

## U.S. FISH AND WILDLIFE SERVICE - SPOTLIGHT SPECIES ACTION PLAN

**Common Name:** Houston toad

**Scientific Name:** *Bufo houstonensis*

**Lead Region:** Region 2

**Lead Field Office:** Austin Ecological Services Field Office

### **Species Information:**

Status: Endangered

Recovery Priority Number: 2c

Recovery Plan: Houston Toad Recovery Plan 1984

Most Recent 5-year Review: None completed; review initiated April 21, 2006 (71 FR 20714).

Threats:

Listing Factor A: The present or threatened destruction, modification, or curtailment of its habitat or range - Habitat loss, fragmentation, and degradation are the most serious threats facing the Houston toad. This includes expanding urbanization, conversion of woodlands to agricultural use, and wetland destruction or alteration.

Listing Factor C: Disease or predation - Red-imported fire ants (*Solenopsis invicta*) threaten Houston toads by killing young toadlets emerging from ponds (Freed and Neitman 1988, Forstner 2002). They have also been known to drastically reduce the abundance of native insect species that serve as the Houston toad's food source.

Listing Factor E: Other natural or manmade factors affecting its continued existence – The Houston toad's distribution appears to be restricted naturally as the result of specific habitat requirements for breeding and development. Small, sedentary species with restricted distributions, specialized habitat niches, and narrow climatic tolerances are especially sensitive to changes in habitat conditions (Welsh 1990, deMaynadier and Hunter 1998). These natural restrictions make them particularly vulnerable to stochastic events and the negative effects of human-induced changes that result in habitat loss, degradation, and fragmentation (Hillis et al. 1984).

Much of central Texas, including Bastrop County and other portions of the Houston toad's range, has been experiencing extreme drought conditions from 2008 to 2009. Drought can severely impact Houston toad breeding habitat and reduce the survivorship of juvenile toads.

**Target:** Prevent species extinction. The Houston toad has experienced considerable population declines (Forstner 2006; Dr. Michael Forstner, pers. comm. 2009) and the juvenile survival rate of this species in the wild has been shown to be approximately 0.03 percent (Forstner 2006). A population viability analysis by Hatfield et al. (2004) indicates this level of survival may result in a probability of extinction at or greater than 60 percent within the next 10 years (Forstner 2006).

**Measure:** Identify and establish three, interconnected Houston toad populations that include a combined total of 1,000 adult female Houston toads. Ensuring the populations are connected through corridors of suitable migrating habitat will allow for dispersal and re-colonization to enhance population size and genetic diversity.

**Actions (2010 – 2014):**

Actions represent the most stepped-down levels of the outline below and are designated by the listing factors that will be addressed when the actions are completed. The actions below are presented in accordance with the Strategic Habitat Conservation approach.

1. Biological Planning
  - a. Work with the Houston Toad Recovery Team to develop a new recovery strategy for the Houston toad and develop an updated recovery plan for the Houston toad (Factors A, C, E)
  - b. Conduct a 5-year status review of the species (Factors A,C, E)
2. Conservation Design
  - a. Designate priority areas – Work with the Houston Toad Recovery Team to determine “priority areas” to protect or restore particular habitat based on the potential of each area to provide desired benefits to the species (Factor A)
  - b. Formulate habitat objectives – Work with the Houston Toad Recovery Team to establish habitat objectives that directly relate to achieving Houston toad population objectives (Factors A, E)
3. Delivery of Conservation Actions
  - a. Pursue ways of protecting existing Houston toad habitat or habitat that could be restored to support Houston toads through fee simple purchases, conservation easements, or other means in designated priority areas (Factor A)
  - b. Engage private landowners in Houston toad conservation through outreach efforts that provides information on land management, financial incentives, and technical assistance (Factors A, C)
  - c. Complete the Programmatic Houston Toad Safe Harbor Agreement (Factors A, C, E)
  - d. Work with Bastrop County to implement the Lost Pines Habitat Conservation Plan (Factors A, C, E)
  - e. Implement habitat restoration efforts in “priority areas” throughout the species’ range (Factor A)

- f. Implement headstarting and/or captive propagation to augment existing or establish new Houston toad populations in designated priority areas (Factors A, E)
- 4. Monitoring and Research
  - a. Continue monitoring the status of known Houston toad populations by breeding chorus surveys (Factor E)
  - b. Continue monitoring headstarted and reintroduced Houston toad individuals after their release (Factor E)
  - c. Monitor and evaluate the effects of various habitat management activities (including species and habitat responses to management treatments) (Factors A, C)

