Instructions for Biodiversity Metrics Scorecard -

Definitions & Descriptions (D&D)

The intent behind the Biodiversity Metrics Scorecard is to create a systematic means of cataloging both the focus of a given conservation policy and the biodiversity metrics utilized to assess the outcomes of this policy. The Definitions and Descriptions (D&D) serve as an organized quick reference for the evaluator of a program/project to list all relevant conservation goals (i.e. critical elements of biodiversity necessary for preserving the targeted biological resource (species, ecosystem, etc.)), the metrics prescribed for measuring outcomes, and the scientific justification for both the necessary biodiversity elements and the metrics utilized to assess them.

Each of the following pages, consists of a D&D template for one of the elements in the Biodiversity Scorecard. These templates are divided into three sections: A. Focus of Metrics, B. Metric(s) Employed, and C. Scientific Justification. To assure practitioners and policy makers that a D&D report is complete, each of these sections need to be complete for each element of the Biodiversity Scorecard. Sections where information is not available (e.g., no metrics are defined to assess this element of biodiversity) should be filled in with a statement of omission (e.g., “No defined metrics for this element” or similar).

# How to fill out each section of the D&D

## A. Focus of Metrics

Provide a brief summary of aspects of the ecosystem or species known to be particularly important in conservation efforts. Examples of this may be if an at-risk species is known to have particularly low genetic diversity or a plant species is known to require specific soil types. Each focus should be enumerated separately.

## B. Metrics Employed

Include in this section biodiversity metrics employed to assess the aspects of the focal ecosystem or species. The list should briefly describe, in one or two short sentences, which metrics are used and critical values (e.g., “Soil pH below 6 measured using random samples at a density of five per hectare”). As with Focus of Metrics above, this should consisted of an enumerated list. If a Focus is omitted in metrics, a number corresponding to the number in A should be entered here and a statement of “No metrics defined” or similar used to illuminate a mismatch between stated foci and prescribed metrics.n

## C. Scientific Justification

Here, provide an enumerated list of the scientifically-supported reasons for the foci and/or metrics matching the above sections. Descriptions of relevant science should provide clear justification for metrics utilized to evaluate the focal system through primary literature with citations. If scientific literature specifically focused on the target system or species is not available, outline literature on the most comparable system; also provide information defining the relevance of the comparable system to the focal system.

Identity, distribution, richness, and proportions of patch (habitat) types and multipatch landscape types; collective patterns of species distribution (richness, endemism)

LEVEL: LANDSCAPE

COMPOSITION

1. NA

A. FOCUS OF METRICS:

B. METRIC(S) EMPLOYED:

1. NA

C. SCIENTIFIC JUSTIFICATION:

1. NA

Identity, relative abundance, frequency, richness, evenness, and diversity of species and guilds; proportions of endemic, exotic, threatened, and endangered species, dominance-diversity curves; life form proportions; C3-C4 plant ratios

LEVEL: COMMUNITY/ ECOSYSTEM

COMPOSITION

1. NA

C. SCIENTIFIC JUSTIFICATION:

B. METRIC(S) EMPLOYED:

1. NA
2. NA

A. FOCUS OF METRICS:

Absolute or relative abundance; frequency; importance or cover value; biomass; density

LEVEL: SPECIES

COMPOSITION

A. FOCUS OF METRICS:

1. NA
2. NA

B. METRIC(S) EMPLOYED:

C. SCIENTIFIC JUSTIFICATION:

1. NA

Allelic diversity; presence of particular rare alleles, deleterious recessives, or karyotypic variants

LEVEL: GENETIC

COMPOSITION

C. SCIENTIFIC JUSTIFICATION:

A. FOCUS OF METRICS:

B. METRIC(S) EMPLOYED:

1. NA
2. NA
3. NA

STRUCTURE

LEVEL: LANDSCAPE

Heterogeneity; connectivity; spatial linkage; patchiness; porosity; contrast; grain size; fragmentation; configuration; juxtaposition; patch size; frequency distribution; perimeter-area ratio; pattern of habitat layer distribution

C. SCIENTIFIC JUSTIFICATION:

A. FOCUS OF METRICS:

B. METRIC(S) EMPLOYED:

1. NA
2. NA
3. NA

Substrate and soil variables; slope and aspect; vegetation biomass and physiognomy; foliage density and layering; horizontal patchiness canopy opens and gap proportions; abundance, density, and distribution of key physical features (e.g., cliffs, outcrops, sinks) and structural elements (snags, down logs); water and resource (e.g., mast) availability; snow cover

STRUCTURE

LEVEL: COMMUNITY/ ECOSYSTEM

B. METRIC(S) EMPLOYED:

A. FOCUS OF METRICS:

1. NA

C. SCIENTIFIC JUSTIFICATION:

1. NA
2. NA

Dispersion (microdistribution); range (macrodistribution); population structure (sex ratio, age ratio); habitat variables (see Community/Ecosystem Structure description); within-individual morphological variability

LEVEL: SPECIES

STRUCTURE

1. NA
2. NA
3. NA

C. SCIENTIFIC JUSTIFICATION:

A. FOCUS OF METRICS:

B. METRIC(S) EMPLOYED:

Census and effective population size; heterozygosity; chromosomal or phenotypic polymorphism; generation overlap; heritability

LEVEL: GENETIC

STRUCTURE

1. NA

A. FOCUS OF METRICS:

1. NA

B. METRIC(S) EMPLOYED:

1. NA

C. SCIENTIFIC JUSTIFICATION:

LEVEL: LANDSCAPE

FUNCTION

Disturbance processes (areal extent, frequency or return interval, rotation period, predictability, intensity, severity, seasonality); nutrient cycling rates; energy flow; patch persistence and turnover rates; rates of erosion and geomorphic and hydrologic processes; human land-use trends.

1. NA
2. NA
3. NA

A. FOCUS OF METRICS:

B. METRIC(S) EMPLOYED:

C. SCIENTIFIC JUSTIFICATION:

FUNCTION

LEVEL: COMMUNITY/ ECOSYSTEM

A. FOCUS OF METRICS:

C. SCIENTIFIC JUSTIFICATION:

1. NA

B. METRIC(S) EMPLOYED:

1. NA
2. NA

Biomass and resource productivity; herbivory, parasitism, and predation rates; colonization and local extinction rates; patch dynamics (fine-scale disturbance processes), nutrient cycling rates; human intrusion rates and intensities.

LEVEL: SPECIES

Demographic processes (fertility, recruitment rate, survivorship, mortality); metapopulation dynamical population genetics; population fluctuations; physiology; life history; phenology; acclimation adaptation

FUNCTION

A. FOCUS OF METRICS:

1. NA

C. SCIENTIFIC JUSTIFICATION:

1. NA
2. NA

B. METRIC(S) EMPLOYED:

Inbreeding depression; outbreeding rate; rate of genetic drift; gene flow; mutation rate; selection intensity

LEVEL: GENETIC

FUNCTION

B. METRIC(S) EMPLOYED:

C. SCIENTIFIC JUSTIFICATION:

A. FOCUS OF METRICS:

1. NA
2. NA
3. NA