

13. The Conservation Social Sciences: An Overview and A Process for Setting a Research Agenda

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Understanding the contribution of the conservation social sciences

The series of papers in this report clearly demonstrate the breadth of insights that have and can be offered by the conservation social sciences. The conservation social sciences reviewed in this document include Psychology, Economics, Sociology, Anthropology, Political Science and Governance, Human Dimensions, Political Ecology, Ethics, Education and Communication, Conservation and Development, and Science and Technology Studies. We have included an overview of each, their common questions, methods, scale of analysis, products and contributions in Table 13. 1 located at the end of this chapter. What follows is a brief discussion of the past and potential contributions of each of the conservation social sciences to conservation policy and practice followed by a discussion of the steps that an organization might take to better incorporate insights from the conservation social sciences into its mandate.

There are numerous ways that the conservation social sciences have led to new lessons and improvements in conservation policy and practice at different scales from the local to the international (see also Table 13.1). For example:

1. Anthropology – Anthropologists have helped us to understand that we are often protecting cultural landscapes that have been used, shaped and preserved by different cultural groups for generations and have worked with local communities to document those management practices. National governments (e.g., Canada) and international bodies (e.g., UNESCO) recognize that these “cultural landscapes” require distinct forms of management. Anthropologists have also shed light on conservation practice, for example, how ways of thinking emerging from different cultural traditions can affect the form and content of conservation interventions.
2. Sociology – Sociology helps conservation organizations and practitioners understand how behaviors—of individuals, groups, and other collectivities—are patterned and driven by social structural forces. Conservation approaches and management interventions cannot focus solely on behaviors as fully voluntary but need to take into account the role of structural influences such as social norms, institutions, etc.
3. Economics – Ecological economists have developed several approaches to identify, characterize and, where possible, quantify trade-offs inherent in natural resource management for conservation, restoration and other purposes. Researchers in this field have also provided insights on the pricing of goods or services as might account for negative environmental externalities, on the functioning of ecological-economic

systems, and on the implications of ecological constraints for desirable scale of the economy.

4. **Psychology** – Psychology, and more specifically social psychology that takes into account one’s social surroundings, can help address the significant need for human behavior change solutions in conservation given its emphasis on understanding how and why individuals think and behave the way they do. Conservation-related studies in this area, for example, have focused on determining what behaviors lead to undesirable impacts on the natural environment, why they occur, and behavior-change strategies for minimizing those impacts. Through an examination of such concepts as values and attitudes, psychological research can also help conservation agencies and organizations understand how people are likely to respond to conservation issues and management actions.
5. **Political Science** – Political scientists have drawn attention to the ways in which governance and policies (e.g., adoption of community-based, participatory or decentralized environmental governance programs) can be used to alter the incentives that groups face as they interact with the environment and each other. At the local level the likelihood of successful conservation tends to increase when communities participate in the creation and enforcement of rules.
6. **Philosophy** – Environmental ethics provides a framework for understanding the values upon which people ground their beliefs. Understanding not only what people believe, but why they believe it, is critical for environmental problem solving.
7. **Science and Technology Studies** – Science and technology studies provides the critical and practical insight into the connections between science, policy and practice. This theoretical perspective has been used to support more effective interactions between scientists, land managers, local communities and policy makers to ensure that conservation science supports effective and ethical conservation practice from local scales to national policy dialogues to international platforms like the Intergovernmental Panel on Biodiversity and Ecosystem Services.
8. **Environmental Education and Communication** – Research building from environmental education and communication can aid in the development of outreach programs designed to change attitudes or specific behaviors among members of a target audience. Efforts geared specifically toward youth can establish an ecological foundation upon which future decisions will be based. Further, the field has contributed strategies for evaluation of communication efforts in order to ensure that program objectives are being met.
9. **Conservation and Development** – Social scientists from various disciplines have demonstrated that the costs of conservation initiatives can be borne by local communities who are often excluded from decision-making. This realization has led to changes in conservation policy and practice. For example, international conservation policy documents such as the Convention on Biological Diversity now require consideration of equity, benefit sharing and participation. Researchers in this field have also provided insights into the improvement of on-the-ground conservation and development programs and sustainable livelihood interventions.

10. Political Ecology – Political ecologists have drawn our attention to the political economic context of conservation practice and have critiqued the ways that western ideas about nature have informed a coercive conservation practice. They ask conservation practitioners to think about the ways power shapes their practice and the nature-society relationships at the site of their conservation intervention.
11. Human Dimensions - “Human dimensions” has become a popular shorthand for interdisciplinary, problem-oriented approaches that blend social and ecological understanding of specific conservation or natural resource management issues.

As noted in the introduction, this list of conservation social sciences is not comprehensive and other fields (including environmental law, planning, human geography, environmental history and environmental humanities) have also made important contributions.

