

# Main Points

- 1) **Biology of overexploitation**
  - impacts of exploitation on target species and ecosystems
  - example: evolutionary consequences of trophy hunting (Monteith et al reading)
  - example: stag beetle collections and anthropogenic Allee effects
  
- 2) **Management of overexploitation**
  - a potential success story about the North American Model of Game Management
  - warning: Jake's opinion: double standards in and selective definitions of wildlife conservation
  - example: social identity and stakeholder opinions about managed wolf hunts
  - example: biological effects of wolves vs hunters

**Pre-reading: Tuesday 17 November = Middleton et al**

**Jake will send HW#4 Tuesday 17 November**

**Vote on material 17 November**

**Options for grades**

**Terms: trophy hunting, anthropogenic Allee effect, social identity, reproductive power**

# History of Exploitation in the U.S.

- Next to habitat destruction, overexploitation is the second most important threat to world's birds, mammals, plants, and reptiles.



**TABLE 3.3** Percent of U.S. Threatened and Endangered Species Affected by Five Types of Threat<sup>a</sup>

	Mammals	Birds	Reptiles	Amphibians	Fishes	Freshwater mussels	Crayfish	Other invertebrates	Plants
<b>Threat</b>	(85)	(98)	(35)	(60)	(213)	(102)	(67)	(143)	(1055)
Habitat loss and degradation	89	90	97	87	94	97	52	96	81
<b>Overexploitation</b>	45	33	66	17	13	15	0	43	10
Invasive species	27	69	37	27	53	17	4	46	57
Pollution	19	22	53	45	66	90	28	20	7
Disease	8	37	8	5	1	0	0	0	1

Note: Numbers in parentheses are the number of threatened species with threat data available.

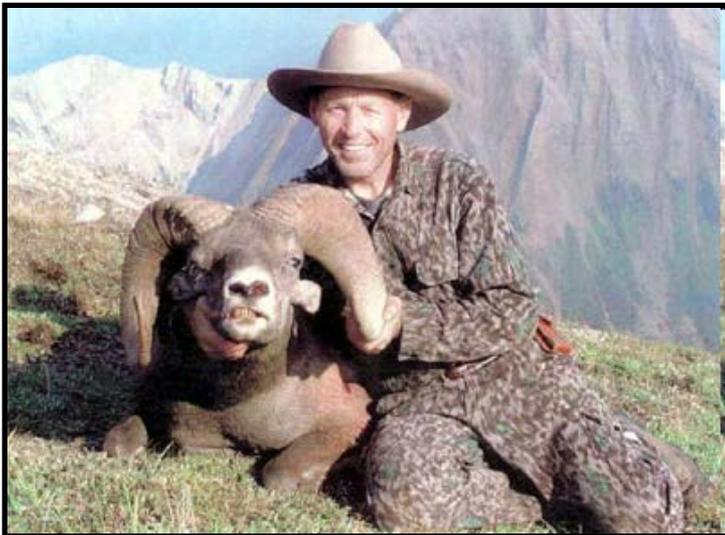
Source: Wilcove et al. 1998.

<sup>a</sup>Listed by taxonomic group.



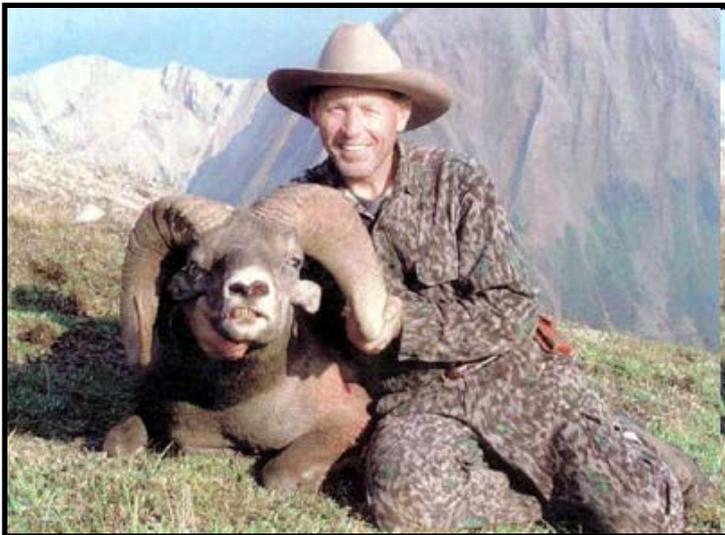
# Trophy hunting and phenotypic change in North American ungulates

- trophy hunting = selective hunting for a trophy or memorial (e.g., horns, antlers, head, etc).

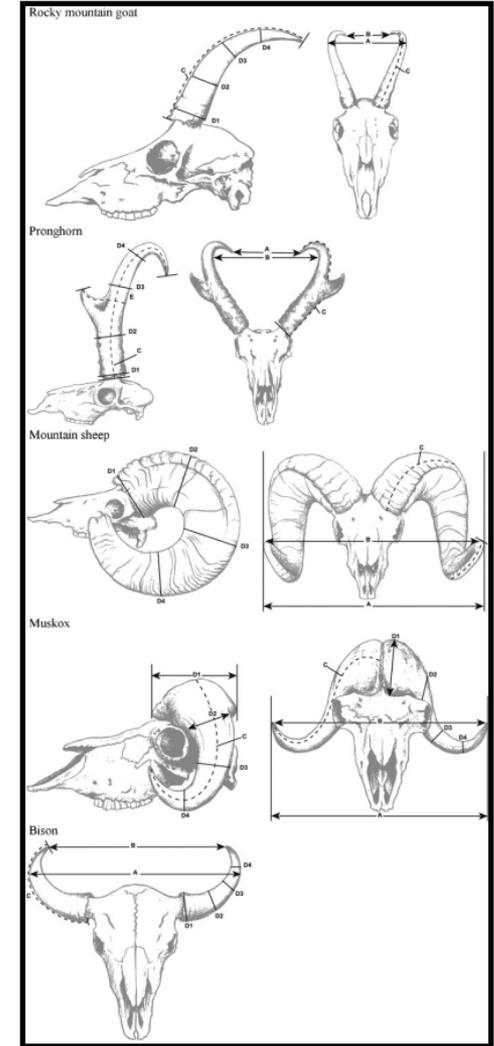
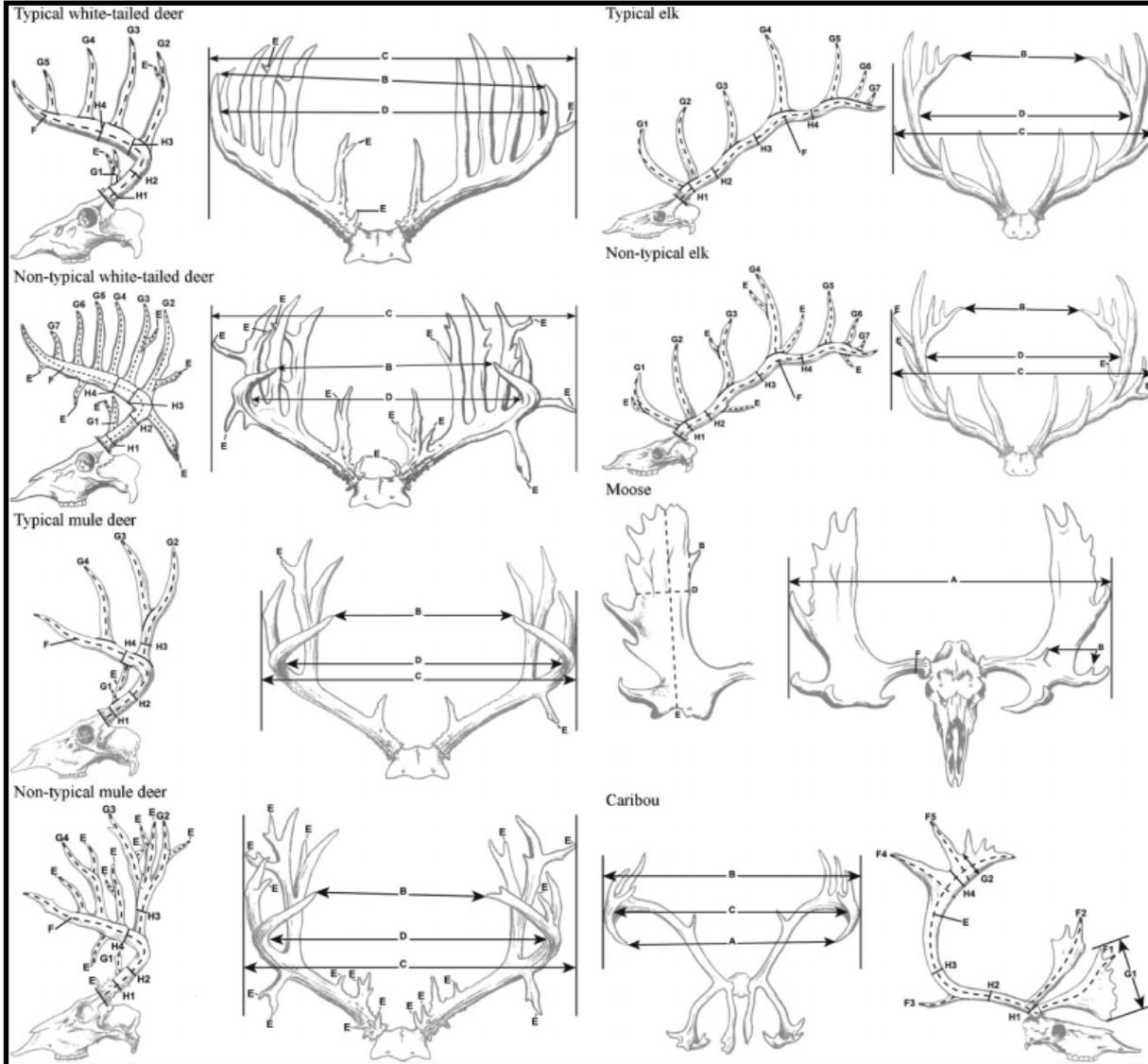


