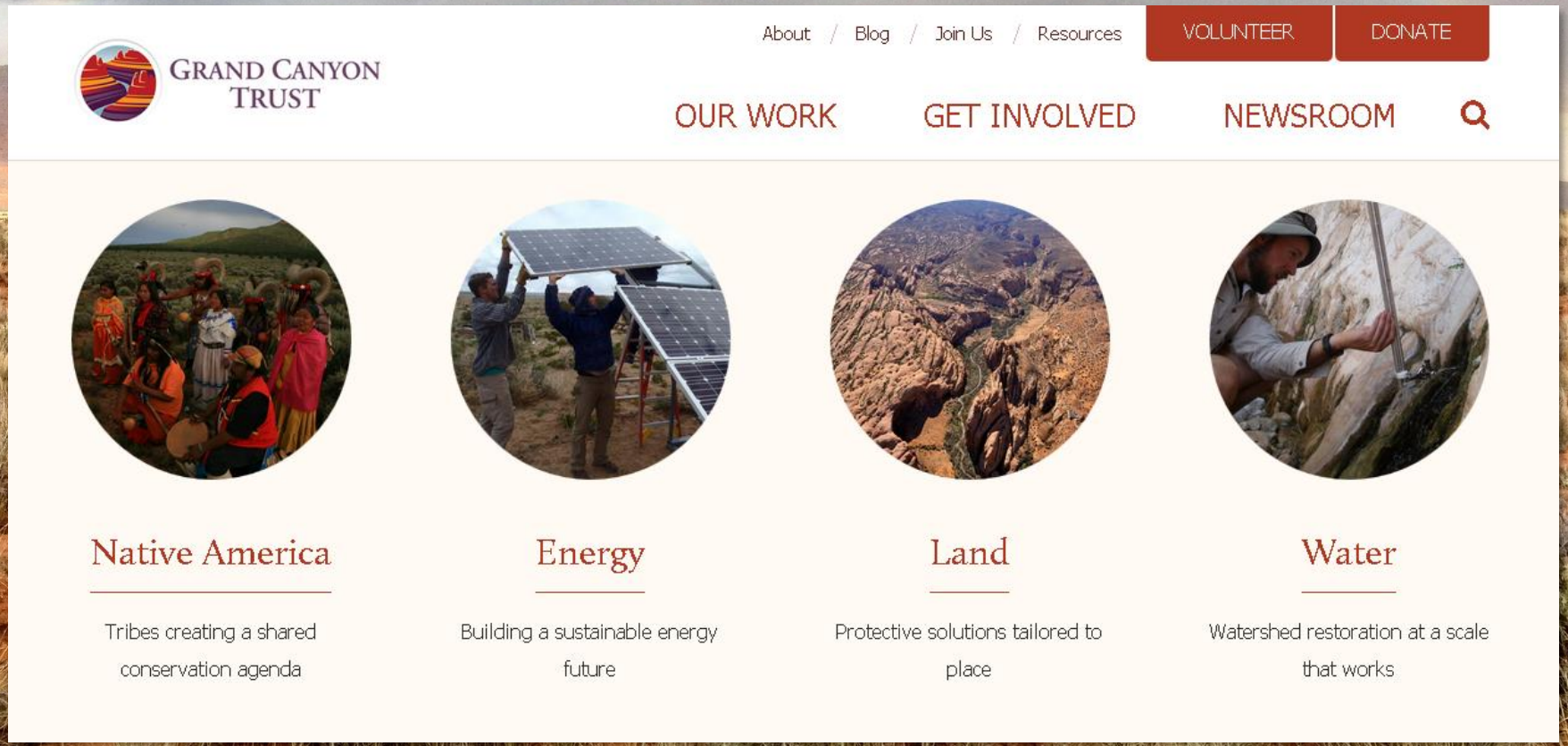
Restoring Riparian Areas through Collaboration on Public Lands

Cerissa Hoglander, Grand Canyon Trust
Hannah Griscom, AZ Game & Fish Department
Tom Runyon, US Forest Service
Micah Keisow, US Forest Service
Kit MacDonald, US Forest Service
Lisa Winters, Grand Canyon Trust
Audrey Kruse, Grand Canyon Trust

GRAND CANYON TRUST

OUR MISSION - To safeguard the wonders of the Grand Canyon and the Colorado Plateau, while supporting the rights of its Native peoples.