Towards a process for setting a social science research agenda

Our experience suggests that many organizations employ an ad-hoc approach to engaging with the conservation social sciences resulting in lost opportunities to realize the full value of conservation social sciences. All too frequently social science is used only to communicate physical science findings, facilitate stakeholder meetings or help implement fully formed policy positions when its contributions to robust conservation practice can be much more profound. Knowledge of the definitions, focal areas, theories, methods and contribution of the different conservation social sciences is helpful to conservation biologists, organizations and funders hoping to engage with social scientists. Such knowledge, however, is not enough and it is also clear that actions need to be taken to overcome barriers to incorporating conservation social sciences and that processes are required to help conservation organizations and funders more clearly articulate their conservation social science research priorities. We propose the following steps to guide organizations wishing to better employ the conservation social sciences.

1. Recognize and overcome barriers to incorporating conservation social sciences; these steps will help build support for and understanding of the conservation social sciences in your organization.
 - ∞ Start an open conversation within your conservation organization about the current place and potential contributions of the conservation social sciences. This conversation needs to start from a position of respect vis-à-vis different ways of knowing and approaching conservation policy and practice.
 - ∞ Fill knowledge gaps that might exist on the potential types, approaches, contributions and roles of the different conservation social sciences relevant to the mandate of your organization.
 - ∞ For organizations with no appropriate in-house social science expertise, it is best to hire an outside facilitator, who is knowledgeable in the conservation social sciences, to facilitate a conversation regarding engagement with the conservation social sciences and to help identify particular approaches, tools and disciplinary expertise. Another possibility would be to have key decision makers read this report and

potentially a few articles written on conservation social science and its place in conservation practice to help guide this conversation.

2. Identify the conservation problem(s) that your organization aims to address.
 - ∞ With key decision-makers in the organization, pinpoint the problem(s) that your organization aims to address as laid out in its mission, vision, focus, programs and specific projects.
 - ∞ Identify key strategies used by the organization to address the problem (e.g., increase awareness of the importance of wetlands, increase the number of conservation easements on private property).
 - ∞ Identify key areas where there exists potential social science insight. This may involve re-framing a conservation objective as a social one. For example, a problem such as “our objective is to protect x wetland and y species” might be reframed as “our objective is to build a constituency that supports wetland conservation” or “our objective is to work with local landowners to conserve wetlands.”
 - ∞ Identify the scale or scales at which the organization wishes to target its efforts (e.g., national, provincial or municipal policy; corporate regulations; sectorial actions; household behavior; individual behavior; etc.)
 - ∞ Identify key social groups or individuals that the organization wants to work with or access (e.g., user groups such as recreationists, community groups, landowners, youth, policy makers, politicians, etc.)(see Table 13.2 for guidance).
3. Partner with social scientist(s) to frame key topics, questions and approach.
 - ∞ If your organization does not have conservation social science expertise on staff, formulating conservation social science questions and identifying suitable approaches and methods (see Table 13.3) will require outside help. Conservation social scientists might be identified through local universities (look to specific disciplinary departments in the social sciences, interdisciplinary environmental programs and environmental themed research institutions), environmental consultancies or organizations. Professional societies such as the Human Ecology Society and working groups within those societies such as the SSWG within the Society for Conservation Biology can also be helpful. Try to seek out individuals with the expertise you are looking for, both in terms of approach and in terms of the ecology or species of focus. These individuals are often looking for opportunities to collaborate or can recommend someone who is. Note that this step might also occur before step 1 or 2.
4. Brainstorm key topics for investigation or research questions. Establish a conservation social science agenda through prioritizing key topics and questions.
 - ∞ With the assistance of someone familiar with the conservation social sciences, create a list of the topics and questions along with information relating to their importance to the organization’s mandate, feasibility in terms of capacity, available financial resources and preferred timeline, potential benefits to conservation, and potential spin-off partnerships, collaborations or projects.
 - ∞ We then recommend having a group of key decision-makers in the organization rank the topics on the basis of importance, feasibility (capacity, resources, timeline),

