Using Conceptual Models to Document a Situation Analysis

An FOS How-To Guide

April 2009

Foundations of Success

Improving the Practice of Conservation

www.FOSonline.org
info@FOSonline.org

Contents

This guide is part of an ongoing series from Foundations of Success. Our aim is to help conservation practitioners design, manage, monitor, and learn from their work. This guide is based on the Adaptive Management principles and practices in the Conservation Measure Partnership's *Open Standards for the Practice of Conservation*. Materials in this guide have been adapted from previous works produced by Foundations of Success and members of the Conservation Measures Partnership.

To provide feedback or comments, you can contact Foundations of Success at info@FOSonline.org. Visit our website at www.FOSonline.org to download the most recent version of this guide. Please cite this work as:

Foundations of Success. 2009. *Using Conceptual Models to Document a Situation Analysis: An FOS How-To Guide.* Foundations of Success, Bethesda, Maryland, USA.

What are Conceptual Models?

Conservation projects are dynamic interventions that take place in complex situations. The context within which they occur usually involves an intricate interaction of social, political, economic, cultural, and environmental factors. Moreover, conservation project managers are forced to learn more about and adjust to the constantly changing context within which their projects take place. Given these complexities, it is particularly important for conservation practitioners to carefully consider the situation in their project sites when they plan their interventions. Unfortunately, practitioners rarely have the time or resources to conduct this level of project planning. A conceptual model, however, is an easy-to-use tool that can help a project team understand and logically illustrate the circumstances occurring within their project site.

Conceptual models – or variations of them – have been used in fields like international development and public health for at least two decades. Recently, this tool has been utilized in the project planning processes of major conservation organization across the world. Similar tools that have historically been used for the same function are decision trees, concept maps, and logic models. Among these tools, conceptual models do the best job of explicitly depicting the interrelatedness among the factors affecting the biodiversity of a given site (Margoluis et al. 2009).

A conceptual model is a tool for visually depicting the context within which a project is operating and, in particular, the major forces that are influencing the biodiversity of concern at the site. As shown in Box 1, a conceptual model is a diagram that uses a series of boxes and arrows to succinctly represent a set of causal relationships among factors that are believed to impact one or more conservation targets.

A well-developed model explicitly shows the relationships among the main contributing factors that drive one or more of the direct threats that, in turn, impact the conservation target(s) of concern (see Box 1 for definitions of terms).

Why Conceptual Models Are Useful

A conceptual model is an illustrative yet succinct way of documenting the textual results of your situation analysis. Ideally, you will have already completed a situation analysis that details your team's understanding of the project site – including the biological environment and the social, economic, political, and institutional systems that affect the conservation targets you want to conserve. Your conceptual model can then serve as a tool for documenting the results of your situation analysis in a clear and concise manner. You and your project team can also develop a conceptual model based on your collective, existing knowledge, regardless of whether you have completed a formal situation analysis. Either way, a conceptual model cannot replace a situation analysis, and must be based on sound information and data.

Conceptual models can further be used to identify which factors at your site (indirect or direct threats, opportunities, or conservation targets) are the most strategic factors for you to try to influence, and what type of strategies would be most appropriate for doing so.

Box 1. Components of a Conceptual Model

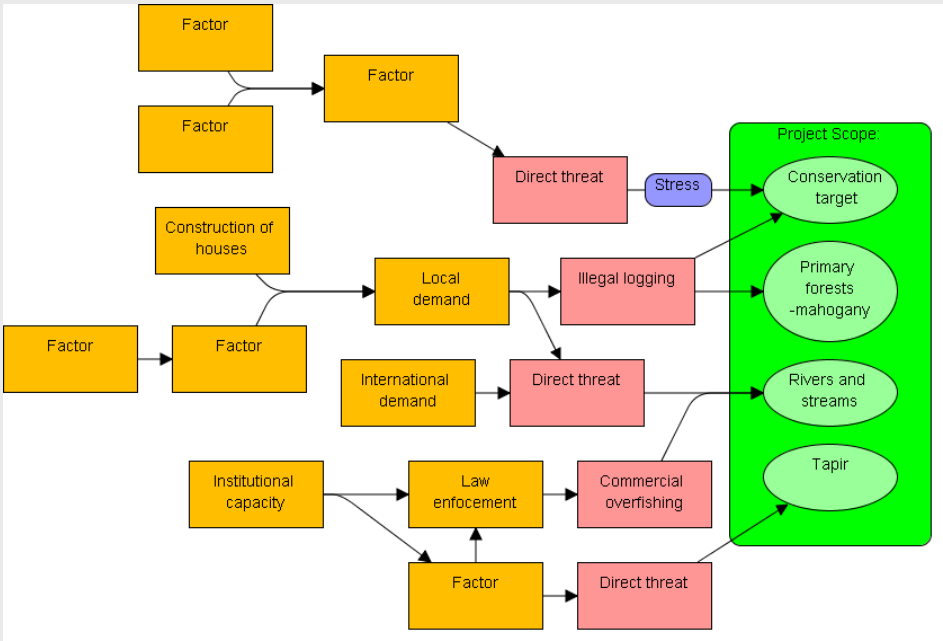
Conservation Target: An element of biodiversity at a project site, which can be a species, ecological community, or habitat/ecological system on which a project has chosen to focus.
Direct Threat: A human action or unsustainable use that immediately degrades one or more conservation targets (e.g., unsustainable logging, overfishing, and urban development).
Contributing Factor: The indirect threats, opportunities, and other important variables that positively or negatively influence direct threats

Indirect Threat: A factor identified in a situation analysis that is a driver of direct threats, and is often an entry point for conservation actions (e.g., logging policies, demand for fish, and human population growth). Sometimes called a root cause or underlying cause.

Opportunity: A factor identified in a situation analysis that potentially has a positive effect on one or more targets, either directly or indirectly, and is often an entry point for conservation actions (e.g., demand for sustainably harvested timber, and established culture of conservation).

Scope: Definition of the broad parameters or rough boundaries (geographic or thematic) for where or on what a project will focus
Stress: The biophysical way in which a direct threat impacts a conservation target.

The following generic conceptual model illustrates the relationship of these terms:



As a visual diagram that illustrates a project's context in a clear and concise fashion, a conceptual model is a powerful communication tool for project teams, partners, donors, and other stakeholders. Because a conceptual model illustrates the logical flow of influence, it allows these actors to see how their potential or current strategies may affect certain factors within the model and consequently, contribute to improving conservation at the site.

When to Use Conceptual Models

Conceptual models are an important tool for documenting the results of your situation analysis (Step 1D of the CMP *Open Standards for the Practice of Conservation*[1]). As such, conceptual models should be developed and used during the early planning stages and throughout the implementation of a conservation project. A sound conceptual model can help your project team members identify key factors on which to focus in selecting your conservation strategies. Further, conceptual models serve as the foundation upon which your project team builds results chains (Step 2A of the CMP *Open Standards for the Practice of Conservation*; see FOS Guidance on Results Chains) to define how you believe your conservation strategies will reduce threats and ultimately conserve targets. A conceptual model is a "living" figure – it will change over time as you learn more about your project site, so you will most likely need to revisit it several times throughout the life of your project. This is normal – in fact, it is the hallmark of good adaptive management.

Box 2. Software Programs You Can Use to Capture Your Conceptual Model

Miradi Adaptive Management Software - This software developed by the Conservation Measures Partnership and Benetech helps practitioners complete all the steps in the adaptive management cycle – including laying out a conceptual model. Available through www.miradi.org.

MS Visio - This is diagramming software with features that facilitate digitizing flow charts such as conceptual models. The figures in this document were developed using MS Visio.

