

Creating Conceptual Models—a tool for thinking strategically

What is a conceptual model and why is one useful?

Within every conservation project, managers have a mental map of what the project hopes to achieve in terms of better conservation, what factors are having an adverse impact on plant and animal communities at the project site and are thus threats to conservation, and how the conservation actions being implemented will address these threats and result in the desired outcomes. A conceptual model is, at its simplest, a printed representation of the mental map inside the head of each and every conservation project manager.

Conceptual models are useful because they help others to understand what conservation managers know implicitly. The process of designing a conceptual model can help coordinate team activities, recruit partners and convince donors of the importance of what we do to make conservation happen. Conceptual models: 1) explicitly define what it is that we want to influence or change as a result of project interventions (i.e., the conservation targets); 2) characterize and prioritize the factors that directly or indirectly result in undesirable impacts on the species or lands we want to conserve (i.e., the threats); 3) graphically represent how these threats, individually or in combination, cause the undesirable changes in the species or lands that we want to conserve; 4) demonstrate that the interventions we choose are clearly focused on reducing key threats and attaining our conservation targets; 5) provide a strategic framework for determining what to monitor to assess project effectiveness and to adapt project actions; and 6) offer a structure for reviewing and revising project assumptions and activities as conditions change over time. Though conceptual models are often believed to be most useful as a planning tool at the outset of a project, they are in fact an effective entry point into thinking strategically about a project at any stage in its development and implementation.

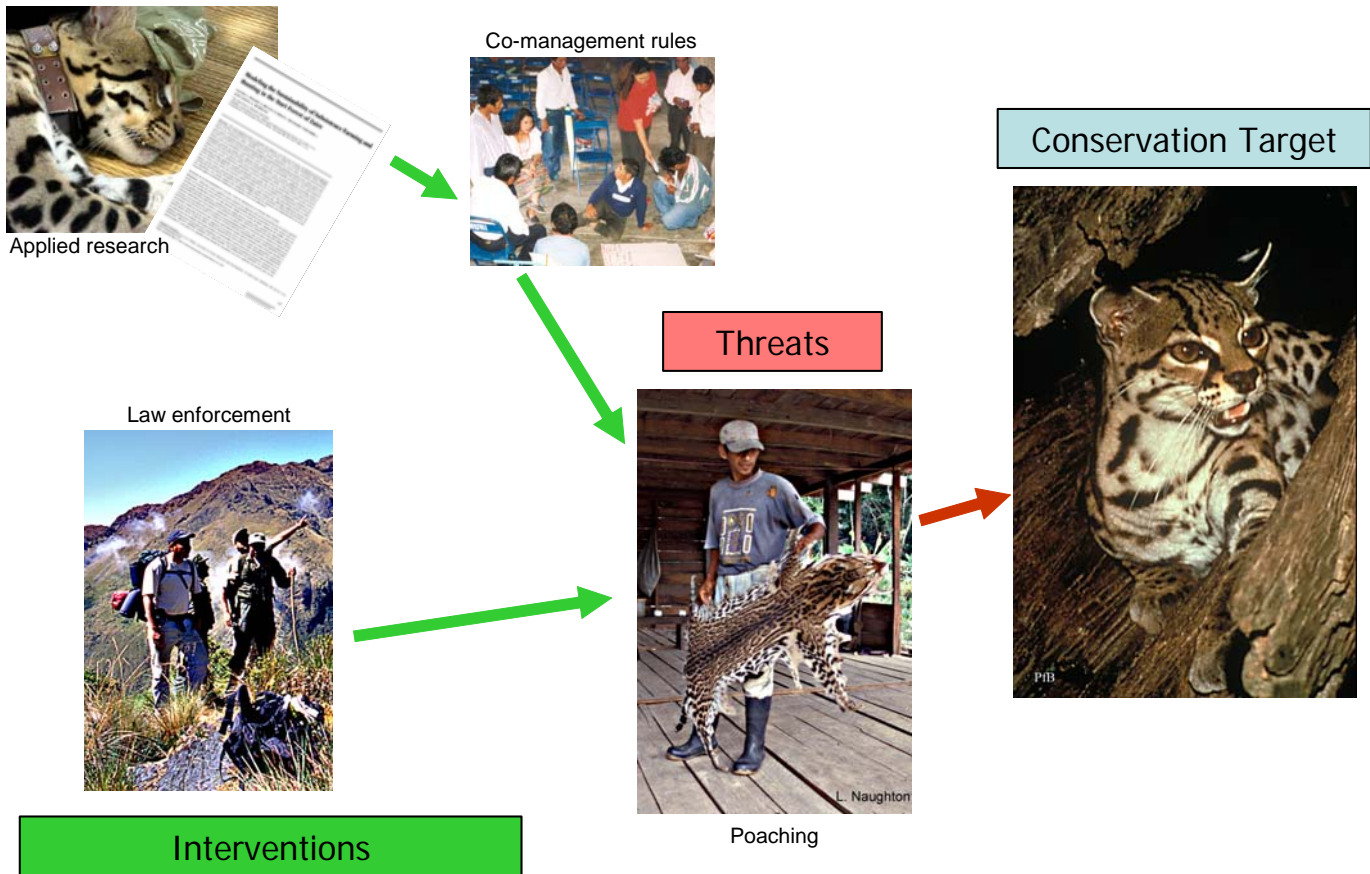
How do you construct a conceptual model for your project?