- conservation benefits and additional benefits, construct a ranking based on the aggregate rankings and then discuss the resulting draft ranking in a meeting.
5. Partner with, contract or hire conservation social scientist(s) to carry out the work
 - ∞ Depending on the nature of the work, this might be the same person you collaborated with in step 3. The organization might also choose, now that you are clear on its needs, to go back to the Universities or consultants to find the right fit in terms of the social science expertise you are seeking.
 - ∞ For some organizations or funders with a more open-ended mandate, it might be more appropriate to post an open call for proposals to conduct the research.
 - ∞ Be aware that if you are working on or near traditional Indigenous territory, it is expected that you coordinate with the indigenous group in the area and follow protocol for working with Aboriginal or indigenous communities. Here are some websites that might help with this process:
 - www.conservationcollaboration.ca
 - www.iucn.org/about/work/programmes/social_policy/sp_themes_ip/
 - ∞ An ideal collaborator is someone who: can work well with the organization; has a personality that fits well with the rest of the team; can clearly communicate verbally and in writing, the approach, purpose and outcomes of the project; and, understands how the social science component fits with the natural sciences and applied approaches to conservation used by the organization.
 - ∞ It is critical in social science research that appropriate permissions and approval for research with human subjects be obtained through an established institutional process at a partner university, tribal organization and/or conservation organization.
 - ∞ Upon completion of the research, in addition to a project report we recommend a dissemination workshop so that results can be meaningfully discussed within the organization and the utility of the research can be enhanced.

Conclusion

Conservation as a practice is necessarily multi- and inter-disciplinary – meaning that it requires an understanding of both natural and social systems and collaboration between natural and social scientists. Discussions and conversations across such disciplinary boundaries is no simple task but one well worth undertaking since these efforts, at the very least, will lay the groundwork for better mutual understanding and, at best, will contribute to better conservation outcomes. Despite some local successes, the prognosis for the Earth’s environment is far from positive and there is a distinct need to strengthen our ability to address conservation challenges. The content of this report shows that the social sciences have a role to play in improving marine and terrestrial conservation policy, practice and outcomes. Each field of conservation social science has made a distinct contribution and yet remains underutilized, its potential largely unrealized. There is thus a need to build social science capacity and increase knowledge of the social sciences among conservation practitioners and within conservation organizations. Knowledge of the distinct focal areas, people or topics of study, types of questions and methods, and research products can assist in distinguishing among the different conservation social sciences and strengthening their application to conservation practice. In this

report, we offer an overview of the conservation social sciences and present a process for conservation organizations looking to establish a conservation social science research agenda. Engaging with the conservation social sciences in a productive and useful way will likely require long-term ongoing partnerships, knowledge and capacity building, open dialogue and clear communication as well as a reflection on past and present practice and a willingness to adapt programs of work.

Table 13.1 - Overview of the conservation social sciences

Disciplines/Fields	Focus	Sample Questions	Methods, Scale and Common Research Products	Contributions to conservation
Anthropology (Environmental Anthropology)	Relationships between humans and the environment as mediated through culture	How do societies use their environment and manage social relationships through resource use? How has a particular cultural group used a landscape historically? How do cultural models affect the way that people use the environment?	<u>Methods:</u> Ethnography, participant observation, interviews, discourse analysis <u>Scale:</u> Usually local, extra-local <u>Products:</u> TEK documentation, methods for incorporating cultural considerations, maps of culturally important areas	Illuminating environmental justice issues; Forwarding culturally appropriate conservation models (e.g., cultural landscapes); Understanding local contributions to conservation and documenting TEK; Elucidating non-economic views of nature; Facilitating better conservation relationships with diverse cultural groups
Sociology (Environmental Sociology)	Influence of social context and the material world on individual conservation behaviors	How might social and economic contextual factors at local and broad scales mediate an individual hunter's attitudes, perceptions and behavior? How do power structures influence access to natural resources? How do social interactions influence relationships with the environment?	<u>Methods:</u> Survey methods, secondary data analysis, interviews, focus groups, participant observation <u>Scale:</u> can range from the analysis of individuals as affected by structure to nation states and beyond <u>Products:</u> range from in depth localized ethnographic analyses, to analyses of large scale secondary data sets to quantitative surveys dealing with environmental beliefs, attitudes, and behaviors	Clarifying the role of context in determining individual conservation behaviors; Understanding how to manage for different stakeholder and cultural groups; Articulating how new meanings of nature are being created by changing contexts; Conveying role of inequality in determining access to natural areas and in destruction of natural resources; Identifying broad scale interventions that facilitate conservation
Economics (Ecological Economics)	Interdependence of economies, ecosystems and human well-being	How much should goods or services cost to account for environmental externalities? What is the net worth of ecosystems to society? What are the contributions of ecosystem services to well-being? What is the optimum scale of economic activity? How should resources be allocated to produce socially just and ecologically sustainable outcomes?	<u>Methods:</u> Economic valuation, economic modeling, energy accounting, changes in prices, stated or revealed willingness-to-pay studies <u>Scale:</u> Local to global <u>Products:</u> Valuation estimates; recommended pricing to account for externalities; scenarios of growth or de-growth	Valuing of ecosystem services; Identifying trade-offs associated with changes in natural resource management; Providing economic justifications for conservation actions; Identification of policies, management and incentive systems that produce ecologically sustainable and socially just outcomes; Strengthening of arguments for ecological restoration; Critique of the growth paradigm and construction of alternative paradigms focused on human development separate from growth.

