

A photograph of two wolves standing in a snowy, wooded area. The wolves are positioned in the center-left of the frame, facing right. They have thick, grey and white fur. The background is a soft-focus forest with snow-covered branches and trees. The overall tone is cool and natural.

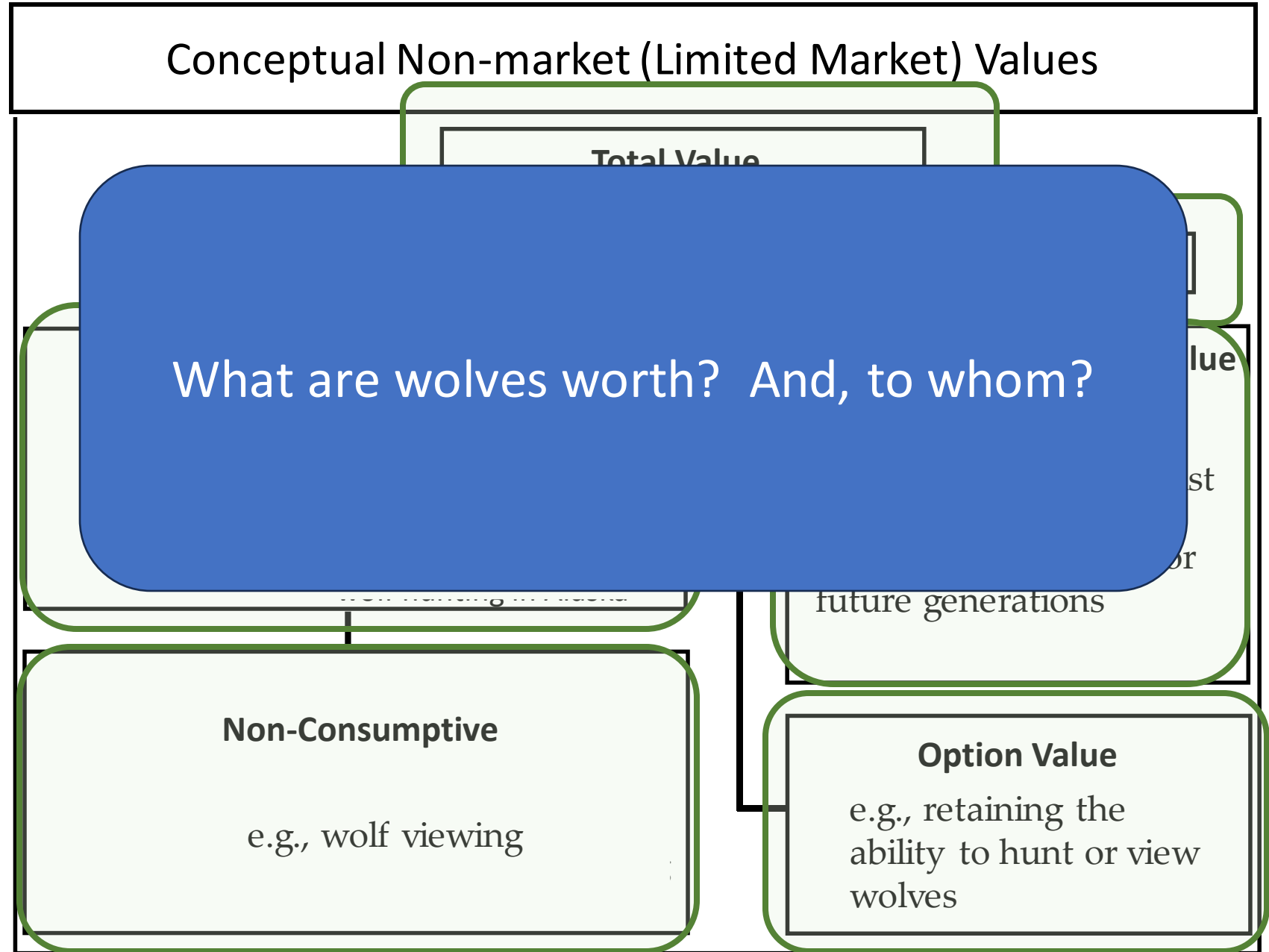
Economic impacts related to wolves

Dana Hoag,

Professor, Agricultural and Resource Economics, Colorado State University

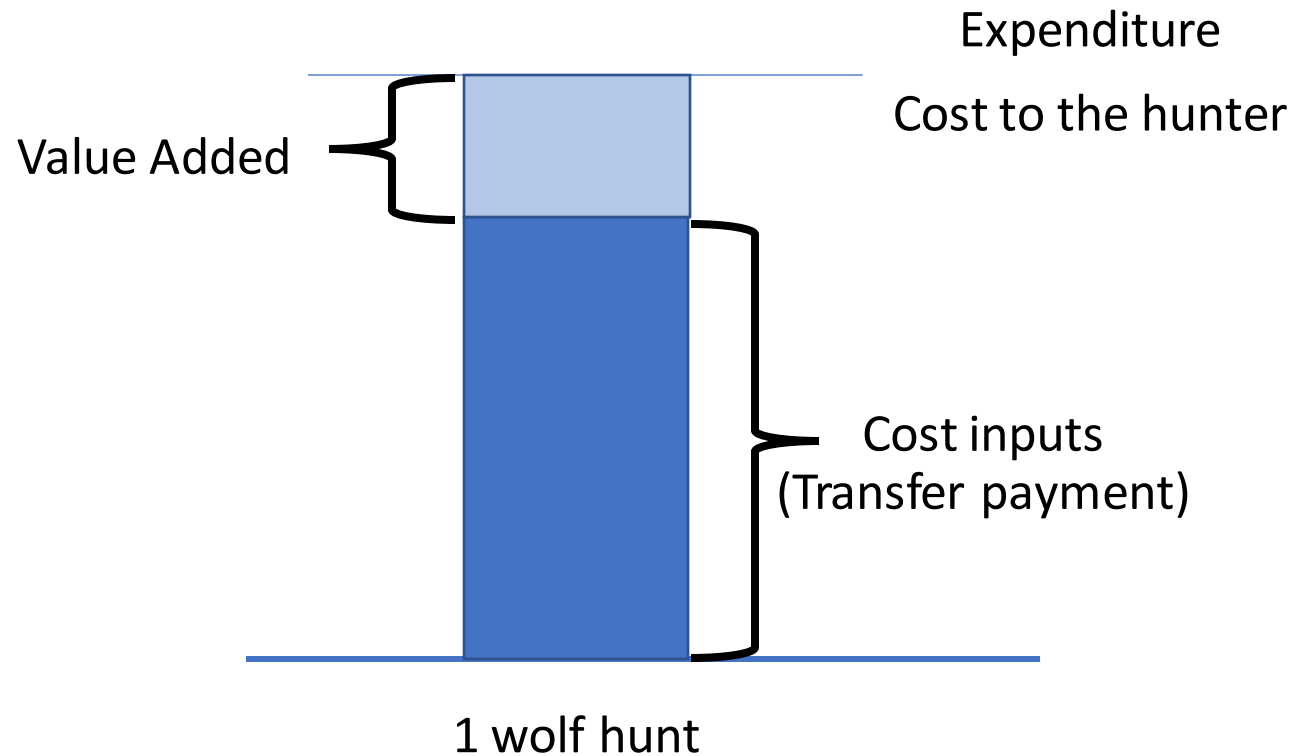
Colorado Extension Training, Grand Junction, CO

