

VIII.

Measures of Conservation Success

The Nature Conservancy has defined conservation success as making substantial progress towards (1) the long-term abatement of critical threats and (2) the sustained maintenance or enhancement of conservation target viability at sites identified for Conservancy action.

Are threats being abated, and is the viability of conservation targets being maintained or enhanced?



This key question can be answered at two levels: for individual threats and targets, and for the site as a whole. Tracking changes in the status of individual threats and conservation targets allows the effectiveness of individual conservation strategies to be assessed, and adjustments in our conservation actions to be made, as appropriate—this is an essential feature of the adaptive, dynamic Five-S site conservation process.

As an organization, the Conservancy needs a simple yet compelling method for assessing conservation progress across sets of sites (e.g., sites within an ecoregional portfolio). The target- and threat-specific assessments, while appropriate for site-specific decision-making, are too detailed for this purpose. What is needed are more general, site-level measures of conservation success. The Conservancy has developed two measures of conservation success for this purpose:

- ▶ **Biodiversity Health**—the viability of focal conservation targets at a site.
- ▶ **Threat Status and Abatement**—our success in abating critical threats to the conservation targets at a site.

Over the next ten years, these two conservation measures will be applied to high priority sites where the Conservancy is engaged in conservation action—TNC “action sites.” The measures will initially be applied to all sites targeted in the Conservancy’s capital campaign and then expanded to include all action sites identified by ecoregional plans, as they come “on line.” In ten years, the measures will include the 2,500 action sites in the United States that contribute to the domestic ten-year goal, and the 100 action sites in other countries that contribute to the international goal. Eventually the measures will be applied to the entire portfolio of sites identified by ecoregional plans.

As the conservation measures are focused on *site* conservation, they do not attempt to track the hundreds or thousands of conservation targets within each ecoregion (which would be a complex and costly measurement and data management operation) or assess progress towards target-specific ecoregional goals.

The Biodiversity Health measure assesses the effectiveness of our conservation strategies at enhancing or maintaining the viability of the focal conservation targets. It is based on the viability

assessment of individual focal conservation targets. The Threat Status measure assesses the effectiveness of our conservation strategies at abating or removing critical threats. It is based on the assessment of stresses and their sources to individual focal conservation targets. These two measures provide a necessary assessment of our net conservation impact at the site. As an organization, our results as shown by these two measures over time are what matters.

However, there is often a lag-time between implementation of conservation strategies and abatement of the critical threats and persistent stresses, and an even longer lag-time between strategy implementation and showing changes in biodiversity health. Accordingly, we also have developed a set of short-term indicators that reflect our *capacity* to implement effective strategies at action sites.

► ► ► ► ► ► ► **Criteria for the Measures of Conservation Success** ◀ ◀ ◀ ◀ ◀ ◀ ◀ ◀

The Conservancy's conservation measures are designed to meet the following criteria:

Measure Results Towards 10-Year Conservation Goals

The measures focus on conservation sites where the Conservancy is substantially engaged in conservation activity, working directly and/or in cooperation with its partners. This is the primary design criterion for the measures; the other criteria are subordinate to this criterion.

Encourage Right Action

The measures, and the assessments upon which they are based, should encourage practitioners to implement efficient and cost-effective strategies to abate critical threats at priority sites. The prevention or reduction of threats, in turn, should lead to maintenance or enhancement of the health of key conservation targets at the sites. In some instances, actions must be taken to restore conservation targets at sites.

Functional

No set of measures will be a perfect instrument, especially in dealing with the complexities of nature and our imperfect understanding of biodiversity, viability, and human impacts on the natural world. Moreover, any classification or grading system by definition categorizes the continuum of the real world. We have sought to establish functional, affordable measures that will reasonably inform us about our progress towards our 10-year conservation goals.

Clear and Compelling

The measures should be clear, compelling and understandable to every staff member and trustee of the Conservancy. While complex conservation science may underlie the measures, the application of the measures should be compelling in substance, language and presentation.

- The measures should be presentable in graphs or figures, allowing us to see results clearly, as well as see improvements over time.
- The measures should be presented in color maps, allowing us to see at a glance the status of our progress in conserving priority sites within a given ecoregion, state, division or country.

► ► ► Biodiversity Health, Threat Status, and Conservation Capacity ◀ ◀ ◀

Biodiversity Health

Biodiversity Health measures the estimated viability of the focal conservation targets at a site. It uses a methodology analogous to that employed by the Natural Heritage Program for ranking the viability of conservation target occurrences. The ranks for the individual focal conservation targets are then consolidated into a Biodiversity Health rank for the site: “Very Good”, “Good”, “Fair”, or “Poor”.

