There are five different unique ecosystems found in the Grand Canyon.

The humpback chub is one of only five native fish species still living in the Grand Canyon.

In 1987, there were less than two dozen condors left in the world.
Introduction

Over a two-year period, artists Bryndis Snæbjörnsdóttir (Iceland) and Mark Wilson (UK) have explored the networks and ripple effects of scientific conservation initiatives in Arizona.
Taking a kind of vertical slice of the Grand Canyon, they have focused on the reintroduction of two endangered species to the environment — the humpback chub, native to the Colorado River, and the California condor, whose zones of flight extend from the Canyon to the Vermilion Cliffs and into Utah. This exhibition examines how ecologies can change radically as a result of tiny individual initiatives by human or other agents.

Snæbjörnsdóttir and Wilson conducted their research for this project in and around the Grand Canyon, Flagstaff, Vermilion Cliffs, Lake Powell and Phoenix, tracing the “wild” water system from the Glen Canyon Dam on the Colorado River to the urban homes of the desert. Working with Dr. Ron Broglio at ASU, they met with, interviewed and labored alongside research scientists running conservation programs for endangered species.

Since 2001, Snæbjörnsdóttir and Wilson have been making work in response to the uncertainty in relationships between animals and humans. Their inquiries have touched on extinction, colonialism, the naming of things, pet habitats, urban pest control and hunting, among other concerns. The common thread is the examination of inconsistencies in our human relationships with other species and the insights garnered by an examination of the margins where culture and nature overlap. Previous projects have taken them to other kinds of “deserts,” from the Arctic in Spitzbergen and Greenland and to Australia’s Red Centre.
How Can Art Advance Sustainability: Symposium Part 1

Gordon Knox
Director, ASU Art Museum

How Can Art Advance Sustainability: Symposium Part 2

Ása Sigurjónsdóttir
Displays and narratives in the work of Snæbjörnsdóttir/Wilson
In their well-known and ambitious project *nanoq: flat out and bluesome* (2001–2006), the artists located and photographed in situ all existent taxidermied polar bears in the United Kingdom. They traced the bears’ provenance — how they came from the Arctic to decorate the foyers of stately homes or lie molding in back corners of regional museums. They brought 10 of these bears together on a new journey for a dramatic exhibition at Spike Island in Bristol (U.K.). The project traces the history of British colonial expeditions into the far north and the changing way that polar bears have been represented in taxidermy — and perceived by humans — from vicious predators to vulnerable and endangered species. Central to the project is the photographic archive of the 33 bears and the research tracing their provenance. Copies of this archive are in the collections of the Reykjavik Art Museum in Iceland and at the Center for Art + Environment at the Nevada Museum of Art.

For *Uncertainty in the City* (2008–2010), a project in Lancaster in the North of England, the artists shifted from polar bears to pests. They traced perceptions of what constitutes a “pest” in an urban space. The artwork reveals profound inconsistencies among the public regarding which animals are to be encouraged, tolerated and therefore included, and which are excluded, as well as how best to handle the proximity and our inevitable cohabitation with wild animals in the city. With their mobile radio unit, Radio Animal, they gathered opinions that ranged from fear and disgust to wonder. Often the sentiments were conflicting, particularly among pest control experts who admire the intelligence and unique charms of creatures they are so often called upon to eradicate or kill.

This project is the artists’ first in the U.S. and the title references Richard Brautigan’s 1967 novella, *Trout Fishing in America*. Brautigan’s tales, anecdotes and poetic ruminations bring alive our relationship to water and things found in water, and elegize
the passing of a way of dwelling with nature. Snæbjörnsdóttir and Wilson's exhibition investigates tensions and cooperation among scientific, public and corporate stakeholders in how we consider nature in our management of wild and public lands. In their videos, photographs and site-specific installations, the artists capture the complexity of groups all vying for their specific interests and ideas concerning the future of endangered species. We hear about the demise of the humpback chub due to the introduction of trout in the Colorado River in the 1920s and the construction of the Glen Canyon Dam in the 1960s, making it more hospitable to trout. In an effort to reverse the engineered destruction of the ecosystem, National Park Rangers are removing trout in tributaries of the Colorado River in order to replace them with chub. The diverse groups involved — anglers, biologists, park rangers and the general public — provide sometimes overlapping and sometimes competing perspectives on these animals and their futures.

In other works, the artists give us a window into the lives and deaths of particular condors in such a way that the birds are not just stand-ins for an endangered species but individuals, each with their own storied life and death. Chris Parish and Eddie Feltes of the Peregrine Fund explain that most condor deaths are due to lead poisoning. Condors scavenge carcass remains contaminated by lead bullet fragments in gut piles left by hunters. As in this exhibition, Snæbjörnsdóttir and Wilson rarely include images of living animals in their work. Rather, what shows up is how we see and depict them. By showing human representations and accounts of animals, the artworks force us to reflect on human perceptions of nature along with the limits, blind spots and implications of such representation.

