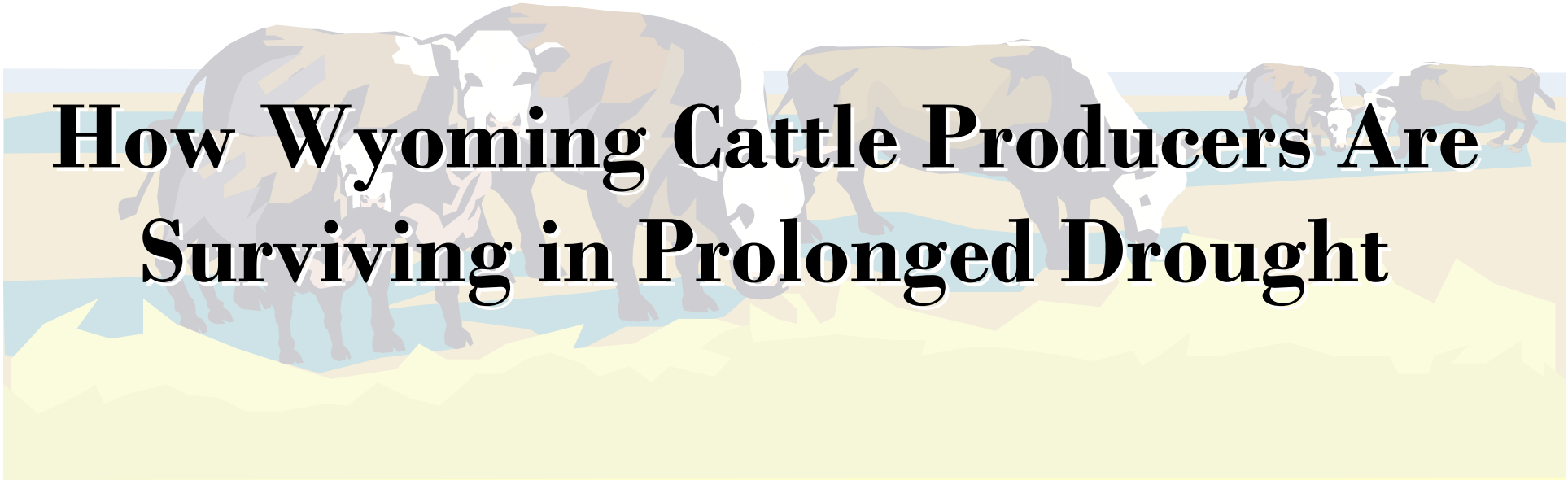
Multiple Impacts—Multiple Strategies:



How Wyoming Cattle Producers Are Surviving in Prolonged Drought

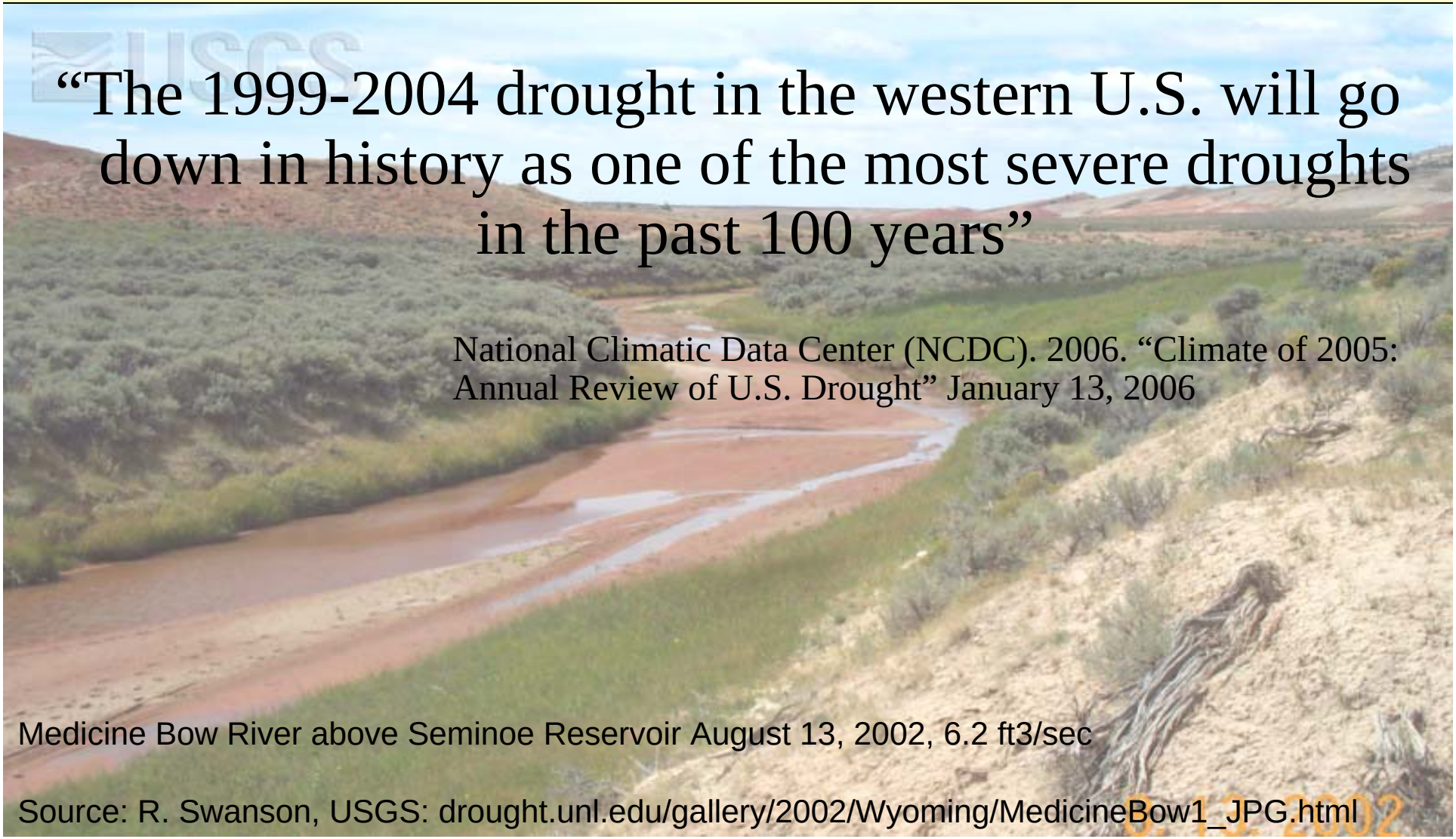
2005 Wyoming Beef Cattle Producer Survey

