Addressing Human Population and Behavior in the Design of Conservation Planning Processes

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Introduction

Working group facilitator Phil Miller briefly explained the context of the species conservation planning (PHVA) workshops in which CBSG is involved, highlighting that there is frequently little explicit focus on the human population aspect and its role in wildlife endangerment. It is possible to get demographic information on the country involved in the workshop but local demographic information (e.g: in the villages around the area of conflict) becomes more difficult. Recently, PHVA workshops are more commonly broken in two parts: (1) the population viability analysis (PVA) that is a much more science-based quantitative risk assessment, and (2) the Population and Habitat Viability Assessment (PHVA) where a broader group of stakeholders and decision-makers develop a long-range conservation plan, using the PVA results and other information as input to the discussions.

Figure 1 below shows the general mechanisms by which human activities modify wildlife population demographic rates (reproduction and/or survival), which in turn lead to changes in population growth. While our knowledge of wildlife population processes may be comparatively good, our understanding of how human activities impact wildlife demography is no so well established – and our understanding of the factors driving human behavior is even worse. If we are to achieve a more effective and meaningful link between humans and wildlife, an increased understanding of these relationships is likely to be essential.

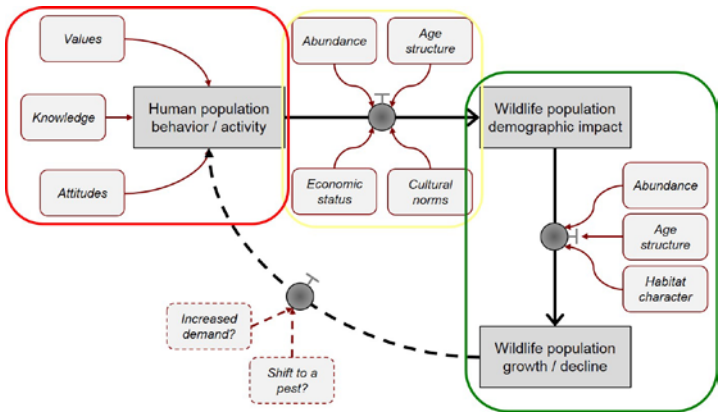

Figure 1. Diagrammatic representation of links between human activity, impact on wildlife demographic processes, and wildlife population growth. Light gray boxes identify characteristics of human or wildlife populations that modify the quantitative nature of the relationships between dark gray boxes.

Workshop discussions, Part I

Can this methodology perhaps be applied in the U.S. first? How can CBSG implement this approach if we don't really know the potential challenges in your own backyard before going somewhere else?

There might be some assumptions on the material that P. Miller presented. Regarding behavior changes there was a lot of discussion on what materials people need to encourage behavior changes, probably it is not only knowledge.
There is often the assumptions that change is not happening because people are not properly informed of the consequences of their behavior. However, research shows that it is seems to be much more related to human attitudes.
Beliefs around behavior change can vary from country to country or even within the same country. The problem is that many times we think we know the solutions, but if you add the complexities around prejudices, you are not be able to see effective behavioral changes.
Human behavioral patterns are based on values and beliefs. If you just look at the behavior in a shallow context you won't understand the causes of the patterns. So perhaps it is important to first focus on the values and beliefs that drive the behavior before immediately focusing on human behavior changes.

We need to take a step back in this discussion. Behavior changes can't be forced…there should be a more positive approach, such as "encouraging or fostering behavioral change". We need to work in a way that is based on an understanding of why behavioral changes are needed.

The concept of "behavior change" should not be directed only at the local human populations that interact with the species most directly. Developed countries need to also change their behavior because these countries have the most impact around global threatening processes such as climate change, habitat loss, etc. We recognize that, at the same time, many of these activities are very difficult to address.

Delmatobius conservation in Titicaca Lake – this was a species to which nobody paid attention. Conservation planning for the species identified that local people should be made aware about the species and its decline; they developed a wonderful project that involved schools, politicians, and the general public. This is a simple action that is very important.

Maybe we should not focus on how we change local human behavior, but instead on how we can solve their needs.

CBSG staff are working on finding a very systematic way to explore people needs/attitudes into the conservation planning process. This can be accomplished in the PVA portion of this larger process. The PVA focuses on the biology, ecology, genetics and demography of the species in question, and evaluates how the abundance of that species or population will change under a set of assumed conditions. Our goal is to understand how a particular human activity would be expected to change reproduction or survival rates in the wildlife population of interest, so that we can predict how that wildlife population will respond to changes in the type and intensity of threatening human activities. With this understanding, we can also predict the effectiveness of alternative management strategies that may target specific human behaviors and their impacts. This analysis is important in the conservation decision-making process. An example of this type of process was discussed, when CBSG evaluated selected species of tree kangaroo in Papua New Guinea in which hunting pressure was significantly impacting specific populations.