MS Word or MS PowerPoint - You can use the drawing feature in MS Word, but this is more time-consuming and less flexible than Miradi or MS Visio.

How to Develop and Use Conceptual Models

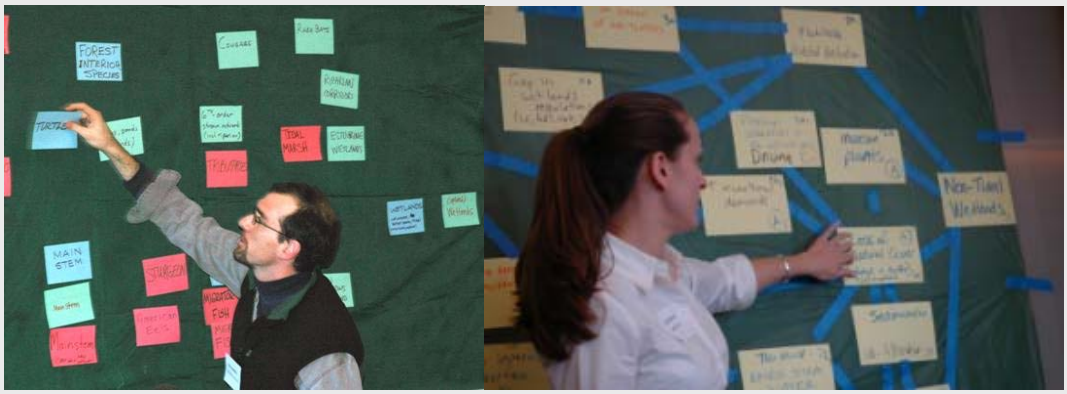
This exercise is often best done with a project team using post-it notes and a flip chart, index cards and a sticky tarp (see Box 3), or some other set-up that would allow you to add, delete, and move around factors. We recommend you then capture the results using Miradi Adaptive Management Software, but you could also use flow-charting software such as MS Visio or the drawing tools in MS Word or PowerPoint (see Box 2). If you have a small group (approximately 4 or fewer persons), you may want to use Miradi directly to develop and record your model. It is often less dynamic but more efficient.

Figure 1. Building a Conceptual Model – A Dynamic Team Exercise

[1]Available at: http://conservationmeasures.org/CMP/Site_Docs/CMP_Open_Standards_Version_2.0.pdf

Box 3. How to Make a Sticky Tarp

One of the most useful tools for workshops is a sticky tarp that you can use in any step where you might normally use a flipchart and would need to move items around a lot. A sticky tarp is simply a large (2x3 meters is a good size) nylon tarp that has been liberally sprayed with a "retackable" artist's adhesive (e.g., 3M Spray Mount Artist Adhesive #6065 – make sure you use the white can!) on one surface and allowed to air-dry. This creates a tacky surface that does not dry out and allows any paper item to stick to it, yet be readily repositioned. Always remember to fold the sticky tarp onto itself (i.e., sticky surface to sticky surface) and to open it carefully not to dislodge the glue from the tarp. Over time you may need to reapply the adhesive to the tarp.



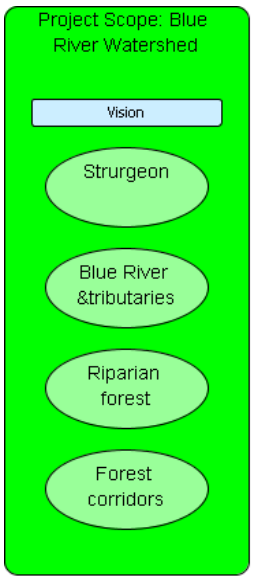
To illustrate this process, we will use the fictitious Blue River watershed as an example adapted from a real-life conservation project.

When building your conceptual model, plan to spend at least a few hours together with your team, and ideally an entire day. To build your model, take the following steps:

Step 1. Assemble Your Project Team and Begin with Your Project Scope

Bring maps of your site and key documents from your situation analysis. Put the scope of your project area on a card and put it at the far right-hand side or the top centre of your workspace (e.g., sticky tarps – see Box 3, large flip chart sheets, chalk board, etc.). You can also link your vision directly to the project scope. As shown in Figure 2, the Blue River team identified the Blue River watershed as the scope of its project.

Figure 2. Scope and Targets

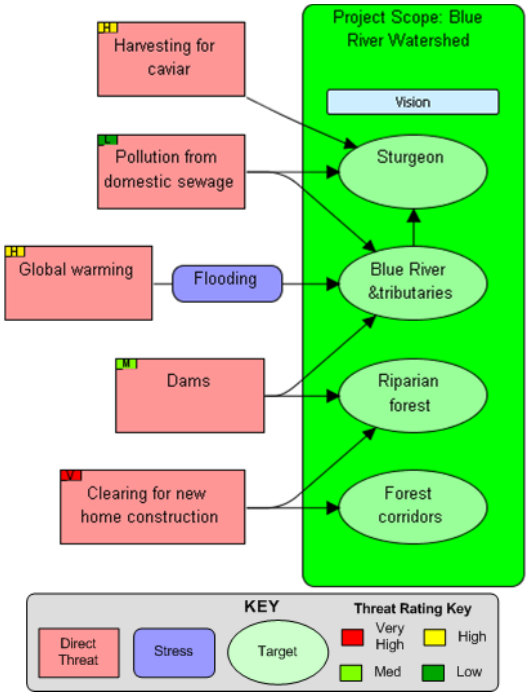


Step 2. Add Your Conservation Targets

Add your conservation and resource management targets to the scope area, since these targets are the species, habitats, and/or ecological communities that you have determined represent and encompass the full suite of biodiversity you are trying to conserve and/or manage at

your project area. Put each of your conservation targets on a card and arrange them vertically underneath the project scope card. If relevant, you may also want to show relationships between different targets. In our example the project team determined that sturgeon, Blue River and tributaries, riparian forest, and forest corridors were its conservation targets (see Figure 2) and that there was a strong relationship between the Blue River/tributaries and sturgeon populations.

Figure 3. Direct Threats and Targets



As shown in Figure 3, the project team from the Blue River watershed identified harvesting for caviar, pollution from domestic sewage, global warming, dams, and clearing for new home construction as the direct threats affecting their conservation targets.

For clarity, it may be necessary in some cases to include *stresses* that describe the biophysical impact of the threat on the biodiversity target (Box 5). In our example, the direct threat of global warming affects the Blue River and its tributaries by causing unanticipated changes in water levels.

Step 3. Place Your Direct Threats in the Model

At this point, you should identify one of the most important direct threats (Box 1) to your targets and write it on a card (you should use a different color card than the one used for your conservation targets). Put this card on your workspace and use arrows to connect it to the conservation targets that it directly affects. Repeat this process for the other main direct threats at your site – do not try to include every single threat though – just focus on the main ones. If you have already completed your situation analysis, simply add in the direct threats you identified during that process.

Before developing the rest of your model, we strongly encourage teams to rate their direct threats (Box 4). If you have a lot of threats influencing your conservation targets, then you may choose to develop the remainder of your conceptual model for only the highest priority threats.

Box 4. Threat Ratings

What Is a Threat Rating? A threat rating is a method for explicitly assessing the impacts of threats on conservation targets and the overall site. The method involves using a set of well-defined criteria – usually **scope**, **severity**, and **irreversibility** – to systematically assess the direct threats affecting a project's conservation targets

Why Are Threat Ratings Important?
Threat ratings help teams understand priority threats affecting their site and where, with limited resources, they might have the greatest impact.

How Do You Conduct a Threat Rating? Miradi offers step-by-step guidance for doing a threat rating and will automatically calculate roll-up values across ratings. See the references section at the end of this chapter for suggested readings for detailed written guidance.

