

Rural Stakeholders and Arctic Grayling (*Thymallus arcticus*) Management in the Big Hole River Watershed, Montana, USA



Grayling photo from MT Chapter American Fisheries Society

DRAFT ANALYSIS

12/15/08

SUBJECT TO REVISION

VIEW ONLY, PLEASE DO NOT REDISTRIBUTE

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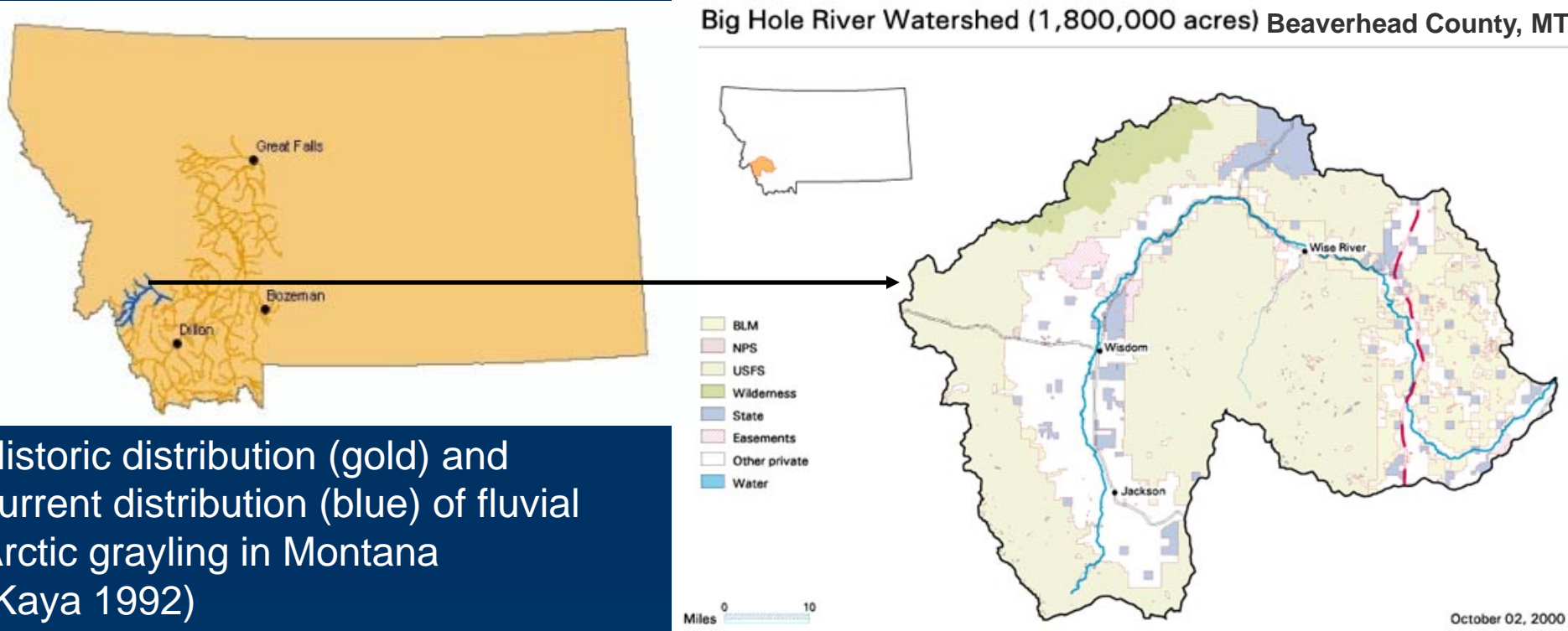
Study Species and Area

Arctic Grayling (*Thymallus arcticus*):

Freshwater salmonid of lakes and rivers in North America and Russia

Arctic grayling in the Big Hole River (drains the Missouri River in Montana)
represent the southernmost US population

Montana's fluvial grayling proposed as a candidate Endangered Species - 1991
Upper Missouri River fluvial grayling were removed from the candidate list - 2007



“As Fight for Water Heats Up, Prized Fish Suffer”