Our goal is to use our population modeling tools to assess the impact of behavioral change on wildlife populations so that it may be possible to identify the most cost-effective behavioral changes.

As another example: Through a recent revision of the management plan for Brazil's Iguazu National Park, the authorities asked different stakeholders:

- What is your vision for the future of the National Park?
- What kind of relationship do you currently have with the National Park?
- What kind of relationship would you like to have the National Park?

This exercise was a great experience in listening to stakeholders and gaining their trust.

There are two different types of people and questions that are relevant to this discussion. One involves the higher-level decision-makers and the best ways to get them involved in the process and buying in to the recommendations emerging from an analysis of the situation. The other question involves who we would collaborate with to bring data on the human population in the area, what their behaviors are, and how they impact wildlife.

There is concern about too strong a focus on behavioral change per se, without really understanding the drivers that causes those behaviors. Perhaps this isn't the right type of group to discuss these issues?

We are reminded that there are distinct but related issues:

a) Human population growth; and
b) Human behavior.

We have a closer connection to the human population community and a better understanding of how to deal with this kind of demographic information. In contrast, we need to connect more functionally with the behavior change community.
We can just think about numbers easily enough, but what humans actually do on a daily basis and how they behave is known to change over the times. It is difficult to consider this but somehow it needs to be included in the species conservation planning process.
Some of the demographic data we're discussing here can be obtained from surveys that have already been done. An example is USAID's Demographic and Health Survey (DHS) program (https://dhsprogram.com/).

Once we have ask the people about why they do specific behavior, we now need to bring in people who can facilitate the implementation of those actions focused on targeted behavior change.

We have being thinking about these actions in a rather simple way. It's unclear how we can successfully integrate larger-scale economically-driven activities like mining into our discussions. In fact, there are community-based marketing tools that can be used at this level that you can tailor to answer to this more global need. Stated another way, we're talking about policy development as a driver of behavioral change – from the individual up to the governmental level. There can be a strong link between the policy level and local communities: If local people understand the issues they can become the advocates for change, not us.

The suggestion was made that important recommendations made at CBSG workshops involving high-level, policy-mediated behavior change can be referred to our colleagues higher up the IUCN chain for attention and discussion. An example of this type of activity was at the recent IUCN Congress in Hawaii,

where recommendations made within the SSC community were discussed and adopted at the higher IUCN level. We can make these changes.

Another example of successful community involvement was given, involving an island off Sumatra, where conservation work has failed in the past. There is an incredible amount of connection among the local people with wildlife and knowledge about it, while at the same time they are hunting local primates for food and other resources. There is considerable concern that the values of the community are not going to be transferred to the next generations, since young people are growing more interested in iPhones, technology, etc. Maybe we don't want them to continue hunting but we can encourage them to change while still keeping their knowledge. Indigenous people are tremendously important, they have influence in the areas in which they live. Their story is documented in "Photo voices": an experiment in which indigenous people are provided with a camera and encouraged to take pictures of what they see as valuable" (https://photovoice.org/)

Cali Zoo has being working with a community close to the Pacific Ocean. They have being working with *Dendrobates* species in collaboration with indigenous people. In recent years the local communities have requested the Zoo to pay in order to gain access to their territories to do their conservation work. Sometimes the communities don't care about the animals. Another project is to teach about poisonous snakes to avoid people killing all snakes. They discovered illegal trade; local communities are selling tortoises for US$2 to illegal traders who send these species to the Asian market.

Action Item #1 – We have discovered through this discussion that there are many useful resources available. We propose to create a library of resources that address the human dimension of wildlife conservation. We can link this library to a very similar type of library recommended by another group at this Annual Meeting: "Integrating human dimensions into Conservation planning workshop, introduced by Sarah Long.
Responsible parties for coordinating this action include Stephanie Sanderson (European Association of Zoo and Wildlife Veterinarians) and Sarah Thomas (Zoological Society of London).

In addition to compiling resources, another proposal is to develop a decision tree that allows conservation planners to organize their information-gathering needs and to identify in which sector behavioral change is required (Figure 2):

- What is the spatial scale of the behavior-driven activities we wish to address?
    - Are the threats resulting from these activities global or local?
    - Are the impacts felt at the level of the individual or the community?
- What drives behaviors that lead to unsustainable resource utilization?
    - Are the behaviors driven by economic considerations or by a set of values?
- How resilient would local/regional communities be to implementing behavior change?