www.grandcanyontrust.org



COLLABORATIVE RESTORATION

=

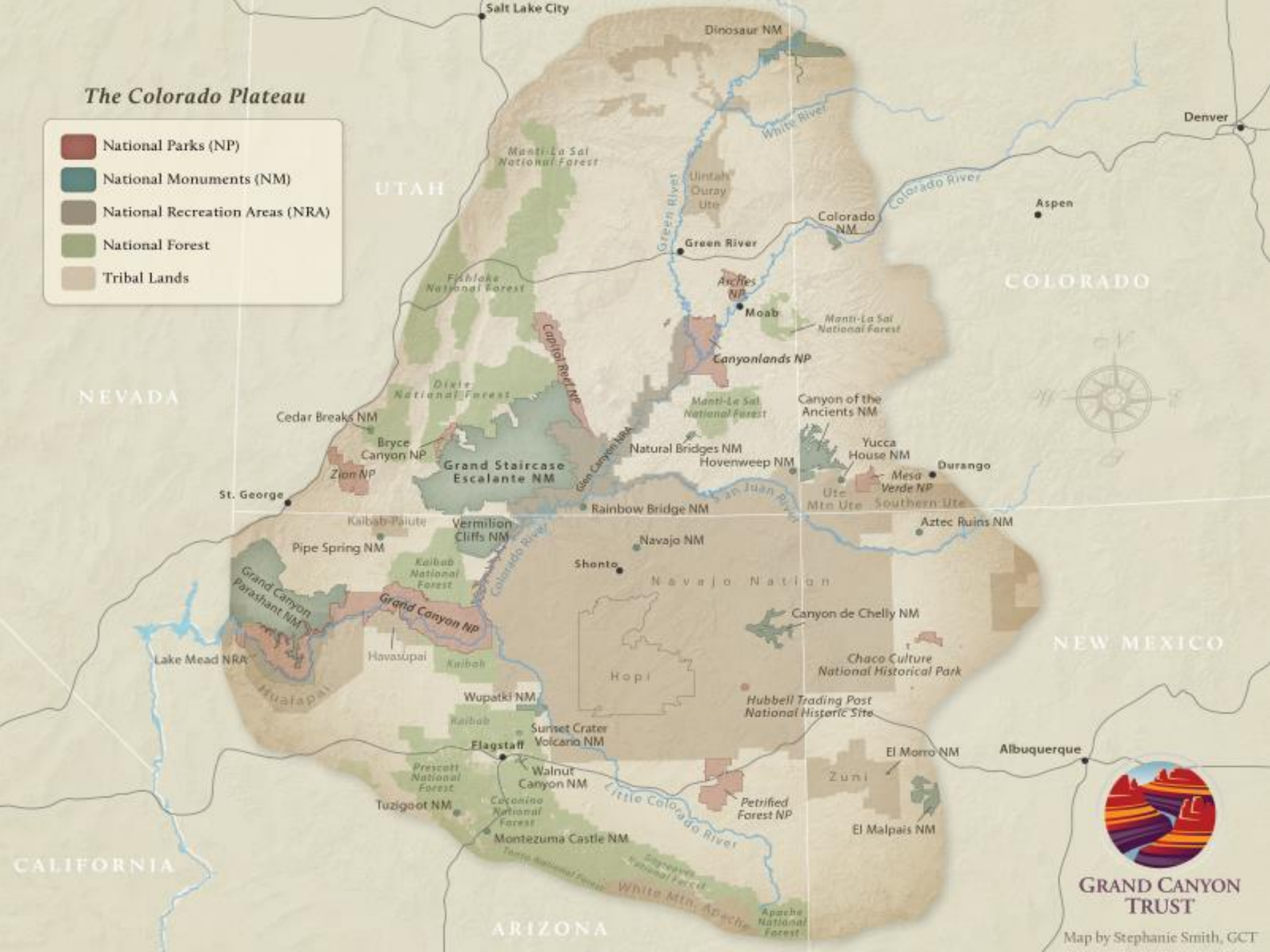
PILOT PROJECTS

+

PARTNERSHIPS

+

PEOPLE POWER


The Colorado Plateau
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Aspen
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COLORADO
NEVADA
NEW MEXICO
CALIFORNIA
ARIZONA
GRAND CANYON TRUST
Map by Stephanie Smith, GCT


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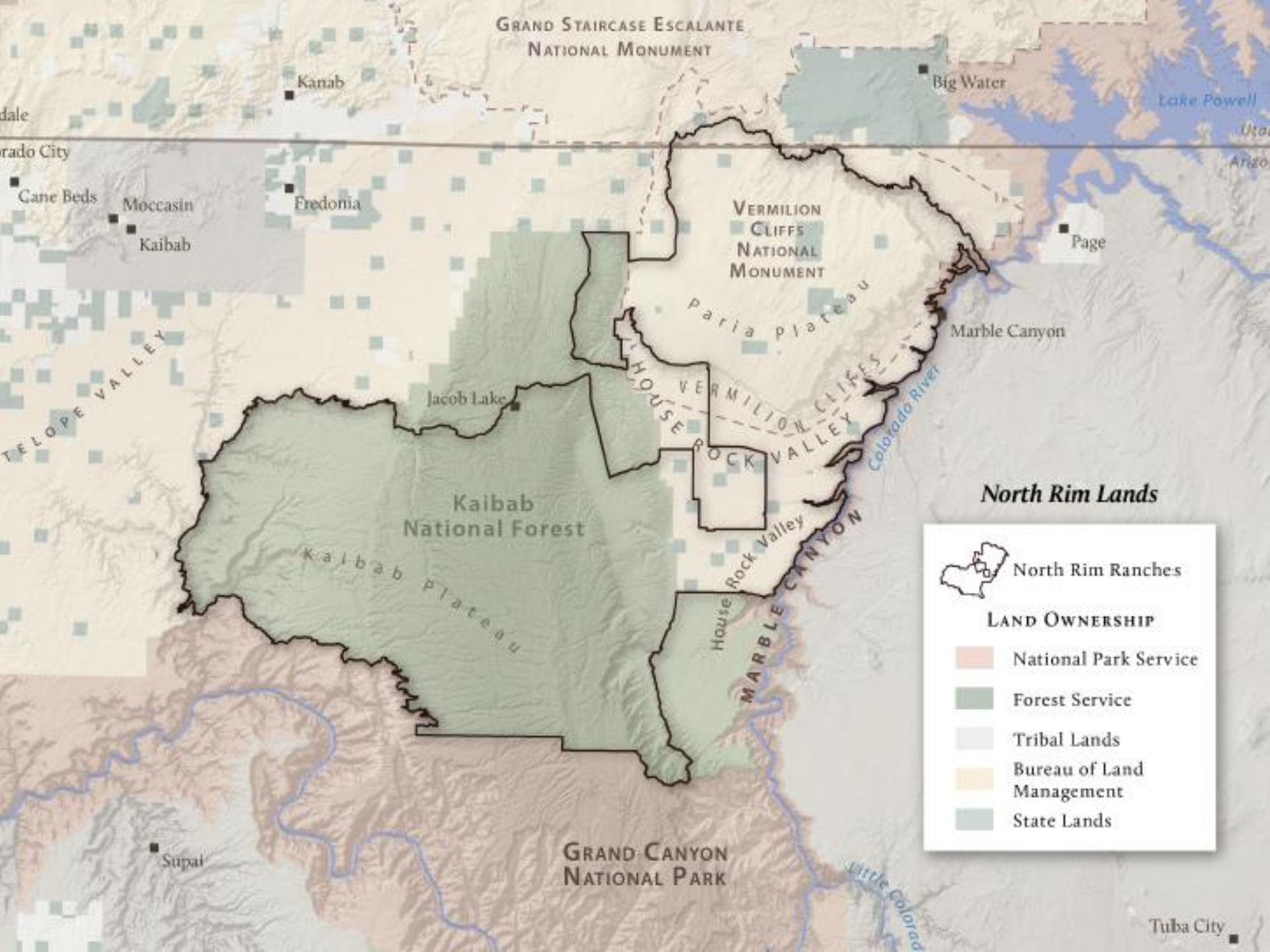
GRAND CANYON TRUST
Map by Stephanie Smith, GCT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North Rim Ranches
Land Ownership
National Park Service
Forest Service
Tribal Lands
Bureau of Land Management
State Lands
Supai
Grand Canyon National Park
Tuba City

K2M RSP

Kane and Two Mile Ranches

Applied Research Plan

Grand Canyon Trust

Bureau of Land Management

U.S. Forest Service

Arizona Game and Fish Dept.

Northern Arizona University

University of Arizona

U.S. Geological Survey

December 2011

FS Agreement No. 12-MU-11030700-002
BLM Agreement No. MOU-AZ-2012-002

MEMORANDUM OF UNDERSTANDING
Between
GRAND CANYON TRUST
AND
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
UNITED STATES GEOLOGICAL SURVEY
AND
USDA, FOREST SERVICE
KAIBAB NATIONAL FOREST
AND
ARIZONA GAME AND FISH COMMISSION
AND
NORTHERN ARIZONA UNIVERSITY
AND THE
UNIVERSITY OF ARIZONA

TITLE: Kane and Two Mile Research and Stewardship Partnership

This Memorandum of Understanding ("MOU") is entered into between the Grand Canyon Trust, hereinafter referred to as "GCT", and its subsidiary North Rim Ranch, hereinafter referred to as "NRR", the Bureau of Land Management, hereinafter referred to as "BLM"; the United States Geological Survey, hereinafter referred to as "USGS"; the USDA, Forest Service, Kaibab National Forest, hereinafter referred to as "U.S. Forest Service"; the Arizona Game and Fish Commission, hereinafter referred to as "Commission"; Northern Arizona University, hereinafter referred to as "NAU"; and the University of Arizona, hereinafter referred to as "U of A" (collectively "Parties" and singularly "Party").

