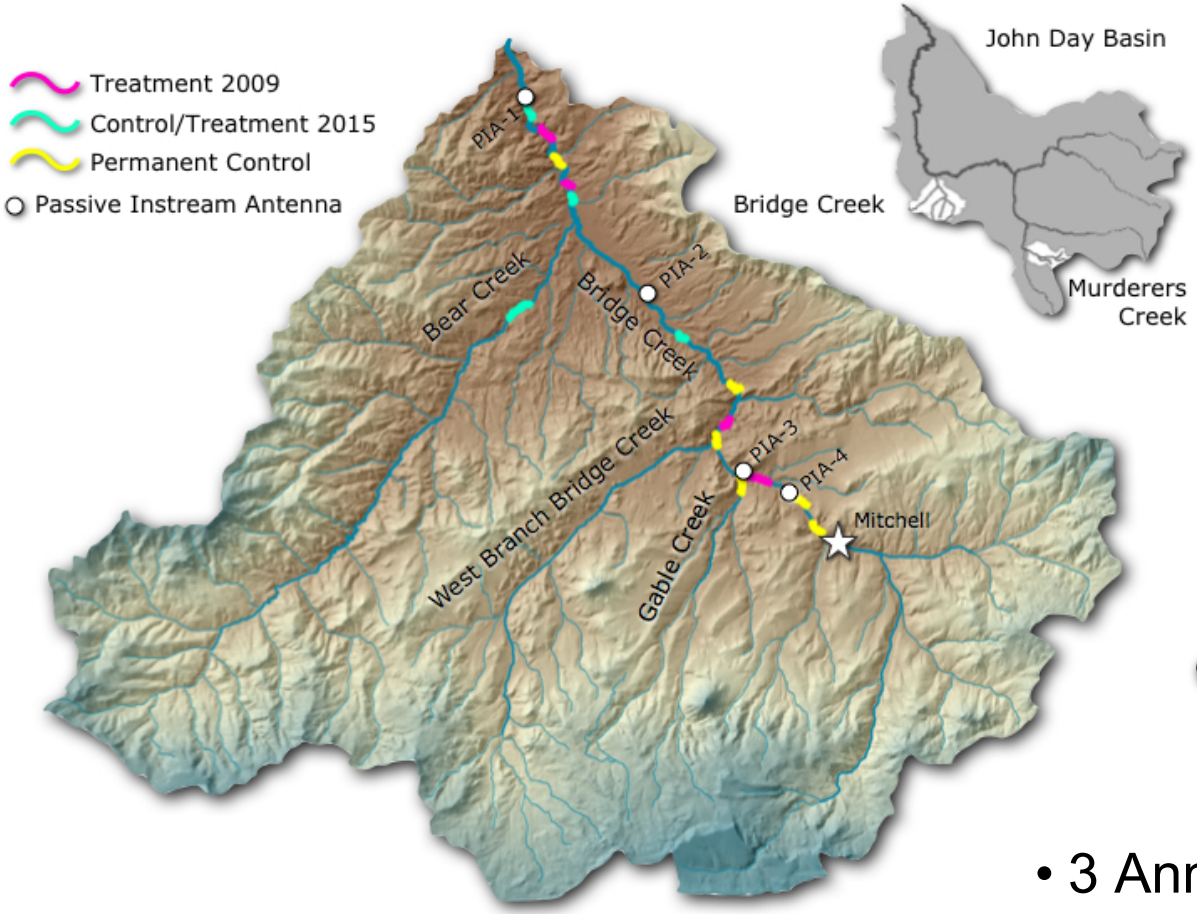
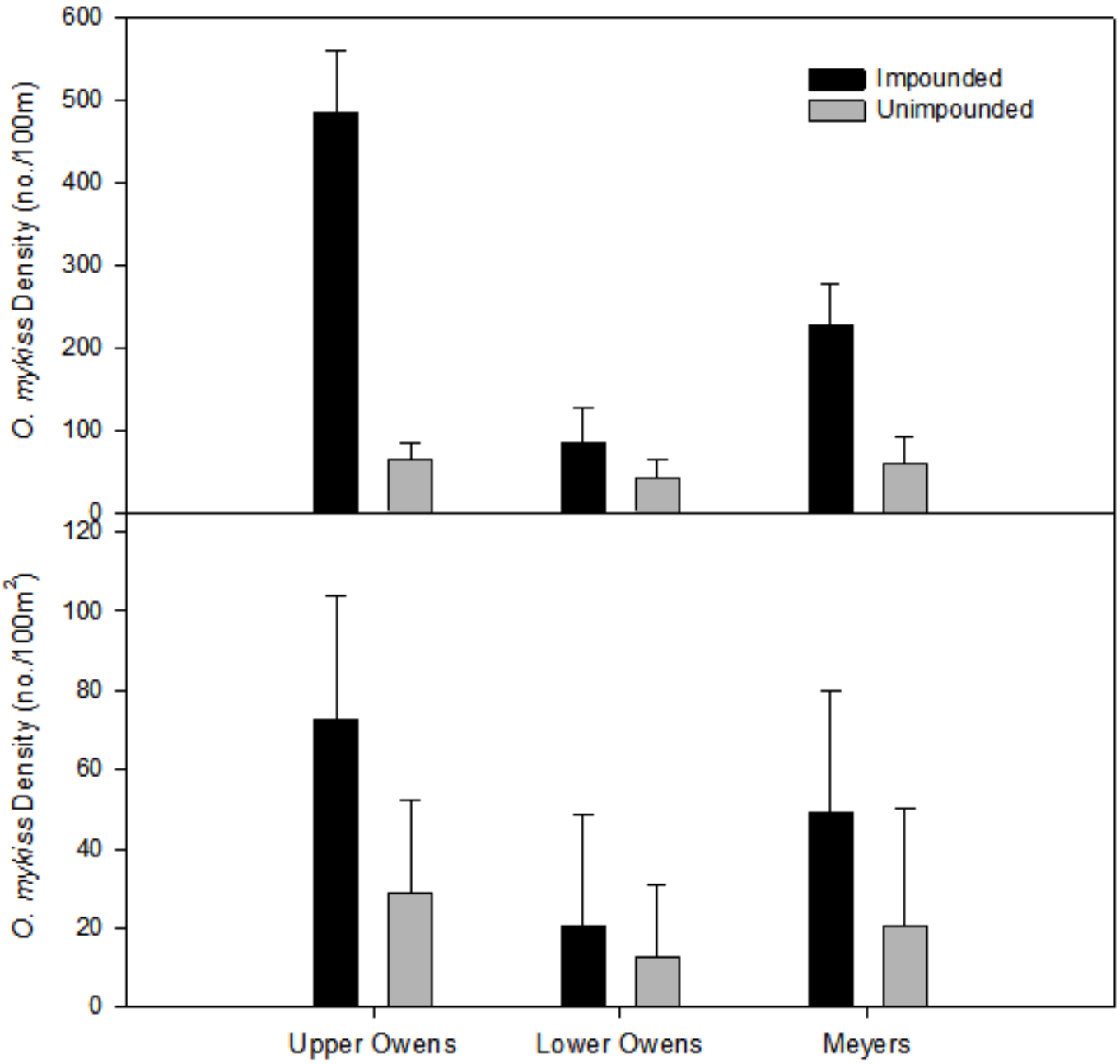
Beaver Dams
• 2008 = 22 (pre-BDAs)
• 2016 = 164!

