Video Highlights Importance of Fire-Maintained Gopher Tortoise Habitat at Archbold Biological Station

The National Cohesive Wildland Fire Management Strategy is a national collaborative effort to bring a broad cross-section of stakeholders together to address wildland fire management challenges. The Strategy directs wildland fire planning activities and has three primary goals: restore and maintain landscapes, develop Fire-Adapted Communities, and improve wildfire response.

Activity	Impact
# acres at Archbold Biological Station	8,870
Natural Florida scrub fire return interval (years)	6-20

Project Overview

The Archbold Biological Station, situated on the Lake Wales Ridge and at the headwaters of the Everglades in central Florida, has been tracking one female gopher tortoise (*Gopherus polyphemus*) since 1968, aptly named Queen of Red Hill (otherwise known as # 21). The famed tortoise lives on one part of Archbold referred to as Red Hill. To highlight the celebrity tortoise and the immense accomplishments and importance of the research station overall, including its use of prescribed fire, the Station contracted with *Into Nature Films* to produce the outstanding video, ***Queen of Red Hill***.

The video explains that during the Queen of Red Hill's lifetime, much land surrounding the Station was cleared for development and the establishment of orange groves. Loss of sandhill and scrub habitats and pine flatwoods were so dramatic statewide that Florida listed the gopher tortoise as a threatened species in 2007. Fire was originally suppressed on Red Hill, dramatically altering the Station's ecosystem from scrub habitat to sand pine forest. Yet, the Queen of Red Hill persisted. As the dependency of several species on the scrub habitat and the role of fire in maintaining that habitat was better understood, fire was carefully re-introduced to the Station in 1977. However, logistical and safety challenges largely prevented reintroduction of fire to the long-unburned areas on Red Hill. Gopher tortoises survived this period of fire suppression by living on fire breaks and a mowed area on the top of Red Hill. The video explores how recent mechanical and prescribed fire treatments have restored open areas needed by gopher tortoises and other scrub species for 'nesting, basking and feeding.' Fire also supports the gopher tortoise's favored foods, wiregrass (*Aristida stricta*) and gopher apple (*Licania michauxii*).

Gopher tortoises, including the Queen of Red Hill, continue to be studied at the Archbold Biological Station. Current research efforts evaluate gopher tortoise responses to fire. The Queen was observed moving into a recently restored and burned area, where she dug a new

burrow and was soon visited by at least two potential mates. The Queen of Red Hill continues to thrive at the Station and contribute to the continued survival of the species through her offspring.

Fire is instrumental in maintaining the Florida scrub ecosystem on the property; wildfire caused by lightning naturally burned the landscape about every 6-20 years or more. The Station researches large and small-scale prescribed burning, evaluating ecological responses to fire. Archbold develops an annual fire management plan based on the fire history and fire return interval for established acreage or burn units. Staff and researchers provide input on which units are prioritized for burning. Most prescribed burns at Archbold are growing season burns, occurring from April-September. The boundaries and fire intensity have been mapped for each wildfire and prescribed burn going back to the 1970s; however, today these data are collected via post-fire aerial images collected from a drone.

The video illustrates that understanding the importance of the Queen of Red Hill and the Archbold Biological Station requires an examination of the land's history. John and Margaret Roebling purchased the Station's land in 1929 to develop an estate and live in a more favorable climate for Margaret's health. The Roeblings loved the natural beauty of the land and sought to preserve it. Establishing their estate, they built several hurricane-resistant structures on the property that are still utilized today for Station activities. After Margaret Roebling's death, her husband donated the land in 1941 to his son Donald Roebling's friend, Richard Archbold. As a world explorer and Research Associate of the American Museum of Natural History, Richard Archbold saw the biological value of the property as a research station, thus establishing the Archbold Biological Station. In 1967, Dr. James Layne became the Station's first research director and initiated a long-term study of the site's gopher tortoise population. In 1968, Layne first found and measured The Queen of Red Hill, noting she was at least 10 years old, making her more than 60 years old today.

Archbold Biological Station is a non-profit, independent research station dedicated to long-term ecological research. Scientists and students focus their research on the organisms and ecosystem of the 8,870-acre Archbold Biological Station and nearby conservation lands on the Lake Wales Ridge, which together protect globally unique Florida scrub habitats. Imperiled species that depend on this habitat include the gopher tortoise and Florida scrub-jay. Archbold contains relict sand dunes, including xeromorphic scrubs, flatwoods and a 90-acre lake. Adjacent private conservation easements and state-owned property envelop Archbold within a 53,000-acre contiguous protected area.

Archbold Biological Station is located on the Lake Wales Ridge (shown on map) in central Florida. Credit: Google Maps

Prescribed burning at the Archbold Biologica Station. Credit: Jennifer Brown, Into Nature Films

Florida scrub-jay at Archbold Biological Station. Credit: Jennifer Brown, Into Nature Films

The "Queen of Red Hill," otherwise known as Archbold Biological Station's gopher tortoise number twenty-one. Credit: Jennifer Brown, Into Nature Films

Support of the Cohesive Fire Strategy

This project supports the national Cohesive Fire Strategy goal of Maintaining and Promoting Resilient Landscapes (use of prescribed burning and mechanical methods to support critical Florida scrub habitat). This project also supports the Cohesive Fire Strategy's Southeast Regional Action Plan through:

- Utilizing best burning practices (Task 6.C.3);
- Identifying areas where fuel treatments provide significant ecological benefits (Task 6.G.5);
- Encouraging the use of alternative management techniques (mechanical, grazing, etc.) to treat wildland fuels where prescribed fire is not feasible or appropriate (Task 6.G.4);
- Promoting and using fire to emulate natural disturbance patterns to maintain and improve ecological systems, balancing social, cultural, and economic needs, especially over large contiguous landscapes (1.1.1); and
- Support efforts to increase prescribed burning for ecosystem restoration (1.1.7)

Additional Resources:
Queen of Red Hill video: ***www.youtube.com/watch?v=r8X18LeBc4I***
Archbold Biological Station: ***www.archbold-station.org/***
Into Nature Films: ***www.intonaturefilms.org***

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Partners: Archbold Biological Station, Florida Forest Service, Into Nature Films