► **Foundation**

The foundation for measuring biodiversity health is the elegant and long-lived “element occurrence” (EO) ranking system developed by the Conservancy and used throughout the Natural Heritage Network. Since 1974 the natural heritage programs have routinely used this methodology to assess the viability of actual occurrences of ecological communities and species on the landscape. An ecological community or species occurrence is ranked according to its estimated *viability*—the likelihood that the element will persist at the existing location over a specified time period (typically 20 to 100 years)—based on a succinct assessment of its **size**, **condition**, and **landscape context**. A viable ecological community or species has sufficient size and resilience to survive occasional natural disturbances and human stresses. For a given conservation target, a set of EO rank specifications defines the different ranks. These specifications are developed with respect to all known occurrences within the range of the target.

The EO ranking system uses simple letter grades, as follows:

“A”=Excellent estimated viability

“B”=Good estimated viability

“C”=Fair estimated viability

“D”=Poor estimated viability; or, not viable

In assessing viability for Biodiversity Health, there are two significant points of departure from the global EO ranking methodology. First, unlike a global EO rank, which is determined relative to all known occurrences within the range of the target, a “site-specific” viability rank for assessing Biodiversity Health is determined relative to only the occurrences of the target at the site, not to all known occurrences. Second, the definitions of condition and landscape context are slightly different. Thus, the site-specific rank, while based on the same principles as an EO rank, is not identical to an EO rank. For this reason, Biodiversity Health uses categorical ranks that are analogous to but on a different relative scale than the EO letter-grade ranks: “Very Good”, “Good”, “Fair”, and “Poor”.

A recently drafted set of standards for assessing the viability of species and ecological communities is now available, as Chapter 5 (*EO Ranks and EO Rank Specifications*) in the document entitled *Draft EO Data Standards* [available on the internet at <http://dvc2.tnc.org/eodraft/index.htm>]. The standards describe in detail the consideration of size, condition and landscape context in determining the viability of an ecological community or

species occurrence at a site relative to all known occurrences. Ecoregional plans have used EO ranks in selecting the portfolio of sites. However, it is important to remember that, as described above and in Chapter IV (*Systems*), the global EO rank specifications are not identical to the site-specific viability ranks for Biodiversity Health; they should be used as a guide only.



Given the dearth of formal EO rank specifications and the flexibility that site planning teams have in defining focal conservation targets, site-specific viability ranks are likely to be the rule rather than the exception for the near future.

► **Application of Biodiversity Health**

The step-by-step procedure for measuring biodiversity health at a site is presented in Chapter IV (*Systems*).

► **Maps**

The Biodiversity Health measure for a site is translated into one of four colors for the purpose of display on maps.

- Dark Green indicates “Very Good” health
- Light Green shows “Good” health
- Yellow means “Fair” health
- Red indicates “Poor” health.

Maps can show the biodiversity health of sites by state, ecoregion or nation.

► **Frequency of Measure**

After an initial baseline measurement, biodiversity health is typically reassessed every three to five years. The actual frequency should be based on the time-scale for observing changes for the focal conservation targets. Some targets may need to be assessed more frequently, but typically a long lead-time is needed to observe meaningful changes in biodiversity health, especially given the variability of natural conditions.

► **Responsibility**

State/country programs are responsible for conducting the measures. Biodiversity health typically is assessed by a Conservancy ecologist/scientist(s) knowledgeable about the site. Actual information may come from a variety of sources, such as public agency staff, researchers, or other partner organizations. The lead Conservancy scientist consults with the lead Conservancy practitioner responsible for conserving the site, as well as with Heritage staff or other scientists or partners, as appropriate.

Threat Status and Abatement

Threat Status and Abatement (Threat Status) measures the seriousness of the critical threats at the site, and our success in abating these threats over time. The eight most serious threats are combined into a Threat Status rank for the site: “Very High”, “High”, “Medium”, or “Low”.

► **Foundation**

The systems, stresses, and sources components of the Conservancy's Five-S framework for site conservation lay the foundation for the Threat Status measure. The Five-S framework was described in Chapter III (*The Five-S Framework for Site Conservation*), and the systems, stresses, and sources components described in more detail in Chapters IV, V, and IV, respectively.

► **Application of Threat Status**

The step-by-step procedure for determining the threat status at a site is described in Chapters IV (*Systems*), V (*Stresses*), and VI (*Sources*). It will be necessary to complete all of the steps described in each of these chapters to measure threat status.

► **Maps**

As with the Biodiversity Health, Threat Status is translated into four colors for the purpose of displaying it on maps.

- Dark Green indicates “Low” threats
- Light Green shows “Medium” threats
- Yellow means “High” threats
- Red indicates “Very High” threats

The same base maps are used as for Biodiversity Health. Maps can show the threats status at sites by state, ecoregion or nation.

