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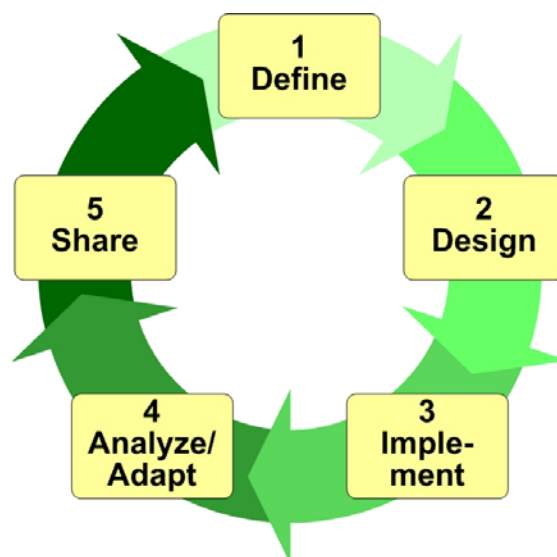


Resources for Implementing the WWF Project & Programme Standards

Step 1.4

Define: Threat Ranking

July 2007



Step 1.4 Threat Ranking

Contents

What Is a Threat Ranking?	1
Why Is Threat Ranking Important?	1
When To Use Threat Rankings	1
How To Do a Threat Ranking	1
1. Determine the criteria for ranking	2
2. Apply the threat ranking.....	3
3. Sum up your threats across all targets to get an overall ranking for the site	4
4. Classify each threat	4
Other Methods for Threat Ranking	6
References	6
Annex 1: Other Methods for Threat Ranking	7
Comparing Absolute and Relative Rankings.....	9

This document is intended as a guidance resource to support the implementation of the *WWF Standards of Conservation Project and Programme Management*. Although each step in these *Standards* must be completed, the level of detail depends on the circumstances of individual projects and programmes. Accordingly, each team will have to decide whether and to what level of detail they want to apply the guidance in this document.

This document may change over time; the most recent version can be accessed at: <https://intranet.panda.org/documents/folder.cfm?uFolderID=60977>.

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Define: Threat Ranking

What Is a Threat Ranking?

Threat ranking is a method for explicitly considering the degree to which each direct threat affects the biodiversity targets at your site. It involves identifying and defining a set of criteria and then applying those criteria systematically to the direct threats to a project area so that conservation actions can be directed where they are most needed.

Why Is Threat Ranking Important?

Conservation must take place in the face of a wide variety of threats. A common challenge for conservation practitioners is determining which of these threats they should address. Often, decisions are made applying an implicit set of criteria to evaluate threats and the overall situation at your site. The danger with this approach is that different people might use different criteria or apply them differently. Moreover, there is also a tendency to address threats for which strategies and expertise already exist, rather than addressing those that are posing the greatest threat to the biodiversity at a site. In real-world situations, where resources are limited, threat rankings provide a systematic process that helps teams focus their actions and address the most important threats at their site.

When To Use Threat Rankings

As outlined in the *WWF Standards of Project and Programme Management*, every biodiversity conservation project should rank their direct threats during Step 1.4 of the initial planning work for their project. Threat ranking will help teams to prioritize action when they are dealing with more than one threat in a conservation area or region.

Although you will go through the threat ranking process in Step 1.4, you will use your results in Step 2.1 (Action Plan), when you identify and select strategies. By narrowing down the threats on which you will focus, you will have a clearer idea of what factors in your conceptual model you should be trying to influence in order to reduce the impacts of those direct threats. This, in turn, will help you narrow down and select your strategies.

How To Do a Threat Ranking

To do a threat ranking, it is important to be clear about what the main threats at your project site are and what biodiversity targets they are affecting. If you developed a conceptual model as part of your situation analysis (Step 1.4), you will have already done this. Often, teams will first develop their conceptual model and then rank all direct threats in their model. Sometimes – especially in cases where the site is very complex and the team has identified several direct threats – it may be useful to first rank your threats and then complete your conceptual model for the medium- and high-ranked threats.

In a threat ranking, a project team will evaluate each direct threat and the impact it is having on the biodiversity target(s) it is affecting. This can be done absolutely or relatively. In absolute rankings, teams consider a criterion (e.g., scope) and a scale (e.g., 1 to 4) and then evaluate threats by criterion, assigning a number within that scale. For relative rankings, teams consider all threats and rank them relative to one another. So, if there are 7 threats, the highest ranked threat in any criterion would get a

7, and the lowest ranked threat would get a 1. Annex 1 provides a more detailed explanation of relative rankings.