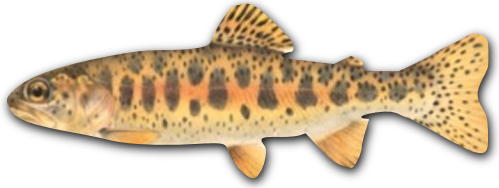
Bridge Creek Fish Population Monitoring

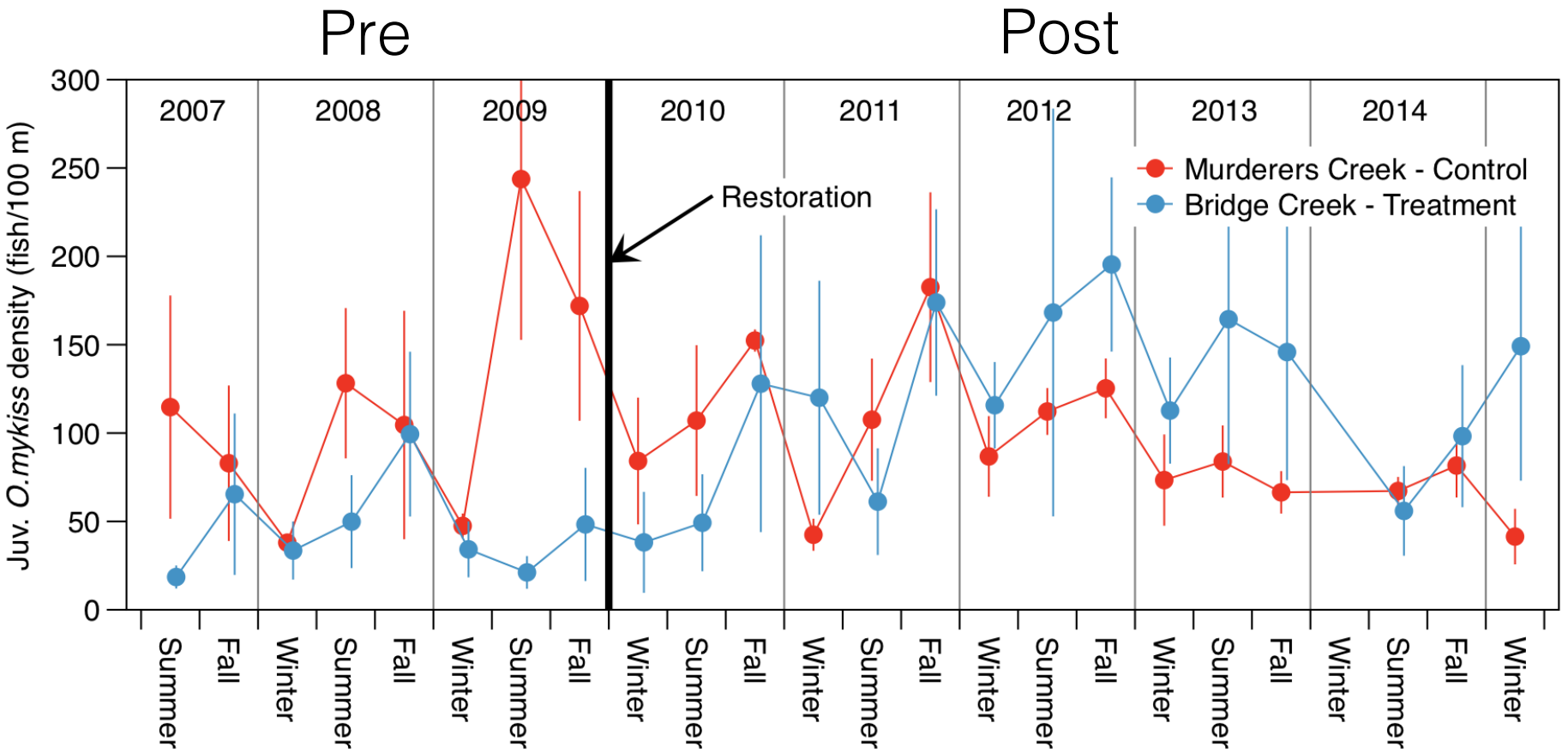


- 3 Annual M-R Surveys - 9 yrs
- ~ 50,000 Juveniles Pit-tagged
- 4 Passive Instream Antennas
- Adult Steelhead Trap


600
500
400
300
200
100
0
O. mykiss Density (no./100m)
Impounded
Unimpounded
120
100
80
60
40
20
0
O. mykiss Density (no./100m2)
Upper Owens
Lower Owens
Meyers

Juvenile *O.mykiss* Density (fish/100 m)