The main resulting stress to the Blue River from these changes in water levels due to global warming is increased flooding. This stress is not inherently clear from the direct threat alone, so the project team chose to include the stress of flooding in their conceptual model (Figure 3). You should review the definitions in Box 5 and your direct threats to make sure that none of them are stresses. This will become particularly important when you rate or rank your direct threats – you need to be certain you are rating comparable factors. The *IUCN-CMP Unified Classifications of Direct Threats*[2] is a very useful tool for identifying and categorizing your direct threats and for helping you ensure that the direct threats you identify are not actually stresses. If you do not find your threat in this taxonomy, there is a good chance it is a stress or an indirect threat.

Box 5. Distinguishing Direct Threats and Stresses

Teams commonly confuse direct threats and stresses. While the difference may seem minor, it can affect threat ratings and subsequent strategy development. Here is some guidance to help you use the concepts consistently.

Direct threat: an action taken by a human that degrades a conservation or resource management target. A direct threat has at least one actor associated with it.
Example: residential development

Stress: biophysical impact of that action on the target. A single stress can be caused by multiple direct threats.
Example: habitat fragmentation

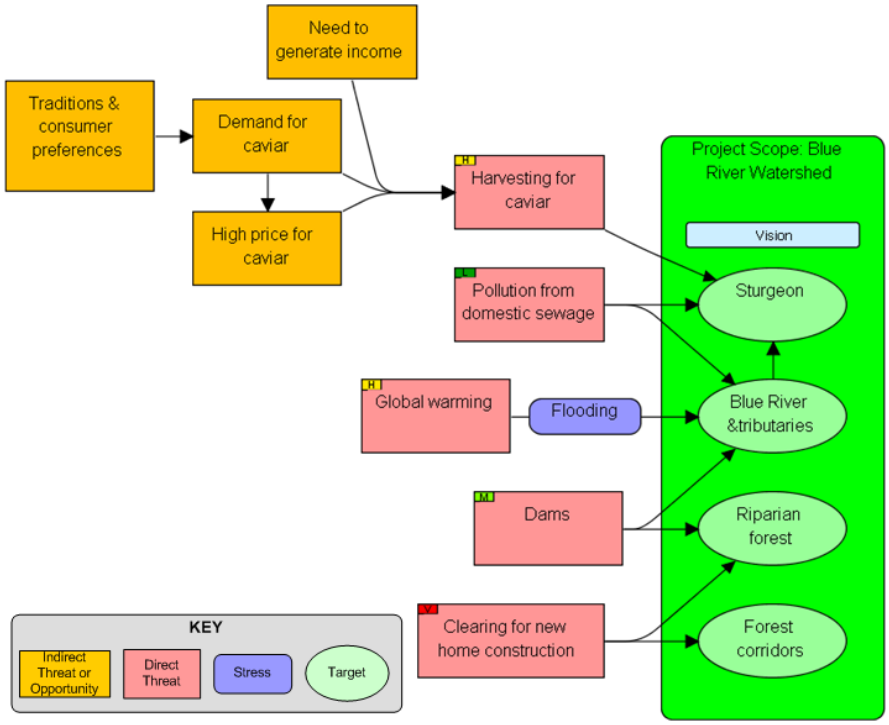
Direct Threat	Example Stress(es)	Example Target Affected
Dams	Altered stream flows Reduced reproductive success of fish	Rivers and streams Migratory fish
Unsustainable Logging	Erosion (Rivers and streams) Sedimentation Habitat destruction Habitat fragmentation	Rivers and streams Rivers and streams, Estuaries Forests Forests
Illegal Hunting	Altered population structure	Monkeys, Rhinos
Unsustainable Agriculture	Sedimentation Habitat destruction Habitat fragmentation	Rivers and streams, Estuaries Forests, Grasslands, Wetlands Forests, Grasslands, Wetlands
Climate change	Coral bleaching Rising sea levels Reduced rainfall	Coral reefs Shoreline habitat Forests, Grasslands, Deserts

[2] Available at: http://conservationmeasures.org/CMP/IUCN/Site_Page.cfm

Step 4. Add Indirect Threats and Opportunities

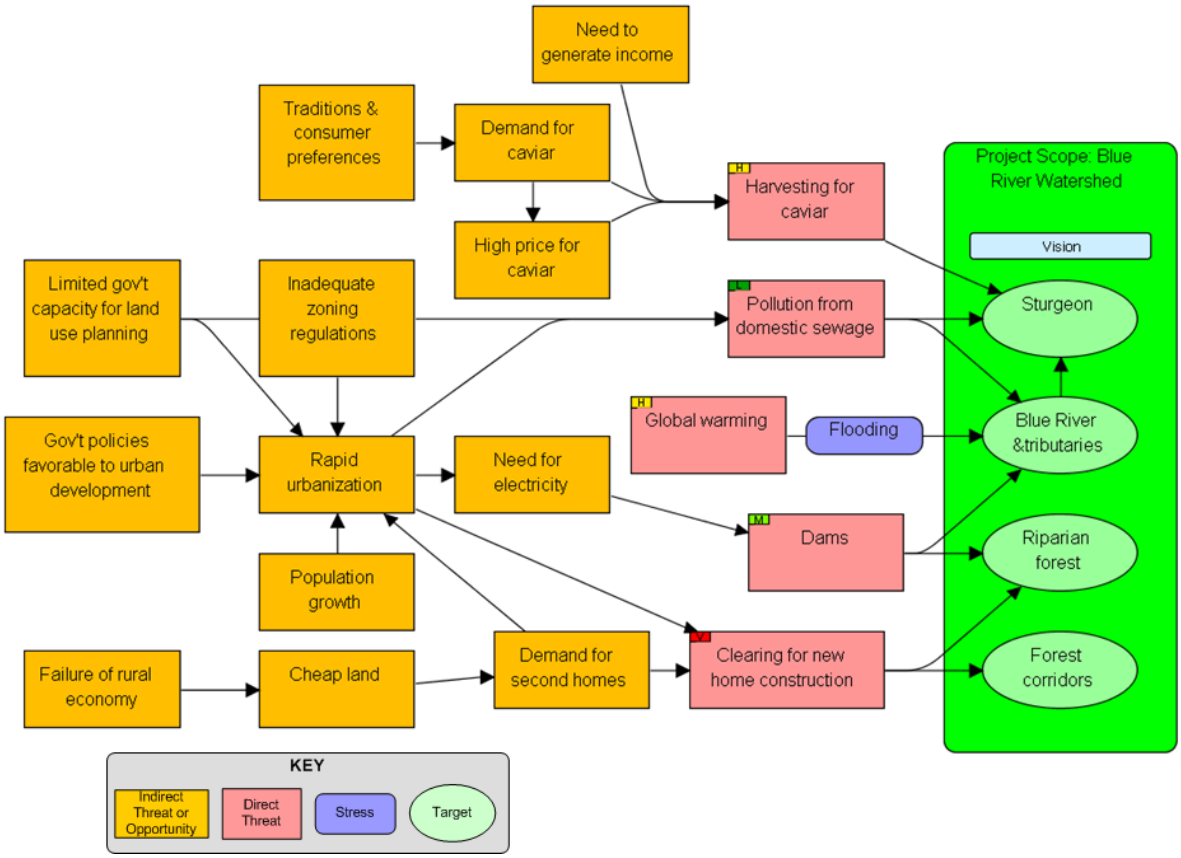
With your situation analysis, you have already done a lot of thinking about what factors (indirect threats and opportunities) are driving or leading to the direct threats at your site. These factors will include economic, political, institutional, social or cultural influences. At this point, you are now ready to add those other factors to your model. You should work from right to left to place each of the factors into your model. Using the Blue River example, team members asked themselves, "What is causing the direct threat of harvesting for caviar?" They identified several factors, including the demand for caviar, the high prices fetched by caviar sales, and a need for harvesters to generate income.