The methodology presented here involves doing an absolute ranking of threats target-by-target and then rolling up the rankings to determine each threat's overall effect on the site. Thus, for each target, you will need to look at all the threats that affect it and rank the degree to which each threat affects it.

In some cases, you may find yourself evaluating both actual and potential threats. In the case of potential threats, it is best to only include them in your ranking if they are threats that are realistic and likely to occur within a reasonable time period (10 years, for example). So, you might include a road that a local logging company is negotiating with the government as a real potential threat, but you would not include an invasion of your site by Martians as a potential threat.

We suggest you use the Conservation Measures Partnership's Miradi software to do your threat ranking (see Box 1). This software uses an algorithm that takes into account a threat's ranking by target as well as across targets to come up with an overall ranking for your site.

1. Determine the criteria for ranking

The first step is to determine the criteria against which you will rank the threats at your site. As a starting point, we recommend that project teams consider the criteria of scope, severity, and irreversibility (Box 2). **Scope** refers to the proportion of the target (area for ecosystems, population for species) that is likely to be affected within 10 years under current circumstances. **Severity** attempts to categorize the level of damage to the biodiversity target expected within that particular scope and in the specified time frame. **Irreversibility** is the degree to which the effects of a given threat can be undone and the targets affected by the threat restored, if the threat is stopped.

Your team may determine other criteria are important, but we suggest limiting the total number of criteria to 4 or fewer. More criteria rarely affect the outcome of the threat ranking and often make this step more complex than it needs to be.

Box 1. Miradi Adaptive Management Software

Miradi, which means "project" in the Sub-Saharan African language of Swahili, is a software program under development that will help conservation project teams implement an adaptive management process such as that supported by the *WWF Standards*. Based on the Conservation Measures Partnership's [Open Standards for the Practice of Conservation](#), Miradi guides conservation practitioners through a series of step-by-step interview wizards. As practitioners go through these steps, Miradi helps them to define their project scope, and design conceptual models and spatial maps of their project site. The software also helps teams to prioritize threats, develop objectives and actions, and select monitoring indicators to assess the effectiveness of their strategies. Miradi is being developed by the [Conservation Measures Partnership](#) (CMP), a consortium of leading nature conservation organizations, and [Benetech](#), a nonprofit technology development organization.

Miradi is available in a beta version for testing at www.Miradi.org.

Box 2. Criteria for Threat Ranking Using the Absolute System

Scope – The proportion of the target that can reasonably be expected to be affected by the threat within ten years, given the continuation of current circumstances and trends. For ecosystems and ecological communities, measured as the proportion of the target's occurrence. For species, measured as the proportion of the target's population.

- 4 = Very High:** The threat is likely to be pervasive in its scope, affecting the target across all or most (71-100%) of its occurrence/population.
- 3 = High:** The threat is likely to be widespread in its scope, affecting the target across much (31–70%) of its occurrence/population.
- 2 = Medium:** The threat is likely to be restricted in its scope, affecting the target across some (11–30%) of its occurrence/population.
- 1 = Low:** The threat is likely to be very narrow in its scope, affecting the target across a small proportion (1-10%) of its occurrence/population.

Severity – Within the scope, the level of damage to the target from the threat that can reasonably be expected given the continuation of current circumstances and trends. For ecosystems and ecological communities, typically measured as the degree of destruction or degradation of the target within the scope. For species, usually measured as the degree of reduction of the target population within the scope.

- 4 = Very High:** Within the scope, the threat is likely to destroy or eliminate the target, or reduce its population by 71-100% within ten years or three generations.
- 3 = High:** Within the scope, the threat is likely to seriously degrade/reduce the target or reduce its population by 31-70% within ten years or three generations.
- 2 = Medium:** Within the scope, the threat is likely to moderately degrade/reduce the target or reduce its population by 11-30% within ten years or three generations.
- 1 = Low:** Within the scope, the threat is likely to only slightly degrade/reduce the target or reduce its population by 1-10% within ten years or three generations.

Irreversibility (Permanence) – the degree to which the effects of a threat can be reversed and the target affected by the threat restored. It is assessed for the impact of the threat on the target, not the threat itself.