The New York Times



Harrison Shull/Aurora Photos

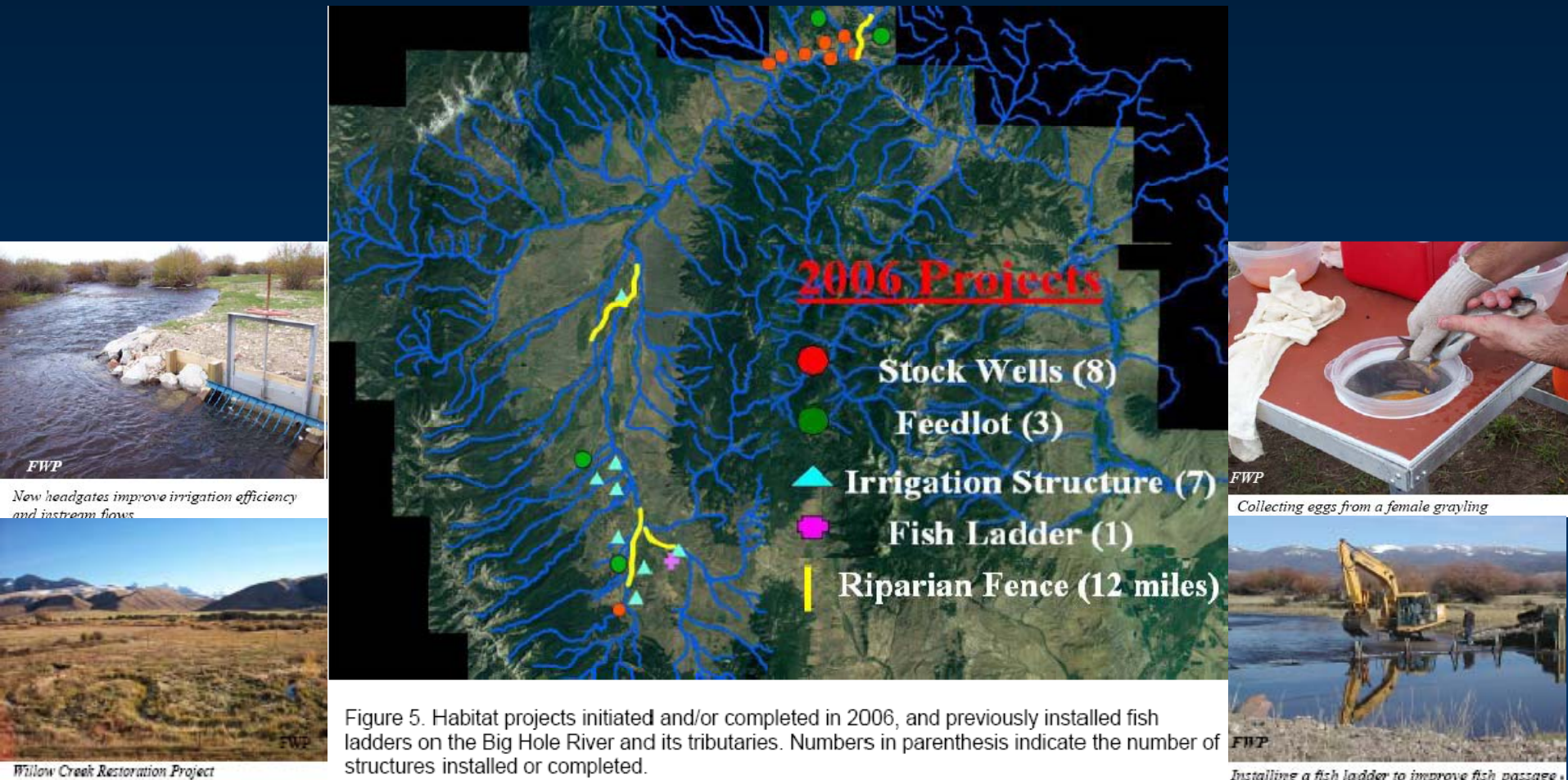
“WISDOM, Mont. — It’s a simple fact of life across the rural West, as it is here in Montana’s mountain-ringed Big Hole River Valley. Flooding river bottoms to grow hay sustains the economy but means less water in the river for the prized wild trout population.”