# Trophy hunting and phenotypic change in North American ungulates

- typically, sportsmen and sportswomen target individuals with large phenotypic traits.



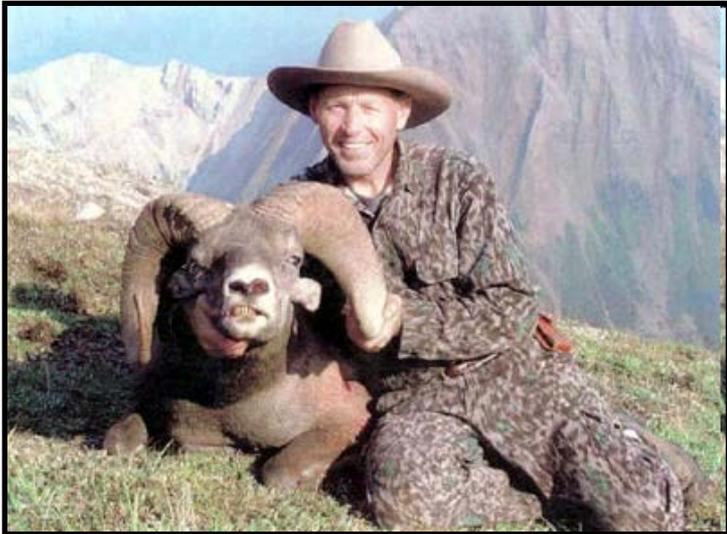
# Boone and Crocket Records of NA Big Game



## **Trophy hunting and phenotypic change in North American ungulates**

- **typically, sportsmen and sportswomen target individuals with large phenotypic traits (horns, antlers).**
- **climate and habitat change also affect horn and antler growth.**
- **social factors may influence Boone and Crocket records.**

**Discussion Q: Monteith et al analyzed >100 years of Boone and Crockett Records, looking at how horn and antler sizes of NA ungulates have changed through time. What hypotheses can you come up with regarding change in horn and antler-size change through time? What predictions do these hypotheses make?**



