



Standards for Ecoregional Assessments and Biodiversity Visions¹

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Conservation scientists and practitioners are using regional conservation assessments around the world to support and guide comprehensive and representative biodiversity protection (e.g. Cowling and Pressey 2003; Noss 2003; Groves 2003; Groves et al. 2002; Dinerstein et al. 2000; Margules and Pressey 2000). In addition to identifying important places, these assessments help organize and update biodiversity information; develop, implement and prioritize strategies; evaluate success, and; inform adaptive management of conservation investments and actions.

Years of implementation of these ecoregional visions, or assessments², has generated a set of standards that can serve as guiding principles to establish scientific credibility, methodological rigor, and consistency for comparative and regional analyses in support of conservation actions (Noss 2003). In addition, processes and products important for developing and implementing partnerships, strategies, measures of success and adaptive management can benefit from standards (Groves et al, 2002; 2003, Dinerstein et al 2000). The below standards define minimum criteria for credibility and conservation impact for ecoregional scale assessments based on efforts by The Nature Conservancy and the World Wildlife Fund. In developing these standards, we have built upon the work of Noss (2003), Cowling and Pressey (2003), Groves (2003) and Margules and Pressey (2000), and used nearly a decade of practical experience in both developing and implementing ecoregional conservation plans in over 90 ecoregions around the world.

Expectations for Ecoregional Assessment/Biodiversity Vision Standards

These standards do not define or dictate approaches, methods, or tools. Ecological patterns, available data, analytical tools and capacities, funding, and timeframes vary greatly among ecoregions and assessment teams. This variety of contexts around the world mandates flexibility. **This set of standards allows flexibility for the variety of situations that are faced and the opportunity for innovation while retaining a minimum level of rigor and consistency in conservation planning science and information needs.**

Funding, capacity and time frames may often force planning teams to develop ecoregional assessments rapidly or force the plans to fall short in meeting one or more of the standards. Given that these standards are key ingredients for successful conservation planning and implementation, failure to meet any one comes at a cost. It may be a cost relative to the scientific credibility, the confidence that all biodiversity is adequately represented, the ability to repeatedly measure status over time, or the adequate engagement of partners to develop and implement a common conservation vision. When a team falls short on a principle, they should evaluate, with their peers, how the quality of the plan may be impacted, what the costs to effective implementation of informed conservation action may be for ourselves or for our partners, and if we can be willing to live with these limitations, and if so, for how long. Teams should also evaluate what circumstances will lead to a revision or strengthening of the plan to address the standard(s). When one of the standards can not be met, the expectation is that an assessment team will clearly articulate to management and partners, the steps that will be taken in the future to ensure that gaps are met.

² The terms “*vision*” and “*assessment*” are here used interchangeably. The World Wildlife Fund’s ecoregional analyses of biodiversity have been labeled “biodiversity visions” whereas The Nature Conservancy’s approach is called “ecoregional assessments.” The two approaches are near completely aligned in purpose and product, and these shared guiding principles aim to further that congruence.

Each of the standards has a suite of examples, products, tools, and methods associated with it. This information is available online in a web-based toolbox for Ecoregional Assessments at: (<http://conserveonline.org/workspaces/ecotools>). If you have any comments or questions, please contact Jonathan Higgins (jhiggins@tnc.org) of The Nature Conservancy, or John Morrison (john.morrison@wwfus.org), of the World Wildlife Fund.

Standards for Ecoregional Assessments/Biodiversity Visions

We have organized the standards into three categories. The first, **Supporting Actions** includes standards centered on building and implementing the assessment in a way that can lead immediately to conservation impact (e.g., collaboration with partners, developing workplans, sharing data). The second category, **Guiding Actions**, contains technical standards for developing the assessment, and defines minimum information needs and scientific analyses to identify goals, define a vision of success, inform conservation actions and measure conservation status. The third category, **Taking Actions** includes standards to identify priority strategies and places, organizational roles and responsibilities and financial support for long-term conservation action.

