

Houston Toad: Introduction and Status



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Amphibian Basics

More amphibian species are threatened with extinction than any other vertebrate group

Water permeable skin means greater sensitivity to environmental contaminants and changes in water quality

All Amphibians are dependent on water to some extent and are thus vulnerable to drought

Two-phase life history means that both aquatic and terrestrial phases are vulnerable

Identification



Highly variable in dorsal color and pattern

Identification

Cranial Ridges

Gulf coast toad



Houston toad



Woodhouse's toad

Identification

Ventral Coloration

Males

Houston toad



Gulf coast toad



Females

Houston toad



Gulf coast toad



Identification

Frogs and Toads produce species-specific mating calls



Houston toad 



 Gulf coast toad



Woodhouse's toad 

Life History: Reproduction

Mating occurs from January through June, but typically on only a few nights

Exact timing is dependent on environmental cues

Successful reproduction occurs in small, still water bodies with some tree cover

Potential reproductive output per pair is very large

Life History: Development

Eggs mature within a week, tadpole development requires approximately one month

Toadlets emerge en masse, a very vulnerable time



Life History: Terrestrial Phase

Juvenile toads disperse rapidly after metamorphosis

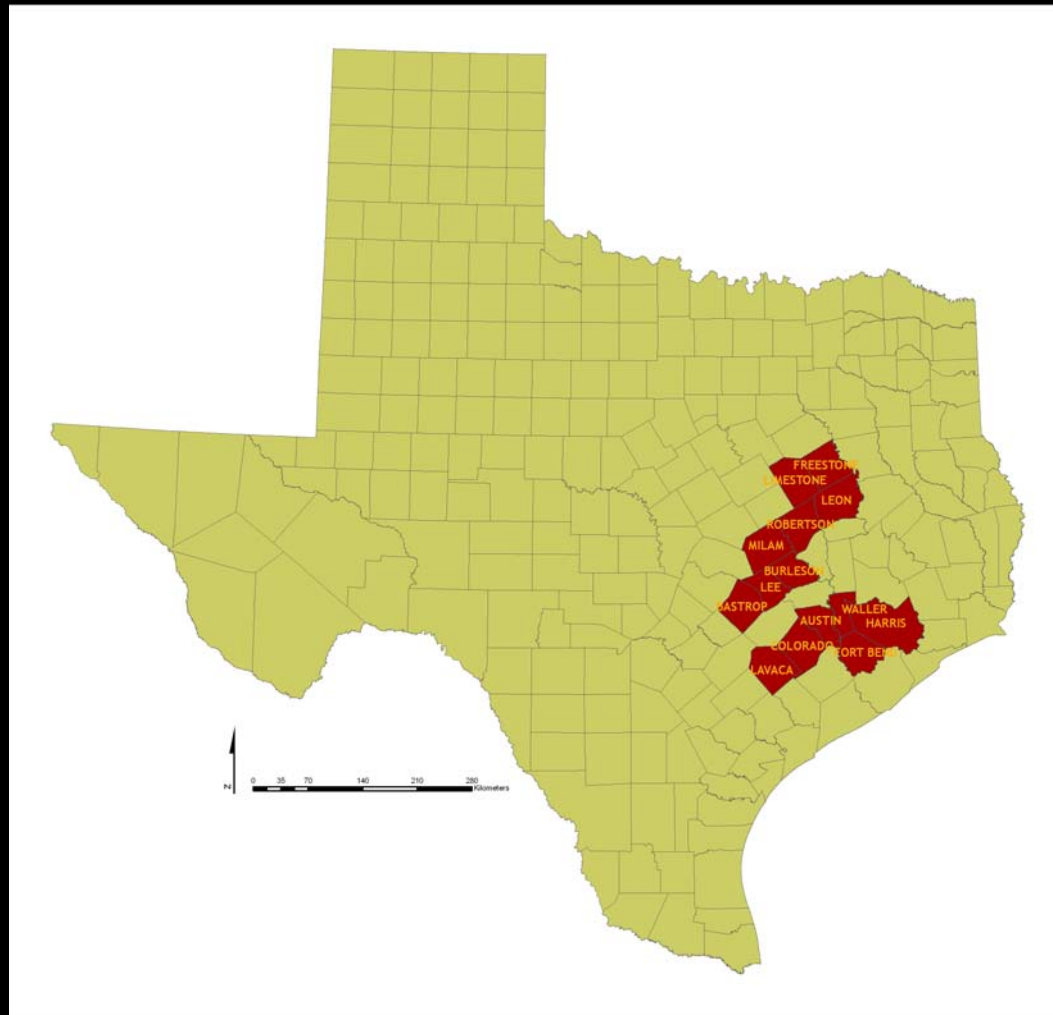
- may colonize vacant but suitable habitat