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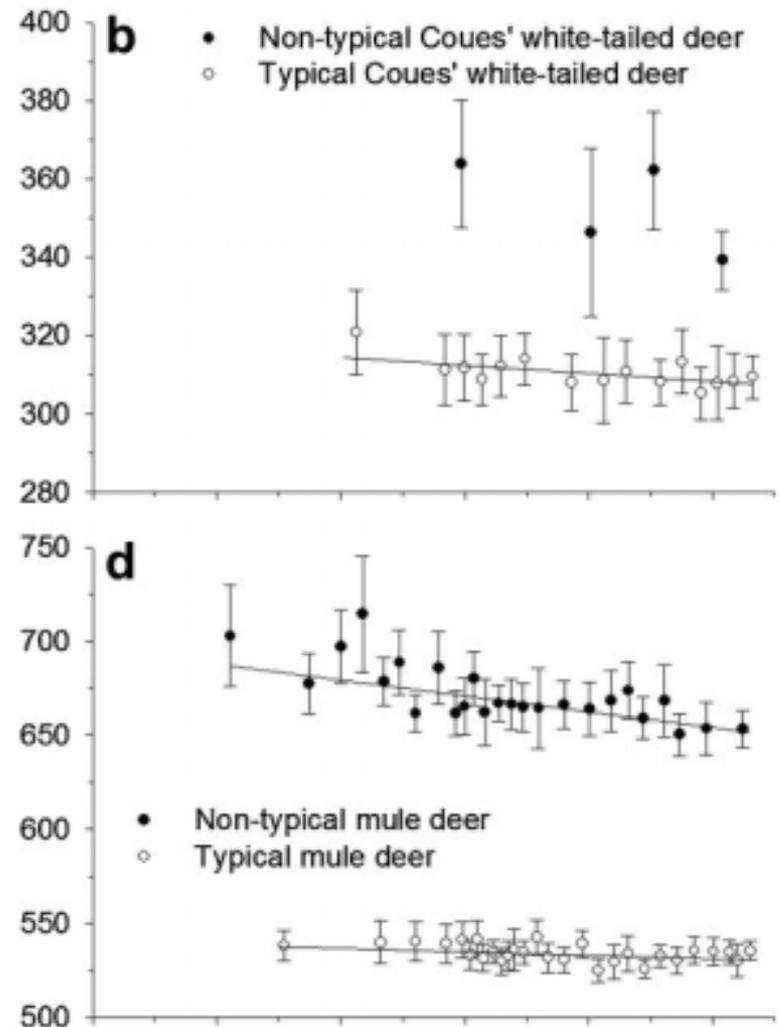
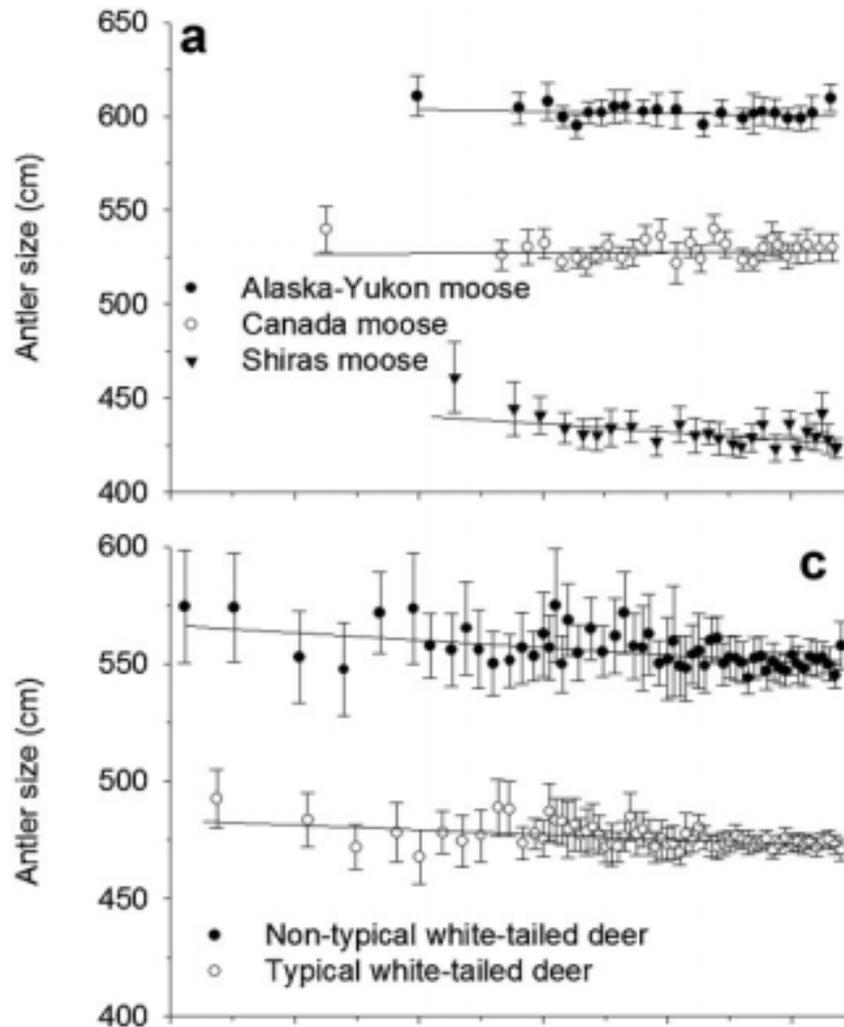
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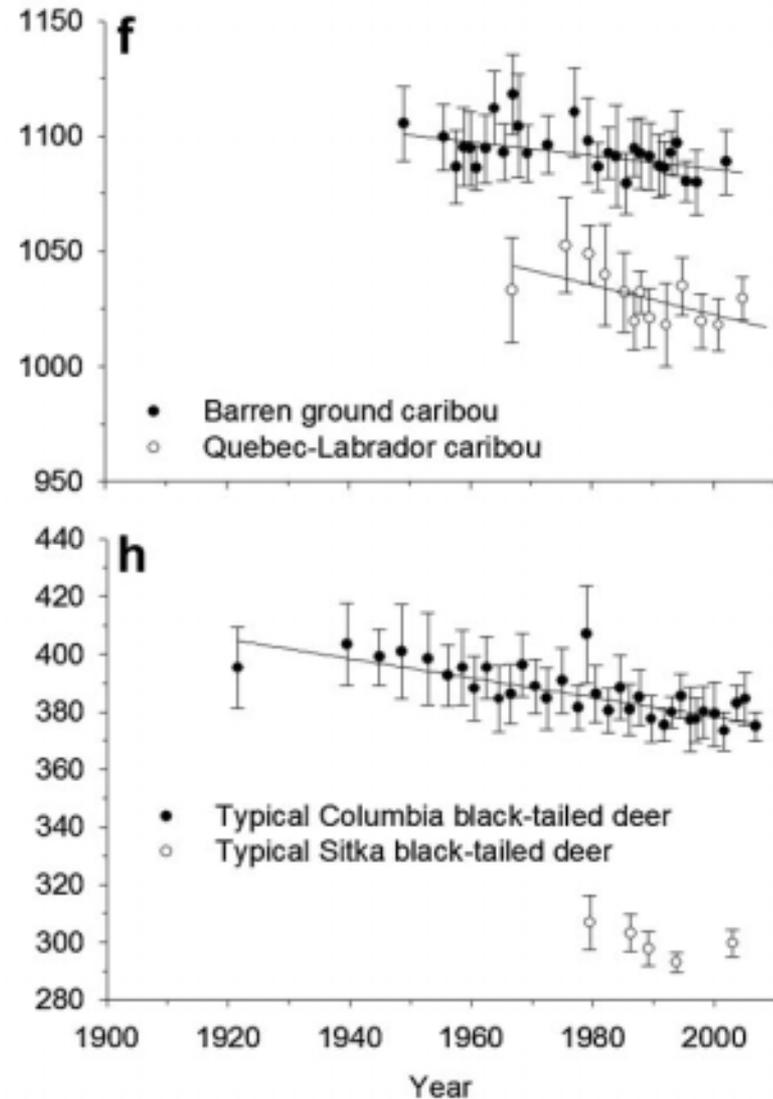
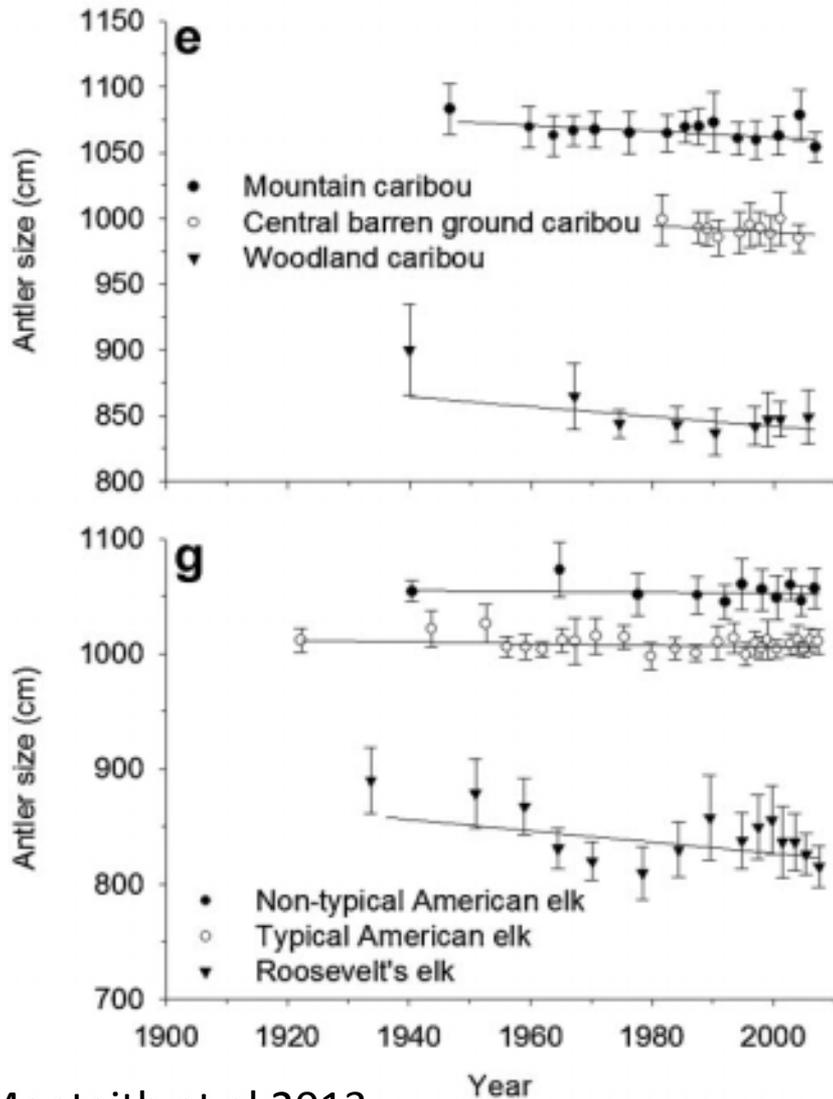
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- **H4 = habitat alteration. Changes in antler and horn size through time should be least pronounced for species experiencing less habitat alteration (musk-ox, Dall's sheep, Stone's sheep).**