University of Wyoming / U.S. Department of Agriculture National Agricultural Statistics Service, Wyoming Field Office

This presentation reports results from the 2005 Wyoming Cattle Producers Survey—Detailing management strategies and responses to recent drought

"The economic impact of drought can be tempered with information and planning"

Drought in Wyoming



"The 1999-2004 drought in the western U.S. will go down in history as one of the most severe droughts in the past 100 years"

National Climatic Data Center (NCDC). 2006. "Climate of 2005: Annual Review of U.S. Drought" January 13, 2006

Medicine Bow River above Seminoe Reservoir August 13, 2002, 6.2 ft3/sec

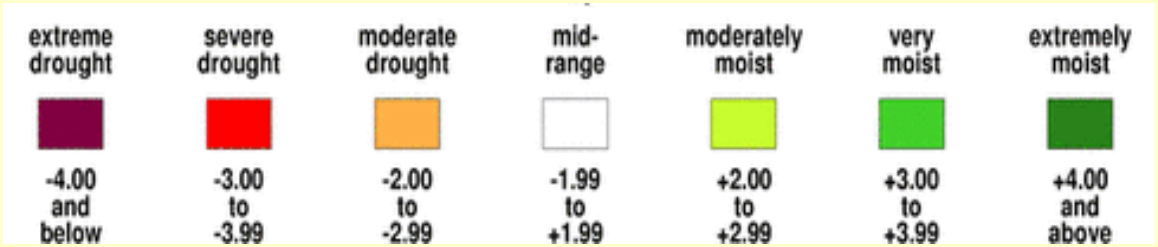
Source: R. Swanson, USGS: drought.unl.edu/gallery/2002/Wyoming/MedicineBow1_JPG.html

Drought in Wyoming

Quantifying Drought

Palmer Drought Severity Indices:

effective in quantifying drought



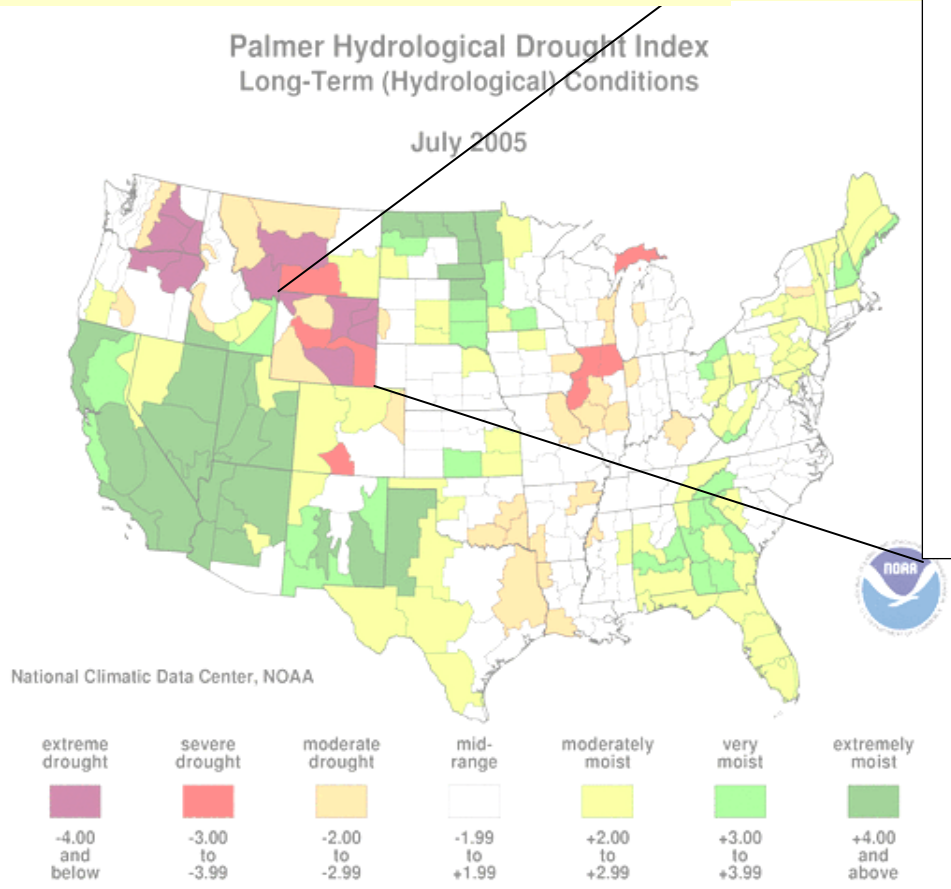
The Palmer Index is standardized to local climate so it can be applied to any region as a relative measure of drought conditions

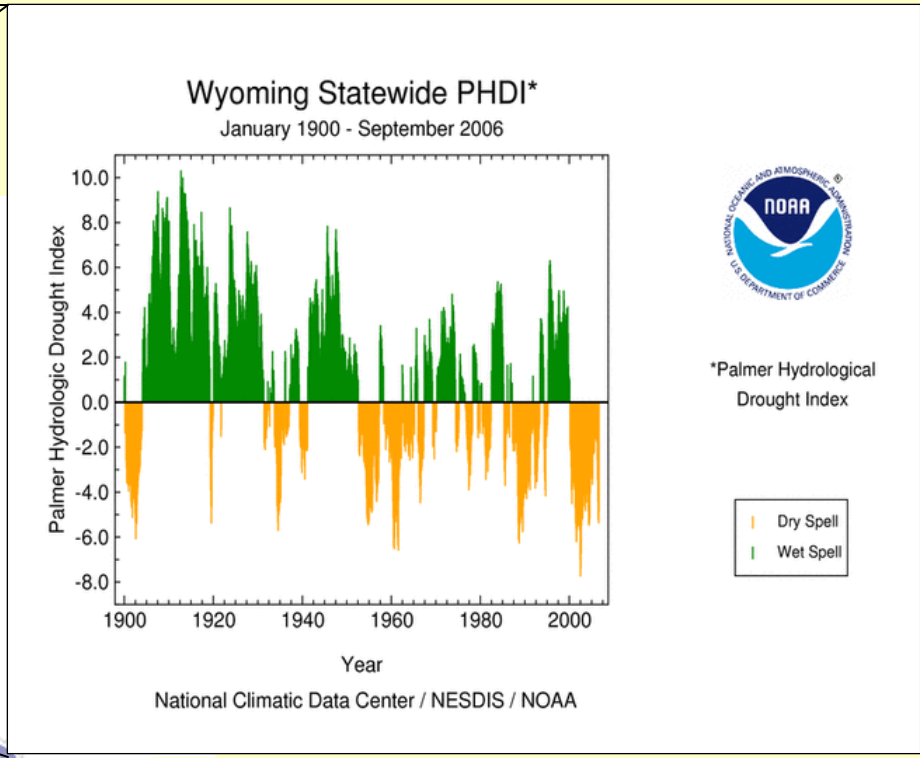
- **The Palmer Hydrological Drought Index (PHDI)** is a long-term drought index
- **The Palmer Z Index** measures short-term drought on a monthly scale

