FOREST MANAGEMENT FOR HOUSTON TOADS

Houston Toad Habitat

The Houston toad (*Bufo houstonensis*) depends on healthy and mature forest ecosystems with mixed pines or hardwoods, significant canopy coverage, an open understory devoid of shrubs and "brush" with a mixture of grasses and forbs on the forest floor, and breeding pools with shaded edges. Unmanaged forests in residential areas and forests that sustain other types of land uses, such as, recreational or agricultural activities, can become less suitable as Houston toad habitat over time. Without active management, forests can become too dense and shaded, accumulate dangerous levels of burnable duff and debris, and be negatively impacted by cattle, pollutants, and vehicles. These and other changes may reduce the ability of forest ecosystems to provide quality Houston toad habitat by altering the toad's food base and competitive environment, increasing the risk of catastrophic fires that could destroy large blocks of habitat, and reducing Houston toad reproductive success. Active management of existing forests and reducing negative impacts from various types of land uses within and adjacent to forested areas is essential to the long-term sustainability of Houston toad habitat. Three different habitats types are described here.

Breeding Habitat are within or adjacent to the appropriate canopy conditions, Houston toads are known to breed in small pools of water, ephemeral ponds, and permanent water bodies. Livestock usage of permanent water bodies can also negatively impact water quality and the quality of habitat along the shoreline of breeding ponds.

Occupied Habitat consists of a breeding pond and the 200 – 1600 meters (656 feet – 1 mile) of adjacent uplands where adult Houston toads are most commonly found. Occupied habitat supports adult Houston toads after the breeding season and represents a boundary of suitable soils within a radius of the breeding ponds.

Dispersal Habitat - are the corridors through which juvenile or adult movement takes place. Dispersal habitats are large and do not require deep sandy soils, but may well require some overstory components. Drainages are the most likely corridor route for dispersing juvenile and adult Houston toads; therefore, riparian areas are also considered dispersal habitat and should be maintained, protected, and restored where degraded.

With NO management, forests can become overly dense and shaded, accumulate dangerous levels of burnable duff and debris, and be negatively impacted by cattle, pollutants, and vehicles.

CENTRAL TEXAS WOODLANDS RESILIENCY

Forest Management

Houston Toad requires small pools of water, ephemeral ponds, and permanent water bodies.

Brush Management - The suppression of wildfires has led to a dramatic increase in the understory density within the range of the Houston toad. The positive correlation between insect and plant community diversity on the forest floor is commonly recognized. Forest thinning is the practice of removing undesirable vegetation (this may include select trees or understory vegetation) from a forested area. Thinning is expected to increase light availability and penetration, which may increase the herbaceous vegetation diversity on the forest floor.

Forest Enhancement/Restoration - Forest enhancement and restoration activities, such as tree planting can help create canopy conditions favorable to the Houston toad. Pine and oak species that are native to the area may be transplanted in open areas to establish a forest canopy amongst the restored, native herbaceous plant community. Tree planting that occurs within relatively open areas is expected to provide habitat for the Houston toad within 10 to 20 years of initial planting. The benefits of these enhancements include the creation of shade and micro-climates that will not only support a diverse assemblage of native grasses and forbs, but also provide a more favorable temperature regime for the Houston toad. These conditions are expected to facilitate and enhance Houston toad movement and foraging (dispersal and occupied habitat) and provide shade for emerging juveniles (breeding and nursery habitat). Houston toads have been found in the highest numbers at canopy coverage greater than 80 percent.

Houston Toad requires an open understory and quality native herbaceous vegetation.

Prescribed burning - Prescribed burning is a technique used to restore, create, and maintain desired understory and ground cover conditions. Habitat may be subjected to multiple, low-intensity "management" burns following initial understory restoration work (i.e., thinning). The purpose of low-intensity burns is to maintain the open understory and enhance the quality and cover of the native herbaceous vegetation, thereby increasing native insect prey abundance and diversity and improving conditions for Houston toad movement. Research on the effects of prescribed burning activities on the Houston toad, its habitat, and prey base is currently ongoing. However, it is predicted that maintaining light availability through prescribed burning will increase the diversity of plant species and, subsequently, the diversity of the arthropod community in Houston toad habitat.

Drainages are the most likely corridor route for dispersing juvenile and adults.

Modified from Houston Toad Habitat Delivery Team draft document "Land Management Guidelines for Houston Toad Habitat" July 2011.

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