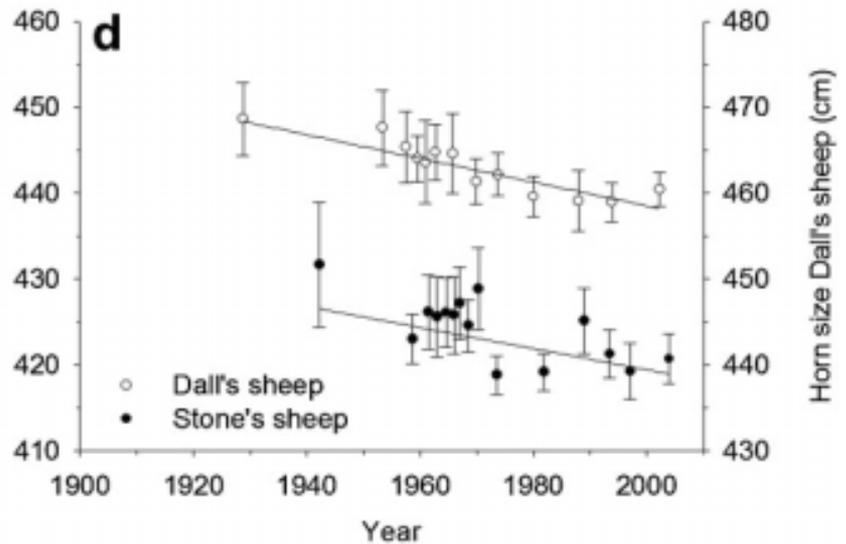
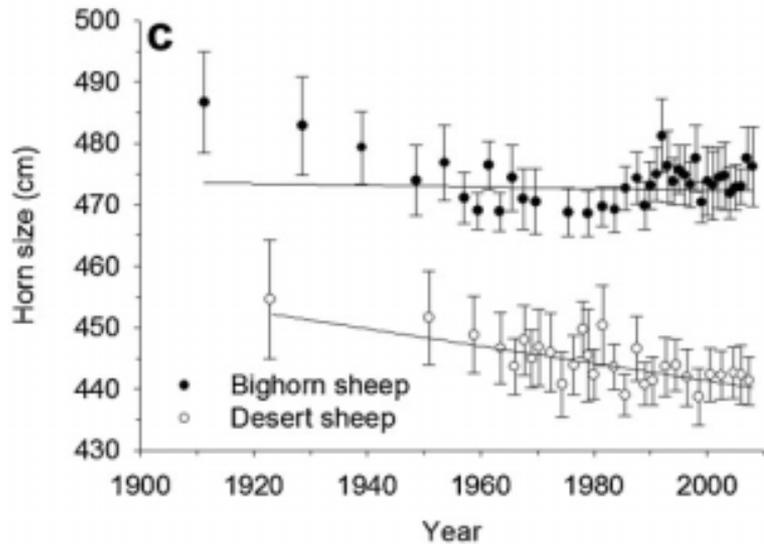
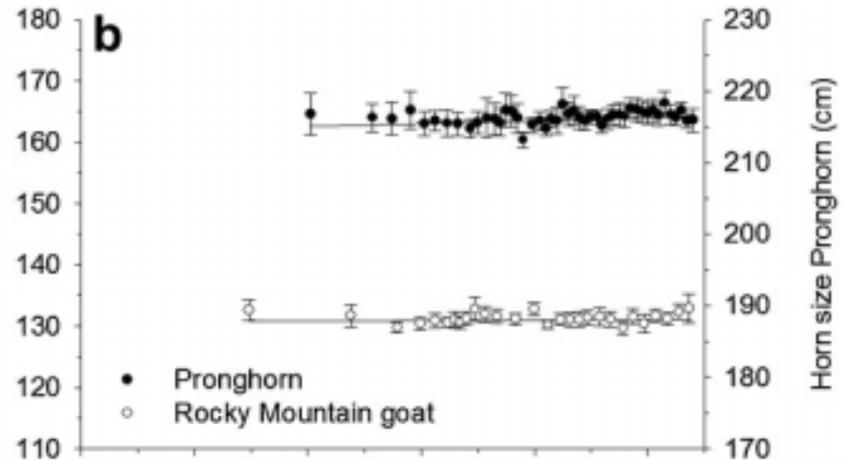
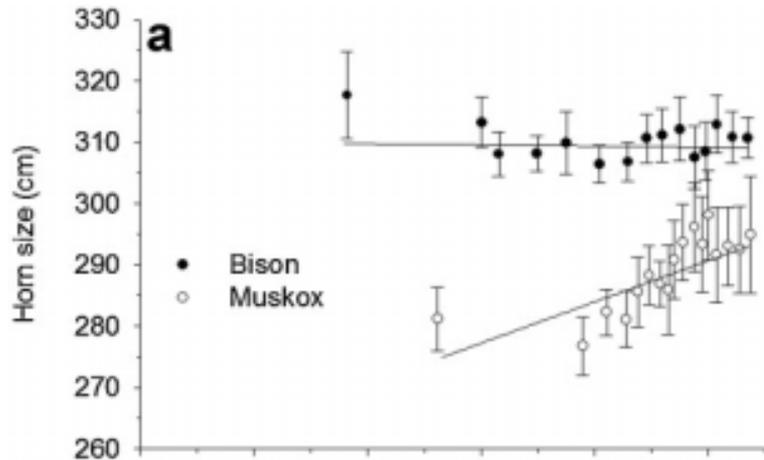
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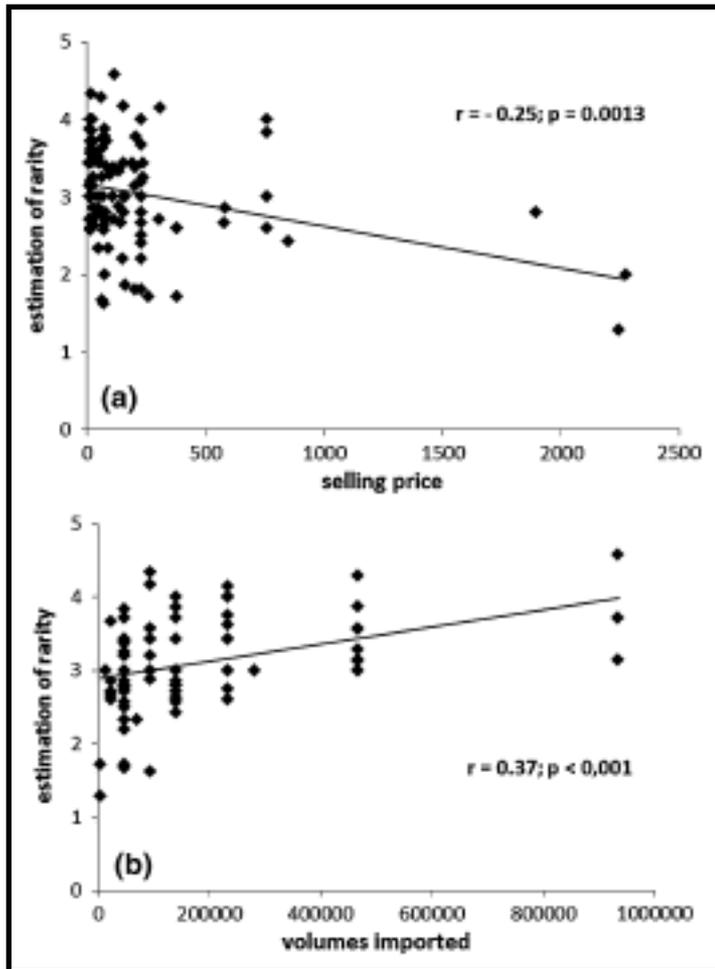
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**anthropogenic Allee effect: rare species cherished by harvesters or collectors assume more value, thus leading to the further decline of rare species**



(b) If you were to select combinations of attributes between the color, the size of mandibles and the rarity of these virtual stag beetles, which one would you take?  
Please select three, in your order of preference\*.

<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
	Small mandible, Black, Abundant		Small mandible, Coloured, Rare		Large mandible, Black, Abundant		Large mandible, Coloured, Rare
<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
	Small mandible, Coloured, Abundant		Large mandible, Coloured, Abundant		Small mandible, Black, Rare		Large mandible, Black, Rare

## History of Exploitation in the U.S.

- **cultural roots of hunting in the U.S. based in subsistence and, to a lesser extent, sport/recreational hunting and fishing.**
- **hunting creates ~700,000 jobs in the U.S. totaling over 61 billion dollars (~1% of the entire civilian labor force).**



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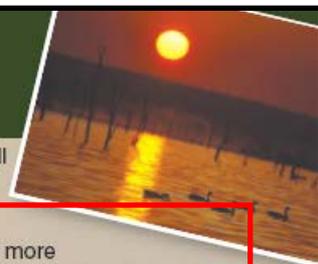
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  - 1900: Lacey Act (prohibiting market hunting)**
  - 1937: Pittman-Robertson Federal Aid in Wildlife Restoration Act (11% excise tax on sporting arms and ammo)**
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- **has resulted in \$8 billion directly for state wildlife agencies to allocate toward wildlife, fish, and non-game**

# Facts about wildlife



Some people oppose hunting because they feel that by preserving wildlife, it will increase. Wildlife, however, is a resource that cannot be stockpiled. If any annual overabundance of game is not harvested, nature often takes over in a cruel and harsh way.

