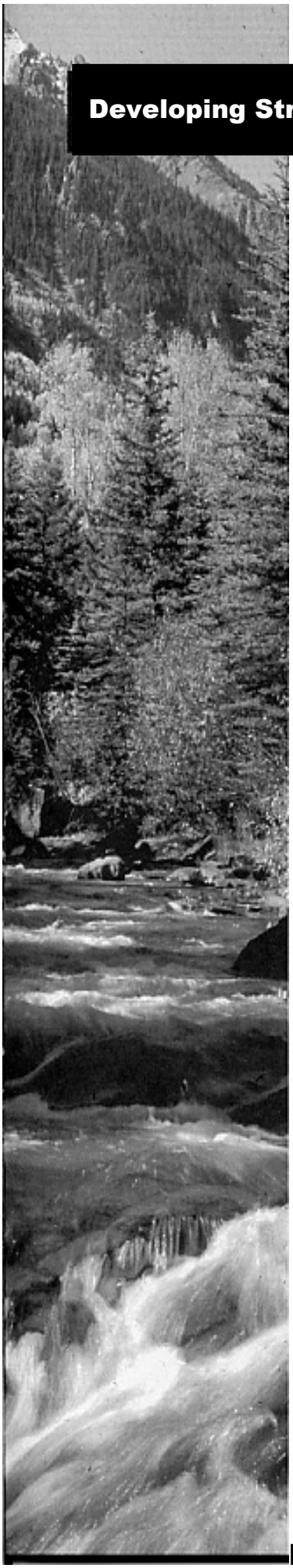

Developing Strategies, Taking Action & Measuring Success

LANDSCAPE - SCALE CONSERVATION

A Practitioner's Guide

Greg Low
Efroymson Fellowship Program

The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

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Dedication and Acknowledgements

There is no one more important to the mission of conserving biological diversity than the growing cadre – now several hundred strong – of project leaders engaged in conserving functional landscapes. They are the people at the front line of biodiversity conservation.

The inspiration for and ideas in this handbook have been gleaned from my work with landscape project directors and other colleagues over the past 18 years. In particular, I want to express appreciation to, and admiration for the original "pioneers" of landscape-scale conservation, including John Hall, former director at the Virginia Coast Reserve; Mark Robertson, who worked in the Florida Keys before becoming a state director; Bill Kittrell in the Clinch Valley; Michael Prevost at the ACE Basin and South Carolina coastal ecosystems; Bud Cook in the Poconos; and Ed Misaki at Molokai. In addition, Bill Weeks – as the Conservancy's chief conservation officer who championed "bioreserves" in the early 1990's, and in subsequent positions – provided tremendous leadership to this new conservation approach. Phil Tabas has also provided invaluable assistance to many landscape-scale projects.

Over the past several years I've had the special pleasure of working with many TNC conservation scientists. I'd like to especially acknowledge landscape ecologist Karen Poiani for her leadership in advancing the scientific framework for landscape-scale conservation. Karen and Brian Richter in their seminal paper, *Functional Landscapes and the Conservation of Biodiversity*, describe the principles underlying the conservation of functional landscapes. Karen has also been a passionate ambassador working hands-on with conservation practitioners around the world. In addition, Jeff Baumgartner and Dan Salzer continue to play key roles in developing our methodology and software for conservation area planning and measures of conservation success.

I want to express deep appreciation to the late Dan Efroymson, and his wife Lori, for their incredible support in advancing landscape-scale, community-based conservation to a new level. Dan Efroymson was one of the wisest and most committed conservationists ever to serve on our Board of Governors. The Efroymson Fellowship Program has allowed us to continually improve the concepts and tools presented in this handbook – which serves as the program's "textbook." Over 180 landscape project teams have now developed conservation plans through the Efroymson workshops, and have contributed greatly to our collective knowledge about landscape-scale conservation.

As pioneers in landscape-scale, community-based conservation, these and other conservation leaders did not have a road map to follow. They charted new territory, and we all must continue to do so. This handbook attempts to capture their, and my own, experience, practice and intuition in planning and implementing landscape-scale conservation projects. While most of them have seen some of the materials in this handbook, they have not formally reviewed them and should not be held responsible for any shortcomings in the approach. This handbook is dedicated to them, to all current and future landscape conservation practitioners, and to the Conservancy's success in achieving its 2010 goal of conserving 600 functional landscapes.

Greg Low, July 2003 (4th edition)

I. Introduction

Conservation by Design establishes The Nature Conservancy's long-term conservation vision – conserving a full array of ecological systems and viable native species through portfolios of functional conservation areas within and across ecoregions. Functional conservation areas range along a spectrum of complexity and scale, from *sites* that conserve a small number of conservation targets, to *landscapes* that conserve many targets at multiple spatial scales. The Conservancy's ambitious conservation goal for 2010 calls for direct action, with partners, to conserve 600 functional landscapes in the United States, Latin America and Asia-Pacific. Through conserving functional landscapes we are most likely to secure enduring conservation results.

This handbook is designed for landscape-scale conservation practitioners. Its focus is building sound conservation strategies to address critical threats to the priority conservation targets. It also provides basic suggestions for working with local communities. It does not, and cannot, address the thousands of day-to-day implementation issues that are faced by practitioners, because the array of ecosystem threats is so diverse and the solutions are so often site-specific. Indeed, it is for this reason that a sound planning framework is so important. Conditions and threats *will* change.

The handbook provides a relatively simple, straightforward and proven approach to planning for the conservation of priority areas. The methodology has been tested, both intellectually and practically, and has been deployed successfully on the ground by hundreds of conservation practitioners. It has been refined and improved based on this real-world experience.

The Conservancy practiced land conservation for decades before we developed and documented this approach. Many times, we did smart things, either because they were obvious or because we had good intuition. Other times, we did dumb things, or things that were not very strategic in achieving biodiversity conservation results. In these latter instances, we misdirected our efforts or misspent our resources. Our time and money are too precious to misspend.

This conservation planning approach works regardless of scale. It was developed for landscape-scale projects, but it can be used at a regional scale and at smaller sites as well. The approach is called the "Five S's": systems, stresses, sources, strategies and success.

The handbook highlights each of the five S's in a short, how-to workbook format. More detailed information can be found in *The Five-S Framework for Site Conservation: A Practitioner's Handbook for Site Conservation Planning and Measuring Conservation Success*. An eloquent and thorough discussion of the systems/stresses/sources/strategies approach to ecosystem conservation is provided in Bill Week's *Beyond the Ark*, as well as interesting discussions about application at real places.

This conservation approach remains a work-in-progress, and this handbook is periodically updated. Suggestions for ongoing improvements are welcomed.

II. Landscape-Scale Conservation

Landscape-scale conservation includes three different types of projects: ***functional landscapes***, ***large functional sites*** and ***large-scale conservation areas***.

- ***Functional landscapes*** ***conserve biological diversity at all scales, including "coarse-scale" ecological systems or species*** that occur and function at large spatial scales -- ranging upward from tens of thousands to millions of acres. In addition, functional landscapes capture many other finer-scale conservation targets, such as small-patch communities and rare species that depend on a restricted habitat. Functional landscapes have a high degree of intactness. They have sufficient functionality, or feasibly restorable functionality, to conserve targets over a long time horizon (e.g. centuries). Functional landscapes typically include both private and public lands.

  Conserving functional landscapes will improve our likelihood of achieving enduring biodiversity conservation. Karen Poiani and Brian Richter in *Functional Landscapes and the Conservation of Biodiversity*[1] note that emphasis on conserving functional landscapes will dramatically improve our efficiency and effectiveness for the following reasons:

  - Capturing ecological systems, communities and species at multiple scales within a single intact landscape provides a more ecologically integrated conservation strategy.
  - Functional landscapes may be more efficiently conserved than many widely dispersed areas.
  - Functional landscapes typically provide more habitat, greater habitat diversity, and larger populations of known and unknown species.
  - Because of their complex and comprehensive environmental gradients, they offer greater protection against global climate change.

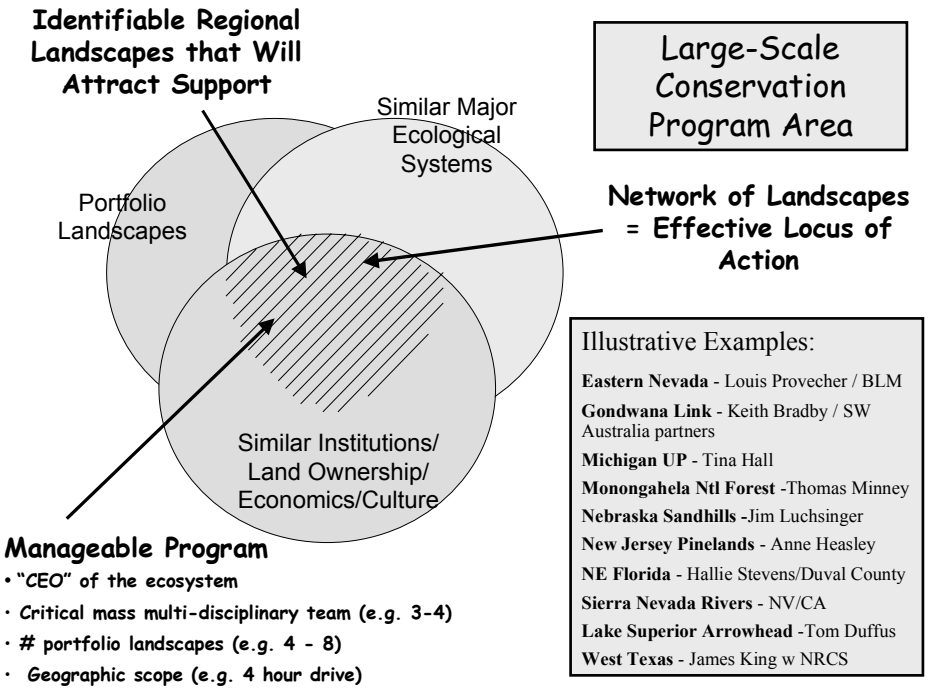
- ***Large functional sites*** require a large spatial area to maintain the processes needed to conserve a set of target species, communities or systems. For example, a large functional site might seek to conserve rare mussel species whose ecological processes involve an entire watershed. While the watershed itself is not a conservation target, compatible uses of forests and farmland in the watershed are required to sustain the mussel populations.

- ***Large-scale conservation program areas*** conserve a network of functional landscapes and sites that are geographically clustered in a regional landscape. These large-scale conservation areas have a common ecological setting and human context (e.g. Michigan's Upper Peninsula, Greater Yellowstone,

[1] *Functional Landscapes and the Conservation of Biodiversity*, Karen Poiani & Brian Richter, Working Papers in Conservation Science #1, The Nature Conservancy. This working paper was extracted from "Biodiversity Conservation at Multiple Spatial Scales: Functional Sites, Landscapes and Networks, by Poiani, Richter et al, Bioscience, February 2000

Southwest Australia's Gondwana Link). Figure 1 below describes the key elements of large-scale conservation program areas.

Figure 1



Community-Based Conservation

Large-scale conservation areas represent a natural evolution from the Conservancy's community-based conservation programs. They are still locally-based, on-the-ground conservation initiatives, and the program staff are well-connected with key local constituencies. The Conservancy still acts as a catalyst — building bilateral and multi-lateral partnerships, while bringing something to the table with each partnership. In fact, many of the Conservancy's original "community-based" conservation offices represented large-scale conservation areas from the outset, such as the Florida Keys and Virginia's Clinch Valley.

Experience shows that most landscape-scale projects require support of key local constituencies to achieve enduring conservation success. Except for remote wilderness areas, ecological systems are typically embedded within large working landscapes that include the people who live and work in these places. Threats are typically generated by incompatible human uses and incompatible development. Solutions require working with local landowners, community leaders and governments. New threats invariably emerge. A long-term institutional commitment to every functional landscape is required to achieve lasting results.

III. Key Success Factors

The following factors are key for success in landscape-scale conservation:

- **Talented "CEO" for the Ecosystem.** Every landscape needs a "CEO" who is dedicated to its conservation. Indeed, the presence of a talented project leader is the single most important ingredient of conservation success. This person may be a Conservancy staff director of a large-scale conservation program area, or a partner who works for a public agency or private conservation organization. Sometimes multiple staff leaders are involved; if so, they must have a shared vision of success and successful collaboration mechanisms. The following chapter, "The Right Stuff," describes the characteristics of a good project leader.

- **Good Multidisciplinary Support.** Every landscape project needs support from an experienced, multidisciplinary team to develop and implement key strategies. The team may be located on site, within the lead institution, or partner organizations. Moreover, a new project also needs to be able to call upon an experienced landscape 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.