WHEREAS, the Parties recognize and encourage a continued commitment to create principles of cooperation and coordination among the signatories so that they may establish a research and stewardship program on the Kane and Two Mile ranches ("K2M");

USDA United States Department of Agriculture
Forest Service

Kaibab N

Forest Service Home | About the Ag

- Site Map

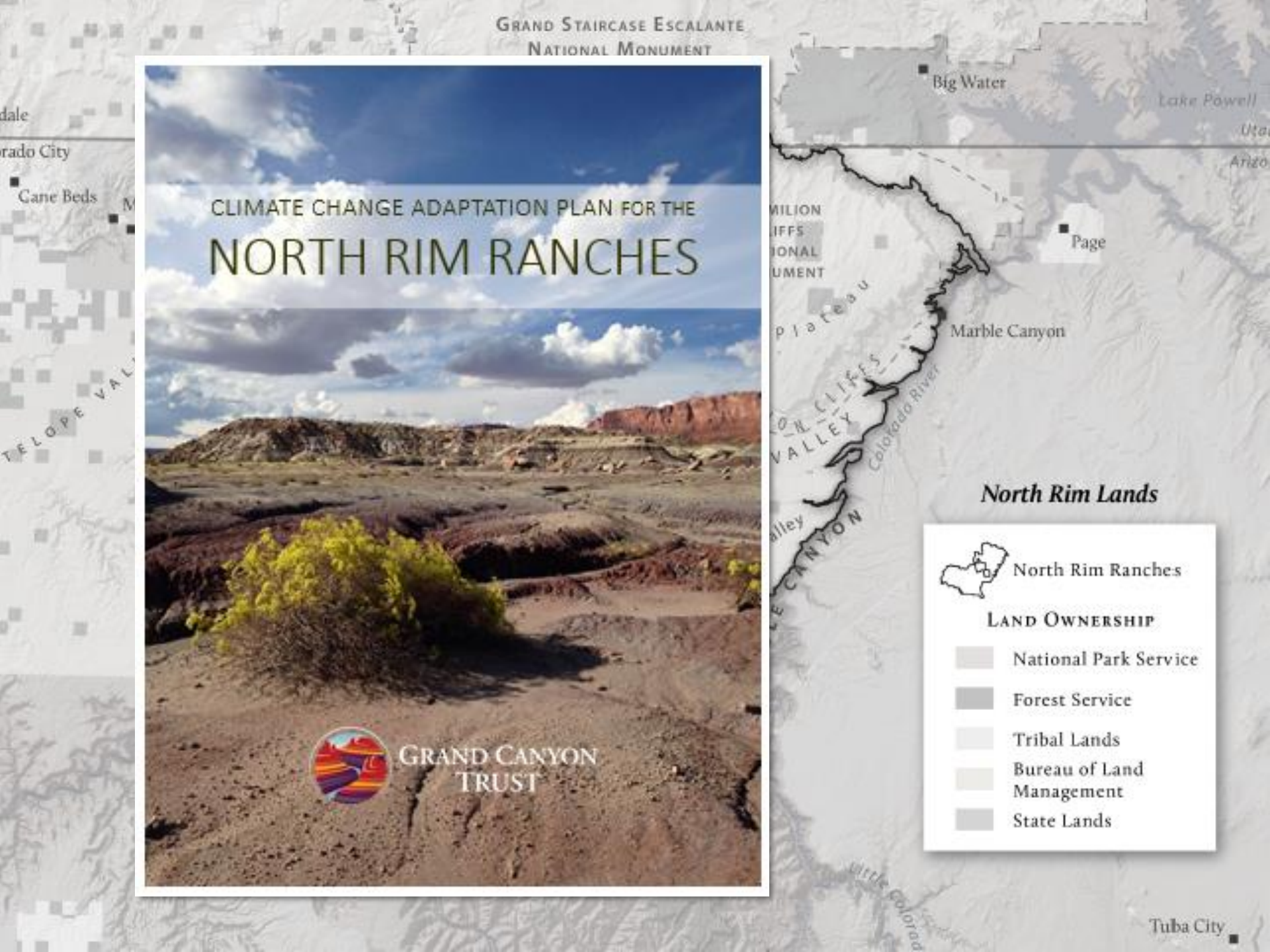
Kaibab National Forest

- Home
- Special Places
- Recreation
- Alerts & Notices
- Passes & Permits
- Maps & Publications
- Land & Resources

Historic Partnership Advancing Science on the Grand Canyon's North Rim

Contact(s): Patrick Lair, 928-643-8172

Against the stunning backdrop of the Kaibab Plateau and Vermilion Cliffs, a pioneering partnership has been forged to bolster the science guiding resource management and public lands stewardship along the North Rim of the Grand Canyon.


Grand Staircase Escalante National Monument
Big Water
Lake Powell
Page
Marble Canyon
Colorado River
Cane Beds
Tuba City
CLIMATE CHANGE ADAPTATION PLAN FOR THE
NORTH RIM RANCHES
Grand Canyon Trust
North Rim Lands
North Rim Ranches
Land Ownership
National Park Service
Forest Service
Tribal Lands
Bureau of Land Management
State Lands

PILOT: CLIMATE ADAPTATION ACTION

PILOT: CLIMATE ADAPTATION ACTION

BEFORE

- Eroded bank covered water source
- Tamarisk invasion

DURING

- Surface water uncovered
- Native clay lined pool
- Rock dams for erosion
- Tamarisk removed
- Native rushes planted

AFTER

- Perennial surface water
- Native riparian plants established

PILOT: CLIMATE ADAPTATION ACTION

SPRING BOX MOD.

- BEFORE: Livestock water development piped nearly all water off site
- AFTER: Valve allows for seasonal on-site water

