

2019

Glen Canyon

BioBlitz

Photo Credit: Carston Oliver

In the early 2000's Lake Powell's waters began to noticeably recede as can be easily seen by a "bathtub" ring on the canyon walls. These lands re-emerging from the water are intriguing to many outdoor enthusiasts and garnering attention from the masses through articles published in the New York Times and National Geographic.

With a changing climate and increased demands for water, there are few signs Lake Powell will fill to its former level.

While there is much interest, there has been little to no investigations into the thousands of acres of public land – and the biological resources - that have re-emerged from Lake Powell.

In 2019, Glen Canyon Institute hosted the first Glen Canyon National Recreation Area BioBlitz. The goal was to better understand the biological resources in Glen Canyon's re-emergence areas.

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A BioBlitz is a short-term event designed to find as many different species in an area of interest. Professional scientists and citizen scientists collect, identify, and count as many species as possible using scientific methods.

BioBlitzes are opportunities for the documenting species and sharing information through research, outreach, and education.
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Scientists: Larry Stevens Ph.D., Steve Leavitt Ph.D., Terry Griswold Ph.D., Ronda Griswold, William Gray, Ph.D., Silvia Gray, John Spence Ph.D., Grace Carpenter, Roy Morris, Tania Parra, Blake Wellard, Ph.D., Kendra Babitz, Tim Graham Ph.D., Ronald J. Kass Ph.D., Paul Dawson, Jeremy Webster, Lindi McIlwaine and Allison Jones.

Staff and Support: Eric Balken, Jack Stauss, Janice Gardner, Carston Oliver, Brendan Ladd

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**This is a landscape
that has not been
explored very
much. There's just
lots to learn here.
It's a wonderfully
complicated
environment.**

Dr. Larry Stevens,
Curator of Ecology,
Museum of Northern Arizona

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On May 17 and 18, 2019, 23 people including expert botanists and entomologists, gathered in 50-Mile Canyon with the intention of documenting all the species they encountered.

With cameras, nets, plant presses, and scientific collection permits, the group traveled 10 miles roundtrip into 50-Mile Canyon, covering areas both above and below Lake Powell's former high-water mark.

The 2-day BioBlitz in 50-Mile Canyon resulted in 726 observations and the identification of over 500 species representing most all major taxa: fungi and lichens, insects, plants, amphibians, reptiles, birds, and mammals.



**93
lichen and fungi
species**



**244
plant
species**



**160[^]
insect and
invertebrate
species**



**47 vertebrate
species**

[^] Final species count pending

Highlights

A Superbloom

The wet winter of 2018 and 2019 set off a “superbloom” of plants in Glen Canyon. The BioBlitz was able to document 244 plant species from diverse taxa.

Throughout the canyon, hanging gardens were established in many wet and seepy areas. Maiden hair fern (*Adiantum capillus-veneris*) is a wind-dispersed pioneer species that was observed and is a sign of a healthy canyon seep community.



Kendra Babitz documents plant species in one of 50-Mile Canyon's unique hanging gardens. Photo Credit: Janice Gardner.



In numbers not seen in decades, blankets of golden mariposa lily (*Calochortus aureus*) covered many areas in and around Glen Canyon. Photo credit: Janice Gardner.



The stream orchid (*Epipactis gigantea*) was found above and below the high-water mark. This plant requires a very complex soil microbiome to thrive, suggesting that Glen Canyon's soils are functioning. Photo credit: Kendra Babitz.



Big seed milkweed (*Asclepias macrosperma*) was one of two species of milkweed documented during the BioBlitz. The riparian areas in Glen Canyon are important habitat for milkweed and the Monarch butterflies (*Danaus plexippus*) that depend on them. Photo credit: Tania Parra

Lichens



Lichens are unique organisms formed from a mutualistic relationship between fungi and algae or cyanobacteria. Lichens proved to be some of the most interesting observations during the BioBlitz. Lichens are sensitive to air pollution and are used as bio-indicators of environmental health.