Scientists make of nature a laboratory, focusing on locations and species for the collection and processing of hard data. As artists, Snæbjörnsdóttir and Wilson
broaden the enterprise by inviting a range of associated humans and nonhumans to the conversation and deploying affective, speculative and creative agencies. They consider the scientific work within cultural and social contexts. The exhibition provokes wonder about human-animal interactions through strategies of humor, contradiction, absurdity, surprise and lateral (rather than direct) representation. *Trout Fishing in America and Other stories* was conducted, “in a combined spirit of respect, reportage, mischief, poetry and imagination.”*

Ultimately, their installation shows us that no matter how we attempt to order, manage or redeem our effects in the world, it is far beyond our capabilities to do so comprehensively. Living with nature means maintaining a vigilant attention to the continuously changing world around us. The artists’ work constitutes an examination of “the larger difficulty of realizing any sustainable future on human terms alone. Like it or not, we (humans and nonhumans) are all cohabitants here, and as such, there is an ecological imperative to recalibrate our conception of who ‘we’ really are.”*

*Quotes from the artists in email conversations, 2014.*
Exhibition Images

Photos by Peter Bugg
Flatbush prickly poppy, frog's goosefoot, fremont's lili, golden crownbeard, lamy rockgoldenrod, gravel bunting, tailed grackle, greater sand snake, groundcherry, squirrel, hart's ragwort, white, honeymat, hooded indian ricegrass, indiana star, kaibab draba, kaibab largeflower hawksbeard, kindley's silverpuffs, little bluestem, style rush, long tailed cudweed, magnificent thistle, mealy goosefoot, scabie biscuit root, mojave bush, mountain snowberry, piñon, wirelettuce, narrowleaf mormon tea, nevada water plantain, northern marsh, painted redstart, pale sandpaper plant, parry's onion mouse, pipsissewa, prickly sowthistle, primrose quackgrass, quail plant, red shiner, red shouldered saddlebush, ripgut brome, sand draba, rough menodora, sand dropseed, sand gilia, rego lily, sentry milkvetch, western, silver buffaloberry, saltgrass, slender woodland beard, smooth horsetail, saponaria milkvetch, spectacle fleabane, squawthorn, thompson's hawk, swamp sedge, wild muly, thurber's sedge, white broom, turpentine bush, whitebeak, velvetweed, venus bedstraw, watson's bedstraw, watson's snake, western meadowlark, wheeler's thistle, whipplecrossbill, white winged
Protecting and ensuring the survival of native species

Conservation efforts for the California condor and the humpback chub are managed by the Arizona Department of Game and Fish, part of the National Park System. They assist with the Federal Wildlife Management Program. The goal is to protect and ensure the survival of native species.
The Grand Canyon

*Trout Fishing in America and Other stories* focuses on conservation efforts taking place in the unique ecosystems of the Grand Canyon.
Covering 1,218,375 acres, the Grand Canyon is located on the Colorado Plateau in Northwestern Arizona. It is recognized as one of the natural wonders of the world due to its unique and exquisite mapping of geologic layers.

There are five different ecosystems found in the Grand Canyon. Elevation, temperature and the amount of precipitation affect where certain plants and animals can survive. Traveling from the North Rim of the canyon down to the Colorado River, you would travel through the ecosystems of the Boreal Forest, Ponderosa Forest, Pinyon-Juniper Woodland, Desert Scrub and Riparian ecosystems.

The Grand Canyon is also home to a wide array of species of plant and animal life. This includes over 1,500 plant species, 355 birds, 89 mammals, 47 reptiles, 9 amphibian and 17 fish. Many of the species located here are rare or endangered, which is why conservation efforts are so important.

Throughout the last century, researchers and park officials have tried different methods to preserve the different wildlife living in the canyon. Today efforts include tracking animals, relocating non-native species and educating people on the amazing creatures that call the Grand Canyon home.
Why are they endangered?

The decline of the humpback is due to a combination of factors such as dams, irrigation, dewatering, channelization, predation by introduced fish species, pollution and other factors such as parasitism, changes in food base and fishing pressure. The chub has difficulty persisting under the combined stress of habitat alteration and competition with a predator.

The building of the Glen Canyon Dam, Hoover Dam and Flaming Gorge significantly changed the environment of the waters that the chub lives in. Also, in the early 1900s, fishermen began introducing trout to the area for sport. Today these non-native fish are further endangering the humpback chubs. Additionally, the water temperature of the Colorado River have significantly decreased as a result of the dams, which affects the chub's ability to reproduce.
FAST FACTS

1. The humpback chub is one of only five native fish species still living in the Grand Canyon.

2. The humpback chub, or Gila Cypha, ranges from 12-15 inches in length. It has olive or brown coloration on its back and silver on its sides and belly.