Figure 4. Indirect Factors Causing Caviar Harvesting



Once you identify initial indirect factors for all your direct threats, you should then ask what the root causes behind those indirect factors are and so on, working to the left until your model is reasonably complete. For example, Figure 4 shows that traditions and consumer preferences are what drive the demand for caviar. By asking themselves what the root causes could be behind each factor in the model, the Blue River team was able to identify the main indirect factors and opportunities driving each of their direct threats (see Figure 5). As you complete your conceptual model, be sure to draw the arrows to show the influence that each factor has on other factors. These arrows will help you later to identify critical factors and potential paths along which you could establish your project goals and objectives. If there are uncertainties, you can note them using question marks or footnotes (or text boxes and comments fields, if working in Miradi) and try to reconcile them later once more information becomes available.

Figure 5. Conceptual Model for the Blue River Watershed



Step 5. Complete Your Model

Figure 6. Completed Conceptual Model

As you work, you may have to rearrange, add, delete, or combine cards. Although the process may seem straightforward, you will find that you and your project team will have some lively debates about what should go where. You also may debate about how much detail to include. A general rule of thumb is to keep your model to 40 factor boxes total (including targets, direct threats, and indirect threats and opportunities). The actual number of boxes you use will highly depend on the complexity of your site. Although a conceptual model presents a reasonably complete picture of what is occurring at a site, it should present only the most relevant direct threats and contributing factors. A final word on conceptual models – do not strive for perfection; strive for a product that will help you and your project team members effectively communicate what is happening at your site and decide what to do in a strategic fashion.

Box 6. Conceptual Model Frequently Asked Questions (FAQs)

In constructing conceptual models, teams often face similar challenges and questions. There is no right or wrong way to develop a conceptual model, but the following FAQs and tips should help you develop a useful model.

1. **What is the right level of detail to include in my conceptual model?**
   You should include as much detail as will be useful for you and your team, but not so much that you end up with an overly complex mess – what we commonly term a "spaghetti mess"! A useful rule of thumb is to keep the orange factor boxes (indirect threats and opportunities) to 25 or fewer.
2. **When do I lump/split threats?**
   Generally, you can lump threats when the actors behind them are the same, the underlying causes behind the threats are the same, and the strategies you would use to address those underlying causes are the same. When one or more of these conditions does not exist, you should consider splitting the threat. For example, in some situations you might lump trawling, long line fishing, and blast fishing under "destructive fishing practices" – especially if they are conducted by the same type of fishers. Conversely, you may have a situation where overfishing is a threat, but there are two main actors: commercial fishing fleets and a few local fishers. Commercial fishing fleets are responding to international market demands and government policies encouraging overfishing. The local fishers are fishing to meet subsistence needs and sell some fish within their village. In this case, it is probably wise to split this threat into "unsustainable commercial fishing" and "small-scale subsistence fishing."
3. **Should I only include major threats?**
   Yes! The biodiversity at your site is likely affected by a number of different threats, but when constructing a conceptual model you should restrict your model to only the most pressing and severe direct threats, in order to focus your attention and work on where it is needed most.
4. **If I cannot or will not address a threat, can I leave it out of my model?**
   No – especially if that threat is an important threat to the site. Your model should present a picture of the current situation at your site. You should use other planning tools (e.g., strategy rankings) to help you identify what you will or will not address. Your conceptual model can help you determine where there are gaps. So, if you identify a priority threat that you cannot address (or that no one else is currently addressing), you should include it in your model as a reminder to at least monitor the threat and even consider encouraging others to address it.
5. **I am a researcher – Is it useful for me to develop a conceptual model even though I am not implementing management strategies?**
   Yes! Conceptual models can help researchers identify important research questions that will help them provide critical information to managers – thus ensuring that their research has management implications. For example, your model might identify that managers and policy makers lack good scientific information about sensitivity of beach and dune habitats and, as a result, they are not setting adequate restrictions on tourism. You might then want to tailor your research questions to focus on tourism impacts on wildlife and provide critical data to help managers determine appropriate visitor limits and identify nesting areas that should be closed or intensively managed during nesting season.

Step 6. Document and Discuss Your Work

At the end of the meeting, capture what you have done in Miradi, a computer flow-chart program, on paper, or via a photo (see Box 2). You may also want to develop brief text paragraphs describing each part of the model. These will provide detail that will be useful for describing your model to others who did not participate, as well as for formally documenting group discussions and decisions.

Step 7. Use and Revise Your Conceptual Model

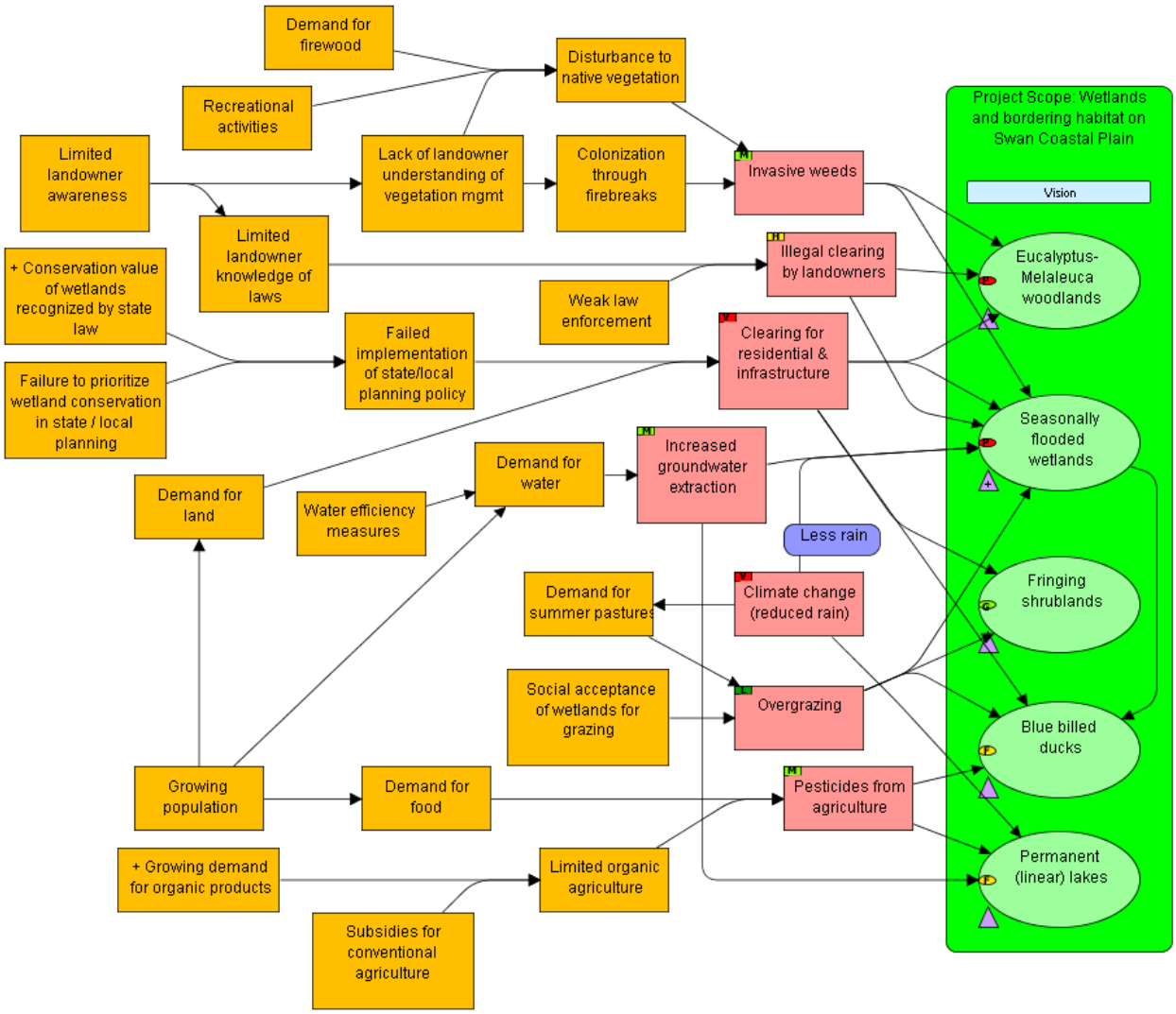
A conceptual model is one of the most helpful and versatile tools you will use for your project planning. The process of building a conceptual model with your project team helps all team members explicitly state their assumptions about what is happening at your site and collectively come to an understanding about your site and what you need to do as a team. The model itself is a useful communications tool for your project team, as well as for people outside of your project. It provides a quick, easy-to-understand overview of your project site and the rationale for your project's goals, objectives, and strategies. A conceptual model also provides you with the building blocks for developing results chains – a tool that helps make explicit the logical sequences that link your strategies to your targets, in a more detailed fashion than is realistically possible with a conceptual model (see FOS Guidance on Results Chains). Ideally, your conceptual model should reflect information from your situation analysis, as well as input from key stakeholders. At a minimum, your project team should consult with stakeholders and other experts and then reconvene to discuss how you might change your model based on this outside input. Additionally, you should revisit your conceptual model at least once a year to determine if there are any new threats or factors (or ones that you may have missed in your earlier model) that are now affecting your targets. If so, you will need to make decisions about if and how you will address them.