October 9 and 10, 2023



Value versus Expenditures

Example for Wolf Hunting



Value versus Expenditures

Example for Wolf Hunting

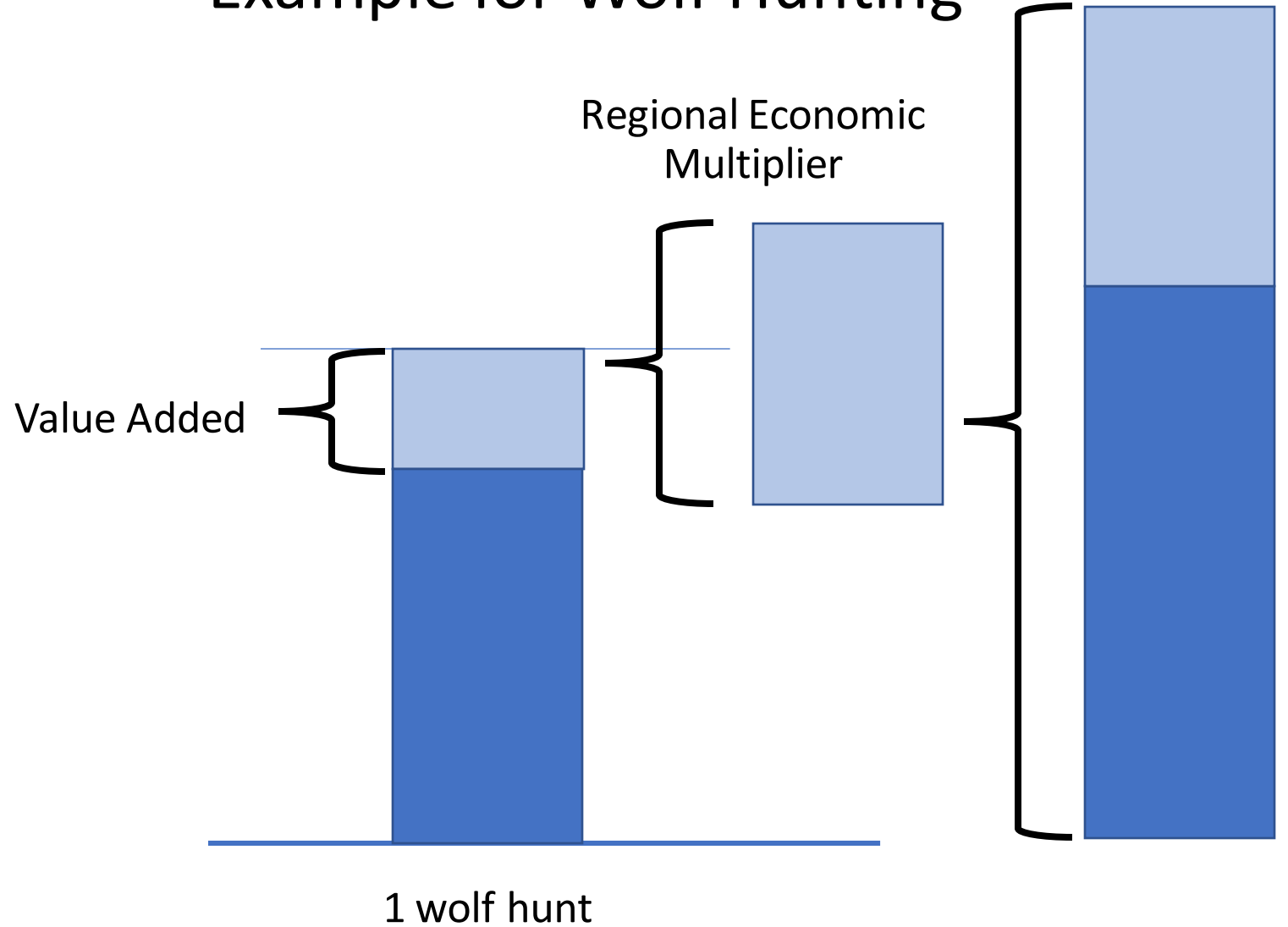


Figure 1: Expenditures related to wolves, based on disparate studies^a



Consumptive	
<u>Wolf Hunting</u>	<u>Examples:</u>
• License Fees	• Hunt/trap license fees in Montana \$432,2738 in 2018 ^I
• Hunting Fees	• Guided hunting in Idaho \$3,800/person per trip ^R
• Trapping	• \$217,723/year in regional expenditures related to wolf trapping in Alaska ^E
• Travel/Retail	• Hunters spent over \$6,773 on trip and gear to hunt in Alaska ^E
Non-Consumptive	
<u>Wolf Viewing</u>	<u>Examples:</u>
• Touring Fees	• Yellowstone wolf viewing tours \$700/day ^Y
• Travel/Retail	• GYE state's annual visitation \$45.5 million/year in regional expenditures related to wolf viewing ^D

These examples prove people are willing to pay for wolf related products and services based on actual expenditures.

