



MEMORANDUM

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To: UT High Plateaus Ecoregional Assessment Team

From: Pat Comer, Chief Ecologist

Re: Conservation Goals and Scenario Building in the Utah High Plateaus Assessment

Date: June 2003

Introduction

For the Utah High Plateaus Ecoregional Assessment, we hope to provide an initial synthesis of biodiversity and conservation information that will inform subsequent management and land use planning. Indeed, there are likely to be perspectives and context for land management and land use that only become apparent through analysis at regional scales. In a document currently being prepared, we will describe aspects of land management scenario generation that use socioeconomic and land use data to create distinct conservation scenarios. This document approaches scenario generation from a different angle. Here I outline what one might call a “goal-based” approach to generating regional scenarios in support of biodiversity conservation.

This approach establishes overall conservation goals, and then develops explicit, numerical objectives for representing targeted species, communities, and ecological systems throughout the ecoregion. Objective setting forces us to address the “how much is enough?” questions in conservation. Objectives should provide the quantitative basis for identifying and prioritizing areas that substantially contribute to biodiversity conservation. These areas may still be managed for multiple uses, but biodiversity conservation would be a principle consideration. To make that consideration operational, management actions would need to be compatible with the ecological processes that support targeted biodiversity elements in each area. So for example, aspects of composition, structure, and dynamic processes supporting forest, riparian/wetland, and aquatic systems, and the habitat requirements of sensitive species, would be principle considerations in establishing compatible management regimes within these selected areas.

Here I provide background explanation, lessons learned, and recommendations for science-based objective setting. Since explicit conservation objectives are working hypotheses that, to a certain degree, reflect societal risk, alternative conservation scenarios may be developed by varying these numerical objectives; i.e. with low numerical objectives representing “high-risk” scenarios for conserving biodiversity, and higher numerical objectives representing “low-risk” scenarios.

Conservation Goals and Objectives – Background

It may be useful to describe this approach in terms of Conservation Goals and Conservation Objectives. Conservation Goals represent the end – or desired condition - toward which we direct conservation efforts for targeted species, communities, and ecosystems. These overarching goals differ among targeted elements. These differences are imbedded in our “coarse-filter/fine-filter” strategy and the purposes for which we targeted different groups of elements. For example, we have targeted a suite of imperiled, rare, and vulnerable species,

and vulnerable species assemblages, as “fine-filter” conservation elements in the Utah High Plateaus. We have targeted them individually because we believe that is the only way we can ensure that their individual needs can be addressed. Our Conservation Goal focuses on the viability of these species within the ecoregion. For practical purposes, we can define a **viable species** as one that has a high probability of continued existence¹ in a state that maintains its vigor and potential for evolutionary adaptation² over a specified period of time. Footnotes included, conservation objectives should support the evolutionary pathway of targeted species in continually changing environmental settings, looking into the future at least 100 years or 10 generations. So our Conservation Goals for species might be stated as: “*targeted species remain invulnerable to loss of viability within the ecoregion.*” Importantly, this statement suggests that not only do we intend to maintain “minimum viable” populations, but *we also hope to specifically address the vulnerabilities they face*, due to habitat loss, habitat conversion, or direct exploitation.

Our “coarse-filter” elements include rare vegetation communities and both terrestrial and freshwater ecological systems. A “coarse-filter” strategy is aimed at maintaining the ecological processes that support the vast majority of species; thus permitting us to avoid targeting numerous species individually. In addition to maintaining non-target species, coarse-filter strategies emphasize the conservation of ecosystem services (e.g. air, water, nutrient cycling, etc.). This overall purpose for coarse-filter conservation may be best characterized as maintenance of **ecological integrity** at an ecoregion scale (Pimentel, Westra, & Noss 2000). While conservation goals for species correctly emphasize genetic fitness and the functional roles of individual species in ecosystems, coarse-filter goals focus on representation of ecological variability and environmental gradients. So our Conservation Goal for communities and ecological systems might be stated: “*essential ecosystem services are secure and non-target species remain invulnerable to the loss of viability.*”

Conservation Objectives are the explicit - and hopefully quantifiable - expressions of broader conservation goals. Objectives express the “how much?” “how many?” and “in what spatial distribution?” questions underlying element conservation. Regional conservation scenario building is appropriately dictated by these explicit, numerical objectives for each targeted species, community type, or ecological system type. By mapping out areas that contribute to these objectives, we create a vision of landscape functionality at a regional scale. Establishing conservation objectives is among the most difficult - and most important - scientific questions in biodiversity conservation. As some have pointed out (e.g. Noss 1996, Soule & Sanjayan 1998), these questions can’t really be answered by theory, but require an empirical approach, element-by-element, and a commitment to monitoring and continual re-evaluation over the long-term. We can, however, use our knowledge of species, communities and ecosystems, and the collective experience of the international conservation community, to develop some empirical generalizations – or working hypotheses - to serve as guidance.