Disciplines/Fields	Focus	Sample Questions	Methods, Scale and Common Research Products	Contributions to conservation
Psychology (Environmental Psychology)	Individual values, attitudes, beliefs, norms, and behaviors regarding the environment or conservation; social psychology, as a sub-discipline, emphasizes the individual in the context of social groups	What are people's thoughts and behaviours regarding the environment and conservation? Why do people think and behave the way that they do towards the environment? How do values shape human relationships and interactions with the environment? What attitudes or preferences do people have regarding conservation issues, species, eco-tourism experiences or management interventions?	<u>Methods</u> : Survey methods, interviews, focus groups, participant observation <u>Scale</u> : Data typically collected at individual level, with generalizations made to populations of interest (e.g., communities, local residents, visitors, etc.) <u>Products</u> : Descriptive reports of people's reactions to conservation issues; theoretical models depicting relationships among key concepts such as values, attitudes, behaviors; audience segmentation and information for use in development of communication or outreach efforts	Anticipating people's response to conservation issues or management actions; Determining more socially acceptable environmental management actions; Predicting and understanding the basis for undesirable behaviors; Helping to frame communication and outreach strategies designed to change attitudes or behaviors; Understanding the basis for social conflict among different population segments or user groups and informing strategies for conflict resolution
Political Science (Environmental Governance)	The formal and informal rules that structure the incentives that society and individuals face as they interact with the environment and each other.	How can environmental governance systems be designed to improve environmental and societal outcomes? What factors are associated with sustainable and successful systems of environmental governance? How can governance be designed to fit different contexts? How do formal and informal rules determine interactions with the environment?	<u>Methods</u> : Agent-based models, lab and field experiments, case studies, statistical meta-analyses <u>Scale</u> : Local to global, but more emphasis on local. <u>Products</u> : Diagnostic frameworks, analytical databases	A better understanding of the attributes of generally successful environmental policies; Designing more efficient, effective, equitable and legitimate conservation governance; Illuminating the importance of community involvement in rule-making and monitoring; Contributing to adoption of community-based or driven conservation programs; Illustrating the usefulness of adopting or incorporating local governance arrangements; Identifying factors that may motivate conservation such as nested governance, community-building, education, and participation
Philosophy (Environmental Ethics)	Reasoning how we ought to relate to nature	What values should we hold towards the environment? How should we manifest those values through conservation policies and actions? What aspects of nature deserve moral consideration? On what basis?	<u>Methods</u> : Argument analysis and synthetic analysis <u>Scale</u> : Theoretical, global to policy to individual <u>Products</u> : Diagnostic values frameworks, analysis of positions articulated in specific conservation issue, framework to integrate a wide variety of disciplines engaged in conservation problem solving	Providing a means of evaluating the robustness and rationality of claims about the values we ought to hold and manifest towards the environment; Understanding the merits of the ethical stances that conservationists hold and espouse and that conservation programs engender; Aiding in the avoidance of undesirable environmental outcomes – e.g., through precautionary approach; Enabling justified and transparent positions through an objective and collaborative methodology

Disciplines/Fields	Focus	Sample Questions	Methods, Scale and Common Research Products	Contributions to conservation
Science and Technology Studies	Role of scientific knowledge and expertise in social and policy change	What forms of knowledge are legitimate for conservation practice? How is science produced, shaped and used in conservation decision-making? What is the relationship between conservation science, policy and practice? How do people develop and use scientific knowledge? How do scientific framings or concepts change the way we govern and manage resources? How does science and knowledge shape people's relations to nature? How can we connect diverse knowledges with environmental governance at different scales?	<p><u>Methods:</u> Trans-disciplinary, empirical case studies, historical accounts, interviews, focus groups, ethnographic studies, surveys, secondary document reviews, comparative case studies, participatory methods, knowledge co-production</p> <p><u>Scale:</u> theoretical insight can work at any scale, from local to regional, national to global, management initiatives, environmental policies, cross-scalar analyses</p> <p><u>Products:</u> methods for trans-disciplinary collaboration, concepts and approaches to bridge different knowledge</p>	Promoting multiple types of knowledge and more inclusive conservation science; Understanding and improving the connections between science, policy and practice; Engendering lasting and effective relationships between conservation scientists, policy makers, practitioners and funders to sustain conservation outcomes; Highlighting conditions under which scientific, cultural and policy change are likely to occur; Informing research design, conservation programs and policy to be more inclusive
Education and Communication (Environmental Education and Communications)	Effectiveness of environmental education and communication and outreach campaigns, understanding target audiences	Do environmental education programs lead to changes in knowledge, attitudes or behaviors? How can information about public values, beliefs, emotions and attitudes lead to more effective communication with key stakeholder groups? Are programs achieving their objectives, and what are the best metrics for evaluating program success or failure?	<p><u>Methods:</u> Program evaluation, quantitative (surveys), qualitative (focus groups, interviews, participatory mapping, photoelicitation), often involves collaboration between conservation organizations and educational institutions (e.g., schools)</p> <p><u>Scale:</u> Local (individual programs) to global (addressing phenomena associated with communicating conservation with public audiences)</p> <p><u>Products:</u> Evaluation results used to improve upon existing efforts, documentation of best practices</p>	Improving conservation education programs and outreach campaigns; Increasing environmental literacy; Understanding that knowledge needs to be connected to values, beliefs and attitudes and that knowledge does not lead to behavior change; Tailoring of communications to target audiences; Illuminating the need to empower audience to take local actions; Affirming need to connect children to natural world; Applying social marketing and behavior change theories to identify barriers and bring about changes in behaviors and promote stewardship

