Five common issues with biodiversity baselines for biodiversity action planning

Jared Hardner (HGA)
Jonathan Ekstrom (The Biodiversity Consultancy)

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The problem

- We are often engaged midway through or even after the environmental assessment process to help a project achieve *No Net Loss (*NNL) or *Net Positive Impact* (NPI).
- Conventional biodiversity baseline studies are typically designed to meet regulatory requirements, and are often insufficient to support biodiversity action planning for NNL or NPI.
- This results in extraordinary attempts to supplement the baseline, possible delays to the project schedule, or the use of very conservative (over)estimates of biodiversity loss – all of which are costly to the company and potentially create reputational risk.
- The purpose of this talk is to review some of the most common failings that we see. Over time, as the pursuit of NNL and NPI is more widespread, these issues should become less common.

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Some key differences

	Conventional biodiversity management	***NNL* or *NPI* biodiversity management**
Performance objective	Reduce *significant* residual impacts	Achieve *no net loss*, or even a *net positive impact*, to a subset or all biodiversity features
What does it apply to?	Legally protected species and habitats	Legally protected species and habitats Other habitats and species of high conservation value Ecosystem services
How is this demonstrated?	*Qualitatively*	*Quantitatively* and *qualitatively*

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The *big five*

1. Biodiversity baseline study area too small

2. Baseline studies not organized around a common vegetation classification

3. Baseline only addresses legally protected species and habitats

4. Need to integrate quantitative impact assessment and biological risk analysis

5. Biodiversity baseline is not adaptively managed

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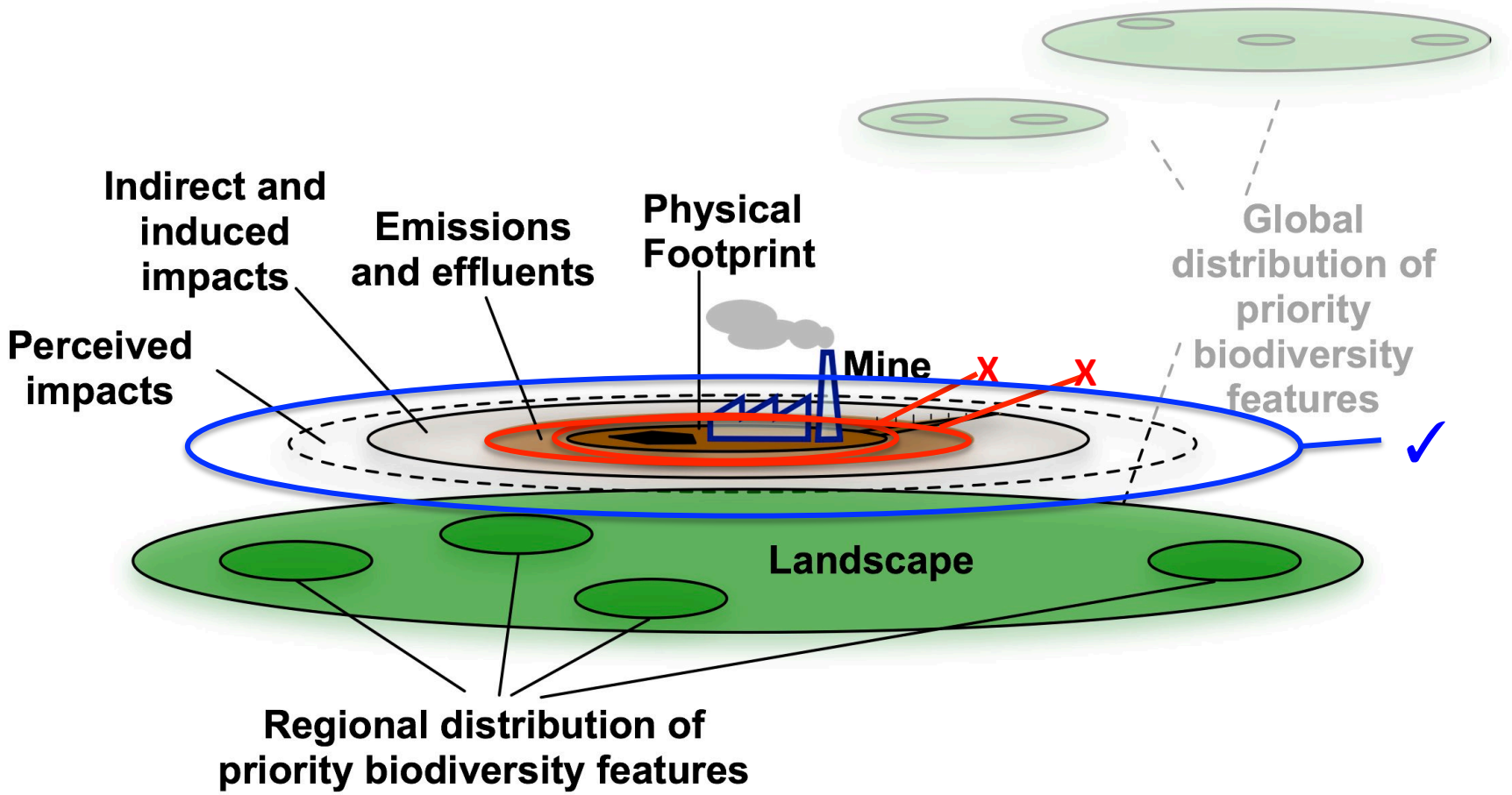
1. Baseline study area is too small