SUPPORTING ACTIONS

- 1. Assemble an ecoregion team with strong and ambitious leadership, and broad expertise in ecology, conservation biology, data analysis and management, and socioeconomic capacity.**

Rationale

Lasting conservation of biodiversity across the ecoregion requires an interdisciplinary approach that ensures both biological rigor and creative solutions that are reflective of overarching socioeconomic and political realities. These capacities may stem from the lead organization responsible for development of the plan, from partner organizations and from influential individuals.

Recommended Products

- A team with the technical skills and experience to engage a wide range of technical staffs, policymakers, and stakeholders, and led by a knowledgeable, energetic, and respected ecoregional coordinator.

2. Engage key internal and external partners and stakeholders throughout the process.

Rationale

Stakeholder and partner involvement is critical to ensure a common understanding and buy-in of the final products and how those products will be used for implementation. It is important to engage them early in the process because they may provide data, analyses, insights, capacities, and resources to develop the conservation plan. Having partners involved in the process provides education and buy-in for the process, and allows opportunities for the assessments to reflect partner priorities, their own planning needs, and better help support their actions. Having critical stakeholders who are not current conservation partners involved in the process offers opportunities for increased understanding and buy-in, and may ultimately lead to more effective implementation and collaboration.

Recommended Products

- A stakeholder analysis: assessment of the most critical and influential stakeholders and partners and a strategy and timeline for engaging them.
- Documentation of the extent and degree of success of partner and stakeholder engagement.

3. Have work plans, content, and products peer-reviewed.

Rationale

Peer review is an important process to strengthen the assessment/vision process and products. Peer review creates opportunities to make the results more scientifically rigorous, comprehensive, appropriately presented and available to support implementation.

Recommended Products

- Participation by ecoregional assessment/vision teams early in their process in a peer review workshop. This review will result in a formal document ("contract") among peers stating next steps to strengthen the process and products.
- Outreach for peer review and participation in peer review in all phases of work.
- Documentation of how peer review (through formal workshops, one-on-one interactions and other means) was accomplished.
- Present final assessment/vision for peer review to organizational core-support teams. This review will evaluate the assessment/vision in relation to standards, identify gaps, comment on potential successes and limitations of the assessment/vision in supporting conservation, and propose priorities and next steps to strengthen it.

4. Make all products, methods and supporting data publicly available, in accordance with data sharing agreements.

Rationale

Information and data must be made available to others to make significant progress towards global biodiversity conservation. This progress will be made through fundraising, working with stakeholders, and informing policy in addition to supporting direct, on-the-ground conservation actions through partners.

Recommended Products

- Reports and data (within data sharing agreements) made available in CD format and on the web. Printed and bound editions are also recommended.
- Communications strategy for ecoregional assessment process and resulting products.
- Documentation of data sharing agreements to guide distribution and management of data and ecoregional assessment products.

5. Use a consistent data management framework in accordance with internal and partner organization data standards.

Rationale

Establishing and using a consistent data management framework will enable, efficient updates over time, analyses within and across ecoregions, and more effective use and implementation of the assessment/vision by the sponsoring organization, its partners and key stakeholders.

Recommended Products

- Documentation of data types, sources, confidence levels, gaps, data sharing agreements, and use/limitations.
- A populated database that includes all of the required data fields in the Ecoregional Assessment Data Standards managed in a database structure consistent with those standards. Currently the Conservation Planning Tool [CPT] is the accepted standard for long-term data management and access.
- Spatial data representing the ecoregional portfolio, and source data on targets and threats used in the assessment.
- Documentation and metadata describing tabular and spatial data (products and source data) that includes projections, scale accuracy, data types, confidence levels, sources and contacts, etc.
- Data has documentation of, and is managed in accordance to, data sharing agreements, MOUs, restrictions on use, and disclaimers as negotiated with data sharing partners.

GUIDING ACTIONS

6. Develop assessments/ visions within ecologically meaningful areas adopted or adapted from existing ecoregional classifications.

Rationale

Conservationists around the world use ecoregions as assessment units to conduct conservation planning because they are ecologically based and consistently globally mapped, and are the appropriate scales for the types of questions being addressed by these assessments/visions.

Recommended Products

- Digital map of assessment units.
- Digital map of ecoregion stratification units.
- Documentation and justification of any newly created ecoregions and/or any aggregation, separation, or boundary modification of planning units based on environmental patterns within the assessment area.

