

Landscape Species Selection



© WCS/Pere Comas

1. What is the tool?

Landscape Species Selection: A structured approach for selecting conservation targets (Landscape Species) that are chosen to provide a project with a useful set of focal species around which to do site-based conservation planning. Selecting Landscape Species as the focus of your conservation efforts is based on the following underlying assumption: if you meet the needs of this chosen suite of species, you can be confident that you will have gone a long way towards conserving the overall biodiversity in your landscape.

The characteristics of Landscape Species are that they:

- ◆ require large spaces
- ◆ are socio-economically (and/or culturally) significant
- ◆ are vulnerable to human uses and threats
- ◆ require heterogeneity (both of habitat and management)
- ◆ perform important ecological functions in the landscape

Landscape Species selection compiles a suite of species which represents key habitats and is critically impacted by human activities and that, if conserved, would help ensure conservation of all other species in the landscape.

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

Direct benefits

- ◆ By focusing on a whole suite of species, rather than on one focal species, you can move from a single-species approach to a landscape-based approach; considering the key human activities that impact wildlife, important habitats, and management zones during your selection process.
- ◆ This process increases knowledge, understanding, and allows for the analysis of all the key biological and threats components of the landscape. It encourages a systematic evaluation of these components, and clarifies necessary conservation actions.
- ◆ It provides a tangible foundation for monitoring whether or not your conservation actions achieve the desired result (conservation of wildlife and their habitat).
- ◆ It provides a tangible set of targets (the suite of Landscape Species) that represent the overall health and function of a large landscape/ecosystem.

Tim Bean
Pete Coppolillo
Etienne Delattre
Rony Garcia
Hugo Rainey
Sam Strindberg
and the Living Landscapes Program

- ◆ It provides an efficient set of conservation targets that, together, represent the habitats that your conservation actions will be designed to conserve, and the threats that you hope to abate, within your landscape. By using this suite of targets as a starting point, you can design a set of conservation actions which addresses all major threats while considering all habitat types and management regimes within your landscape.
- ◆ It provides a framework that explicitly maintains wildlife as its focus, as opposed to concentrating on broader levels of organization or on other types of targets. In Laos, WCS staff were able to talk about wildlife with their government counterparts rather than just discussing poverty alleviation as had previously been the case.

Indirect benefits

- ◆ It helps you to recognize the way in which your site fits within the larger, range-wide, context of biodiversity conservation.
- ◆ It potentially raises awareness of less charismatic species which may be particularly vulnerable or ecologically important to your landscape. Sometimes the selection process leads to the selection of unexpected species that may have been otherwise overlooked, but which are critical indicators of the overall health of the landscapes which they represent. WCS field sites in Guatemala and Laos discovered that they needed to include a turtle and catfish species, respectively, to represent their rivers and streams.
- ◆ It helps to ensure that no habitat type is neglected by your conservation actions, since species which may not have been an original focus will be added to ensure that all habitat types are represented.
- ◆ It provides a systematic database of information about a range of species in your landscape. The process requires you to gather information about the wide range of species that live in your landscape and this information can then be stored for later reference.

The selection process requires you to have this information for not only your chosen species, but for all species considered during the process; and this data can be an invaluable resource as you undertake conservation at your site.

- ◆ It creates an opportunity to engage various partners, e.g. governments and donors, by offering a framework for participation and involvement of stakeholders in the project. Many WCS sites (e.g., in Laos, Belize, Bolivia, and Thailand) found that by involving local partners in this process they were able to engage stakeholders in their conservation efforts from the earliest stages of design. When outside participants were very involved in the process, they found that this gave WCS a platform from which to talk about wildlife with people, making it a great outreach tool.
- ◆ It facilitates monitoring of conservation actions across your landscape. Field Example: In Thailand the selection process was directly tied to the development of a **monitoring framework** to measure effectiveness. Using Landscape Species as monitoring targets narrows down the number of entities that you might want to monitor.
- ◆ It forces you to become familiar with the literature on the species/ecology of your site.

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.



Material products

- ◆ A list of landscape species is the primary product generated; but also
- ◆ data on the human activities and habitat types within your landscape; and
- ◆ additional information on:
 - ◆ the number of species affected by each human activity,
 - ◆ the number of species using each habitat (and level of use),
 - ◆ the relative impact of human activities on each species, and
 - ◆ the ranking of human activities with respect to the degree of impact on all species in the landscape.

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

- ◆ It may not make all stakeholders happy.
- ◆ It may not be useful in planning monitoring if chosen species are difficult to monitor; however, the process can be useful nonetheless because it can suggest that you need bigger reserves, or more inter-connection, etc.
- ◆ It does not lead you to interventions or tell you about interventions to implement - that is a separate process.