Drought in Wyoming

Long-term Drought: **PHDI**

National and statewide PHDI:



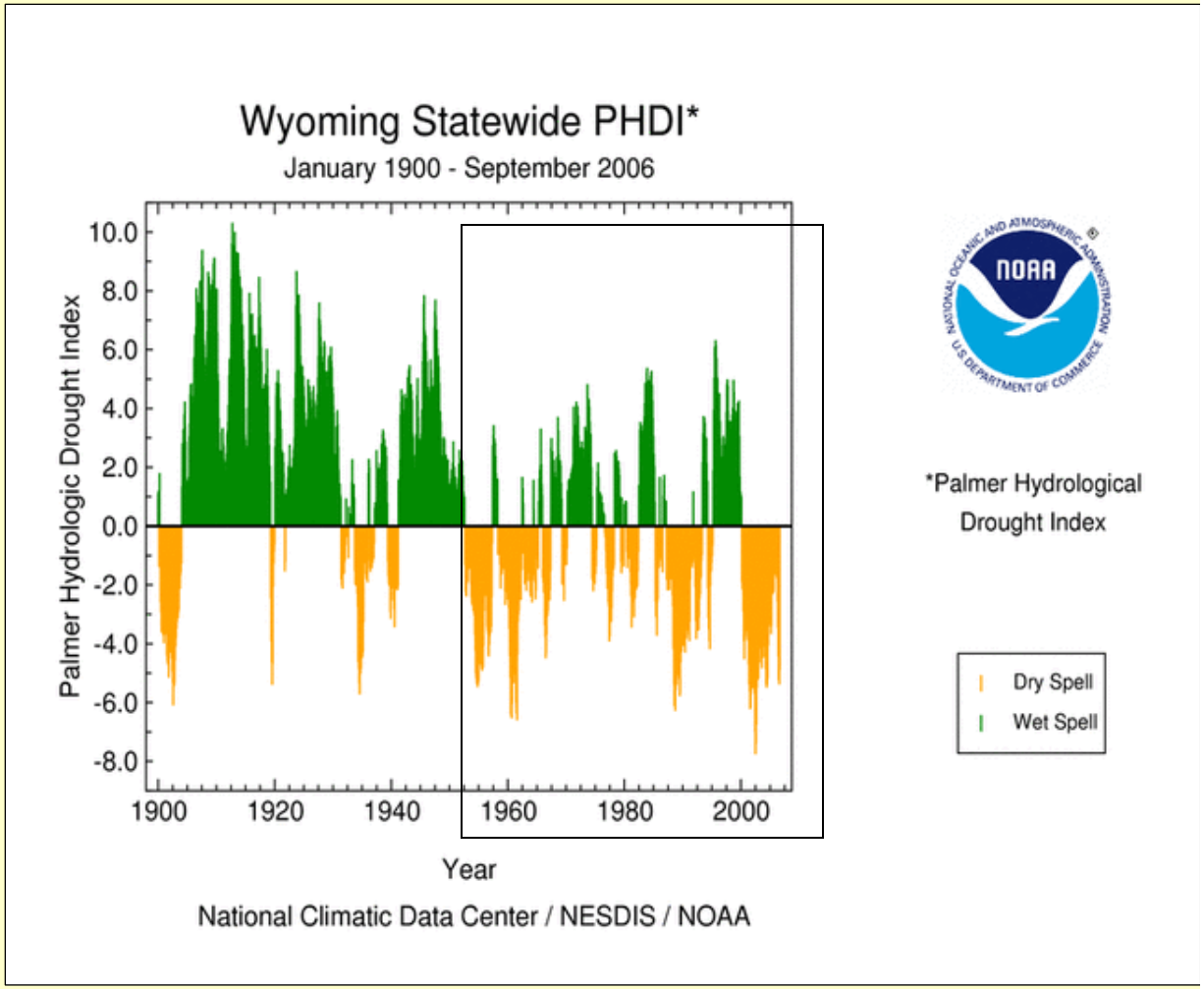


Indicate multiple periods, consecutive years below normal precipitation in Wyoming