Though there is no single “correct” way to build a conceptual model, one approach is to base it on 4 elements, namely a goal, conservation targets, threats and interventions. Here are suggested steps that can be followed in putting together a conceptual model containing these elements for your site:

- ◆ Decide on the overall goal of your project. It should be visionary, long-term, and inspiring.
- ◆ Define the conservation target or targets in time-limited terms referring to a specific state you wish to reach.
- ◆ List all the direct and indirect factors that you believe are threats to your conservation target(s) at your site.
- ◆ Arrange the threats in a way that shows how each threat relates to other threats that work against achieving your conservation target(s).
- ◆ List the current or planned interventions (conservation activities) and arrange them adjacent to the threats they are meant to address.



Seeing your project clearly



Steps to building a conceptual model

One of the best ways to create a conceptual model is to work in a team, composed of just project staff or a wider group of stakeholders. The team fills out 4x6 color-coded index cards that can be easily moved around on a table to show how they are causally linked to one another. Aim for simplicity or the end result will not serve as an effective strategic planning or communication tool. We use orange cards for the goal, light blue for conservation targets, red for threats, and green for interventions – but any color combination is fine.

Hint: The exercise described in this manual will take 3-4 hours (or longer if your team is large and includes several different stakeholders). You should think of this as developing a 1st draft of a conceptual model, something that your team will refine and change over time. Remember that creating a conceptual model, though a powerful tool for seeing your project clearly, is just one step in effective strategic planning.

Remember it is a model so simplify if need be

With only a few cards on the table a conceptual model is relatively easy. However, as you add more direct and indirect threats the model can become very complex very quickly and it will take more thought to make the connections among threats clear. An important thing to remember is that a conceptual model is just that – a model, which is a simplification of reality that only contains the key elements and not all elements. Just as a model car clearly is identifiable as such even if it does not have a working engine, a conceptual model should be realistic rather than real. The challenge to creating a good conceptual model is to include only those essential elements that allow us to understand the context for conservation but not swamp us in unnecessary detail.

Step 1 – Goal of the project

Spend about 5-10 minutes brainstorming on the overall goal of your project.

Hint: a project or program **goal** is a visionary, relatively general, but brief statement of intent (e.g. “Conserve wildlife and their habitats in the Yasuni landscape over the long-term”). Avoid identification of threats or interventions in the goal statement (e.g., don’t write “Protect the Yasuni landscape from oil exploration via policy reform”). Also be careful of goals that include potentially conflicting components such as “Conserve wildlife and increase human welfare....”

Step 2 – Conservation targets

Next spend about 10-20 minutes identifying the conservation targets of the project – that is the specific components of biodiversity that you are focusing your efforts to conserve.

Hint: Conservation targets are the species, habitat types, or ecological phenomena that the conservation project wants to influence through some intervention. Select targets one by one and after each selection ask yourself—if we conserve these targets will we reach our goal? If not, then select another target. Though there is no absolute upper limit to how many conservation targets you choose, experience suggests that 3-5 is reasonable and that 10 may be too many. Keep in mind that your conservation targets are those attributes of the biodiversity of an area that you are explicitly promising to conserve, and what others will use to assess whether or not the project, over the long-term, has been successful. Once you have chosen your targets flip each index card over and write a specific statement defining the state or condition of the target that you would like to attain within a given timeframe. For example, “Maintain present white-lipped peccary density within existing habitat of the Madidi-Tacana landscape.”