-Jim Robbins, writing for The New York Times
April 1, 2008

Grayling Recovery Efforts

Candidate Conservation Agreements with Assurances (CCAA) Program

Enrolled ~32 landowners managing over 150,000 acres in the Upper Big Hole River



Photos taken from the Arctic Grayling Recovery Program Annual Report (2006)

Groups Involved in Grayling Recovery

Federal Agencies

US Fish & Wildlife Service (USFWS)

US Department of Agriculture, Natural Resources Conservation Service (NRCS)

US Forest Service (USFS)

US Bureau of Land Management (BLM)

State Agencies

Montana Fish, Wildlife & Parks (MT-FWP)

Montana Department of Natural Resource Conservation (MT-DNRC)

Non-governmental Organizations

Arctic Grayling Recovery Program (AGRP)

Big Hole Watershed Committee (BHWC)

Big Hole Watershed Foundation (BHWF)

Trout Unlimited (TU)

The Nature Conservancy (TNC)

Private landowners

Study

Questions:

- How do rural stakeholders regard management efforts to recover Arctic grayling in the Big Hole River watershed?
- How do grayling restoration activities relate to economical development in this watershed?

Methods:

- Distribute opinion surveys to 300 watershed residents to determine stakeholder:
 - knowledge of Arctic grayling population status
 - attitudes towards grayling recovery program activities and participants
 - opinion of the recent de-listing decision
- Compare survey results to demographic & economic data (Beaverhead Co., MT)
 - US Census 2000
 - US Dept. of Commerce, Bureau of Economic Analysis reports