How Project Teams Have Used Conceptual Models

1. Provide an Overview of the Situation in the Project Site

Figure 7 provides an example of a conceptual model modified from work done by a WWF Australia team working on wetlands in the Swan Coastal Plain. This model provides a quick overview of the situation affecting eucalyptus-melaleuca woodlands, seasonally flooded wetlands, fringing shrublands, blue-billed ducks, and permanent (linear) lakes (the six targets this team is working to conserve). One can quickly see that there are seven major direct threats to these targets. This conceptual model provides a simple overview that allows one to quickly trace the causes of a direct threat (e.g., illegal clearing by landowners) to the indirect factors driving it (e.g., weak law enforcement and a limited landowner understanding of laws). For each target and direct threat, a conceptual model provides an easy way to quickly view the situation at the site and develop an understanding of the main drivers – positive and negative – behind the direct threats.

Figure 7. Conceptual Model for the Swan Coastal Plain

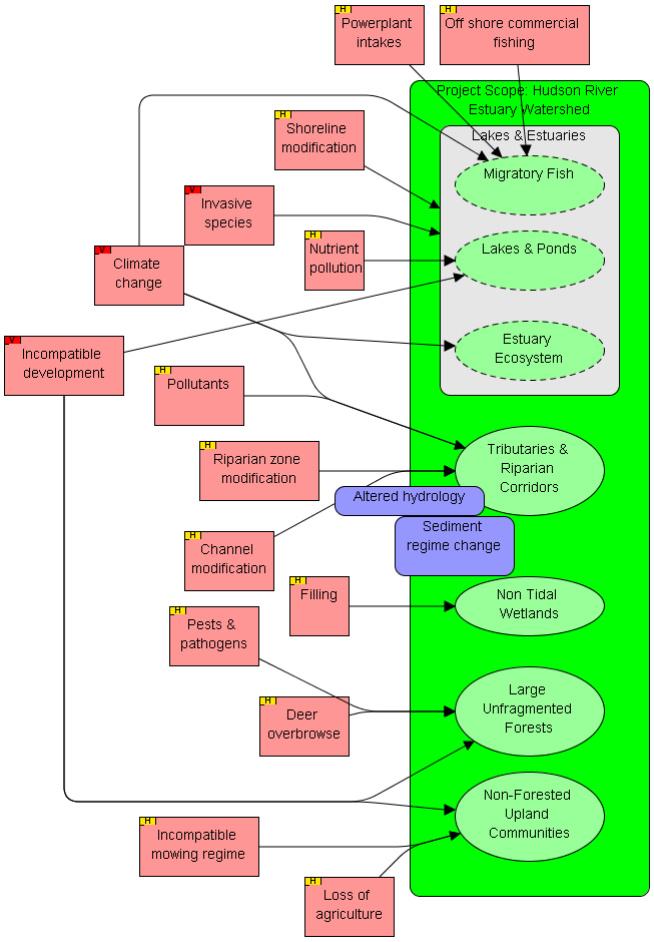


Modified from WWF Australia Wetland Watch Project (March 2007)

2. Provide a Framework for Strategic Planning

FOS and The Nature Conservancy (TNC) facilitated a multi-stakeholder planning process for the Hudson River Valley in Eastern New York State. TNC wanted to start working in the area, but it was unsure what was already taking place and what would be the most strategic actions for TNC, in collaboration with others, to take. As a first step, the group (which included approximately 70 people from 25 different organizations) built a general model for the Hudson River Estuary Watershed, with a geographic scope consisting of the entire extent of the watershed that drains into the tidal portion of the Hudson River, from the Troy dam south to the New York Harbor. A simplified version of this model, illustrating only conservation targets and their direct threats, is shown in Figure 8.

Figure 8. Priority Direct Threats and Conservation Targets for the Hudson River Estuary Watershed