► **Frequency of Measure**

After an initial baseline measurement, threat status is typically re-assessed every two to three years. The actual frequency should be based on the time-scale for observing changes at the sites. Typically conservation strategies must be deployed over a few years to observe meaningful changes in the status of threats. However, a major land protection project, for example, might change the Threat Status dramatically (e.g. from red to green).

► **Responsibility**

State/country programs are responsible for conducting the measures. Threat Status typically is assessed by a team including the Conservancy staff practitioner responsible for the site’s conservation and a knowledgeable Conservancy ecologist/scientist working at or with the site. Actual information may come from a variety of sources, such as public agency staff, researchers, or other partners.

Conservation Capacity

The Conservancy’s ten-year conservation goals emphasize those conservation sites in ecoregional portfolios where the Conservancy will play a substantial conservation role—Conservancy action sites. Action sites lend themselves to a focused project approach drawing on the Conservancy’s unique capabilities, including in some cases a project director with designated responsibility for conserving the site. Our experience to date indicates that three key factors account for success at action sites:

- Project Leadership and Support.
- Strategic Approach.
- Adequate Funding.

Building these capacity factors, in turn, allows us to implement strategies that abate critical threats and enhance or maintain the conservation targets.

For Conservancy action sites, a total of seven indicators of the three key success factors are scored to determine the overall Capacity at a site.

► **Application of Conservation Capacity at Action Sites.**

1. Verify the Type of Project.

Conservation Capacity is assessed only for sites where the Conservancy is playing a meaningful conservation role, i.e., Conservancy action sites. The Conservancy’s project activity at action sites typically will fall into one of three categories:

- **Conservancy-led projects**

In which TNC is taking a primary leadership role in conserving the site, typically through the leadership of a Conservancy project director (e.g. most U.S. bioreserves).

- **Joint ventures with partners**

In which TNC is teamed up with one or more partners—typically via a memorandum of agreement—to put staff and resources in place for site conservation (e.g. Cosumnes River, California, where the local project director is funded and managed jointly by TNC and BLM).

- **Partner-led projects**

In which the Conservancy plays a substantial supporting role assisting a partner organization that assumes primary responsibility for conserving the site (e.g. most international projects).

The application of Conservation Capacity to action sites is triggered when TNC engagement begins at the site.

2. Assess Capacity Using Seven Indicators.

To help evaluate Conservation Capacity, a set of indicators has been developed for each of the key success factors, along with suggested benchmarks for evaluating each indicator. The indicators are listed below, along with a description of the highest benchmark of capacity. The complete set of benchmarks is provided in Appendix E. The benchmarks allow each indicator to be scored on a 4.0 to 1.0 grading scale.

- **Project Leadership and Support**

The presence of a talented project director is the single most important element of success. This person may be a Conservancy staff person, but might also be a conservation partner who works for a public agency or private conservation organization. The project director



Landscape action sites require a project director and often a community-based approach to conservation. A set of core competencies has been identified for project directors, and a hiring guide published for managers (*Competencies for Community-Based Conservation Leaders: A Hiring Guide*, available upon request from the

Conservation Operations Division [contact Susan Spellman, sspellman@tnc.org]). Managers are strongly encouraged to evaluate the competencies of the local project director during the project director’s introductory employment period. A recommended evaluation format for core competencies is included in the hiring guide.

is assigned responsibility for site conservation, and has sufficient time to focus on developing and implementing conservation strategies at the site(s). Landscape action sites require a full-time project director, whereas a less than full-time project director may be sufficient at other action sites.

In addition, the project director needs to be able to call upon an experienced ecosystem conservation practitioner—to serve as a sounding board for ideas, to provide advice and counsel, to provide contacts with outside sources of assistance, and to provide hands-on help at the site when needed. The project also needs to receive regular, high-level assistance from a full-service, experienced support team—either via on-site staff, from the state/country program staff, and/or from other sources.

The three indicators related to Project Leadership and Support include:

Focused Staff Responsibility for Conservation

A staff member from the Conservancy or a partner organization has clearly assigned responsibility, authority, and account-ability for conserving the site, with adequate experience and sufficient time to focus on developing and implementing conservation strategies at the site.

Conservation Manager or Mentor

The project has regular, sufficient (relative to site need), ongoing, hands-on involvement by an experienced conservation manager or mentor (i.e., at least five years experience *and* proven results in conserving sites with a similar level of complexity).

Project Support Team

The project receives regular, high-level assistance from a full-service, experienced support team, including conservation science, protection, land and water management, applied research, government relations/public funding, development, and operations. The support may be provided via on-site staff, state, country, international program, or partner organization staff.