Stakeholder Demographics

US Census 2000 data for Beaverhead County

Age

< 45 years: 62%

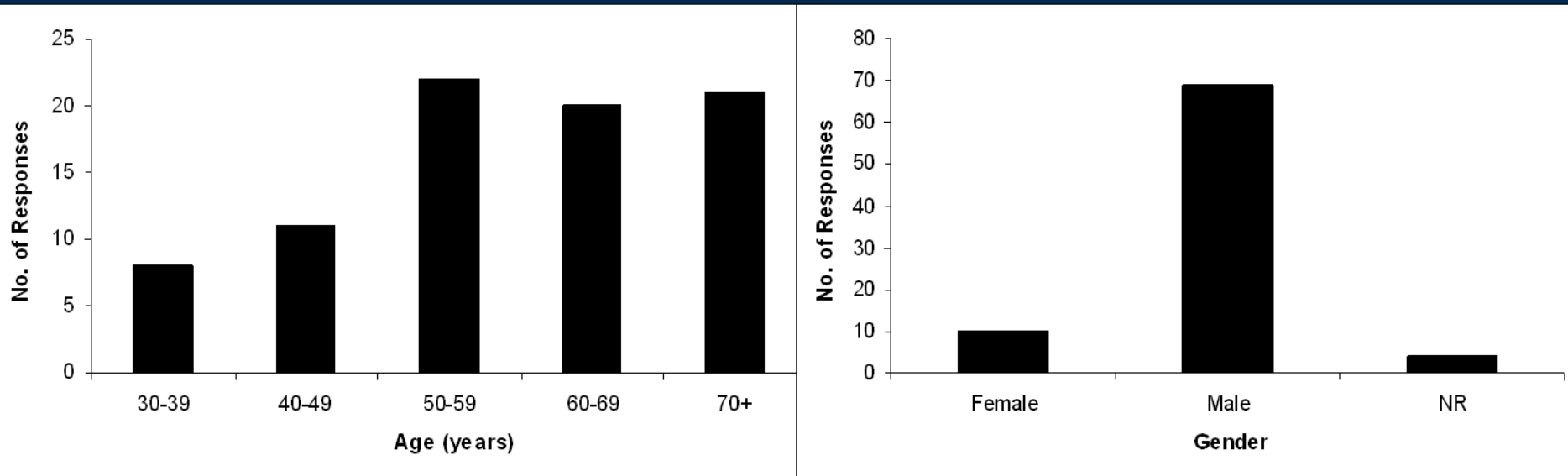
> 45 years: 38%

Gender

Female: 4489

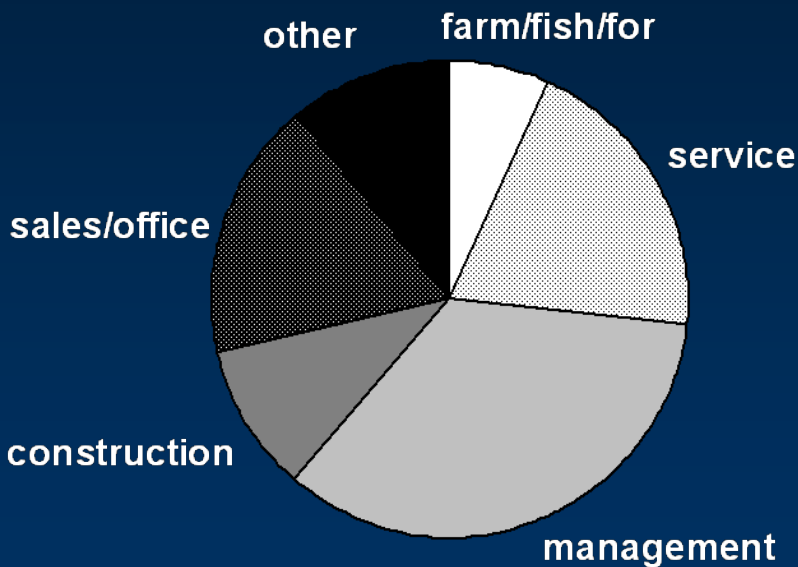
Male: 4713

Age and gender of respondents to the grayling survey (2008)

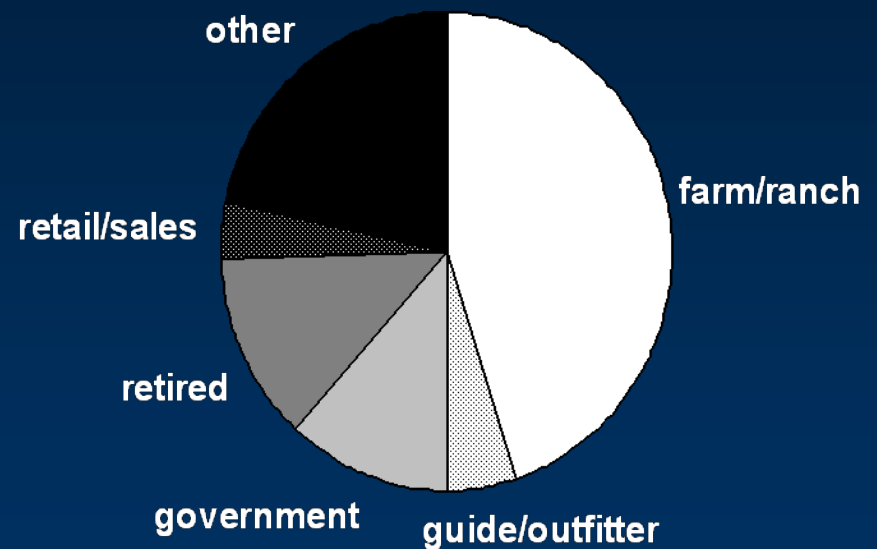


Stakeholder Occupations

Beaverhead County,
US Census 2000*



Grayling survey respondents
(2008)