- ◆ It does not guide you on ultimate aim: For example, if you have limited resources should you choose to work with those species where you are most likely able to intervene easily and successfully or the most threatened species?
- ◆ This tool is appropriate for site-based projects, not for projects where you are focused on a single species! (If your project is focused on only one species, this tool is irrelevant.)
- ◆ Landscape species selection is a process for selecting umbrella species, but the process will inevitably leave gaps that need to be filled with special elements (e.g., need to consider endangered or endemic species, etc.).
- ◆ The approach cannot ensure complete conservation of migratory species; migratory species may make poorer umbrella species or indicators of conservation success because of mortality occurring outside the focal landscape.

Field examples

WCS scientists working in the *Huai Kha Khaeng-Thung Yai (HKK-TY) Landscape* of the Western Forest Complex of Thailand found this process very useful. In their landscape, the selection of species was straightforward, as the chosen species were relatively easy to monitor in order to measure the effectiveness of conservation activities, displayed the five characteristics of a Landscape Species to a large degree and clearly represented the various habitats/detrimental human activities present: tiger (all terrestrial habitats except riverine/poaching of prey), hornbill (upland forest/logging), elephant (all terrestrial habitats except dry dipterocarp forest/poaching for ivory) and otter (aquatic systems/water quality & over-fishing). Furthermore, the Government of Thailand is very interested in the process, its results, and potential application to other landscapes within the country.

The Laikipia Wild Dog Project in Kenya is focused on conserving Wild Dogs across the landscape, so this tool would not be appropriate for that project (as the target species has been pre-selected); alternatively, if the *Ruaha Landscape* in Tanzania is the focus (due in some part to the presence of wild dogs) then even if wild dogs were not chosen in the selection, you would proceed with the application of the Landscape Species Approach.

4. What are the requisites for using this tool?

Project type and stage of development

- ♦ It is probably not useful for very focused, single-species, single-habitat projects, research focused on a single key issue, or policy-based projects (e.g., turtle beaches, maleo nests).
- ♦ This process is very specifically tailored for use by site-based conservation projects (rather than advocacy, education, policy, or national level planning). That said, wildlife as conservation targets can guide national level planning (as was done for country planning in the Democratic Republic of Congo).
- ♦ This process is useful and valid at any stage, although you should have an overall goal and roughly defined landscape selected before beginning. It is most useful if done at the beginning of a project or periodically as the landscapes and/or human activities change, but it can be carried out at any time.

Information and data

For the quick option (this option was used by WCS/Thailand):

- ♦ A list of the habitat types present in your landscape
- ♦ A general idea of the key human activities that negatively impact species in your landscape
- ♦ A list of species in the landscape, and
 - ♦ their basic biological characteristics
 - ♦ how their biology interacts with human activities and habitats.

For the more complete option (in addition to the above):

- ♦ Knowledge of the species' socio-economic and cultural value
- ♦ The Landscape Species Selection Software

Technical staff skills

- ♦ No special technical skills are needed; once you have gathered the information listed above, the selection software (especially in conjunction with the technical manual) is very simple to use.
- ♦ You need species experts who know something about species in the context of your landscape (i.e., how human activities may affect the species).
- ♦ You need *a willingness to make simplifying assumptions*.

LLP tools

- ♦ Human Activities Assessment can precede it.
- ♦ Ideally done in conjunction with Conceptual Model development.
- ♦ LLP's Landscape Species Selection Software.

5. How to use the tool:

View the related LLP Technical Manuals, Bulletins, papers, case studies, and other documents:

- ♦ LLP Technical Manual 5.
- ♦ LLP Bulletins 1-4.
- ♦ Pattanavibool, A. and P. Manopawitr. 2005. Report on 'Living Landscapes Program Workshop for the Huai Kha Khaeng-Thung Yai World Heritage Site, Thailand'.



