Threats Landscapes

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1. What is the tool?

Threats Landscapes (or *Human Activities Landscapes*): A process for generating maps that provide information about the spatial distribution and (relative?) impact of human activities that may threaten species. The threats can be species-specific or general to the landscape.

A primary reason for creating Threats Landscapes is to guide where to implement conservation interventions by providing spatial information on the relative importance of threats, and indicating where they are most severe within the landscape.

This tool provides you with a graphical representation of the effects of various threats occurring across your landscape. For example, in the Guatemala landscape this process clearly illustrated the effects of hunting on wildlife.

2. What will this tool do for your project (or what conservation challenges will using this tool help you solve)?

Direct benefits

♦ It provides relative information about the severity, location and intensity of the human activities [threats] across the landscape. This information can help focus conservation actions within the landscape to abate specific, priority threats.

♦ It allows us to better understand the impacts of individual threats, both on individual target species and on overall habitat quality.

♦ It forces us to think about how human activities occurring *outside* the landscape (sometimes referred to as "sources" of threats) affect what is occurring inside the landscape.

♦ It can be a powerful visual communication tool for showing how humans impact the landscape (e.g., Lao Elephants).

♦ It provides an understanding of the range of human activities that are threats to species and their habitats, which is essential to developing project conceptual models and monitoring frameworks.

♦ It can help us to predict the distribution and intensity of future threats by helping us to understand the present Threats Landscape.

♦ Understanding how people use the landscape can be seen as a proxy for their perceived value of the landscape.

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Indirect benefits

♦ It requires you to compile a standard set of geospatial information about threats and human activities at a given point in time. These data can be used for many things, including as the baseline for monitoring threats across the landscape in the future.

♦ The process provides links to, and opportunities to interact with, local stakeholders.

♦ The process helps point out gaps in knowledge and highlights where new research may be needed.

Material products

♦ Maps of human activities/threats across the landscape.

♦ Models describing the step by step process of analysis used to map threats across the landscape.

♦ Compiled database of GIS data related to human activities and threats.

♦ (Potentially,) written documents describing the data and process of modeling.

3. What will this tool NOT do for your Project?

♦ In many cases, the tool will not tell you where you should work, though it can inform and guide you where to work (especially if you use the information generated to develop Conservation Landscapes).

♦ It does not provide spatial information on where *indirect* threats are occurring (e.g., lack of law enforcement may be an important indirect threat – root cause – but mapping human activities will not tell you where law enforcement does and does not occur across the landscape).

♦ In some cases the tool may simply validate your knowledge of the landscape, and thus may not add new insights as to the distribution and severity of threats to species and

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their habitats (e.g., a human activities map is often simply a map of what we already know about the distribution and impact of human activities on wildlife). Using a participatory process to determine the threats in your landscape can often be very informative!

♦ As the additive or cumulative effect of overlapping human activities is poorly understood, this tool may not clarify the impact of multiple activities.

♦ When threats are highly dynamic, these maps can become quickly outdated unless updated frequently (e.g., fire incidence maps in the Laguna del Tigre in Guatemala or Ruaha, Tanzania).

♦ This tool in itself cannot help address threats that are politically charged/insensitive/etc., although it can certainly illuminate the impact of such threats.

The Landscape Species Approach

The Landscape Species Approach is a wildlife-based strategy to define ecologically meaningful conservation areas, recognizing the complexity of the biological and social landscape in which conservation occurs (see **Living Landscapes Bulletin 2**). The Landscape Species Approach depends on selecting a set of species with complementary ecological needs (a suite of Landscape Species which collectively represents the biodiversity of the landscape as a whole) (see **Living Landscapes Bulletin 3**). The goal of the approach is for conservation of the suite of Landscape Species to lead to conservation of not only those species, but of all biodiversity in the landscape.

4. What are the requisites for using this tool?

Project type and stage of development

- At the initial stages of the project, this process helps you to better understand the relative distribution of threats before taking action.

- Repeating this process throughout the life a project is one way to visually track changes in the severity of threats and their distribution across the landscape.

Information and data

GIS layers [these layers need to be representative for seascapes and landscapes].
Examples of needed layers are:

- Roads, navigable rivers, railroads and other access routes
- Land cover
- Human population density
- Topographic or bathymetry
- Landownership (if possible)
- Land use, management zones, jurisdictions
- Cities, towns and other settlements, urban centers
- Infrastructure
- Natural resource extraction/exploitation/ use

Field examples

The Threats Landscape for elephants in *Laos* was useful as a visual communication tool for showing how humans impact the landscape.

The geospatial information about human activities that the process generated for *Madidi Landscape* in Bolivia were used as the baseline for monitoring how threats change across the landscape into the future.

Fire incidence maps in the *Laguna del Tigre* in Guatemala and *Ruaha, Tanzania* needed to be updated frequently so as not to become outdated, illustrating the importance of frequent mapping for dynamic human activities.

Technical staff skills

- Advanced GIS skills

- Modeling background

- Social science skills (particularly knowledge of land use practices)

- Wildlife ecology background (ability to translate land use practices to impacts on wildlife and habitat)

- Also recommended:
  - A socio-economic knowledge of communities

LLP tools

- It is useful to have undertaken a Conceptual Modeling exercise (at least a preliminary one) to identify threats and conservation targets in your landscape. (The latter could be done using the Landscape Species Selection tool.)

- Participatory Threats Assessment- while this step is optional, it can help inform your understanding of the landscape and allow you to map threats that your team has no previous knowledge about.

- Landscape Species Selection- this is not a necessary prerequisite, but if you have not used this tool to select targets, you need to have selected targets by some other means before beginning (you need to know what your species/habitats are so that you can identify threats to those species/habitats).

- Biological Landscapes (optional).

5. How to use the tool:

- Read **LLP Technical Manual 6**.

- Read: Gosia Bryja. 2006. Report on Threats Landscapes for Lao PDR.

- Read the literature on human activity mapping.

6. Who should be involved in using the tool, and why?

For the map design- Site personnel:
♦ GIS-proficient staff;
♦ Project manager;
♦ Species experts/people with knowledge of the landscape;
♦ People who know the local culture and local people.

For overall help with the process:
♦ WCS/NY Living Landscapes technical staff, if necessary

For review and buy-in:
♦ Project managers, linking to other:
♦ Organizations,
♦ Agencies, and
♦ Stakeholders.

For management and policy decisions and review of technical human activity maps/models-
♦ Those collaborators and stakeholders who are involved in the decision-making processes.

7. How long will it take?

If you have data compiled and ready to use:
♦ Simple modeling of current threats - 2 weeks
♦ Modeling of future threats scenarios - 2 months (this is optional, it provides a more rigorous look at how threats will likely influence your landscape over time.)

If you do not have the software, the GIS layers, and/or the staff time available, you can opt to undertake a Participatory Threats Assessment Workshop (see LLP Technical Manual 1).

If you do not have data compiled, it will take a dedicated staff person approximately 4-6 months to generate the required GIS layers.

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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 so 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 use 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 conservation strategies, and develop monitoring frameworks.

We describe the application of these tools in a series of brief technical manuals which are available by email from llp@wcs.org.

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