

On the biological versus social success of economic compensation schemes in wildlife conservation and management

J. Christopher Haney, Frank Casey, Timm Kroeger

Conservation Science and Economics

Defenders of Wildlife

1130 17th Street, NW

Washington, DC 20036

*Pathways to Success:
Integrating Human
Dimensions into Fisheries
and Wildlife Management*
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Statement of problem

Wildlife compensation: *ex post* and *ex ante* financial reimbursement in lieu of damages caused by wild animals to crops, livestock, or other privately-held goods and services; a means to redistribute social risk or reward from the presence of wildlife.

- ▶ However, effectiveness of compensation disputed – in various contexts described as “failed,” “successful,” and “no effect.” Why?



Criticisms of compensation

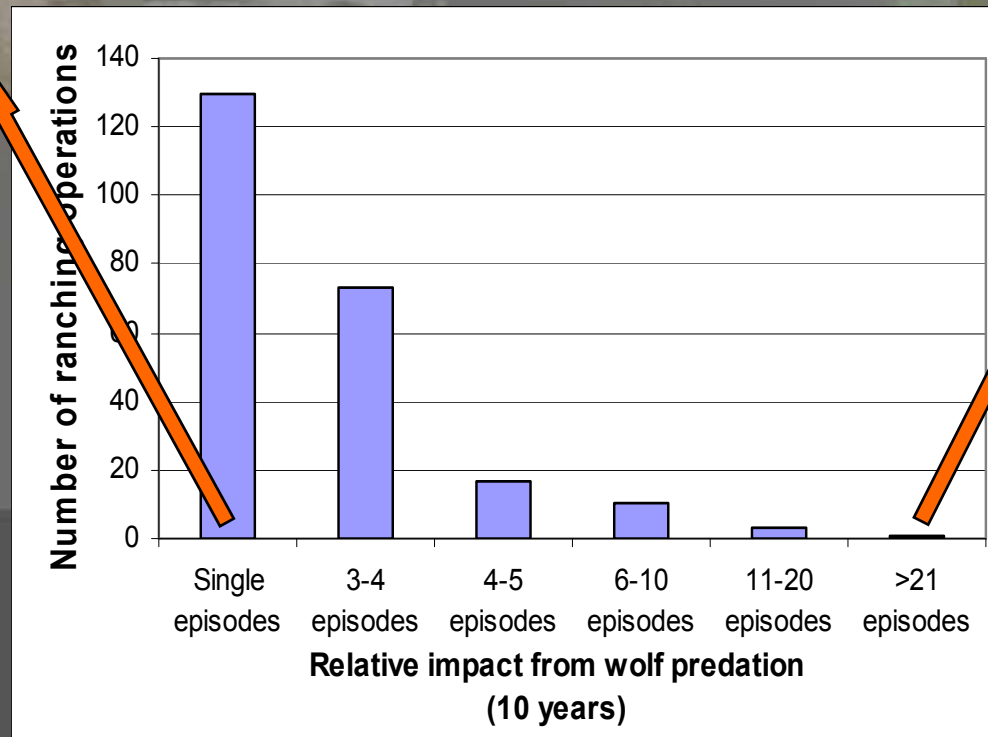
- 1) Wildlife damages hard to distinguish from other causes of crop and livestock loss,
- 2) False claims difficult to detect, and set bad precedent,
- 3) Transaction costs are high,
- 4) Moral hazard; weakens incentives for loss prevention in crops/livestock (*Dyar and Wagner 2003*),
- 5) May subsidize agricultural expansion, habitat conversion, then more conflict and retaliatory killing (*Rondeau and Bulte 2005*).



Risk-sensitive context for business costs from wildlife damages

Reactive mitigation:
economic compensation

Preventative incentives:
fladry fencing, guard dogs, etc.



Dimensions to success

Contributory?

Necessary?

Sufficient?

- 1) Biological,
- 2) Economic,
- 3) Social equity,
- 4) Public opinion,
- 5) Legal/regulatory,
- 6) Administrative,