Drought in Wyoming

Long-term Drought: **PHDI**

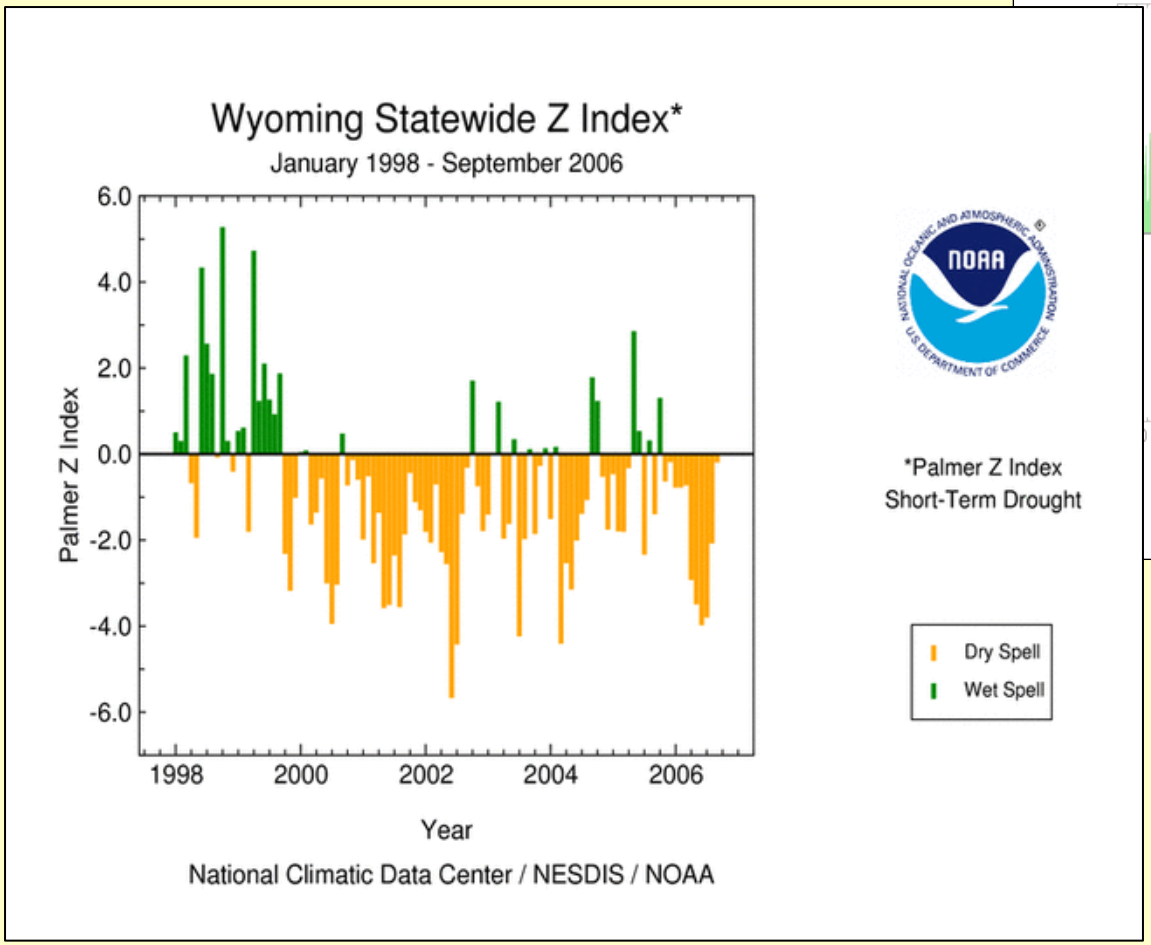
Statewide, long-term drought indices indicate more frequent and prolonged periods of drought since 1952

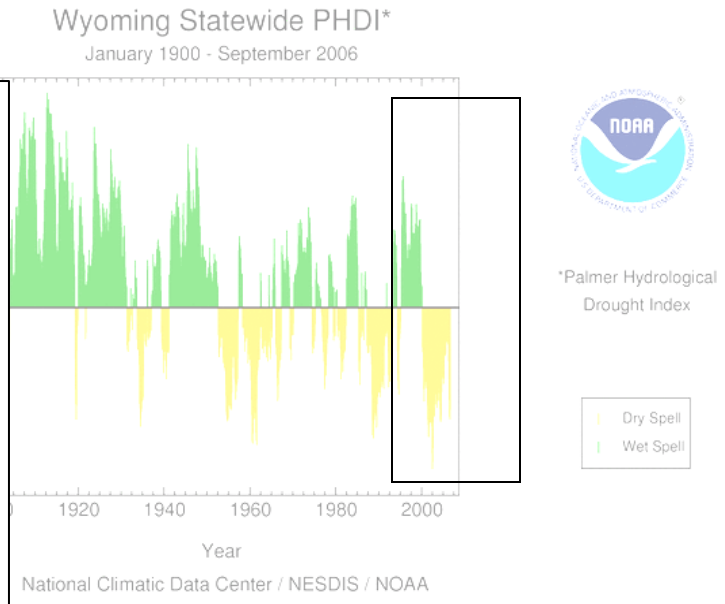


Drought in Wyoming

Short-term Drought: **Palmer Z Index**

State Z Index:





Indicates below-normal precipitation predominant since the winter of 1999/2000

2005 Wyoming Beef Cattle Producers Survey
Results Regarding Drought

Survey Vitals

- Conducted in Spring of 2005 by the USDA National Agricultural Statistics Service on behalf of the University of Wyoming

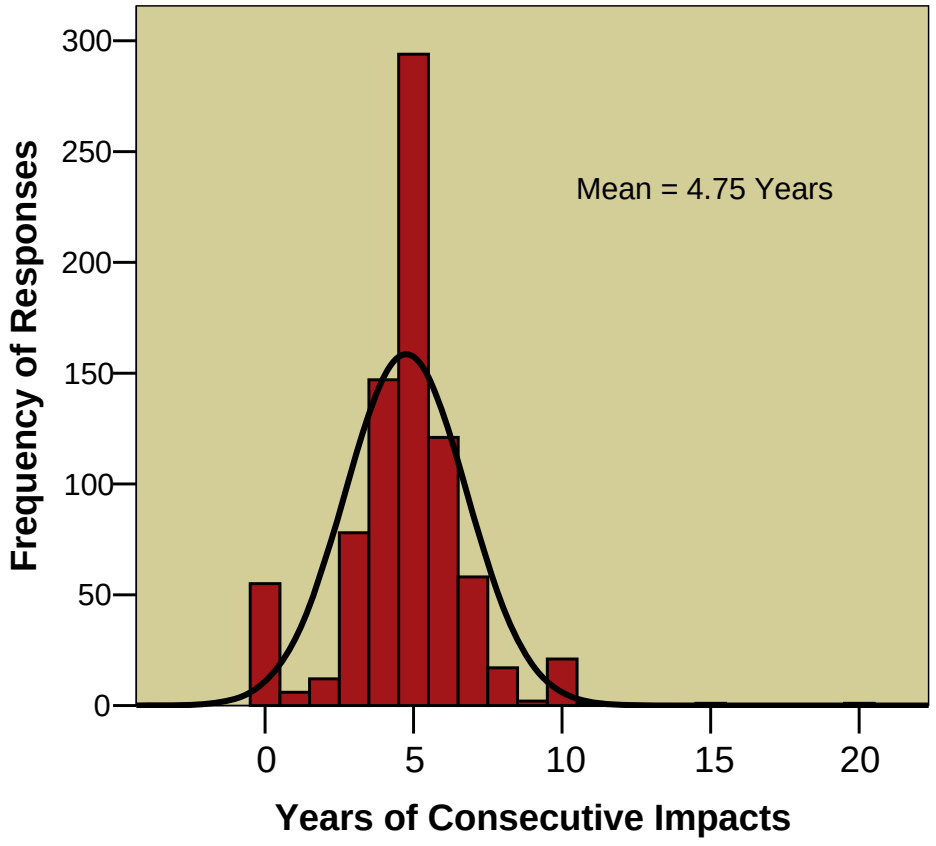
- Stratified random sample of 3,000 producers drawn from the population Wyoming's 6,000 beef cattle ranchers