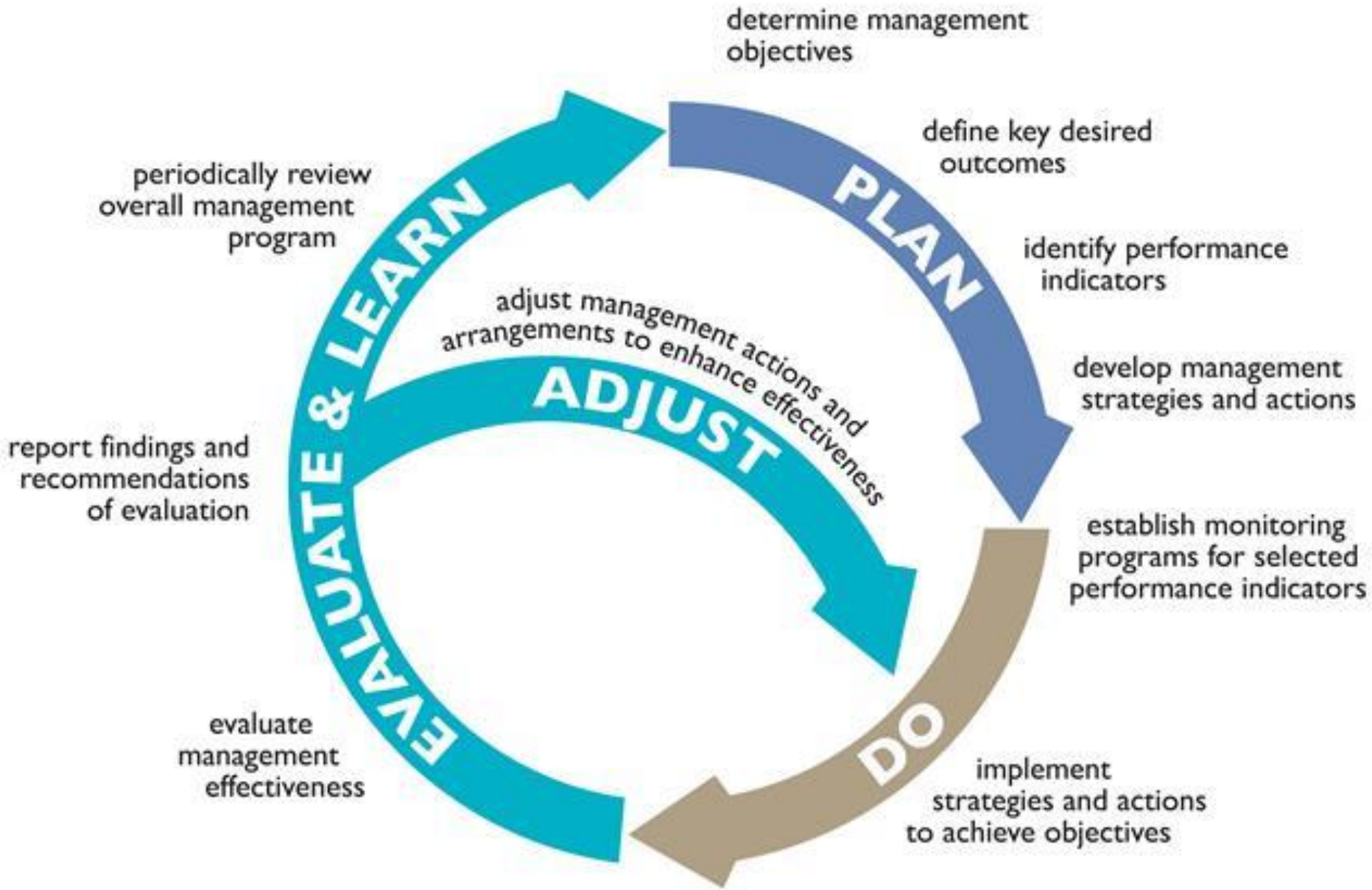
CHECK DAMS

- BEFORE: Flood event eroded drainage
- AFTER: Check dams slow and redirect flow

WATER ACCESS

- BEFORE: Dry, eroded drainage
- AFTER: Seasonal pools provide wildlife water access

The adaptive management cycle



Source: DPIPWE 2014 after Jones 2005, 2009

This story map is on our website!

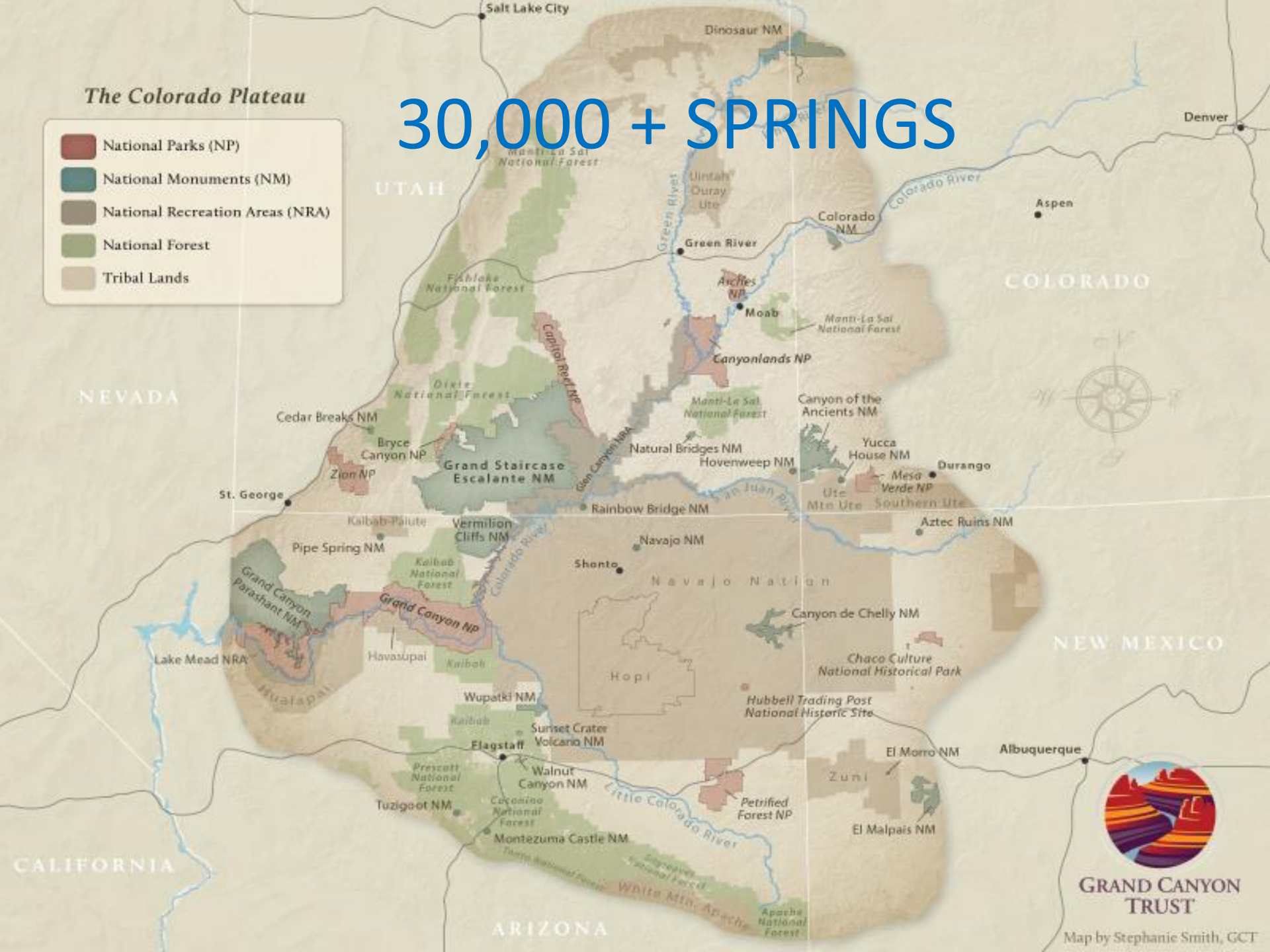
GRAND CANYON TRUST

Threatened Waters: Grand Canyon's Seeps and Springs

At first glance, the Grand Canyon is dry, dusty, and desolate—a mile-deep crack in a parched desert landscape. Look a little closer though, and, you'll discover hidden pockets of life where water gushes out of the ground, canyon tree frogs sing, and monkey flowers cling to mossy walls.