**Action Table: Houston Toad Spotlight Species Action Plan 2010 - 2014**

Action Number	Action Description	Minimum List of Potential Partners	Total Estimated Cost* (\$1,000s)	Comments (includes years action is planned to attain 5-year goal and performance measure)
1.a	Work with the Houston Toad Recovery Team to develop a new recovery strategy for the Houston toad and develop an updated recovery plan for the Houston toad	USFWS, Recovery Team	30	Years 1-5
1.b	Conduct a 5-year status review of the species	TxState, USFWS, TPWD	100	Year 1; Funded through section 6 grant program; due 2010
2.a	Work with the Houston Toad Recovery Team to determine “priority areas” to protect or restore particular habitat based on the potential of each area to provide desired benefits to the species	USFWS, TPWD, TxState, EDF, Bastrop County, Recovery Team	0	Year 1
2.b	Formulate habitat objectives – Work with the Houston Toad Recovery Team to establish habitat objectives that directly relate to achieving Houston toad population objectives	USFWS, Recovery Team	0	Year 1
3.a	Pursue ways of protecting existing Houston toad habitat or habitat that could be restored to support Houston toads through fee simple purchases, conservation easements, or other means in designated priority areas	USFWS, TPWD	75	Years 1-5; Does not include the cost of land
3.b	Engage private landowners in Houston toad conservation through outreach efforts that provides information on land management, financial incentives, and technical assistance	USFWS, TPWD, EDF, Bastrop County, NRCS, Houston Zoo, LCRA, BSA/CAC	110	Years 1-5; Estimated costs could differ depending on frequency of outreach events, cost of outreach materials, or other factors
3.c	Complete the Programmatic Houston Toad Safe Harbor Agreement	USFWS, EDF	35	Year 1

**Action Table: Houston Toad Spotlight Species Action Plan 2010 - 2014**

Action Number	Action Description	Minimum List of Potential Partners	Total Estimated Cost* (\$1,000s)	Comments (includes years action is planned to attain 5-year goal and performance measure)
3.d	Work with Bastrop County to implement the Lost Pines Habitat Conservation Plan	USFWS, Bastrop County	50	Years 1-5
3.e	Implement habitat restoration efforts in "priority areas" throughout the species' range	USFWS, TPWD, EDF, Bastrop County, NRCS	500	Years 1-5
3.f	Implement headstarting and/or captive propagation to augment existing or establish new Houston toad populations in designated priority areas	USFWS, Houston Zoo, TxState, TPWD	1,040	Years 1-5; Headstarting efforts are currently ongoing; Estimated costs include zoo expenses for housing, feeding, health monitoring, and other costs in addition to personnel
4.a	Continue monitoring the status of known Houston toad populations by breeding chorus surveys	TxState, Houston Zoo, TPWD, USFWS	200	Years 1-5
4.b	Continue monitoring headstarted and reintroduced Houston toad individuals after their release	TxState, Houston Zoo, TPWD	200	Years 1-5
4.c	Monitor and evaluate the effects of various habitat management activities (including species and habitat responses to management treatments)	TxState, Houston Zoo, TPWD, USFWS	75	Years 1-5

\*Total estimated costs only reflect funding needed beyond our USFWS staff time and what we expect our partners to contribute (either in staff time or resources).

**Role of other agencies:** U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) – This agency’s staff actively works with landowners within the Houston toad’s range on a variety of soil, water, and land conservation issues. NRCS staff can assist by identifying landowners willing to participate in Houston toad conservation efforts and various Federal funding sources for on-the-ground management and restoration efforts. They can also provide technical assistance for site-specific conservation practices.

Texas Parks and Wildlife Department (TPWD) – This State agency has landowner contacts throughout the Houston toad’s range. Their staff can assist in this effort by helping to identify landowners willing to participate in Houston toad recovery practices, such as land management and allowing access to their properties for surveys, monitoring, research, collections for headstarting and captive propagation, and Houston toad releases. TPWD owns and manages Bastrop State Park, which is occupied by one of the largest remaining Houston toad populations. The staff at Bastrop State Park is contributing to this effort by conducting Houston toad surveys, research on land management techniques, and assisting with headstarting efforts. TPWD staff expertise can also be helpful in determining areas to focus Houston toad recovery efforts, formulating habitat objectives, and developing a new recovery strategy for the species.

**Role of other ESA programs:**

Section 7 – Under section 7(a)(1) of the Endangered Species Act of 1973, as amended (ESA), Federal agencies are directed to utilize their authorities to carry out programs for the conservation of threatened and endangered species. The U.S. Fish and Wildlife Service (USFWS) can work with other Federal agencies to engage them in the actions listed above to help meet the 5-year goal of preventing extinction and to work proactively to recover the Houston toad. Some actions could include: (1) funding and/or implementation of various management activities to create, enhance, or restore Houston toad habitat; (2) funding for land acquisition; (3) funding for monitoring activities; and (4) education and outreach activities. The consultation process under section 7(a)(2) of the ESA also provides opportunities to implement recovery actions for the Houston toad by addressing threats to listed species that may result from Federal agency programs and activities.