Dimension 1: biological compatibility

More successful



Population increase and/or range expansion

Retaliatory killing halts/decelerates

Population stabilizes

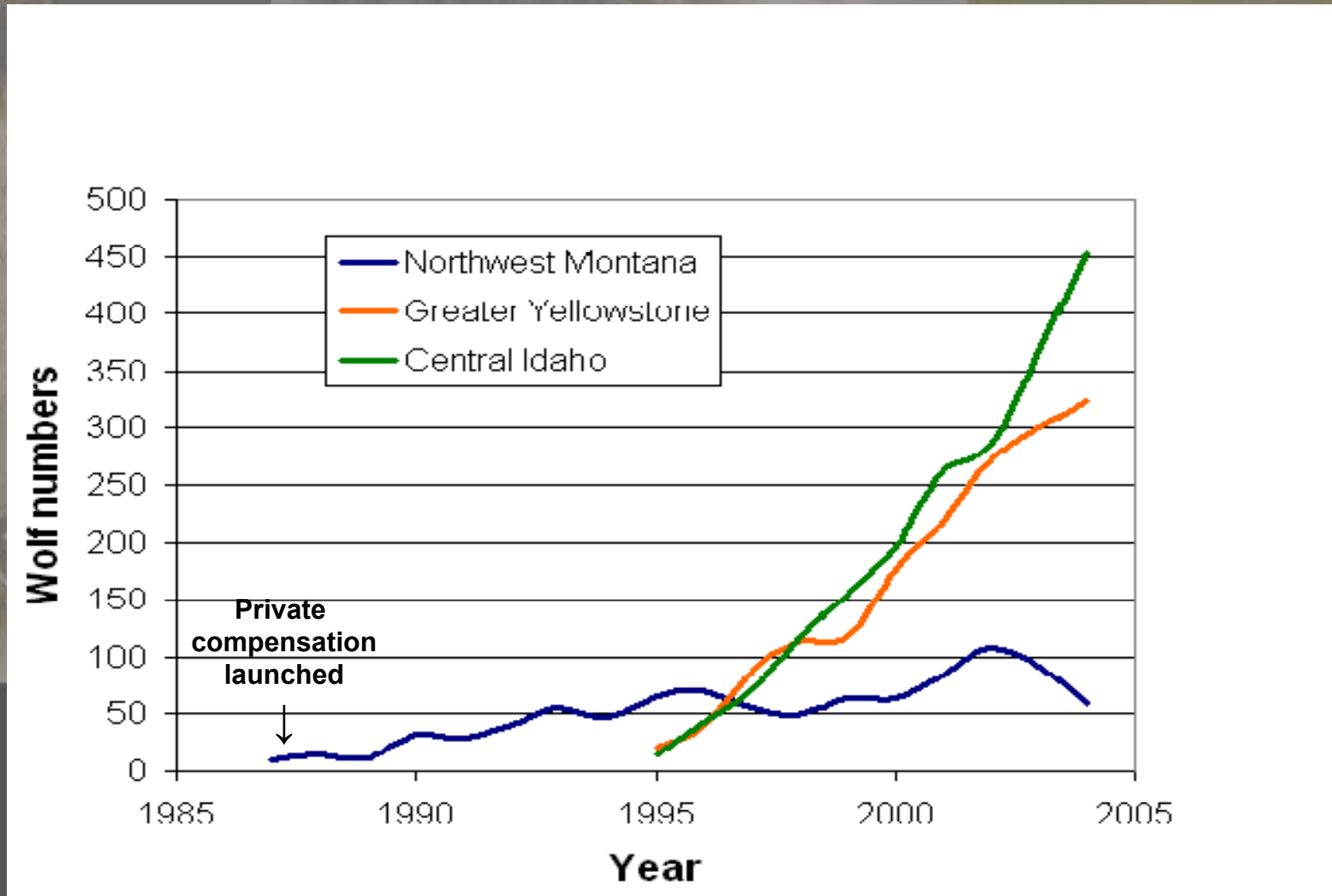
Retaliatory killing continues

Habitat loss intensifies (from perverse incentives)

Less successful (or failure)



Dimension 1: biological compatibility population increase



Dimension 2: economic feasibility

More successful



Wildlife population increases –
unit costs decline

**Wildlife population increases –
unit costs stable**

Wildlife population stabilizes –
unit costs climb

Funds run out – negative impacts return

Less successful (or failure)