PILOT: CLIMATE ADAPTATION ACTION

MEASURING SUCCESS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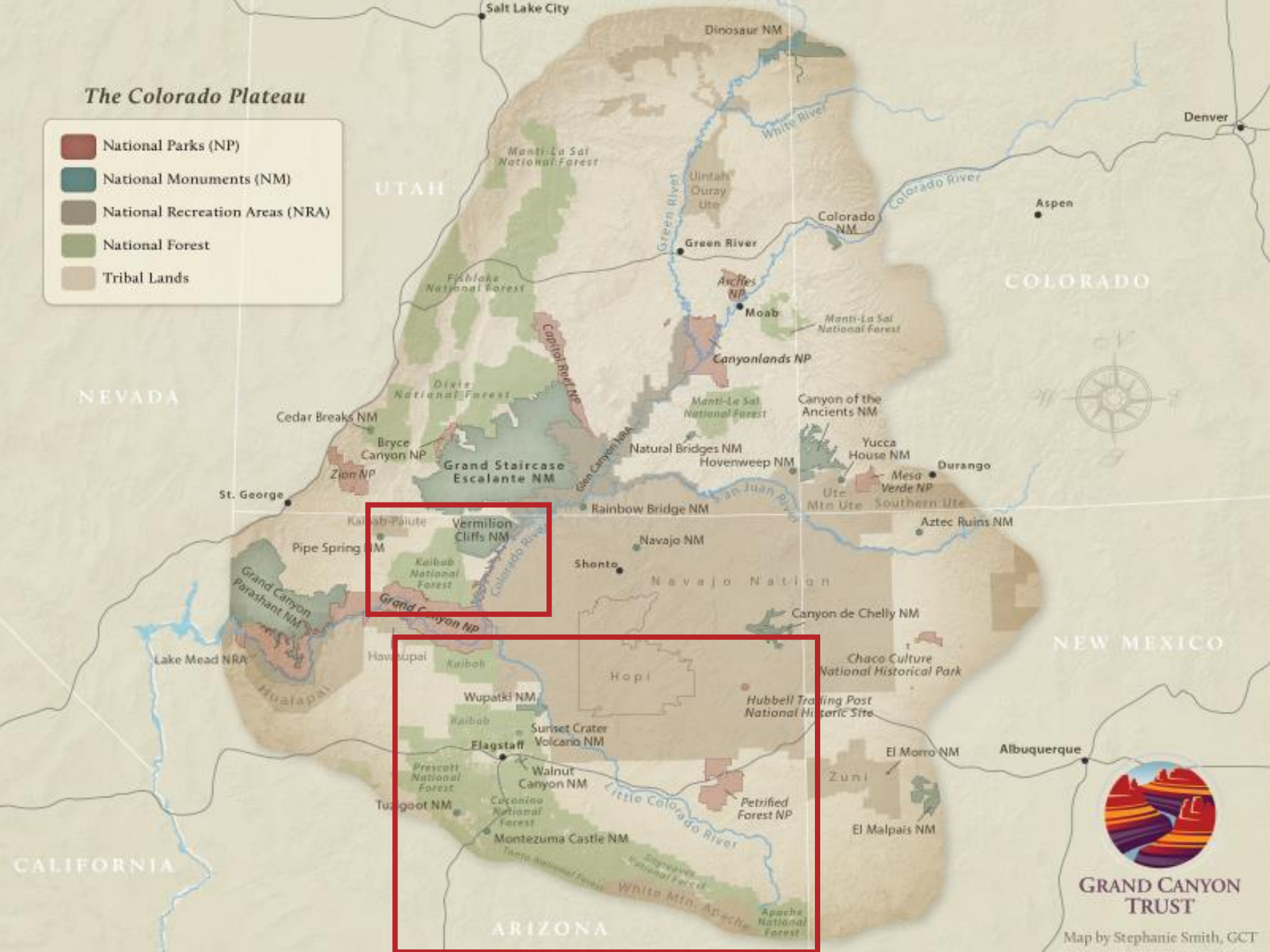
ARIZONA
GRAND CANYON TRUST
Map by Stephanie Smith, GCT

30,000 + SPRINGS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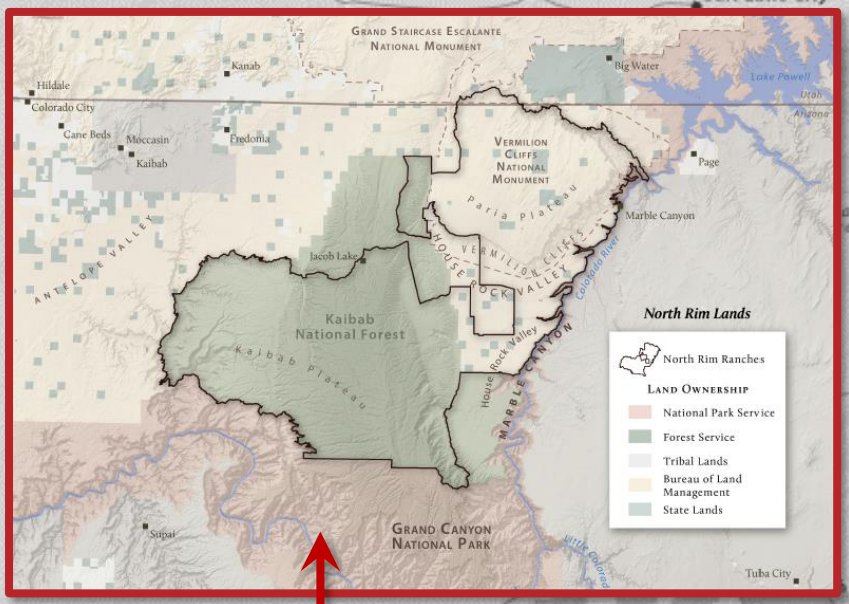

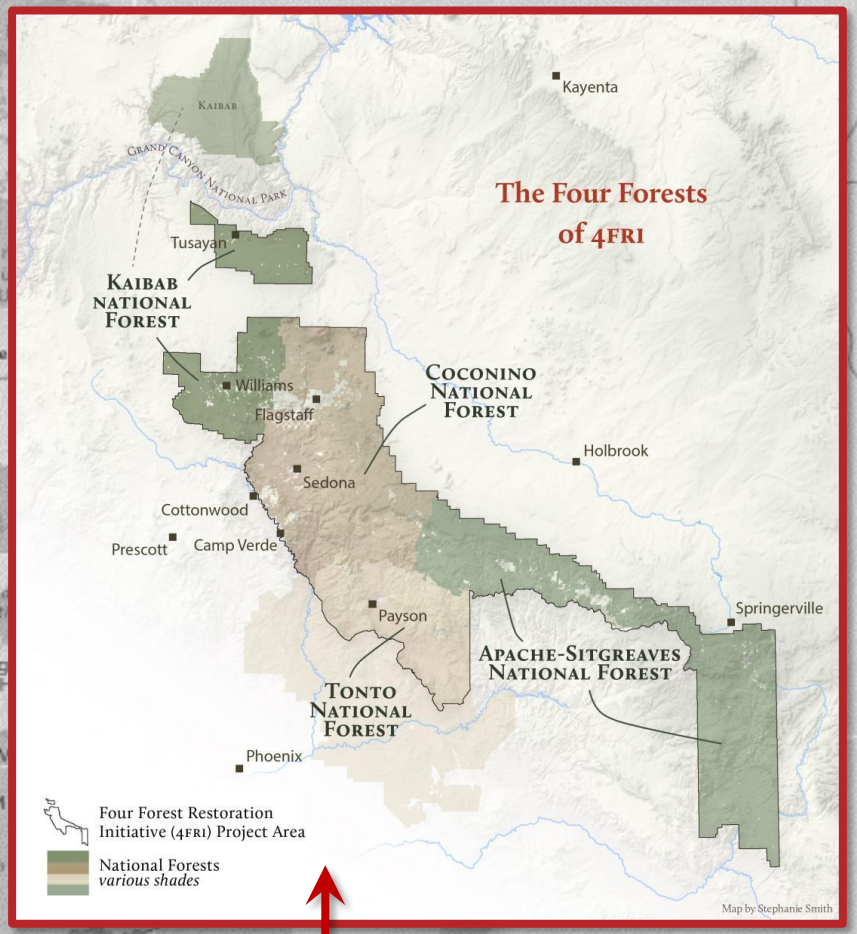

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CALIFORNIA
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North Rim Ranches

4FRI

Grand Canyon Trust

Map by Stephanie Smith, GCT

PARTNERSHIPS: THINGS TO KEEP IN MIND

Pilot projects → Try a low cost, small scale. Spread the word about what you've learned.