- 4 = Very High:** The effects of the threat cannot be reversed, it is very unlikely the target can be restored, and/or it would take more than 100 years to achieve this (e.g., wetlands converted to a shopping centre).
- 3 = High:** The effects of the threat can technically be reversed and the target restored, but it is not practically affordable and/or it would take 21–100 years to achieve this (e.g., wetland converted to agriculture).
- 2 = Medium:** The effects of the threat can be reversed and the target restored with a reasonable commitment of resources and/or within 6–20 years (e.g., ditching and draining of wetland)
- 1 = Low:** The effects of the threat are easily reversible and the target can be easily restored at a relatively low cost and/or within 0–5 years (e.g., off-road vehicles trespassing in wetland).

2. Apply the threat ranking

If you are unable to download Miradi, you can use the Excel spreadsheet that accompanies this guide. We suggest you limit the number of direct threats you rank to 10 or, preferably, fewer. More than 10 threats will make this process unnecessarily complex.

The steps for applying the threat ranking are:

- a. **Develop a list of all direct threats** – On your worksheet, add main direct threats you have identified in your conceptual model.

- b. **List your targets** – In the top row of your worksheet, enter all the biodiversity targets you are trying to conserve at your site.
- c. **Put a line through the boxes where there is not a relationship between the threat and the target** – If you use the Excel template rather than the Miradi software, make sure that for each target, you only rank the threats that your conceptual model shows directly affect your target. Putting a line through the boxes where there is not a relationship will help you remember not to rank threats that do not affect a target
- d. **Rank each threat for SCOPE, SEVERITY, and IRREVERSIBILITY (PERMANENCE)** – Using the definitions and 4 point scale defined in Box 2, discuss each threat target-by-target and criterion-by-criterion with your team and then assign and record a score in the appropriate box. Repeat this process until you have ranked all threats against all targets they affect.

Add up the ranking scores for each threat by target – Scope and severity taken together, give you a sense of the *magnitude* of the threat. As such, they are the most important criteria for rankings. For this reason, we recommend double-weighting them (or using Miradi or another algorithm that emphasizes scope and severity). The Excel template will weight them automatically. Those threats with the highest number would be considered the greatest threats to your target.

3. Sum up your threats across all targets to get an overall ranking for the site

To understand how great a threat your direct threat is to your overall site (not just a specific target), you need to consider its impact on all targets within your site. If you cannot use Miradi software, you can merely sum the totals for each threat by target to get a numeric value for the overall site. While not perfect, this method will allow you to compare the magnitude of the threats for the site in general. Those threats with the highest number would be considered the greatest threats to your site.

Generally, it is important to know how a threat is affecting your overall site and to focus on those threats causing the greatest impact to the sites. Nevertheless, you may decide to work on a threat that is a high or very high threat to a target but is only a medium or low threat to your overall site. This is fine, but you should be clear in justifying why you have made that decision. For example, perhaps not all targets are equal, and it is really important for social, political, or ecological reasons that you focus more energy on one particular target.

4. Classify each threat

Although it may be tempting to evaluate your threats on numbers alone, it is better to classify them into categories of very high, high, medium, and low. These categories are more appropriate, given the somewhat imprecise and subjective nature of the ranking process. For example, the difference between a threat with 12 points and one with 10 points is likely not significant, but the difference between one with 12 points and one with 5 is significant. You should use this classification for both the targets and the site overall.

Applying a threats ranking method helps you determine where to act – an often difficult decision when working in complex sites with multiple threats and multiple targets. In general, the threats ranked very high and high will be the ones to which you should direct your project strategies.

Figure 1. Example of an Absolute Threat Ranking by Target

The following is an example of a threat ranking, using an absolute ranking method. This is based on a real-world ranking done by a WWF project team working in an island marine site. Three criteria (scope, severity, and irreversibility) are used to evaluate seven direct threats across three targets. Each threat is rated using the criteria and a 4 point scale.

