Northwest **Power** and **Conservation** Council

October 3, 2017

MEMORANDUM

TO: **Fish and Wildlife Committee members**

FROM: **Kerry Berg**

SUBJECT: **Presentation on the South Fork Flathead Westslope Cutthroat Conservation Project**

BACKGROUND:

Presenter: Matt Boyer, Montana Fish, Wildlife & Parks

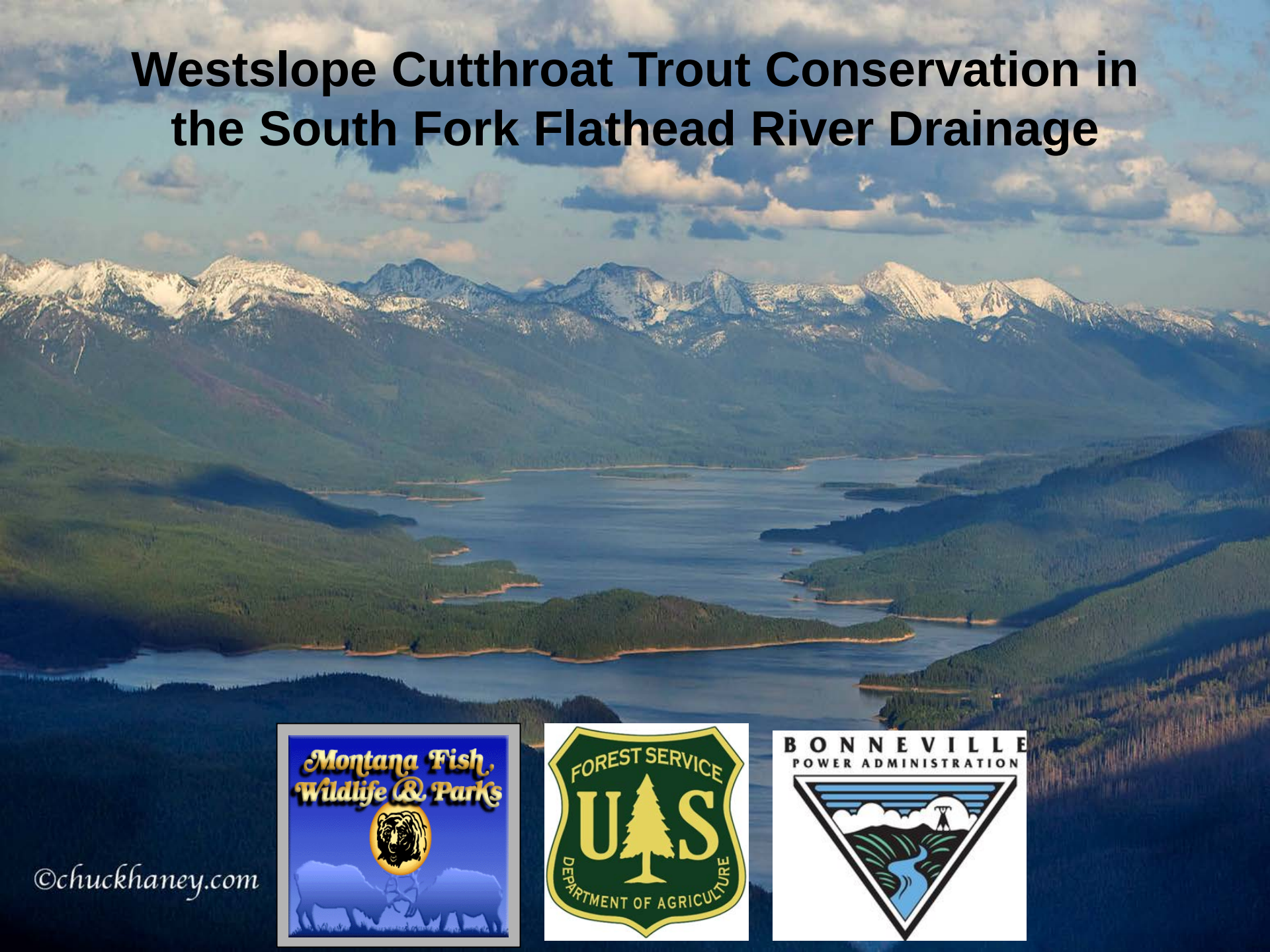
Summary: The South Fork Flathead River drainage contains 355 lakes and approximately 1,898 miles of stream habitat. This drainage was isolated from the mainstem Flathead River by the construction of Hungry Horse Dam in 1952. The newly created reservoir and the remaining South Fork Flathead River maintain a unique assemblage of native fish such as bull trout, mountain whitefish, pygmy whitefish, westslope cutthroat trout and suckers. Within Montana, the South Fork watershed comprises more than half of the remaining interconnected populations of genetically pure westslope cutthroat trout, a species that has declined to less than 10% of its historic range due to habitat degradation, and hybridization and competition with introduced fishes. Yet, even within this cutthroat trout stronghold, historic stocking of headwater lakes and the downstream movement of nonnative rainbow and Yellowstone cutthroat trout has led to the spread of hybridization and the gradual loss of locally adapted gene pools in native westslope cutthroat populations.

To protect the legacy of this native trout and the fishery it supports, more than 10 years ago biologists with Montana Fish, Wildlife, and Parks and

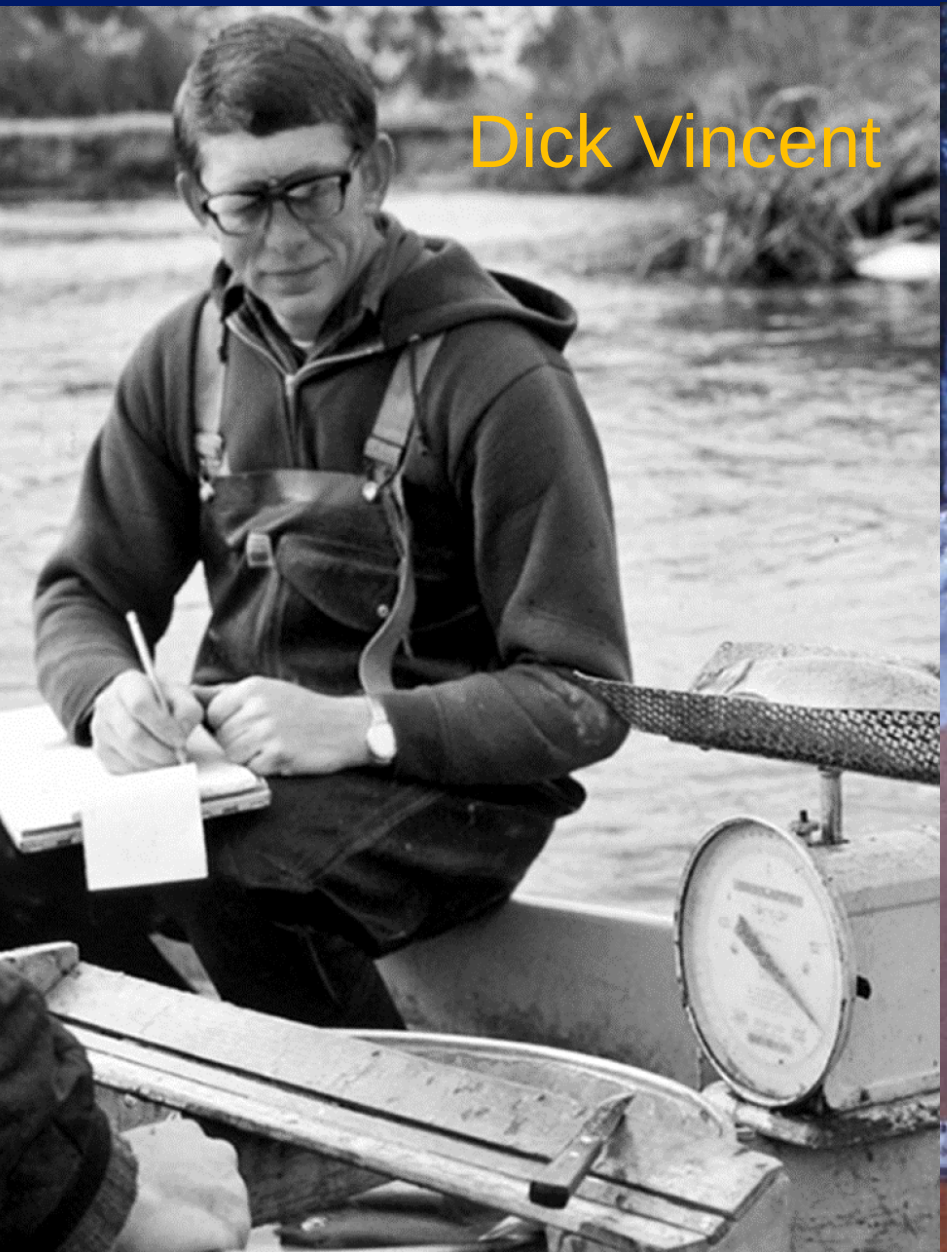
the US Forest Service implemented a landscape scale conservation strategy to preserve westslope cutthroat in the South Fork Flathead watershed. The goal of this effort was to remove the sources of nonnative trout from 21 headwater lakes where hybridization is occurring and reestablish native westslope cutthroat trout populations. To achieve this goal, biologists used the piscicide rotenone to eradicate the current fishery in order to restock it with native cutthroat. The first two lakes associated with this project were treated with rotenone during the fall of 2007. With the treatment of Sunburst Lake this year, the project is coming to a successful conclusion.