Relationships + working together → Find that common ground. Bridge those divides. Include stakeholders. None of us can do it alone.

Good starts → Start with those "easy wins." Where are stakeholder priorities? Compromises can be okay.

Sharing + learning → Continue to close those knowledge gaps, and use this knowledge to inform action (adaptive management).

Scenarios → Uncertainty is inherent. Think in scenarios – what is the worst-case risk from this action? What is the best-case? What is the cost of no action? What are the co-benefits?

Patience… but also tenacity → If you want to go fast go alone, if you want to go far go together. Collaboration takes time. Agencies take (more) time. Coordinators play a key role.

PARTNERSHIPS: THINGS TO KEEP IN MIND

People Power → The best advocates for restoration can come from outside the office. People want to be engaged and there are many ways they can support!

PEOPLE POWER

Citizen Scientists 2016-2019

SPRING NAME _____ SURVEY DATE _____ OBSERVERS _____ SHEET 1 OF 9

SITE · GENERAL

SPRING NAME _____ SSI SITE ID *(optional)* _____

LAND UNIT MANAGER _____ DETAIL *(Forest/District/Other)* _____ ALLOTMENT/PASTURE *(optional)* _____

ACCESS DIRECTIONS TO SPRING *(only update if needed)* _____

Describe the spring ecosystem including approximate size, physical setting, and notable geologic or other features.

SITE DESCRIPTION *(only update if needed)*

SURVEY · GENERAL

DATE _____ BEGIN TIME _____ END TIME _____ PROJECT _____

OBSERVERS _____ PRECIPITATION/WEATHER _____

SITE · GEOREFERENCE

Record a GPS point at the source. If source can be located but is inaccessible, record a GPS point from the nearest safe location, note direction and distance to source, and describe location of GPS point marked instead. For a springs complex, record a GPS point at each visible source and note each uniquely. If making a new sketch map, note each GPS coordinate uniquely and mark location on sketch map using a **G**. *Additional points could be added on to a separate page. Decimal degrees preferred.*

LOCATION: Did the GPS point you were given get you to within 30 meters of the spring? ☐ YES ☐ NO*

**If NO, record new GPS point below. If spring cannot be found, indicate "NOT FOUND" in the table.*

DEVICE NAME _____ DATUM *(Check one)*: ☐ NAD83 ☐ WGS84 ☐ OTHER _____ POSITION ERROR _____

POINT NAME/NUMBER	DESCRIPTION	EASTING/LONGITUDE	NORTHING/LATITUDE	ELEVATION *(feet)*

1 Datasheet Version: 3/23/2018 5:23:00 PM DATA ENTRY· NAME _____ DATE _____ 1

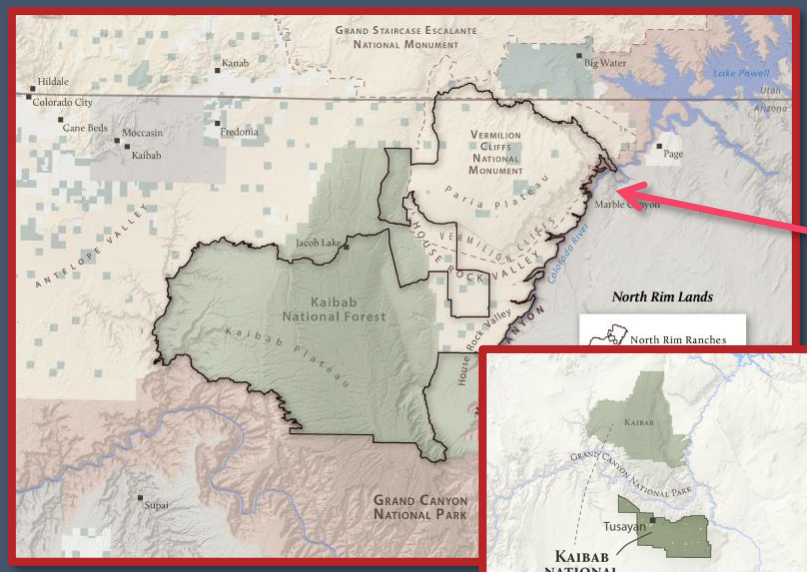
SPRINGS STEWARDSHIP INSTITUTE
a GLOBAL INITIATIVE *of the* MUSEUM *of* NORTHERN ARIZONA

www.springsstewardshipinstitute.org

PEOPLE POWER

Citizen Scientists 2016-2019

145 Springs Surveyed



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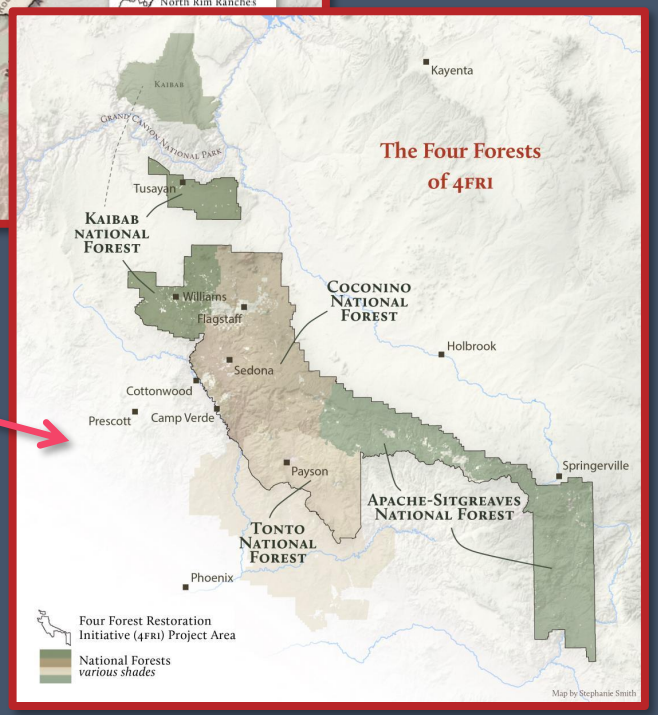