Adult toads are believed to be more sedentary

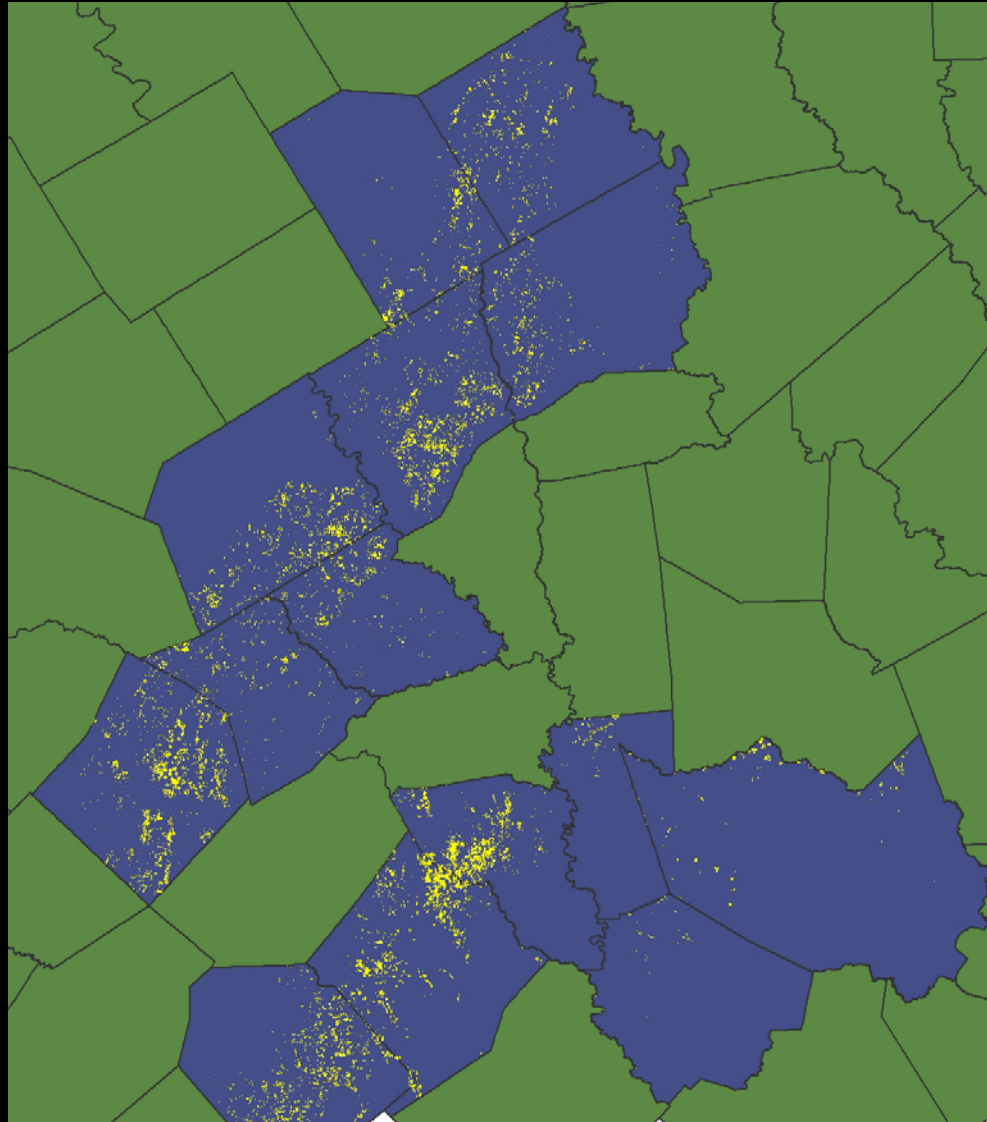
Deep sands are associated with successful reproduction and are needed for hibernation