Relevance: This project is funded by BPA through the Council's program via the Hungry Horse Mitigation Habitat Restoration project (1991-019-03). The Council's Fish and Wildlife Program calls for preventing the introduction of non-native and invasive species in the Columbia River Basin, and suppressing or eradicating non-native and invasive species. In the resident fish strategy the program also calls for the protection and mitigation of native fish populations.

Westslope Cutthroat Trout Conservation in the South Fork Flathead River Drainage



Acknowledgements



Acknowledgements

Acknowledgements

Historic distribution of WCT

Presently, WCT occupy less than 10% of their historic range in the U.S. and less than 20% of their range in Canada.

Rainbow trout: world's most widely introduced fish

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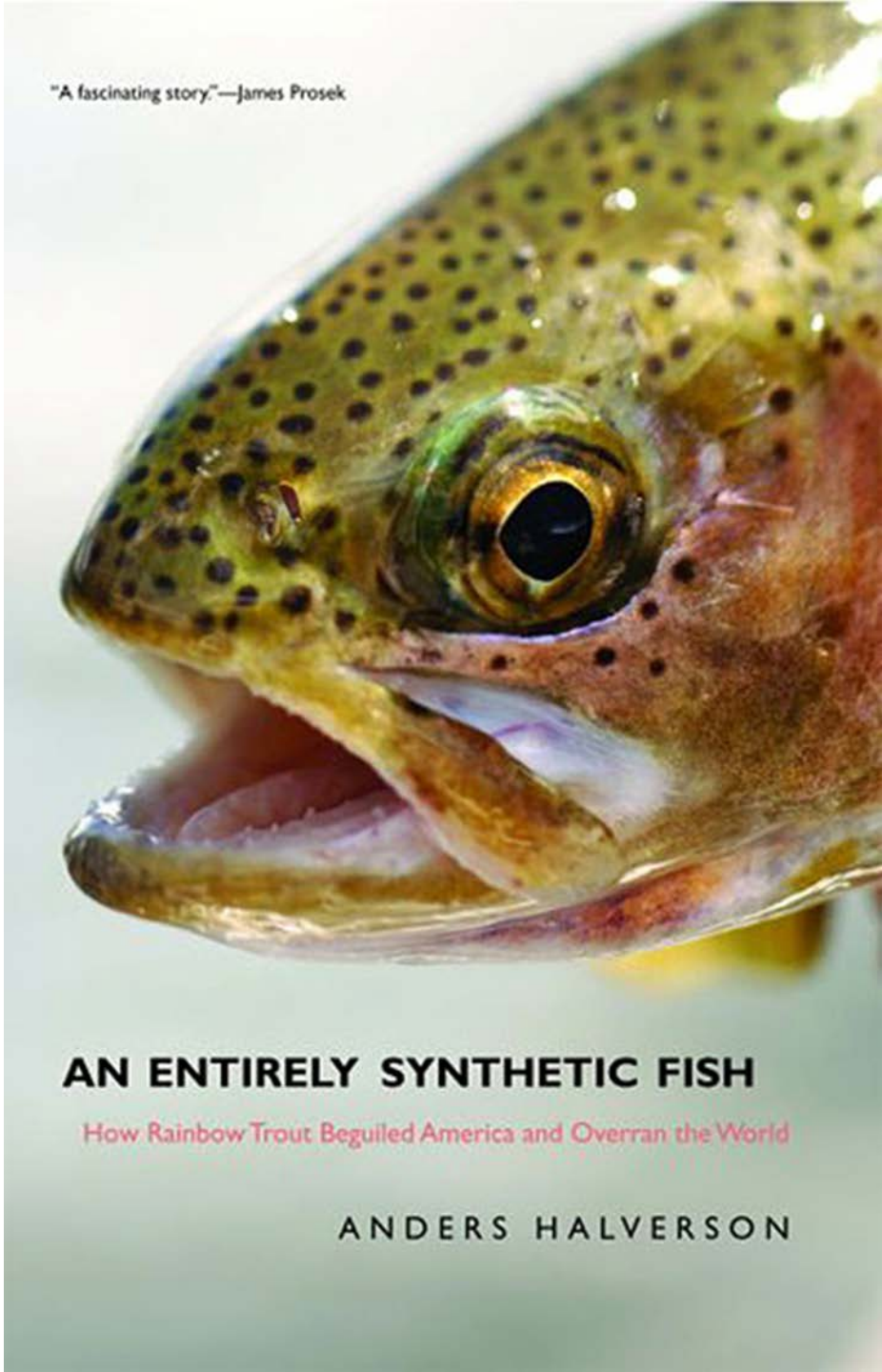
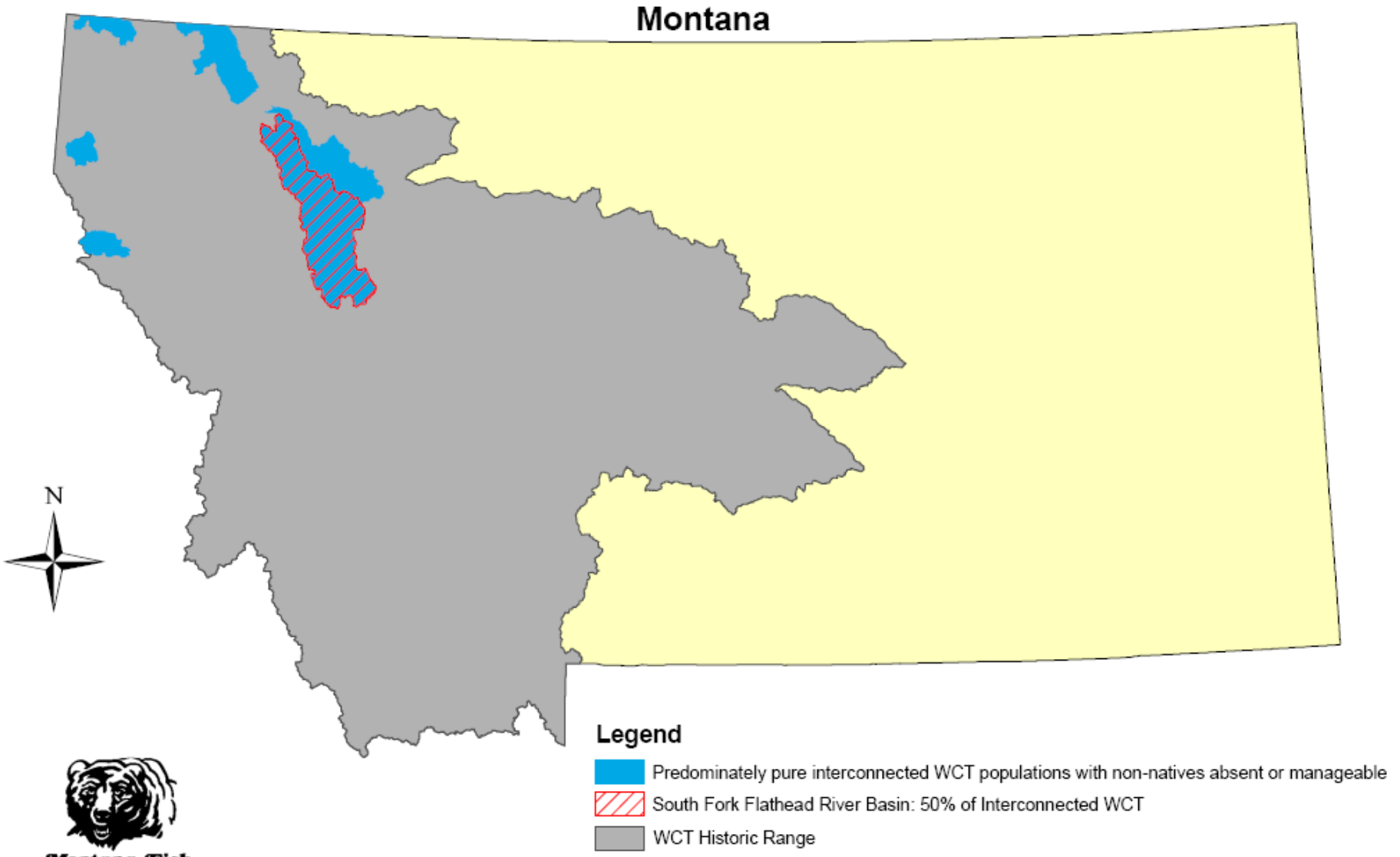