Disciplines/Fields	Focus	Sample Questions	Methods, Scale and Common Research Products	Contributions to conservation
Conservation and Development	Relationship between conservation and/or development processes and environmental and social-economic outcomes	Do local livelihoods support or undermine conservation outcomes? How do levels of wealth impact environmental outcomes? How do conservation initiatives impact local livelihoods, wealth and well-being? What constitutes best practice in designing conservation and development initiatives? Under what conditions are win-win conservation and development outcomes possible? When are trade-offs required? How can we simultaneously achieve Convention on Biological Diversity and Millennium Development Goals? What actions will maintain social adaptive capacity and ecological resilience?	<p><u>Methods:</u> Qualitative (interviews, focus groups), quantitative (surveys, economic analyses, cost-benefit, trade-off approaches), participatory methods (PAR, focus groups), spatial analyses</p> <p><u>Scale:</u> Local initiatives to global scale analyses</p> <p><u>Products:</u> insights on how to enhance sustainability of livelihoods; evaluations and recommendations for improving ongoing initiatives, best practice guidelines for conservation and development projects, maps and quantitative analyses of ecological and societal outcomes, policy briefs.</p>	Understanding the social and economic impacts of conservation initiatives; Re-orienting national and international conservation policies to consider local development needs; Identifying how to contextualize conservation programs; Designing and improving individual conservation and development projects or broader programs; Incorporating social-economic considerations into broad scale environmental planning
Political Ecology	Critique and improvement of conservation processes; focus on political economic context and power relations that shape practice	What is the political economic context of resource users' decisions? What are the economic, political, social and cultural sources of conservation conflict? How can a better understanding of the above inform more successful conservation practice? How is conservation governance functioning? What are the perceptions of the different players in the governance arrangement and what are the conservation outcomes?	<p><u>Methods:</u> Case study based analysis frequently using mixed methods featuring qualitative techniques (interviews, focus groups, discourse analysis, ethnography) and quantitative techniques (surveys, land use mapping, remote sensing analysis, participatory mapping.</p> <p><u>Scale:</u> cross scalar: contextualizing local case studies by tracing processes that shape the dynamics of the case up through to the global scale.</p> <p><u>Products:</u> descriptive reports; community based maps and analysis; recommended improvements to processes and practices</p>	A better understanding of the political economic context of conservation policy and practice; better understanding of the conflicts arising due to conservation interventions; critique of how particular ideas of nature have informed a coercive conservation practice; critique of the involvement of corporate interests in conservation practice; better understanding of local nature-society relationships and under what conditions conservation compatible livelihoods persist.

Disciplines/Fields	Focus	Sample Questions	Methods, Scale and Common Research Products	Contributions to conservation
Human Dimensions of Conservation and Natural Resource Management	<p>Type 1 (Classical). Addressing natural resource managers' information needs about public attitudes & values. Type 2 (Problem Oriented). Creating comprehensive and actionable ways to effectively integrate conservation and human dignity</p>	<p>1. What is a community's level of tolerance for a species involved in human-wildlife conflicts? 2. How do community members define and judge the significance of the impacts of a particular wildlife management initiative, such as reintroduction of a species? Is there common ground between stakeholders, managers, and other participants in a controversial conservation situation?</p>	<p><u>Methods</u>: 1. quantitative sociology adapted- e.g. wildlife stakeholder acceptance capacity 2. multiple-methods selected for traction on a specific problem <u>Scale</u>: local to macro-scale <u>Products</u>: 1. Quantified understanding of public attitudes and values formatted to guide managers; 2. collaborative re-definition of previously-intractable problems</p>	<p>Conservation efforts ought to be participatory, pluralistic, allow for individual and collective reflection and learning, adaptive, systems-oriented, and action-oriented.</p>

Table 13.2 - Conservation problems (as defined by locus, scale, groups and topics) and relevant fields of social science*