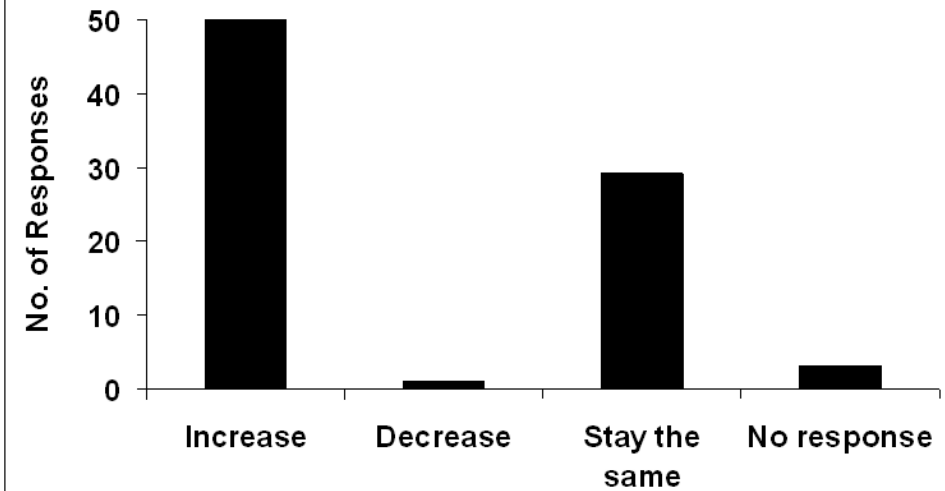
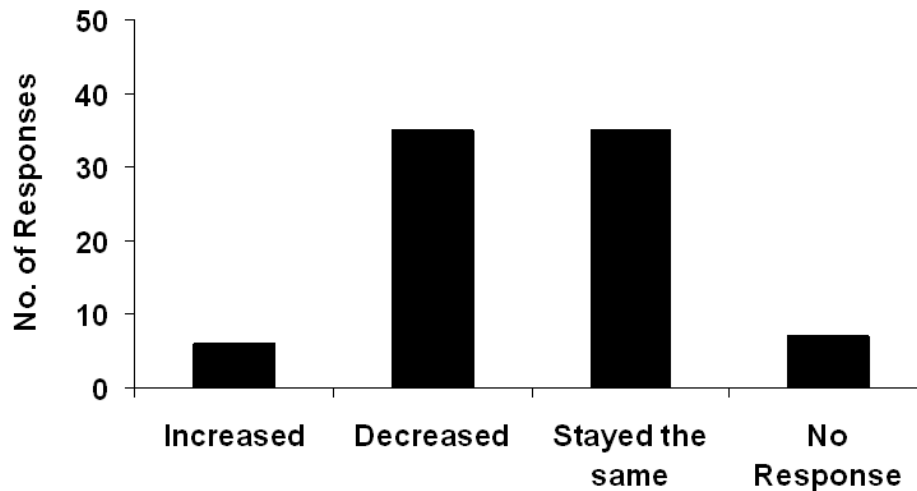


*Census labor force data does not include data on the retired, unemployed or disabled

Survey Responses: Grayling Abundance

In the last 10 years, have grayling numbers in the Big Hole River:

Do you want grayling numbers in the Big Hole River to:

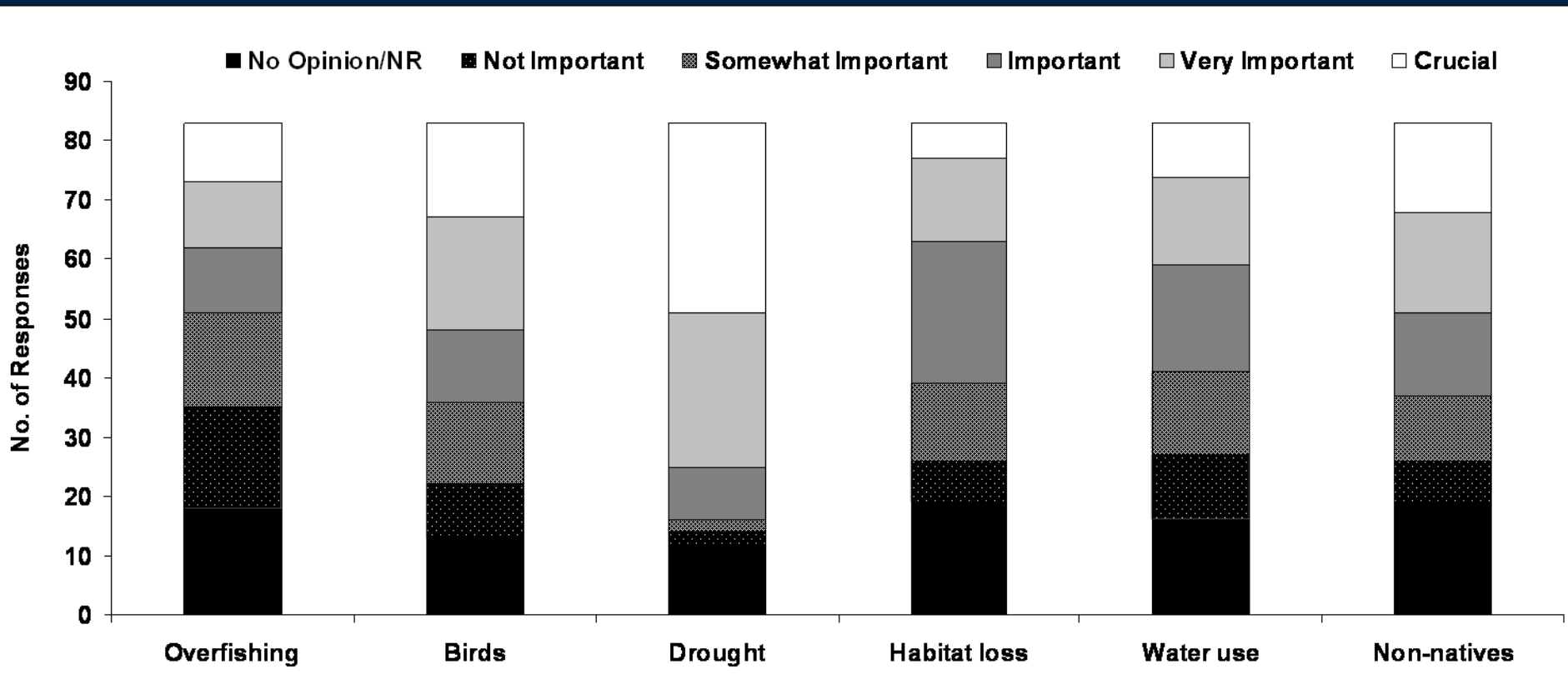


40% of respondents go fishing

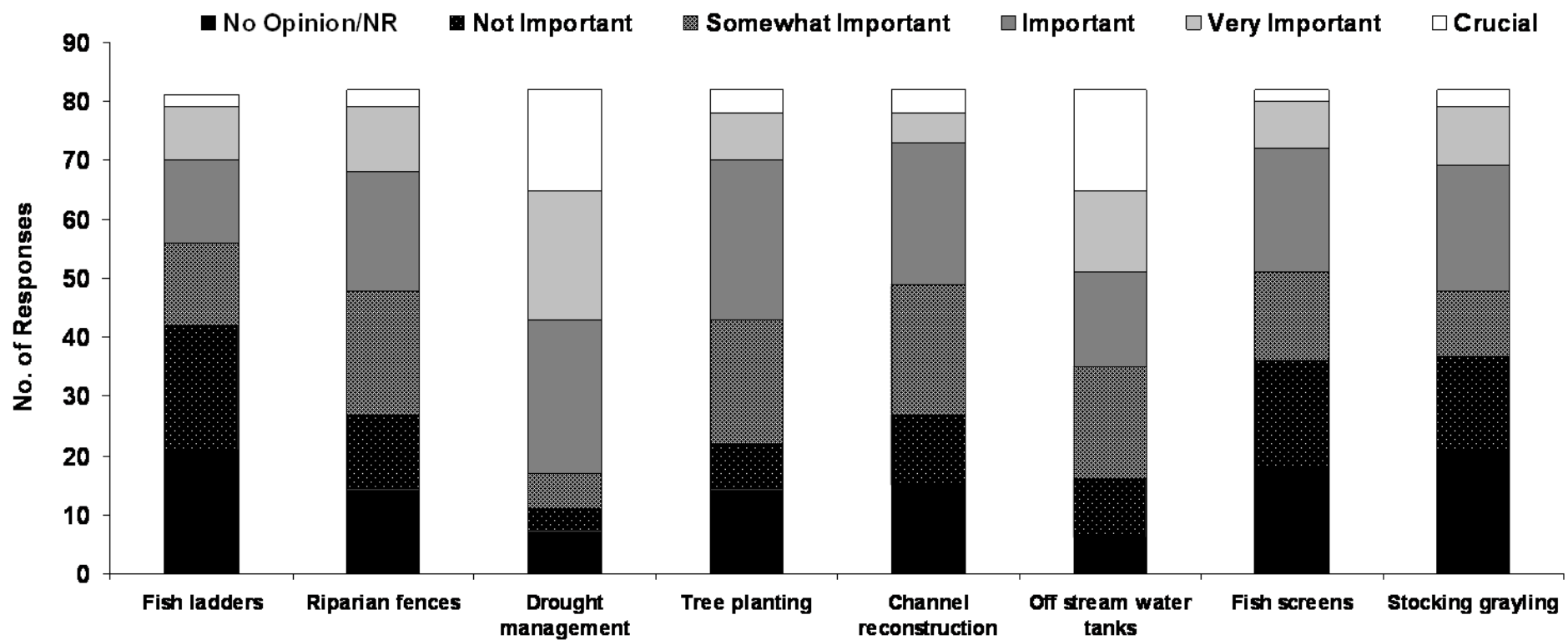
45% of respondents have observed grayling in the river