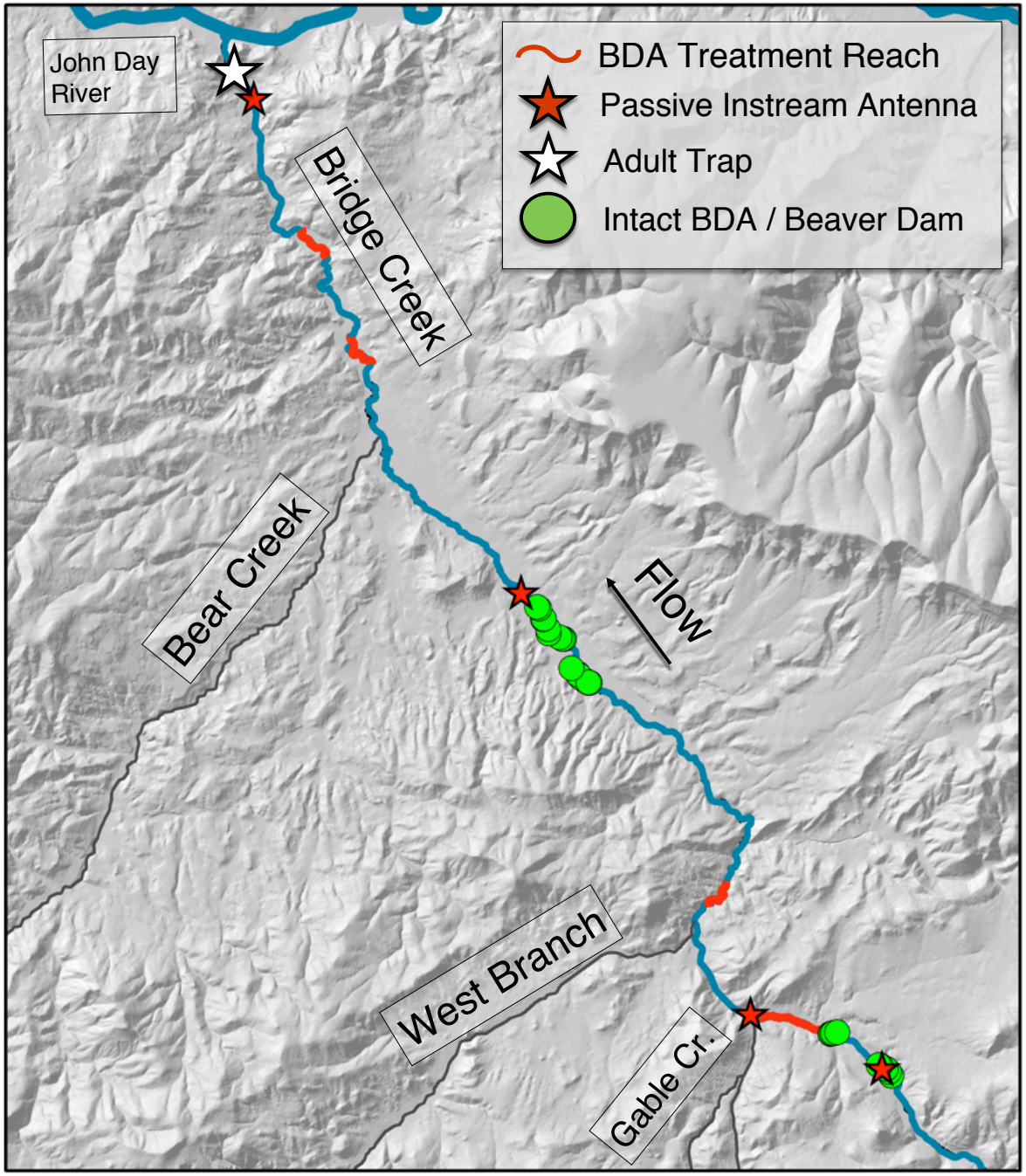


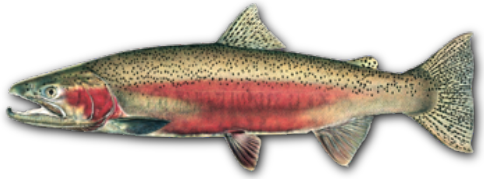
Bouwes et al. 2016 *Scientific Reports*

Steelhead Response to increase in beaver dams and BDAs

168% increase in abundance
52% increase in survival
172% increase in production

Barriers??‘

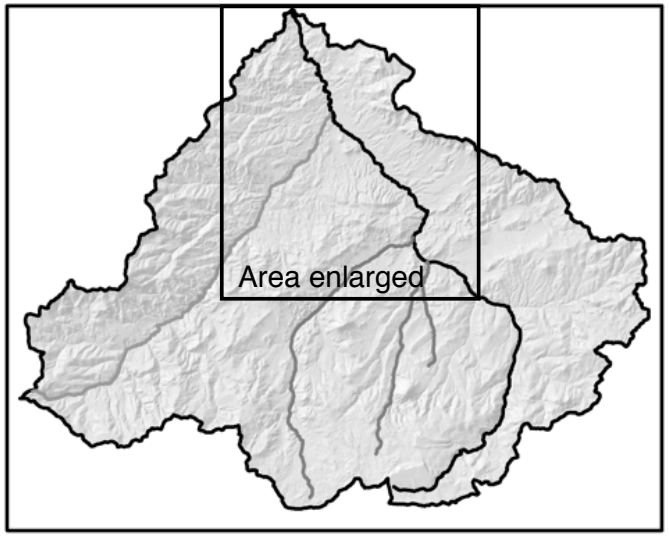


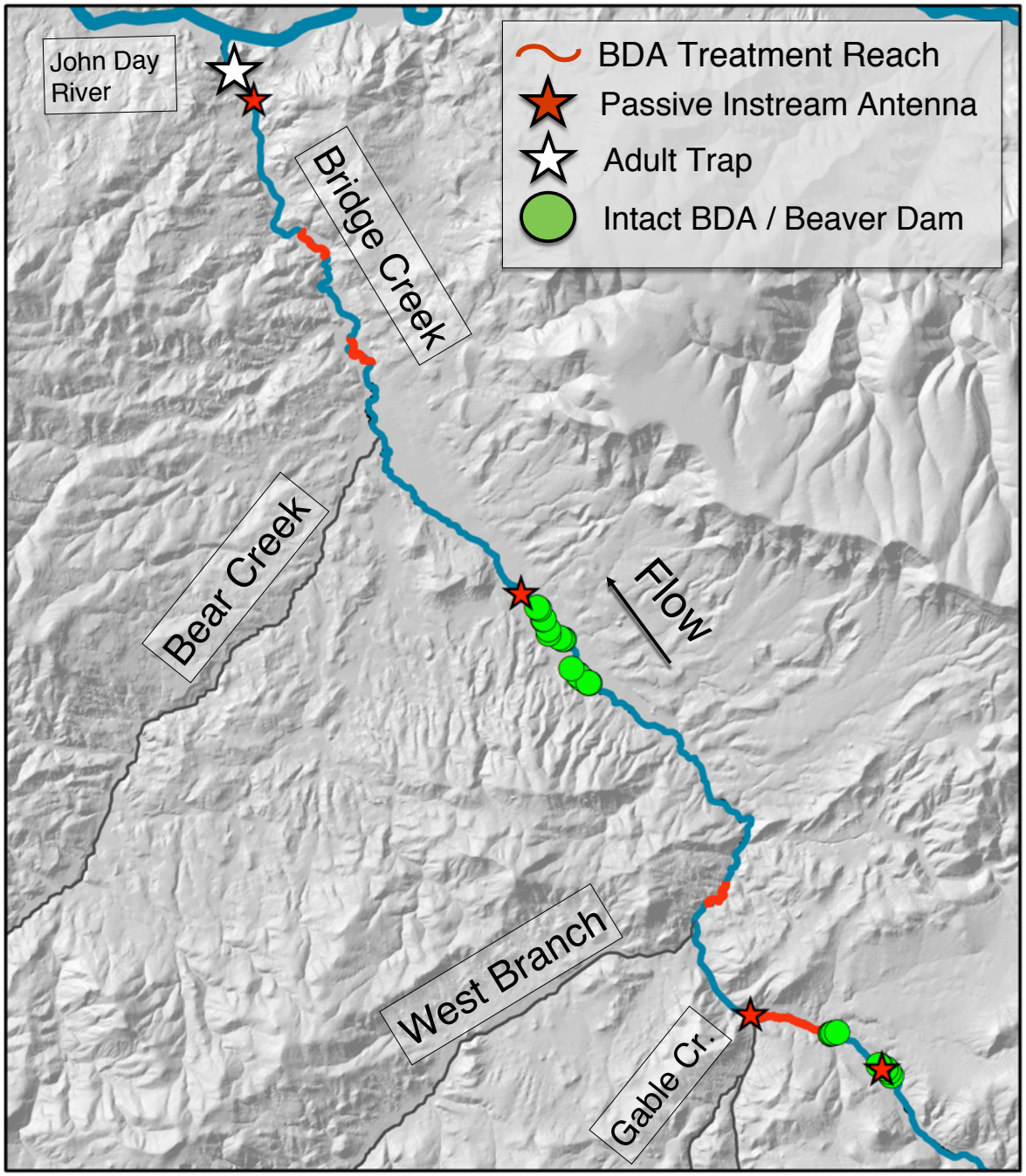


Fish Passage

- 4 Instream Antennas
- Adult Steelhead Trap

78,000 PIT-tagged *O.mykiss*

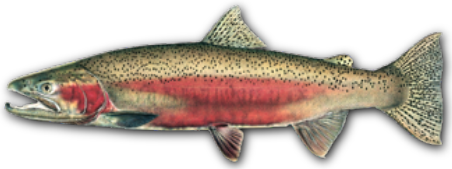




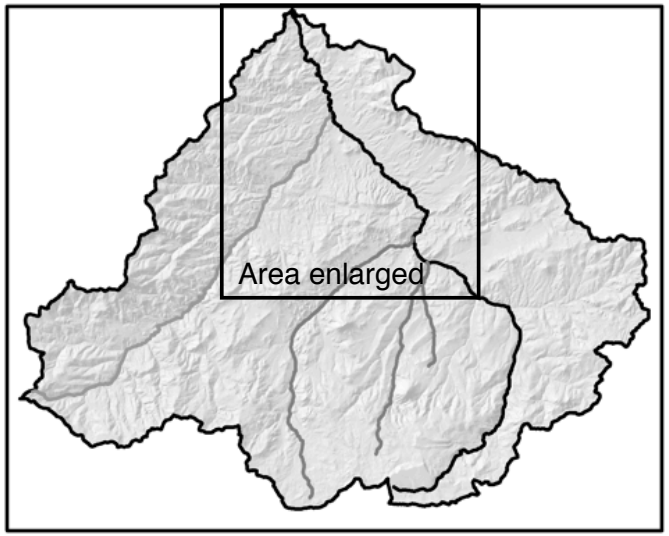
2009

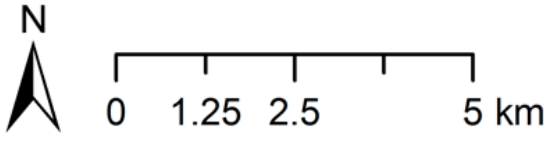
Pre-restoration

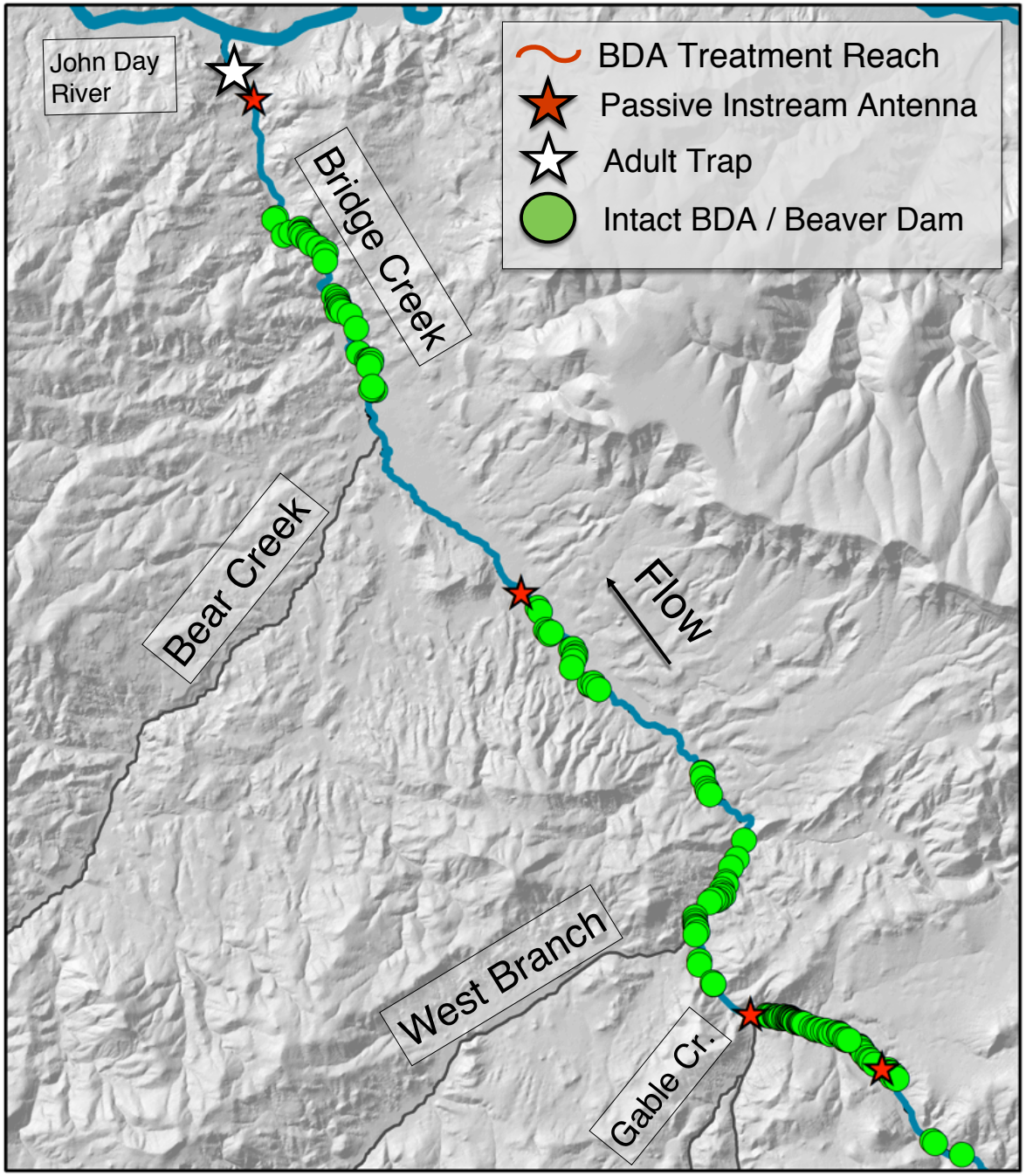
22 Beaver Dams



17% Passage



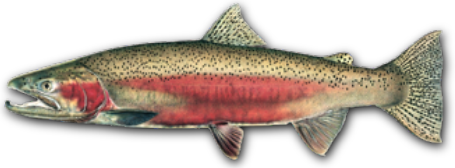




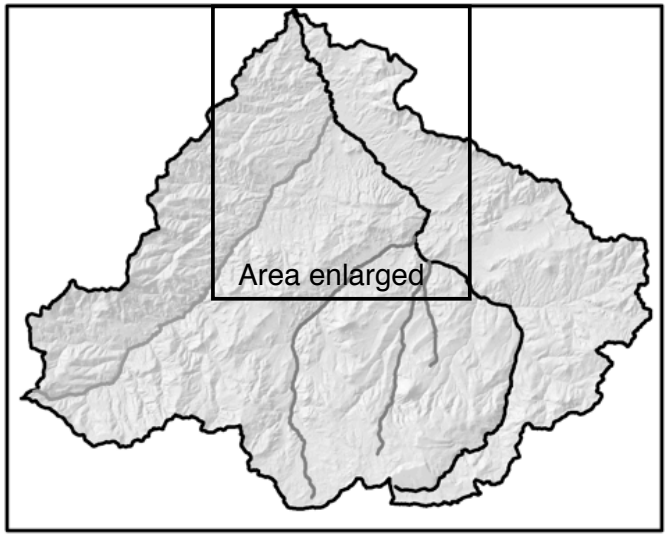
2016

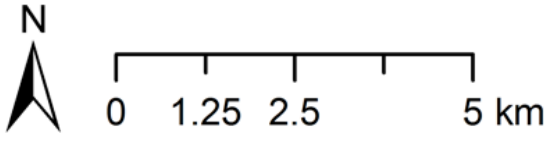
Post-restoration

164 Beaver Dams



29% Passage





BDA Projects are Young

Long-term impacts unknown?

Impairments treated by beavers

- Channel incision/disconnected floodplains
- Water storage
- Low flows (bump up surface water)
- Riparian expansion
- Habitat complexity for fish
- Habitat complexity for amphibians
- Habitat complexity for birds (e.g. sage grouse)
- Increase forage and water for cattle or wild ungulates
- Sediment storage
- Nutrient recycling

Birch Creek, ID – Restoring Perennial Flow

Restoration Goal

- Restore perennial flow

Setting

- Abundant forage for beaver
- Shallow water depth – high risk of predation
- Previously unsuccessful beaver translocation