Weather, more than any other factor, often decides the fate of wildlife. Just as wildlife will flourish under ideal weather conditions—mild winters and bountiful springs—the opposite is true when seasons are harsh.

In a harsh winter, when oversized white-tailed deer herds deplete all available food, merciless death by slow starvation is inevitable. Predators attack the young and hunger-weakened stragglers. Disease and parasites add to the toll. Most often, the end result is a weak, unhealthy herd with far fewer deer than would be present if hunters had taken a reasonable surplus in the fall.

Research shows that a healthy white-tailed deer herd, reasonably sized to make the most of available habitat, can be reduced each year by as much

as 40 percent with no ill effect on the future

population. Hunters in most states rarely take more than 15 percent of the herds. Yet, if left alone, a white-tailed deer herd can double in size in only two years, quickly deplete available food supplies and face certain mass die-offs.

This management concept is even more evident with gamebirds. Quail has an annual mortality rate of 75 to 80 percent whether it is hunted or not. Dove and pheasant populations are likewise regulated far more by factors of feed, cover and weather, than by hunting.

It is apparent that hunting is a useful part of today's wise game management practices. By teaming habitat improvement with carefully regulated hunting seasons and bag limits, our professional conservationists make sure that hunters take only the surplus of game populations.

An overabundance of any one species can cause a shortage of food and an increase in the spread of diseases. Hunters help to regulate and maintain wildlife while not affecting future populations.

# money for conservation

Sportsmen and women have historically funded the majority of the conservation effort.

The wildlife conservation programs of state fish and game departments add up to a vast undertaking, one involving thousands of people working for the well-being of hundreds of species of birds, animals and fish, game and non-game species alike, on millions of acres of land and water.

As one might imagine, the cost of managing our wildlife is extremely high, with hundreds of millions of dollars spent each year.

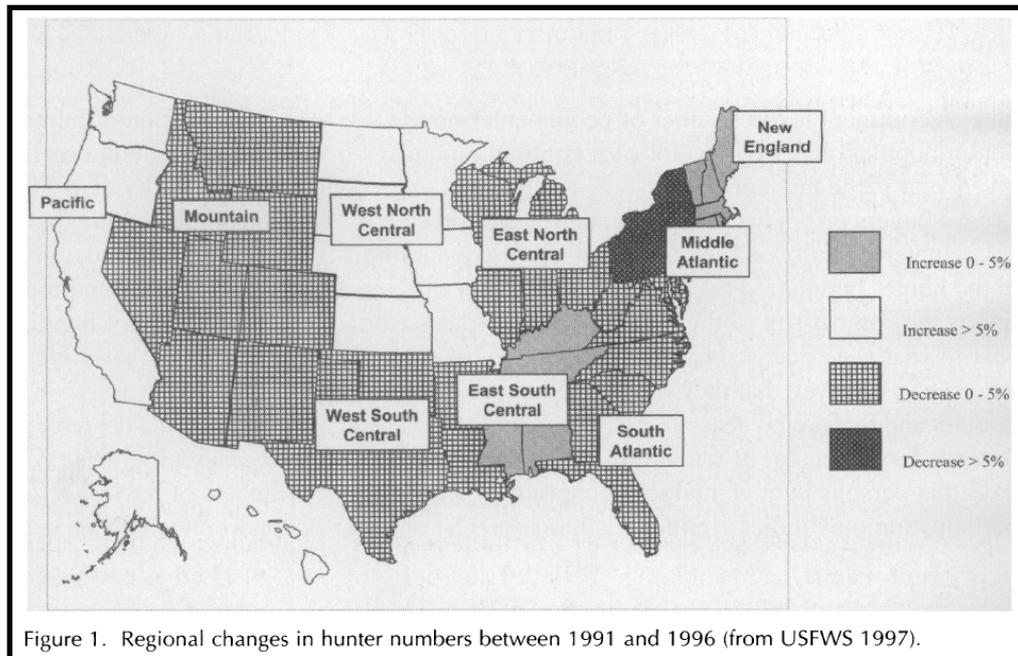
Here, once again, the hunter enters the picture because, unlike other state governmental agencies, the 50 fish and game departments receive little support from taxes paid by the general public. Instead, the majority of their operating funds come from hunters and anglers. Sporting enthusiasts are paying, as they have for many years, nearly all the bills for practical wildlife conservation — and paying them not just for their own benefit, but for that of all Americans.

Dating as far back as the 1920s, sportsmen and women have paid the lion's share for conservation. Through license fees and special excise taxes on hunting and fishing equipment, they currently contribute more than \$4.7 million each day for the benefit of wildlife.



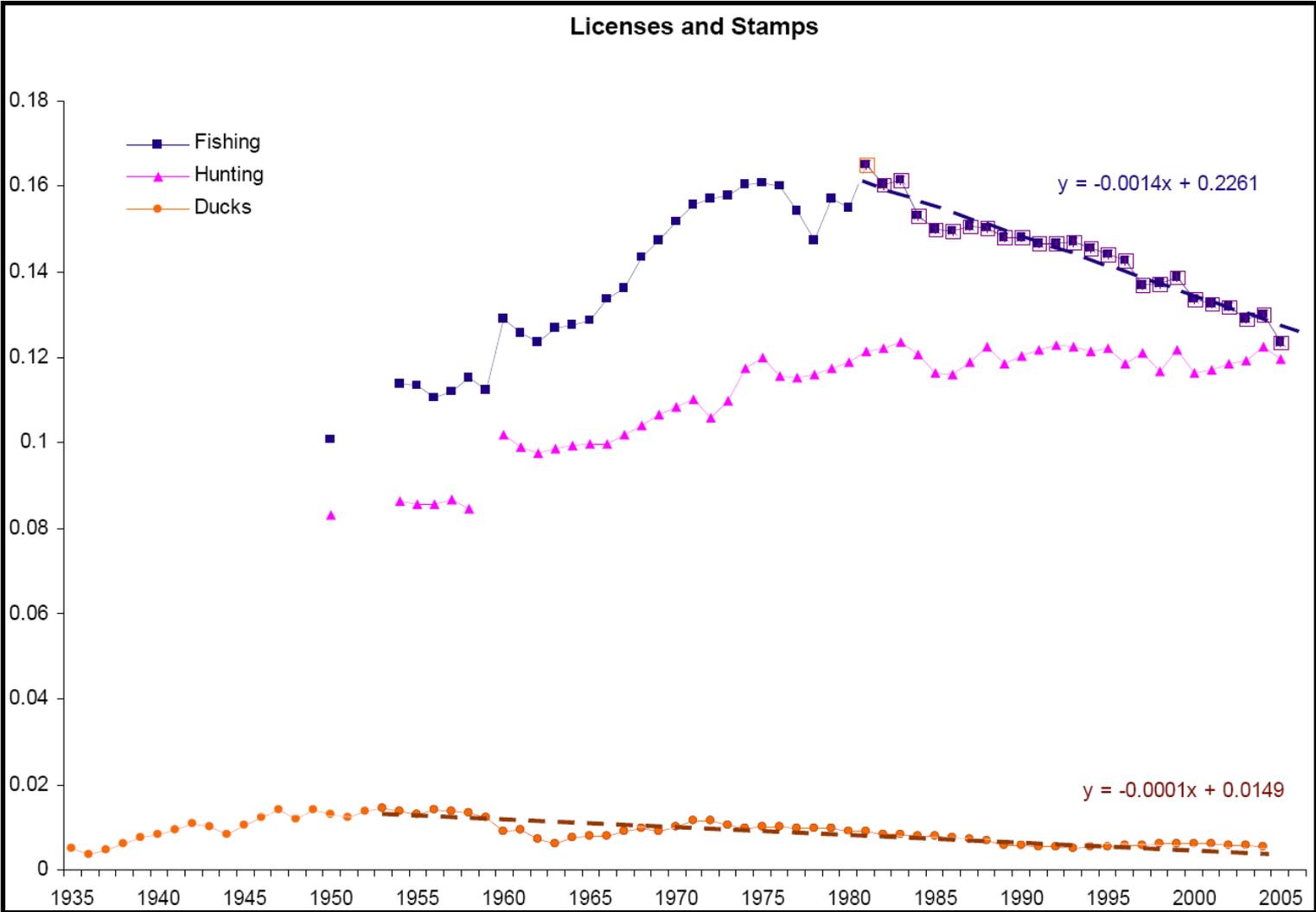
## Trends of Managed Exploitation in the U.S.

