears to have increased (range 125-397%) at all management areas from 2008-2010. Population growth rate was positive at most management areas (range 1.39-

1.72), but additional years of monitoring are likely required for these estimates to become significant.

Grandmaison, David, Taylor Cotten, Dennis Abbate, and Vincent Frary. 2012. Flat-tailed Horned Lizard Occupancy Surveys within the Yuma Desert Management Area on the Barry M. Goldwater Range – West; Annual Report. Arizona Game and Fish Department Wildlife Contracts Branch, Phoenix, Arizona. The Yuma Desert Management Area (MA) is an important component in the overall conservation of the flat-tailed horned lizard (*Phrynosoma mcallii*; FTHL) in Arizona and represents a primary portion of the species range in the state. We established 75 randomly selected 2-ha occupancy survey plots to track FTHL distribution and persistence within the Yuma Desert MA. Each plot was surveyed on six occasions coinciding with peak FTHL activity (i.e., April to September). Observers recorded the presence of FTHL and their sign (i.e., tracks, scat, carcasses, etc.) during 1-hour time constrained surveys of each plot. The proportion of area occupied (PAO) by FTHL was estimated at 0.88 (95% CI: 0.78-0.94). The probability of FTHL detection (p) was estimated at 0.61 (95% CI: 0.56-0.66). The high success rate of our 2011 survey effort indicates that FTHL are widely distributed throughout the Yuma Desert MA and suggests that the current sampling program is appropriate for assessing FTHL occupancy and distribution in Arizona.

Goode, Matt, Phil Rosen, Mickey Parker, and Kevin Young. 2012. Evaluation of potential impacts of the joint strike fighter program on the flat-tailed horned lizard at the Barry M. Goldwater Range. Annual Report for Project Year 1 (April - December 2011), Submitted to MCAS-Yuma. The study estimated FTHL abundances on ten 4-ha mark-recapture plots averaged 52.2 (range 17.1 – 96.4; one estimate per plot), although abundance estimates declined by about half over the June-October census period. Plots were situated along paved roads, lizard-barrier drift fences, powerlines, and near the end of planned runway locations of the JSF airfield. The study investigated relative abundance of the FTHL in relation to effects of paved roadway, paved roadway with adjoining powerline, and a lizard-barrier drift fence. The study used scat plots, scat transects, and live captures on the mark recapture plots as indices of FTHL abundance. Results showed (1) significant reduction in indexed FTHL abundance near paved road + powerline combinations, but (2) minimal reduction zone near paved road alone. Drift fence results (3) also suggested a greater abundance reduction than paved road alone, though with less data. The study radio-tracked 27 FTHLs for an average of 62.5 days each. Individuals radio-tracked along paved road utilized road shoulders but rarely crossed the road. Mortality of lizards carrying the radiotransmitters was high, as reported in previous studies. The study initiated tests to refine this important technique for further use on this project. During paved road transects on BMGR in FTHL habitat, it recorded live animal totals of 238 reptiles, including 50 FTHLs (the most frequently encountered reptile species), and 172 avian and 21 mammalian predators. Finally, the study monitored 27 road-killed FTHLs, which remained on the road for an estimated average of 17 hr: these data will be used to model and compute total FTHL mortality on the paved road.

Yue Max Li. 2011. Flat-Tailed Horned Lizard Demographic Monitoring Within the Yuma Desert Management Area – Sahara Mustard Component. The invasive winter annual plant Sahara Mustard (*Brassica tournefortii*) may threaten the population health of Flat-tailed horned lizard (*Phrynosoma mcallii*; FTHL) through reducing the population of native annual plants,

whose seeds are the major diet of desert harvester ants (genus *Pogonomyrmex* and *Messor*), which in turn are the main diet of FTHL. In this study, we assess the impact of Sahara Mustard on the richness and abundance of both desert winter annual plants and desert harvester ants occurring in Barry M. Goldwater Range (BMR) West. The findings will help to predict the impact of Sahara Mustard invasion on FTHL populations. We studied the impact of Sahara Mustard on native winter annual plants by conducting a Sahara Mustard removal field experiment between Dec 2010 and Apr 2011 across four types of habitats in the Mohawk Valley: sandy flat, semi-active dune, flood plain and rocky hillslope. We are analyzing the data on seedling survival, density, individual height, and richness of all winter annual plants in Sahara Mustard removal versus control plots. Preliminary results show strong density effect of Sahara Mustard on the seedling survival rate and size of native plants. We studied the impact of Sahara Mustard on desert harvester ants by surveying the nest density and diversity of ants along a gradient of population density of Sahara Mustard in the Yuma Desert MA, within the area which covers the demographic survey plots for FTHL. We are still in the process of identifying all the ant species sampled through pit-fall trapping and ground survey. The lack of ant activity caused by low summer precipitation may reduce the reliability of our findings.

Appendix B: 2012 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.** All MAs and the RA have been delineated and officially designated.
 - 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 maintaining lizard barrier fencing along the Area Service Highway.
 - 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.** BLM-El Centro will continue to rehabilitate illegal routes and add signage to designated routes.
 - 2.4.1. Reduce new roads to a minimum in MAs.** BLM-El Centro: all designated routes within the MAs have been signed.