- **Institutional Leadership.** While individual staff may come and go, institutions are enduring. A private or public conservation organization must provide leadership for developing and implementing conservation strategies at each landscape. If multiple institutions are involved they too must have a shared vision of success and successful collaboration mechanisms in place.

- **Strategic Approach & Measures of Success.** The strength of its strategic approach will serve as the foundation of a project's success. This handbook describes a methodology for developing effective conservation strategies. Embedded in the strategic approach is a set of two conservation "scorecards" to measure success – the viability of the focal conservation targets and the status of critical threats. Project teams should deploy an iterative and adaptive approach to evaluate results and make necessary strategic adjustments over time.

- **Adequate Funding.** The project must have adequate funding to support the project staff and operations, as well as private and public funds to implement key strategies.

- **Engagement & Collaboration with Key Partners & Constituencies.** The project team must effectively engage with key partners and constituencies, including those in the local community. Ultimate success in protecting functional landscapes will require their long-term support for conservation and compatible development.

- **Continuity of Effort.** The job of conserving functional landscapes must be done place-by-place-by-place, and year-after-year-after year. Critical threats will continue to emerge. This work is "a 100 year job."

IV. The Right Stuff — A Talented Project Director

A talented "CEO" or project director is the single most important factor in achieving successful landscape-scale conservation. The special ingredients summarized below and are extracted from a Conservancy assessment of competencies for locally-based conservation leaders.

- ***Alignment with Core Values.*** Integrity beyond reproach; innovation and excellence; commitment to people; commitment to the future.
- ***Composure.*** Cool under pressure; can handle stress; is not knocked off balance by the unexpected; doesn't show frustration when resisted or blocked.
- ***Dealing with Ambiguity.*** Can effectively cope with change; shifts gears; can decide and act without having the total picture; can comfortably handle risk and uncertainty.
- ***Drive for Results.*** Bottom-line oriented; steadfastly pushes self and others for results; takes initiative to make concrete results happen – a deal maker.
- ***Interpersonal Savvy.*** Relates well to all kinds of people; builds constructive and effective relationships; uses diplomacy and tact.
- ***Learning on the Fly.*** Learns quickly when facing new problems; open to change; analyzes successes and failures for clues to improvement; tries to find solutions.
- ***Partnering.*** Understands how to build a partnership for clearly defined results; active listener; collaborative; recognizes value of distinct strengths; shares credit.
- ***Patience***. Tolerant with people; tries to understand the people and the data before making judgements and acting; sensitive to due process and proper pacing.
- ***Perseverance.*** Pursues everything with energy, drive, and a need to finish; seldom gives up before finishing, especially in the fact of resistance or setbacks.
- ***Political Savvy***. Can maneuver through complex political situations; anticipates where the land mines are and plans approach accordingly; is a "maze-bright" person.
- ***Sizing up People***. Good judge of talent; can articulate people's strengths and limitations and project what they're likely to do in various situations.
- ***Strategic Thinking***. Can craft competitive and breakthrough strategies; can hold on to a vision; puts the trivial aside and focuses on the critical.

In short, the job requires a person with commitment and caring; driven to results, but patient and persistent; both smart and street-smart; an "institutional deal-maker," a head for critical thinking and a bias for action. The Conservancy is fortunate to have secured a growing cadre of locally-based conservation program leaders who have demonstrated that the vast majority of these talents can indeed reside in mortal human beings.

V. Conservation Planning — An Iterative, Adaptive Approach

In the early 1990's, When the Conservancy first started to develop landscape conservation plans, project teams typically went off and spent several months putting together a lengthy written plan. They would publish the plan in a nicely bound document, and then bring the plan into the Conservancy's home office for review by a group of managers and other interested parties. We discovered there were several flaws in this process.

- The development of a lengthy written plan caused project teams to try to "get it 100% right" the first time around. We found instead that we never do "get it right", as we are continually gaining new information and insights. Instead, good planning can only be an ongoing series of successive approximations built on sound working hypotheses.

- The intensive development of a lengthy published plan (even one labeled "draft") often caused project teams to become defensive about their work and less prone to want to make changes.

- Circumstances change, often considerably, in the real world. New threats emerge. Other threats become more or less serious. Our understanding of targets changes. Some strategies work and others don't; new strategy ideas arise. Between changing circumstances and new knowledge, a landscape conservation plan would often change by as much as 20% in a year.

- Review by multiple colleagues from the field, facilitated by a veteran conservation practitioner and conservation scientist, was found to serve as a better sounding board, as well as an excellent way to advance conservation learning.

Accordingly, the Conservancy now encourages project teams to view conservation planning as an iterative, adaptive process. Conservation planning software (see next chapter) and the Efroymson Fellowship Program (see http://home.portal.tnc.org/grcefroymson on the Conservancy's Intranet) facilitate this approach.

Developing a "Credible First Iteration"

Experience has shown that project teams can develop a "credible first iteration" landscape conservation plan in a relatively short time frame through the Efroymson Fellowship Program or a facilitated rapid conservation plan. The following elements are necessary for developing a credible first iteration:

- Project team of 3 to 6 participants with good knowledge of the area, including its biota and human context
- Modest advance preparation -- short summary of project area, potential conservation targets and maps circulated in advance
- Excel conservation planning workbook as primary platform, plus base maps
- Facilitated process to keep the ball rolling, focus on key issues, and push for closure
- Reviewers from outside the operating unit who provide "tough love" critique
- Iterative approach – project team meets periodically to revise plan as needed

VI. Conservation Planning — The Five-S Framework

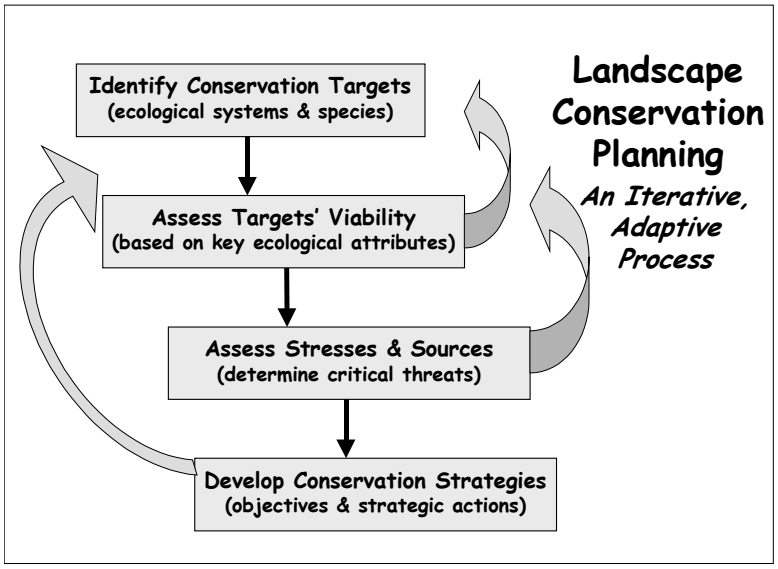
The Five S's include:

- **Systems**: the conservation targets at a landscape and the key ecological attributes that maintain their viability.
- **Stresses**: the types of destruction, degradation, or impairment afflicting each of the conservation targets at a landscape.
- **Sources**: the agents generating the stresses.
- **Strategies**: the types of conservation activities deployed to abate sources of stress (threat abatement) and enhance or restore the system (restoration).
- **Success**: measures of biodiversity health and threat abatement at a landscape.

The logic underlying the 5-S framework is simple. Our conservation goal at a landscape is to maintain healthy, viable occurrences of the selected conservation targets. By definition, healthy occurrences are not significantly stressed. Abating the sources of stress should alleviate the stresses to the systems, resulting in greater viability of the conservation targets. In those cases where viability has been reduced due to an historical source, direct restoration of a conservation target may be necessary.

These straightforward planning steps are illustrated in Figure 2 – identifying conservation targets (*Systems*) and assessing their viability, determining critical threats (*Stresses* and *Sources* of stress), and developing sound *Strategies*. A powerful set of measures of *Success* is fully embedded within the framework. This handbook summarizes a proven, step-by-step approach for planning to conserve functional landscapes.

Figure 2



VII. Systems — aka. Conservation Targets

Landscape conservation begins with understanding the priority conservation targets at the area. Each landscape in an ecoregional portfolio has one or more *prima facie* reasons it is important for conservation, such as an outstanding example of an ecological system. Identifying the right set of focal conservation targets at the area is the foundation for all subsequent steps in planning. A different set of targets will have different threats and therefore different strategies.

Conservation targets ("systems") at a landscape may include ecological systems, ecological communities, species, and other important natural resources:

- ***Ecological Systems***. Ecological systems are assemblages of ecological communities that occur together on the landscape and share common ecological processes (e.g. flooding), environmental features (e.g. soils and geology) or environmental gradients (e.g. precipitation). An example is Bottomland Hardwood Forest.

- ***Ecological Communities***. Ecological communities are groupings of co-occurring species, including natural vegetation associations and alliances. An example is Atlantic White Cedar Swamp.

- ***Species.*** Types of species targets may include:

  - Globally imperiled and endangered native species (e.g. species ranked G1 to G3 by natural heritage inventories)

  - Species of special concern, due to vulnerability, declining trends, disjunct distributions or endemism within ecoregion

  - Focal species, including keystone species, wide-ranging regional species and umbrella species

  - Major groupings of targeted species that share common natural processes or have similar conservation requirements (e.g. freshwater mussels, forest-interior birds)

  - Globally significant examples of species aggregations, such as a migratory shorebird stopover area aggregation

  Note: An "indicator species" should not be a target *per se*. Indicators species may be used to monitor the health of other communities, systems or species that are conservation targets.

- ***Other Significant Natural Resources.*** Some projects may include targets that are not biodiversity targets. Other natural (or cultural) resources -- such as groundwater supplies, productive farmland, wilderness areas or cultural features -- may be important to partners engaged in conserving the area.

There are three key elements in the "systems" stage of conservation planning:

1. Identify the focal conservation targets at the landscape.
2. Determine the key attributes of viable conservation targets.
3. Rate the viability of the focal targets.

Identify the Focal Conservation Targets

The targets selected will ultimately determine the conservation strategies at the landscape — what critical threats must be abated and what ecological restoration must be performed? The list of focal conservation targets for landscape planning need not be long and comprehensive; rather, it should be short and representative. Experience based on conservation planning at almost 200 landscapes has shown that **eight or fewer focal targets** will suffice for 95% of the areas, including landscapes in the millions of acres.

While selecting a small number of focal targets can sometimes be a challenging task for landscapes, it is in many ways the most important step in the conservation planning process.

There are five steps in identifying focal conservation targets. The list of conservation targets (or likely targets) identified through ecoregional planning is a good starting point:

Step 1. Determine the viable ecological systems and groupings of targeted species that occur at the landscape, with special attention to coarse-scale systems and systems that have other embedded targets. Ecological systems provide the "coarse filter" for conserving the representative array of species and natural communities. Species groupings provide a way of aggregating the target species at an area that share common natural processes and have similar conservation requirements (e.g. freshwater mussels).

Example: The Laguna Madre landscape in Texas & Mexico was divided into five major ecological systems — coastal sandplain matrix, Tamaulipan thornscrub, hypersaline lagoon system, barrier island complex, and nearshore marine system.

Step 2. Look for "nested" species and community targets that are "captured" within the ecological system targets. Often, conserving an ecological system will lead to conserving a rare species or natural community that is embedded within the system. These "nested" targets should be documented, but are not cited as focal targets.

Step 3. Identify priority species or communities that have ecological attributes or conservation requirements not adequately captured within the targeted ecological systems. Types of ecological communities, species and species groups to consider include:

a. **Individual species and ecological communities that have special conservation or management requirements --** due to distinct locations, ecological process or threats.

b. **Globally important attributes of regional-scale species that should be conserved at the landscape.** Individual conservation areas make important and often unique contributions to the functional network of areas that supports a population of a regional-scale species, or grouping of species. The particular life stage(s) of the regional-scale species that is fulfilled at the landscape may be considered a focal conservation target (e.g. nesting, stopover or wintering grounds for migratory birds).

   Example: The globally significant concentration of piping plovers is also a target at Laguna Madre.

c. **"Keystone" species that drive ecological processes and "umbrella" species that disperse or use resources across different ecological systems.** The latter species help ensure attention to linkages, connectivity, ecotones and environmental gradients.

   Example: At Laguna Madre, seagrass beds are being considered as a focal target because of their critical role in supporting the entire estuarine food web. The ocelot is a focal target because it utilizes a full gradient of terrestrial-estuarine-barrier island-marine systems.