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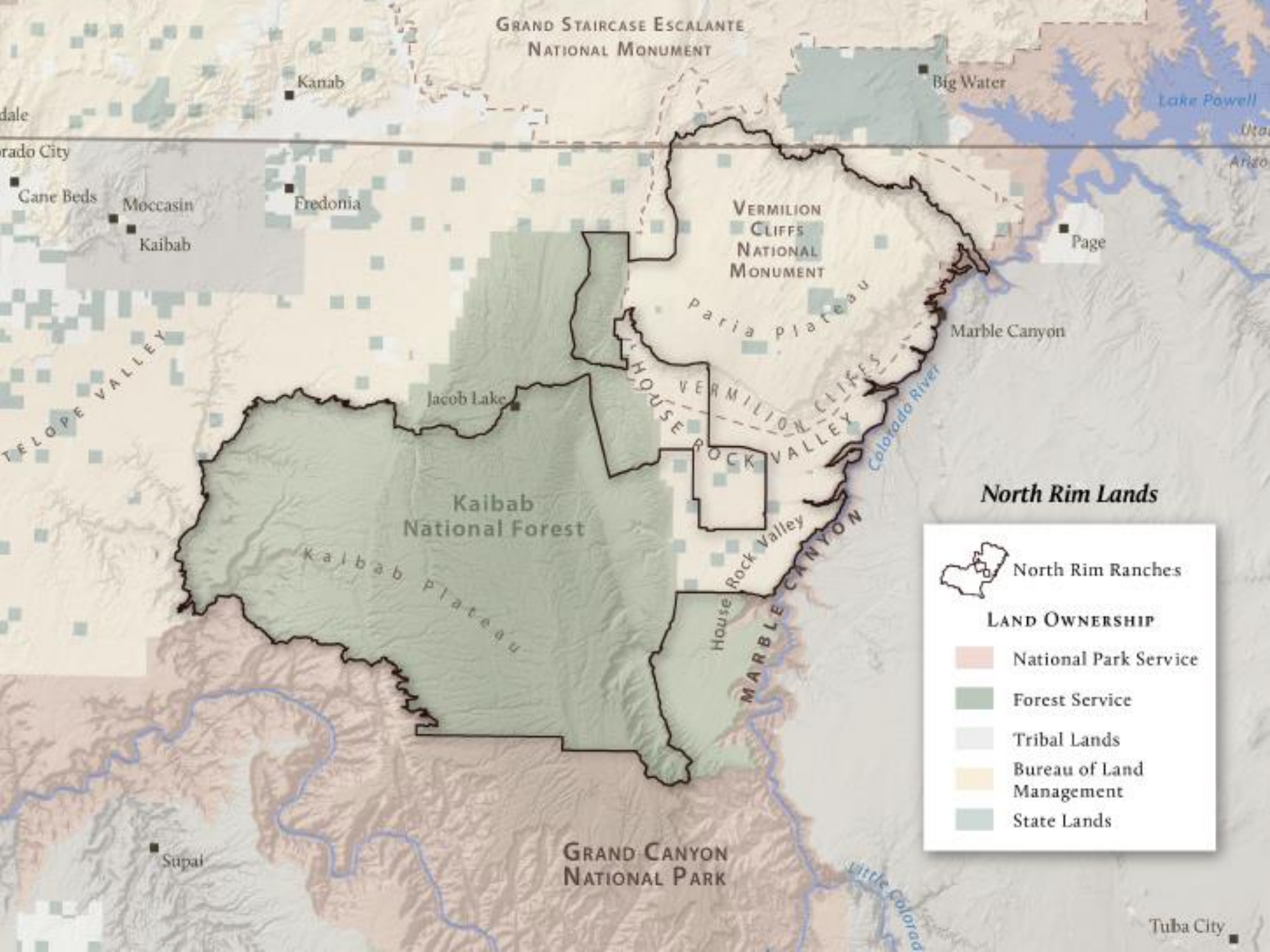
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Tuba City

COLLABORATIVE PROJECTS

Spring Exclosures

7 Volunteers (224 hours)

+ 3 USFS

+ 2 GCT

COLLABORATIVE PROJECTS

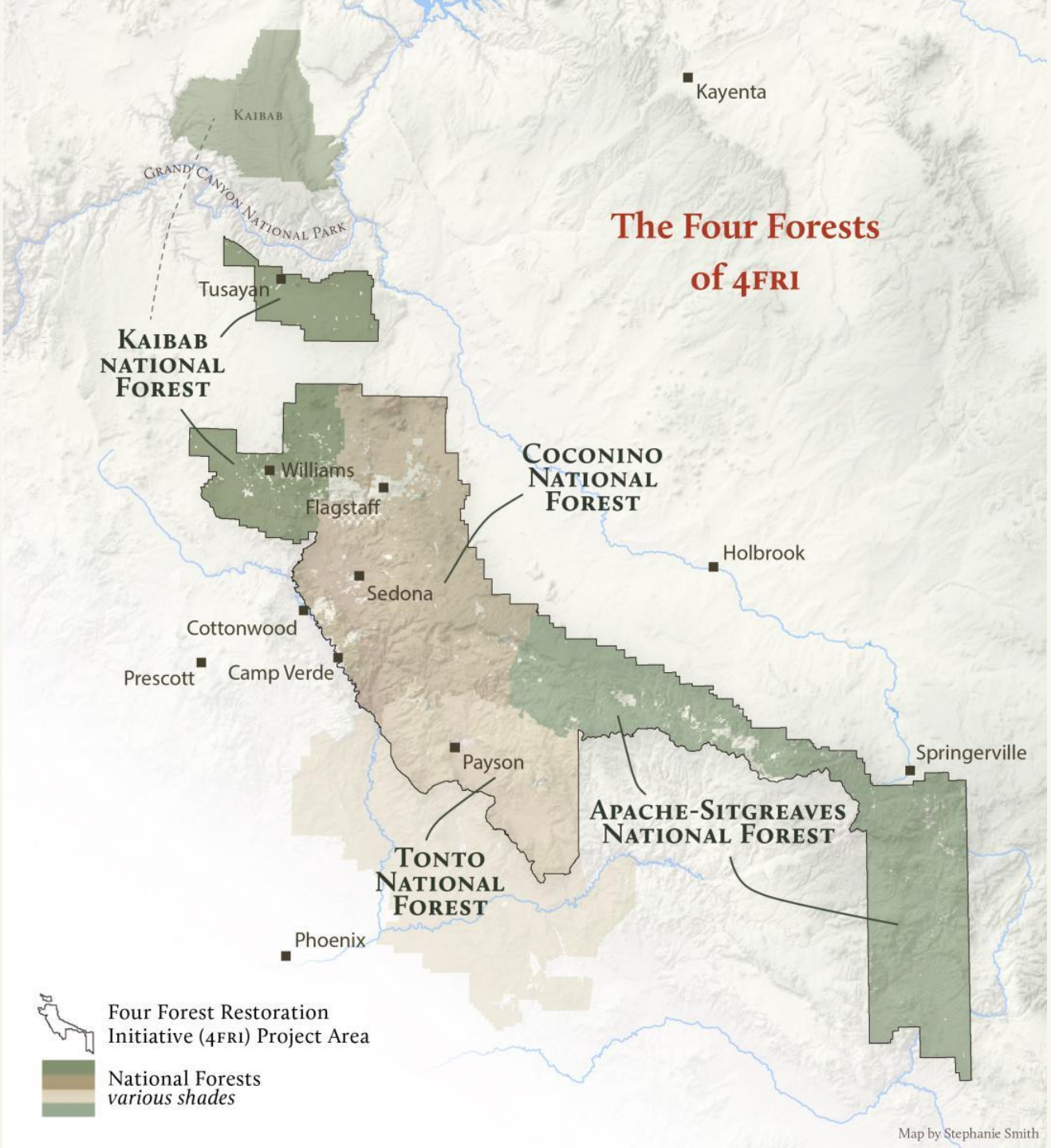
Lake + Wet Meadow Exclosures

21 Volunteers (630 hours)

+ 10 USFS

+ 4 GCT

+ 1 AGFD


The Four Forests of 4FRI
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Kayenta
Williams
Flagstaff
Coconino National Forest
Holbrook
Sedona
Cottonwood
Prescott
Camp Verde
Payson
Springerville
Apache-Sitgreaves National Forest
Tonto National Forest
Phoenix
Four Forest Restoration Initiative (4FRI) Project Area
National Forests
various shades
Map by Stephanie Smith

