Conservation Economics

Wildlife Management Institute

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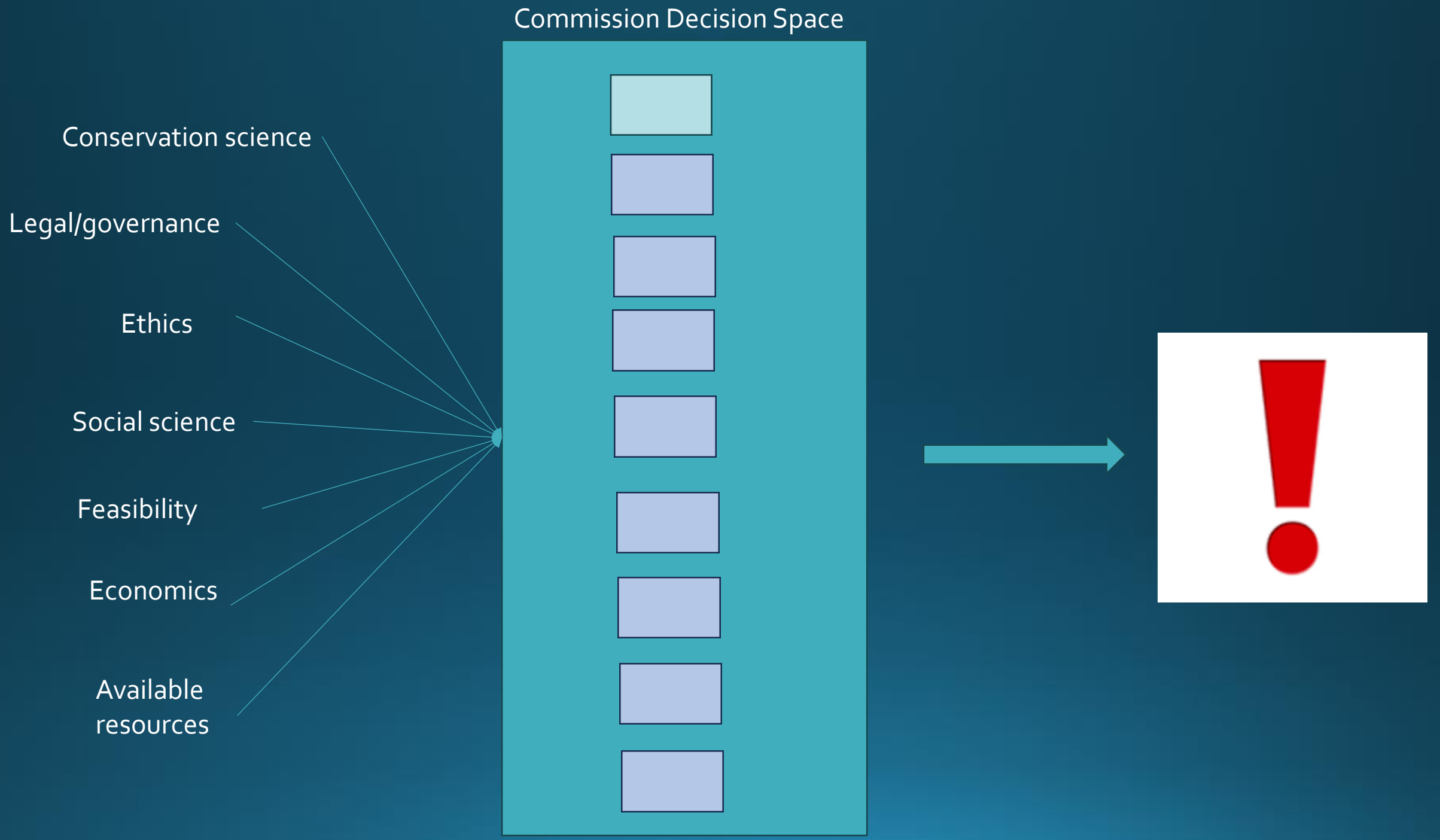
MSCG Project Intent

- Not to replicate or create conservation social scientists in state agencies
- Provide basic information to increase awareness of and about the acquisition and application of conservation social science in agency decision making
- For the purposes of these modules, we'll use the more modern and broader terminology of conservation social sciences rather than human dimensions of wildlife management
- Our use of the term wildlife includes mammals, fish, birds, insects, reptiles, etc.
- WMI deeply appreciates the contributions of Dr. Daniel J. Decker and Dr. Lou Cornicelli to this project

"Economics is a social science that studies how society meets competing demands in the face of limited resources."

