

Space Chickens – A Unique Partnership to Help Save a Critically Endangered Species

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The Attwater's Prairie Chicken (*Tympanuchus cupido attwateri*) is a critically endangered species with approximately 50 birds remaining in the wild in the entire world. Johnson Space Center (JSC), in partnership with the Houston Zoo, developed a Space Act Agreement and licensed five acres of JSC property to the zoo to build a new captive breeding facility in an effort to supplement the wild populations of this bird. An important element of this unique partnership involves fundamental research into ecosystems and environmental management supporting the JSC and NASA missions. It demonstrates to the community JSC's commitment to complying with the Endangered Species Act by helping in the conservation of an endangered species. In addition, this project visibly implements the NASA mission of "protecting the home planet." Bringing these birds back to the JSC site, where they once ranged in the wild, is a vital contribution toward the conservation and preservation of this important rare bird.

Introduction

The Attwater's Prairie Chicken was added to the U.S. Endangered Species list in March 1967. During the 1900s, about one million birds could be found along the coastal prairies extending from Corpus Christi, Texas to the Bayou Teche area in Louisiana. By 1919, as the six million acres of prairie lands began to be developed, the bird had completely disappeared from Louisiana. By 1937, only about 8,700 birds remained in Texas. The birds experienced a dramatic decline in population between 1993 when an estimated 456 existed, to 1996, when only 42 birds remained in the wild. Less than 1% of the original prairie habitat previously occupied by this rare bird remains today.

In 1992, the first captive-bred chicks were hatched at Fossil Rim Wildlife Center. The U.S. Fish and Wildlife Service developed a Recovery Plan, and a Recovery Team formed between several zoos and universities to breed the birds in captivity. The predication was that the birds would be extinct by the year 2000 without intervention.

The Attwater's Prairie Chicken is actually a grouse and is only found on the Texas Gulf Coast. Only two wild populations remain in the world today: The Texas Nature Conservancy's Galveston Bay Preserve in Texas City, Texas, and the Attwater Prairie Chicken National Wildlife Refuge near Eagle Lake, Texas. At the release sites, biologists band the birds and fit each bird with a radio transmitter.

The birds were once common on the JSC property, but they disappeared from the site in the early 1980s. The prairie buffer zones around JSC's facilities offer a quiet, open setting where the birds can breed and grow in a more



natural environment. Over the next several years, the Houston Zoo hopes to more than triple the capacity of its breeding program at JSC to support its partners in the U.S. Fish and Wildlife's Attwater's Prairie Chicken Recovery Plan. Each year, birds from the JSC site will be released back into the wild in the ongoing effort to establish self-sustaining wild populations on the Texas coastal prairies.



Natural History

The breeding season runs from January to May. In the wild, the males gather on an area of bare ground called a lek or "booming ground." The males make a "booming" sound by inflating bright orange air sacs on the sides of their necks, and performing a ground-stomping "dance" in an effort to attract a mate. The females hover on the outskirts of the lek. Once a female chooses a mate and breeds, she leaves the lek area and creates a nest in a depression on the ground. The female begins to lay eggs in March. The hen will lay about a dozen eggs in a clutch. Gestation is approximately 26 days. However, only about 30% of all nests remain viable due to predation by snakes, coyotes, and other mammals. Only about 50% of all chicks become adults.

Program Goals

The goal of the Attwater's Prairie Chicken Recovery Plan is to reestablish 5,000 birds in three geographically separate, viable populations. To reach this goal, the recovery effort focuses on the following five strategies:

1. Habitat management on both public and private lands (involving voluntary cooperators only).
2. Public outreach to help generate support for ongoing recovery efforts.
3. Population management consisting of captive breeding and reintroduction efforts.

4. Coordination between government agencies and private interests.
5. Research to provide information necessary for taking efficient steps toward recovery.

Conclusions

Current data reveal a 10% increase in the number of eggs and chicks over prior years at the zoo location, and a hatchability increase of 15% over 2005. In addition, the unique partnership between JSC and the Houston Zoo has proven to be mutually beneficial by helping to educate employees and the public regarding the plight of this rare Texas-endemic bird, and by linking captive breeding directly to reintroduction efforts and attempts to secure and restore suitable prairie habitats.

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13. ABSTRACT (Maximum 200 words) The Biennial Research and Technology Development Report is a compilation of advances in research and technology accomplished by Johnson Space Center (JSC) engineers and scientists. It contains astromaterials research and exploration science, space life science, engineering, extravehicular activity, White Sands Test Facility (WSTF), and education and center operations. Examples of astromaterials research and exploration science demonstrate major improvements in handling and analysis of extremely small solar and asteroid particles. Space life sciences research includes neurovestibular research and arterial and cardiac function in six-degree head-down tilt bed rest. Engineering research includes the designing of a prototype ultra-wide-band tracking system for lunar operations where navigation tools are not available. JSC is also studying ramifications of applying laser peening to friction stir welding for space operations. The extravehicular program is developing medical and engineering practices to maintain a productive healthy crew during difficult and dangerous work situations. WSTF's research on ignition testing on multiple spacesuit materials placed in various oxygen concentrations is critical for future exploration missions. JSC's commitment to science, technology, engineering, and math educational programs for elementary schools through post-doctorate programs is strong. Finally, advances in technology are needed for JSC's work with the community, and for facilitating space center operations.

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