Lessons Learned

Some primary lessons learned in conservation objective-setting in regional assessments include:

- 1) As already mentioned, an *adaptive approach* to setting conservation objectives is essential. We simply do not have sufficient knowledge or data while establishing objectives and the ecosystems supporting our targeted elements will continue to change. All conservation objectives should use the best available knowledge, but should also be viewed as “working hypotheses.” This requires careful documentation and a long-term commitment to research and monitoring.
- 2) We will always be dealing with both *uncertainty* and *risk*. This should be clearly acknowledged. Uncertainty results from our incomplete knowledge and our inability predict future events. Risk reflects the fact that conservation objectives are, in the end, social decisions, based upon societal willingness to accept the risk of biodiversity loss.

¹ 90% certainty of surviving 100 years and/or 10 generations

² Potential for adaptation implies that the species or population has sufficient genetic variation to adapt by natural selection to changing environmental conditions within a predicted range of frequency and amplitude of disturbance and change.

- 3) *Both risk levels and uncertainty should decrease with increasing element vulnerability.* For elements that are considered highly endangered due to rarity and current threats, we must urgently pursue necessary research to reduce uncertainty and set objectives that reduce the risk of loss.
- 4) *The spatial context of selected conservation lands is important.* That is, in setting objectives, one should not presume that the lands and water forming the “matrix” around selected conservation lands contribute no biodiversity value. In fact, land and water management throughout a given region will continue within a policy framework established by existing regulation, so considerable contributions of biodiversity values can be expected from surrounding lands.
- 5) We should *set quantitative, measurable objectives* for all targeted elements. This is required to develop conservation scenarios and to measure our success over time. However, in addition to quantitative objectives, more “qualitative” or descriptive objectives can be very useful.
- 6) Given the common circumstance where there is a high level of uncertainty, objectives may be best expressed within *a range of measurable values*.
- 7) *Ecoregional objectives should be placed in the context of rangewide objectives* for all targeted elements. This means that elements must be clearly defined across ecoregions (e.g. using standardized plant and animal taxonomies and classifications for communities and ecological systems), and any existing rangewide objectives should be evaluated to determine the appropriate contribution from within a given ecoregion.
- 8) *Use history as a guide to the future.* Wherever possible, use knowledge of element distribution and abundance over recent millennia to guide establishment of conservation objectives.
- 9) Where available, existing *recovery plans* for individual species should be fully utilized in the development of conservation objectives.
- 10) Develop useful *element groupings* and establish *initial objectives* to apply when lacking specialized knowledge, then *refine objectives* as possible with element-specific information.
- 11) *Use established guidelines* to describe the conservation status of species, especially to define a threshold of “vulnerable” status. IUCN “Vulnerable” criteria, along with those established by NatureServe (Global Ranks 3 thresholds), should be used as a guide for objective setting.
- 12) *Sub-regional geographic stratification* can be used as a practical tool to represent environmental variability supporting targeted elements; especially for communities and ecological systems. Stratification for terrestrial elements may differ fundamentally from aquatic elements. Subregional stratification is less important for rare-to-imperiled elements and wide-ranging species.
- 13) *State conservation objectives within set time frames.* All objectives could be stated within e.g. 25-100 year time frame. For highly threatened elements, objectives stated within shorter time frames (5-10 years) are appropriate.

As a general rule, conservation of multiple examples of each element, stratified across its geographic range, is necessary to represent the variability of the element and its environment, and to provide some level of “replication.” Replication is needed to ensure persistence in the face of environmental stochasticity and likely effects of climate change. It is also required to allow for comparative study – to understand our targeted elements better – and to detect change reliably. Although information is limited, we should take existing knowledge of our targets as far as possible. The following issues and approaches might be considered in light of existing knowledge.