- Overall survey response rate was 40% and totaled 1,190 responses

2005 Wyoming Beef Cattle Producers Survey
Results Regarding Drought

Majority of Wyoming producers indicated their operations had been negatively impacted by the most recent drought 4 to 6 years

Consecutive years of recent drought impacts reported by Wyoming cattle producers.

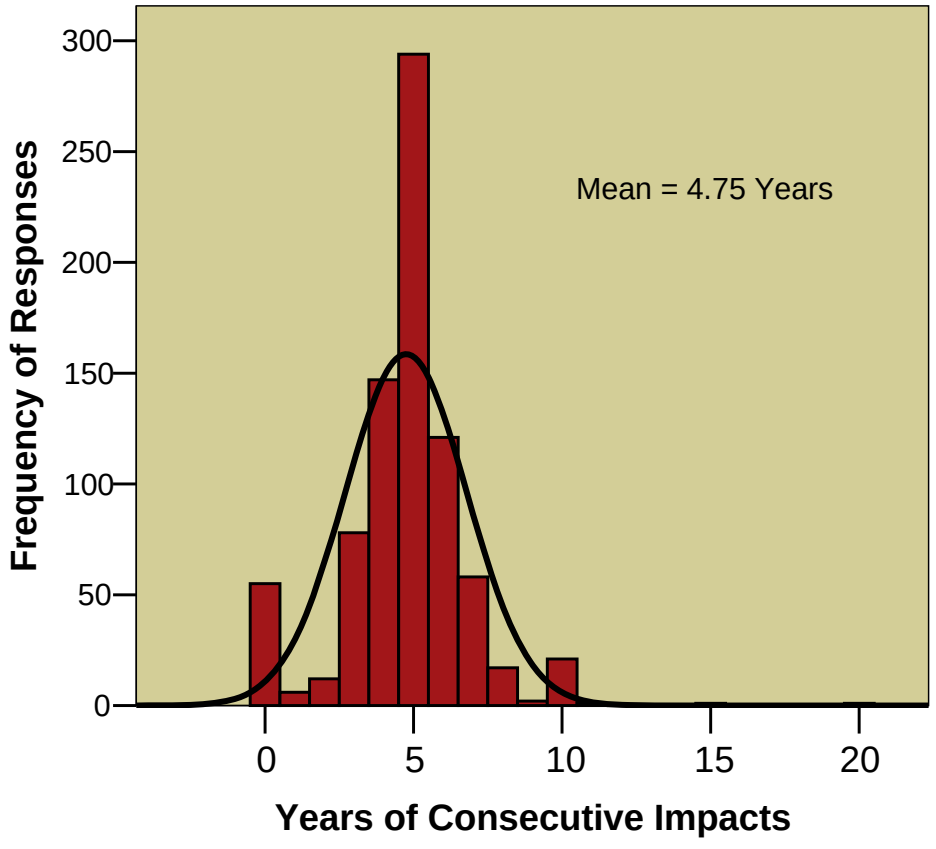


2005 Wyoming Beef Cattle Producers Survey
Results Regarding Drought

Responses suggest multiple year drought is common in Wyoming and should be integral to drought management contingency plans.

(Results are comparable to short term Palmer Index measures.)

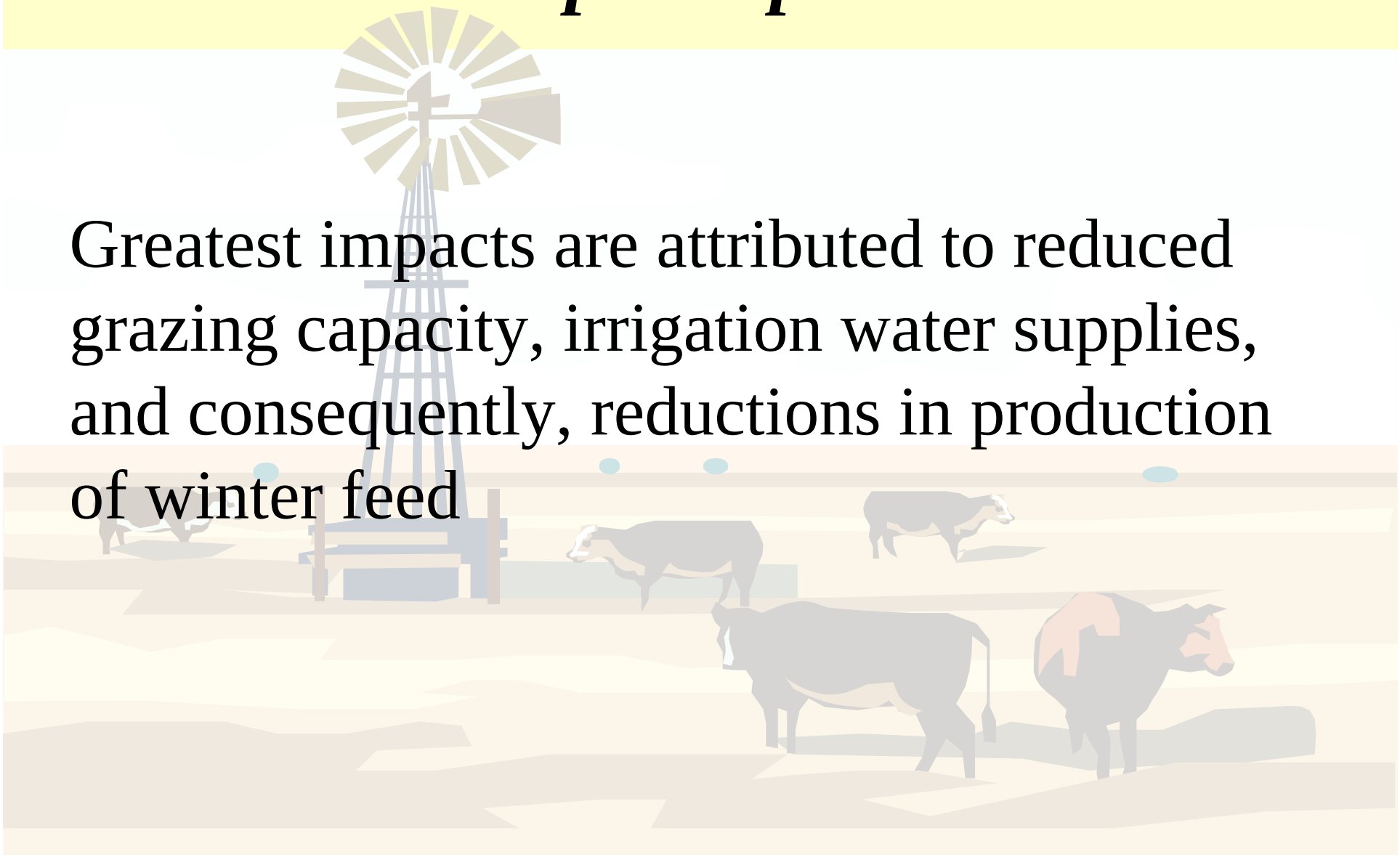
Consecutive years of recent drought impacts reported by Wyoming cattle producers.