DIRECT THREAT	TARGET: Sharks					TARGET: Coral Reefs					TARGET: Intertidal Systems					TARGET: Seabirds					SITE RANKING	
	SCOPE	SEVERITY	IRREVER SIBILITY	TOTAL	CLASSIFICATION	SCOPE	SEVERITY	IRREVER SIBILITY	TOTAL	CLASSIFICATION	SCOPE	SEVERITY	IRREVER SIBILITY	TOTAL	CLASSIFICATION	SCOPE	SEVERITY	IRREVER SIBILITY	TOTAL	CLASSIFICATION	TOTAL	CLASSIFICATION
Illegal shark fishing by boats from mainland	4	3	3	17	Very High																17	High
Global warming						4	3	3	17	Very High											17	High
Diver & anchor damage						1	2	1	7	Low											7	Low
Legal but unsustainable fishing by local fishermen						3	3	3	15	High	3	2	3	13	Medium						28	Very High
Sewage											1	1	1	5	Low						5	Low
Potential oil spills											1	2	2	8	Low	2	3	2	12	Medium	20	High
Introduced predators (rats)																2	3	2	12	Medium	12	Medium

Note: Total = 2*(scope + severity) + Irreversibility

Other Methods for Threat Ranking

There are other ways to do threat ranking as well. Perhaps the most detailed threat rankings method is that presented in the The Nature Conservancy's Conservation Action Planning tool (TNC 2003). The method involves a detailed ranking of each threat, using a 4 point absolute scale and applying a series of algorithms to convert the ratings into an overall threat rating. The method used by Miradi Adaptive Management software is a simplified version of this threat rating method.

Another method adapted from Margoluis and Salafsky (1998) compares all the direct threats in a given site to one another across each criteria. This involves considering the threats overall for the site, not target-by-target, as presented in the method above. It also involves considering the threats relative to one another. Thus, it forces a team to decide which threats are the most critical – rather than falling into the potential trap of saying all threats are important. Annex 1 provides more details on relative rankings.

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Annex 1: Other Methods for Threat Ranking

Perhaps the most detailed threat rankings method is that presented in the The Nature Conservancy's Conservation Action Planning tool (TNC 2003). The method involves a detailed ranking of each threat, using a 4 point absolute scale and applying a series of algorithms to convert the ratings into an overall threat rating. The method used by Miradi Adaptive Management software is a simplified version of this threat rating method.

Another method adapted from Margoluis and Salafsky (1998) compares all the direct threats in a given site to one another across each criteria. This involves considering the threats overall for the site, not target-by-target, as presented in the method above. It also involves using a relative ranking process, rather than an absolute. Due to differences in the systems, the suggested criteria also differ somewhat (see Box 3). For both absolute target-by-target and relative whole-site ratings, we suggest the use of the scope and severity criteria. For the relative whole-site ranking, however, you should not use the irreversibility criterion. This is because irreversibility is highly dependent upon a specific target's resilience to a given threat. For example, a threat of acid rain might pose a minimal threat to a forest but completely eliminate aquatic life in streams and lakes found in that forest. If the acid rain threat were eliminated, its effect on the forests could be reversed, but it might be impossible to reverse its effect on streams and lakes – and, in particular, the aquatic species that were eliminated. Because of this issue with irreversibility in whole site ratings, we suggest you use **urgency** as your third criterion. Urgency refers to the importance of taking immediate action to address the threat. Generally, a threat that is occurring now will be more urgent than one that is likely to occur in the future. However, if, with minimal resources, you could take action today on a threat and avoid significant resource investment in the future, then that threat would also be considered urgent. A good example of such a threat is an invasive exotic species.

Box 3. Criteria for Threat Rankings Using the Relative System

Scope – The proportion of the target that can reasonably be expected to be affected by the threat within ten years, given the continuation of current circumstances and trends (generally, proportion of area for ecosystem targets and proportion of population affected for species targets).

Severity – Within the scope, the level of damage to the target from the threat that can reasonably be expected given the continuation of current circumstances and trends. *Note: you should only consider the area/scope affected, not the whole site when calculating severity. So, if you have a threat that affects 10% of your overall area, you should judge its severity in terms of its level of damage within that 10%.*

Urgency – The importance of taking immediate action to deal with the threat. Is the threat occurring now? Or is it only likely to be important in future years? Could you avoid significant resource investment in the future by taking action today? *Note: The time element in the scope and severity definition is different from that in the urgency criterion. The first gives a boundary for the overall timeframe, whereas the latter asks, within that time frame, which threat is most important to address first? Urgency clarifies if action needs to happen right now, 5 years from now, or 25 years from now.*

The following steps provide guidance for a relative ranking. For definitions of each criterion, see Box 3.