- **Strategic Approach to the Project**

The strength of our strategic approach underlies our success in site conservation. The two indicators of Strategic Approach are:

Understanding/Application of the Five-S framework (systems, stresses, sources, strategies, success)

The staff project director and a multi-disciplinary team have completed a thorough assessment of the five “S’s” and have developed a sufficiently documented site conservation plan and appropriate site maps. (The assessment must be consistent with the spirit, not necessarily the letter, of the Five-S framework. No matter what formal planning process is used [e.g., one dictated by local, state, or federal policy], the identification of and logical linkage between systems, stresses, sources, strategies, and success must be apparent).

Iterative, Adaptive Approach to Developing and Implementing Key Conservation Strategies

Key components of ecological systems and threat status are monitored, and a multi-disciplinary project team meets regularly (e.g. quarterly, semi-annually, or annually) to assess progress, evaluate results based on monitoring of appropriate indicators of viability and threat, review and test strategic hypotheses, and make necessary strategic adjustments

- **Project Funding and Sustainability**

The local project must have sustainable operational funding that is adequate to support the local staff director and operating costs, as well as program funding that is adequate to implement key strategies. Funding may come from both private and public sources. There are two indicators related to Project Funding and Sustainability:

Start-Up or Short Term Funding

Funding has been secured, pledged, or is highly probable for core operations for at least the first two years, as well as major private or public funds to implement key conservation strategies.

Sustainable Support

The project has sufficiently developed a mix of long-term funding (broad donor base, endowment, or predictable funding), community support, and institutional partners.

3. Assign “Conservation Capacity” for the action site

First, determine the average score of the indicators within each of the three capacity success factors. The overall average score is then calculated by taking the average of these three average success factor scores. The Conservation Capacity for the site is summarized as “Very High,” “High,” “Medium,” or “Low” according to the following grading scale for the overall average score:

≥ 3.5	Very High
3.0 – 3.4	High
2.0 - 2.9	Medium
< 2.0	Low

- **Maps**

As with the Biodiversity Health and Threat Status, Conservation Capacity is translated into four colors for the purpose displaying the Overall Capacity on maps.

- Dark Green indicates “Very High” capacity
- Light Green shows “High” capacity
- Yellow means “Medium” capacity
- Red indicates “Low” capacity

The same base maps are used as for Biodiversity Health and Threats Status. Maps can show the conservation capacity at action sites by state, ecoregion or nation.

- **Frequency of Measure**

Capacity is typically re-assessed every one to two years. Often conservation capacity can be enhanced over a shorter time span than it takes for complex strategies to actually abate threats.

- **Responsibility**

State/country programs are responsible for conducting the capacity measures. Capacity is assessed jointly by the lead staff practitioner responsible for conserving the site, along with the state director or state conservation program director. Division vice presidents may also participate.

The previously referenced Microsoft Excel workbook entitled *Site Conservation/Measures of Success Workbook* contains an automated *Capacity Worksheet* template that can be used to assess the capacity indicators. The Excel worksheet provides a computer-automated scoring system that generates Conservation Capacity for a site based on assessment of the seven capacity indicators. Moreover, the worksheets will allow a graphic presentation of the current score for each

indicator.

The Excel workbook is included on the diskette that accompanied this handbook, or is available upon request from the Site Conservation program of the Conservation Science Division (site_conservation@tnc.org).

An analogous "manual" *Capacity Worksheet* is provided in Appendix E, and can be copied and filled out manually to compute indicator scores and Conservation Capacity for a site.



A Note on Measures of Success, Monitoring, and Adaptive Management

The Biodiversity Health and Threat Status measures, although based on an assessment of individual conservation targets and threats, have been designed to summarize the overall, or average, level of biodiversity health and threat abatement at a site, respectively. By their summary nature, they mask the changes in viability of individual targets and the magnitude of individual threats, and therefore may not be adequate for site-specific decision-making and adaptive management. However, as should be clear from the preceding chapters of this hand-book, the target- and threat-specific information that is the basis for the summary measures also is the basis for detailed decision-making. This may include setting specific conservation goals for individual targets (see toolbox, page IV-8); identifying critical threats and precise, focused conservation strategies to abate the threats; and assessing the efficacy and success of specific strategies in achieving conservation objectives and goals, i.e., abating threats and enhancing target viability.

You and your site planning/implementation team will need to design a monitoring program that efficiently provides the appropriate information for site-specific decision-making and for the

► The Conservancy's *Monitoring and Adaptive Management Program* is available to provide guidance on development and implementation of monitoring programs to meet our conservation needs (contact Bob Unnasch,

bunnasch@tnc.org).

► A more thorough discussion of monitoring and adaptive management, in the context of the Five-S framework for site conservation, is provided in the *Supplemental SCP Volume*.



organizational Measures of Conservation Success. The information needed to apply the Five-S framework should be the basis for designing such a monitoring program. Specifically, monitoring should focus on the size, condition, and landscape context of the focal conservation targets, on the severity and scope of stresses to the focal targets, and on the status of critical threats (i.e., sources of stress).