Extensive clearing and sod-forming grasses impede toad movements

Historic Distribution



Remaining Optimal Habitat



Population Dynamics

Loss of individual breeding groups was historically common

Immigration from adjacent healthy populations maintained long-term stability

Recent barriers to toad movement prevent recolonization

The result is permanent loss of toads from potentially suitable habitat

Habitat Connectivity

Corridors of suitable habitat connecting potential breeding sites

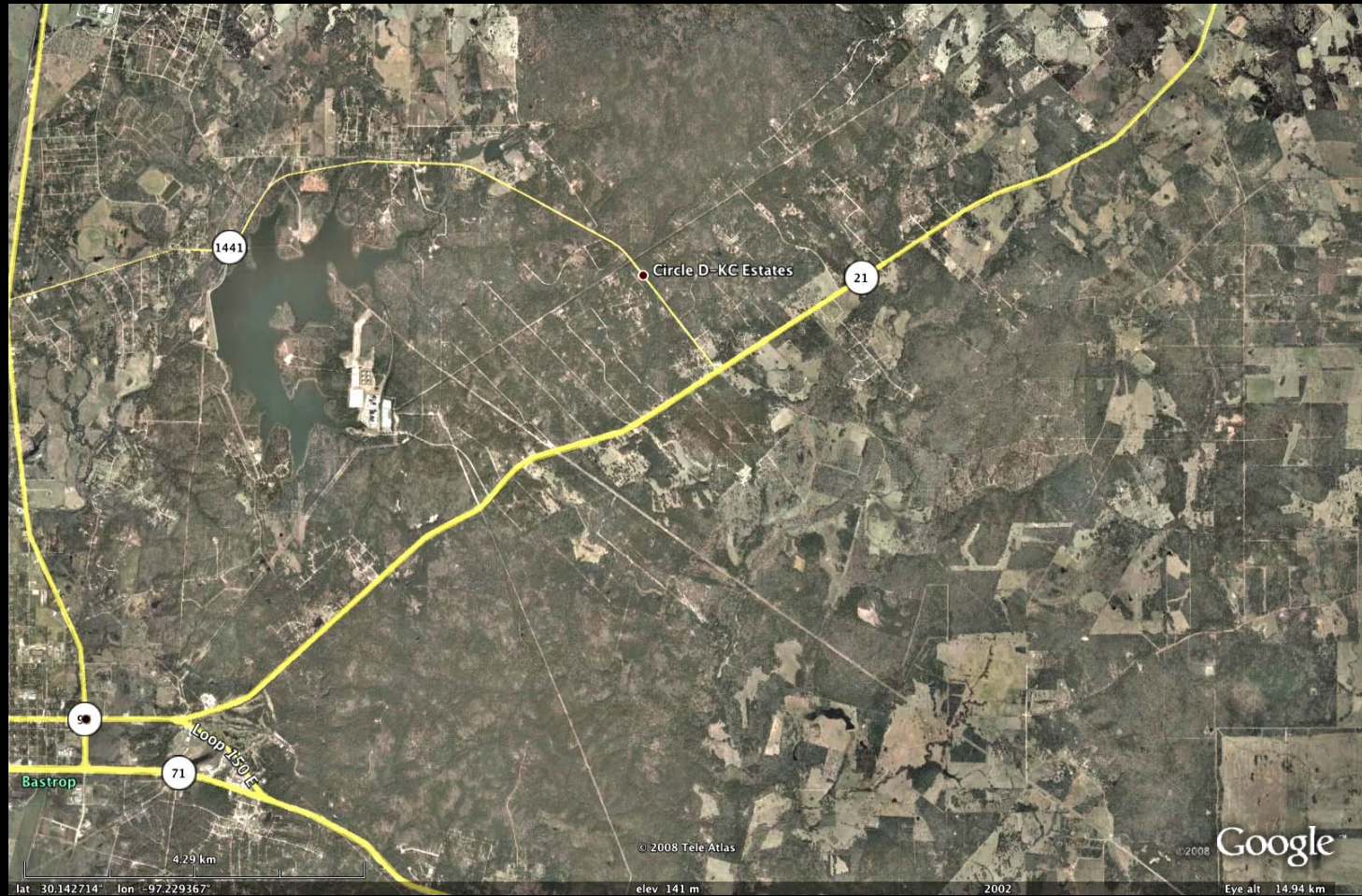
Facilitates recolonization after local extinction events and permits gene flow

Connectivity is compromised by forest fragmentation and large highways

At present, connectivity is SEVERELY disrupted

Reestablishing habitat connectivity is crucial for recovery of Houston toads

Habitat Connectivity



Habitat Requirements

Eggs and tadpoles need standing water that persists for at least 45 days

Toadlets need healthy riparian areas with some tree cover

Adults and juveniles are associated with sandy forest habitat

All phases do best in relatively healthy forest with open understory and high native plants diversity

Habitat Requirements



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Habitat Requirements



Major Threats

Habitat loss

- Unpermitted loss of habitat in violation of Endangered Species Act

- Urbanization

- Loss of native vegetation - intentional or unintentional

Loss of habitat connectivity

Mortality of juveniles

Other threats?

- Pesticides

- Fire ants

- Chytrid fungus

Houston Toad Management

Optimal management supports toads
through all life stages

Strategies and tools depend on the
spatial scale

Healthy ecosystems support healthy
toad populations

Management Objectives

Enhance and restore existing wetlands

Support healthy riparian zones

Maintain healthy woodland

Steward land for diversity

Maintain native ecosystems

Improve habitat connectivity

Management Strategies

Wetlands and Riparian Zones

Reverse eutrophication

Support emergent vegetation

Encourage native grasses and forbs

Rotational and restrictive grazing during
breeding season

Tree planting around ponds

Management Strategies

Upland habitat

Manage woody understory

Encourage native plant diversity

Reforestation particularly of old fields and pasture

Focus on reestablishing wooded corridors between
existing forest patches

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