Locus and Scale of Problem*	People and groups or topics of study*	Examples of problems or questions at this scale	Possible fields of Social Science
Society at national and international scales	<ul style="list-style-type: none"> General public, advocacy groups, NGOs and ENGOs, national agencies, international bodies such as the IUCN Ideas, metaphors, philosophies, narratives, beliefs, ethical stances 	How does society imagine nature? How does society understand the relationship between humans and nature? How do conservation organizations envision conservation? What logics inform particular conservation practices or resistance to them? In what ways might ethics guide conservation actions? What social and material factors shape the way society approaches conservation? Do environmental ed. programs facilitate connections between people and nature?	Political ecology; humanities; sociology; ethics; education and communication; science studies; anthropology
Federal or state laws and policies	<ul style="list-style-type: none"> Politicians, legislators, policy makers, scientists Laws, governance, incentives, regulations, knowledge building 	Are laws efficient and effective at supporting conservation? How do science and other factors guide conservation decision-making? What is the impact of a proposed law or policy? Do existing educational policies facilitate learning science effectively?	Environmental law; governance; science studies; education and communication
Mid-level multi-jurisdiction management unit	<ul style="list-style-type: none"> Tribes, NGOs, management boards Planning, regional policy creation, brokering of management actions 	How does decision-making occur in management boards? In what ways is power brokered? Who is involved in environmental governance? What is the role of science in management? How has the area been used historically? What are the main contestations over resource management and why? How has the influx of corporate funding transformed the conservation agenda?	Environmental governance; science studies; anthropology; history; human dimensions; political ecology
Local governments	<ul style="list-style-type: none"> Elected leaders, planning departments, technical agencies Political 'grounding', best practices, applied technologies 	Is environmental conservation a local election issue? How do cities plan their green space and parks?	Environmental governance; planning
Management initiative – e.g., protected area	<ul style="list-style-type: none"> Managers, co-management boards, adjacent communities Best practices, participation, governance 	What management actions are being taken? By whom? How? How are community livelihoods impacting or being impacted by a protected area? How is the management initiative being received or resisted? What cultural models are being employed to shape policy and practice?	Human dimensions; Cons. and dev.; political ecology; science studies; ethics; anthropology; governance; psych.
Private sector and businesses	<ul style="list-style-type: none"> Resource-dependent corporations, local businesses and sectors Best practices, goods & services, sustainability programs 	What economic mechanisms might be used to guide corporate behavior? How can environmental messaging be used to guide consumer behavior?	Cons. and development; ecological economics; communication
Community neighborhood, community or group	<ul style="list-style-type: none"> Resource-dependent communities Civic organizations, associations, schools, livelihood group Civic engagement, social networking, place making, social norms 	How do local social practices or cultural norms affect conservation behaviors? What impact does social networking have on levels of civic engagement? What competing visions for conservation exist? How can outreach be improved through understanding social networks? How do cultural practices relating to the environment figure in resource use conflicts?	Anthropology; conservation and development; education and communication; psychology
Household/individual	<ul style="list-style-type: none"> Residents, individual resource users, homeowners, visitors/tourists, private landowners, recreationists Awareness, knowledge, attitudes, values, personal norms, emotions, behavior, stewardship, conflict 	How can we reduce the consumption of goods or energy in the household? How can we change knowledge and behavior of traditional or recreational resource users? How are individuals likely to respond to a particular conservation or management action? How can we develop effective communication to build local support for conservation efforts?	Psychology; ecological economics; education and communication; human dimensions; environmental governance

Note: *This analysis inspired by a paper titled "Human Dimensions of Puget Sound Ecosystem Health and Recovery: Social Sciences Scale and Scope" by Mary-Anne Rozance (rozance@pdx.edu) and Kathleen Wolf presented May 2, 2014 at the Salish Sea Conference, Seattle, WA.

Table 13.3 - Explanation of social science methods applicable to conservation issues. This table is illustrative, not comprehensive.