Step 4. "Lump" together – into a single target grouping -- related targets that meet all of the following tests (e.g. rare mussels):

- Co-occur on the landscape
- Share common ecological processes
- Share similar critical threats

Step 5. In all cases, an initial determination should be made as to whether a proposed conservation target is viable, or feasibly restorable. The Conservancy's vision is to conserve *viable* occurrences of native species and ecological systems. Viability indicates the ability of a conservation target to persist for many generations. If a target is on the threshold of collapse, or conserving a proposed target requires extraordinary human intervention, it may not represent the best use of limited conservation resources. For this reason, some targets will be eliminated.

Table 1 shows an illustrative list of focal conservation targets at four conservation areas. Appendix B provides a one-page decision support tool for selecting focal targets.

Check the list of focal conservation targets to ensure that all likely targets in a new or revised ecoregional plan are adequately covered, as well as targets that represent the biodiversity at the landscape. Revise the list as necessary. Selecting targets is an iterative, adaptive process. *Targets should be re-considered, and revised if necessary, at every step of the Five-S planning process -- including after consideration of viability, threats and strategies.*

Table 1
Illustrative Lists of Focal Conservation Targets
At Selected Functional Landscapes

Florida Panhandle

- Longleaf pine matrix and associated communities
- Seepage-stream complex
- Blackwater rivers/streams
- Red-cockaded woodpeckers
- Flatwood salamanders
- Florida black bears

Laguna Madre, Texas & Mexico

- Thornscrub matrix
- Coastal sandplain matrix
- Hypersaline lagoon
- Barrier island communities
- Reddish egrets
- Piping plovers
- Ocelots

Grassland National Park-Bitter Creek, Canada & Montana

- Northern mixed-grass prairie
- Sage grouse
- Burrowing mammals complex
- Badlands
- Riparian/aquatic
- Bison

Rocks Islands-Southern Lagoon, Palau

- Marine lake ecosystem
- Limestone forests
- Mangrove systems
- Seagrass systems
- Coral reef systems
- Large reef food fish
- Turtles
- Beach and cay ecosystems

Determine the Key Attributes of Healthy, Viable Targets

The long-term viability of a focal conservation target's occurrence in a landscape is a function of the **key ecological attributes** relating to its **size**, **condition** and **landscape context**. Based upon the best available knowledge and judgment, project teams need to identify the key ecological attributes relevant for each target.

- ***Size*** is a measure of the *area* or *abundanc*e of the conservation target's occurrence.
- ***Condition*** is a measure of the composition, structure and biotic interactions that characterize the occurrence.
- ***Landscape context*** includes two factors: the ecological processes that maintain the target occurrence and connectivity. *Ecological processes* include hydrologic regimes (e.g. flooding), fire regimes and many kinds of natural disturbance. *Connectivity* includes such factors as species targets having access to habitats and resources and the ability of a target to respond to environmental change through dispersal or migration.

Selecting Key Ecological Attributes

One of the most important steps in good conservation planning is selecting a small set of ecological attributes that are critical to each target's long-term viability. There is an almost infinite number of attributes that could *describe some characteristic* of a target. Our conservation planning task is to identify a parsimonious selection of critical attributes that will capture the target's likelihood to persist for a century or longer. Project teams are encouraged to begin with *three to five* key attributes for each target. Table 2 provides a selection of representative key ecological attributes that apply to many targets.

Table 2
Representative Key Ecological Attributes

- Minimum dynamic area – the size needed for an ecological system to recover from natural disturbances & provide breeding territory for representative species.
- Population size – i.e. sufficient for genetically viable reproduction of a species.
- Characteristic native species
- Reproduction or recruitment
- Presence of old growth and biological legacies (e.g. dead and dying species)
- Key ecological processes & natural disturbance regimes
- Availability of critical habitats and resources
- Dispersal or migration in response to environmental changes

Project teams often wonder about into which viability category a given attribute should be placed – e.g. under the "condition" category or under "landscape context." Use the general definition above to make this placement. However, the placement of a key attribute is not nearly as important as *selecting the right attributes*.

Hints for Selecting Key Ecological Attributes

- **Pick factors that are critical for long-term viability over centuries**
  What factors, if degraded, would seriously jeopardize the target's ability to persist for 100+ years? These may be related to size, structure, composition, reproduction/recruitment, ecological processes, connectivity or other factors
- **Look for attributes that may be seriously degraded by future human-caused threats**
  High-ranked stresses help reveal key attributes (the inverse)
- **Look for a parsimonious number of really key ecological attributes (e.g. 3 to 5)** … versus many desirable or descriptive characteristics
- **Key attributes may be refined over time**
- **The key attributes are what's important;** the indicators are what you will measure (see below)

Rate the Focal Targets' Key Attributes

The final step in the "system" stage of conservation planning involves rating the current status of each key ecological attribute. These ratings essentially define the health, or long-term viability, of each focal target. They also provide our long-term measure of success.

♦ **Select Indicators to Measure Each Key Ecological Attribute**

In order for each key ecological attribute to be assessed, the basis for its measurement must be established. These measures are called ***indicators***.

For example -- if *minimum dynamic area* is a key attribute for an ecological system, then its indicator would be *acres* or *hectares*. If characteristic native vegetation is an attribute, then the *percentage* of native cover might be the indicator.

Indicators must be measurable. Therefore they frequently involve some type of quantitative assessment -- such as number of acres, recruitment, age classes, percent of cover, or

frequency of fire regime. Sometimes the measures may involve assessment of sample plots or transects. Other indicators may involve measurable elements that are not numerical, such as the seasonality of fire or flooding regime.

Look for indicators that meet the following criteria:

- Strongly relate to the status of the key ecological attribute
- Might provide an early warning to serious stresses
- Independent variables – not significantly affected by other threats off the site
- Are efficient & affordable to measure
- Where you can reasonably benchmark a "Good" vs. "Fair" rating (see below)

Sometimes a single indicator can be used to assess two or more key ecological attributes – for example, the seral stages in a floodplain forest could be used to measure both the flooding regime and recruitment.

♦ **Rate the Current Status of Each Indicator**

A simple but effective grading scale is then used to assess the current health of the key ecological attributes -- ***Very Good, Good, Fair*** *or* ***Poor***.

This four-part grading scale is based on over 20 years of similar application by natural heritage inventory programs throughout the United States. It provides a sufficient degree of distinction among the four scores and allows for a reasonable confidence level, while recognizing the tremendous lack of information and research that would be needed to provide more precise grades for almost all targets.

A description of the ratings is as follows:

> **Very Good** -- The factor is functioning at an ecologically desirable status, and requires little human intervention.
>
> **Good** -- The factor is functioning within its range of acceptable variation; it may require some human intervention.
>
> **Fair** -- The factor lies outside of its range of acceptable variation & requires human intervention. If unchecked, the target will be vulnerable to serious degradation.
>
> **Poor** -- Allowing the factor to remain in this condition for an extended period will make restoration or preventing extirpation practically impossible.

Ideally, and over time, a set of benchmarks should be established for each of these four ratings for each key ecological attribute. These benchmarks should state clearly where the indicator being measured would fall within each level. For example, is "good" minimum dynamic area grassland a minimum of 50,000 or 100,000 acres?
However, the scientific information needed to establish these benchmarks is often lacking or inadequate. In these cases, project teams should rely on well-informed expert opinion

to determine a "credible first iteration" of the benchmarks and assessment of the current rating. For the initial planning, it is often sufficient to describe the benchmarks for "Good" and "Fair," since the viability scores typically fall into one of these two categories for the large majority of targets.

Table 3 shows an illustrative set of key attributes, indicators and benchmarks for their ratings. Appendix C provides a one-page support tool for assessing key attributes and rating target viability.

Table 3
Illustrative Key Ecological Attributes, Indicators & Rating Specifications
Northern Mixed Grass Prairie

	Size	***Condition***	***Landscape Context***
Key Attribute	**Minimum dynamic area**	**Native vegetative cover**	**Natural fire regime**
Indicator	*Acres*	*% native cover*	*fire return interval + range of size*
Rating **Very Good**	100,000 acres unfragmented block	♦ ≥ 90% native cover	♦ FRI of 3 to 5 years AND size range of 5,000-25,000 acres
Good	50,000 – 100,000 acres	♦ ≥ 75% native cover	♦ FRI of 3 to 10 years AND size range of 5,000-25,000 acres
Fair	20,000 – 50,000 acres	♦ < 75% native cover	♦ FRI of 3 to 10 years AND size range of 1,000-40,000 acres
Poor	< 20,000 acres	♦ < 50% native cover	♦ Outside of above parameters

Remember that landscape conservation planning as much a process as a product. Project teams are often initially overwhelmed by key ecological attributes, indicators and ratings – how can this possibly be done for eight targets? Instead, assessing ecological health should be viewed as an iterative process, involving a continuing series of "successive approximations" over years. Research priorities should focus on attributes, indicators and ratings where uncertainties are most vulnerable -- i.e. your conservation strategies would be affected. We should strive to steadily improve our knowledge over time; we will never "get it right" them first time.

Note: Appendix A provides an example of the conservation targets and overall viability rankings for a Southwestern River landscape. Key ecological attributes, indicators and viability scores for an illustrative project are also provided in the Conservation Area Planning/Measures of Success Excel workbook.

VIII. Stresses and Sources — aka. Threats

Stresses destroy, degrade or impair conservation targets by impacting a key ecological attribute relating to their size, condition or landscape context. A source is the proximate cause of a stress. We need to understand both the *stresses* affecting the conservation targets and the *sources* of stress in order to ensure that we develop effective conservation strategies.

For example, nutrient loading is a stress to many aquatic ecosystems, where excess nutrients in the water draw off oxygen and therefore kill fish and other aquatic life. However, the nutrient loading might be caused by many different sources, such as farm fertilizers, animal feed lots, septic systems, sewage treatment facilities or suburban runoff.

At first glance, the distinction between stresses and sources may appear complicated or unnecessarily confusing, but it is actually designed to make a complex task easier to understand. More importantly, it is designed to help lead to effective strategies for addressing critical threats. This is well described by Bill Weeks in *Beyond the Ark*:

> The Nature Conservancy originally called the second step in its [conservation] planning discipline "threats analysis". Project teams understandably adopted "threat" as the unit of analysis. The Conservancy concluded after a time, however, that its project teams would be better positioned to develop good strategies if they considered threats in two more narrowly defined steps. Team members are now advised to ask first what the ecological stresses to a system are—independent of the source of those stresses—before separately tracing those stresses to their sources. If we do not consciously alter our natural mode of expression, we will, for example, call a proposed road a threat in an estuarine system. We are then immediately inclined to the conclusion that we must stop construction of the road. Threat: road. Solution: stop road. However, if we separate the threat into stress and source, the stress isn't the road. The stress is, for example, loss of tidal flow. That formulation of stress inclines us to think, instead, of ways to keep tidal waters flowing through the pathway that is the proposed location of the road. Culverts may be the answer. (p. 46) [2]

Stresses

There are two steps in the "stresses" stage of analyzing threats: (1) identify major stresses to the focal conservation targets; and (2) rank the stresses.

- **Identify Major Stresses to the Conservation Targets**

  Every natural system is subjected to various disturbances. For our planning purposes, however, only the destruction, degradation or impairment of priority conservation targets that is caused directly or indirectly by human sources should be considered a stress. Most stresses are caused directly by incompatible human uses of land, water and natural resources; sometimes, incompatible human uses indirectly cause stress by exacerbating natural phenomena.

[2] Beyond the Ark: Tools for an Ecosystem Approach to Conservation , W. William Weeks, Island Press, 1997

Every stress impairs a key ecological attribute associated with a conservation target's size, condition or landscape context. In looking at stresses to a forest system, for example: habitat destruction would reduce the target's *minimum dynamic area* (size); altered structure would affect its *characteristic age structure* (condition); and altered fire regime would affect its *fire return interval* (landscape context).

The stresses to consider should be either current stresses *or* have high potential to occur in the next ten years under current circumstances and management.

It is important to be as precise as possible in identifying the stresses; this will help focus the subsequent identification of sources of stress and minimize "double counting" of stresses. An illustrative list of stresses is shown in Table 4. Use this list as an aid, but consider other stresses that may be relevant and significant to your specific targets.

♦ **Rank the Stresses**

The relative seriousness of a stress is a function of the following two factors:

- **Severity of damage.** What level of damage to the conservation target can reasonably be expected within 10 years under current circumstances? Total destruction, serious or moderate degradation, or slight impairment?
- **Scope of damage.** What is the geographic scope of impact to the conservation target expected within 10 years under current circumstances? Is the stress pervasive throughout the target occurrences or localized?

Based upon the best available knowledge and expert judgments, rank each stress to each focal conservation target that you've identified. Rank the stress based on the following scale: ***Very High, High, Medium*** *or* ***Low***.

The stress rank is based on the severity and scope of the stress. Guidelines for these assessments are provided in Appendix D. We want our conservation strategies to reduce or eliminate those stresses that have high severity combined with widespread scope. We are less concerned about a stress with very severe impacts to only a small area, or stresses that are widespread but with low severity.