Pilot Ralph Cooper in front of the Fish and Game Department airplane and the tank which was installed to distribute fish.

Pack string with a load of fish for the high country.

Westslope Cutthroat Trout
and
South Fork River Basin



Montana Fish, Wildlife & Parks


Koessler Lake


Danaher Creek


South Fork Flathead River

Historically fishless lakes planted with trout (1920-1960)

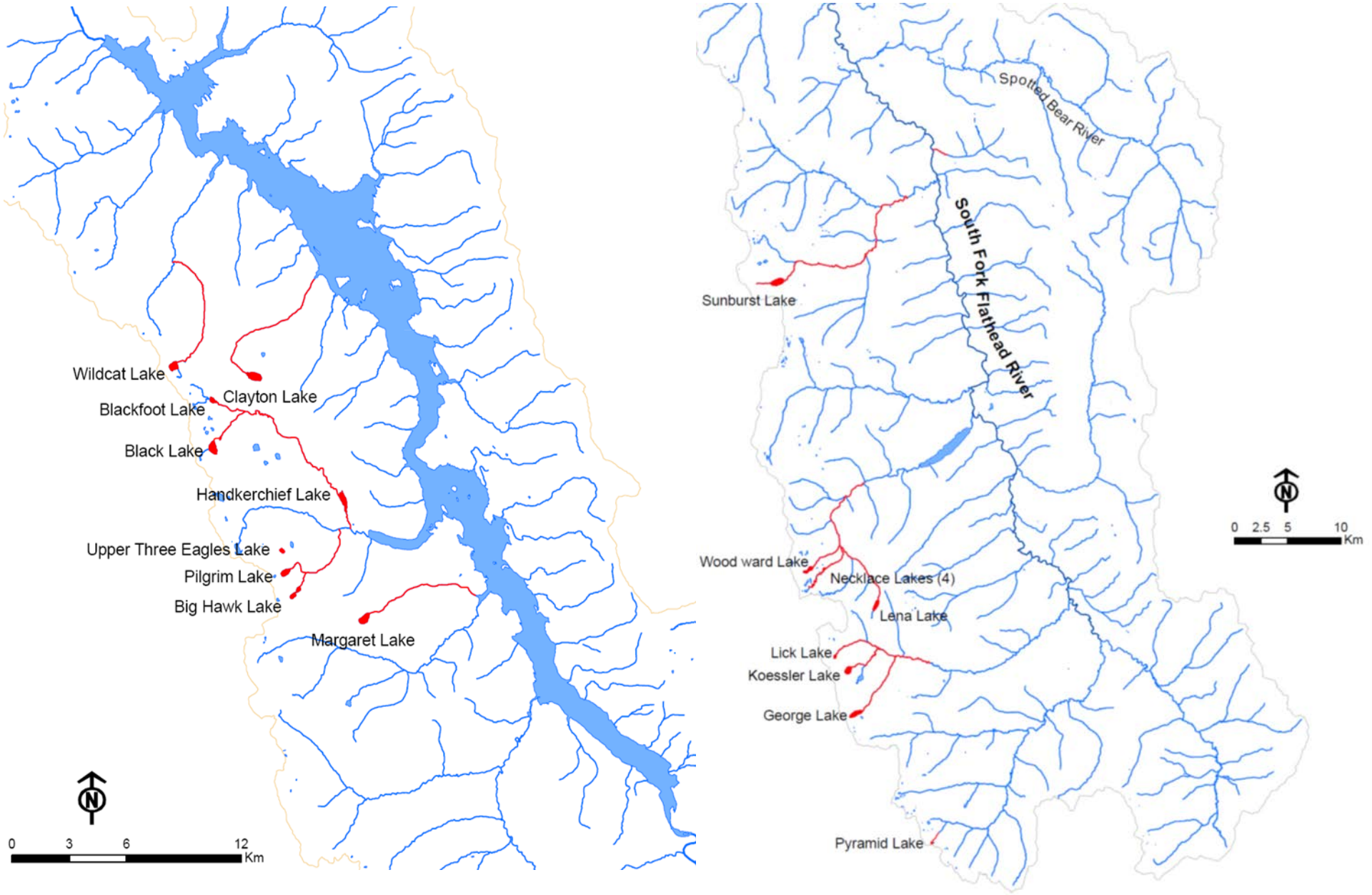
Wildcat Lake
Clayton Lake
Blackfoot Lake
Black Lake
Handkerchief Lake
Upper Three Eagles Lake
Pilgrim Lake
Big Hawk Lake
Margaret Lake

0 3 6 12 Km

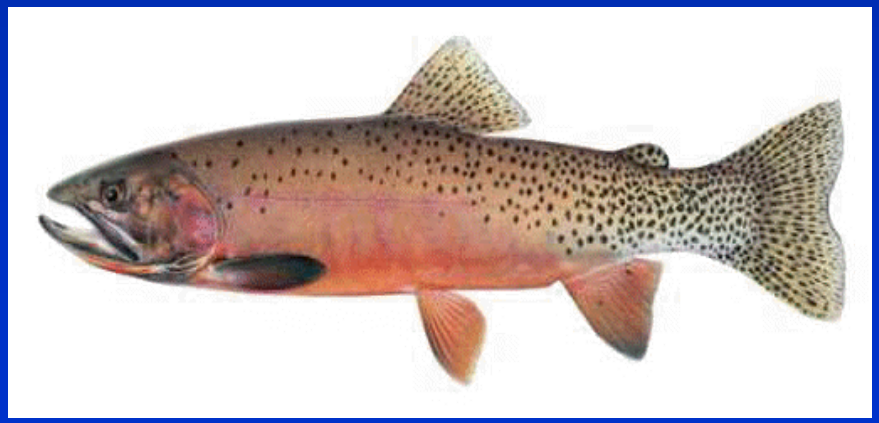
Spotted Bear River
South Fork Flathead River
Sunburst Lake
Wood ward Lake
Necklace Lakes (4)
Lena Lake
Lick Lake
Koessler Lake
George Lake
Pyramid Lake