- Proportion of public that hunts ~7% of US population; proportion of public that fishes ~20% of US population

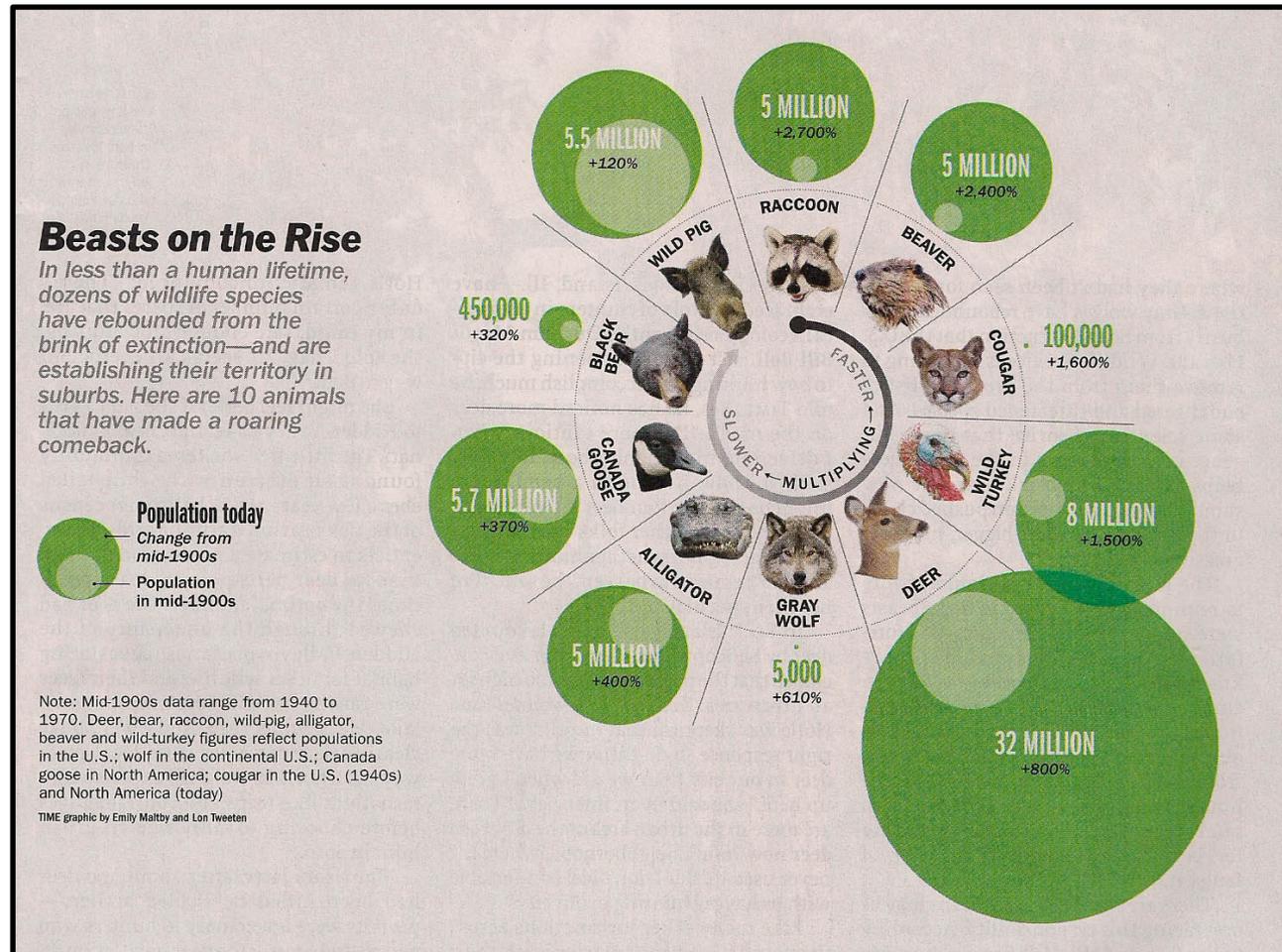


- May translate into reduced funding for state fish and wildlife agencies.

# Trends of Managed Exploitation in the U.S.



Discussion Q: This figure (published in Time magazine last year) incorporates at least two of the key ideas we discussed in class, plus value judgments. What are the ideas and what are the value judgments?



# A Double Standard in Hunting Organizations?

Big Game Forever - Protecting Big Game Abundance for Future Generations - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.biggameforever.org/

Most Visited Media M Customize Links Free Hotmail Windows M Windows Media

WyoWeb 31 Google Calendar Major Research Instrumentation Pr... ISI Web of Knowledge [v.4.10] - W... Find It@IUW JSTOR: Wildlife Society Bulletin, Vol... Loading...

Big Game in Crisis Wolf Overpopulation Solutions Endorsements & Sponsors How You Can Help

Donate Now! Make a difference. Join the Cause!

# WOLF

overpopulation is drastically reducing **elk** and **moose** populations

## Wolf Overpopulation

Wolf overpopulation is dramatically damaging and even eliminating entire populations of Moose, Rocky Mountain Elk and other large ungulate populations. Wolf predation is erasing decades of effort and hundreds of millions invested in rebuilding healthy big game populations.

Ill-advised experimentation and anti-management philosophy continues to be pushed by extreme animal rights and anti-sportsmen special interest groups. This war on the west threatens big game herds, proactive state wildlife management, use of renewable wildlife resources and the western way of life. Our success ensures that delicate wildlife populations are restored to healthy levels.

Our combined effort is needed to make sure that these giants of the forest are not lost for generations to come in our wilderness areas. We must act now to protect our future. Help us win this battle by signing our petition.

### Our Partners

Sign the Petition!

We call on Congress to:

1. immediately and permanently delist wolves nationwide by passing H.R. 6028 and S.B. 3919;
2. place a moratorium on further wolf reintroductions

We call on the States to:

1. immediately reduce wolf numbers to agreed upon levels in reintroduction areas and
2. manage for no increases in wolf populations in non-reintroduction states to address the alarming rate of disappearance of our big game populations

\* indicates required field

Email Address\*

First Name\*

Last Name\*

Referred by   
*(optional)*

Zip Code\*

Sign Petition

*"I predict that you are going to have major impacts from wolves in this state...I predict major elk decline...wolves repeatedly depress moose, caribou and elk populations while studying them throughout Canada...I've watched herd after herd [of caribou] go EXTINCT across Canada...The problem, wolves have no know predators to keep them in balance with the ecosystem."*