Conservation Planning Software – A Powerful Tool

An automated Microsoft Excel workbook entitled *Conservation Area Planning /Measures of Success Workbook* has been developed to help project teams assess targets, rank threats, and develop strategies. The Excel workbook has been deployed at hundreds of conservation areas, with very positive reviews from diverse users – ranging from Ph.D. conservation scientists to land protection dealmakers. The Excel software is provided as part of the Conservancy's Efroymson Fellowship Program and can be downloaded from: http://www.conserveonline.org/.

Table 4
Illustrative List of Stresses

Alteration of natural fire regimes
Altered composition
Altered structure
Extraordinary competition for resources
Groundwater depletion
Habitat conversion
Habitat destruction
Habitat fragmentation
Habitat disturbance
Loss of genetic diversity
Resource depletion
Modification of water levels; changes in natural flow patterns
Nutrient loading
Sedimentation
Salinity alteration
Altered chemical regime

Sources

For each stress to a given conservation target, there are one or more causes or sources.

Previously we cited nutrient loading as a stress to aquatic ecosystems. The potential sources of this stress include farm fertilizers, animal feed lots, septic systems, sewage treatment facilities or suburban runoff. We need to know which of these sources are very serious threats that we must address, as the strategies for each source would be vastly different.

This chapter presents three steps in the "source" component of conservation planning:

1. Identify the major sources of stress
2. Rank the sources
3. Identify critical threats

♦ Identify the Major Sources of Stress

Most sources of stress are rooted in incompatible human uses of land, water and natural resources. It is important to identify the most ***proximate sources*** (e.g. incompatible residential development), rather than ultimate sources (e.g. population growth). However, the underlying cause of a given threat should be considered if it is necessary to address the underlying cause to abate the proximate threat at the conservation area (e.g. new road development opening up an outlying area to development).

The sources of stress to consider should be happening now, or have high potential to occur in the near future. A ten-year horizon works well for looking at most threats, with a couple of exceptions (e.g. global climate change and some invasive species).

A checklist of sources of stress is provided in Table 5, as well as via a pull-down menu in the Excel workbook. Use this list as a starting point, but consider other sources as well. Define "generic" sources more precisely (see box below); sources must be well-defined in order to design effective conservation strategies.

Precision in Defining Threats

Many priority systems are stressed in varied ways by incompatible residential development. However, different aspects of incompatible residential development are relevant to different stresses. For example, at one riverine system, the highest ranked stress was alteration of the shoreline's natural migration. The project team's originally stated source of stress was "second home riverfront development." However, the density of development, the pattern of sprawl, the septic systems, and the fragmentation were *not* the critical sources – rather it was bulkheads and groins being built on the river. A targeted development ordinance to address this specific threat would be much more effective and easier to accomplish than a broader strategy to "control growth" in this

♦ **Rank the Sources**

When multiple sources all contribute to a given stress, we want to focus our threat abatement strategies on the source or sources that are most responsible for the stress. We also want to focus on those sources that, if allowed to occur at an area, will have a long-term duration, and thereby cause long-term impacts (e.g. housing development). The relative seriousness of a source is a function of the following factors:

- **Degree of contribution to the stress.** The contribution of a particular source to a given stress, assuming the continuation of the existing management/ conservation situation. Does the particular source make a very large or substantial contribution to causing a stress, or a moderate or low contribution?

- **Irreversibility of the stress**. The reversibility of the stress caused by the source. Does the source produce a stress that is irreversible, reversible at extremely high cost, or reversible with moderate or little investment?

  Example: A wetland may be converted (the stress) by various sources with differing degrees of reversibility.

  - If the wetland were to be paved over for a shopping center, the irreversibility would be *Very High*.
  - If the wetland were to be plowed up for farm fields, the irreversibility would be *High*.
  - If it were to be ditched and drained, the irreversibility would be *Medium*.
  - If it were to be impacted by ORVs, the irreversibility would be *Low*.

Based upon the best available knowledge and judgments, rank the sources in the same manner as the stresses. The ranking should be based on the explicit assessment of contribution and irreversibility. Guidelines for these assessments are provided in Appendix D. Assign the source to one of four classes: ***Very High, High, Medium*** *or* ***Low***.

♦ **Identify Critical Threats**

The final step in the assessment of stresses and sources is a synthesis of the individual stress and source analyses, in which the threats to each of the conservation targets are identified. **A "threat" is actually a combination of a stress and a source of stress**. **For taking corrective action, the source is the thing on which we must focus our threat abatement strategies**.

Critical threats are also ranked as ***Very High, High, Medium*** *or* ***Low.*** Identifying critical threats is more easily accomplished by completing the Stresses/Sources worksheets in the *Conservation Area Planning/Measures of Success* Excel workbook. The workbook then automatically calculates and displays the critical threats in the Threats Summary worksheet, which is illustrated in Appendix A.

Table 5 -- Illustrative List of Sources of Stress

Agricultural and Forestry
- Incompatible crop production practices
- Incompatible livestock production practices
- Incompatible grazing practices
- Incompatible forestry practices

Land Development
- Incompatible primary home development
- Incompatible second home/resort development
- Incompatible commercial/industrial development
- Incompatible development of roads or utilities
- Conversion to agriculture or silviculture

Water Management
- Dam construction
- Construction of ditches, dikes, drainage or diversion systems
- Channelization of rivers or streams
- Incompatible operation of dams or reservoirs
- Incompatible operation of drainage or diversion systems
- Excessive groundwater withdrawal
- Shoreline stabilization

Point Source Pollution
- Industrial discharge
- Livestock feedlot
- Incompatible wastewater treatment
- Landfill construction or operation

Resource Extraction
- Incompatible mining practices
- Incompatible oil or gas drilling
- Overfishing or overhunting
- Poaching or commercial collecting

Recreation
- Incompatible recreational use
- Recreational vehicles

Land/Resource Management
- Fire suppression
- Incompatible management of/for certain species

Biological
- Parasites/pathogens
- Invasive/alien species

Global Climate Change

IX. Conservation Strategies

The way we respond, or fail to respond, to the critical threats will very likely be the *single most important factor* affecting the long-term health of the priority systems at the landscape.

In most cases, the critical threats stem from incompatible human uses of land, water or natural resources. The critical threats may be sprawling residential development that fragments a forested ecosystem; intensive second home development in ecologically sensitive areas that destroys important habitats along the coastline; or inappropriate agricultural or forestry practices that degrade adjoining rivers, streams or estuaries.

The conceptual framework for conservation strategies assumes that abating the critical threats will consequently alleviate the current or future stress to the system -- resulting in healthy, viable conservation targets. *Threat abatement strategies* focus on abating or removing one or more sources of stress. However, in many instances, a target has been degraded by historical threats that require some form of active restoration. In these situations, a *restoration strategy* that directly enhances or restores the viability of the target must be considered.

It is vital, therefore, that we have a good way to formulate and evaluate the wide array of potential conservation strategies. This chapter presents five steps for identifying strategies and setting priorities for action:

1. Define objectives
2. Probe the situation
3. Brainstorm potential strategic actions that might accomplish the objective(s)
4. Select priority strategic actions based on benefits, feasibility and costs
5. Determine key next steps for taking action

♦ Define Objectives

What is a strategy? After years of trial and error, the Conservancy has developed a framework for describing clear and focused strategies to produce results. Just as we improved our assessment of threats by dissecting threats into stresses and sources, we have similarly improved our formulation of strategies into two key elements. A conservation strategy is a high-level ***strategic action*** designed to achieve a specific ***objective*** that abates a threat and/or enhances the viability of a conservation target.

Each strategy is grounded and defined by an ***objective***, which clearly describes an outcome related to threat abatement or enhanced viability. To provide focus for the strategic actions, a project team must define specific, measurable objectives for critical threats and significantly degraded key ecological attributes—outcomes that must be accomplished in order to achieve conservation success.

To select and set key objectives, a project team should:

- Focus on abating critical threats – those with an Overall Threat Ranking of Very High or High.
- Look for degraded key ecological attributes (Poor or Fair) that require immediate attention.
- Describe the desired outcome that will reduce the Overall Threat Rank to "Medium" or improve the current status of the associated key attribute to "Good."

  Note: Objectives can address a source, high-ranked stress and/or key ecological attributes – they're all connected. When using key ecological attributes to describe outcomes, the Objective typically will be based on the "Good" benchmark for that attribute.
- Set "SMART" objectives (Specific, Measurable, Actionable, Realistic, Time-based)

  Note: The Objective is what will be achieved, not how you will do it.

Illustrative Objectives

- ❑ Eliminate feral ungulates on 90% of mesic forests within 10 years
- ❑ Within 5 years reduce the rate of primary forest converted to other land uses by 50%
- ❑ Reduce sediment loading to normal TDML levels on 60% of the 47 "hot spots" on Upper River
- ❑ Increase bay scallops in estuary by 400% over current levels by 2005
- ❑ Within 10 years, achieve and maintain 60% elimination of foxes to improve recruitment of mallefowl to "good" levels (tbd)
- ❑ Eliminate human disturbances (fishing, birding, jogging, dog walking) at key feeding locations (see map) during 4-week bird migration time period
- ❑ No new species of pests/pathogens in New England forest blocks in next 10 years

Note: If a project team does not feel that sufficient information exists to establish a numerical goal in an objective, consider using x, x% or "tbd" (to be determined) as a temporary placeholder. Securing the information to set a reasonable goal then becomes a key action step.

♦ **Probe the Situation**

Critical threats and degraded ecological attributes typically result from incompatible human uses and management of natural resources. Therefore, to develop effective strategies, project teams must understand the cultural, political, and economic contexts that underlie the critical threats, as well as the opportunities for abating the threats and restoring viability.

The probing should focus on the critical threats and key ecological attributes for which objectives have been set. Some project teams use conceptual models (e.g. situation diagrams) to discover and represent the linkages. Others use probing questions looking at potential causes, the scale at which the threats and systems operate, the key constituencies that are harmed by the threat or might benefit from its abatement, etc. A "wizard" for asking probing questions is provided in Appendix E.

♦ **Brainstorm Potential Strategic Actions**

After probing of the situation, consider the array of ***strategic actions*** that collectively might accomplish the objective. A **strategic action** is a high-level of action that will actually accomplish the objective -- in contrast to an **action step**, which is a supporting activity or next step. For example, acquiring land is a strategic action, whereas developing a priority list of parcels is an action step.

Broadly speaking, there are four types of strategic actions that can be deployed to abate critical threats or enhance the health of conservation targets:

- **Acquisition of Interests in Land and Water**

  Direct protection of targets is a powerful approach for abating many critical threats. To ensure appropriate land or water conservation for the long term, significant natural areas and water resources often require *acquisition of fee interest* by a public resource agency, The Nature Conservancy, a local land trust or other group with a mission of protecting such resources. *Conservation easements* also offer permanence in land protection while retaining land in private ownership. Easement restrictions may range from simple prescriptions for unfragmented open space to detailed standards and goals for managing significant natural resources. Easements can be secured with public funding sources through *purchase of development rights*. Private landowners and public land managers may also enter into a *management lease or agreement* with the Conservancy or another conservation agency, such as a soil conservation district.

- **Ecological Management of Land and Water**

  Threats may be abated and conservation targets enhanced through proper management of land, water and other natural resources on public and private lands. Ecological management at many systems requires simulation of large-scale *ecological processes*, such as fire and flooding regimes. Often we can gain credibility and high leverage by demonstrating *best management practices* on lands and waters in co-operation with key landowners and partners. Working with partners and communities, we can educate, encourage and reward landowners and land managers who follow best management practices for *farming, grazing, forestry, water uses or invasive species control* on their property. Strategies to establish management and restoration programs that recognize and address the uncertainty of how the ecological system will respond to management actions fall under the rubric of *adaptive management*.

For systems that have been highly stressed in the past, and whose size or condition is now seriously degraded, conserving the target often requires *restoration*. Restoration is a complex and challenging task, and typically should be considered only when the landscape context for the target is good. Moreover, we must rigorously assess both feasibility and cost-effectiveness before launching restoration programs.

- **Public Policies**

The Conservancy has a long history of working to develop major public funding sources for conservation. This includes international funding (e.g. Parks in Peril), national (e.g. Land & Water Conservation Fund), state (e.g. major statewide bond initiatives) and local (e.g. purchase of development right programs). Developing and applying major public funding sources constitutes a powerful conservation strategy – typically one that extends beyond a single landscape project.

