Assessing Similarities Between Observed Ecological Communities

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Introduction

Natural ecological community types are defined as recurring assemblages of plant species; the species occurring together because they respond similarly to a variety of site attributes (Grossman et al 1994). The species that make up the assemblage often show an affinity or association with each other (Kent and Coker 1992). Ecological community "types" are taxonomic concepts; the community observed in the field will almost never exactly match the concept. Data on a community should be collected in a plot, or series of plots, chosen to represent one vegetation entity. The plot(s) should be relatively uniform in vegetation and site type, and large enough to reasonably represent the floristic composition of the community. Using a variety of analytical tools, plots can then be grouped and classified. The Ecological Society of America (2003) provides detailed information on the steps and data required for vegetation classification.

Often, however, the objective of a field study is to document the vegetation and floristics of a site, not to classify the vegetation. So a more subjective process is needed to determine if vegetation documented through plot data (or less ideally, simple site observation) can be "assigned" to a recognized community type.

Assessing similarities

What are the factors to look at when determining if the observed assemblage of plants is similar enough to be considered the same ecological type? Corns (1983) used a three-point similarity rating to allow a consistent but subjective assessment of similarities of floristic composition and dominance when there is a lack of quantitative data.

1. Identical to or very similar
2. Similar in most respects
3. Several similarities but important differences

There are a number of factors to consider when assigning a similarity rating to two vegetation units, as follows.

1. Is the **physical structure** the same? .Looking at the dominant growth form; a growth form with a high percent cover, usually in the uppermost dominant layer (e.g. grassland, woodland, forest or shrubland). A grassland and open shrubland for example may be considered similar, but not the same.

2. Are the **dominant species** present that have been used to define the type? Dominant species are those frequently attaining a high cover in particular vegetation units, usually (but not always) in the uppermost dominant layer.

3. Is the suite of **constant species** present that have been used to define the type? These are the suite of species that are present in a high percentage of the plots that define a type, often defined as those species with at least 60% constancy.

4. Is the **landscape context** the same? A site may be physically different, but ecologically similar. For example, a community that has developed in subxeric conditions may be on level site sites at the southern portion of its range, but on south-facing slopes moving north.

5. What is the **pattern type** of the communities being compared? Ecological communities can be divided into three main pattern types, which can change with location. A grassland type for example may be a matrix type on a level landscape, but a small patch type restricted to south-facing slopes in hilly areas.

- **Matrix communities** are widespread and cover large areas across the landscape.
- **Large patch communities** are less extensive and cover less of the landscape, but overall may still form large, uninterrupted patches.
- **Small patch communities** form small, discrete areas, usually associated with specific, specialised habitats, such as cliff faces or saline seepages.

To make this type of assessment as objective a possible, types being compared can be given a score, with each factor that is the same given a one, two for similar, three for different. The smaller the score, the more similar the two types are.

Factor	Rating		
	1	2	3
1. Is the physical structure the same?	Same	Similar	Different
2. Are the dominant species the same?	All	Most	Few (if there are none that are the same, stop now, the type is different)
3. Are the constant species present?	All	Most	Few
4. Is the landscape location the same?	Same	Ecologically similar	Different
5. Are they the same pattern type?	Y		N

References Cited

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