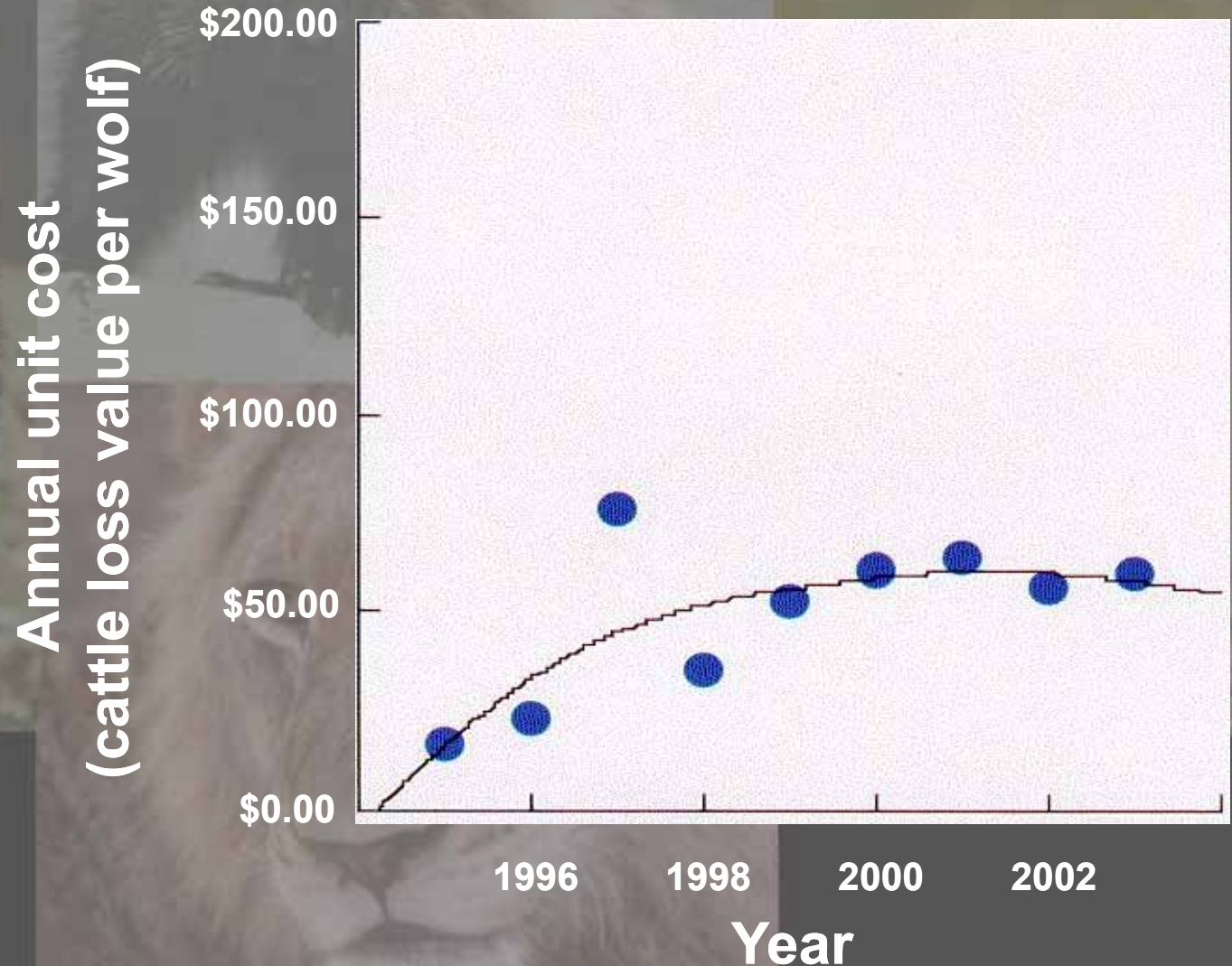


Dimension 2: economic feasibility

unit costs stable



- Curve fitted with distance weighted least squares regression (DWLS) using tension set at 0.20.



Dimension 2: economic feasibility

diverse metrics available to gauge relative
cost effectiveness

Black bear

\$2.70/ha (Ziegltrum 2006)

Wild dog

14-27 packs/\$100,000 (Lindsey et al. 2005)

African lion

\$290/individual predator (Patterson et al. 2004)

African lion

\$0.50/head of livestock (Tom Hill, pers. comm.)

Gray wolf

\$1,959/ranch (Haney et al. unpubl.)

Macaque

\$66/household (Maikhuri et al. 2005)