COLLABORATIVE PROJECTS

Spring Exclosures + Plantings

18 Volunteers + 1 NFF
+ 2 GCT + 1 USFS

COLLABORATIVE PROJECTS

Spring Exclosures + Plantings

June 2019 Photos
Spencer Plumb,
National Forest Foundation

September 2018 → June 2019

COLLABORATIVE PROJECTS

Rock run-downs, one-rock dams, Zuni bowls

10 Volunteers (180 hours)
+ 5 GCT + 5 USFS

COLLABORATIVE PROJECTS

Rock run-downs, one-rock dams, Zuni bowls

December 2019 Photos
Matt O'Neill,
US Forest Service

July 2019 → December 2019

COLLABORATIVE PROJECTS

Road decommissioning + berm excavation + re-seeding

USFS + AGFD + Natural Channel Design

NEXT STEPS

- **Spring boxes like this cover spring sources across the Colorado Plateau.**
- **Some springs no longer have perennial or even seasonal water.**
- **Springs in multiple-use landscapes are exposed to overuse.**

NEXT STEPS

→ Continue citizen science + springs assessment
→ Continue to plan + implement actions
→ Gather knowledge + best practices for springs
→ Work with managers to increase climate change + springs considerations
→ Continue to advocate for water protections

MANY THANKS!

MANY THANKS!

AZ Game & Fish Department
Friends of Northern Arizona Forests
National Forest Foundation
Northern Arizona University – M.S. ES&P Students
Patagonia
Plateau Ranches
Springs Stewardship Institute
TerraBirds
U.S. Fish & Wildlife Service
U.S. Forest Service
Wilburforce Foundation
Wildlife Conservation Society

OUR ASK

↓

Come volunteer

Be an advocate

Share your expertise

Stay in touch

!

GRAND CANYON TRUST

To volunteer, check out our website:
www.grandcanyontrust.org /volunteer

- Field-based: Summer restoration trips will be posted in February!
- Office-based: Data entry volunteers always welcomed!

SUPPLEMENTAL

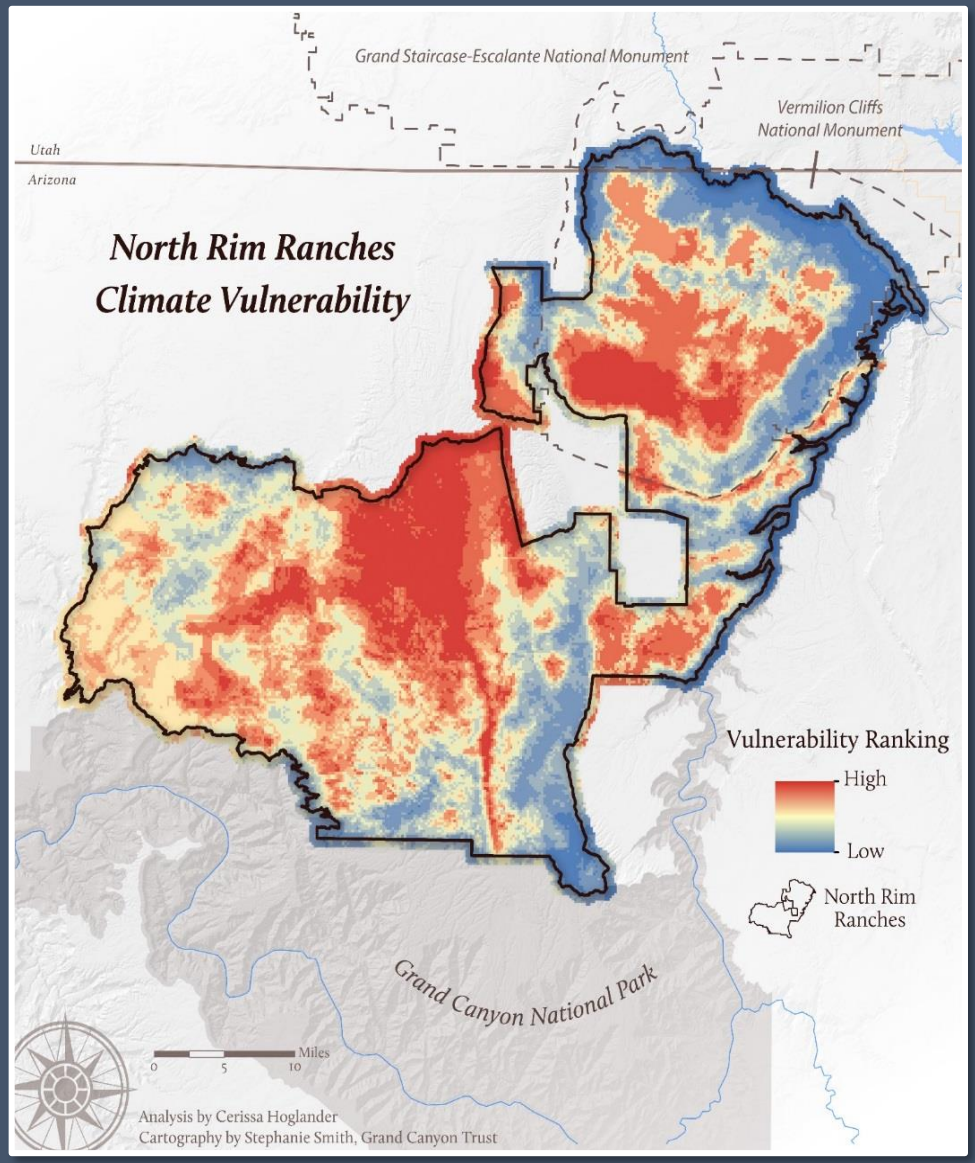
YEAR	RESTORATION	SURVEYS
2017	**4 North Rim Springs + Lakes** 1 Volunteer Trip 1 Service Learning Trip (20 volunteers, 461 Hours)	**27 North Rim Springs** **19 4FRI Springs** 2 Volunteer Trips (11 Volunteers, 350 Hours)
2018	**2 North Rim Springs + Lakes** **1 4FRI Spring** 3 Volunteer Trips (58 Volunteers, 798 Hours)	**32 Southern Utah (!!!) Springs** **2 Volunteer Trips** 17 Volunteers (17 Volunteers, 434 Hours)
2019	**2 North Rim Springs + Lakes** **2 4FRI Springs**	**60+ 4FRI Springs** **Post-restoration Surveys**

PRIORITY ADAPTATION **ACTIONS.**

PROTECT WATER RESOURCES.
ADAPT DEVELOPED SPRINGS.
RESTORE DEGRADED SPRINGS.

120+ SPRINGS
50%? DEVELOPED
???? DEGRADED

1. CLIMATE ADAPTATION PLANNING



- ✓ Landscape-scale vulnerability map
- ✓ Climate impact scenarios
- ✓ Adaptation action recommendations

RIPARIAN AREAS ARE **KEYSTONE ECOSYSTEMS**.

- Biodiversity hotspots
- Water resources for livestock, wildlife, people
- Habitat connectors
- Climate refugia
- Sensitive indicators
- Sacred + culturally significant

RIPARIAN AREAS ARE **THREATENED**.

- Climate change
- Multiple uses, agencies
- On-site development
- Invasive species
- Trampling
- Mining
- Groundwater pumping
- Lack of protections

… & many others