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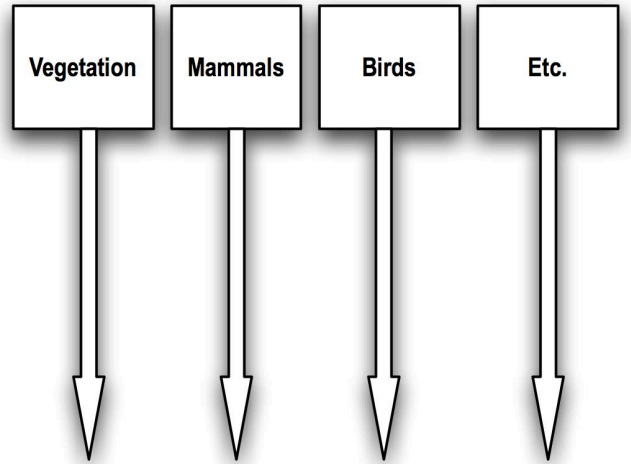
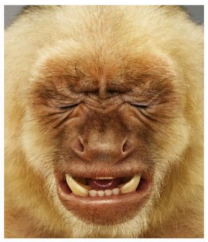
2. Baseline study not organized around a common vegetation (habitat) classification

✗ **Vegetation studies proceed in parallel with other studies**

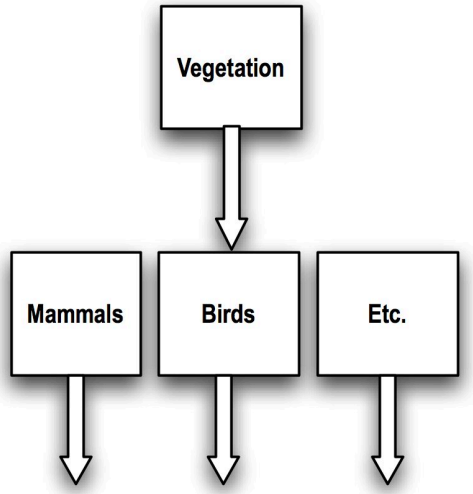




-vegetation types under- or oversampled for other taxonomic groups

-can't use vegetation as a surrogate for impacts to other taxonomic groups

✓ **A common vegetation map is developed first and then used to structure studies of other taxonomic groups**



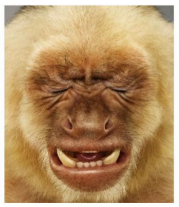
-faunal studies structured by vegetation map

-ability to use vegetation as a surrogate for other groups is tested and proceeds as appropriate

3. Baseline only addresses legally protected species and habitats

Baseline to support a traditional EA

- Congregatory/ migratory species ✗
- Legally-protected species ✓
- Species with high use-value ✗
- Endemic species ✗
- Other sensitive habitats (e.g., IBAs) ✗
- Legally-protected habitats ✓
- All natural habitats ✗



For priority biodiversity values, the baseline should generate information on:

- -Distribution
- -Abundance
- -Threats
- -Conservation status
- -Mitigation options

Baseline to support a NNL or NPI Action Plan

- Congregatory/ migratory species ✓
- Legally-protected species ✓
- Species with high use-value ✓
- Endemic species ✓
- Other sensitive habitats (e.g., IBAs) ✓
- Legally-protected habitats ✓
- All natural habitats ✓

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4. Need to integrate quantitative impact assessment and biological risk analysis

Biodiversity action planning to achieve NNL or NPI is typically highly quantitative, and requires *quantitative* baseline data on habitat quality (relative and/or absolute abundance of species).

Predicted net impact of Rio Tinto QMM for the period 2004–2065, based on Scenario 2 (0.9% annual deforestation rate, equivalent to the Madagascar average).

		2004-2065
Quality Hectares 	1. All forest	+1,251
	2. Littoral forest	+350
	3. Fort Dauphin littoral forest (including Mandena, Petriky, Ste Luce; excluding Mahabo)	+216
Units of Global Distribution	1. All High Priority species	83/90 positive
	2. Priority plants only	54/54 positive
	3. Priority animals only	29/36 positive

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4. Need to integrate quantitative impact assessment and biological risk analysis

Qualitative risk analysis complements quantitative impact assessment by describing how important impacts are to the viability of the affected features.