- *Proportional Range Representation:* conservation objectives should reflect the historic range of distribution (e.g. under climatic regimes of the past 2,000 years) for the targeted element. For example, if 50% of the known, historical range of the element falls within a given ecoregion, the goal for that ecoregion should reflect roughly 50% of a rangewide goal. In practical terms, we have used the target’s distribution, *relative to the ecoregion* as a guide to establish numeric differentials in objective-setting (higher with endemic, to lower with peripheral). These categories may be assigned to all conservation targets.

Endemic = >90% of global distribution in ecoregion,

Limited = <90% of global distribution is within the ecoregion, and distribution is limited to 2-3 ecoregions,

Disjunct = distribution in ecoregion quite likely reflects significant genetic differentiation from main range due to historic isolation; roughly >2 ecoregions separate this ecoregion from other more central parts of its range

Widespread = global distribution >3 ecoregions,
Peripheral = <10% of global distribution in ecoregion

- *Meta-population dynamics on real land/waterscapes underlie species viability.* In order to understand populations and simple models of metapopulation dynamics, we need information on: 1) number of habitat patches, 2) probability of patch (i.e. *local population*) extinction, 3) rate of movement between patches, and 4) correlation of fates of separate populations (Morris et al. 1999). Number four is the instance where stochastic events effect multiple populations simultaneously due to their proximity to each other. A sort of “dynamic tension” therefore exists between factors 3 and 4, in that we need to allow for dispersal between distinct populations, but if too many are clustered, their fates may be strongly correlated. Theory, at least, suggests a combination of clustered and isolated populations. These are very important considerations as they apply to setting conservation objectives and scenario building. For example, if the fates of all populations are highly correlated, we gain little from “replicating” multiple occurrences. If there is no correlation of fates and no movement, you can greatly reduce the overall chance of extinction by protecting best examples; but you gain little by adding poor quality examples (Morris et al. 1999; Chaplin 1999).

Unfortunately, available information tends to be limited to the first and second points above; e.g. locations of *occurrences* and some estimate of the *occurrence quality*. There are very few cases where we have any knowledge of points three and four. Even with the occurrence data we have, the relationship between populations and occurrences is not straightforward. NatureServe has established working assumptions about separation distances between extant occurrences so that clustered occurrences may be treated as one “meta-occurrence” counting towards conservation objectives, if that is the likely biological reality. For species targets, knowledge of life history (e.g. home range, known dispersal distance) forms the basis for these assumptions. Similarly, knowledge of supporting processes and environments can inform these assumptions for community types and ecological systems.

- *Spatial Stratification:* In the United States, USFS *Sections* (U.S. Forest Service 1999 draft) have commonly been adopted as primary stratification units for terrestrial elements. The TNC Freshwater Initiative’s ecosystem classification approach is spatially hierarchical, and *Ecological Drainage Units* (EDUs) are similarly scaled and serve the same purpose for freshwater elements. So in reality we apply *more than one stratification scheme* for a given ecoregional assessment. In most instances, some degree of element occurrence replication should be provided within each *Section/EDU* of their historical range within the ecoregion.
- *Spatial Pattern and Targeted Elements:* Characteristic spatial patterns for ecosystems and species habitat (Figure 1) often reflect key ecosystem processes and important life-history traits. Scaling of elements, as

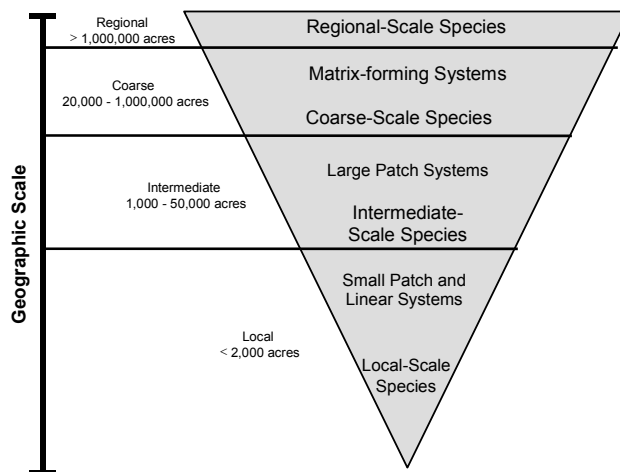


Figure 1: Categories representing geographic scale of conservation elements. Areal ranges are approximate and overlapping (Poiani et al. 2000).