Some threats to biodiversity need to be addressed through good public policy – that is, by influencing laws, policy or funding programs to address the critical threats. For example, haphazard residential growth fragments significant ecosystems across the country, not only near growing urban areas but also in rural landscapes. To address this threat, good local comprehensive plans and development ordinances are needed to define, design and locate the types and amount of compatible development. A community might also provide financial incentives like tax abatements or purchase of development rights to keep land in traditional land uses such as farming and forestry.

The Nature Conservancy's role in developing good policies must always be carried out within the organization's values. In particular, the Conservancy has a long tradition of being **non-confrontational** in all of its conservation actions and words. The Conservancy seeks to be constructive and solution-oriented. Some examples of how the Conservancy might engage in public policies include:

- Provide **good scientific, economic and technical information and assistance** to decision-makers.
- Demonstrate **alternative practices and solutions** that directly address system threats and which serve as leverage for public-sector policies and programs.
- Propose targeted **adjustments in the design or administration of public sector policies or practices**. Demonstrate the public value of these efforts.
- Help foster **broad public support** for such changes. *Effective policies require strong public support.* Local organizations and citizens must take the lead in promoting sound public policies for environmental protection and compatible economic development.

Because threats operate at various scales, not all threats can be addressed simply through local policies. Regional or national policy initiatives – such as a multi-state effort to secure adequate water flow on a major river – may also be needed. These policies must be founded on good information and public support.

- **Compatible Development Alternatives**

  To address threats caused by incompatible human economic activities, we must often do more than appropriately manage resources and foster good policies that prevent incompatible activities. We must actively develop, promote and implement compatible development alternatives.

  Compatible development is both environmentally *and* economically sound. Environmental soundness can be measured by assessing the health of targets and degree of threat – i.e. health is "Good" or better and threat is "Medium" or lower. Economic soundness can be measured by a reasonable profit or return on investment. The key challenge that we all face is the willingness to make trade-offs on both sides of the ledger. A workable, fair and effective compromise would be a solution where the conservation result is "Good" vs. "Very Good," and the economic result is a "Good" vs. "maximum" profit. A big challenge will be finding mechanisms that lead to compatible development outcomes.

  Compatible businesses, products or land uses fall into one of the following categories: *preemptive compatible development; resource-based compatible development; or diversified compatible development.*

  - ***Preemptive compatible development*** seeks to get in front of the problem, and to preempt an incompatible development activity.

    Example: Reselling properties to conservation buyers with conservation easements that are crafted to achieve the desired outcomes for threat abatement and ecological viability.

  - ***Resource-based compatible development*** involves a business or land use practice that is based upon the sustainable harvest and use of natural resources.

    Example: Sustainable and well-managed timber harvesting in lands that buffer a core unfragmented forest area which has no extraction.

  - ***Diversified compatible*** development is an economic activity that enhances and diversifies the local economy, without negative impacts on natural resources or the region's environmental quality (e.g. recruitment of a "clean" industry attracted to a local area because of its quality of life).

    Example: Nature and heritage-based tourism that operates at a scale and in a manner that does not impair the conservation targets

Any or all of these strategic approaches – in particular compatible development -- may require efforts designed to secure short-term and long-term community support. The Conservancy has worked at dozens of landscape-scale projects to help develop community visions, strategic plans and action steps towards compatible development.

♦ **Select Priority Strategic Actions**

The potential strategic actions should be evaluated to select those that will most effectively and efficiently accomplish the objectives. Potential strategic actions should be assessed using three criteria: *Benefits*, *Feasibility*, and *Cost*.

Benefits

The benefits of a given strategic action derive from directly achieving threat and viability objectives (direct benefit) as well as from enabling or catalyzing the implementation of another strategic action (indirect benefit or leverage). To assess the potential benefits of a strategic action, consider three factors:

- *Scope and Scale of Outcome*
  The degree to which the proposed strategic action, if successfully implemented, is likely to secure the desired objective(s) at a degree of intensity and/or spatial scale sufficient to reduce critical threat ranks to a "Medium" rank and/or to increase a key ecological attribute to a "Good" rank.

- *Duration of Outcome*
  The degree to which the proposed strategic action, if successfully implemented, is likely to secure a long-lasting outcome. Strategic actions likely to achieve enduring, long-lasting outcomes are most desirable; those with short duration less desirable, all other things being equal.

- *Leverage*
  The degree to which the proposed strategic action, if successfully implemented, will enable or catalyze the implementation of other strategic actions (and thus achieve other important objectives), either within the immediate conservation project, or elsewhere.

Feasibility

Overall feasibility of a strategic action is based on three factors:

- *Lead Individual & Institution*
  The availability of a lead individual with sufficient time, proven talent, relevant experience, and good institutional support to implement the strategic action.

- *Ability to Motivate Key Constituencies*
  The degree to which key constituencies (e.g. landowners, public officials, interest groups) whose involvement is necessary to implementing the strategic action and their motives are understood and the action appeals.

- *Ease of Implementation*
  Strategic actions that are less complex, have been successfully implemented previously, fit within the core competencies of the lead institution, and for which funding is accessible have a higher likelihood of success than other actions.

Costs

Strategic action costs should be estimated for the time horizon of the strategy, but no longer than 10 years. Cost estimates should focus on the use of *discretionary* or *unrestricted* dollars (or other appropriate currency). The overall cost of a strategic action is based on four factors:

- *One Time Cost*
  The amount of any direct, one-time costs.
- *Annual Costs*
  Other direct costs, excluding staff time, that will be accrued annually.
- *Staff Time*
  The average number of staff (FTE) required to implement the strategic action.
- *Number of Years*
  The number of years the strategic action will require staff time and annual costs for implementation.

The overall rank for each strategic action, based upon Benefits, Feasibility, and Cost, should serve as a guide for selecting the strategic actions to implement. The scoring system is designed to reward strategic actions that produce very high benefits for reasonable cost. It also identifies strategic actions that are "low-hanging fruit", i.e., lower cost actions with medium benefits that are very feasible to implement. The strategy ranking criteria are provided in Appendix E, and the Excel workbook automates the final strategy rankings based on these factors.

Don't Ignore Good Intuition

Use the Excel workbook as a tool to probe and test your project team's intuition, best judgement and common sense – not as a "black box" that provides the definitive answers. This applies to the outcomes for target viability, threat rankings and strategies. Differences between your intuitive judgements and the software outcomes are always worth probing.

♦ **Determine Key Next Steps**

Working from the list of highest ranked strategies, select a small number for immediate implementation. The best people and discretionary resources should be focused early on the ideas that produce the highest "return on investment."

For each strategic action selected, list the key steps necessary for taking action. This should be limited to principal activities, not a detailed listing of all tasks. These activities may include priority research tasks needed to define the objective. Sometimes only the first step will be known.

Illustrative Conservation Strategies
Objectives, Strategic Actions & Action Steps

Increase bay scallop populations 400% over 2003 level by 2005.

- Culture scallops and release into spawner sanctuaries
  - – Grow 200,000 scallops at Mashomack Preserve in 2003
  - – Double number of spawner sanctuaries to 10
  - – Lobby towns to write code to enforce no-take provisions of spawner sanctuary program
  - – Lobby New York State legislature to delay scallop season until Nov.1st to increase possibility of late scallop spawn
- Ensure that NYSDEC scallop management plan includes culture, monitoring and the designation of sanctuaries in state waters

Create 40,000 acres of forest interior habitat, an amount that will support x (tbd) breeding pairs of the most area-sensitive species @ R > 1.

- Protect & restore ~10,000 acres of key inholdings within/adjoining existing public lands
  - – Map/identify existing forest habitat & ownerships
  - – Identify best opportunities to consolidate forest interior habitat
  - – Protect key parcels through acquisitions, easements, CRP & other means
- Secure USFS $ for acquisition of key parcels

Eliminate feral ungulates on 90% of mesic & wet forests within 10 years.

- Catalyze and support new Watershed Alliance involving all key landowners to develop & implement a superb watershed management plan
  - – Hire coordinator and team to implement plan
- Demonstrate success on lands of lead private landowner & state lands

Strategy Hints

- Look for early winners — those actions that are the most likely to succeed and offer tangible results. Strive to show early, tangible success that reinforces the interests and issues important to key constituencies. Success then tends to beget more success.
- Carefully consider strategies that may be big winners. A proven "champion," with a track record of success, is needed to launch complex, high-impact strategies. Sometimes a more difficult and complex strategy often needs a foundation of smaller successes. The temptation to tackle big projects must be weighed against the perils that the project could bog down or cause tension in fragile alliances with partners or community leaders.
- Also consider the *programmatic* cost of failure. This is different than financial cost. It is also different than just failing to abate a threat. For example, an early failure in implementing a highly visible strategy might have a negative domino effect on other strategies.
- For describing your work to donors, community supporters or others, it may be helpful to group and describe strategies as a set of 3 to 5 strategic initiatives, program areas or strategic priorities — such groupings can help show the bigger picture, and the language can be adapted for the audience.
- Different strategies are often linked. For example, demonstrating a successful compatible residential development approach could help lay the groundwork for an improved land use plan and development ordinance. Look for these linkages.
- Strategies should not be seen as fixed plans. Circumstances change as work proceeds, new knowledge is gained and new threats emerge. Strategies must change accordingly.
- An objective may involve two different time horizons. Some things can be accomplished in relatively short order. Other things will require a long, persistent effort. We must do both.

X. Building Community Support

The Nature Conservancy's experience indicates that long-term ecosystem conservation will succeed only with strong support from the people who live and work in these places.

Economic development is vitally important to communities everywhere. Both rich and poor areas seek to enhance their economic opportunities. However, inappropriate economic development and uses of land and water often present critical threats to important natural systems.

On the other hand, people everywhere want to maintain and improve their quality of life. Wherever we are engaged with communities, the vast majority of local people say they want to live in a place with a vibrant community, a prosperous economy and a healthy environment. Three-fourths of all Americans believe *there does not have to be a choice between the environment and the economy.* There is a powerful, but usually latent, desire by local citizens to improve the quality of life in the place where they live.

On this foundation, many landscape project directors have worked successfully with local citizen and staff leaders to build support for conserving the community's character, enhancing the economy and protecting the environment. By showing our genuine interest and support for community and economic development, we in turn have generated significant community understanding and support for conservation.

Cases studies, principles and tools for working with communities are presented in two previous Conservancy publications, of which limited copies are still available:

> ***A Citizen's Guide to Achieving a Healthy Community, Economy and Environment.*** Explains basic principles of community and economic development, includes case studies from community-based projects, and offers an extensive bibliography.
>
> ***Pathways: Building a Local Initiative for Compatible Economic Development.*** Provides details and step-by-step suggestions on building a collaborative, broad-based local vision and plan. Several case studies are presented in the introductory chapter.

Landscape project directors who have deployed these approaches have found their standing in the community substantially enhanced. They have developed important relationships with an array of local citizen and staff leaders. The Conservancy has emerged as a positive force for community betterment. This improvement in our standing with local partners has led to direct and indirect threat abatement and demonstrable conservation results.

Helpful Hints for Working with Communities

- ***Listen***. One of the most important things you can do is keep your ears open. Listen to the opinions of local residents from all sectors, as well as community leaders. You need to understand the wants, needs and aspirations of the community to be an effective partner.

- ***Take a Personal Approach to Develop Trust.*** People everywhere, but especially in rural places, relate to other people as individuals. Take a personal approach, not an institutional approach, to developing relationships. More than anything else, you must build up personal trust between yourself and community leaders.

- ***Work with All Sectors.*** While you need to work closely with current local political leaders, be prepared for political leadership to change. Don't concentrate on the public sector alone. Get to know, and find opportunities to work with, numerous local citizen leaders and community organizations. Bridge socio-economic and racial barriers.

- ***Make Deposits.*** You cannot expect to take "withdrawals" (e.g. community support for something important to you) unless you have made previous "deposits" (e.g. your support for something important to the community). In many instances, relatively easy but important "deposits" can be made by acting as a broker for knowledge, outside expertise or contacts, or small amounts of seed funding.

- ***Pick Up the Phone.*** When in doubt, pick up the phone, call an experienced person in your organization or elsewhere and ask for help. These people can help you find expertise and funds for local "deposits".

- ***Think Small.*** Be willing to work with your community in small scales, such as village, town and county. People often care most deeply about the place where they live. How *they* define their community matters most to them, not how *we* define the landscape.

- ***Be Patient.*** Landscape-scale, community-based conservation is a marathon race, not a sprint. Continuing small, positive steps makes all the difference in the long run.

XI. Measuring Conservation Success

The Nature Conservancy has defined conservation success as ***making substantial progress towards the long-term abatement of critical threats and the sustained maintenance or enhancement of biodiversity health at conservation areas***.

To answer this key question, the Conservancy has developed two measures of conservation success at priority landscapes:

> **Biodiversity Health** – the viability of the focal conservation targets at a landscape conservation area.
>
> **Threat Status** – success in abating critical threats at the area.