0 2.5 5 10 Km

Downstream expansion of hybridization

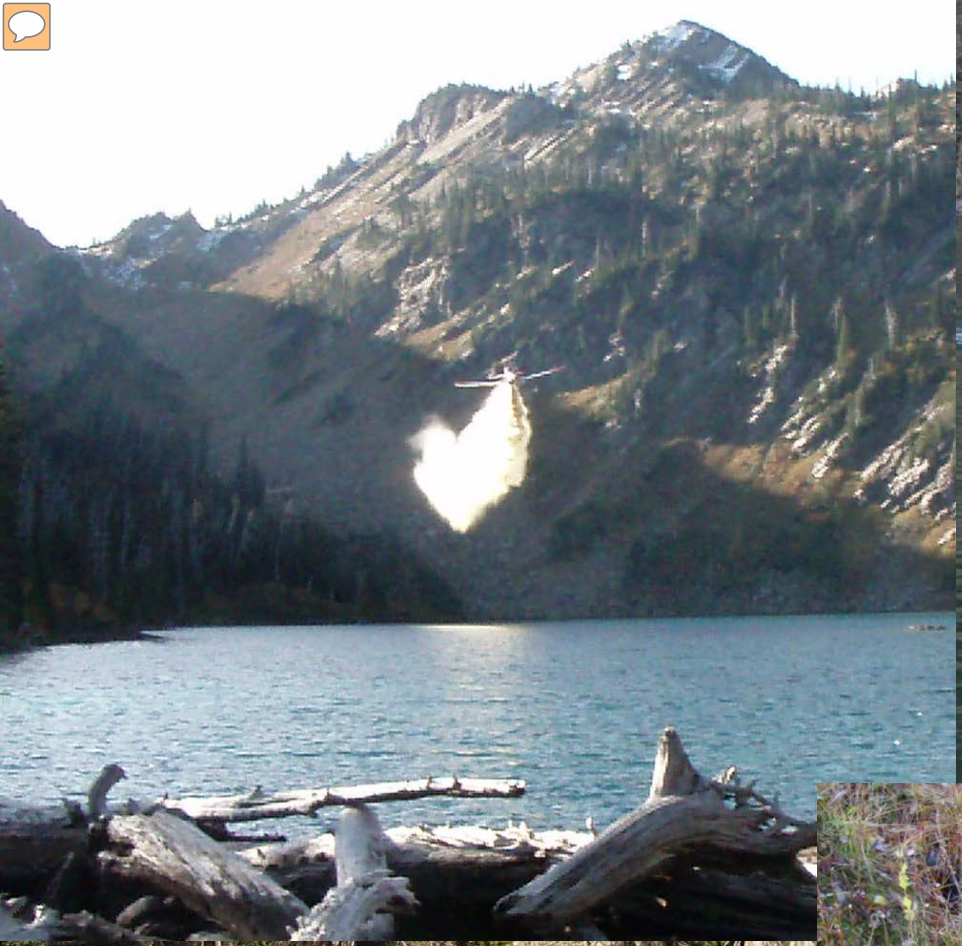


Objective: restore and protect native westslope cutthroat trout fisheries by removing sources of introduced trout in 21 headwater lakes.

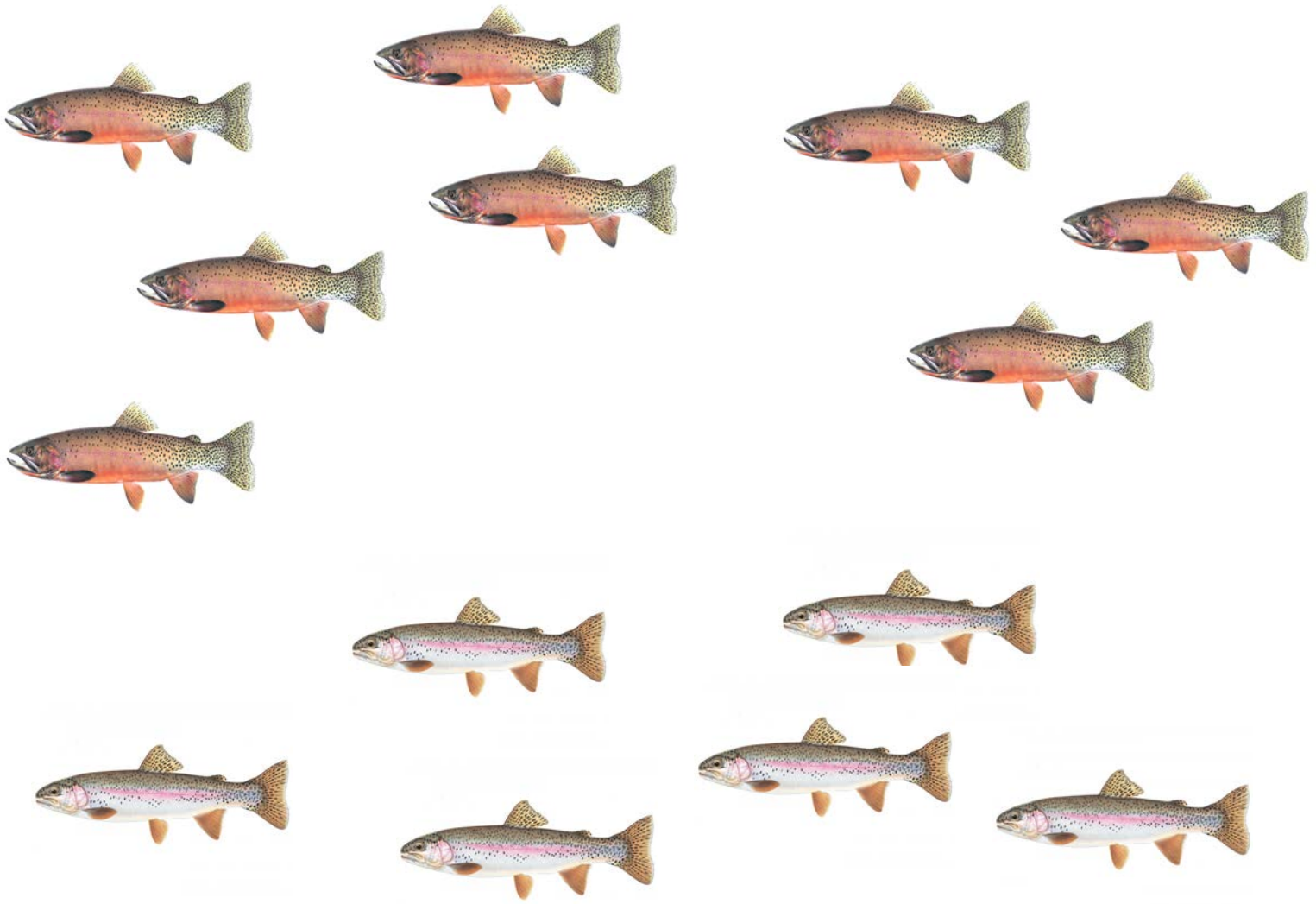


Fish removal methods

Angling
Barriers
Explosives
Genetic swamping
Gill netting
Seining
Trap nets
Electrofishing
Sterile tiger muskies
Piscicide