7. Select terrestrial, freshwater and marine conservation targets/ biodiversity elements/features across multiple biological and spatial scales.

Rationale

It is necessary to define a subset of targets that best represent the biodiversity of an ecoregion to focus the assessment. Conservation targets should cover the suite of biological scales (species, communities, ecological systems and other targets), taxa, and ecological characteristics to adequately inform comprehensive biodiversity conservation. Targets should include coarse and fine filter targets. This includes using rare and endangered, wide ranging, migratory and keystone species, rare communities, and all ecological systems and/or ecosystem types, as well as additional target types that are useful in capturing the variety of biodiversity characteristics, scales and ecological processes.

Recommended Products

- List and attributes of fine filter targets (e.g. distribution; local, widespread); conservation status: threatened and endangered; endemic, wide ranging species, rare communities, coarse-filter targets (ecological systems and ecosystems) and other types of targets. See the Ecoregional Assessment Data Standards 1.0 for required fields.
- Maps of occurrences of targets throughout the ecoregion.
- Description of data gaps for specific target groups and geographic areas.

8. Develop explicit abundance and distribution goals for conservation targets/biodiversity elements.

Rationale

A comprehensive vision is the definition of conservation success. This vision defines: “how much is enough.” A vision based on targets/elements depends on explicit goals for the number and distribution of viable, secure occurrences of them necessary to ensure their long-term persistence in the ecoregion, and fulfill the ecoregion’s contribution to ensure target/element persistence across their full ranges. Goals should be sufficient to allow the target/element to maintain ecological variability, evolve, and persist within the ecoregion as conditions change over the coming decades. These goals are the gage which we use to measure conservation status and progress.

Recommended Products

- Minimum numerical abundance (number, percent or area) and distribution goals (spatial/ecological stratification) and justifications for these goals for every target/group of targets within the ecoregion.
- If appropriate, alternative goals, as expressions of relative risk, to form the basis for creating multiple regional conservation scenarios.
- For relatively intact ecoregions, multiple goal levels may be effectively combined with forecasts of future land/water uses to identify types, levels and locations of acceptable impacts and those that need to be addressed through priority conservation actions.

9. Screen all target/biodiversity element occurrences for viability or ecological integrity.

Rationale

The screening of target occurrences enables the development of a conservation portfolio/vision that builds on the best available examples of biodiversity in an ecoregion. A thorough understanding of target viability further enables investment in areas where populations and ecosystems can function in light of current and imminent threats, and allows practitioners to determine the need for conservation or restoration efforts. Understanding the patterns of viability are central to measuring status and progress of effective conservation, informing conservation strategies, and as indicators of the impact of conservation actions.

Recommended Products

- Documentation of size, condition, and landscape context criteria and indicators used for viability/integrity assessment.
- Description of screening methodology for occurrences of each target or target group.

- Viability/integrity rating (preferably in both spatial and tabular data formats) for all target occurrences (including list of screened occurrences, list of occurrences that met minimum thresholds, and list of occurrences with insufficient information).

10. Conduct an analysis of the severity and geographic scope of threats to conservation targets/biodiversity elements and their occurrences, and analyze the root causes of priority threats.

Rationale

The type, source, severity, and scope of threats drive portfolio design, strategy development and conservation actions. Threat prevention and abatement are keys to securing biodiversity. Updated analyses of threats are critical to evaluate the dynamic landscape to better inform conservation actions and opportunities, and offer a critical indicator of the status of threats to biodiversity and the degree of success of our conservation actions.

Recommended Products

- List of dominant threats to each conservation target or to groups of targets.
- Analyses (including maps and database) of the severity (degree of impact) and the geographic scope (distribution and extent) of the threat to target occurrences.
- Descriptive narrative or schematic diagram of the root causes, or driving forces to dominant threats across the ecoregion linking them to biodiversity elements/targets and their occurrences.

11. Design ecoregional portfolios/biodiversity visions to best meet goals for all conservation targets/ biodiversity elements, using the principles of efficiency, representation, irreplaceability, and functionality.