Step 3 – Direct and indirect threats

Now spend about 20-30 minutes listing the direct and indirect factors that constitute threats to your conservation targets. The easiest way to do this is give each of the people in your group 10 index cards.

Direct Threats

Start off by ask all team members to think of the human activities present or imminent in your area that result in significant negative impacts on the first conservation target selected. Write each human activity on a separate card. Remember that this is a model of reality so only write down a human activity if it is a significant threat to the target. After writing an activity on an index card, turn the card over and add three additional pieces of information: 1) indicate which of the four riders of the biodiversity apocalypse (i.e., habitat loss, species depletion, pollution and introduc-

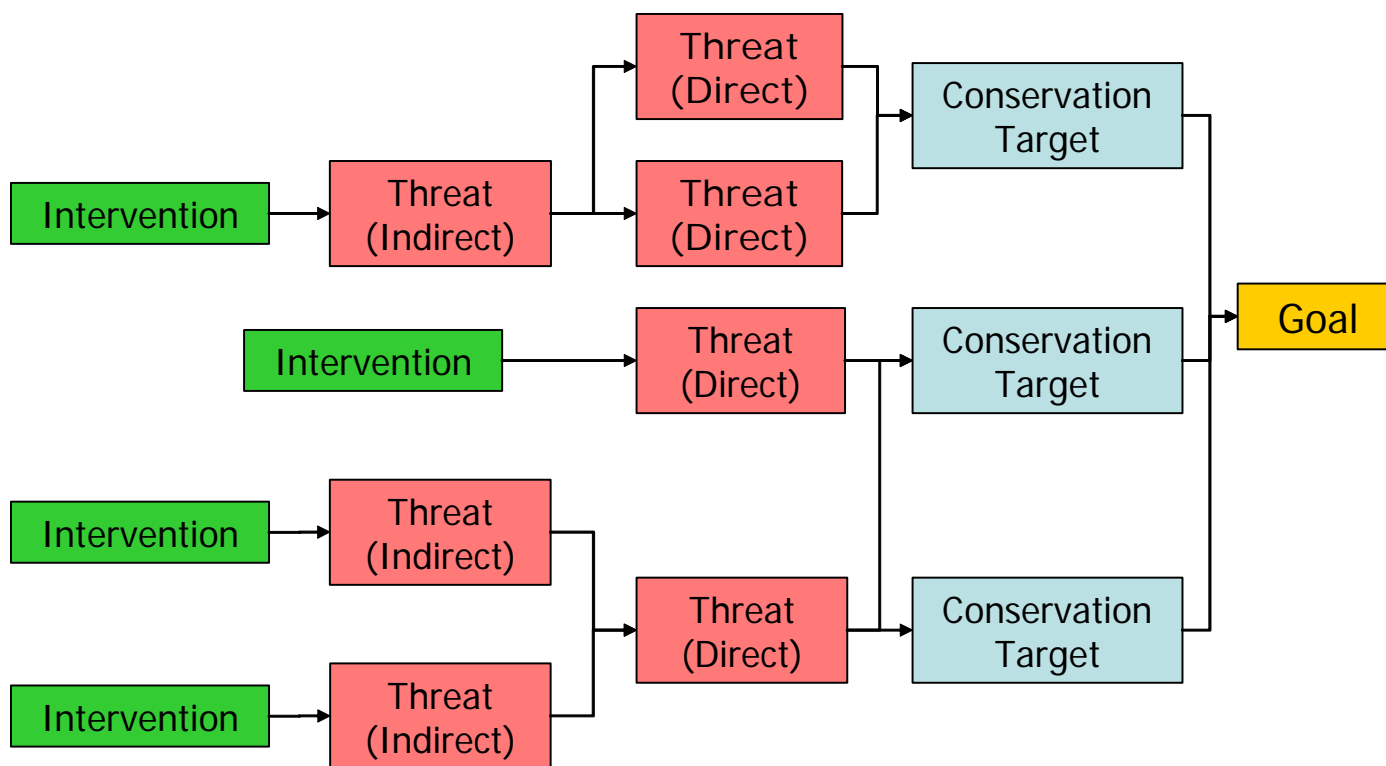


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tion of exotic/invasive species) this human activity leads to, 2) indicate the primary individuals, groups, firms, or agencies whose behavior is most directly responsible for this human activity, and 3) characterize the primary reason this human activity occurs and thus results in habitat loss, species depletion, pollution or introduction of invasive species. For example, if the activity was “illegal lobster fishing,” on the other side of the card you would write: 1) species depletion, 2) non-local fishermen, and 3) too few patrols by the coast-guard and the fisheries ministry.

Once you have identified all significant direct threats to the first conservation target continue sequentially through the other targets to see if any additional direct threats exist.