Richard C. Ready *in* Decker et. al., 2012


Commission Decision Space
Conservation science
Legal/governance
Ethics
Social science
Feasibility
Economics
Available resources

Conservation Economics

- Discipline has been around for over 50 years
- Focuses on value of natural environment – things that are not directly bought or sold (e.g., animals, scenic views, nutrient cycling, clean air)
- Draws from environmental economics, agricultural economics, transportation economics and behavioral economics
- Economics offers a simple picture of how we choose
- Focus is to achieve socially efficient use of resources, taking into account all of the values gained and sacrificed, now and in the future

Conservation Economics

- Social goal of all economics – make people happy
- Helps to systematically prioritize conservation actions (from a monetary perspective)
- People tend to be overly optimistic, are biased toward the present and are averse to losses
- Creates models to inform decisions; models are always imperfect
- Need to control for uncertainty in models – behavioral, scientific and value uncertainty
- Instead of a recommendation of A is better than B, the input and valuation of the multiple elements in a decision should be evaluated collectively

Conservation Economics

- Environmental economics – focuses on the value of natural environment – things not bought or sold in markets (e.g., scenic views, clean air, animals)
- Natural resource economics – focuses on how people should exploit resources to get the most value from them (e.g., oil, minerals, timber)
- Ecological economics – a bridge across ecology, economics and other science disciplines and focuses on how people interacted with the environment in the past and how they might in the future
- Behavioral economics – focuses on the psychological, cognitive, emotional, cultural and social factors involved in the decisions of individuals or institutions, and how these decisions align with classical economic theory

Conservation Economics Challenges

- Create static and falsely precise models as human values change over space and time
- Hard to quantify value of soil retention, carbon sequestration, water purification, an endangered species life, etc.
- Generally, there is a fundamental conflict between economic growth and environmental conservation
- Many of the drivers of environmental degradation are economic in origin
- Conservation is an inherently transdisciplinary field, but economics is often not considered

Conservation Economics Challenges

- Classic economics boils everything down to monetary value – can be difficult in conservation context
- Jargon-filled vocabulary makes communication with other disciplines difficult
- Often focuses on theory and modeling rather than practical applications
- Simplistic models poorly suited for complex conservation problems
- Most agencies don't have an economist on staff
- Acquiring and analyzing economic data can be expensive

Conservation Economics Challenges

- Need to include hard to value costs (land, management, opportunity costs)
- Consider ecosystem services – flood control from wetlands, carbon sequestration from forests, but also economic and social costs (jobs)
- Quantifying these values are difficult
- Often done from a utilitarian perspective not taking into account other values (aesthetic, spiritual, sense of place, etc.)
- Determining the value of multiple environmental attributes is problematic, but not doing so is even more so
- Whos' opinions get measured?
- Time horizon may impact certainty about values (e.g., short lived vs. long term project)

Conservation Economics Approaches

- Willingness to pay – the amount of money someone is willing to pay for something good or that they desire (e.g., fishing license)
- Willingness to accept – the amount of money you would have to pay someone to compensate them for a deleterious change (e.g., crop depredation from wildlife)
- Travel cost analysis – tool that estimates the value of natural resource amenities by analyzing data on recreational site characteristics and people's visitation patterns and travel costs
- Cost benefit analysis – comparing estimated costs of an action to determine if the benefits of the action outweigh the costs

Conservation Economics Approaches

- Stated preference – valuation tools that use survey responses to hypothetical questions rather than data on actual choices
- Revealed preference – valuation tools that use behaviors such as job choice, housing choice, and recreational site choice to reveal information about the values people have for features of the environment
- Non-use values (also known as existence values) – values people have for nature that do not stem from direct interaction (e.g., people value whales, nutrient cycle, habitat function)
- Use values – values associated with direct interaction with nature and the environment (e.g., hunters value opportunity to hunt elk, hikers value parks that provide and maintain trails)

Why Use Conservation Economics Info?

- Many of the drivers of environmental degradation are economic in origin
- Helps inform which conservation goals are most strategic based on monetary (use and non-use) value
- Helps inform decisions about tradeoffs between conservation and other economic goals
- Helps inform policies about acquiring, protecting and managing natural lands

How is Conservation Economics Info Used?

- Estimate the value of cropland vs. untouched forest
- Estimate the cost of moving towards a limited entry fishery vs. an open access fishery
- Estimate people's willingness to pay when considering fee increases
- Estimate the cost of removal of an electric-producing dam vs. the value of a restored fish run
- Estimate the value of coastal wetlands pre and post-hurricane
- Estimate the economic impact of regulation changes on different demographic groups

How is Conservation Economics Info Used?

- Estimate the value of wildlife viewing of charismatic animals
- Estimate the economic impact on housing values near public lands or urban green spaces
- Estimate the amount of money visitors spend in the local economy when visiting a wildlife management area or park
- Estimate the economic impact of a wildlife disease outbreak
- Estimate the impact of a commercial fishery on local economy
- Estimate the value of western US forests impacted by wildfires

Resources

- Human Dimensions of Wildlife Management. ed. D.J. Decker, S.J. Riley, W.F. Siemer 2nd ed. 2012. Johns Hopkins University Press, Baltimore, MD

- Farley, J. 2008. Conservation through the economic lens. Environmental Management. DOI 10.1007/s00267-008-9232-1

- National Academies of Sciences, Engineering, and Medicine. 2005. Valuing Ecosystem Services: Toward Better Environmental Decision-Making. Washington, DC: The National Academies Press. https://doi.org/10.17226/11139