described by Poiani et al. (2000) can effect the assumptions we make as we express conservation objectives. It is therefore useful to categorize each element according to its presumed spatial character, as it has occurred in recent millennia without significant human alteration. For matrix, and most large patch and linear systems, occurrences should be mapped as *large, continuous polygons* or *lines*, and conservation objectives may be expressed as a percentage of historical extent (e.g. *circa* 1850) proportionally represented across all major physical gradients. Objectives for remaining large patch systems, small patch systems – or where landscape fragmentation precludes mapping and modeling – may be mapped as *scattered polygons* and *points*, and objectives are best expressed as numbers of occurrences

- *Specialized Objectives vs. Element Groupings*: Some entire categories of elements must be reviewed individually, and element-specific conservation objectives must be established for scenario building. For example, regional scale species tend to be wide-ranging mammals and birds. Individuals of these species may range across and beyond a given ecoregion. We typically represent these elements as *polygons (or lines)* of “*potentially occupied habitat*” and where possible, *polygons* of *specific habitat components*. In one case with the High Plateaus (grey wolf), we have a simulated population viability model that may be run under different regional scenarios. Analysis of their habitat requirements, especially identifying critical core habitats and landscape linkages is best assessed sequentially with each regional scenario developed using all other elements. That way, regional scenarios can be evaluated individually for their impact on these species; then modified accordingly.

Another class of elements requiring individual attention includes those that are extremely rare. Many naturally rare and endemic G1-G2 elements¹ have existed over millennia with very few distinct occurrences. In these cases, an objective of “all potentially viable occurrences” is appropriate.

A third class of elements includes Threatened and Endangered species with current recovery plans. Plans should be reviewed against agreed-upon goals to define explicit conservation objectives, and where applicable, these numbers should be applied to conservation scenario building.

Another, sometimes overlapping class includes elements for which conservation action is most urgent. These tend to be G1-G2 elements that occur in landscape where rapid land use conversion is taking place. For these elements, specific short-term (5-10 year) conservation objectives should be established.

- *Preliminary Numbers for Element Groupings*: The majority of species, communities, and ecological systems fall outside the categories where specialized objective setting is essential. For these numerous cases, we also lack specialized knowledge to create element-specific objectives. So where do we begin to establish objectives? Theoretical work on species viability (e.g. Quinn and Hastings 1987) has been applied to many species in Florida (Cox et al. 1994). This suggests that 10 distinct subpopulation of 200 individuals should be sufficient for survival of at least one subpopulation over 10 generations/100 years. Though again, these were intended to represent minimum-viability estimates for genetic fitness.

Guidelines for determining the conservation status of species have been established by NatureServe and Natural Heritage Network (Master et al. 2002), and by the IUCN (Mace et al. 1994). We can appropriately look to these published guidelines to inform our conservation objective setting. After all, our conservation goals state directly that we intend to either improve or maintain the conservation status of targeted elements. These criteria include factors such as total population size, number of sub-populations or occurrences, condition/occurrence viability, range extent, trends, threats (severity, scope, and immediacy), intrinsic vulnerability, environmental specificity, and current levels of protection. Both the NatureServe and IUCN systems define “vulnerable” conservation status for species. Our Conservation Goals are to move species beyond “vulnerable” status. We want our coarse filter to prevent new species from becoming “vulnerable.” So for example, in general terms, a given community type or species is ranked G3 (“Vulnerable”) by NatureServe when it is known from 21 – 80 occurrences, or (for species) 2,500 – 10,000 individuals,

¹ See Appendix 1 for explanation of NatureServe global ranks

measurable declines <10% over 10 years or 3 generations, and many (>40) occurrences under protective management across its known range.

These numbers of occurrences could form the basis for describing three distinct levels that depict “high risk” “moderate risk” and “low risk” scenarios for many elements; i.e. with low numerical objectives representing “high-risk” scenarios for conserving biodiversity, and higher numerical objectives representing “low-risk” scenarios.

“Fine-Filter” Objectives

Table 1 provides a summary of initial objectives for targeted species and species assemblages. Again, this could be used as a starting point when element-specific information is lacking. Here, elements are grouped according to distribution relative to the ecoregion. Numbers decrease as endemism decreases, in rough proportion to the ecoregion’s share of the global distribution. Within-ecoregion stratification is implied here with some degree of replication (>1 occurrence) in each stratification unit (*re: Section/EDU*) throughout its natural distribution in the ecoregion.