The Biodiversity Health measure assesses the effectiveness of conservation strategies at enhancing or maintaining the long-term viability of the systems. The Threat Status measure assesses the effectiveness of conservation strategies at abating or removing sources of stress. These two measures provide a necessary and sufficient assessment of conservation impact. The results shown by these two measures over time are what matters.

These two core measures are seamlessly embedded in the Five-S conservation planning approach and in the Excel conservation planning workbook. In effect, a baseline set of conservation measures is developed concurrently with an initial conservation plan, and progress in biodiversity health and threat abatement is monitored as the plan is updated over time.

Illustrative Conservation Measures

Biodiversity Health
As described in the "Systems" chapter, Appendix A shows the Viability ranks for the conservation targets at a Southwestern River landscape. The rankings for each target on shown on the Viability worksheet, based on the key ecological attributes selected for size, condition and landscape context. The target viability rankings are then combined into an overall Biodiversity Health rank for the project: Very Good, Good, Fair or Poor.

Threat Status
As described in the "Sources" chapter, Appendix A shows the critical threat ranks for each target on the Summary worksheet. The individual threat rankings are then combined into an overall Threat Status rank for the project area: Very High, High, Medium or Low.

Note: The sample project in the Excel workbook shows how the measures are derived and rolled-up for a landscape.

Assessing Conservation Capacity

There is often a lag time between implementation of strategies and abatement of a threat, and an even longer lag time showing changes in biodiversity health. Accordingly, a set of shorter-term "leading" indicators is needed to assess a project's capacity to implement effective strategies that abate critical threats and enhance the conservation targets.

Chapter II describes the key success factors for achieving landscape-scale conservation results. The Conservancy is now developing a revised set of Project Resource Measures to be used by project teams and to be included in the Excel workbook (see Appendix F). A small set of indicators and associated benchmarks are used to determine the overall capacity at a conservation area. The key indicators include:

- Staff Leadership
- Multidisciplinary Team
- Institutional Leadership
- Funding
- Legal Framework for Conservation
- Community & Constituency Support

Building these elements of capacity allows project teams to implement strategies that abate critical threats and enhance ecosystem health.

XII. The Case for Place

As the Conservancy's mission so clearly articulates, our conservation work must be carried out on the ground – preserving the plants, animals and natural communities that represent the diversity of life on earth *by protecting the lands and waters they need to survive.* To fulfill this vision, the Conservancy's vision is to conserve *portfolios of functional conservation areas* within and across ecoregions.

While we clearly should explore and pursue new high-leverage strategies for conservation, we must recognize that enduring conservation results ultimately requires that the ***key capacity factors be in place to implement the needed conservation strategies at each functional landscape***. Without someone assuming responsibility for the strategies, they will not be implemented. There is no avoiding the reality of doing conservation place-by-place.

Moreover, our experience has shown that if these factors are in place, tangible conservation results are indeed achieved. Critical threats are abated. Ecological management enhances the health of conservation targets. Support of key constituencies and the local community provides a platform for enduring results.

Over time, these capacity factors must be in place at several thousand functional landscapes, which will serve as a powerful coarse-filter for biodiversity conservation. The enduring impact will be enormous. In a typical ecoregion in the United States, a suite of 25 functional landscapes will conserve, on the average:

- *All coarse-scale ecological systems*, across an array of environmental gradients
- *Two-thirds of the conservation targets in the ecoregion*
- *Over half of all target occurrences in the ecoregion*

This job at first glance seems overly daunting. How can we possibly do conservation planning and implement conservation strategies at thousands of landscapes?

Multiple partners are coming together in Efroymson Fellowship workshops to develop first-iteration conservation plans for hundreds of globally significant landscapes. Multidisciplinary project teams develop these plans in about ten days, in a series of two or three workshops. Using this approach, the Conservancy and partner organizations can begin to take intelligent conservation action immediately at these landscapes. With about 10% the Conservancy's professional conservation staff's time, *within five years* we could develop good initial plans and strategies for 75% of the functional landscapes in the United States.

Fortunately, the definition of "we" is a collective one that includes hundreds of public and private conservation institutions. Indeed, the presence of a capable conservation institution is one of the very key factors of success.

If conservation institutions are key to success, then "institutional deal-making" must become a leading strategy for building global conservation capacity. Institutional deal-making can take many forms, and dozens of creative arrangements have been manifested, over the years. Some recent examples include:

- Cost-sharing between TNC and state agencies in Kentucky to place staff in several landscape programs that each encompass multiple portfolio areas;
- Bringing highly-targeted staff expertise and experience from the U.S. to build capacity within promising private conservation organizations in Australia through a low-cost, high-impact Asia-Pacific fellowship program;
- Providing technical information and expertise, and securing Congressional funding for ecological fire management within a 100,000 acre pineland ecosystem at a national forest in Arkansas;
- A cost-sharing agreement between the Conservancy and BLM in Nevada to secure staff to develop and implement conservation strategies for all portfolio areas in a BLM district (BLM is responsible for managing 80% of all portfolio areas in Nevada).

Institutional deal-making may be a high-leverage means to the end, but in all of these cases the end was kept clearly in sight – the conservation of portfolio landscapes.

The Nature Conservancy had about 75 staff members when I joined the organization in 1974; today the organization has over 3000 staff. By engaging a growing cadre of public and private conservation partners, developing credible first iterations and continually improving landscape conservation plans, and vesting staff responsibility in large-scale conservation area programs – I am confident that the capacity can be put in place to conserve as many as 5,000 functional landscapes worldwide within the next decade.

The conservation scorecards developed with the conservation plans – the measures of success – will then begin to show the abatement of critical threats and enhancement of biodiversity health at these Last Great Places on Earth for generations to come.

Appendix A

Illustrative Landscape Conservation Plan and Measures of Success

Microsoft Excel Workbook

Home	Conservation Area Planning / Measures of Success Workbook			
Directory	©The Nature Conservancy			
Welcome				

The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

Site:	Southwestern Arizona River		Overview	?
Ecoregion			Assessment of Target Viability	?
?	1: Riparian Forest Mosaic - mainstem		Summary Tables	?
Go to Selected Target	2: Mixed Broadleaf Riparian Forest - Trib		Strategies	?
	3: Aquatic Community - Mainstem		Monitoring Table	?
	4: Aquatic Community - Tributary		Menu Lists	?
	5: Upland Plant Community Mosaic		Project Resource Measures	?
	6:		Nested Targets	?
	7:		Scoring Tables	?
	8:		MOS Summary	?
Office:			Reset Menus & Screens	?
Contact:			Clear Workbook Input	?
Date:	format: Month-Yr		Load Input from SCP File	?
Scaling for Your Computer's Monitor		?	Cambiar idioma / Mudar idioma	?

Conservation Area Planning / Measures of Success Workbook

The buttons with black letters will take you to the designated worksheets.
(Go to "Overview" first!)

The ? buttons provide help; click ? once to open help box, again to close.

Please enter the Site name, Ecoregion and Focal Conservation Targets to the left (limit Site name and Target names to 35 characters).

Southeastern Arizona River

Overall Viability Summary

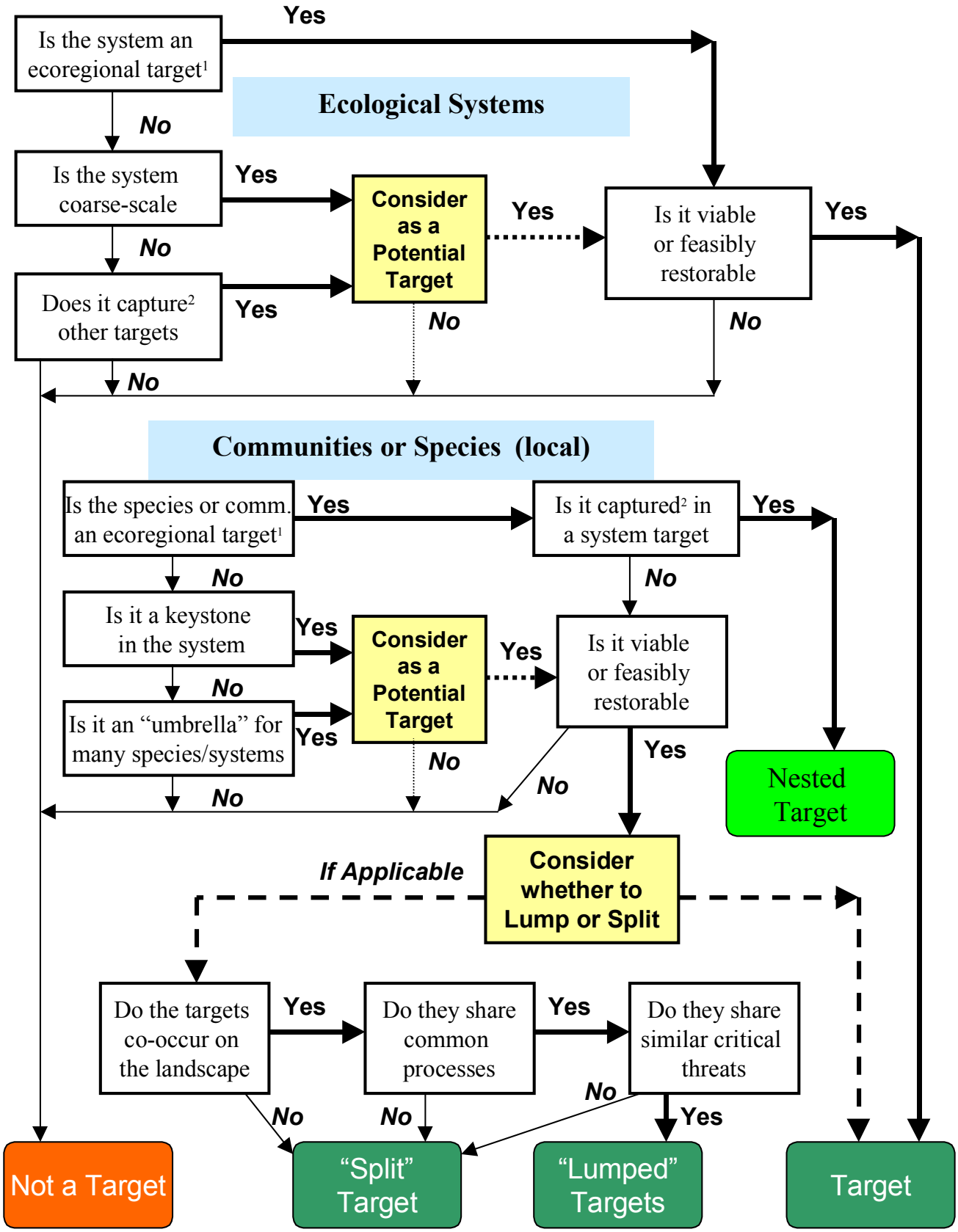
Conservation Targets	Size		Condition		Landscape Context		Viability Rank
	Grade		Grade		Grade		
Riparian Forest Mosaic - mainstem	Good		Fair		Good		Good
Mixed Broadleaf Riparian Forest-tributary	Very Good		Good		Fair		Good
Aquatic Community - Mainstem	Poor		Fair		Fair		Fair
Aquatic Community - Tributary	Good		Good		Fair		Good
Upland Plant Community Mosaic	Very Good		Fair		Fair		Good
Site Biodiversity Health Rank							**Good**

Summary of Active Threats

Active Threats Across Systems	Riparian Forest Mosaic - mainstem	Mixed Broadleaf Riparian Forest-tributary	Aquatic Community - Mainstem	Aquatic Community - Tributary	Upland Plant Community Mosaic	-	Critical Threat Rank
Excessive Groundwater Withdrawal	High	-	Very High	-	-	-	**High**
Invasive/Alien Species	Medium	-	Very High	Medium	-	-	**High**
Incompatible Grazing Practices	High	Medium	Medium	Low	Low	-	**Medium**
Extirpation of beaver	High	-	-	-	-	-	**Medium**
Incompatible Primary Home Development	Medium	-	-	-	-	-	**Low**
Fire Suppression	Low	-	Low	Low	Low	-	**Low**
Incompatible Crop Production Practices	Low	-	Low	-	-	-	**Low**
Recreational Vehicles	-	Low	-	-	Low	-	**Low**
Incompatible Mining Practices	-	-	-	Low	-	-	**Low**
Incompatible 2nd Home Development	-	-	-	-	Low	-	**Low**
	-	-	-	-	-	-	**-**
	-	-	-	-	-	-	**-**
Threat Status for Targets and Site	High	Low	Very High	Low	Low	-	**High**