Generic Conceptual Model with three conservation targets

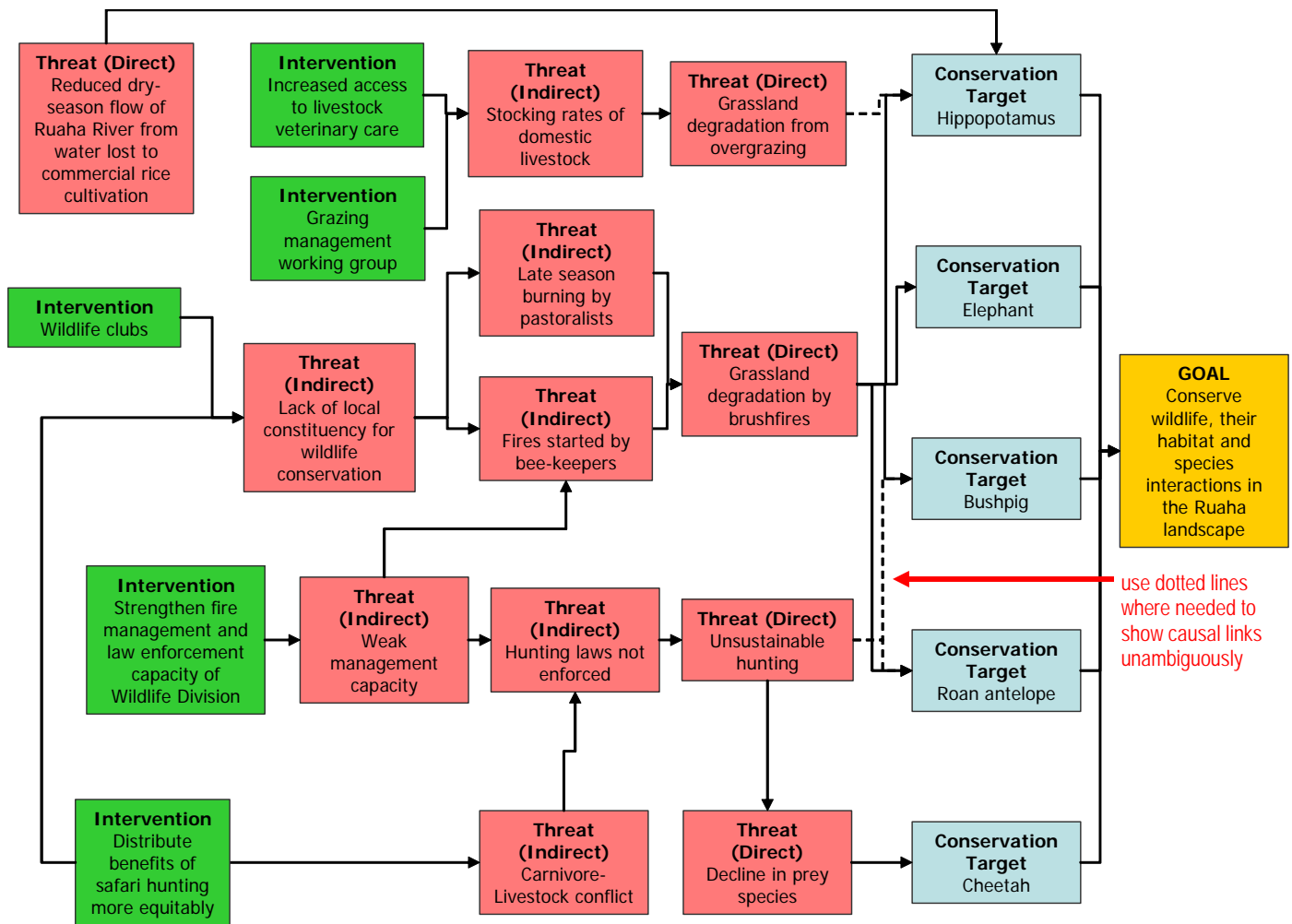


To keep things simple combine cards that are very similar – i.e., those that stem from similar actors via similar mechanisms and produce the same direct threat. For example, if non-residents are poaching wildlife with automatic weapons and they are also doing so with traps, collapse these two mechanisms together into the same direct threat index card, unless you think that reducing hunting by automatic weapons and by traps would require very different approaches. This will reduce clutter and make the conceptual model a more useful planning tool.

Hint: Direct threats are human activities such as hunting, fishing, logging, farming, road building and house construction that physically result in undesirable changes in animal abundance, age or size class distributions, movement patterns, species richness, and/or the quality and extent of their habitat.

Indirect Threats

Though there are only four categories of direct threat to biodiversity (habitat loss, species depletion, pollution and invasion of non-native species), these typically result from the interacting activities of users, managers and policy-makers. For example, though over-fishing is considered a direct threat to Nassau Grouper populations in the reefs of Belize and Honduras, it is indirect factors such as weak law enforcement, lack of economic alternatives for poor households, increase in the number of fishers, etc., that drive and facilitate unsustainable fishing and species depletion. Just as all direct threats can be grouped into four broad categories, we can also cluster indirect threats into three categories: 1) Managers: lack of capacity or interest to enforce resource use regulations, monitor impacts, or communicate rules to users; 2) Users: lack of awareness of how their activities can manifest as threats to biodiversity and sustainable use of natural resources, lack of interest in conservation, or lack of alternatives to a damaging activity; and 3) Policy-makers: inadequate laws, policy, or support for their enforcement. These three categories address not only the factors that indirectly facilitate damaging human activities, but also they identify the individuals or groups that must be engaged to promote change and effect conservation.



Identification of indirect threats is based on the assumption that some management, awareness and policy ingredients are missing or there would be sustainable use of natural resources and effective biodiversity conservation. Ask the team to identify those missing ingredients.