Expenditures generate local jobs, revenue, and taxes; also value above what they cost to provide (producer surplus)

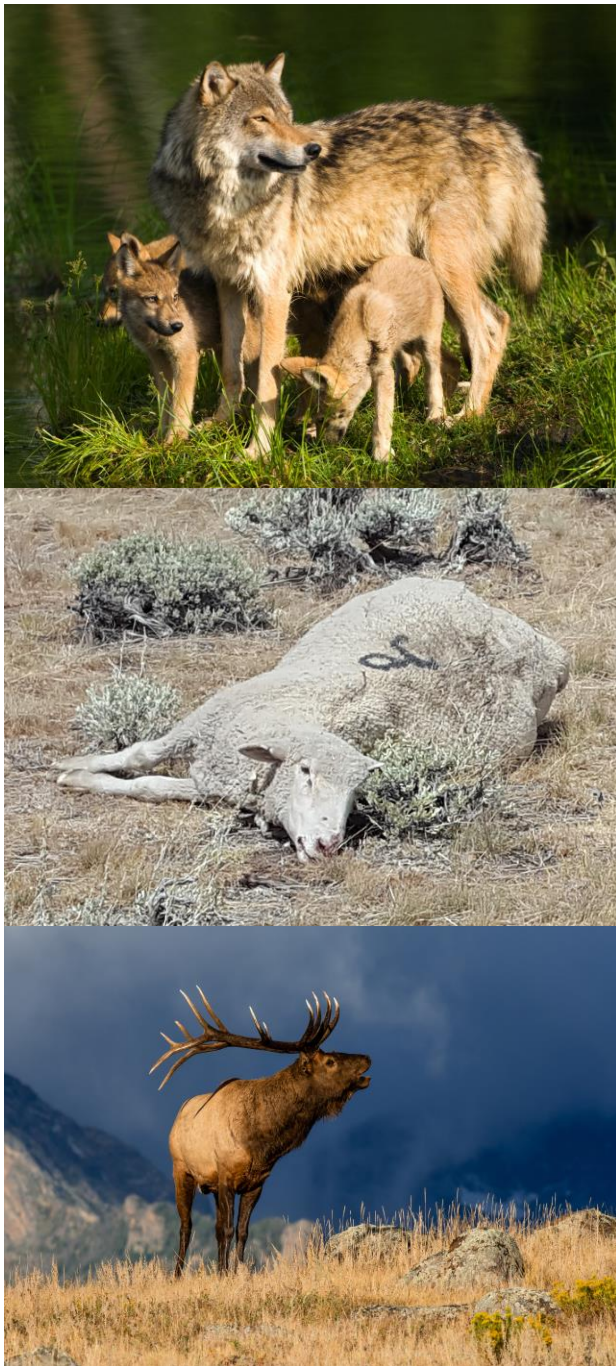
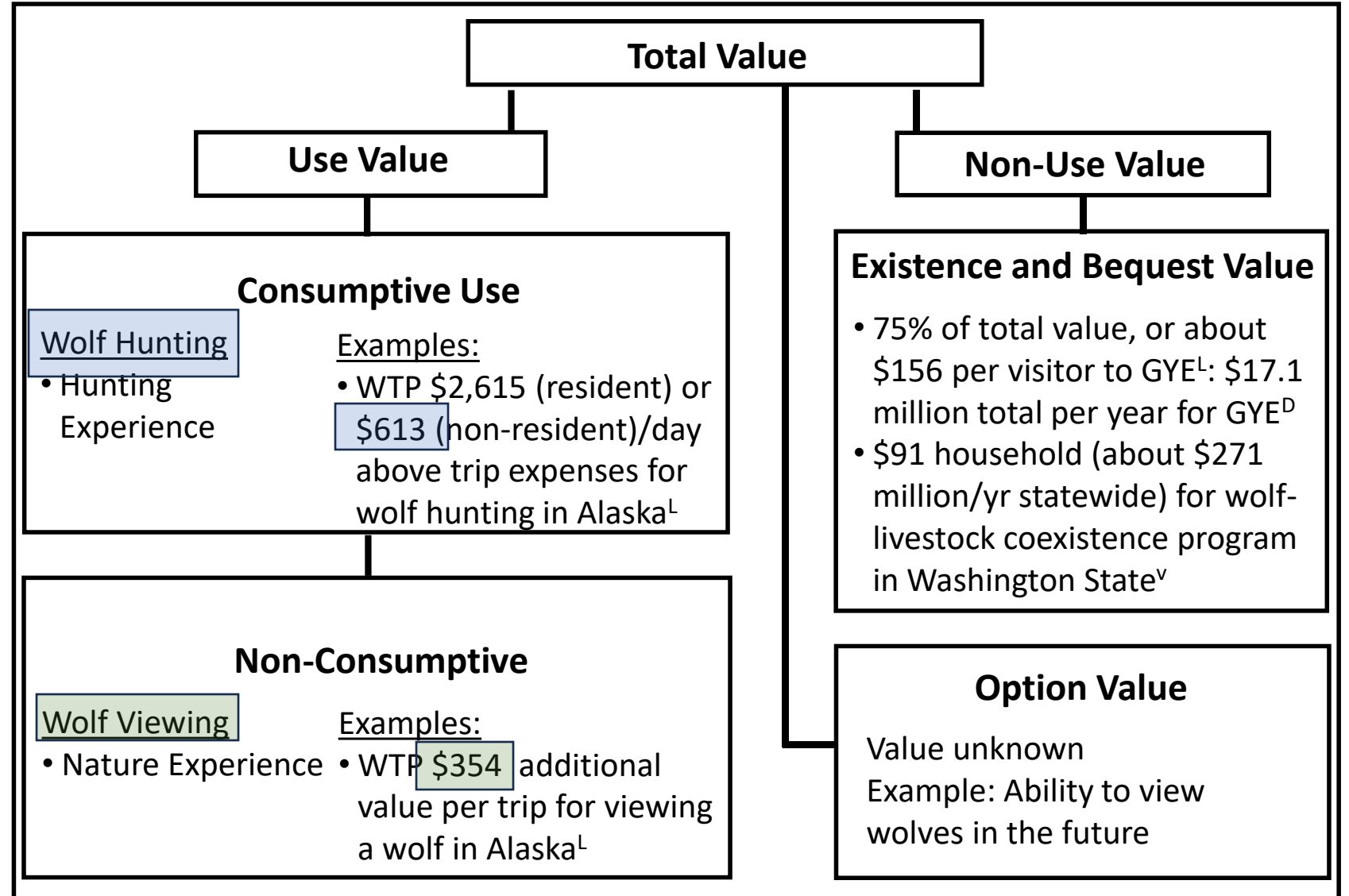