Dimension 4: influence on public opinion

More successful



“Hearts/minds” of harshest skeptics won over

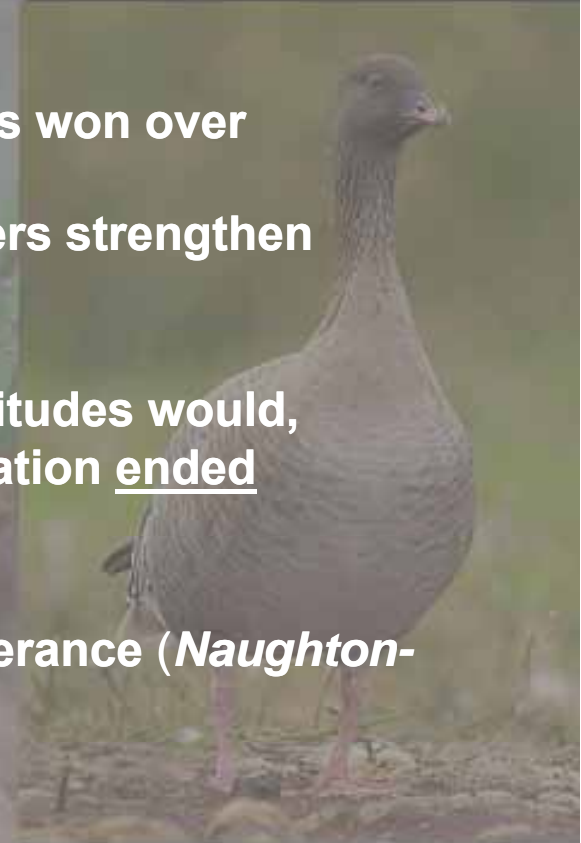
Attitudes of *pro-wildlife* stakeholders strengthen when compensation is used

Skeptical stakeholders indicate attitudes would, hypothetically, worsen if compensation ended (*Suzanne Stone 2006*),

Compensation fails to increase tolerance (*Naughton-Treves et al. 2003*),

Attitudes of key stakeholders worsen with compensation

Less successful (or failure)



Dimension 6: administrative practicality

Successful

Impartial, third-party verification of claims

Rapid processing and payment of claims

Stakeholder oversight/involvement

Payments for false or unverified claims

No transparency or stakeholder involvement

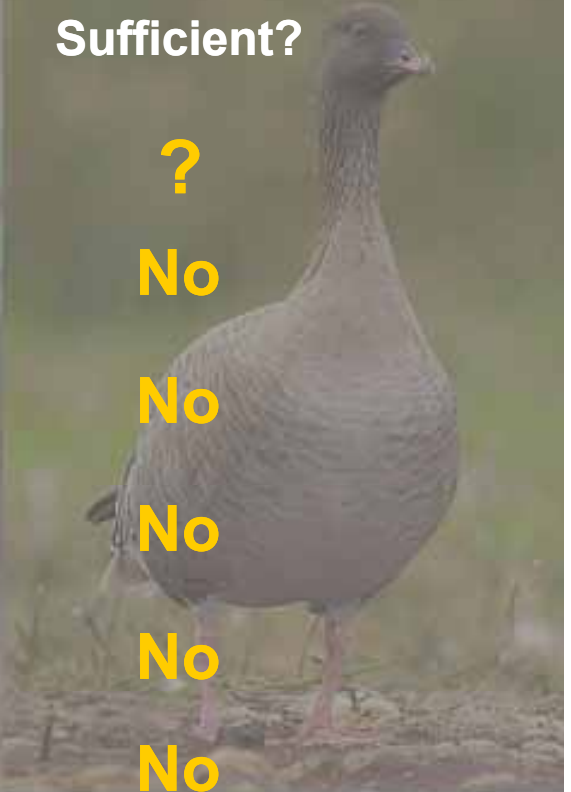
Arbitrary payments (e.g.,
substantially less than full
market value, not all classes
of crops or livestock)

Failure



Dimensions to success

	Contributory?	Necessary?	Sufficient?
1) Biological	✓	✓	?
2) Economic	✓	✓	No
3) Social equity	✓	?	No
4) Public opinion	✓	No	No
5) Legal/regulatory	✓	?	No
6) Administrative	✓	✓	No



Timing, implementation, and role of compensation: a hypothesis

? Privately-run, insurance-type

? Government-sponsored ?

NGO-sponsored ?

Wildlife abundance

Common/widespread

Recovering

Imperiled



Broad findings

- 1) Success and failure of wildlife compensation depends most on whether the practice is viewed primarily as a wildlife conservation technique (*benefiting wildlife*) versus a social subsidy (*benefiting people*).
- 2) Wildlife compensation's mixed record of success arises from the huge variety of species, habitats, and human environments that are involved – no size fits all.



Other (very tentative) findings

- 1) Successful compensation occurs when several dimensions reinforce outcomes; but failures can result from profound breakdown in any single dimension.
- 2) Success/failure along single dimensions of compensation programs can be measured on either graduated or nominal scales,
- 3) Scale convergence (or divergence) may determine whether or not compensation schemes are ultimately effective.



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