Appendix B
Conservation Target Selection Tool

Focal Conservation Target Selection Tool



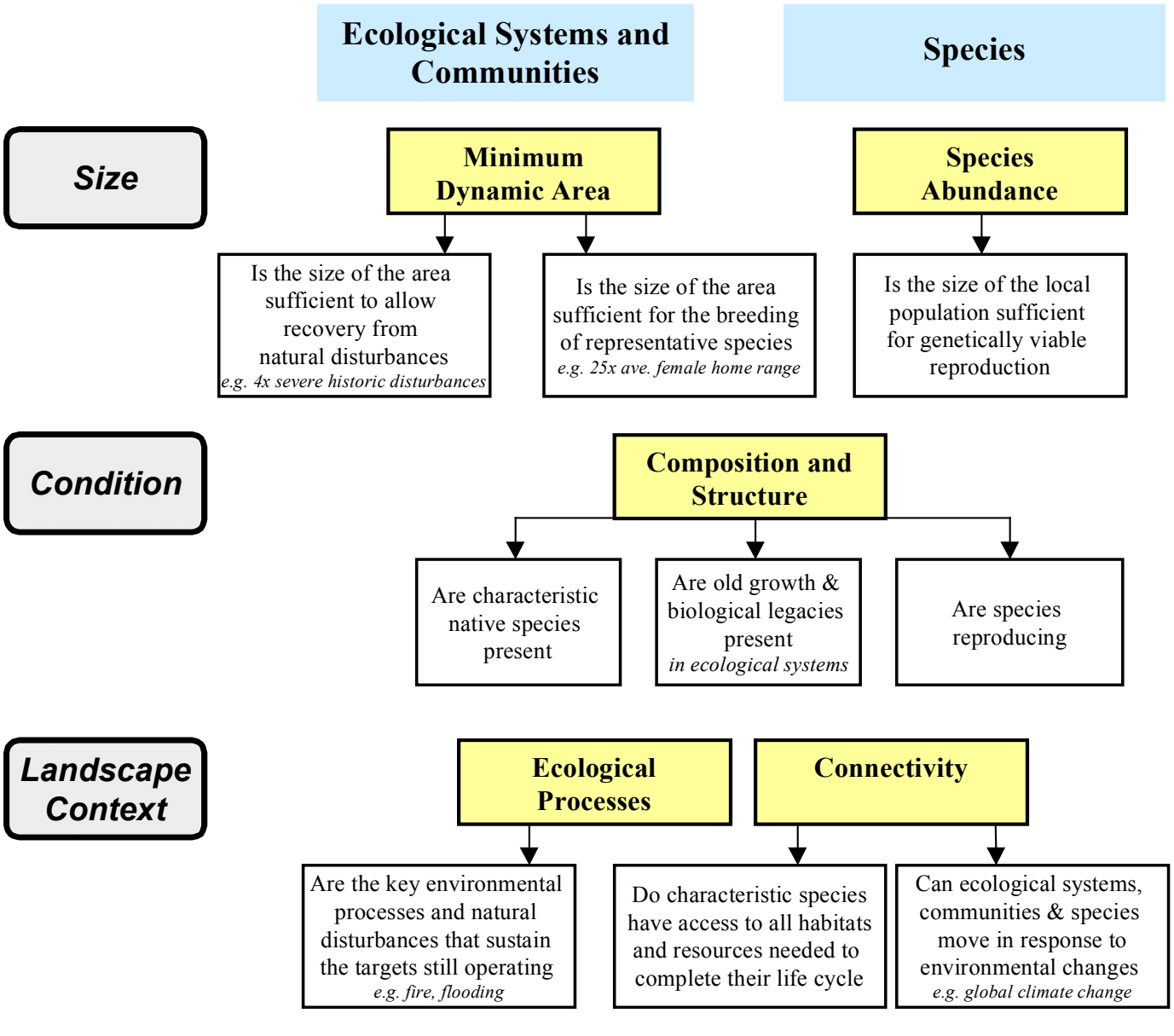
Notes: [1] Or is the system, community, or species likely to be a target in a new or revised ecoregional plan?

[2] "Captured" means that conserving the system will lead to conservation of the embedded species, community or system.

Appendix C
Viability Assessment Tool

Viability Assessment Tool

Representative Key Ecological Attributes



Rating Key Ecological Factors

Poor *Imminent Loss*	Fair *Likely Degradation*	Good *Minimum Integrity*	*Very Good* *Optimal Integrity*
Allowing the factor to remain in this condition for an extended period will make restoration or preventing extirpation practically impossible	***The factor lies outside of its range of acceptable variation & requires human intervention. If unchecked, the target will be vulnerable to serious degradation***	***The factor is functioning within its range of acceptable variation; it may require some human intervention***	***The factor is functioning at an ecologically desirable status, and requires little human intervention***

Note: The ecological factors cited are common to many targets, but are not inclusive. Not all factors will apply to a given target.

Appendix D
Guidelines for Ranking Stresses and Sources

Stress Ranking Guidelines

Severity of Damage *-- what level of damage can reasonably be expected within 10 years under current circumstances (given the continuation of the existing management/conservation situation)*	
Very High	The stress is likely to *destroy or eliminate* the conservation target over some portion of the target's occurrence at the site
High	The stress is likely to *seriously degrade* the conservation target over some portion of the target's occurrence at the site
Medium	The stress is likely to *moderately degrade* the conservation target over some portion of the target's occurrence at the site
Low	The stress is likely to *only slightly impair* the conservation target over some portion of the target's occurrence at the site

Scope of Damage *– what is the geographic scope of impact on the conservation target at the site that can reasonably be expected within 10 years under current circumstances (given the continuation of the existing situation)*	
Very High	The stress is likely to be *very widespread or pervasive in its scope*, and affect the conservation target *throughout the target's occurrences the site*
High	The stress is likely to be *widespread in its scope*, and affect the conservation target at *many of its locations* at the site
Medium	The stress is likely to be *localized in its scope*, and affect the conservation target at *some of the target's locations* at the site
Low	The stress is likely to be *very localized in its scope*, and affect the conservation target at a *limited portion of the target's location* at the site

Stress Ranking Chart

↓ ***Scope***	***---------- Severity ----------***			
	Very High	**High**	**Medium**	**Low**
Very High	*Very High*	*High*	*Medium*	*Low*
High	*High*	*High*	*Medium*	*Low*
Medium	*Medium*	*Medium*	*Medium*	*Low*
Low	*Low*	*Low*	*Low*	-

Source-of-Stress Ranking Guidelines

Contribution *– Expected contribution of the source, acting alone, to the full expression of a stress (as determined in the stress assessment) under current circumstances (i.e., given the continuation of the existing management/conservation situation)*	
Very High	The source is a *very large* contributor of the particular stress
High	The source is a *large* contributor of the particular stress
Medium	The source is a *moderate* contributor of the particular stress
Low	The source is a *low* contributor of the particular

Irreversibility *– Reversibility of the stress caused by the source of stress*	
Very High	The source produces a stress that is not reversible, for all intents and purposes (e.g. wetland converted to shopping center)
High	The source produces a stress that is reversible, but not practically affordable (e.g. wetland converted to agriculture)
Medium	The source produces a stress that is reversible with a reasonable commitment of additional resources (e.g. ditching and draining of wetland)
Low	The source produces a stress that is easily reversible at relatively low cost (e.g. ORVs trespassing in wetland)

Source Ranking Chart

↓ ***Irreversibility***	***---------- Contribution ----------***			
	Very High	**High**	**Medium**	**Low**
Very High	*Very High*	*High*	*High*	*Medium*
High	*Very High*	*High*	*Medium*	*Medium*
Medium	*High*	*Medium*	*Medium*	*Low*
Low	*High*	*Medium*	*Low*	*Low*

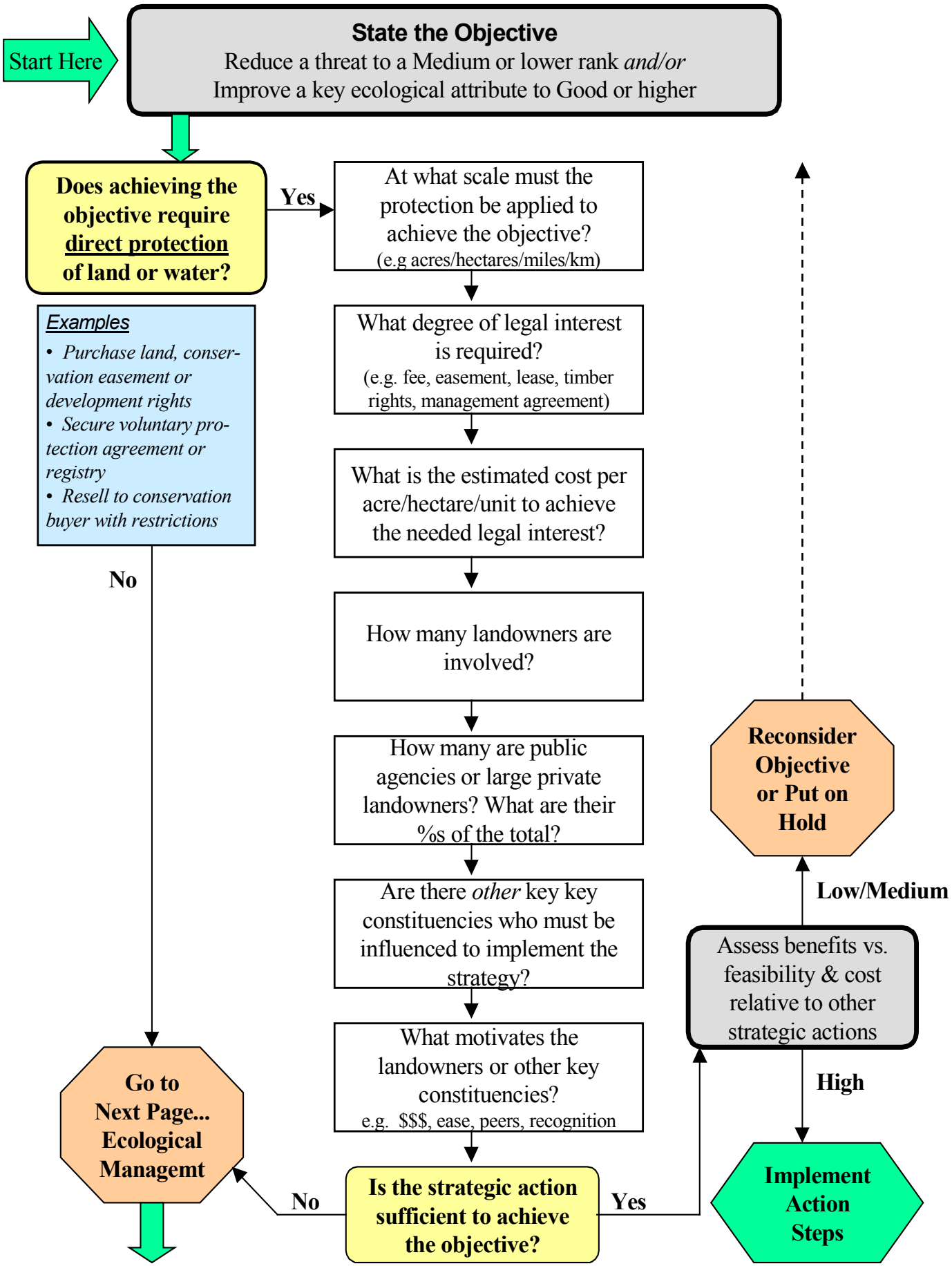
Threat Ranking Chart

		---------- Source ----------			
		Very High	**High**	**Medium**	**Low**
---- Stress ----	**Very High**	*Very High*	*Very High*	*High*	*Medium*
	High	*High*	*High*	*Medium*	*Low*
	Medium	*Medium*	*Medium*	*Low*	*Low*
	Low	*Low*	*Low*	*Low*	--

Note that the Threat Rank for a given source of stress can be no higher than the rank of the stress.

Appendix E
Strategy Development & Evaluation Tools

Conservation Strategy "Wizard"



Conservation Strategy Wizard

continued -- page 2

Continued from Protection if needed…

Does achieving the objective require <u>ecological management</u> of land or water?

Yes

<u>Examples</u>

- *Fence cows from stream*
- *Remove & prevent invasives through weed co-op*
- *Secure funds to implement prescribed burns on National Forest*
- *Hire park rangers to prevent trespassing*

No

At what scale must the management be applied to achieve the objective?
(e.g acres/hectares/miles/km)

What degree or intensity of application is required
(e.g. 95% removal of feral animals; fence key boundary; biannual fire)

What is the estimated cost per acre/hectare/unit to implement the mgmt action?

How many landowners are involved?

How many are public agencies or large private landowners? What are their %s of the total?

Are there *other* key key constituencies who must be influenced to implement the management action?