Strategy

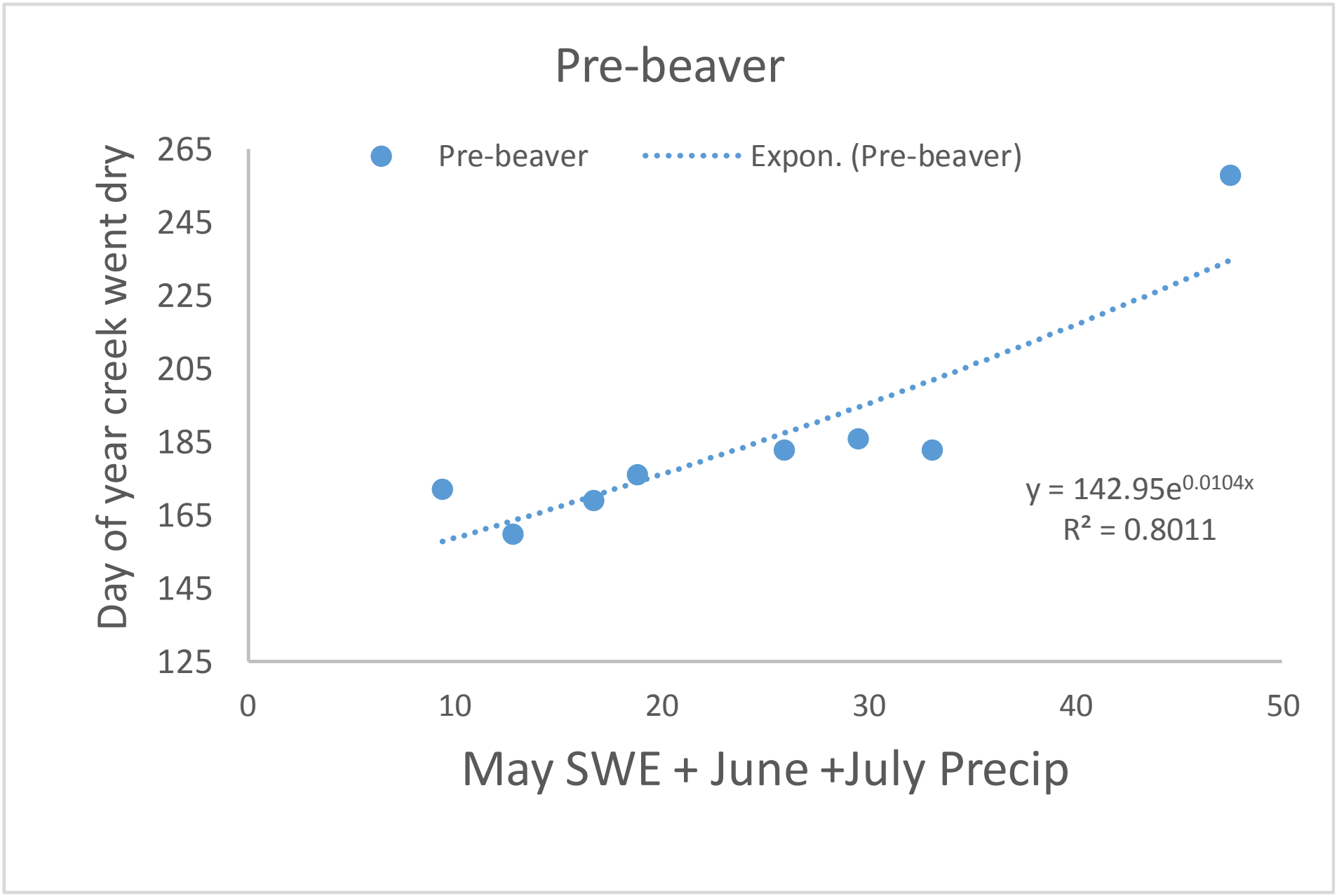
- Build BDAs to provide immediate habitat/refuge for beaver

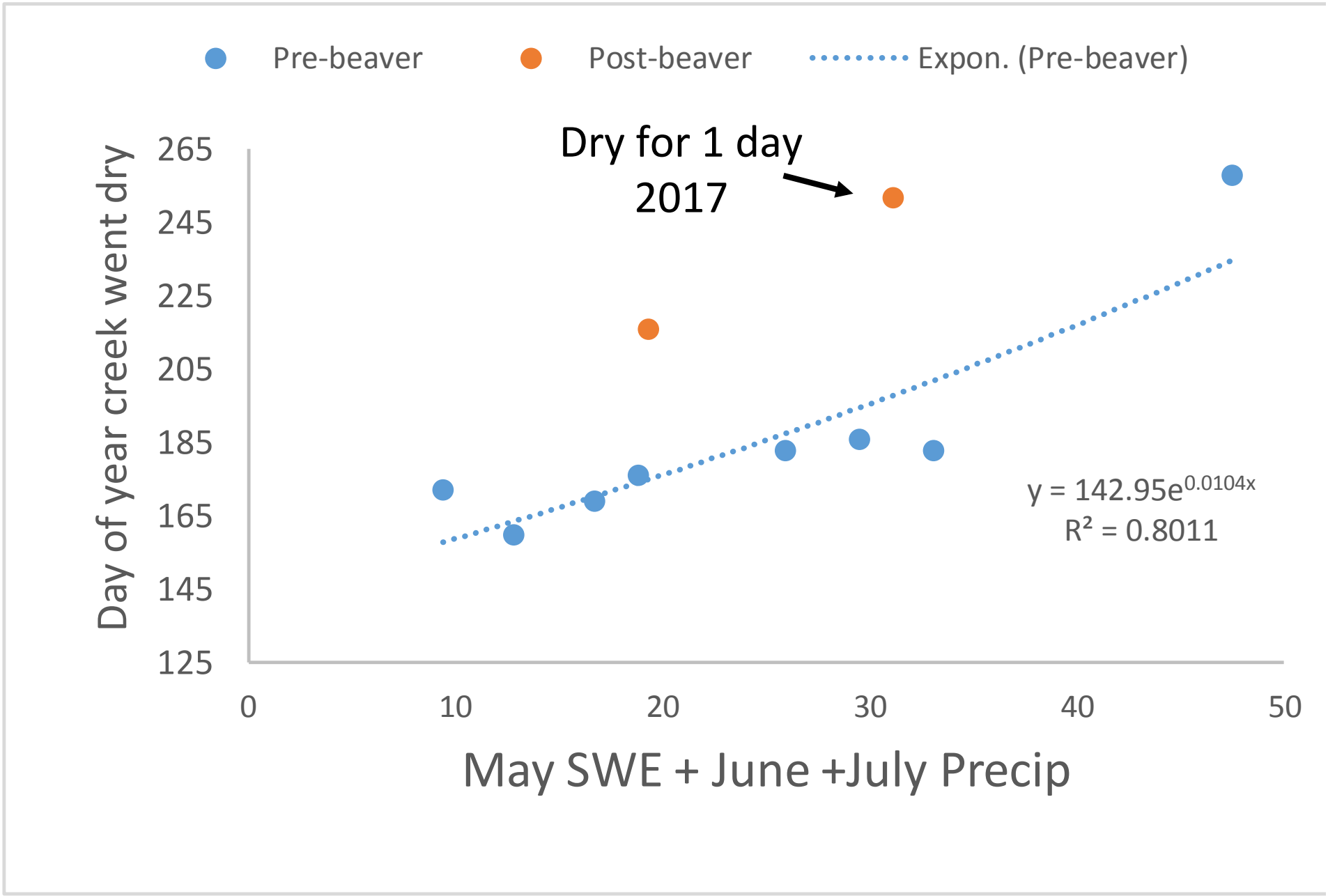
Birch Creek, ID – Restoring Perennial Flow

- Beaver utilized BDAs
- Successful translocation
- Continued beaver activity

BDA flooded by natural beaver dam built downstream

Birch Creek, ID – Restoring Perennial Flow


Pre-beaver
Pre-beaver
Expon. (Pre-beaver)
Day of year creek went dry
265
245
225
205
185
165
145
125
0
10
20
30
40
50
May SWE + June +July Precip
y = 142.95e0.0104x
R² = 0.8011


Pre-beaver
Post-beaver
Expon. (Pre-beaver)
Dry for 1 day
2017
Day of year creek went dry
265
245
225
205
185
165
145
125
0
10
20
30
40
50
May SWE + June +July Precip
y = 142.95e0.0104x
R² = 0.8011