Habitat Conservation Plans (HCPs) – HCPs provide a framework to complete projects while conserving listed species. Through the development and implementation of HCPs within the Houston toad’s range, project planners may mitigate anticipated impacts on the Houston toad. Mitigation could include: (1) funding and/or implementation of various management activities to create, enhance, or restore Houston toad habitat; (2) funding for land acquisition; (3) funding for monitoring activities; and (4) education and outreach activities. In addition to providing mitigation, the development of HCPs could provide opportunities for local communities within the Houston toad’s range to maintain healthy forest ecosystems, promote the long-term survival of the species, and protect themselves from legal liabilities under the ESA.

A number of HCPs have already been issued within the Houston toad’s range, including the regional Lost Pines HCP, which covers most of Bastrop County. Over the next five years,

the Service will continue to monitor the implementation of these HCPs to gauge their overall success and to ensure Houston toads are responding favorably to habitat management and other mitigation strategies.

Safe Harbor Agreements (SHA) – SHAs are currently in place on three private tracts within Bastrop County. Through these agreements, large tracts of privately owned land are being actively managed for the benefit of the Houston toad. The Service is partnering with Environmental Defense Fund (EDF) to develop a programmatic SHA for the entire range of the Houston toad to encourage landowner participation in Houston toad recovery efforts within and outside of Bastrop County. This programmatic SHA will outline a variety of land management activities that landowners can engage in to create, enhance, and restore habitat for the Houston toad. The responses of Houston toads to the habitat changes that occur on enrolled properties will also be monitored over time as part of the SHA.

Section 6 Grants – The section 6 grant program can assist in preventing the Houston toad's extinction by funding surveys and monitoring efforts, on-the-ground management, research on the effects of land management practices, and land acquisition.

Recovery Budget Initiative – National funds through the Recovery Budget Initiative (Showing Success/Preventing Extinction) are also available for on-the-ground-recovery actions. These funds may be crucial for achieving the conservation actions for this species.

**Role of other FWS programs:** Partners for Fish and Wildlife Program (Partners) – This program can provide technical and financial assistance to private landowners within the Houston toad's range to meet the habitat needs of the species. Also, Partners staff can help in the identification of private landowners willing to participate in Houston toad conservation efforts.

Fisheries – Hatcheries and technology centers may be able to provide facilities, personnel, and expertise for Houston toad headstarting and/or captive propagation.

**Additional funding analysis:** The actions identified above represent only those actions needed to prevent extinction of the species over the next 5 years. Funding for monitoring would be necessary to determine the long-term viability of Houston toad populations within designated priority areas and provide for adaptive management strategies to help move the species toward recovery. Potential partners and total estimated cost of the actions over the 5-year period is also provided

Conduct population viability analysis to better define Houston toad habitat and population targets for more effective biological planning (Factors A, E)

- Potential partners: USGS and Recovery Team
- Estimated cost: \$30,000

Expand Houston toad monitoring efforts to facilitate more thorough, range-wide surveys of the species (Factor E) – Additional funding could provide:

- (1) More personnel to conduct more extensive Houston toad surveys throughout its range

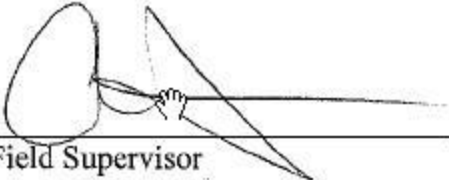
- Potential partners: USFWS, TPWD, Houston Zoo, Texas State University
- Estimated cost: \$250,000

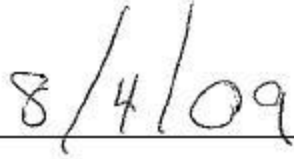
(2) Financial support to train private landowners and land managers to conduct Houston toad surveys on their own properties

- Potential partners: USFWS, TPWD, Houston Zoo, Texas State University, EDF
- Estimated cost: \$25,000

(3) Recording devices to be placed near potential breeding areas that are not easily accessible to determine if they are being occupied by Houston toads and possibly detect previously undocumented Houston toad populations. This action would help the Service and the Houston Toad Recovery Team more effectively target specific areas for implementing conservation activities.

- Potential partners: USFWS, TPWD, Houston Zoo, Texas State University
- Estimated cost: \$100,000

  
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Field Supervisor

  
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Date



### **Literature Cited:**

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### **List of Abbreviations and Acronyms:**

BSA/CAC – Boy Scouts of America/Capital Area Council  
EDF – Environmental Defense Fund  
LCRA – Lower Colorado River Authority  
NRCS – National Resources Conservation Service  
TPWD – Texas Parks and Wildlife Department  
TxState – Texas State University, San Marcos  
USFWS – U.S. Fish and Wildlife Service  
USGS – U.S. Geological Survey  
Recovery Team – Houston Toad Recovery Team