Figure 2: Illustration of non-market values for wolves, with examples from diverse studies^a



Value versus Expenditures

Example for Wolf Hunting

Willingness to Pay

\$7,386

Price \$6,773

Extra value to
the hunter

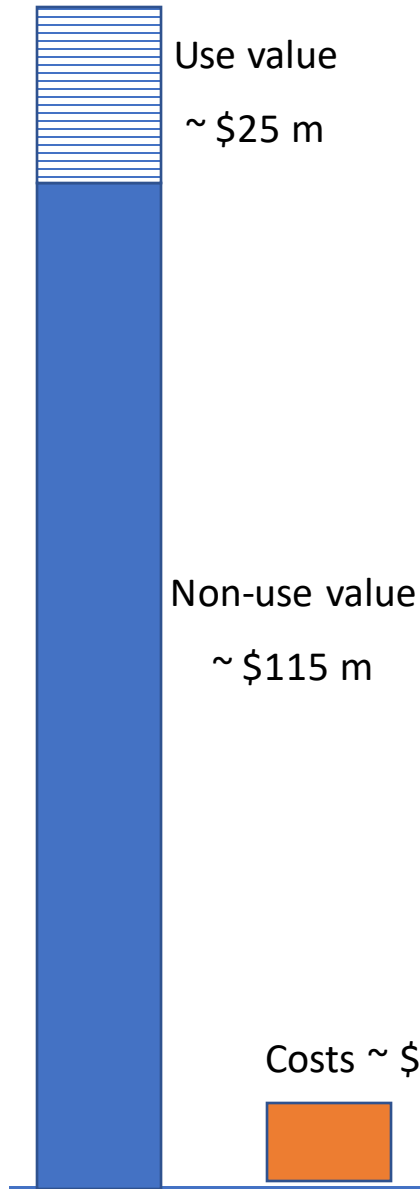
\$613

1 wolf hunt





Total Benefit ~ \$140 million



Bottom Line –

Based on best available information

Existence value –

Best estimate:

Benefits worth over \$115 million

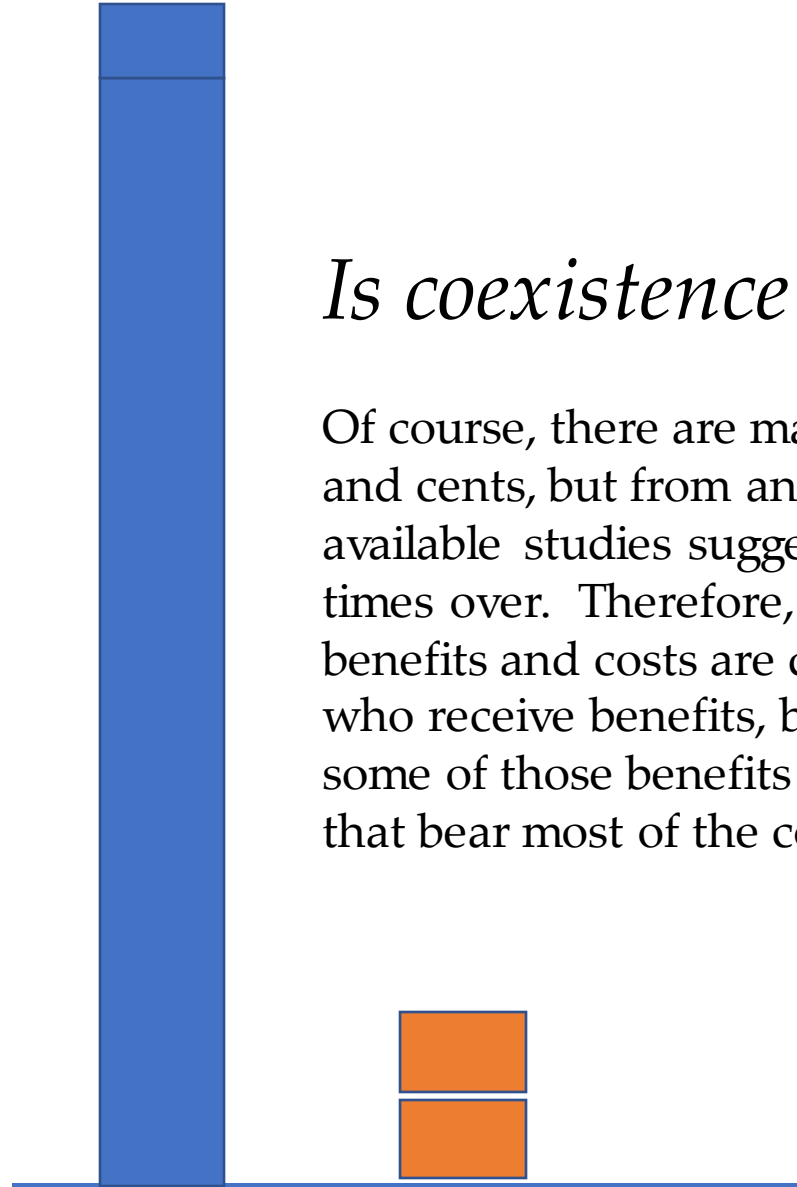
Costs about 2-3 million

Benefits to people in the state are likely to be over 50 times what they cost to have in the state.

Use value - Not yet determined. How will recreation or hunting in Colorado be effected?



Benefits ~ \$140 million



Is coexistence worth the conflict?

Of course, there are many things to consider besides dollars and cents, but from an economic standpoint, a review of available studies suggests that benefits cover costs multiple times over. Therefore, the answer depends on if and how benefits and costs are distributed. Will the majority of people who receive benefits, but incur no costs, be willing to transfer some of those benefits to a minority of ranchers and hunters that bear most of the costs?

Costs ~ \$2 million

New Colorado Survey

Which of the following Wolf Management Plans would you choose?