Tom Berglund, 1994

Find: elk Next Previous Highlight all Match case

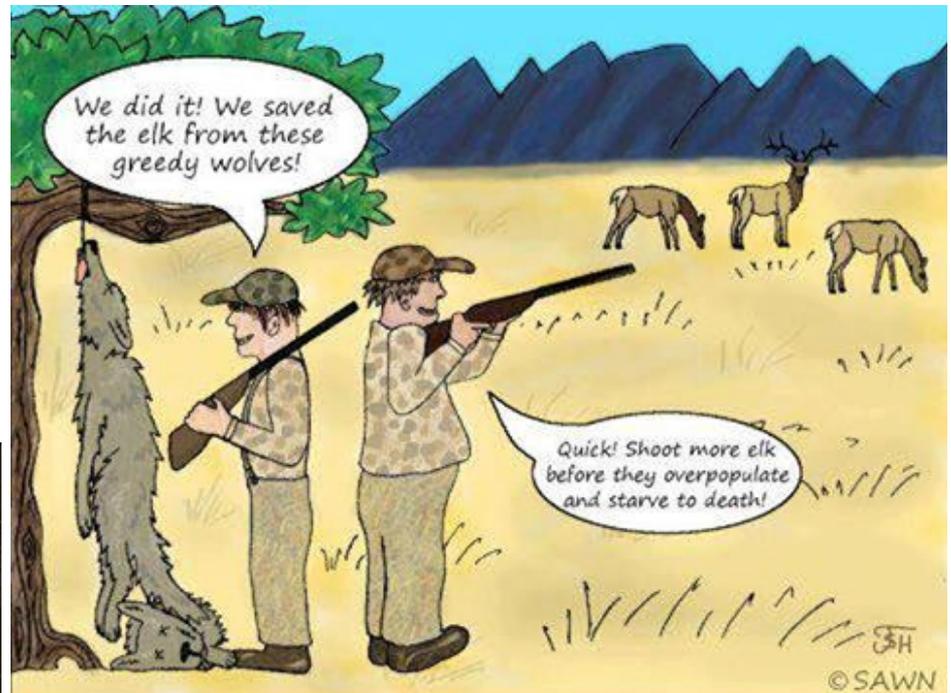
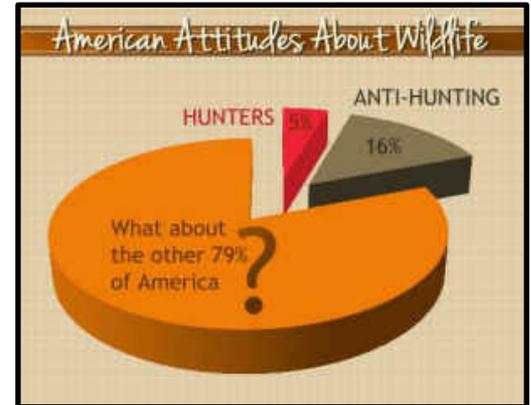
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start Big Game Forever ... Inbox - Outlook W... 3783836.pdf (appli... spine-jasmonate d... main datasheet\_hi... Presentation1 peterson.pdf - Ad... HunterConservatio... enck et al.pdf - Ad... M5 Assistantship in... 6:29 PM

# Social identity and stakeholder opinions

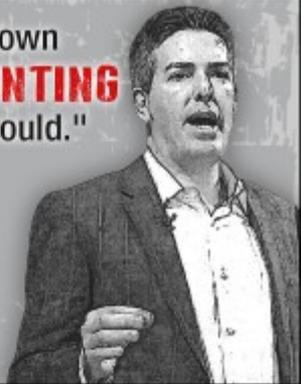
So you're anti-hunting but you still eat meat?

You must only eat animals that commit suicide.



"If we could shut down **ALL SPORT HUNTING** in a moment, we would."

— Wayne Pacelle, CEO  
Humane Society of the United States



# Social identity and stakeholder opinions

- social identity = the component of one's identity derived from group membership, in which the individual views him/herself as a representative of that group, and acts according to group social norms.



# Social identity and stakeholder opinions

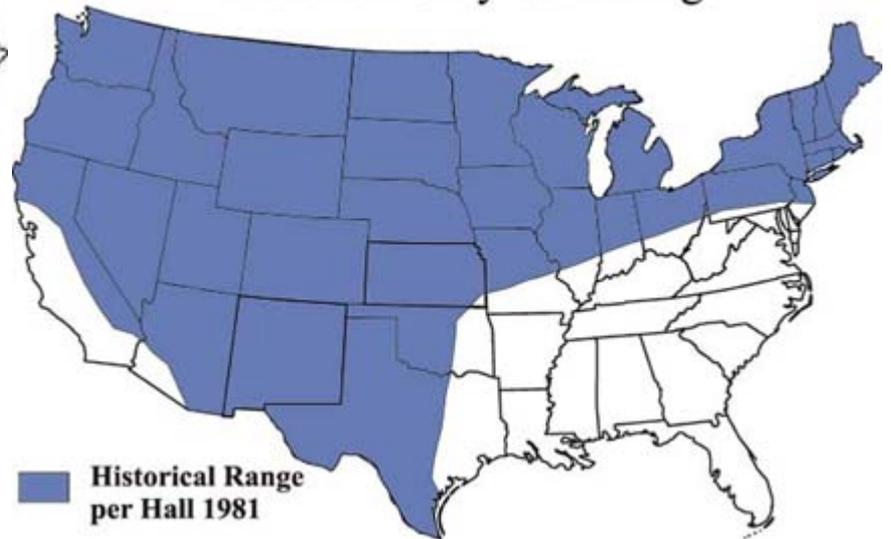
- **social identity = the component of one's identity derived from group membership, in which the individual views him/herself as a representative of that group, and acts according to group social norms.**
- **in-groups often assume that out-group members are “carbon copy” representatives of a homogenous group, and not unique individuals.**
- **in-groups are cohesive due to the value and emotion attached to membership, and a shared desire for positive self-esteem through social identity.**

# Social identity and stakeholder opinions

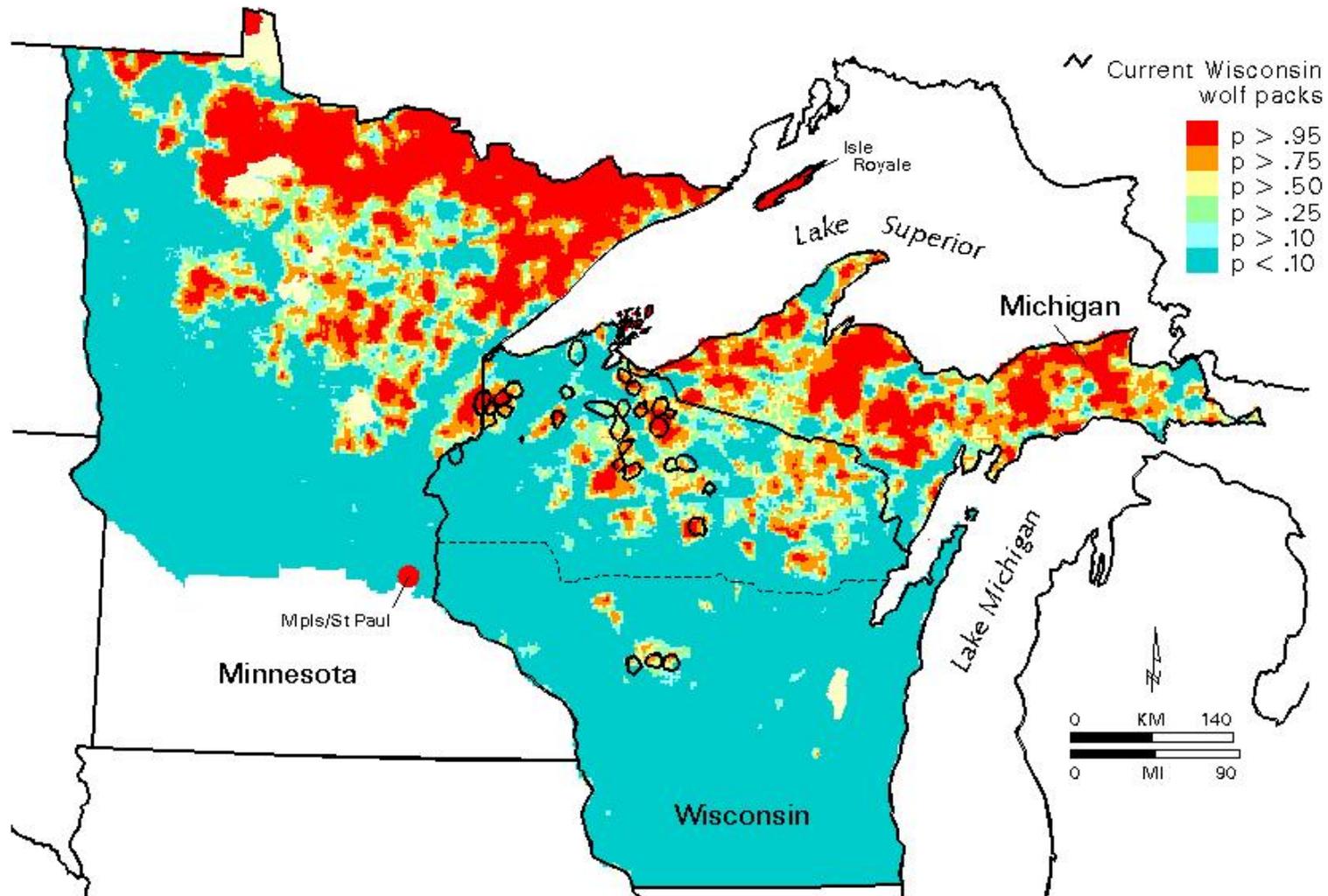
**Gray Wolf Range at Time of Listing Under the ESA (1974)**