2005 Wyoming Beef Cattle Producers Survey

Multiple Impacts—

Greatest impacts are attributed to reduced grazing capacity, irrigation water supplies, and consequently, reductions in production of winter feed



2005 Wyoming Beef Cattle Producers Survey

Multiple Impacts—

Between 2000 and 2004:

- Grazing capacity dropped from 16 to 31 % below normal (15% reduction)
- Irrigation water supply reduced from 12 to 22 % below normal (10% reduction)
- Winter feed production decreased from 18 to 35 % below normal (17% reduction)

2005 Wyoming Beef Cattle Producers Survey

Multiple Impacts—

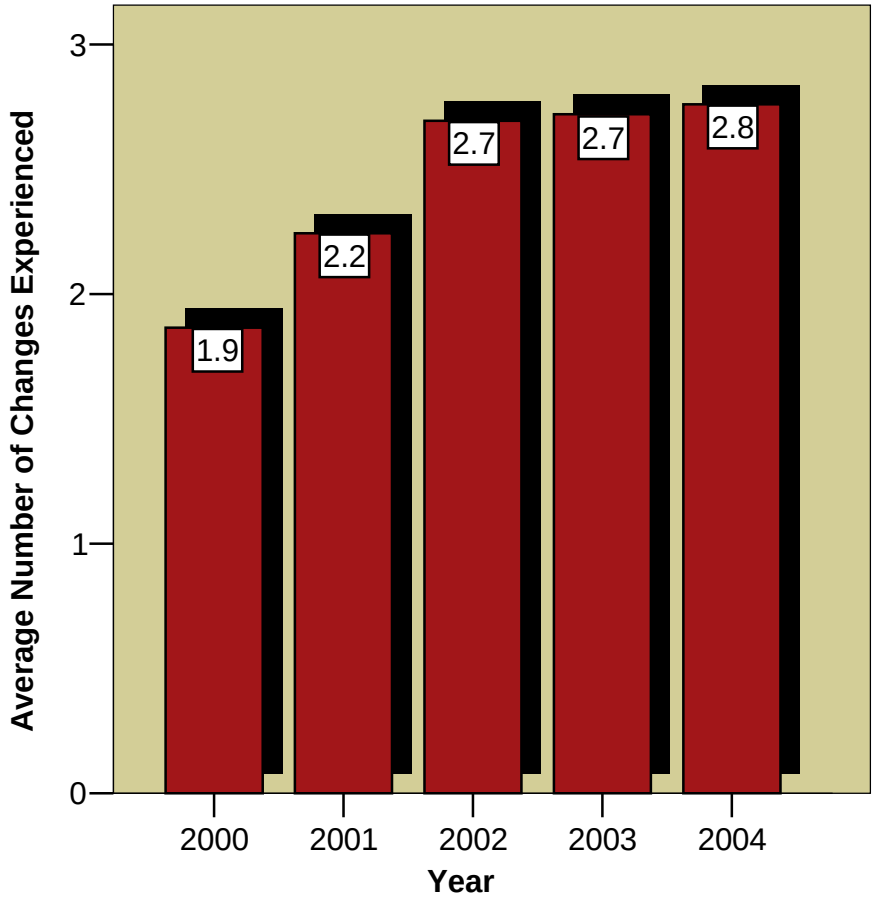
Reduced feed availability coupled with other responses to the drought also reduced sale weights (from 6 to 4 percent below normal) and weaning percentages (which each dropped from 4 to 6 percent below normal)

2005 Wyoming Beef Cattle Producers Survey

Multiple Impacts—

Wyoming ranches experienced a compounding number of impacts due to drought between 2000 and 2004