This structure would help to define where data are needed to understand behaviors and how to manage them.
It is certainly possible to produce both a decision tree to guide structure of information in the library, as well as the library itself.

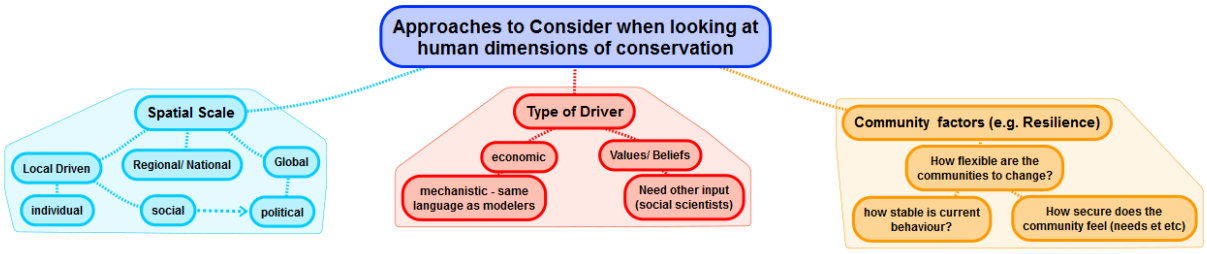

Figure 2. Simple graphical representation of a decision-tree structure for organizing information assembly when incorporating human dimensions into wildlife conservation planning processes.

The question was raised about the potential value of some type of retrospective analysis of existing conservation plans. For example, is there any value in going back to an older plan, like that for the black-footed ferret in the United States, to understand how they addressed the human dimension (values? behaviors?) and, if they didn't, how the plan itself may have been different with its inclusion?
In some/many cases (the Chinese baiji river dolphin being one example) there can be too much confusion and misunderstanding that inhibited actions. The projects themselves may be very good, but they might not be succeeding for a variety of different reasons.
A book by Mark Dowie titled "*Conservation Refugees: The Hundred-Year Conflict Between Global Conservation and Native Peoples*" discussed several cases of failure in conservation efforts. Process and projects must be much more explicit in the way they work regarding the human dimension aspect.

Action Item #2 – Consult the CBSG conservation planning workshop library to identify projects that could be analyzed retrospectively for assessing the value of adding the human dimension. Candidate projects could also involve cases of failure in order to determine how much we can learn from them. Responsible parties for coordinating this action include Anne Baker (CBSG North America), Sarah Bexell (University of Denver) and Phil Miller (CBSG), who will each discuss the potential of students in their local area to become involved in the work.

We ended our general discussions with by considering a metapopulation approach to assessing the impacts of human behavior on spatially-fragmented wildlife populations (Figure 3). Local human communities are spatially structured into metapopulations in much the same way as wildlife populations. It's likely that different human communities display different types of behaviors/activities (e.g., economically-driven vs. value-driven), which may impact local wildlife populations in different ways. This complexity may require conservation planners to apply different management activities to different local communities in order to ease the pressure on wildlife. It was noted that city planners already predict population growth in their communities and the associated impacts. Local business leaders and politicians demand access to this information. Perhaps we could access this planning community to gain access to these data.

The social dimension is a much more complex scale to understand conservation issues than simply focusing attention on the analysis of wildlife biological data (demographic, genetics, etc.). We need to build bridges to new areas that have the expertise to deal with this approach.

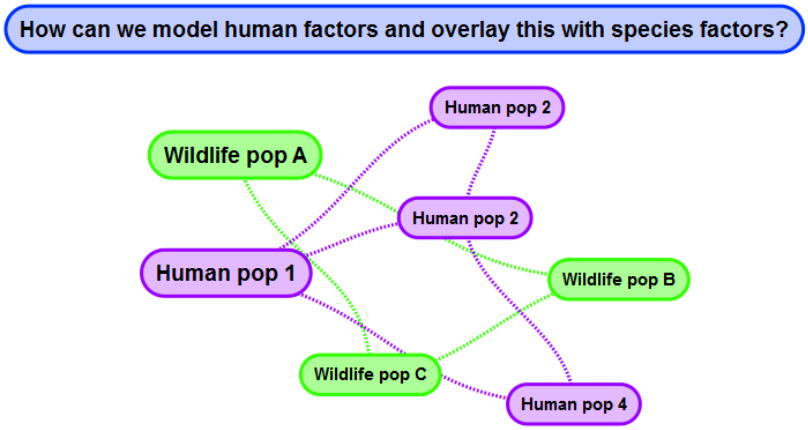

Figure 3. Depiction of a hypothetical metapopulation structure for both wildlife (green) and human (purple) local populations

Workshop discussions, Part II

The focus of the working group conversations then shifted to a proposed conservation planning process for the Humboldt penguin (*Spheniscus humboldti*) in coastal areas of Chile and Peru. This was a continuation of discussions initiated in a similar type of working group convened at the 2015 CBSG Annual Meeting in Al Ain, UAE. Our goal here was to extend our discussions around understanding the context of conservation of the species in Chile and Peru so that we can begin assembling the necessary information in order to design a more effective species planning process.