	Reintroduction Option 1	Reintroduction Option 2	No Reintroduction No Payment
Annual Voluntary Contribution per Household	\$100/year	\$150/year	\$0/year
Wolf Population	200 Wolves	400 Wolves	10 Wolves
Compensation	Fair Market Value	Fair Market Value + Indirect Loss	No Compensation
Cost Sharing	No Cost Sharing	100% of the actual cost	No Cost Sharing
Livestock Killed per Year	Moderate (60 cows and 30 sheep per year)	High (120 cows and 60 sheep per year)	Minimum (5 cows and 3 sheep per year)
Government Lethal Control of Wolves	No wolves lethally removed	Approximately 30 wolves per year (only kill wolves that consistently engage in conflict with livestock)	No wolves lethally removed
Wolf Hunting	Not Allowed	Allowed after wolf population is sustainable	Not Allowed

Results



- Colorado vote - 51% for and 49% against
- Willingness to pay \$115 million per year (\$100/yes voter)
 - (Balance in benefits and costs) 90% of benefits from front range, 5.4% on Western Slope. Almost all costs on Western slope
 - (Pay more if producers compensated) \$31 million for 200 wolves – Another \$84 million if compensation provided – most with indirect payments
- Little if any willingness to pay for more than a sustainable population
- Some willing to pay for hunting, would pay almost \$200
- Willing to pay \$0.29 for avoided livestock kills, and \$1.13 for avoided wolf kills

Costs

Three types

- Personal – Lost pets, human confrontations, property, time



What do wolves cost? And, to whom?

groups. Monitoring, management, control, cost-share programs, advising, compensation programs – Reduced damages from cost sharing should be accounted for in reduced compensation payments.

S,
y of
ng

ivate

Putting it all together

Lesson 1: There is a lot of value to those that voted to reintroduce wolves- Ask for redistribution?



How much value can be captured, and how?

NRCS (EQIP, Habitat)

Livestock producer organization?

Blackfoot Challenge

Local groups (North Park)

Putting it all together

Lesson 2: There are a lot of ways to manage losses

Carcass management

Cost - \$50-100 per head (\$8 for pickup and \$40 for composting)

Range riders

Cost - \$20,000/rider for 4-5 months

Turbo Fladry

Cost - \$1.50/ft (\$8,000/mile)

Look for Cost - Sharing





Questions?

Wolf Population:

The total number of wolves expected to live in Colorado in the long run. After *reintroduction*, potential options include about 200 for a minimum self-sustaining population or 400 to 600 for more plentiful populations. Another option is no reintroduction, where wolves naturally migrate into Colorado from nearby states. Currently, about 10 wolves live in a pack in North Park, Colorado. A no wolf option is not considered since wolves that migrate into Colorado are protected by the Endangered Species Act.

Annual Voluntary Contribution per Household: The amount that your Colorado household would be willing to contribute every year to support the wolf management program. This money would be used for management, compensation, and cost sharing.

Compensation: A payment that a producer receives for livestock confirmed to be killed by wolves. Payment is typically based on the fair market value (FMV) of the animal injured or killed. FMV would be about \$1,100 for a mature cow or \$225 for a ewe, given today's prices. Indirect compensation could also be added to account for weight loss or reduced birthrates for a herd harassed by wolves. In the states of Washington and Wyoming, which already have wolves, indirect compensation is provided by paying for unconfirmed losses or missing livestock using a multiplier of FMV. The multiplier of FMV is 2 in Washington and 7 in Wyoming.

Cost Sharing:

Financial assistance to livestock producers to offset their costs for the implementation of non-lethal tools (such as special fencing or guard dogs) to prevent their livestock losses to wolves.

Livestock Killed: Number of livestock killed in Colorado in a single year by wolves.

Lethal Control of Wolves: The number of "conflict" wolves that could be killed due to preying on livestock or other problems. These are removed by the government under strict legal requirements.

Wolf Hunting: Whether wolf hunting is allowed once the population reaches a sustainable level.

Economic publications from Colorado

- Economic consequences of the wolf comeback in the Western US
https://waeaonline.org/western-economics-forum/?fwp_dropdowns=2022
- People and Predators website: <https://extension.colostate.edu/topic-areas/people-predators/>
 - Click “About Predators” then Wolf Economics
 - Click “Protecting Livestock” – Watch video “Learning from Experience”
- Economic wins and losses from reintroducing wolves in Colorado
https://csuredi.org/redi_reports/economic-wins-and-losses-from-reintroducing-wolves-in-colorado/
- Willingness to pay for reintroducing wolves in a divided voting base
<https://www.sciencedirect.com/science/article/pii/S2351989423002111>