**Historical Gray Wolf Range**



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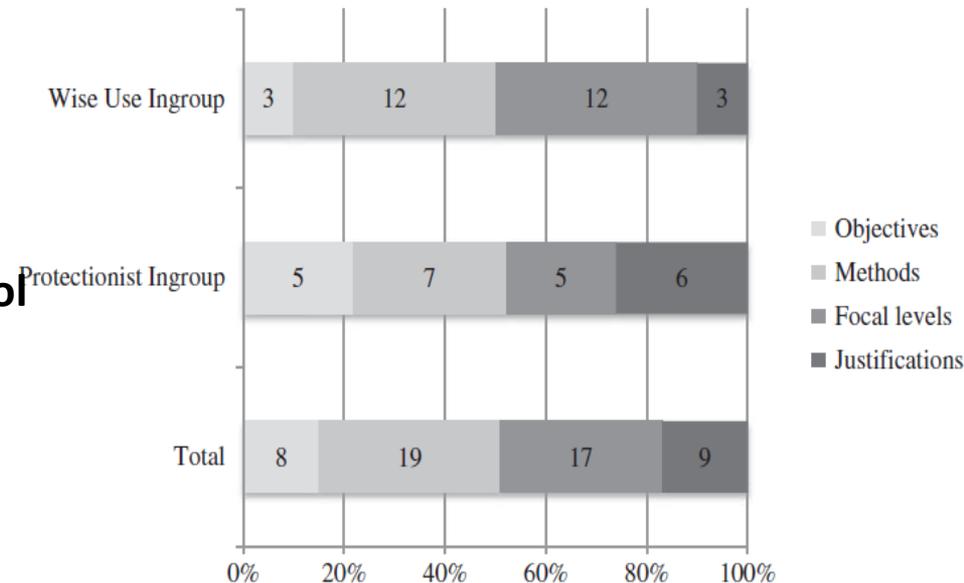
## “wise use” in-group

-- objectives: humans have a responsibility to manage nature, and a right to emphasize desired species over others

-- methods: hunting necessary for wolf management; supported non-lethal control as well

-- focal levels: management of wolf populations to initial recovery goals of USFWS

-- justification: wolves reduce deer herds; hunting wolves will increase tolerance of wolves



# Social identity and stakeholder opinions

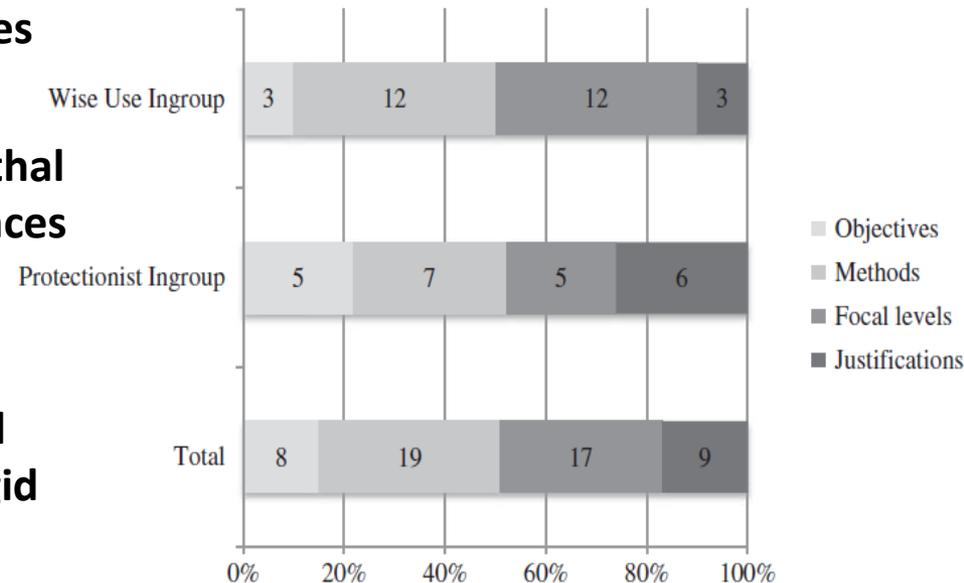
## “protectionist” in-group

-- objectives: non-interventionist conservation of game and nongame species

-- methods: favored non-lethal control; lethal control only justified in certain circumstances

-- focal levels: discussion of individual wolves as related to management; viewed USFWS recovery goals as outdated and rigid

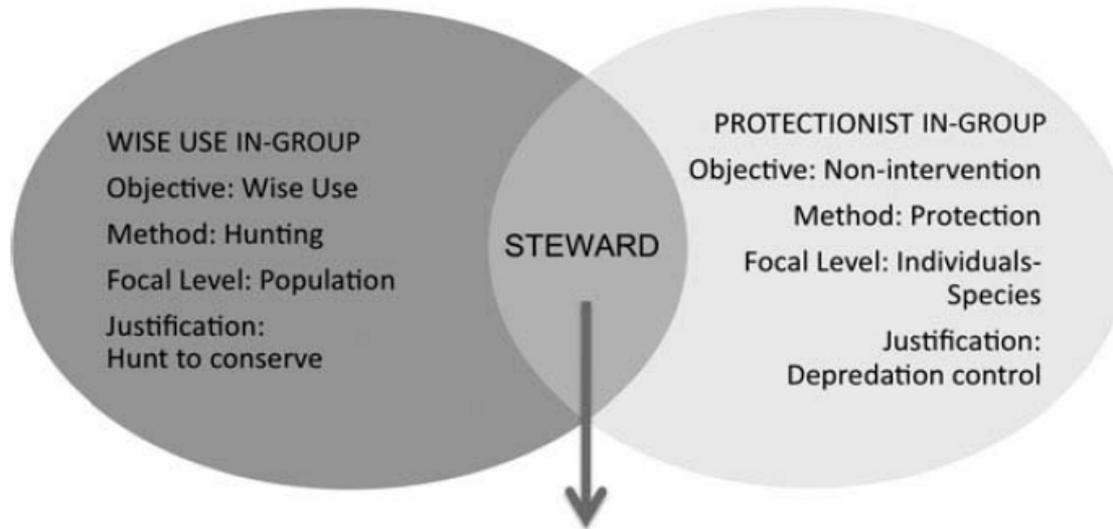
-- justification: lethal control only justified when wolves posed a threat to humans or domestic animals; hunting or trapping not justified



# Social identity and stakeholder opinions

Protectionist view of wise-use group: wise-use group prone to anger when asked to share resources; hunters and ranchers

Wise-use view of protectionist group: anti-hunting advocates who prioritized animals over people, prone to anthropomorphizing, and naïve about the harsh reality of nature



Ecosystem “health”  
Education  
Existence values  
Long-term sustainability  
State pride in Michigan

# Impacts of hunters and wolves on reproductive power in elk

Age	Reproductive value	Late hunt elk harvest	Hunt impact	Wolf-killed elk	Wolf impact
0	1.000	152	152	508	508
1	1.471	100	147	19	27
2	2.004	43	86	10	20
3	2.077	54	112	7	14
4	2.012	36	72	3	7
5	1.990	55	109	7	13
6	1.967	77	151	8	17
7	1.966	65	128	13	26
8	1.904	50	95	10	19
9	1.818	55	100	12	21
10	1.724	51	88	12	20
11	1.661	25	42	30	50
12	1.507	16	24	20	30
13	1.324	25	33	40	53
14	1.168	19	22	30	35
15	0.984	18	18	51	50
16	0.856	13	11	63	54
17	0.735	3	2	77	56
18	0.538	4	2	51	27
19	0.239	1	0	32	8
<b>Total elk:</b>		<b>862</b>		<b>1,003</b>	
<b>Total reproductive impact:</b>			<b>1,394</b>		<b>1,055</b>