- 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 in January, 2003. All vehicle routes on BLM managed lands in Imperial County were designated as open, closed, or limited. BLM has completed initial signing of all of these routes and is routinely patrolling the area and replacing signs as necessary. BLM is also in the process of restoring closed routes to a natural condition. MCAS-Yuma’s INRMP includes 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 restore closed routes throughout the Western Colorado Desert area, particularly in the FTHL Management Areas. The MCAS-Yuma INRMP includes most of the Yuma Desert MA and calls for closure of redundant routes; routes will be identified for closure within the MA.
- 2.4.4. Coordinate with USBP to ensure cooperation and enforcement of vehicle regulations.** ICC members will continue to 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 Desert MA to designated camping areas. The MCAS-Yuma INRMP closes the portion of the Yuma Desert MA on the Barry M. Goldwater Range 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 Desert MA to designated camping areas. The MCAS-Yuma INRMP closes the portion of the Yuma Desert MA on the Barry M. Goldwater Range 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, BLM lands, and 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.** BLM-El Centro will continue restoration and rehabilitation efforts in 2012 utilizing SCA interns. Efforts will focus on the East Mesa MA.
- 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 State Parks, State Parks OHMVR Division office headquarters in Sacramento, and by BLM-El Centro. Ocotillo Wells District, through OHMVRD, will continue to acquire private in-holdings. Colorado Desert District will continue to acquire private in-holdings within ABDSP.
- 4.2. Seek funding to acquire key parcels in MAs.** Compensation funds 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. 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.** Agencies will continue to consult with Department of Homeland Security on border fencing issues.
- 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. The ICC will continue to work with Mexico biologists to develop a Mexico Rangewide Management Strategy.

6.2 Develop a conservation agreement. 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 2012.

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 goals 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. El Centro is currently almost fully staffed.

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, via slides, pictures and/or descriptions. BLM-El Centro will continue to distribute FTHL brochures and maps to land users. 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 people who collect or handle FTHL. (New CDFG regulations enable monitors who move FTHL as mitigation for projects in California to do so with a letter of authorization from CDFG and not a collecting permit.)

- 8.2. OWSVRA shall continue to budget for surveys.** Depending on funding, planned monitoring (in house) is to complete 80 occupancy plots with 6 visits per plot as outlined in the newly established protocol.
- 8.3. Continue to refine cost-effective techniques for assessing FTHL abundance.**
 - 8.3.1. Test trapping and other techniques used 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.** The sentinel plots proposed for each of the MAs will provide this data.
- 8.5. Determine effects of conflicting activities.**
- 8.6. Determine genetic variation among populations and effects of barriers.** The study to evaluate genetic variation across the range of FTHL has been completed.
 - 8.6.1. Determine genetic variation in MAs.**
 - 8.6.2. Determine effects of human-created barriers.**
 - 8.6.3. Determine effects of natural barriers.**
- 8.7. Determine effectiveness of mitigation measures.** The ICC may implement a relocation study to determine whether the RMS should be revised.

9. Continue Inventory and Monitoring.

- 9.1. Continue inventories.** BLM-El Centro will continue to monitor lizard populations in the MAs using the methods prescribed by the ICC. In the Coachella Valley Preserve, FTHL will continue to be surveyed by the Center for Natural Lands Management, with a focus on lizard-ant-small mammal interactions. The objective is to use a correlation approach as well as an experimental approach (small mammal enclosures with varying resource levels) to determine whether the small mammals restrict the growth of the ant populations and therefore impact FTHL. With funding from Reclamation and/or MCAS, AGFD will conduct 2 demographic plots within the Yuma Desert MA. With funding from MCAS, MCAS and AGFD will resample the 75 occupancy plots that were established in the Yuma Desert MA in 2011. Sentinel plots are proposed in the West Mesa, and Yuha Desert MAs. OWSVRA will survey its revised 80 occupancy plots in the RA, chosen from the original 160. Occupancy surveys are proposed for the Borrego Badlands MA and Yuha Desert MA. Pending funding, a mark-recapture survey is proposed for the Borrego Badlands MA.
- 9.2. Monitor habitat quality and population trends in the MAs.** BLM-El Centro conducts disturbance and vehicle track surveys as time and funding allow. The Student Conservation Crew conducting restoration in the Yuha Desert 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 2012 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.** Observations of FTHL during the course of biannual reptile surveys at OWSVRA will be recorded as part of regular monitoring. BLM-El Centro will gather population data using occupancy and sentinel plots. Colorado Desert District will continue occupancy plots in Borrego Badlands MA.
- 9.2.3. Document habitat disturbance and loss.** All authorized habitat impacts will be reported in the 2012 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. The results from MCAS Yuma's disturbance study will be included in the 2012 ICC Annual report as well as the results from the ant study.
- 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 2012. The report will include a schedule of activities to be accomplished in 2013, budget needs for 2013, and projected budget needs for major projects in 2014 and 2015. The report shall also include a summary of monitoring results and a discussion of the likely causes of any noted declines in population.
- 9.2.5. 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. MCAS-Yuma will continue their JSF study multi-year survey and monitoring of FTHL behavior, habitat use, and effects of increased road traffic and noise exposure through 2014. It will install traffic counters along County 14 to monitor volume of traffic prior to and after ALF construction pre-construction traffic volume data. It will build upon mark-recapture baseline FTHL abundance and demographic data. This will allow documentation in changes in FTHL abundance and demographics due to factors such as seasonal and annual variation, and to obtain long-term data on individual growth and survivorship. It will continue to place new plots in areas of interest, and will re-survey existing plots. It will refine and extend its measurements of distance-from-effect for paved roads, powerlines, and the ASH drift fence. This will permit more accurate estimates of impact severity and allow the study to identify which impacts are most important individually and under what circumstances. It will continue to examine FTHL movement patterns using radiotelemetry. This will provide insight into FTHL natural history, the better we will be able to assess how JSF construction will affect the FTHL population on BMGR. It will continue to refine methodology for radiotelemetry used to

evaluate JSF impacts. It will continue to formally monitor FTHL road use and mortality by conducting road surveys. Supplementing this data with traffic volume data will provide insight into how roads are both directly and indirectly affecting FTHLs on the BMGR. Finally, it will also continue to monitor how other species of reptiles, as well as their predators, are using the roads and infrastructure.