Table 1. Initial Conservation Objectives for Targeted Species and Species Assemblages, expressed as three levels for developing “High Risk” “Moderate Risk” and “Low Risk” conservation scenarios.

Distribution	“High Risk” Scenario	“Moderate Risk” Scenario	“Low Risk” Scenario
	Number of Occurrences		
Endemic	25	50	80
Limited	13	25	40
Disjunct	7	13	20
Widespread	7	13	20
Peripheral	3	7	10

These estimates form a practical starting point for scenario building. Experience suggests that the number of available occurrences for many species elements will be a limiting factor in fleshing out scenarios that are based on these numbers.

“Coarse-Filter” Objectives

Conservation objectives for ecological systems and communities should also take into account the element’s distribution relative to the ecoregion, as well as differences in their typical spatial pattern. Coarse-filter objectives are commonly expressed as areal extent. Areal measures have been commonly applied to conservation objective-setting at national scales using theory from island biogeography (MacArthur and Wilson 1967, Wilcox 1992) and working hypotheses on the role of species diversity in ecosystem function (e.g. see Hart et al. 2001). A well-established (albeit quite general) relationship exists between habitat area and the number of species that an area can support (e.g. Wilcox 1992). Loss of habitat tends, over time, to result in the loss of species within an approximate range. This relationship formed the basis for international objectives (12% of country area) set by IUCN for member countries (WCED 1987). However, one could argue that the objectives set by IUCN were far too low. For instance, it is estimated that with an 88% decrease in habitat extent (e.g., conservation objective = 12%), one could expect a decrease over time of 27-50% of species supported by the habitat (Wilcox 1992). This idea is graphically represented below and was adapted from Cincotta and Engelman (2000) (Figure 2).

IUCN objectives were also expressed in terms of extent for an entire country. Our conservation objectives should be stated for each targeted element, and establish some historic context wherever possible, by expressing the desired extent as a percentage of estimated area *circa* e.g. 1850, or the time period immediately prior to wide-spread European-American settlement of a given ecoregion. Ecosystems are dynamic, changing at varying rates, with short-term cycles, and long-term trajectories. However, in many places, short-term cycles *and* long-term trajectories have been abruptly altered through human land use, and have had obvious impact on native

biodiversity (Wilson 1992). Our task is to understand natural dynamics, then evaluate our alterations and mitigate their effects. For example, in the Utah High Plateaus, fire, water diversion, and hunting historically supported Native American cultures over millennia, but the most rapid change to the upland matrix of this ecoregion has been through mine-related wildfire, logging, intensive grazing, road construction, fire suppression, and urbanization. The 1850 time period marks the beginning of rapid and transforming, human/technology-driven changes to ecosystems, but is recent enough to reflect vegetation patterns under modern climatic conditions. It therefore, provides a useful and important reference point.

Establishing an estimate of historic extent for ecological systems is no simple task. In some highly altered ecoregions, it is nearly impossible. However, for purposes of establishing numerical conservation objectives, a reasonable approximation will suffice. Historic extent for linear riparian systems can be modeled using riverine ecological systems and Ecological Land Units. For most other terrestrial ecological systems, percent change for each system type can be estimated within 10% intervals using current land use/land cover data, as well as specific studies. We can then add (or subtract) area from the current mapped extent to approximate extent *circa* 1850. Where change was estimated to be less than 10%, current extent can be used.