Rationale

Ad-hoc conservation is blind investment and lacks context. A comprehensive vision (portfolio) should identify a suite of places that contains occurrences of biodiversity targets/elements that are necessary to conserve the biodiversity representative of an ecoregion. This vision/portfolio should ensure that the relative contributions of an investment strategy are understood in a regional context. Conservation assessments need to be current to define the present arenas for actions in a comprehensive yet efficient way to inform our actions and those of partners and stakeholders given the changing landscape of biodiversity patterns, threats, and conservation opportunities. In addition, visions/portfolios are the framework for measuring conservation progress within an ecoregion.

Recommended Products

- Description of design goals, criteria, approach, methods, assumptions and rationales.

- Assessment of the conservation management status of lands and waters (e.g. IUCN protected/managed area categories, conservation management strategies such as fire and sustainable water management, invasive species control, etc).
- Approaches and tools used to generate vision/portfolio (e.g. expert workshops, optimization tools such as SITES, SPOT, MARXAN, EPAT) and rationales.
- For cases where optimization tools have been used, clear descriptions and rationale for inputs and values, such as cost surfaces.
- Shape files and maps of areas of biodiversity significance and patterns of threats. Include alternative risk and updated scenarios where available.

12. Assess and report ecoregional biodiversity conservation status at appropriate intervals.

Rationale

It is necessary to quantify the current status and, over time, the degree of change in the viability, threat, and conservation management of biodiversity target/element occurrences with respect to their goals. This allows conservationists to evaluate current situations and progress toward achieving overall ecoregional goals, discern the impacts of conservation efforts, and identify new priorities to which our actions must respond. The three ecoregional measures assessed for target occurrences: target viability, status of threats to that occurrence, and the conservation management status of those lands and waters harboring the occurrence, define the extent to which those target occurrences are under effective conservation. The abundance and distribution of these occurrences throughout the ecoregion define the degree to which those ecoregional targets are effectively conserved.

Recommended Products

- Tabular and summary reports on the viability, threat, and conservation management status, and the combined intersection of the three to measure effective conservation for all coarse filter targets and a select subset of fine-filter targets at a minimum, and all fine-filter targets and/or target groups if possible, based on occurrences and their progress towards goals.
- A plan for routinely evaluating the viability, threat and conservation management status of target occurrences, outlining how frequently the measures data will be collected, who will be responsible for collecting the data, how the data will be maintained, and costs of collecting and maintaining the data. These data will be geospatial at least, and incorporate on-the-ground information at best.

TAKING ACTIONS

13. Set overall priorities for conservation action within the ecoregional portfolio/biodiversity vision and define institutional goals, roles and priorities.

Rationale

The number of places necessary to conserve biodiversity and the threats to biodiversity in those places can be considerable. Selecting priorities among them is essential for effective and efficient conservation. In setting priorities, one should consider the potential biodiversity contribution, scope and severity of threats, opportunities for success in abating types, key enabling conditions (e.g., presence of partners and conservation capacity, leverage opportunities, conservation funding, and potential for success. Frequently, multiple organizations or partners may seek to have impact on the ecoregional portfolios. Mutual agreements should be established among key conservation players in the ecoregion regarding where each will work complementarily but separately and where collaboration may occur.

Recommended Products

- Assignment of priorities for actions among targets, threats and/or areas of biodiversity significance.
- Clear, transparent, and explicit description of criteria, data types and sources, methods and tools used to define priorities.
- Maps and databases of priority areas of biodiversity significance and their priority levels.
- A set of institutional priorities, goals and roles for action for all key partners and stakeholders involved in conservation actions.

14. Produce a long-term financial plan to support strategy and measures, implementation, further data development, and analyses.

Rationale

Long-term conservation requires sufficient resources over the course of actions, and financial sustainability is a prerequisite for sustainable conservation. Further, for an ecoregional assessment to maintain efficacy, data must be managed over time and analyses updated as new data become available or methods advance. Consideration of how ecoregional conservation activities (maintenance of the vision/assessment, implementation of conservation action, and measuring progress) can be resourced over the long-term will improve the sustainability of the portfolio's conservation.

Recommended Products

- A long-term financing plan to support the sponsoring organization, partners and stakeholders in maintaining and updating data, conducting analyses, implementing conservation strategies, and measuring conservation progress.

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