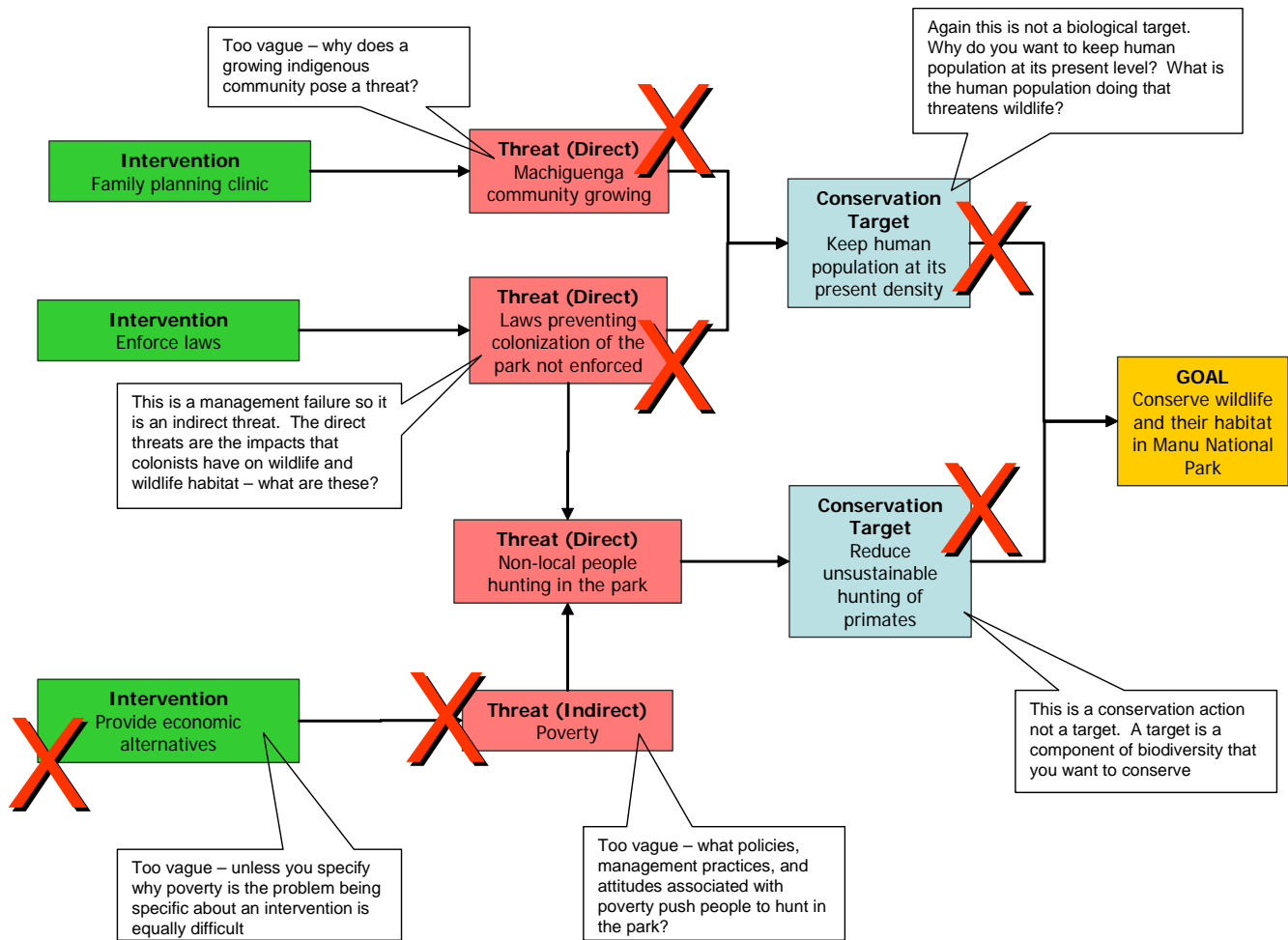
Hint: Try to be as explicit as possible when characterizing these **indirect threats**. Saying that roads are an indirect threat does not tell us why they are a threat – the why is very important for understanding how you propose to reduce or mitigate the threat. So if roads provide poachers with access to the park – say that, because it is poacher access that we want to control not tourists using the same roads.

For each category try to provide examples that are relevant to your particular area. For example:

Users lack awareness, interest or alternatives (e.g., tourists are aware that they are not allowed to collect coral but they do so anyway, people do not know the laws, fishers do not value rays so they are discarded as by-catch, ranchers are openly hostile to predator conservation programs).

Managers lack willingness or capacity (e.g., natural resource management agencies are unable to detect or stop rule-breakers, local communities do not have a tradition of collective management of resources so they do not enforce informal rules, there are no fish abundance or catch data to guide management decisions).

Policy makers' laws and regulations are not appropriate, do not exist, or their enforcement is not supported (e.g., laws regulating tourism development on reefs do not exist, government departments have overlapping jurisdictions, law breakers are seldom prosecuted, land ownership laws are unclear, existing laws contain incentives that perversely result in biodiversity loss).



Including threats outside of your control

Sometimes you might want to include exogenous threats outside our control, such as drought, or coral bleaching.