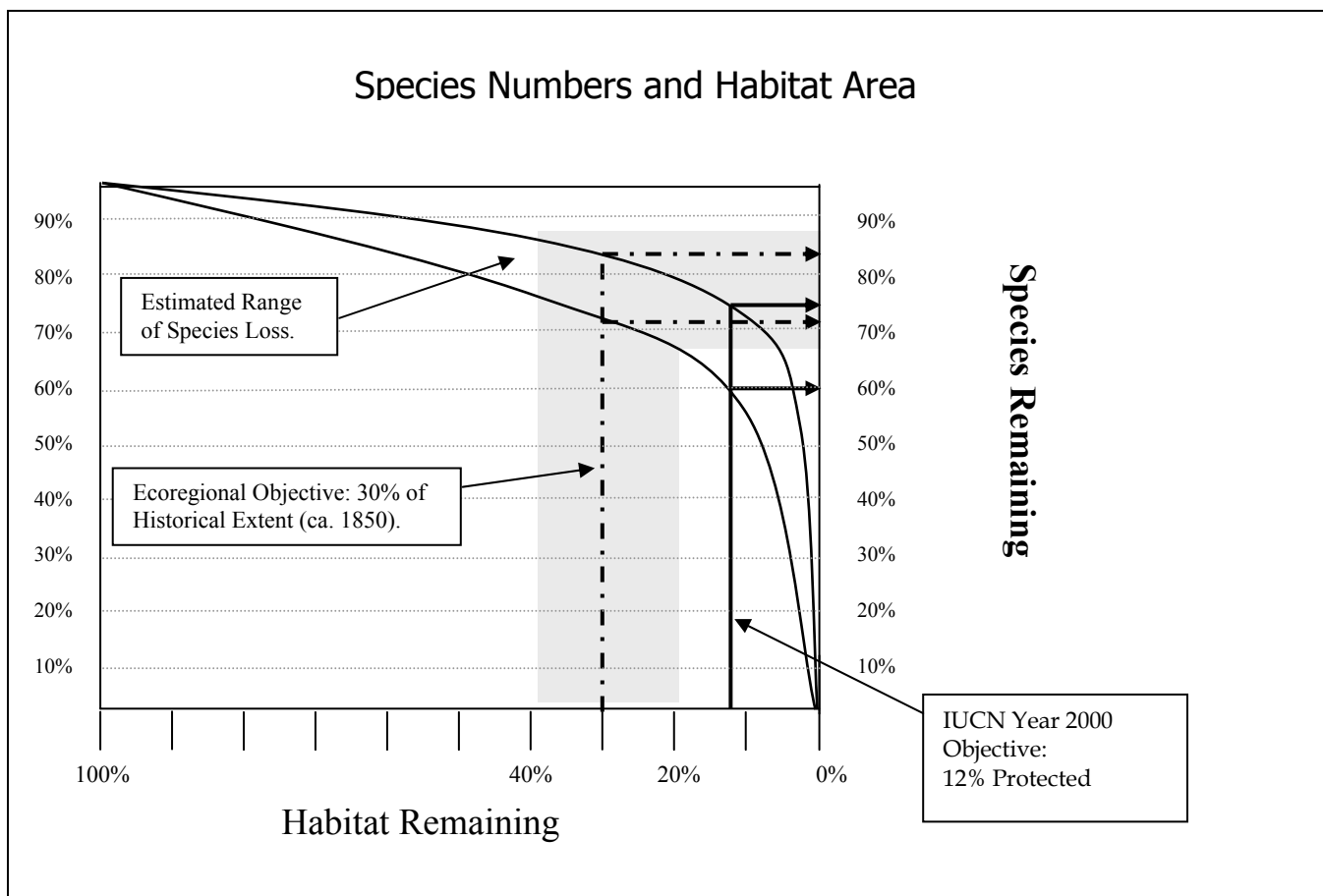


Figure 2: Estimated species loss with percent area of habitat loss over time (modified from Dobson 1996).

In addition to a goal for areal extent, all ecological systems should be represented proportionally across major biophysical gradients. Representation of major biophysical gradients helps to ensure that each regional scenario represents native ecosystem diversity while providing a hedge against a changing climate. This can be accomplished in two ways. First, as mentioned earlier, all systems should be represented in each of the ecoregional *Sections/EDUs* of their natural distribution. Second, for large patch, linear, and matrix forming systems that can be reliably mapped, they should be represented in combination with Ecological Land Units and aquatic macrohabitats to help represent ecological variability and gradients. The portfolio design software (SITES) can be programmed to apply percent objectives to vegetation/ELU and river system/macrohabitat

combinations; ensuring that the major biophysical gradients of each system would be represented in proportion to their occurrence for the ecoregion as a whole.