Social Science Method	Brief Description
Interviews	Interviews seek to identify interviewees' perceptions, opinions, beliefs, and attitudes. The data obtained can be qualitative (descriptive data, e.g. explorations of meaning, asking why and how), quantitative (numerical data, e.g., measurements of frequency and magnitude, asking what, when, where, how much) or mixed . Structured interviews follow a script. Unstructured interviews involve questions that are not created in advance, which allows for spontaneity and the developments of new questions over the course of the interview. Semi-structured interviews follow a framework of specific topics, but they are flexible, allowing and often enabling new ideas to emerge from the interviewee. Key informant interviews focus on the impressions, opinions and experiences of people with a specified expertise. In a life history interview , the researcher tends to proceed chronologically and ask open-ended questions to prompt the interviewee to share the story of his or her life. The resulting life-history stories can help researchers understand how people think about and create meaning in their lives and provide insight into other cultures.
Focus group	A moderator facilitates a small group discussion among carefully selected people who discuss their perspectives on a specific topic. This method enables researchers to identify the extent to which participants share an understanding of a topic and the influence of individuals on others in the group. Moderators need strong group leadership and interpersonal skills. Focus group facilitators can employ a diversity of social science approaches, such as those listed in this table, and also Delphi methods (a systematic method of forecasting using a panel of experts), nominal group processes (involves developing ranked solutions to a problem) or structured decision making .
Participant Observation	The researcher immerses him or herself in a group of people that he/she studies for an extended period of time (months to years). The researcher establishes rapport with the group or community and collects data via informal interviews , life history interviews , participating in everyday life of the group, observing community discussions , and analyzing documents that individuals and the group create.
Free lists	A method to elicit from research participants about all the entities that are related to a particular issue. Particularly useful during initial exploratory research. The benefit of this approach is that it is less leading than direct questions about an issue and is more effective at eliciting participants' views.
Policy analysis	Analysis of policy tends to be conducted by academics to explain why a policy was developed in a particular context and its intended as well as unintended consequences. Policy makers often commission analysis for policy , usually conducted on shorter time frames than most academic research. Both entail case studies , surveys and statistical analysis .
Policy sciences	A high-level approach for integrating multiple methods to comprehensively define a problem in-context, and invent and select alternative courses of action.
Structured Decision Making	Structured decision-making (SDM) provides a practical approach to collecting and organizing the knowledge and values of a group working together to identify and evaluate alternatives in the context of a complex decision. With the goals of transparency, rigor and efficiency, SDM clarifies trade-offs and uncertainties while integrating technical information with value-based deliberation.
Program evaluation	Researchers collect, analyze and use data to determine if and to what extent policies, projects and programs are efficient and/or resulting in the intended effect. Such evaluations may include the program's cost per participant, possible ways to improve it, unintended consequences linked to the program, alternatives and insight into whether or not the program's goals are useful and appropriate. Evaluators often work closely with stakeholders in such assessments.
Discourse analysis	Discourse analysis is the study of the meaning of language beyond the level of a sentence. Given that language is a system of thought and linked to social practices, discourse analysis focuses not just on what is said or written, but how this discourse is embedded in historical, political and social contexts.
Narrative analysis	Researchers use narrative analysis to understand how people create meaning through stories, often based on personal experience. The units of analysis include stories, conversations, journals, autobiographies, letters, interviews, field notes and photos.
Participatory methods	Social scientists work closely with non-academic research partners to co-create research questions and co-produce knowledge relevant to the communities of the research partners and academia. Participatory action research involves close collaborations with partners beyond academia aimed at generating social change. There are an array of participatory methods and facilitation techniques.
Ethnography	Ethnography is systematic research on people and cultures. Methods can entail participant observation as well as generating extensive field notes, surveys and interviews . Ethnographers strive to be reflexive, that is researchers seek to account for the influence of their presence and personalities within the groups they study.

Social Science Method	Brief Description
Surveys/Questionnaires	Individuals sampled from a population provide information that can be analyzed statistically. Typically, surveys assess preferences, behavior, factual information and opinions.
Economic valuation	Economic valuation is the assessment of monetary value associated with environmental conditions or ecosystem services (e.g., carbon sequestration, coastal protection from mangroves) that tend to be overlooked in traditional financial valuation.
Cost-benefit analysis	Cost-benefit analysis is a systematic method for determining and comparing the costs and benefits associated with a policy, decision or project. It provides quantitative, monetized values to compare alternatives and inform decision-making.
Economic modeling	Economic modeling involves the identification of key elements of an economic system to determine cause, effect and influence among interacting components. Economists use models to generate different scenarios, often to assess the effects of various policy options or other choices. Visual models are graphical representations of an abstracted economy, generally used for teaching. They tend to be visual extensions of mathematical models , which are linked systems of simultaneous equations involving multiple variables. Empirical models involve the application of data to a mathematical model to estimate the model's values. Computers are critical for economists to build and run simulation models , which are mathematical models that the user parameterizes (setting the numerical value of certain variables), then the computer runs the simulation to find solutions to the equations in the model.
Agent-based modeling	Agent based models are a type of simulation model used to study the actions and interactions among autonomous agents to determine how they influence a system in its entirety. Such modeling can be used to study emergence (how larger patterns arise in systems via interactions among smaller system components that, by themselves, do not display the pattern), game theory (the study of strategic behavior) and complex systems, among other topics.
Lab and field experiments	Lab-based experiments are conducted in closed and controlled settings. Field experiments are conducted in more natural settings with treatment and control groups. Field experiments tend to be associated with greater variability in the data since unanticipated environmental conditions may influence the variables studied. Social scientists can use field experiments to identify causal relationships between policy interventions and outcomes.
Case study	Case studies involve the use of one or more quantitative, qualitative or mixed method to explore, explain or describe a group, person, decision, project, institution, policy or other system. Researchers use case studies to empirically investigate an issue in its real world context. In prospective case studies , researchers define the characteristics of the cases that correspond to the purpose(s) of their research, then select cases when they become available. In retrospective case studies , researchers identify inclusion characteristics then select cases from historical records. Comparative case studies can illustrate similarities or differences between cultures, countries and contexts. Special attention needs to be paid to the definition of categories and types of data that may vary across case studies when comparing two or more.
Meta-analysis	Meta-analysis involves employing statistical methods to combine and/or compare results from previous research to find patterns, disparities or other relationships across multiple studies. Such analysis can collate information to provide greater statistical power pertaining to a metric of interest. Researchers need to be attentive to how they select studies, manage incomplete datasets and deal with publication bias (studies that support the null hypothesis or have inconclusive results are less likely published).
Systematic review	In contrast to meta-analysis, which <i>always</i> uses statistical techniques, a systematic review is a literature review that strives to find, assess, select and compile robust evidence concerning research question(s). Reviewers use both quantitative and qualitative methods to synthesize the data.
Argument analysis	Argument analysis is the process of evaluating the soundness of premises and the validity of arguments that underlie any particular ethical claim.