3. It has a prominent dorsal hump behind its head, a flat fleshy snout and small eyes.

4. The chub’s underhanging mouth suggests bottom feeding. It is known to feed on Chironomids, Simuliids, plankton, crustaceans, diatoms and other small invertebrates.

5. The humpback chub has physical adaptations such as a large adult body size, large predorsal hump and small eyes that have helped the chub evolve in the turbulent Colorado River.

6. The humpback chub requires a minimum temperature of 60.8 degrees Fahrenheit to reproduce.

How can we save the humpback chub?

Conservationists are translocating (moving) the humpback chub to designated tributaries to increase chub population. Researchers are also removing non-native trout from the area to restore the chub’s native fish habitats.

A recovery plan prepared by the Colorado River Fishes Recovery Team under the Fish and Wildlife Services in the 1980s outlines these major objectives:

- Resolve taxonomic problems in Colorado River basin
- Identify and define humpback chub populations
- Implement monitoring programs
- Investigate the life history and ecological requirements of humpback chubs
- Protect humpback chub populations and their habitats
- Promote and encourage improved communication and information dissemination
- Determine biological criteria/objectives for delisting the chub
The California Condor
1. California condors weigh on average 19 pounds and have wingspans of 9-10 feet, making them the largest bird in North America.

2. When hatched, the condor chick is all white and usually naked with a yellow-orange head or neck and a black beak. Upon achieving full adult coloration, their heads become a full orange and their bill color changes from black to ivory.

3. They partake in behavior known as urohydrosis, a very unusual behavior in the bird world. This includes drenching their legs in their own urine during hot weather in order to cool their bodies.

4. Condors are a carrion vulture, which means they feed almost exclusively on already dead animals, killed by other predators or hunters, or that died of natural causes.

5. Once they form in pairs they have not been observed to break up over the years unless one of them dies.

6. The condor is the rarest bird in the area. In 1987, there were less than two dozen condors left in the world, but now there are approximately 400 in the wild and captivity.

7. Experts say that today the best place to spot condors is on the South Rim near Lookout Studio.

**Why are they endangered?**

The primary cause for condor deaths is lead poisoning. Kills left behind by hunters make a perfect meal for condors, but many of these animal carcasses are contaminated by the used lead bullets. Eventually, many condors consume toxic levels of lead. Additionally, several deaths are caused by golden eagles, which often compete for the same food. Collisions with wires have also been known to cause condor deaths.

**How can we save the California condor?**

Finding ways to reduce lead contamination of the environment is the most immediate concern for reducing condor mortality rates. Efforts are being made to have all hunters in condor ranges switch out their lead bullets for those made of copper. Other ways to counter lead poisoning threats include the creation of no-hunting zones and the adoption of non-toxic ammunition for condor ranges. U.S. Fish and Wildlife placed a ban on cyanide traps for coyote control in areas where condors are present. An effort to educate hunters has already taken place in order to increase awareness, including an ammunition exchange program led by Arizona Game and Fish Department to remove lead bullets from the environment.

**FAST FACTS**

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Get Involved!
Help save Arizona’s native species

Arizona Game and Fish Department
azgfd.gov

The Peregrine Fund, California Condor
condorcliffs.org

Upper Colorado River Endangered Fish Recovery Program
coloradoriverrecovery.org

National Park Service
nps.gov

Grand Canyon Monitoring and Research Center
gcmrc.gov

Grand Canyon National Parks Conservation Association
npca.org/parks/grand-canyon-national-park.html

Grand Canyon Trust
grandcanyontrust.org

U.S. Fish & Wildlife Service, Endangered Species
tfs.gov/endangered

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Arizona Game and Fish Department. 2014. Preserving humpback chub from extinction. azgfd.gov/w_c/research_humpback_chub.shtml (accessed September 1, 2014).


Acknowledgments

*Trout Fishing in America and Other stories* was co-curated by Dr. Ron Broglio, associate professor, ASU Department of English, and Heather Sealy Lineberry, senior curator and associate director, ASU Art Museum. Assistance provided by Ty Fishkind, curatorial intern. Educational programs managed by Andrea Feller, curator of education, ASU Art Museum. The artists’ research was greatly assisted by Jane Rodgers, Clay Nelson and Melissa Trammell of the National Park Service; Chris Parish and Eddie Feltes of The Peregrine Fund; and Dr. Thomas Dowling, ASU School of Life Sciences. Invaluable technical assistance was provided by David Robert.

The project was supported by a research grant from The Julie Ann Wrigley Global Institute of Sustainability at ASU. Additional support generously provided by Arizona Game and Fish Department Heritage Fund, University of Cumbria, UK, the Helme Prinzen Endowment, The Steele Foundation, the City of Tempe, the College of Liberal Arts and Sciences, ASU Department of English and the ASU Art Museum Creative Impact Board.

This educational resource was created by the ASU Art Museum in spring 2015 in conjunction with the exhibition *Trout Fishing in America and Other stories*, presented fall 2014 at the Museum.