In order to establish an initial percent area goal, we should consider the species/area relationship (Figure 2) and proportional representation of biophysical gradients. In addition to this, we should consider the fact that several hundred of the most vulnerable and sensitive species are targeted either individually, or in rare communities. In many ecoregions, we have selected an initial objective of 30% of historic extent (as estimated *circa* 1850) for each system in the ecoregion. This percentage, on its own, would suggest that we could lose between 15% and 35% of native species (Figure 2). But given the other targets and considerations, this 30% goal is an adequate point of departure. This should also be a reasonable “middle point” for developing three distinct scenarios; from “20% = High Risk” to “30% = Moderate Risk” to “40% = Low Risk” scenarios.

Table 2 provides a summary of recommended initial conservation objectives for coarse-filter elements. As noted, conservation objectives for many “patch-forming” elements are expressed as a number of occurrences. These objectives draw on similar assumptions and numerical estimates used above for fine-filter elements as well as those described by Anderson et al. (1999). Again, as with fine-filter elements, Section/EDU scale stratification is implied in these numbers for the entire ecoregion. In addition to these numerical estimates, biophysical models should be used to “represent major biophysical variability and gradients” as described earlier.

Table 2. Initial Conservation Objectives for Ecological-System and Rare-Community Elements, expressed as three levels for developing “High Risk” “Moderate Risk” and “Low Risk” conservation scenarios.

Distribution Relative to Ecoregion	Spatial Pattern of Occurrence					
	Matrix, Large Patch and Linear Ecological Systems			Small Patch Ecological Systems and All Rare Communities		
	Area or Length, per Section or Ecological Drainage Unit			Number of Occurrences		
	“High Risk” Scenario	“Moderate Risk” Scenario	“Low Risk” Scenario	“High Risk” Scenario	“Moderate Risk” Scenario	“Low Risk” Scenario
Endemic	20%	30%	40%	25	50	80
Limited				13	25	40
Widespread				7	13	20
Peripheral				3	7	10

Conclusions

For the Utah High Plateaus Ecoregional Assessment, we hope to provide an initial synthesis of biodiversity and conservation information that will inform subsequent management and land use planning. We plan to develop several distinct land management scenarios utilizing both “goal-based” biodiversity representation and socioeconomic/land use options. Here I outline background and numerical objectives for the “goal-based” approach to generating regional scenarios. Three distinct levels of biodiversity representation are presented for species, rare communities, and ecological system targets. These distinct levels allow us to express a range of societal risk and scientific uncertainty, forming the basis for distinct land management scenarios.

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Appendix 1. NATURAL HERITAGE NETWORK GLOBAL CONSERVATION STATUS DEFINITIONS

The Global (G) Conservation Status (Rank) of a species or ecological community is based on the *range-wide* status of that species or community. The rank is regularly reviewed and updated by experts, and takes into account such factors as number and quality/condition of occurrences, population size, range of distribution, population trends, protection status, and fragility. The definitions of these ranks, which are not to be interpreted as legal designations, are as follows:

- GX** **Presumed Extinct:** Not located despite intensive searches and virtually no likelihood of rediscovery
- GH** **Possibly Extinct:** Missing; known only from historical occurrences but still some hope of rediscovery
- G1** **Critically Imperiled:** At high risk of extinction due to extreme rarity (often 5 or fewer occurrences), very steep declines, or other factors.
- G2** **Imperiled:** At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
- G3** **Vulnerable:** At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
- G4** **Apparently Secure:** Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- G5** **Secure:** Common; widespread and abundant.

G(#)T(#): Trinomial (T) rank applies to subspecies or varieties; these taxa are T-ranked using the same definitions as the G-ranks above.

Variant Global Ranks

- G#G#** **Range Rank:** A numeric range rank (e.g., G2G3) is used to indicate uncertainty about the exact status of a species or community. Ranges cannot skip more than one rank (e.g., GU should be used rather than G1G4).
- GU** **Unrankable:** Currently unrankable due to lack of information or due to substantially conflicting information about status or trends. NOTE: Whenever possible, the most likely rank is assigned and the question mark qualifier is added (e.g., G2?) to express uncertainty, or a range rank (e.g., G2G3) is used to delineate the limits (range) of uncertainty.
- GNR** **Not ranked:** Global rank not assessed.

Rank Qualifiers

- ?** **Inexact Numeric Rank:** Denotes inexact numeric rank.
- Q** **Questionable taxonomy that may reduce conservation priority:** Distinctiveness of this entity as a taxon at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon in another taxon, with the resulting taxon having a lower-priority (numerically higher) conservation status rank.