(From the top)
Photo 1: This lichen is likely a new species of 'crater lichens' in the genus *Circinaria*.

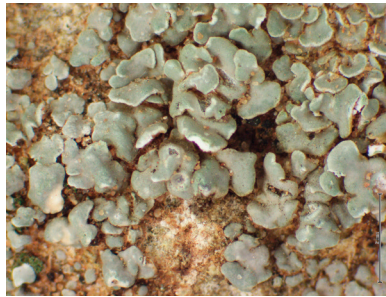


Photo 2: An unidentified species of 'coal dust lichen' in the genus *Polysporina*. This species is nearly genetically identical to specimens only known from Iran.

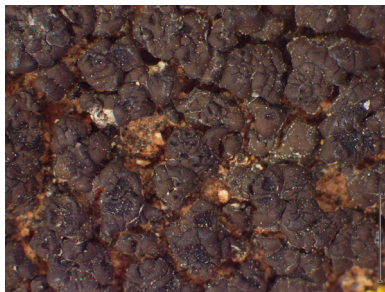
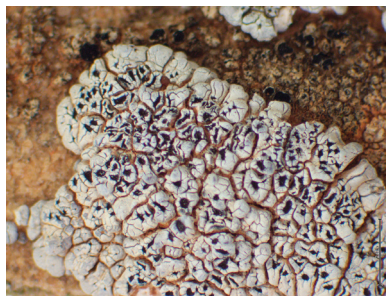


Photo 3: First found in Grand Staircase-Escalante National Monument, this is a new species of 'cobblestone lichen', recently discovered and still undescribed.



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The story is that there is a lot that we still don't know about lichens and fascinating finds around every corner in the Glen Canyon National Recreation Area.

Dr. Steve Leavitt,
Lichen Expert
Brigham Young University.

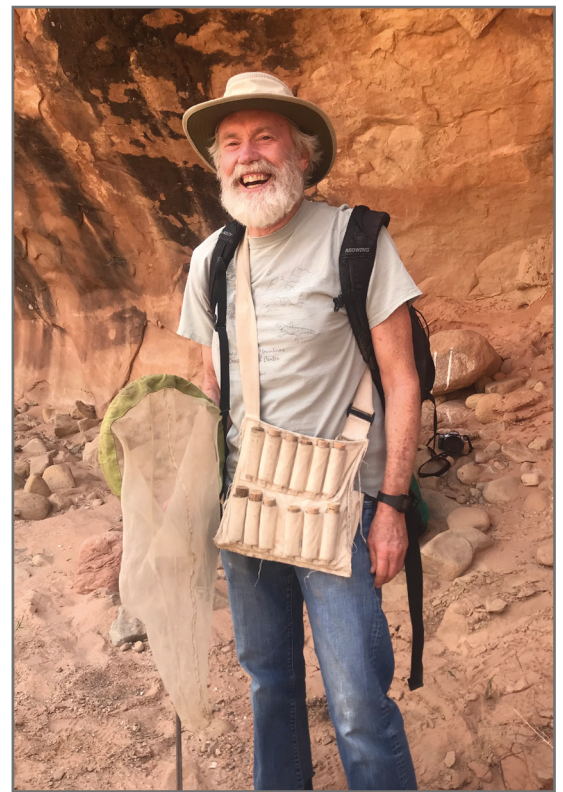
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New Bee Species

Pollinators, such as bees, are key to a functioning ecosystem and support most of the world's plant diversity. In 50-Mile Canyon, the BioBlitz turned up all six bee families known to North America. Of great excitement was finding two new species of bee that have yet to be named. These bees have only been seen before in Grand Staircase Escalante National Monument and appear endemic to the Colorado Plateau.