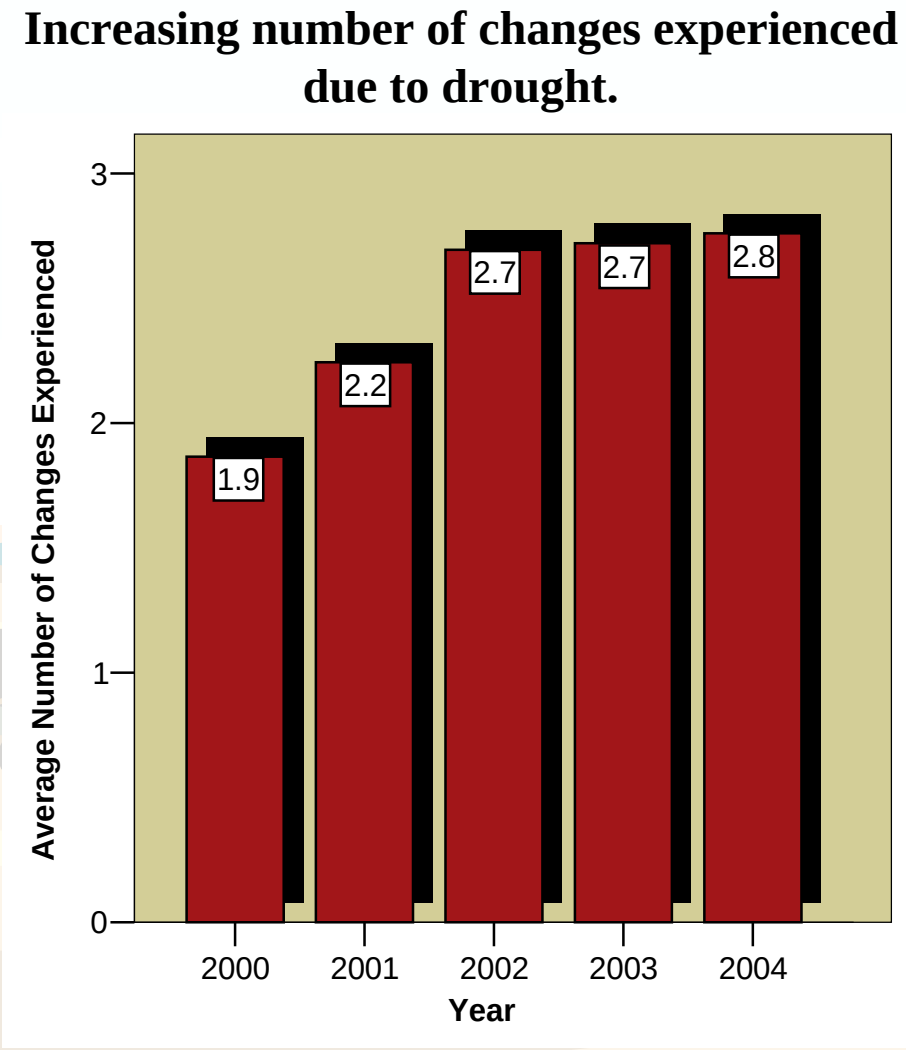
Increasing number of changes experienced due to drought.



2005 Wyoming Beef Cattle Producers Survey

Multiple Impacts—

Survey respondents reported an average of 1.9 different impacts (i.e., reported in multiple categories on the survey) in 2000—which increased to an average of 2.8 impacts reported in 2004



2005 Wyoming Beef Cattle Producers Survey
—Multiple Strategies

Most frequently cited drought management strategies: purchasing additional winter feed, partial herd liquidation, and participating in some type of government feed assistance program

The least common drought strategy reported was total herd liquidation

2005 Wyoming Beef Cattle Producers Survey
—Multiple Strategies

Given the potential for specialization and long term genetic improvement programs for herds, it is not surprising that ranch operations were unwilling to consider total herd liquidation in response to drought.

(Note: The responses received for this strategy could understate the frequency with which this strategy was adopted because producers that no longer had cattle when they received the survey may have declined to participate or were eliminated from the analysis)

2005 Wyoming Beef Cattle Producers Survey —Multiple Strategies

Drought management strategies used by Wyoming producers

Strategy	Respondents
Partial Herd Liquidation	44%
Total Herd Liquidation	3%
Selling Retained Yearlings	13%
Lease / Purchase Additional Grazing	33%
Purchase Additional Winter Feed	59%
Early Weaning of Calves to Reduce Feed Needs	34%
Participated in Government Feed Assistance Program	42%
Participated in Government Income Assistance Program	10%
Earn Off-Farm Income	44%
Added Alternative Livestock Enterprise	7%
Added Alternative Crop Enterprise	3%

2005 Wyoming Beef Cattle Producers Survey —Multiple Strategies

Drought management strategies used by Wyoming producers

Strategy	Respondents
Other	4%

"Other" strategies listed by Wyoming producers included changes in grazing, pasture, or other feed sources; specific herd reductions, herd management strategies including pasture rotation, moving herds off of pasture early, and not backgrounding calves; hauling water or changing irrigation practices in response to water availability; and increasing income from additional ranch and off-ranch sources

2005 Wyoming Beef Cattle Producers Survey —Multiple Strategies

Drought Management Strategies and Operation Size

Operation Size	Strategies Employed
Small and Medium	Earn off-ranch income
Medium and Large	Lease / purchase additional grazing
	Sell retained yearlings
Large	Add alternative crop / livestock enterprises