Genetic swamping



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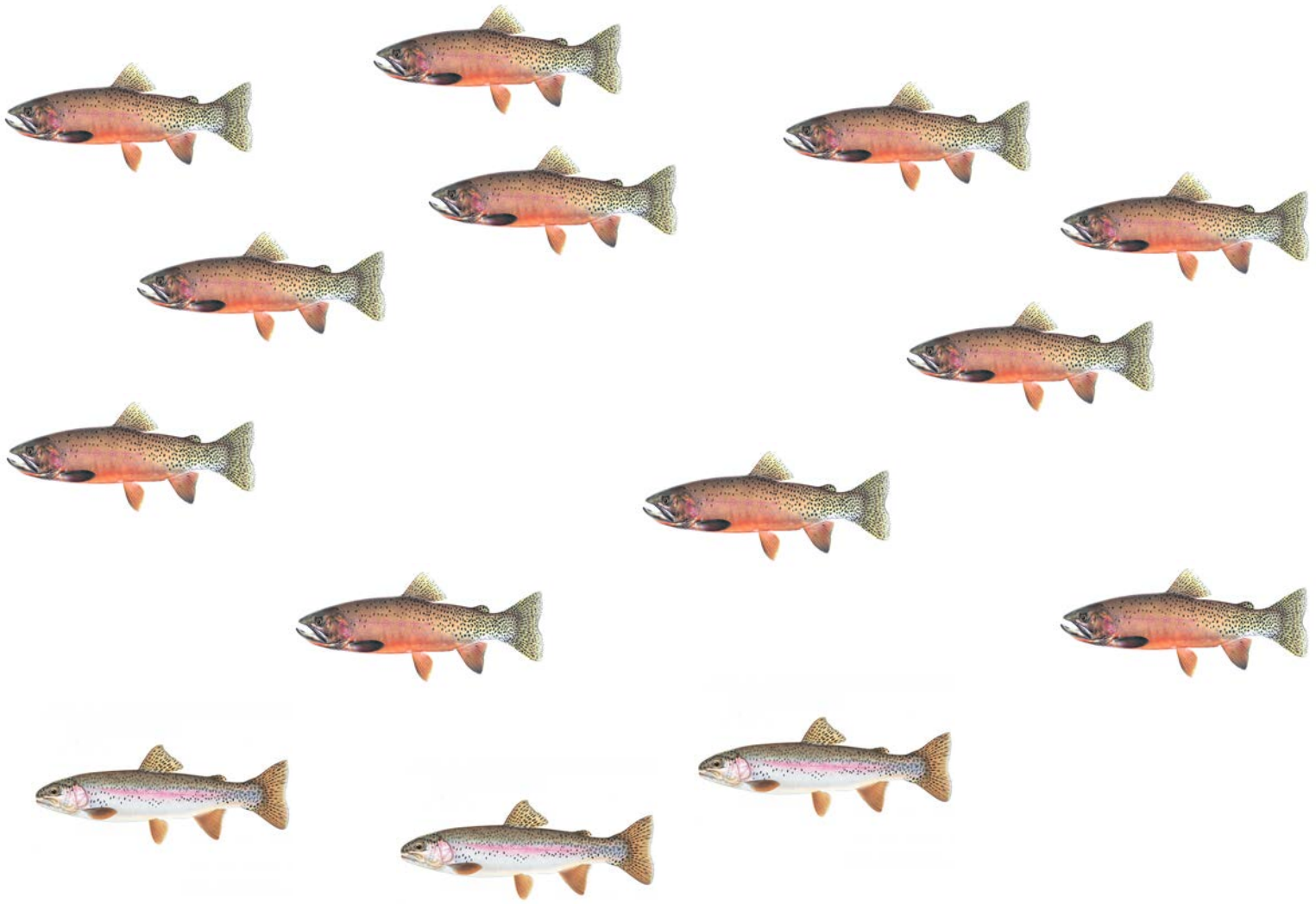
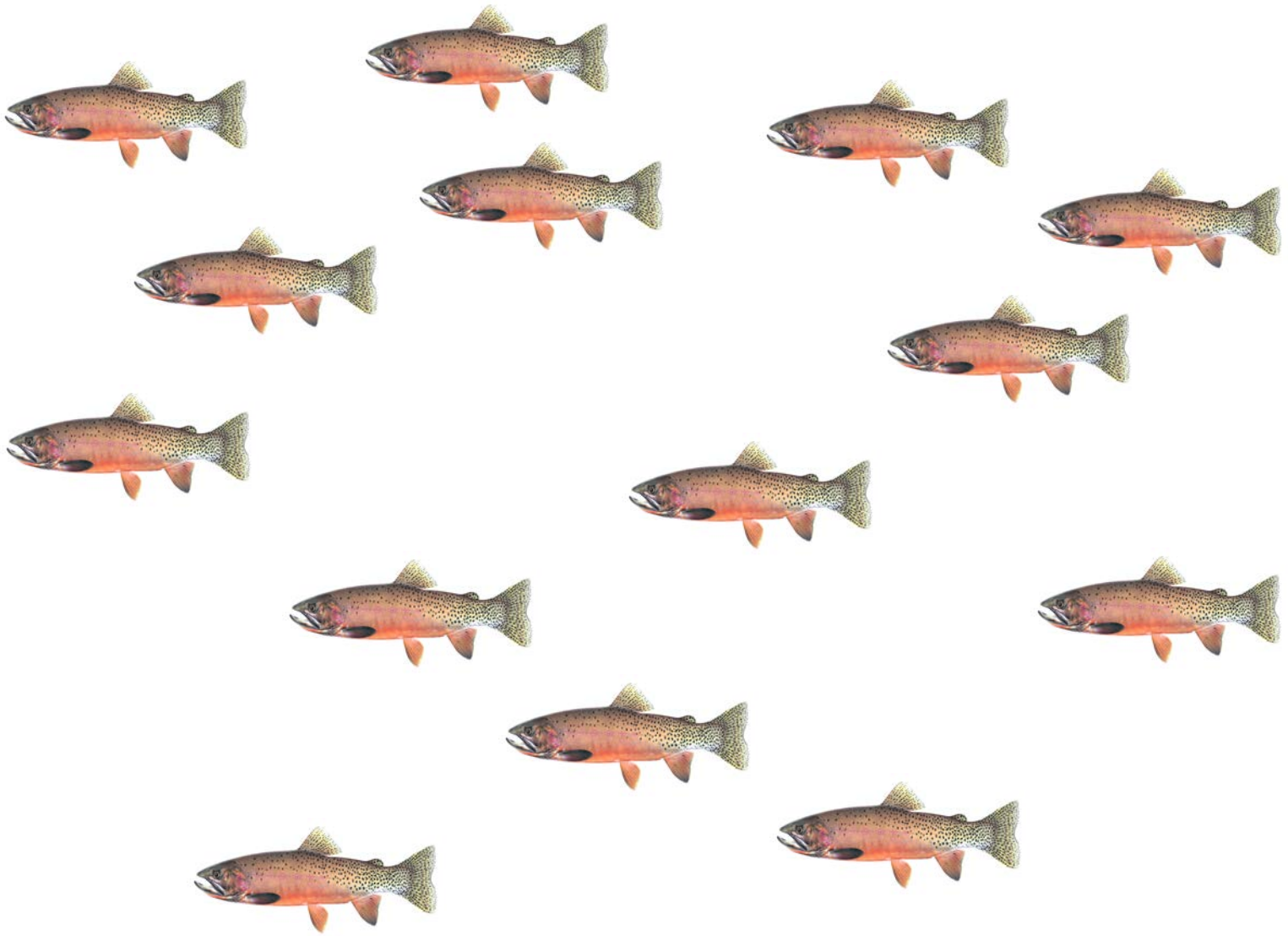


Genetic swamping



Fish, Wildlife & Parks seeks public input on westslope cutthroa

Former FWP biologist critical of wilderness lakes plan

Saving cutthroat is worth a try

Proposal made to kill hybrid trout in lakes

Cutthroat controversy

By BRETT FRENCH
Gazette Outdoor Writer

OPINION

Lake project aims to save true trout

Lakes may get toxic treatment

By JARED MILLER
Staff Writer

A plan to restore Westslope cutthroat trout in three Jewel Basin lakes using a natural poison to kill existing populations of non-native trout entered the public comment phase this month.

The proposal was released in three separate draft environmental analysis from Montana Fish, Wildlife and Parks.

Preferred among DEA alternatives is a proposal to poison fish in lake. The three Jewel Basin lakes did not respond to swamping.

"Although chemical treatment can be viewed as heavy handed, it's a one-time thing. You do it and you are done with it," Grisak said.

Stocked upstream with Rainbow trout and Yellowstone cutthroats between 1909 and the 1940s, the Jewel Basin Lakes pose a serious threat to the South Fork drainage and Hungry Horse Reservoir.

"The perception of the South Fork is it's a pristine wilderness

Trout Unlimited critical of wilderness lakes plan

A10— HUNGRY HORSE NEWS, Thursday, August 5, 2004

Trout Unlimited favors BPA plan to rid lakes of hybrids

By CHRIS PETERSON
Hungry Horse News

The executive director of Montana Trout Unlimited favors a plan to poison 21 South Fork drainage lakes to rid them of non-native and hybrid fish.

The plan for the lakes is an attempt to stem the threat of

members statewide.

Farling said it's important to to preserve native stocks in the South Fork of the Flathead now while hybridization is still fairly low.

"The thing that woke us up is whirling disease," he said. "Rainbows can't deal with it ...

tion for native westslope cutthroat trout populations.

The plan, which would be carried out over a 10-to-12-year period, is to poison 21 lakes in the drainage where hybridization is occurring and replace those stocks with native cutthroats fish.

or question whether the plan will actually work. They note that the rainbows, for example, were stocked decades ago, and yet the hybridization has been limited.

But Farling claimed that slowly but surely hybridization is spreading, and now is the time to nip it in the bud.

To plant or not to plant? That is the question

Should the government be using taxpayer money to destroy good trout fishing?