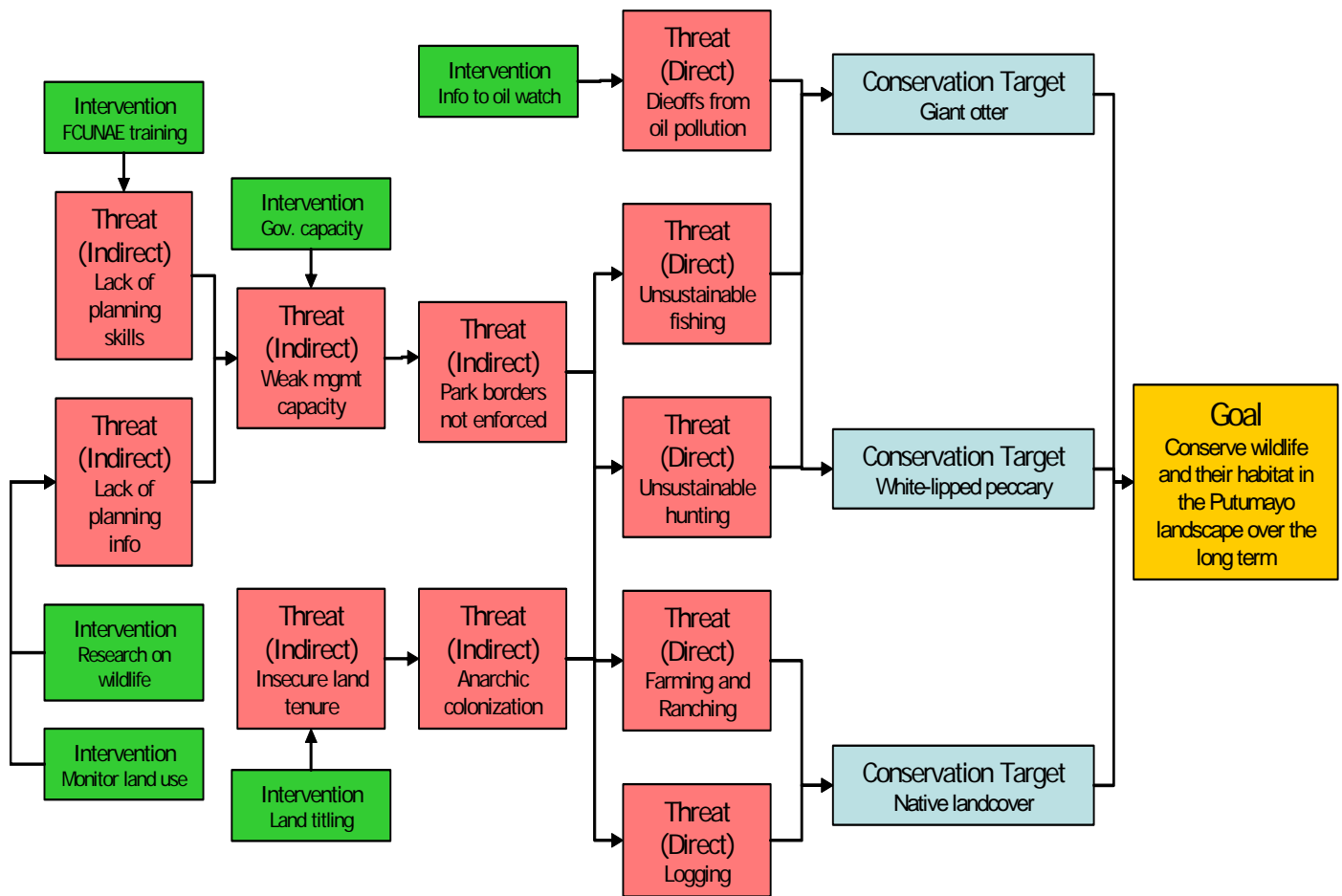
However you must strike a balance. Do not list every threat and indirect threat – only those believed most influential. For instance, some teams will be inclined to list poverty, poor infrastructure, inadequate training, inadequate resources, and a host of other development issues as indirect factors. Though all of these indirect factors may contribute, narrow down the list to those few that are most influential and of most concern, currently. Remember that a model is a simplification of reality, a tool intended to help us focus on the MOST IMPORTANT factors not all the factors.

Step 4 – Rearrange the direct and indirect threats into causal chains for each conservation target

This step is often the most challenging, as the group now has to explicitly state their beliefs about cause and effect. For each conservation target, place the direct threats to that target in a column to the left of the target. Then place immediately to the left of the direct threats those indirect threats that the group thinks most directly lead to or influence each direct threat.

Hint: Avoid creating a conceptual model with dozens of elements and numerous overlapping lines as they are very difficult to understand. Instead, you may decide to make a separate model for each of your project's conservation targets, or a model for each of the direct threats. By using multiple models to depict your project, you can turn complexity into clarity.

Continue this process of arranging cards beside those already placed to show how each factor in turn leads to or influences the others in a casual chain or network leading to the direct threats. As you assemble the conceptual model you may want to reword cards



for specific direct or indirect threats or add new cards to make the causal chain more explicit. Allocate about 10-15 minutes for each conservation target, though less time is typically needed for each successive model as the group gains experience in its construction.