Bear Creek, Wheeler County

August 7th, 2017

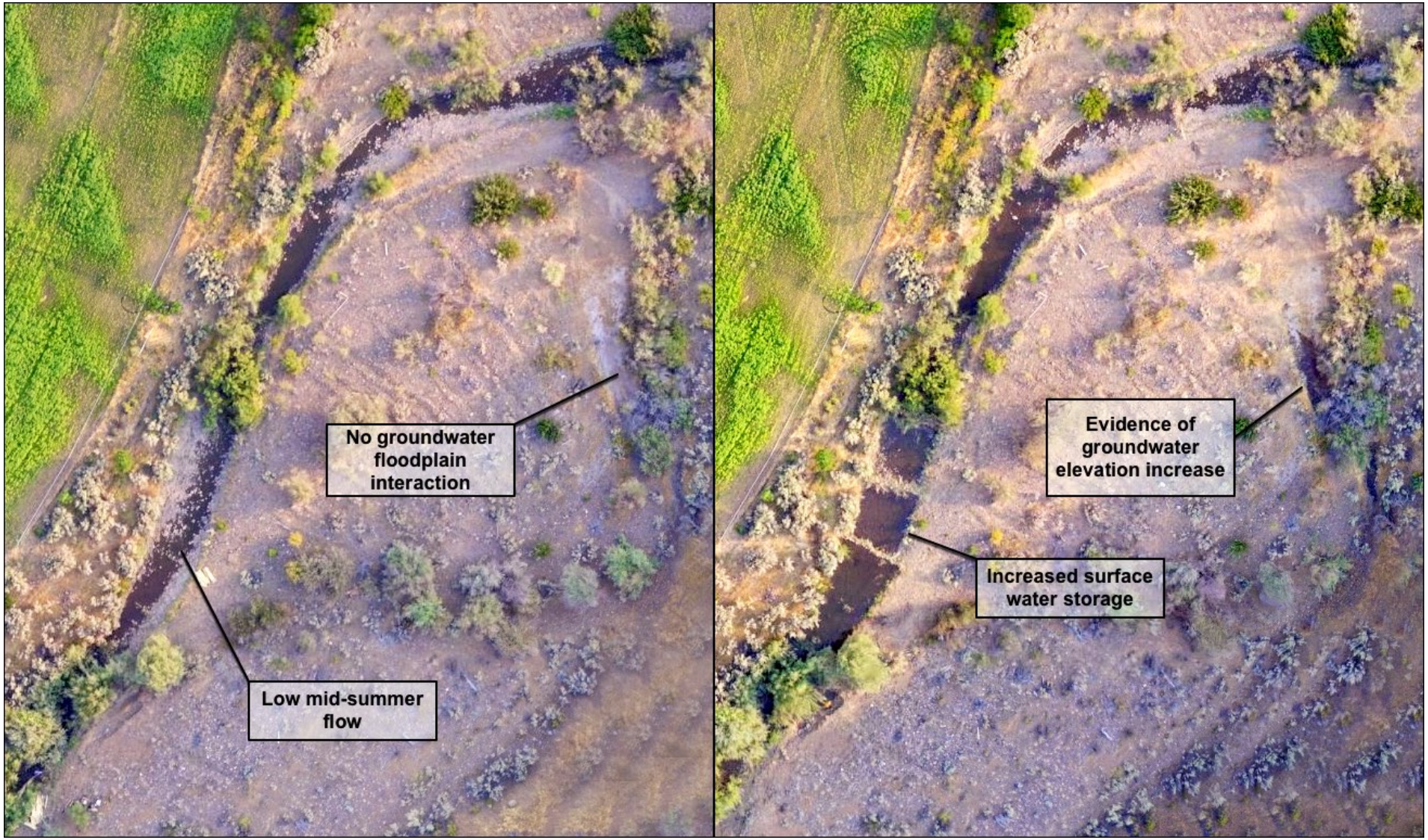
August 7th, 2017

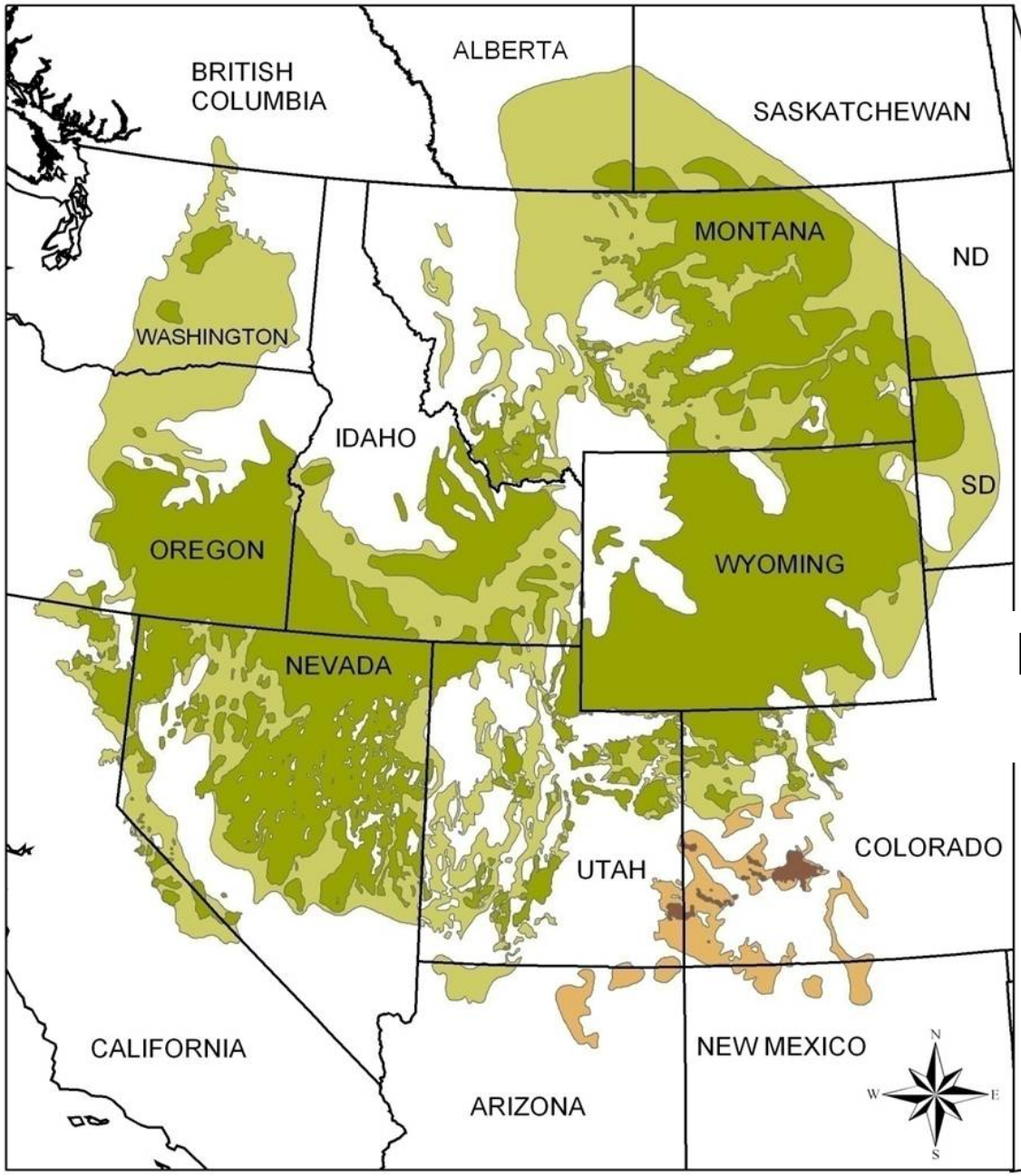
August 9th, 2017

BDA Response

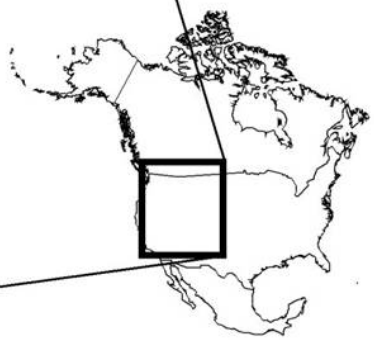
August 3rd, 2017

August 9th, 2017

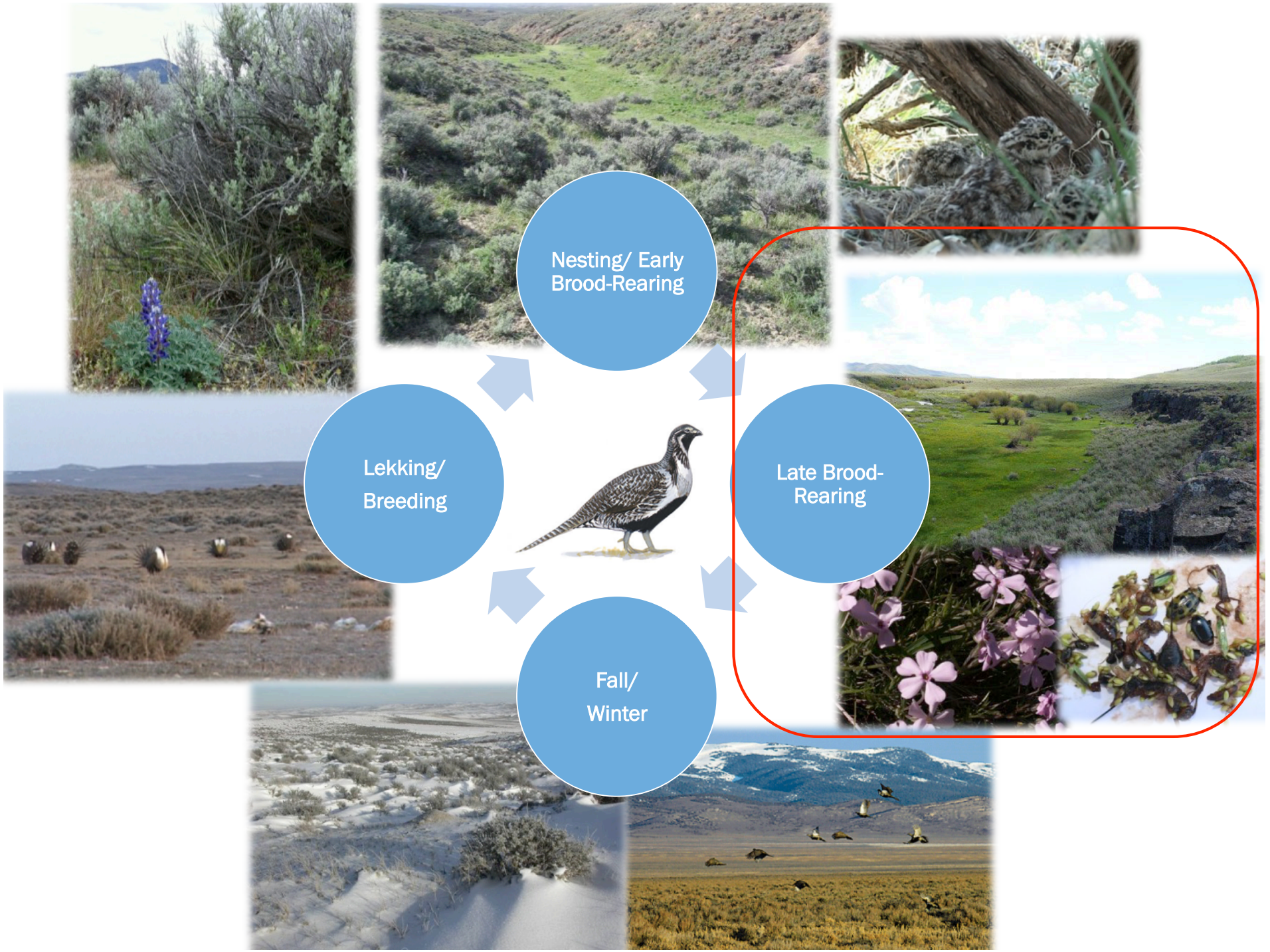


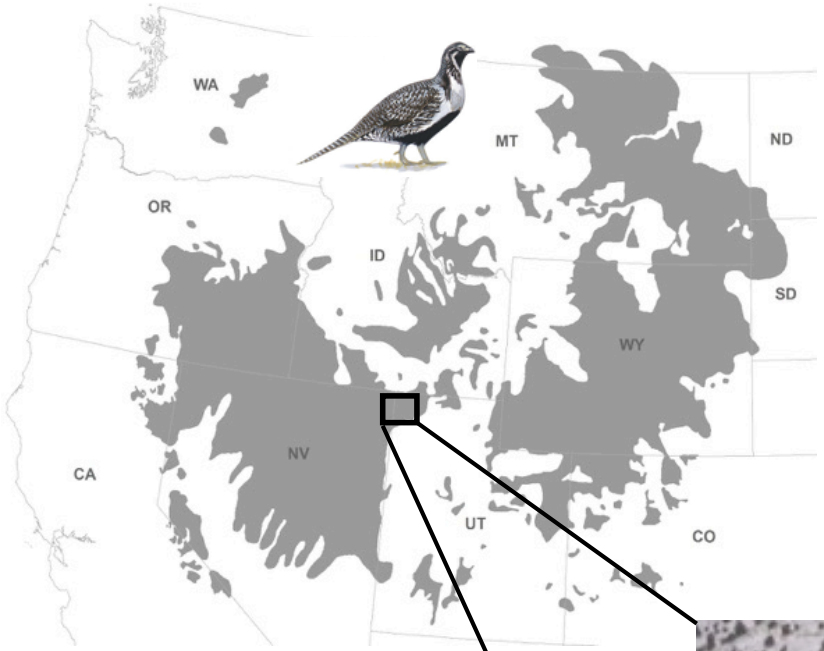


Bellwether for health of sagebrush ecosystem



Produced by C.L. Aldridge, after Schroeder et al. 2004, Condor 106:363-376


Nesting/ Early Brood-Rearing
Late Brood-Rearing
Fall/ Winter
Lekking/ Breeding


WA
MT
ND
OR
ID
SD
WY
NV
CA
UT
CO

WELCOME TO
GROUSE CREEK
"A PLACE LIKE NO OTHER"
EST. 1875

Partnership:

- WRI/SGI Funding
- Tanner Family
- Kent Sorenson (UDWR)
- USU
  - Eric Thacker, Randy Dahlgren, Terry Mesmer, Joe Wheaton
- Anabranch Solutions

Archives

Select Month

Categories

Tanner Family Improves Habitat For Cattle and Sage Grouse in Prime Habitat Area: NW Utah's Box Elder County

November 10, 2014

By Steve Stuebner (Story PDF)
(Note: This story coincides
the Nov. 13-
nternational Sage Grouse
m in Salt Lake City)

e Tanner family's Della
ch, they run about 1,000
d of Angus cattle on a mix
rivate and public lands in
heart of prime sage
se habitat in Northwest
, due west of the Great
Lake. During the summer

[Utah State University Magazine – Fall 2016]

UTAH's WATERSHED RESTORATION INITIATIVE

Maggie Creek

Recovery is the result of grazing exclusion since about 1993 and colonization of the area by beaver.