That's what has state and Forest Service officials

Issues

- Endangered Species Act
- Effects on non-target species (birds, amphibians, insects)
- Fish toxins
- Motorized equipment in wilderness
- Angling opportunity
- Mysis shrimp (i.e., agency mistake realized in hindsight and unforgiven by public)
- Outfitter impacts
- Wilderness values
- Fishless lakes
- Grayling in Handkerchief Lake
- Removing angling limits before treatment
- Use of horses and mules
- Pre- and post-treatment monitoring

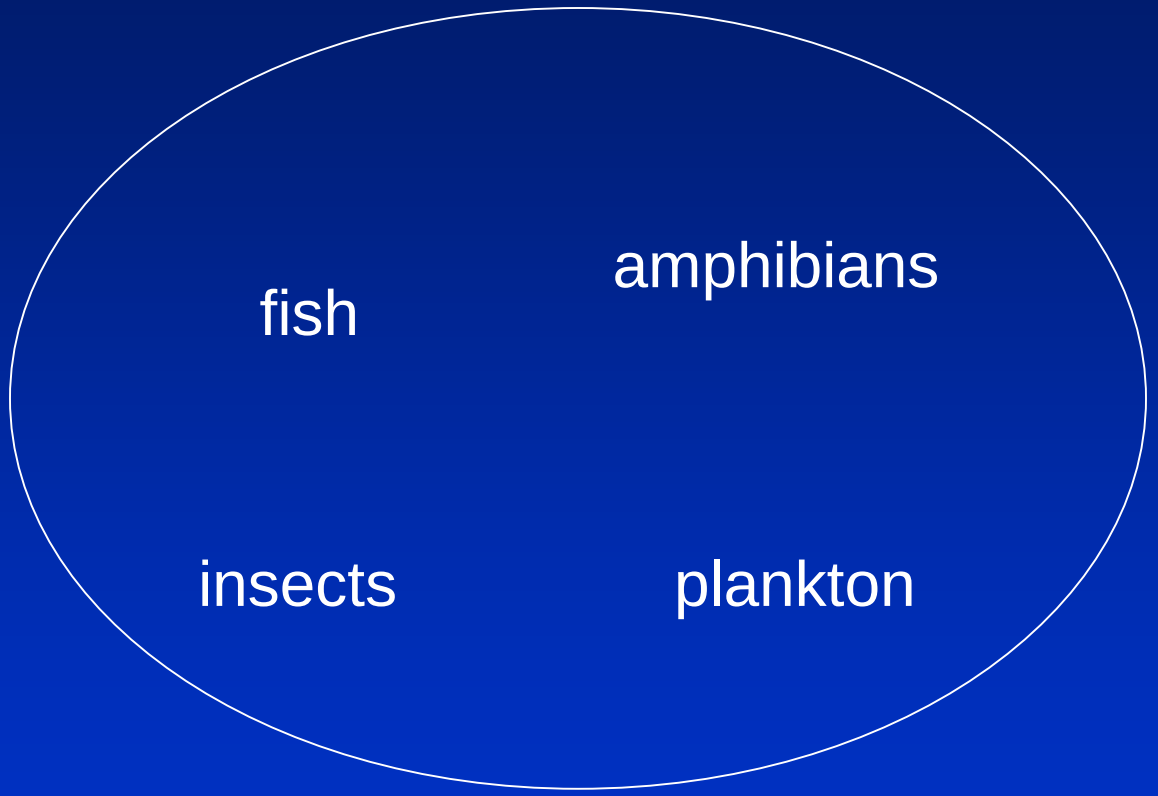
Lakes with hybrid trout

- Black (2007)
- Blackfoot (2007)
- Lower Big Hawk (2008)
- Clayton (2009)
- Margaret (2009)
- Wildcat (2010)
- Necklace Chain of Lakes* (2011)
- Lick* (2012)
- Lena* (2013)
- Koessler* (2014)
- Handkerchief (2016)
- Sunburst* (2017)
- Upper and Lower Three Eagles
- Pilgrim
- Pyramid*
- George*
- Woodward*

denotes genetic swamping

*located in Bob Marshall Wilderness

Keeping all the pieces...