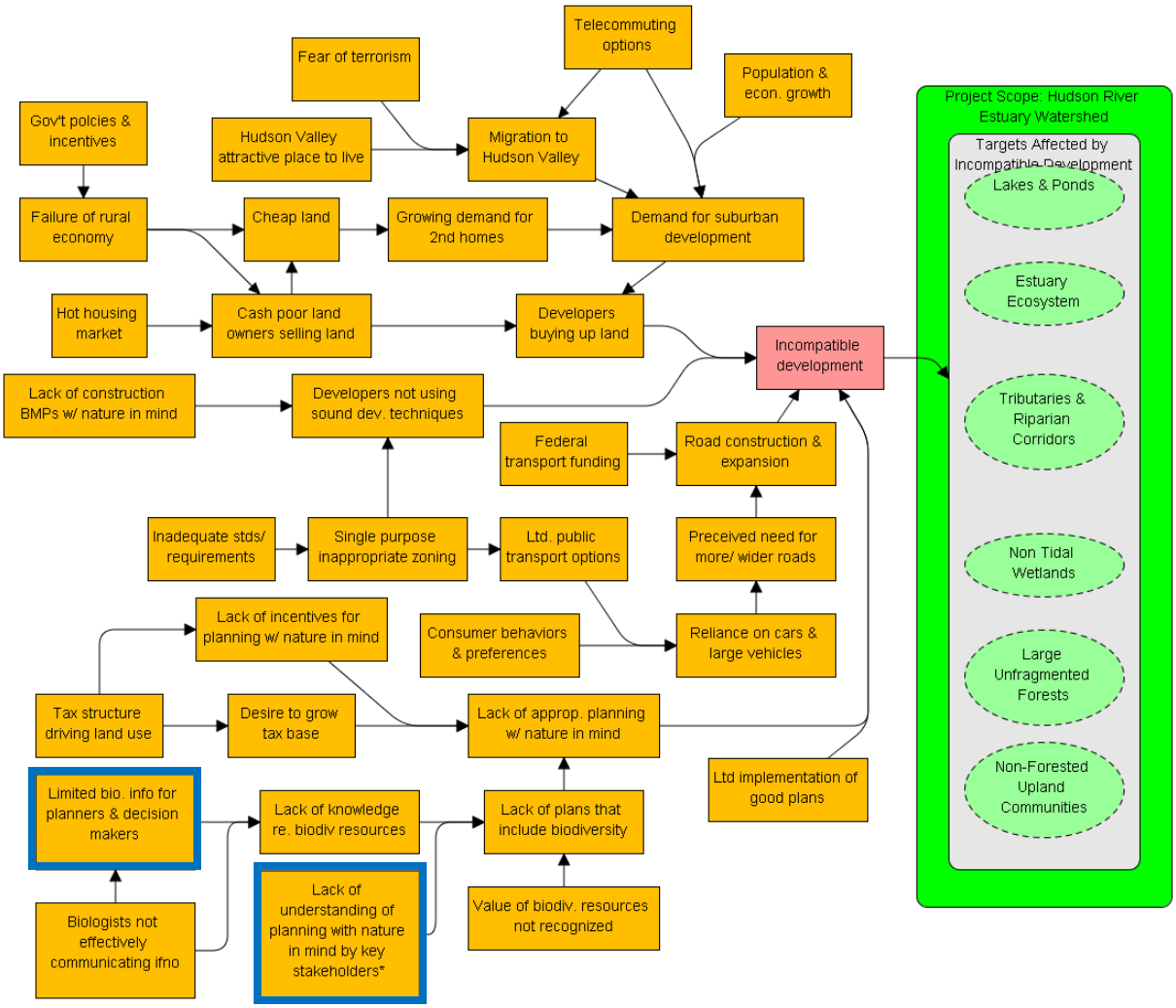


The team formed working groups for highly ranked threats, and those groups then developed more detailed conceptual models around those threats. Figure 9 is a conceptual model developed by a group concerned about threats related to incompatible development. You can see that the team identified numerous factors leading to incompatible development. Not all conceptual models need to or should be this complex, but this was the level of detail that this team found helpful.

In developing this model, the team was able to examine the various indirect threats and opportunities, determine which were the most critical, and then asses what the team was best positioned to do. The team concluded they should work on issues related to planning – factors comprising the bottom third of the model. More specifically, the team chose two factors (outlined in blue in Figure 9) on which to intervene:

1) Limited and/or inaccessible biological information for planners and decision makers; and
2) Lack of understanding of planning with nature in mind (by various stakeholders).

Figure 9. Conceptual Model and Highlighted Strategies for the Direct Threat of Incompatible Development



Based on this decision, the team developed a series of PowerPoint presentations aimed at planning audiences that provide these audiences the information, tools, and resources planners need to get critical biological data or information and to use that information to help them develop plans that better consider nature. They intended to pilot these training materials through a variety of venues, including state and regional planning meetings and online college courses. In March 2007, the team revisited their conceptual model and noted new areas where they could possibly work, as well as identified some threats that were missing. For example, "mega" development, such as airport expansion and interstate highway construction, is on the rise and is something this group recognized it needs to add to the model. Over time, the group can continue to revise the model and use it to identify other actions they could take to ultimately counter the incompatible development threat.

As illustrated above, conceptual models form the foundation for the subsequent development of an action plan by explicitly narrowing down the universe of what you will try to address with

your project. The TNC group acknowledged the broader world but was very clear about what part of that world they would try to influence. Conceptual models also provide a framework to help you specify in more detail how you think your strategies will influence your project site (see FOS guidance on results chains, www.fosonline.org). They also identify some of the main factors and targets for which you will develop objectives and goals. All of these components (assumptions, objectives, and goals) are key inputs for your action plan.

3. Provide a Basis for Monitoring and Evaluation (M&E)

Conceptual models and, in particular, results chains (a tool that builds off of conceptual models) help teams narrow down the variables they could monitor. Instead of choosing from a universe of potential indicators, a conceptual model provides a framework for narrowing down the variables of interest.

For example, staff from the World Wildlife Fund (WWF) developed a conceptual model for their program in the Mesoamerican Reef (MAR) – a marine area that stretches from the Yucatan Peninsula to the Bay Islands of Honduras and includes the Belize Barrier Reef and the Caribbean coast of Guatemala. As shown by the portion of the conceptual model outlined in blue (Figure 10), a very high threat to the MAR is effluent pollution, particularly agrochemicals from large scale commercial agriculture in Guatemala and Honduras. WWF is working with several large agricultural companies to promote the adoption of best management practices designed to reduce agrochemical runoff into streams and rivers and, ultimately, into the waters of the MAR.

The WWF team worked off of their conceptual model to develop a theory of change for their strategy to work with large agricultural companies on runoff issues. Figure 11 presents a results chain that specifies this theory of change. As the results chain illustrates, WWF believes that companies that have received information about water quality and bioaccumulation of toxins in the MAR will voluntarily agree to participate in a program to reduce agrochemical use. In turn, WWF believes these companies will then agree to and implement the recommended best management practices, which will lead to reduced effluent pollution affecting the MAR.

To measure the effectiveness of this strategy, WWF is monitoring the indicators shown in blue, which are linked directly to individual results from the chain. These indicators include the availability of information about what pesticides, herbicides and fertilizers to reduce, the number of agreements signed with agricultural companies, the number of companies implementing each best management practice, and ultimately reduction in total agrochemical toxicity, the amount of water and fertilizer used, and the percent of soil organic matter. WWF is also keeping an eye on the extent to which other companies adopt these best management practices, which save costs as well as reduce pollution.