Social Science Method	Brief Description
Synthetic analysis	Synthetic analysis involves the use of basic conceptual frameworks from ethics (including various ethical theories, environmental ethical theories, and then even some metaphysical ideas) to test people’s beliefs with social science methodologies (surveys, focus groups, etc.) to understand not only what people think but why they think it and how this aligns with ethical theories. For example, this might show that people have a variety of opinions about whether or not it is okay to intervene in wilderness, or to hunt large carnivores, etc., but we can also then employ ethical frameworks to understand why – or rather to understand how these various opinions on wilderness and hunting line up with various ethical and environmental ethical predispositions.
Mixed methods	Mixed method research focuses on understanding the real-world context and cultural influences linked to the topic(s) under investigation. Researchers in mixed methods projects tend to employ quantitative and qualitative methods and integrate the results. Researchers are also explicit about the philosophy and theory underpinning their inquiries.
Pile Sort	During a pile sort, the researcher asks a respondent to organize a set of items (specimens, photos of objects, names of things, etc.) into piles according to criteria that the respondent deems relevant. After the sorting is complete, the researcher asks why the participant sorted in the chosen manner. This method can be less leading than direct questions and effective at eliciting how participants think about the items and how they relate to each other.
Archival research	Archival research focuses on the analysis of primary sources , which were written or created during the period of study (not to be confused with primary data , which is data that the researcher collects). Researchers use primary sources to find data and evidence from archival records.
Secondary document analysis	Secondary document analysis involves the study of documents, often found in libraries and online, containing information originally presented elsewhere, generally in primary documents . Secondary document analysts recognize that the authors of secondary documents interpret, evaluate, generalize, synthesize or otherwise alter the original information.
Secondary data analysis	Secondary data is information that someone other than the researcher created. Common secondary data sources are census records, records from organizations. Researchers can use this data to reveal aggregate patterns or broad trends and make comparisons over time and across contexts.
Documentation of Traditional Ecological Knowledge (TEK)	Berkes (2001) defines TEK as “a cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and their environment” (p. 8).* TEK researchers record 1) factual observations, such as names and classification systems; 2) management systems that determine access to resources, types of harvest/use etc.; 3) historic and current uses of ecosystem components, often preserved in oral traditions; 4) ethics and values underpinning the management of exploitive capacities as well as appropriate relationships between humans and ecosystems; 5) culture and identity, often embodied in language and cultural landscapes; 6) cosmology and worldview related to beliefs and perceptions of how humans and animals ought to interact and the roles that humans ought to have in their communities.
Arts-based research	Researchers systematically use the process of creating an artistic expression, which can take diverse forms (e.g., paintings, dances, carvings) to understand the experience of researchers and the people who they study.
Spatial analysis	Geographic Information Systems (GIS) can be used to organize spatial information to better understand human behavior in a spatial context and inform planning, such as helping optimize locations for development or conservation. Data sources include remote sensing data from satellites and aerial photos . In Community-based mapping , researchers employ a wide range of tools to facilitate the participation of community members as they map local knowledge (e.g., contaminated sites, sacred sites, sources of water etc.). Such mapping can help communities improve resource management, plan for the future, record and use their local knowledge, make their concerns more visible and improve communication with external organizations (e.g., government agencies). Transect walks involve a systematic walk following an established path crossing a project area with locals who create a transect diagram identifying concerns about a particular topic which community members and researchers later discuss.

Note: *Berkes, F. (2001). Sacred Ecology. New York, NY: Routledge.