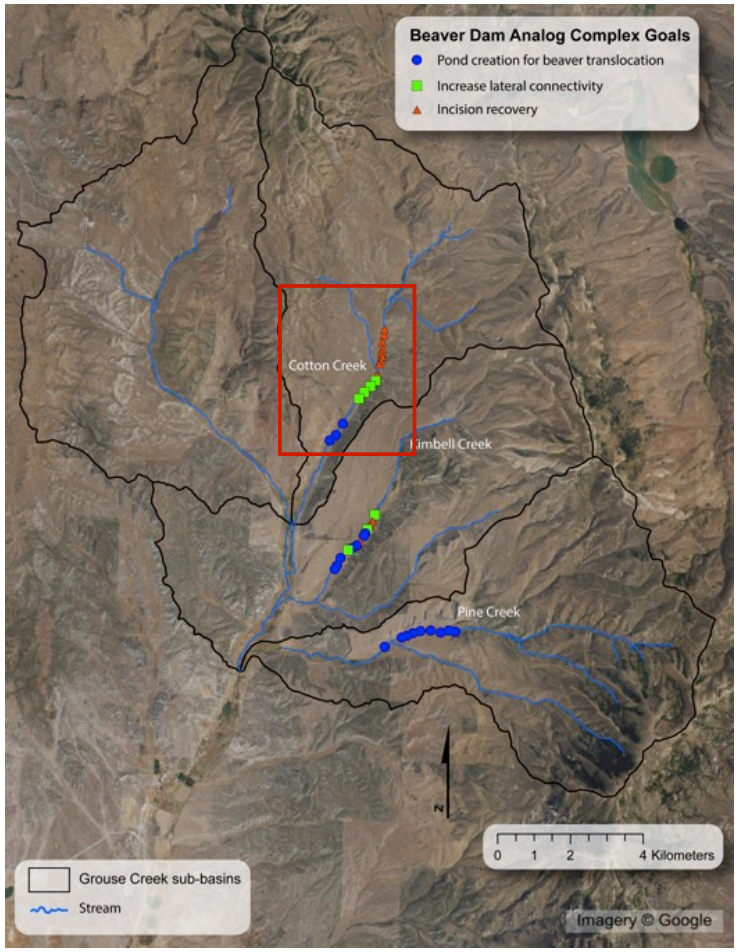
Reading the landscape…
expanding the emerarld ribbon

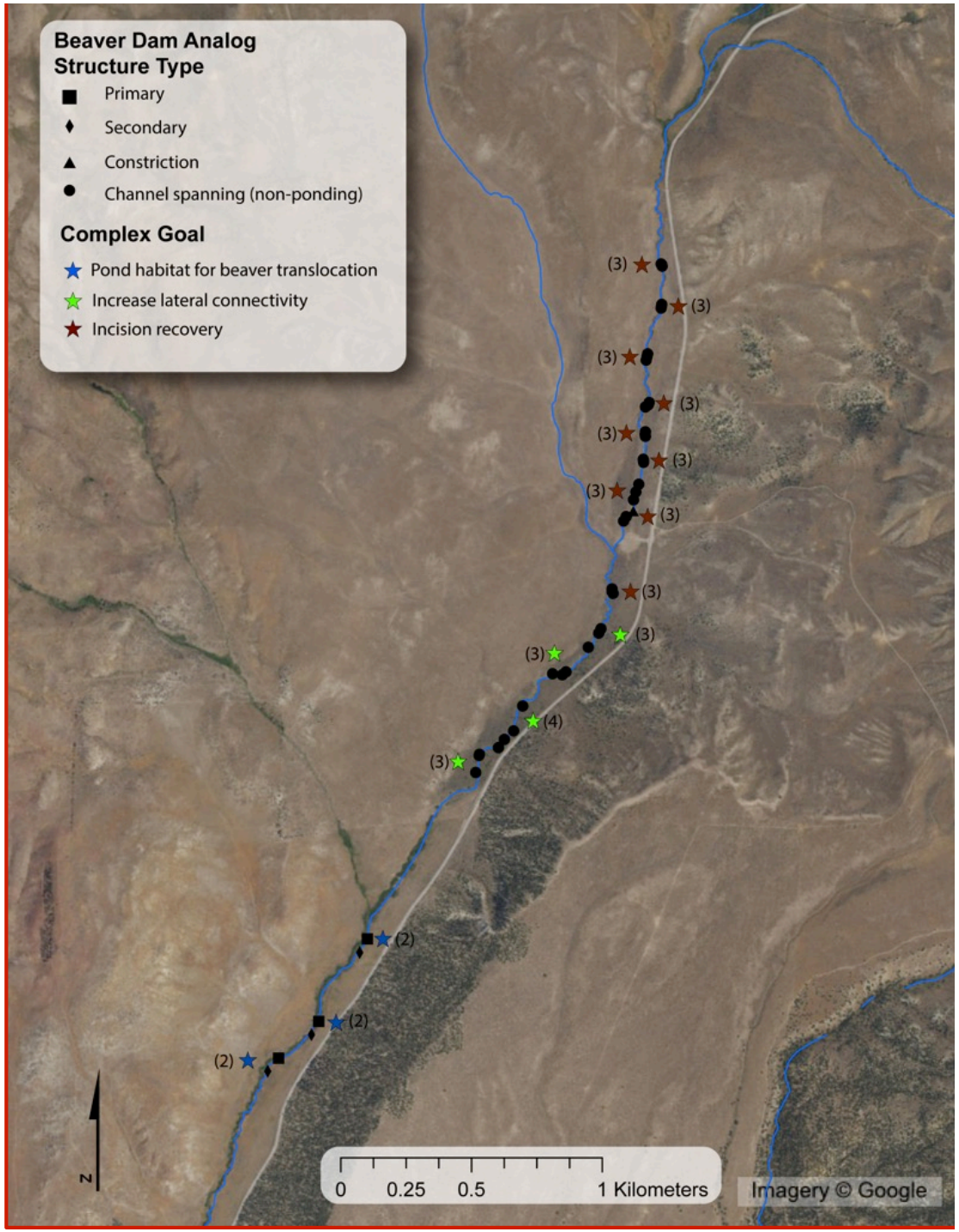
USDA NRCS

ANABRANCH SOLUTIONS

UtahState University
DEPARTMENT OF WATERSHED SCIENCES

BDA Treatments





Figures from Scott Shahverdian (Anabranch Solutions, 2017)

ANABRANCH SOLUTIONS

A pilot structure in high flow

No scientific results yet… just built pilots last fall (16 structures in 3 creeks) & implemented 114 structures this June

San Rafael- Improving Fish Habitat

(Bluehead & Flannelmouth suckers, Roundtail chub)

San Rafael- Improving Fish Habitat

Large-scale collaborative pilot

- Restore incised stream, floodplain connectivity ->
- What replaces the tamarisk?
- Increase habitat quality for endangered fish

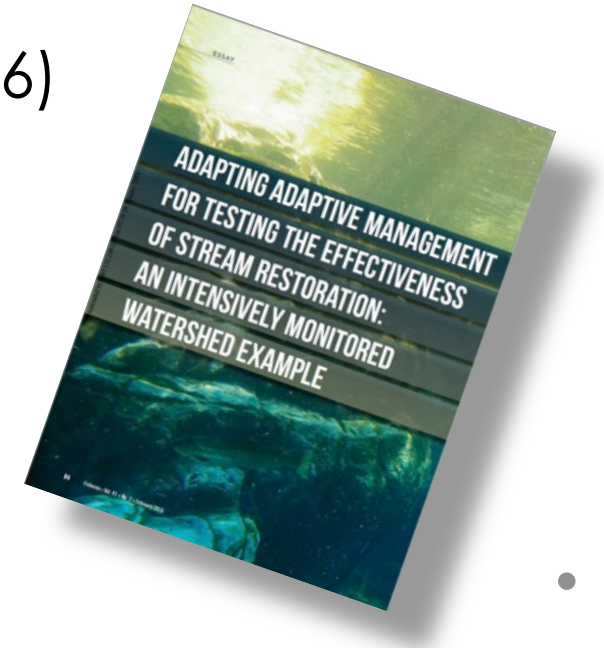
San Rafael- Improving Fish Habitat

- Breached dams provided most complex habitat
- Stable structures ≠ best habitat

Fish And Wildlife Habitat

Conclusions

- Small wadeable streams (where BDAs and beaver are appropriate restoration tool) make up the majority of the stream network.
- Many streams are degraded
- A lot of money spent on stream restoration
- Restoration needs to be realtively inexpensive, expansive and effective
- These approaches are flexible enough to address multiple watershed/habitat impairments

Conclusions

- We need to demonstrate if and how restoration works - MONITORING!
- Leverage financial commitments to restoration and implement as a manipulative experiment- ADAPTIVE MANAGEMENT ! (Bouwes et al. 2016)