	CONSEQUENCE				
LIKELIHOOD	**Minor**	**Medium**	**Serious**	**Major**	**Catastrophic**
Almost Certain	Moderate	High	Critical	Critical	Critical
Likely	Moderate	High	High	Critical	Critical
Possible	Low	Moderate	High	Critical	Critical
Unlikely	Low	Low	Moderate	High	Critical
Rare	Low	Low	Moderate	High	High

Consequence	**Descriptors**
Minor	Local viability is not reduced.
Medium	Local viability or function of value is reduced. Recovery is possible.
Serious	Local viability or function of value is lost and/or regional viability or function is reduced. Recovery is possible.
Major	Regional viability or function of value is lost and/or global viability or function is reduced.
Catastrophic	Global viability or function of value is lost.

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5. Biodiversity baseline not adaptive

- It is not unusual for a biodiversity baseline to be viewed as a “one-off” effort that is scoped and carried out to be ready just in time for the risk/impact assessment
- In parts of the world where it is very difficult to anticipate what the baseline will find, or where little is known about the species and habitats that are likely to be present, a one-off baseline may raise more questions than it answers
- In these circumstances, there is a need to adaptively manage the baseline, and various iterations of field work may be required.

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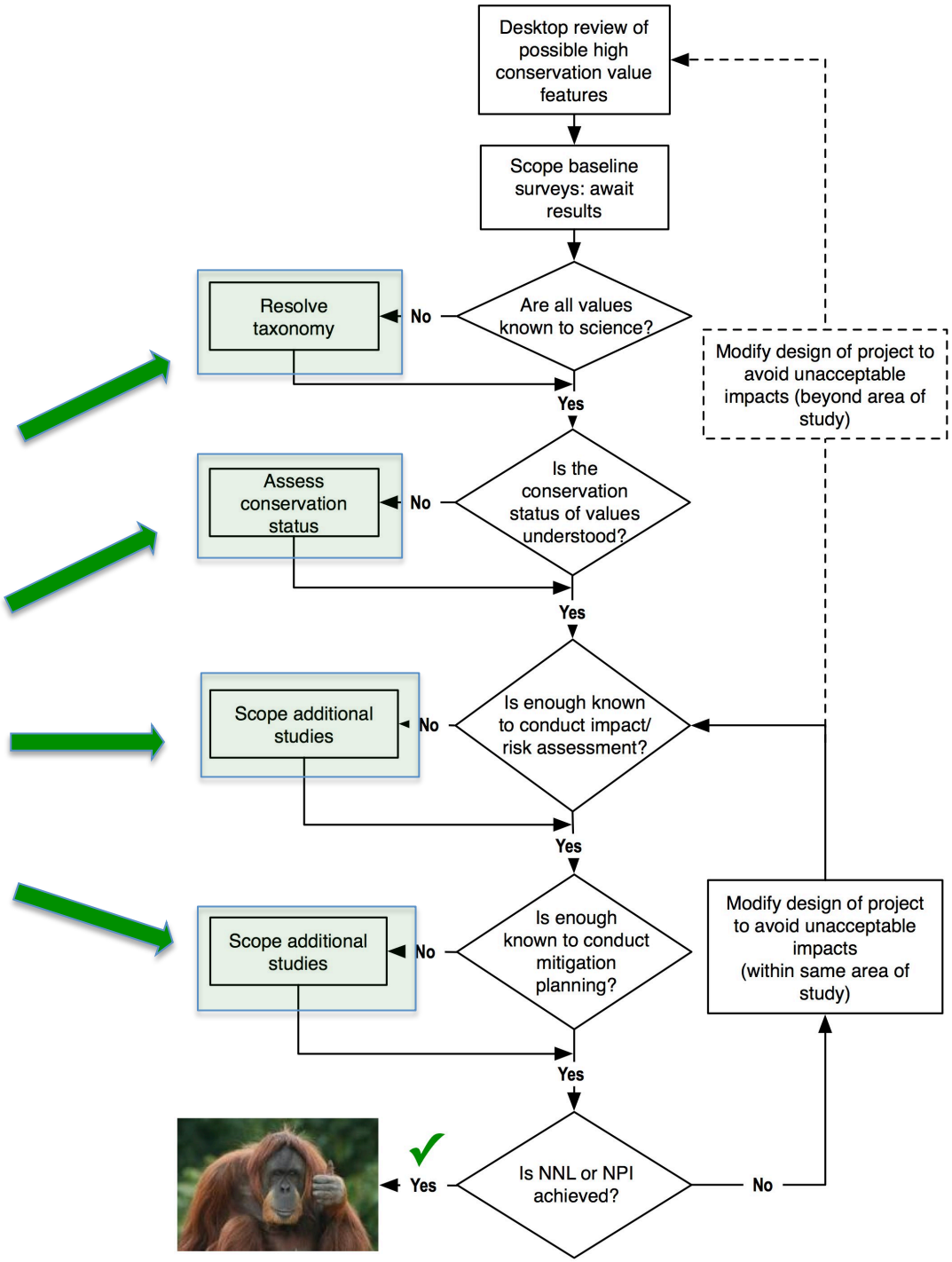
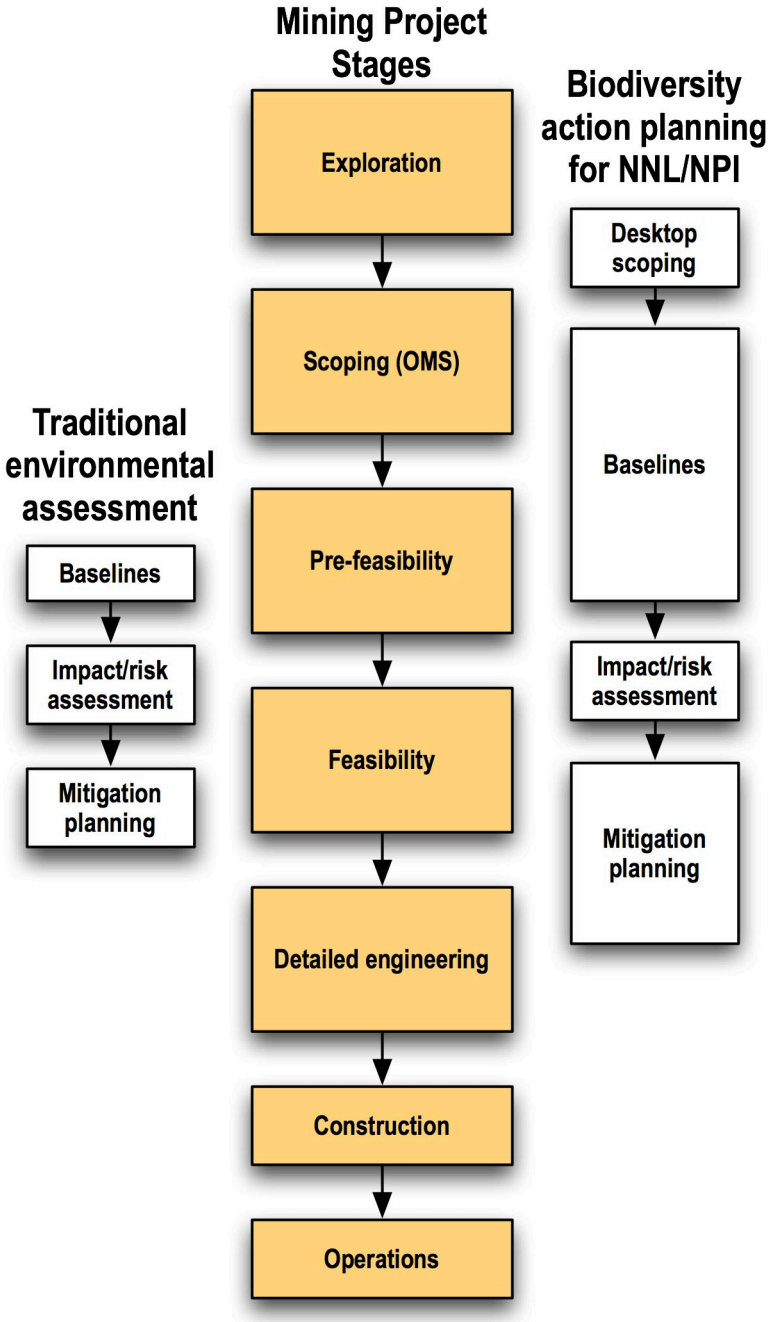
Some factors that require that a baseline be adaptively managed:

- Documentation of new or little studied species or habitats
- Biodiversity values with no or outdated conservation assessments
- Discovery of high conservation value features for which the initial baseline inventory did not provide adequate information to support risk/impact assessment or mitigation planning to achieve NNL or NPI



5. Baseline not adaptive



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Conclusions

- If a project seeks to achieve NNL or NPI, it cannot assume that a conventional biodiversity baseline will allow them to do so.
- Baseline contractors need to understand the project's objectives before the baseline study is designed.
- Baseline studies to support NNL and NPI need to be highly adaptive, which requires:
  - Beginning as early as possible in the project schedule
  - Flexibility in the baseline budget to accommodate the need for supplementary studies as the baseline progresses
  - Constant monitoring of baseline results and rapidly responding to baseline findings as they emerge

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