What motivates the landowners or other key constituencies?
e.g. $$$, ease, peers, recognition

Is the strategic action now sufficient to achieve the objective?

No

Go to Next Page... "Pressure Points"

Yes

Assess benefits vs. feasibility & cost relative to other strategic actions

Low/Medium

Reconsider Objective or Put on Hold

High

Implement Action Steps

Conservation Strategy Wizard

continued -- page 3

Continued from Management if needed…

Does achieving the objective require influencing a key decision-maker or decision-making body?

Yes

What key decision maker or decision-making body will/can determine or influence the outcome?

What legal standing, authority or other influence do they have?

What constituencies might be adversely impacted by the threat? Can they meaningfully influence the decision-maker?

What constituencies stand to gain from the threat? Can they be neutralized?

Are there *other* key players who could influence the decision or action?

What motivates each of the key constituencies?

e.g. $$$, ease, peers, recognition

What information about the threat or possible alternatives is essential to influence the decision maker or key players?

Is the strategic action now sufficient to achieve the objective?

Yes

Assess benefits vs. feasibility & cost relative to other strategic actions

High

Implement Action Steps

Low/Medium

Reconsider Objective or Put on Hold

No

Go to Next Page... Underlying Factors

Examples

- ***Stop something*** *-- e.g. secure federal legislation to de-authorize dam; influence Minister to deny mining permit in Reserve*
- ***Start something*** *-- e.g. secure local adoption of weed control ordinance*
- ***Change something*** *-- e.g. Influence World Bank to stipulate conditions for project $; provide technical expertise to Planning Board to change site of proposed landfill*

Conservation Strategy Wizard

continued -- page 4

Continued from Pressure Points if needed…

Does achieving the objective require addressing some key underlying factor related to the threat?

Yes

Examples

- *Provide "grass bank" to ranchers to rest their grasslands & allow burning*
- *Provide net income guarantee to farmers to encourage deployment of BMPs*
- *Provide open use zones for off-road vehicles in non-sensitive areas*
- *Provide revenue sharing from Park to fund local community patrols*

Is there an underlying factor that acts as a critical "driver" of the threat?
e.g. need for jobs/cash; demand for goods; pop. growth; cultural values

Can the "driver" feasibly be addressed, or does it represent too strong a force or hurdle?

Are there other indirect factors that strongly influence the threat
e.g. customary practices, risk avoidance, lack of knowledge

What key constituencies must be engaged to address the driver or underlying factor?

What motivates each of the key constituencies?
e.g. $$$, ease, peers, recognition

What actions are necessary to address the driver or other factor?

Can they be deployed at sufficient scope and scale?

Is the strategic action now sufficient to achieve the objective?

No

Consider Other Strategies or reconsider Target Viability

Yes

Assess benefits vs. feasibility & cost relative to other strategic actions

Low/Medium

Reconsider Objective or Put on Hold

High

Implement Action Steps

Strategy Action Evaluation Criteria

Benefits

Threat Abatement – *For the Objective(s) which the Strategic Action will address, how many threats to Targets would be reduced one or more levels (e.g. from High to Medium) if the strategy is successfully implemented*

Very High	*3 or more High or Very High* threats reduced
High	*2 High, or 1 Very High* threat reduced
Medium	*1 High, or 3 or more Medium* threats reduced
Low	*No threats* would be reduced by the strategic action (*or fewer than 3 Medium* threats)

Viability Enhancement – *For the Objective(s) which the Strategic Action will address, how many key ecological attributes of Targets would be improved one or more levels (e.g. from Fair to Good) if the strategy is successfully implemented*

Very High	*3 or more Fair or Poor* key ecological attributes improved
High	*2 Fair, or 1 Poor* key ecological attribute improved
Medium	1 Fair, or 3 or more Good key ecological attributes improved
Low	*No* key ecological attributes improved (*or fewer than 3 Good* attributes)

Contribution – *If successfully implemented, to what degree does the Strategic Action contribute to the achievement of the Objective(s) -- looking at the threats and ecological attributes evaluated above*

Very High	The strategic action, *in itself, achieves 1 or more Objectives*
High	The strategic action *makes a substantial contribution* towards achieving 1 or more Objectives, but is not by itself sufficient
Medium	The strategic action *makes a important contribution* towards achieving 1 or more Objectives
Low	The strategic action *makes a relatively small contribution* towards achieving 1 or more Objectives

Duration of Outcome – *If successfully implemented, to what degree is the Strategic Action likely to secure a long-lasting outcome -- looking at the threats and ecological attributes evaluated above*

Very High	The strategic action is likely to achieve an *enduring, long-lasting* outcome (e.g. acquisition of fee interest in land; a well-established, ongoing management practice; a very secure public policy)
High	The strategic action is likely to achieve a *relatively long duration* outcome (e.g. partial interest in land; long-term renewal management agreement; solid but potential vulnerable public policy change)
Medium	The strategic action is likely to achieve a *moderate duration* outcome (e.g. 3 to 5 year management agreement; agency guidelines)
Low	The strategic action is likely to achieve a *short duration* outcome (e.g. handshake agreement; 1 year management plan; stop-gap policy)

Leverage – *If successfully implemented, to what degree does this Strategic Action produce leverage towards the accomplishment of <u>other</u> conservation strategies – either at the project area or elsewhere*

Very High	The strategic action *clearly and tangibly sets the stage* for successful implementation of another high-impact conservation strategy, or is *likely to be replicated at many other projects*
High	The strategic action *helps set the stage* for successful implementation of another high-impact conservation strategy, or is *likely to be replicated at other projects*
Medium	The strategic action *could help set* the stage for the successful implementation of another high-impact conservation strategy, or *could* be replicated at other projects
Low	The strategic action is important at the project area, but does not provide leverage for other conservation strategies

Overall Benefits Scoring: see scoring tables

Feasibility

Lead Individual / Institution – *The availability of a lead individual with sufficient time, proven talent, relevant experience, and good institutional support to implement the strategic action*

Very High	A lead individual ("champion") with sufficient time, proven talent, substantial relevant experience and institutional support is reasonably available and committed to lead implementation of the strategy
High	An individual with sufficient time, *promising* talent, *some* relevant experience and institutional support is reasonably available and committed
Medium	An individual with sufficient time and promising talent is reasonably available, *but lacks* relevant experience or institutional support
Low	No lead individual currently available

Ability to Motivate Key Constituencies – *To what degree are the key constituencies (e.g. landowners, public officials, interest groups) whose involvement is critical to implementing the Strategic Action well understood, and the Strategic Action is likely to appeal to their key motives*

Very High	The key constituencies and their motives are *well understood* and the strategic action *is likely to* appeal to their key motives
High	The key constituencies are *well understood* and the strategic action *may* appeal to their key motives
Medium	The key constituencies are *somewhat understood* and the strategic action *may* appeal to their key motives
Low	The key constituencies *are not well* understood and it is uncertain whether the strategic action will appeal to their key motives

Ease of Implementation

Very High	Implementing the strategy is *very straightforward*; this type of strategy has been done *often* before
High	Implementing the strategy is *relatively straightforward*, but not certain; this type of strategy has been done before
Medium	Implementing the strategy involves a *fair number of complexities*, hurdles and/or uncertainties; this type of strategy has *rarely* been done before
Low	Implementing the strategy involves *many complexities*, hurdles and/or uncertainties; this type of strategy has never been done before

Overall Feasibility Scoring: see scoring tables

Costs

Cost in Discretionary Dollars *– Estimate the total cost of implementing the Strategic Action, including staff time, in unrestricted or discretionary dollars that are available to the project (over the time horizon of the strategy – e.g. 10 years)*

Very High	Total cost is *$1,000,000 or more*
High	Total cost is *$100,000 or more*
Medium	Total cost is *$10,000 or more*
Low	Total cost is less than *$10,000*

Overall Cost Scoring: The score above. Note: the above benchmarks are based on U.S. dollars; international users should use appropriate benchmarks and local currency.

Appendix F

Project Resource Measures & Benchmarks

Leadership and Support

Staff Leadership: *The presence of a talented staff member with lead responsibility for conserving the area. If multiple staff leaders are involved, they must also have a shared vision of success and successful collaboration mechanisms in place.*	
Very High	A staff leader has (1) clearly assigned responsibility, authority, and accountability for conserving the area, (2) experience in implementing conservation strategies, and (3) sufficient time to focus on developing and implementing conservation strategies at the area. If multiple staff leaders are involved, they have a shared vision of success and successful collaboration mechanisms in place.
High	A staff leader has any two, but not all three elements of focused staff responsibility (responsibility, experience, time). If multiple staff leaders are involved, there may be some difficulties in collaboration.
Medium	A staff leader has no more than one of the three elements of focused staff responsibility (responsibility, experience, time). If multiple staff leaders are involved, they have conflicting visions of success and no collaboration mechanisms.
Low	No staff member(s) with designated job responsibility for conserving the area**.**

Multidisciplinary Team: *Project receives support from an experienced, multidisciplinary team to develop and implement key strategies - located on site, within the lead institution(s) or provided by partner organizations.*	
Very High	The project receives sufficient/experienced support from a project team in all functions needed for successful strategy implementation.
High	The project receives support from a project team – but regular assistance is not available in a few important programmatic areas needed for successful strategy implementation.
Medium	The project receives support from a project team – but regular assistance is not available in many important programmatic areas needed for successful strategy implementation.
Low	The project receives insufficient assistance in most programmatic areas.

Institutional Leadership: *A private conservation organization, government agency, other private sector institution, or some combination of institutions is providing leadership for developing and implementing conservation strategies at the project area. If multiple institutions are involved they must have a shared vision of success and successful collaboration mechanisms in place.*	
Very High	There is clear leadership provided by one or a combination of institutions that (1) have established clear responsibility and (2) developed adequate capacity to implement conservation strategies. If multiple institutions are involved they have a shared vision of success and successful collaboration mechanisms in place.
High	Institutional leadership is being provided but assignment of responsibility or adequate capacity is not at a sufficient level. If multiple institutions are involved, there may be some difficulties in collaboration.
Medium	Institutional leadership is failing to provide adequate capacity to implement conservation strategies even though responsibility for project area is has been accepted by one our more institutions. If multiple institutions are involved, there are serious difficulties in collaboration.
Low	No institution has clear responsibility or adequate capacity to implement conservation strategies.

Legal Framework for Conservation

***Legal Framework for Conservation**: Existence of an appropriate framework of protection tools and policy instruments that can be deployed to secure enduring conservation results at the project area. The potential legal protection tools include many types of ownerships and forms, such as parks, privately owned conservation areas, community reserves, conservation easements or public designations. The potential policy instruments also include many types, such as development ordinances, legal permits, seasonal restrictions or no-take fisheries zones. This factor seeks to assess whether the potential legal framework for conservation at the project area exists, not whether it has been fully deployed or fulfilled.*	
Very High	An appropriate framework of protection tools and policy instruments exists, and is either being deployed, or has the potential to be deployed at the project area.
High	Most key elements of a legal framework exist, but one key protection tool or policy instrument needs to be authorized or substantially amended.
Medium	Some elements of a legal framework exist, but two or more key protection tools or policy instruments need to be authorized or substantially amended.
Low	Few or no elements of a legal framework for conservation exist.

Funding

***Funding.** Existence of sufficient operational funding to support the staff and operating costs, as well as program funding to implement and sustain key strategies. Funding may come from both private and public sectors and be available through a variety of mechanisms and sources, such as appropriation of public funds, contributions by donors, endowment, and other sources.*	
Very High	Funding to *implement* key conservation strategies and for core operations has been secured, pledged, or is highly probable for at least two years, *and* the project has developed likely sources of long-term funding to sustain core costs and key conservation strategies for the next 5 years.
High	Funding to *develop & launch* key conservation strategies and for core operations has been secured, pledged, or is highly probable for at least two years, *and* the project has undertaken financial planning and achieved partial success in developing sources of long-term funding to sustain core costs and key conservation strategies for the next 5 years.
Medium	Funding has been secured or pledged for core operations and initial conservation strategies for at least *one year* and some planning is underway to develop secure sources of long-term support for operations and conservation strategies.
Low	Funding has not been secured or pledged for core operations and strategies and no planning or implementation of long-term funding sources.

Community & Constituency Support

***Community & Constituency Support:** The project team effectively engages and gains the support of key constituencies, including those in the local community.*	
Very High	The project team and their program are favorably received and supported by key constituencies – including those in the local community, and there are no major obstacles to key strategy implementation due to community or constituency resistance.
High	The project team and their program are largely favorably received and supported by key stakeholders, but there is some difficulty in strategy implementation due to community resistance.
Medium	The project team and their program have mixed support in the community and there is some significant community opposition to strategy implementation.
Low	The project team and their program have very little support in the community and there is significant community opposition preventing most key strategy implementation.