Step 5 – Add the conservation activities

Once you have a causal chain for each conservation target it is worth spending another 5-10 minutes on each model to add index cards that show what WCS and other organizations are doing - or intend to do - to tackle the threats identified in the model. Note on the reverse side who is/would be implementing the conservation action or intervention. In this way we can see clearly how we contribute to conservation and where the gaps remain.

Step 6 – Capture the results

Don't forget to take a digital photograph or create a flow-chart (on paper or computer) of the conceptual model for each conservation target.

If you want you can also create a hard-copy of the conceptual model by arranging the cards on one or more sheets of flip-chart paper and connecting them with arrows drawn with a black marker pen.

Hint: Some people would argue that if an indirect threat like 'weak capacity' links to more than one direct threat then we need to rethink how to describe 'weak capacity' to create a separate indirect threat that links to each direct threat. For example insufficient management capacity may prevent a community from regulating two direct threats - dynamite fishing and illegal colonization. However, as one threat comes from within the community and the other from outsiders, solutions are likely to be very different, so it may make the model clearer to split the indirect threat—weak capacity to: 1) lack of community norms to regulate dynamite fishing, and 2) lack of legal authority to evict colonists.

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Step 7—Remember conceptual models are just tools to help us plan, monitor progress and adapt to change. Don't worry if you feel that your conceptual model is not 'perfect.' This exercise creates a first draft of a conceptual model, something that we hope your team will review, refine and revise over time. Remember your model is an approximation of reality – a reality that is dynamic – a reality that needs to be updated over time. Conceptual models are our best present understanding of what is important, and therefore help us plan project priorities. But they become even more useful when they serve as one step in developing a monitoring strategy that tracks changes in the model over time, allowing us to review and update our assumptions as an iterative part of making conservation happen in the real world.

Contact

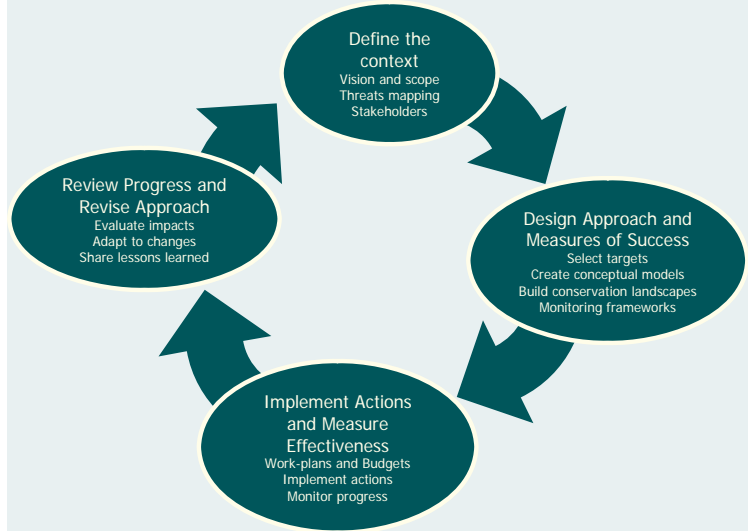
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Living Landscapes Program Manuals

WCS-International saves wildlife and wildlands by understanding and resolving critical problems that threaten key species and large, wild ecosystems around the world. Simply put, our field staff make decisions about what causes the needs of wildlife and of people to clash and take action with their partners to avoid or mitigate these conflicts that threaten wildlife and their habitat. Helping our field staff to make the best decisions is a core objective of the Living Landscapes Program.



We believe that if conservation projects are to be truly effective, we must: (1) be explicit about what we want to conserve, (2) identify the most important threats and where they occur within the landscape, (3) strategically plan our interventions such that we are confident that they will help abate the most critical threats, and (4) put in place a process for measuring the effectiveness of our conservation actions, and using this information to guide our decisions. The Living Landscapes Program is developing and testing, with our field programs, a set of decision support tools, designed to help field staff: select targets, map key threats, prepare a conservation strategy, and develop a monitoring framework.

The application of these tools is described in a series of brief technical manuals which are available by email from llp@wcs.org or on our website www.wcslivinglandscapes.org. These how-to guides are designed to provide clear and practical instructions. If after using the manual to run a strategic planning exercise you have any suggestions as to how we might improve the instructions please let us know.