- a. **List All the Threats at Your Site** – Using the Relative Ranking worksheet in the Excel file that accompanies this guide, create a matrix with each threat occupying a row and the columns containing the criteria, total ranking, and classification for your site.
- b. **Rank Each Threat for SCOPE** – List your ranking of the threats based on the area of your site or the proportion of the population affected. Assign the largest number (equal to the total number of threats) to the threat affecting the largest area or population, continuing down to a rank of 1 for the threat that affects the smallest area or population. For example, if you have 6 threats, the threat covering the largest scope would receive a 6, while that covering the smallest scope would receive a 1.
- c. **Rank Each Threat for SEVERITY** – Record the rankings you assigned to the threats based on the impact or severity of destruction to the area or scope affected, again with the largest number (equal to the total number of threats) assigned to the threat of greatest severity and continuing down to a rank of 1 for the least severe threat.
- d. **Rank Each Threat for URGENCY** – Record your rankings for urgency, with the largest number (equal to the total number of threats) assigned to the threat for which you need to take immediate action to reduce it. Continue down to a rank of 1 for the threat that you can wait longer to address.
- e. **Sum Up Your Rankings** – Add up the total of the ranking numbers by column and record that total at the bottom of each column (*Note: As a check on your calculations, this total should be the same for scope, severity, and irreversibility*). Scope and severity taken together, give you a sense of the *magnitude* of the threat. As such, they are the most important criteria for ratings. For this reason, we recommend double-weighting them (or using Miradi or another algorithm that emphasizes scope and severity). The Excel template will weight them automatically.
- f. **Classify Your Threats** – As with the absolute ranking, it is better not to put too much value on the actual numbers coming out of your ranking, but rather to classify threats into categories of very high, high, medium, and low.

Figure 2. Example of a Relative Whole-Site Threat Ranking

The following is an example of a threat ranking applied at the level of the whole site and using a relative ranking method. This is based on a real-world ranking for a WWF project in a tropical forest site. Three criteria (scope, severity, and urgency) are used to evaluate nine direct threats.

DIRECT THREAT	SCOPE	SEVERITY	URGENCY	TOTAL	CLASSIFICATION
Agriculture frontier expansion	7	8	9	24	Very High
Commercial fishing	1	2	1	4	Low
Freshwater turtle and turtle eggs over-harvesting	3	7	4	14	Medium
Hunting	8	4	7	19	High
Illegal Logging	6	5	8	19	High
Mining	2	9	5	16	Medium
Paiche (Invasive fish species)	4	6	6	16	Medium
Palm exploitation	5	3	2	10	Low
Unsustainable Brazil nut management	9	1	3	13	Medium
TOTAL	45	45	45		

Comparing Absolute and Relative Rankings

Absolute and relative rankings each have their own set of advantages and disadvantages. You will have to decide what makes most sense at your site. Table 1 provides some information that will help your team decide which method works for your site.

Table 1. Comparison of Advantages and Disadvantages of Absolute Target-by-Target and Relative Whole Site Threat Ranking Methods

	Advantages	Disadvantages
Absolute Target-by-Target Rankings	<ul style="list-style-type: none"> • Ratings from one site to another are directly comparable if criteria are applied consistently • Two or more threats that are equal for a particular criterion can receive the same ranking • Ratings account for threats that may affect only a limited set of targets 	<ul style="list-style-type: none"> • Ratings may not show much of a spread, making it difficult to determine which are truly the most important threats for conservation action • Need a good understanding of your targets & how each threat affects them
Relative Whole Site Rankings	<ul style="list-style-type: none"> • Forces a spread across the threats so that threats are not rated the same • Can be faster if the team has a good understanding of the threats to the site • Easier to do if you are just starting out at your site & don't have a lot of information about your targets 	<ul style="list-style-type: none"> • Ratings from one site to another are not directly comparable • Forces sometimes artificial or arbitrary distinctions between threats • Does not do a very good job of accounting for threats that affect only a limited set of targets (e.g., threats such as hunting that affect only a single species)

In general terms, we recommend using absolute target-by-target ratings in situations where you have a lot of information and a fairly thorough understanding of your site. Relative whole site are more appropriate when you do not have a lot of information about the site and when you just want to get a quick approximation of your most critical threats. Often though, this can be enough for your purposes. You just need to be aware of the benefits and limitations of each method.