After a brief update from those working with the species in the field, working group participants noted that population abundance in this area is currently increasing. This led some to question whether this was a worthy candidate of an enhanced planning effort that incorporated the appropriate human dimensions. Overall, the conclusion was that while the population maybe increasing, it may be subjected to new or worsening threats in the near future that may put the populations at greater risk. Consequently, the group decided to continue with the discussions around detailed project planning.

The remainder of available working group time was devoted to developing a detailed threat diagram (Figure 4). In addition to the direct threats that are considered to impact penguin reproduction and survival, the group made an attempt at identifying the factors that drive the direct threats, i.e., the indirect threats. No formal attempt was made to distinguish direct from indirect threats as is done in other threat analysis processes. Figure 4 represents an early draft of this analysis which will no doubt undergo review and revision as project planning moves forward.

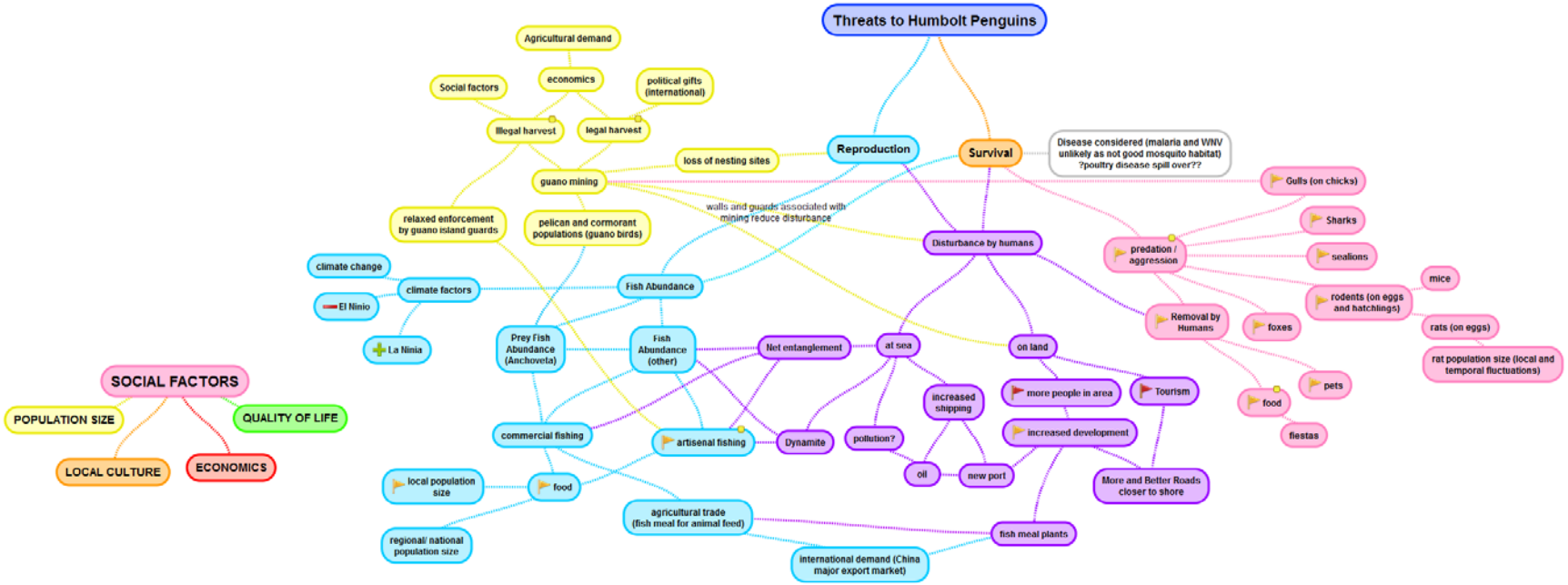

Figure 4. Preliminary threats diagram for the Chile and Peru populations of the Humboldt penguin, *Spheniscus humboldti*.