Figure 10. WWF MAR Program Conceptual Model

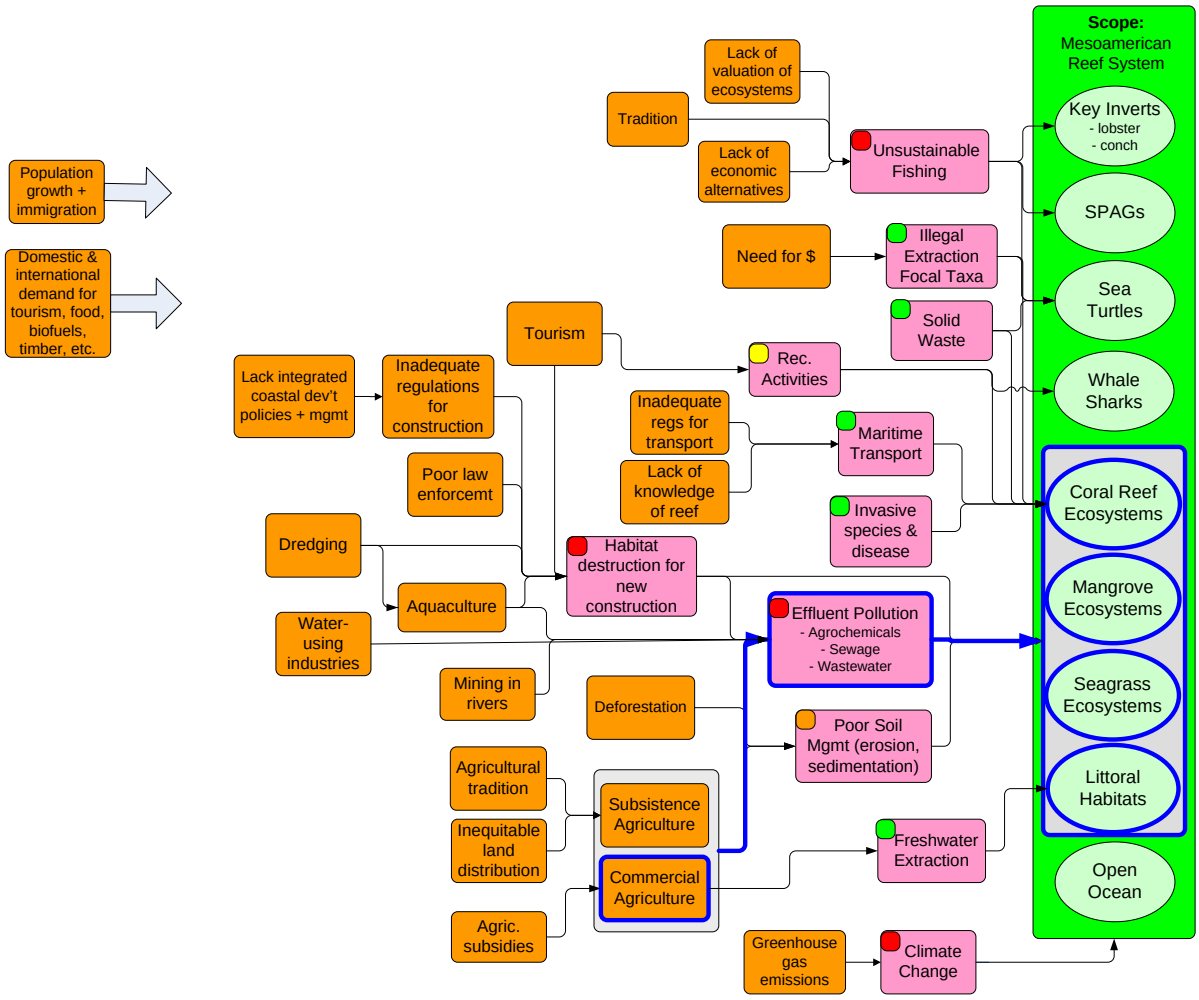
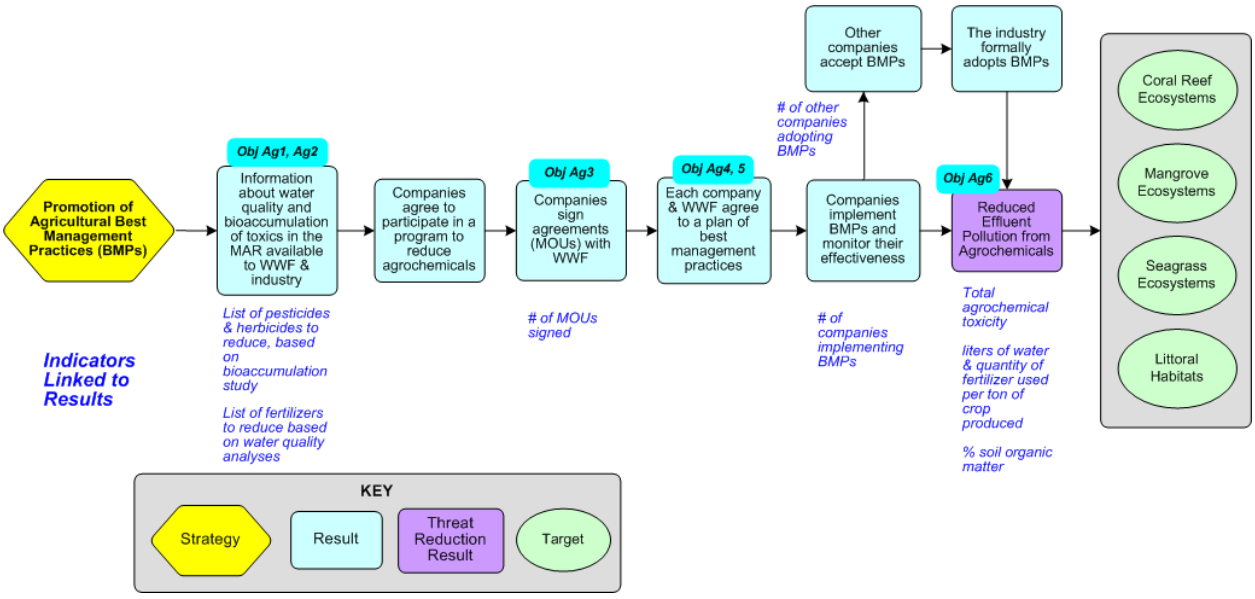


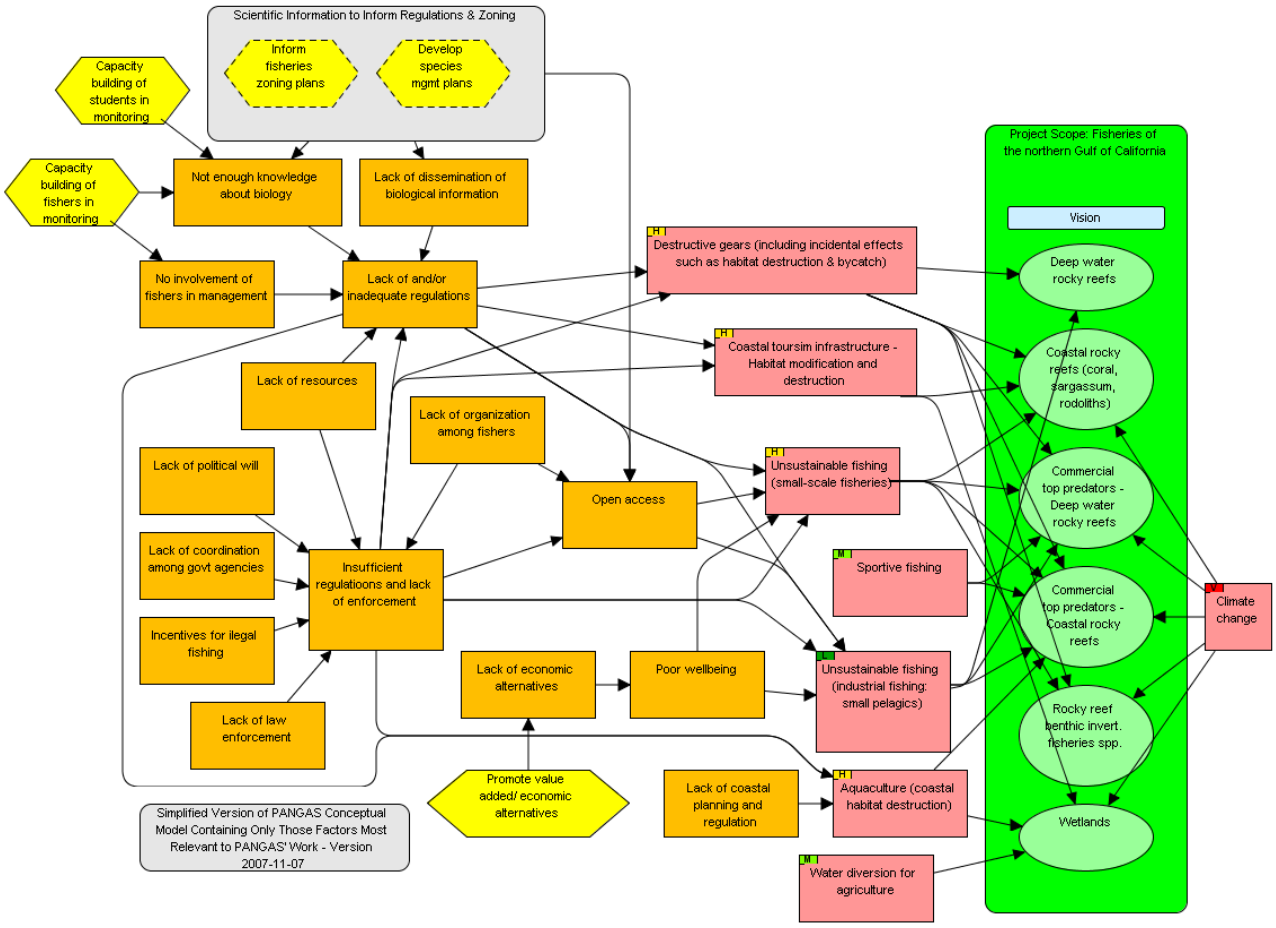
Figure 11. Results Chain for Strategy to Promote Agricultural Best Management Practices