Fried et al. *In revision*. North American Journal of Fisheries Management

Schnee et al. *In prep.*

East Glacier

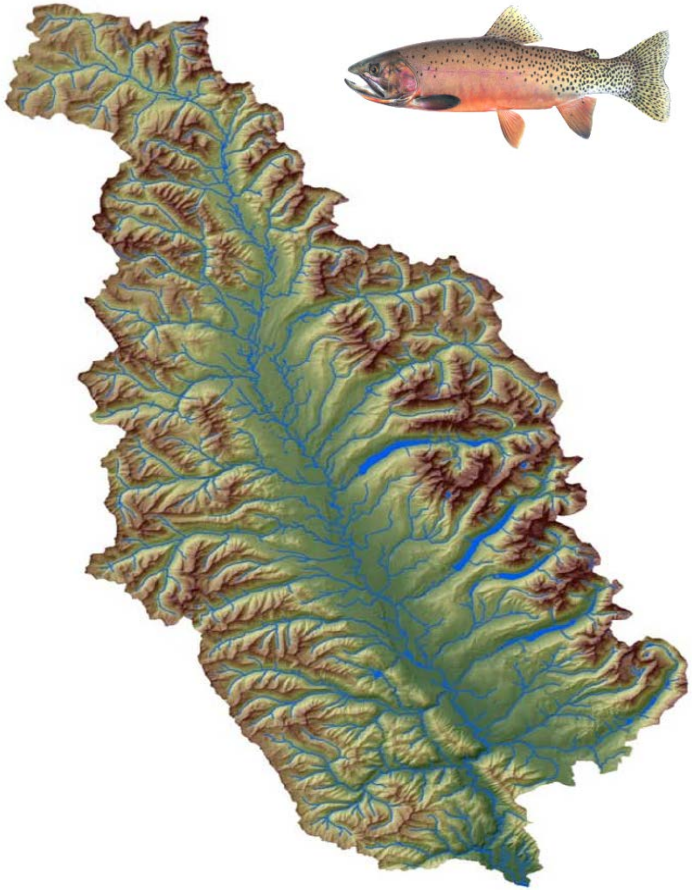
Kalispell

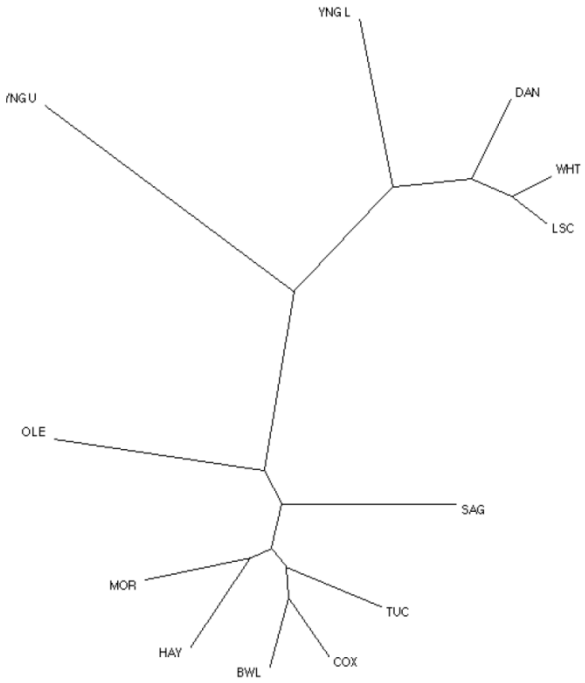
1681 mi^2

3770 mi^2

Missoula

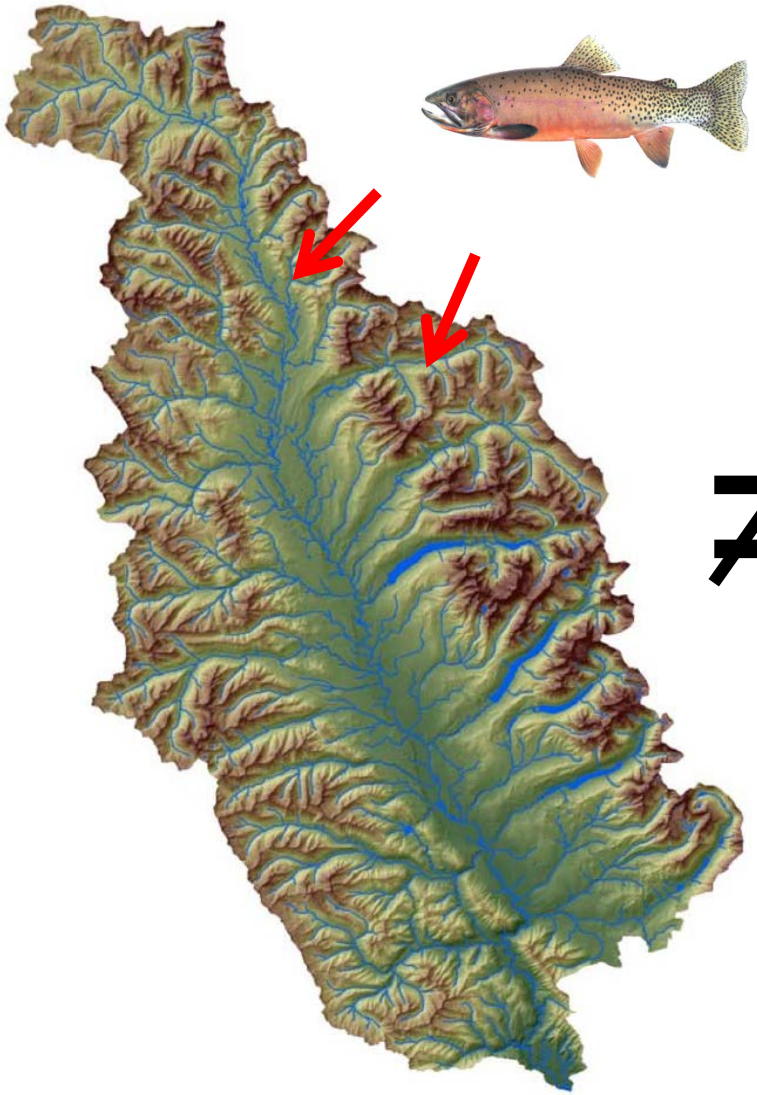
Population genetic structure





Strong genetic divergence among populations

(Allendorf and Leary 1988, Taylor et al. 2003, Drinan et al. 2011)



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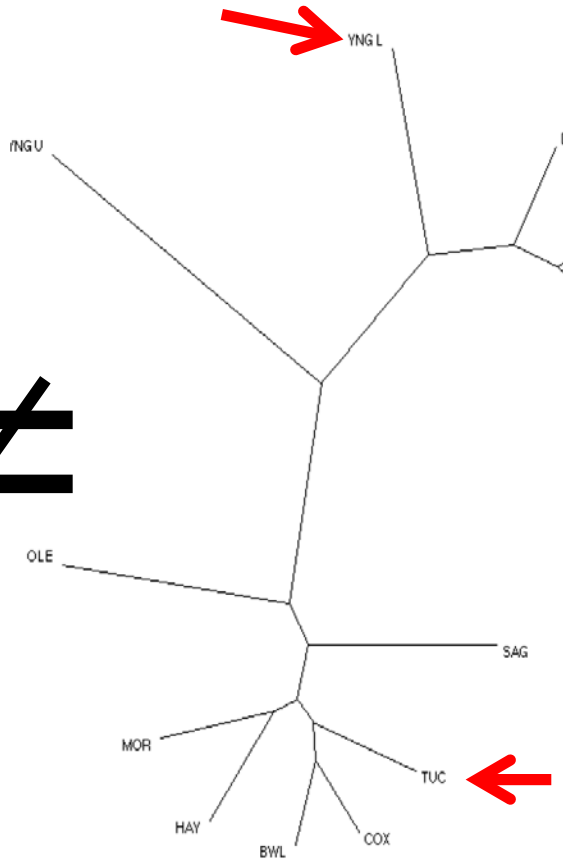
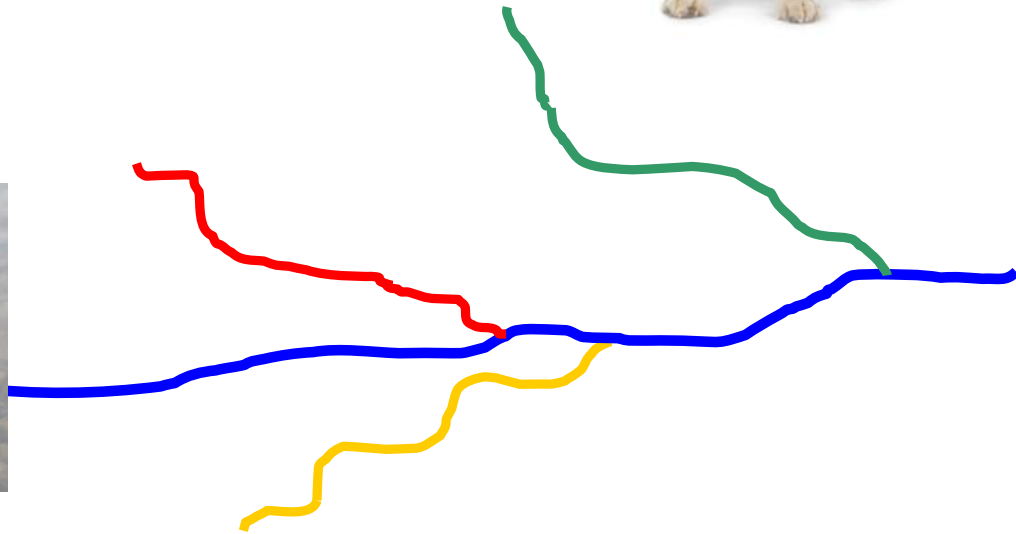


Geographic proximity often does not predict genetic similarity

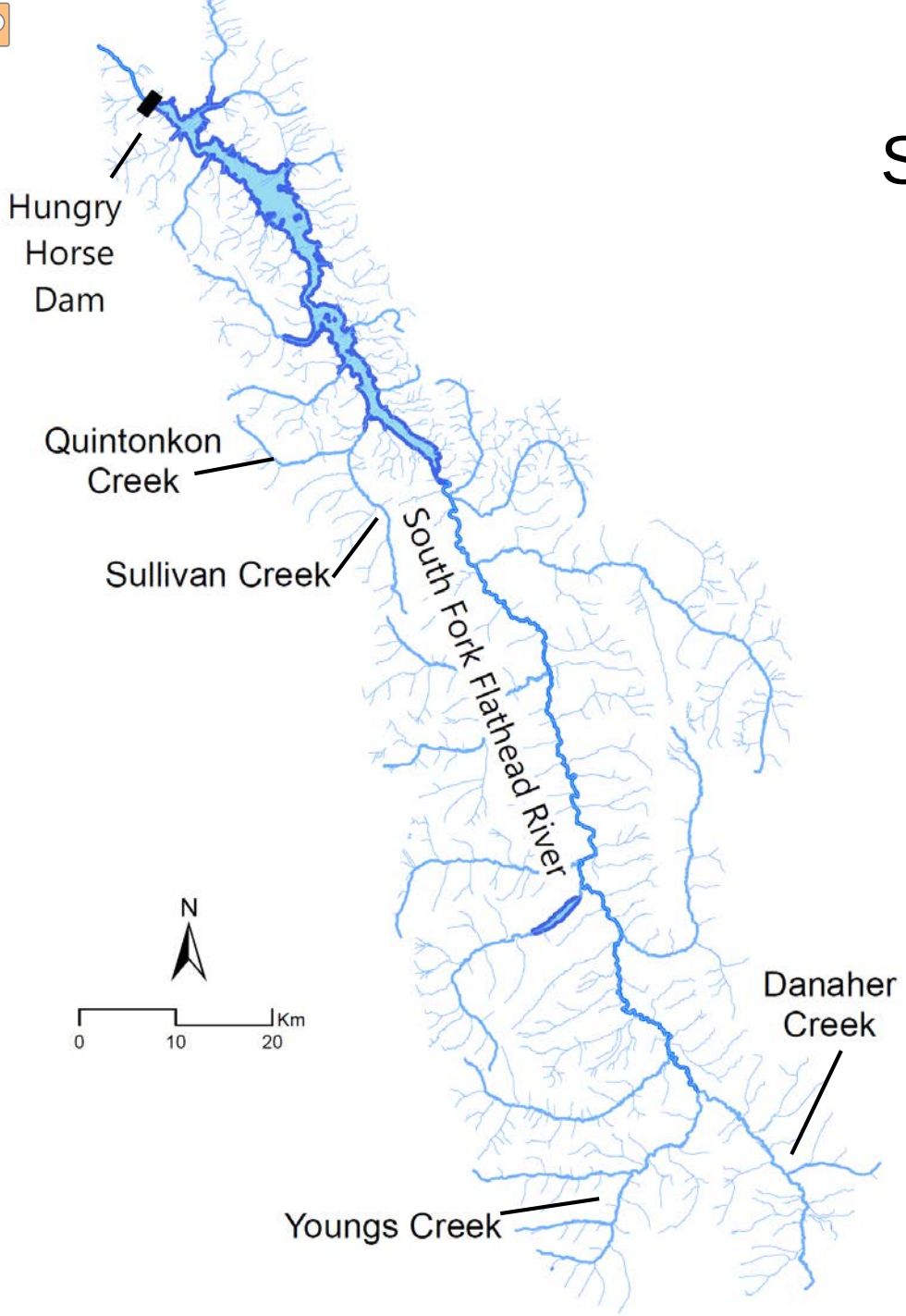
Many WCT alleles exist in only a few populations but are common where they occur (Allendorf and Leary 1988)