© WCS/David Wilkie

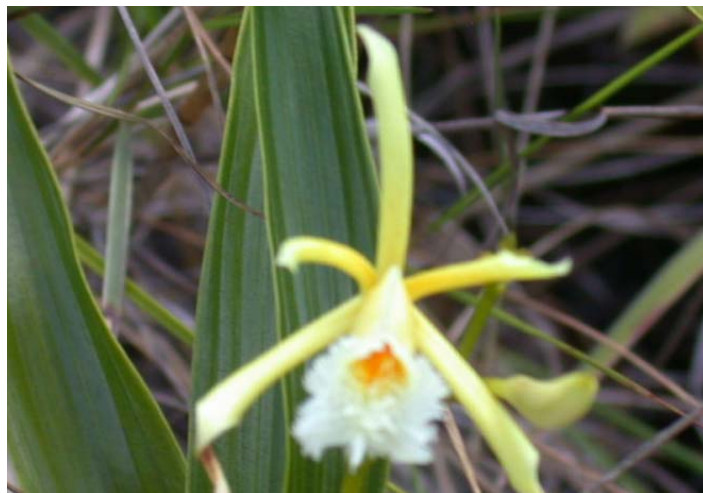
Living Landscapes Program—Landscape Species Selection

- ♦ Strindberg, S. 2006. Workshop report on 'Landscape Species Selection for the Nam Kading Landscape, Lao P.D.R.'.
- ♦ Gibson, J., S. Hoare, S. Strindberg, and C. D'Agrosa. 2004. Report on 'Glover's Reef Seascape Species Selection Workshop, Belize'.
- ♦ Sanderson E. W., K.H. Redford, A. Veder, P.B. Coppolillo, and S.E. Ward. 2002. A conceptual model for conservation planning based on landscape species requirements. *Landscape & Urban Planning* 58:41-56.
- ♦ Coppolillo, P., H. Gomez, F. Maisels, and R. Wallace. 2004. Selection criteria for suites of landscape species as a basis for site-based conservation. *Biological Conservation* 115:419-430.

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

A complement of people who have a good understanding of the landscape in terms of its key habitat types, human activities and management zones and of the characteristics of the species occupying that landscape should ideally be involved in the Landscape Species selection process. However, since the process can be used in a participatory fashion, other stakeholders may also be involved to further obtain buy-in to the conservation work rather than necessarily contribute to the actual selection process, but this depends on the nature of your project (the scope of the project and the stakeholders involved). People who might be involved include:

- ♦ Conservation managers (communities, local NGOs, government counterparts)- for technical knowledge and/or buy-in
- ♦ (Species) experts- for technical knowledge
- ♦ Stakeholders- for buy-in and/or landscape/ species information



© WCS/Robert Wallace

7. How long will it take?

The actual time to complete the process varies widely by site, depending on who is involved (e.g., if the selection itself is used as a tool to obtain buy-in from other stakeholders by means of participatory workshops it takes longer), how detailed the data you input into the process are and whether you consider this data collection as part of the process. Furthermore, the process may be repeated as your landscape changes. For example:

- ♦ WCS/Thailand (HKK-TY Landscape): One and a half days for species selection without software during a three day participatory workshop that included conceptual modeling.
- ♦ WCS/Cambodia (Northern Plains Landscape): Four hour species selection involving only WCS staff and a proto-type of the selection software.
- ♦ WCS/Bolivia (Madidi Landscape): Species selection process repeated several times (with and without software/internally to WCS and with other stakeholders) over multiple years. The most recent selection process took 5 days (and nights!).
- ♦ WCS/Congo (Nouabalé-Ndoki Landscape): 4 weeks and additional time developing the selection process (WCS staff only without software).
- ♦ WCS/Argentina (Sea and Sky Seascape): 3 years involving multiple participatory workshops (6 months over 3 years) and counting.

- ♦ WCS/Mongolia (Eastern Steppe Landscape): Used a two-stage process- data collection (2 weeks) stretched out over a couple of months.
- ♦ WCS/Guatemala (Maya Biosphere Reserve Landscape) – Three days using the software with WCS landscape/species experts only.
- ♦ WCS/Tanzania (Ruaha Landscape): Four days (using software, but without an expert workshop).
- ♦ WCS/Laos (Nam Kading Landscape): Two day participatory workshop (plus two weeks of initial preparation/emails with species experts).
- ♦ WCS/Belize (Glover’s Reef Atoll Seascape): Two day participatory workshop with species experts and stakeholders (plus one month of initial preparation).

All sites used the Landscape Species selection software, except for the WCS/Thailand and WCS/Congo sites.

Obviously, adding expert workshops that involve experts from outside your organization or organizing participatory workshops that involve stakeholders will add more time to the process.



© WCS/Luke Hunter

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.

Contact: Living Landscapes Program/Wildlife Conservation Society, 2300 Southern Blvd. Bronx, NY 10460 USA



This publication is made possible by the generous support of the American people through the United States Agency for International Development (USAID), under the terms of Cooperative Agreement No. LAG-A-00-99-00047-00. The contents are the responsibility of the Living Landscapes Program of WCS and do not necessarily reflect the views of USAID or the United States Government.