2005 Wyoming Beef Cattle Producers Survey

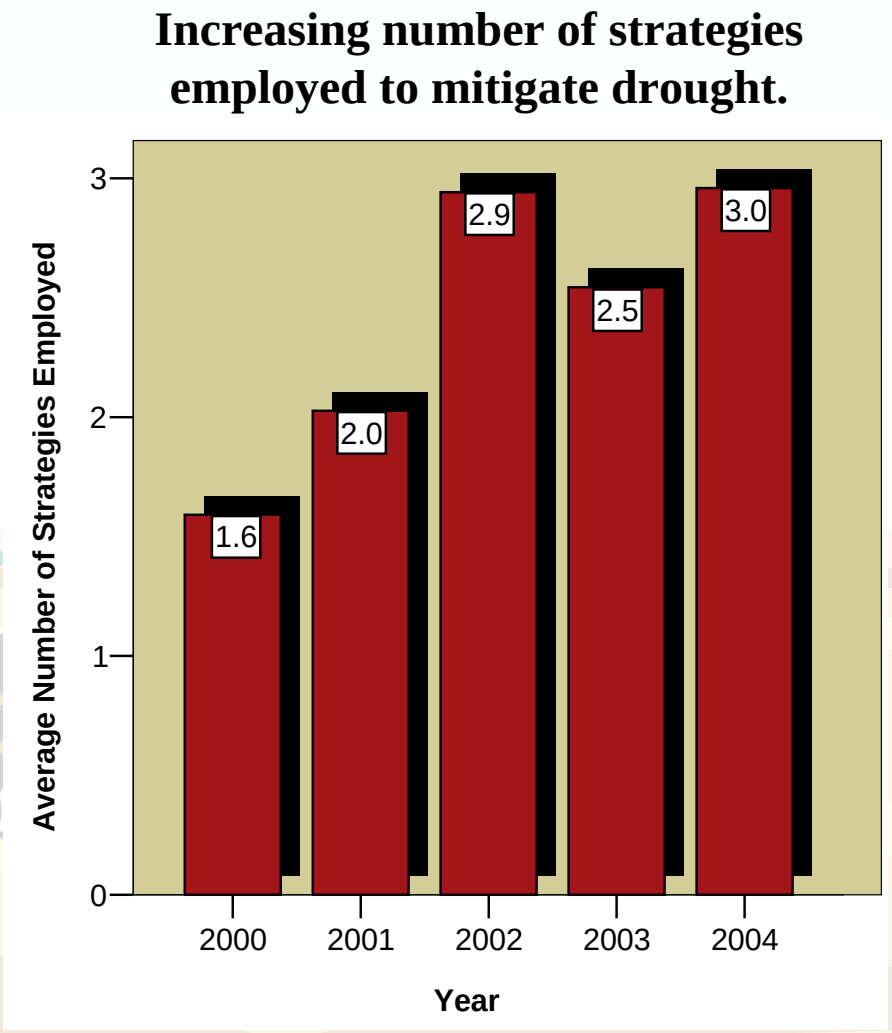
—Multiple Strategies

Drought Management Strategies and Operation Size

It is possible that larger producers face fewer resource constraints which may also partially explain the differences observed between the small, medium and large producers concerning their strategies related to the sale of retained yearlings (It is easier for larger producers to retain genetic bases while selling off yearlings to make quick forage adjustments)

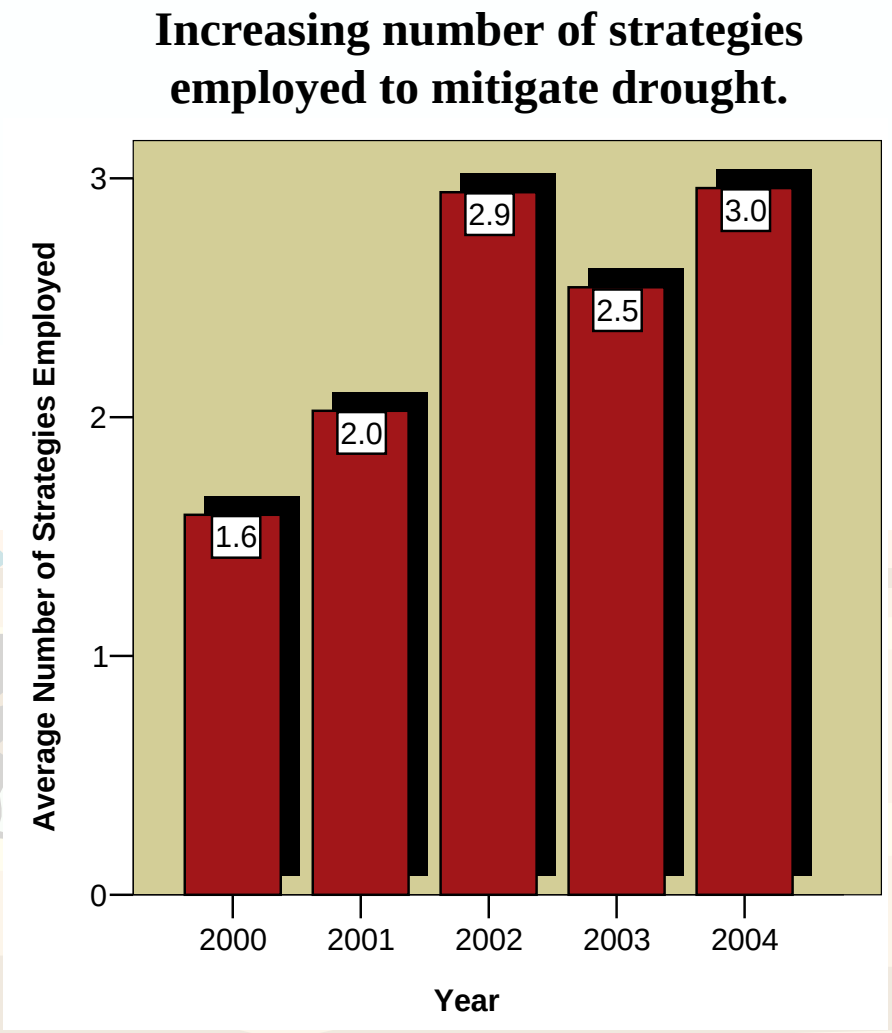
2005 Wyoming Beef Cattle Producers Survey —Multiple Strategies

As the length of the drought increased respondents were more likely to use multiple strategies to mitigate drought impacts



2005 Wyoming Beef Cattle Producers Survey —Multiple Strategies

During 2000 and 2001 producers used 1 to 2 strategies on average while between 2002 and 2004 the mean number of strategies utilized increased to between 2 and 3 in a given year. This held true across all operation sizes



Drought in Wyoming

IMPACTS

This most recent period of drought has reduced range productivity, lowered irrigation water supplies, and may ultimately force ranchers to develop drought management strategies with longer time horizons

Where To Go For Information?

Drought Weather and Climate Monitoring

NOAA Drought Information Center

http://www.drought.noaa.gov/

Federal Government

USDA / FSA Disaster Assistance Programs

http://www.fsa.usda.gov/FSA/webapp?area=home&subject=diap&topic=landing

General Regional Information

Rangelands West

http://rangelandswest.org/index.html

Where To Go For Information?

Western Land Grant Universities

Texas Drought

http://agnews.tamu.edu/drought/DRGHTPAK/CONTENTS.HTM

North Dakota State University: Coping with Drought

http://www.ag.ndsu.edu/drought/

University of Arizona Drought Resources

http://cals.arizona.edu/extension/drought/

University of Nebraska: National Drought Mitigation Center

http://drought.unl.edu/index.htm

Where To Go For Information?

International

Drought Watch Canada

http://www.agr.gc.ca/pfra/drought/article_e.htm

Australia Drought

http://www.agric.nsw.gov.au/drought/

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Siân Mooney
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Colorado State University
Wendy Umberger
The University of Adelaide
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