43% of those respondents that have observed grayling felt they are abundant

Survey Responses: Factors Associated with Decreasing Grayling Numbers



Survey Responses: Factors Associated with Increasing Grayling Numbers



Who is helpful in managing grayling?

	<u>Most Helpful</u>	<u>Very Helpful</u>	<u>Somewhat Helpful</u>	<u>Not Helpful</u>	<u>No Opinion</u>	
	+10 pts	+5 pts	+1 pt	-10 pts	0 pts	
	No. of Responses					<u>Total Points</u>
BHWC	25	29	11	4	13	366
MT-FWP	25	26	15	5	11	345
AGRP	16	18	15	7	26	195
BHRF	15	24	15	10	18	185
USFWS	7	26	25	7	17	155
NRCS	6	21	27	11	17	82
MT-DNRC	3	22	28	10	19	68
TU	3	16	24	11	28	20
TNC	2	12	22	17	29	-68
BLM	0	2	27	19	34	-153
USFS	0	4	30	22	26	-170

Poverty and Economic Development

Beaverhead County, MT:

- Per capita personal income: \$29,399 (national average: \$36,714)*
- 17% live below the poverty line
- 76% have not completed a college degree

*US Dept. of Commerce, Bureau of Economic Analysis

A developing restoration economy?

- 2006-2008 Big Hole River CCAA projects totaling ~\$1.85 million
- CCAA projects mix of federal, state, non-profit, and private funding
- MT state agencies are discussing water markets, ecosystem goods and services

“Restoration projects are already creating good-paying Montana jobs and restoring our environment. Much more will be done in the years ahead. We need to be aggressively planning now to make sure our students and workers receive the training necessary to get the job done,”

- **MT Governor Brian Schweitzer,**
Workshop on Education Needs for Restoration Economy, Oct. 2008



Conclusions

In working with rural stakeholders, managers should consider:

- 1) Provide diverse educational opportunities for stakeholders (and their families):**
 - fisheries management and restoration techniques
 - roles of different managers and institutions
 - stakeholder rights, responsibilities and opportunities
- 2) Prioritizing restoration activities for the benefit of fish, wildlife and people**
- 3) Linking economic development to natural resource conservation**

Future directions for this project include:

- 1) Modeling**
 - Arctic grayling population dynamics and extinction probabilities
 - Big Hole River ecosystem response to restoration
- 2) Comprehensive economic valuation of Big Hole River restoration activities**

Acknowledgements

- Big Hole River Foundation
- Big Hole Watershed Committee
- MT-Tech Undergraduate Research Program
- Special thanks to:
 - Noorjahan Parwana
 - Buddy Drake
 - Jim McGee
 - Peter Lamothe
 - Jeff Everett
 - Shane Vatland