4. Communicate With and Engage Donors, Partners, and Stakeholders

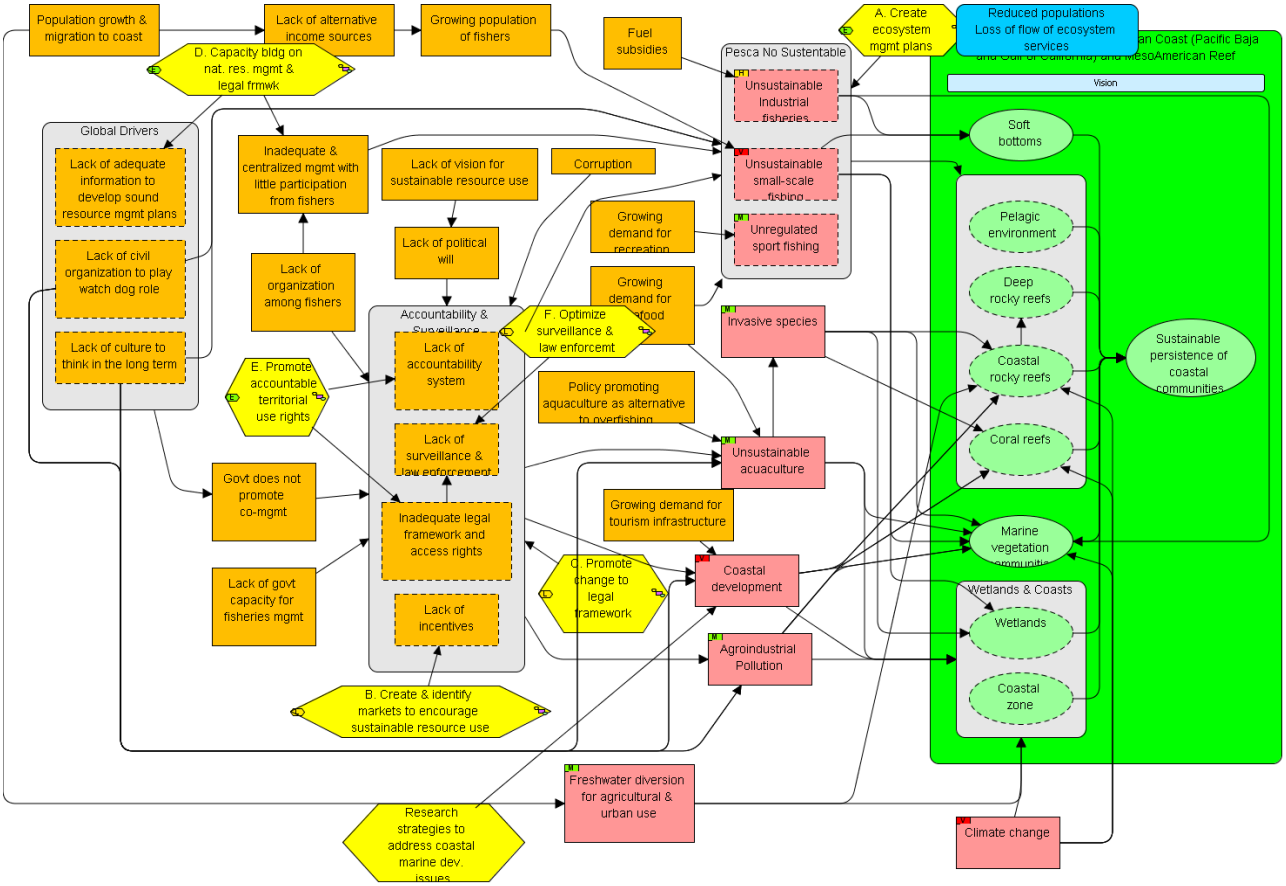
It is common to hear those who develop conceptual models remark with surprise that the process of developing a conceptual model and the model itself improve partners' ability to communicate with one another and other stakeholders. The models help them easily visualize how their individual projects act together to affect the entire site within which they are working. Recently, in a workshop with Comunidad and Biodiversidad (COBI), a nonprofit working in Mexico, a member of the PANGAS project commented how helpful COBI's conceptual model was for illustrating the overlap between COBI and PANGAS and the mutual factors they are influencing in the region (Figure 12 and Figure 13).

Figure 12. PANGAS Conceptual Model with Strategies



In particular, he noted that by looking at each institution's conceptual model, one could identify the different strategies used to reach similar conservation targets and how these strategies reflected the varied missions of each institution. For instance, PANGAS' strategies focused on research to inform management decisions (Figure 12), while COBI's focused on territorial use rights, functioning legal frameworks, effective surveillance, and viable markets – important elements of ecologically and economically viable no-take zones (Figure 13). The PANGAS representative remarked that this layering of different institutions' conceptual models facilitated a robust understanding of the overall conservation efforts in the region and could help institutions identify opportunities for collaboration as well as gaps that need to be filled.

Figure 13. COBI Conceptual Model with Strategies



References

Conceptual Models

CMP 2007. *Open Standards for the Practice of Conservation, version 2.0*. Conservation Measures Partnership. Available at: http://conservationmeasures.org/CMP/Site_Docs/CMP_Open_Standards_Version_2.0.pdf.

Margoluis, Richard, and Nick Salafsky. 1998. *Measures of Success: Designing, Managing, and Monitoring Conservation and Development Projects*. Chapter 6. Island Press, Washington, D.C.

Margoluis, Richard, Caroline Stem, Nick Salafsky, and Marcia Brown. 2009. Using conceptual models as a planning and evaluation tool in conservation. Evaluation and Program Planning 32, 138–147

Threat Classification and Rating:

Foundations of Success. 2008. Conceptualizing and Planning Conservation Projects and Programs: A Training Manual. Pp. 44-54. Foundations of Success, Bethesda, Maryland,

Margoluis, R. and N. Salafsky. 2001. *Is Our Project Succeeding? A Guide to Threat Reduction Assessment for Conservation.* Biodiversity Support Program, Washington, DC.

Salafsky, Nick, Daniel Salzer, Alison J. Stattersfield, Craig Hilton-Taylor, Rachel Neugarten, Stuart H. M. Butchart, Ben Collen, Neil Cox, Lawrence L. Master, Sheila O'Connor, and David Wilkie. 2008. *A Standard Lexicon for Biodiversity Conservation: Unified Classifications of Threats and Actions*. Conservation Biology, 22: 897-911. Available at: http://www.fosonline.org/Site_Page.cfm?PageID=16.

Salafsky, Nick, Daniel Salzer, Guillermo Placci, Alison J. Stattersfield, Stuart H. M. Butchart, Caroline Stem, Rachel Neugarten, and Marcia Brown. 2007. *Measuring Threat Magnitude: A Comparison of Existing Methods and Recommendations for a Standard System.* Draft paper.

TNC, 2007. Guidance for Step 4: Identify Critical Threats. In *Conservation Action Planning Handbook: Developing Strategies, Taking Action and Measuring Success at Any Scale.* The Nature Conservancy, Arlington, VA. Available from: http://conserveonline.org/workspaces/cbdgateway/cap/resources/2/1/handbook