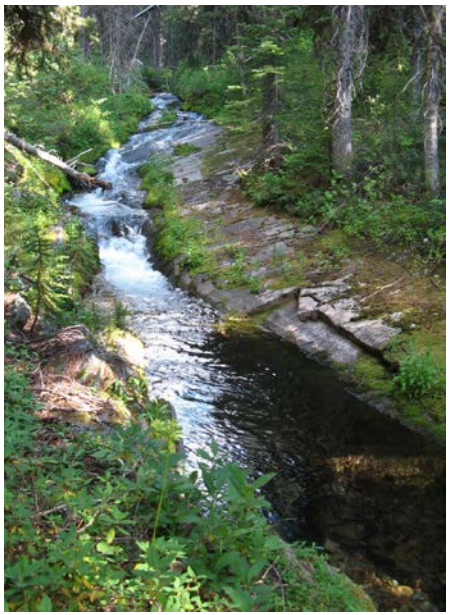
Canis familiaris



Oncorhynchus clarkii lewisi

South Fork Flathead WCT Donor Populations





Use of local WCT stocks for genetic conservation






In 9 yrs. of collections > 90% survival from wild to hatchery

Hatchery v. Wild Environments

Similarities

- Water
- Photoperiod

Differences

- Diet
- Density
- Substrate
- Temperature
- Flow regime
- Inter-specific competitors

from: Waples 1999 *Fisheries*

Factors that lead to genetic change in cultured populations

1. Intentional or *artificial* selection for a desired trait (eg. growth rate, body size)

2. Selection resulting from nonrandom sampling of broodstock

3. Unintentional or *natural* selection that occurs in the hatchery environment

Campton *AFS Symposium* 1995

Conventional

Intermediate

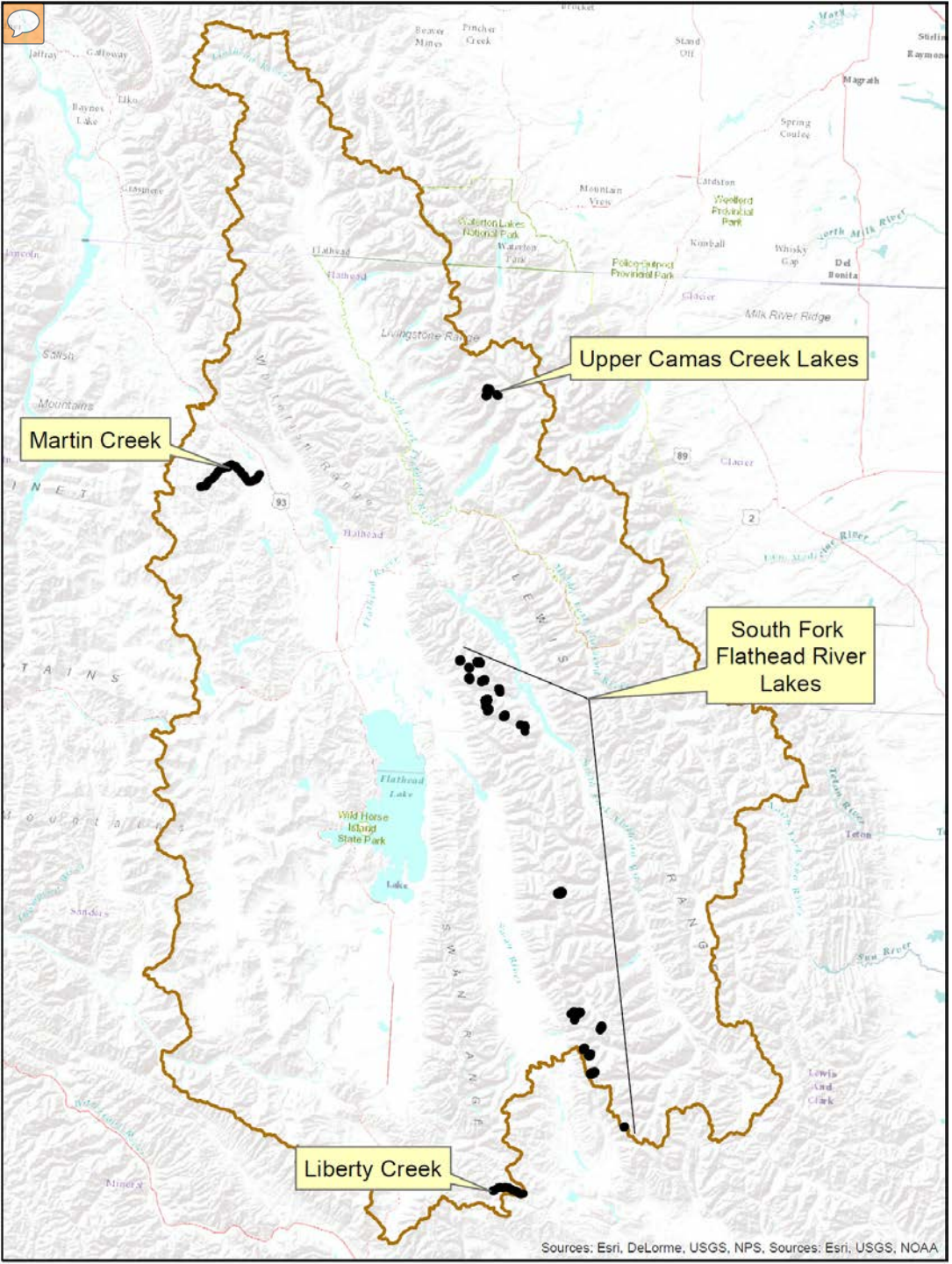
Enriched

Clint Smith MS Thesis 2011


N6690


GALVAN

Future westslope cutthroat restoration opportunities in the Flathead Subbasin



Koessler Lake September 2014

Koessler Lake September 2014

Sunburst Lake, September 2017

Montana Fish, Wildlife & Parks

Parks Canada Parcs Canada

Alberta Environment and Parks

Thanks!


Northwest Power and
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BONNEVILLE
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FOREST SERVICE
US
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BOB MARSHALL
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FOUNDATION


Montana Sportsmen
ALLIANCE
Voice of Reason on Montana Fish and Wildlife Issues


BACK
COUNTRY
HORSEMEN


USGS
science for a changing world


Montana
Conservation
Corp


UNIVERSITY OF
MONTANA


FLATHEAD
Flathead Valley Chapter
Trout Unlimited


MONTANA
STATE UNIVERSITY

South Fork Flathead westslope cutthroat trout conservation program

Photo credit: Pat Clayton Fish Eye Guy Photography

Montana Fish, Wildlife & Parks

BONNEVILLE POWER ADMINISTRATION

FOREST SERVICE US DEPARTMENT OF AGRICULTURE