A new and unnamed bee species in the genus *Atoposmia*



Dr. Terry Griswold,
Research Entomologist
U.S. Department of Agriculture
Utah State University

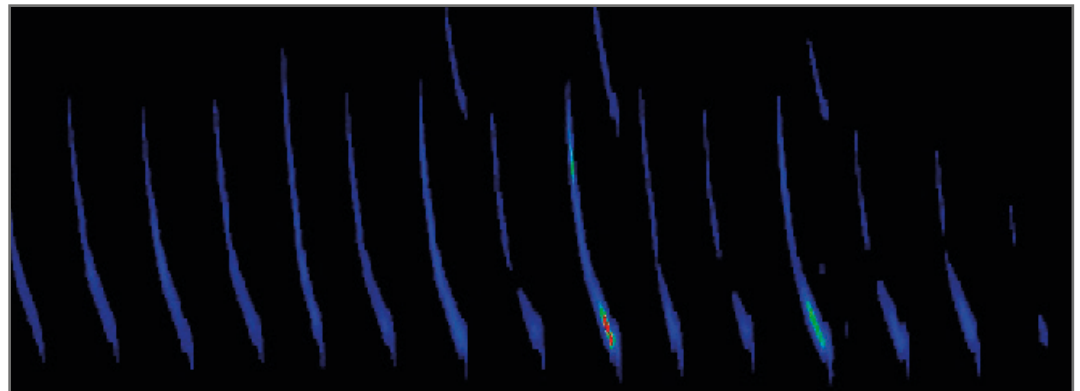
Bats

Three National Park Service biologists joined the BioBlitz to record bats. They used acoustic recorders to “listen” to bat as they flew over a small spring. SonoBat software identifies the acoustic recordings to species. Two bat species were positively identified; the California myotis (*Myotis californicus*) and canyon bat (*Parastrellus hesperus*). The 17 species of bats documented in Glen Canyon National Recreation Area are an important consumer of insect pests, seed dispersers, and pollinators.

California myotis
Credit: ©Frank Carey



The acoustic signature of a California myotis bat.
Credit: Gabe Reyes, USGS, Western Ecological Research Center.





A Reawakening

Fremont cottonwood (*Populus fremontii*) are thriving near areas previously flooded by Lake Powell. Photo credit: Allison Jones

BioBlitz scientists were pleased to see native species making a comeback into the re-emergence areas. While biodiversity below the high-water mark was lower, several important species to Glen Canyon's riparian ecosystems were quickly restoring themselves.

Fremont cottonwood (*Populus fremontii*) and narrowleaf willow (*Salix exigua*) regeneration was significant, which are native trees and shrubs that provide habitat for many species.

Beaver (*Castor canadensis*) activity, including several small dams, was found at and below the water mark. These species are important measures of a functioning ecosystem.



Near the high water mark willows regenerate alongside a beaver dam. Photo Credit: Allison Jones.

The BioBlitz revealed some cause for concern. Several species of non-native, invasive plants were found only in the re-emergence areas. These plant species have the potential to get a competitive start in the re-emergence areas and begin invading the riparian corridors up canyon.

For example, ravenna grass (*Saccharum ravennae*) is an escaped landscaping plant that can choke out native trees and shrubs. This plant was documented in the re-emergence areas and has been found in other areas of Glen Canyon.

The BioBlitz demonstrated that thousands of acres of public land are on a path to recovery. Flora and fauna are returning to the canyons that have been under decades of sediment.

Glen Canyon's re-emergence areas are of value and are worthy of proper management to ensure the best path to full recovery. These canyons are also full of questions waiting to be answered. Glen Canyon Institute is dedicated to facilitating the best restoration outcomes into the future.

To learn more about Glen Canyon
Institute and support our work,
please visit us at glencanyon.org



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*Dedicated to the restoration of Glen Canyon
and a free flowing Colorado River.*

Thank you to the many volunteers and National Park Service staff who contributed to the 2019 Glen Canyon National Recreation Area BioBlitz. Special thanks to John Spence, National Park Service. Report prepared by Wild Utah Project.

