

University of New Mexico

## UNM Digital Repository

---

Long Term Ecological Research - Reports

Long Term Ecological Research (LTER)

---

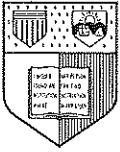
4-1988

### **Coordinating Committee Meeting, H.J. Andrews LTER Site, Oregon, April, 1988**

Long Term Ecological Research Network

Follow this and additional works at: [https://digitalrepository.unm.edu/lter\\_reports](https://digitalrepository.unm.edu/lter_reports)

---



**New York State College of Agriculture and Life Sciences**  
a Statutory College of the State University  
**Cornell University**

Department of Natural Resources  
Fernow Hall, Ithaca, N. Y. 14853-0188

Fishery Science  
Forest Science  
Wildlife Science  
Natural Resources  
Resource Policy  
and Planning  
Aquatic Science

**MEMO TO:** LTER-CC and LTER Vegetation Scientists  
**FROM:** T. Fahey  
**SUBJECT:** Development of "Vegetation Profiles of LTER Sites"

Together with J. Hughes and T. Siccama, I have developed a plan for producing a document profiling the vegetation characteristics of each of the LTER sites. This plan has been scrutinized only by our very limited group and undoubtedly contains many imperfections. Before launching this endeavor, we would request the thoughtful criticism of as many LTER scientists as possible. Most importantly, are there other important purposes for which this document could be applied and if so what additional information would be valuable? For the stated purposes, is the proposed format suitable? Will this information be readily available from your site? Obviously, we will be constrained by length limitations; is this suggestion of presenting information for three or four community types, representing successional or topo-edaphic gradients, the most appropriate choice? We expect that most of the information requested will be readily available from most of the LTER sites.

Be assured that your comments and criticisms will be carefully considered. Before embarking on this project we want to be certain that it will actually be useful. Let us know if you think it will be wasted effort or if you are enthusiastic about its potential value.

This proposed project would be integrated with the Ecological Data Exchange (EDEX) project of T.G. Siccama. EDEX, described in published notices (Bull. Torrey Bot. Club 113:442), is designed to compile into a readily-available form a large set of ecological data for any of a variety of uses.

TJF:mth

## Vegetation Profiles of LTER Sites

### Introduction

A concise and readily available reference describing and quantifying certain aspects of the vegetation of the principal community types at each of the terrestrial LTER sites could serve several important purposes: (1) facilitation and stimulation of inter-site synthesis studies within the LTER program; (2) extension of our information base to scientists outside the LTER program; and (3) communication to outside agencies (e.g., the developing IGBP); and (4) future planning within LTER for the compilation of information essential to continued development of better understanding of long-term and large-scale patterns in ecological systems.

In planning the proposed format for this Vegetation Profiles document, we have considered each of these primary purposes, and we have attempted to include within the format the most valuable information for meeting these purposes while avoiding the need for any major research effort on the part of the investigators from each site. In the following document, we describe a proposed format and follow with an example of a partial example for the Hubbard Brook LTER site.

Proposed Format (for each site)

I. Site Information

Name of Site

Geographic location - coordinates

Elevation

Geologic Province

II. General Features (narrative)

This will be a brief (e.g., 3 double-spaced pages) description of the general nature of the vegetation, including references to published information. For each site the following information will be presented in the order suggested below:

1. General physiognomy of the major vegetation communities, including site vegetation map.
2. Representativeness of the vegetation for the region.
3. Brief site history, ownership description.
4. Arrangement of vegetation in the local landscape and the nature and strength of environmental gradients.
5. General perception of the principal environmental factors limiting primary productivity (e.g. nutrients, water, growing season, herbivory, etc.).
6. General perception of the principal factors controlling spatial variability of vegetation composition (e.g. site history, disturbance, propagule availability, resource availability, etc.).
7. Natural disturbance regime, including frequency, scale and intensity for each major disturbance agent.
8. If applicable, current disturbance regime(s) for the site or region.
9. Brief narrative of rationale for choice of community types for detailed description (below).

### III. Community descriptions

For each of 3 or 4 plant communities at each site, we will present detailed information on composition and dynamics. Because of the contrasting nature of community dynamics at the different sites it may not be optimal to have the choice of communities pre-defined for all sites. For example, at HBEF a successional sequence within the hardwood zone seems most important because topographic variation is minor. For many sites the latter variation may be more important, so that communities from different physiographic positions are more appropriate to describe.

We would like to present all the available information indicated below for each selected community type. We expect that this type of information will already be readily available for most of the sites. If this is not the case, let us know! We provide an example of the mature northern hardwood forest at Hubbard Brook for clarification.

1. Data Tables: A brief narrative should precede the data table for each community type, describing the sampling scheme and/or a reference to literature.

The data tables would provide for each important species the following information: Scientific name; basal area (for trees) or canopy cover (for non-forest vegetation); stem density (where possible); frequency; and relative importance value. If widely enough available, we might also present biomass values by species.

The data table would be subtended with the following community-wide information: total biomass of vegetation; root:shoot ratio; leaf area index; fine root biomass; canopy height; time since last large-scale disturbance; and/or physiographic position.

2. Lists of flora alphabetically by family, abundances, and growth-form life-form classifications. These could be provided for each community type or alternatively with one list for the site as a whole and the community types of occurrences added as another column.

Example of Community Descriptions

## DATA TABLE

Hubbard Brook, Watershed 6 - 1987 Forest Inventory  
 Total number of trees measured = 11059 (includes >2cm)  
 W-6 1987 Forest population summaries > = 10 cm dbh, live

Species	Basal area m sq / ha	Density no / ha	Frequency %	Rel. Imp. Value
<i>Acer saccharum</i>	9.93	187.15	92.31	31.73
<i>Fagus grandifolia</i>	7.61	187.31	92.79	28.80
<i>Betula allegheniensis</i>	5.35	73.38	94.71	19.29
<i>Fraxinus americana</i>	0.18	1.31	3.37	0.60
<i>Acer pensylvanicum</i>	0.04	3.00	13.94	1.42
<i>Prunus pensylvanica</i>	0.01	0.31	1.92	0.19
<i>Prunus virginiana</i>	0.00	0.08	0.48	0.05
<i>Abies balsamea</i>	0.63	27.23	15.87	3.78
<i>Picea rubens</i>	0.51	17.15	27.40	4.00
<i>Betula papyrifera</i>	1.36	54.77	30.77	7.62
<i>Sorbus americana</i>	0.09	3.46	8.65	1.05
<i>Acer rubra</i>	0.19	5.46	8.65	1.30
<i>Tsuga canadensis</i>	0.01	0.62	1.44	0.18

Total biomass = 218 Mg/ha

Canopy height = 22-25 m

Root:shoot biomass ratio = 0.18

Time since disturbance: 75-80 yr

Leaf area index = 5.5

Physiographic position: South slope

Fine root biomass (<0.6 mm) = 500 g/m<sup>2</sup>

## Plant Growth-Form Classification (from Whittaker 1975)

1. Needle-leaved (mainly conifers -- pine, spruce, larch, redwood, and so on)
2. Broad-leaved evergreen (many tropical and subtropical trees, mostly with medium-sized leaves)
3. Evergreen-sclerophyll (with tough, evergreen, mostly smaller leaves)
4. Broad-leaved deciduous (leaves shed in the Temperate Zone winter, or in the tropical dry season)
5. Thorn-trees (armed with spines, in many cases with compound, deciduous leaves)
6. Rosette trees (unbranched, with a crown of large leaves -- palms and tree-ferns)
7. Bamboos (arborescent grasses)
8. Lianas (woody climbers or vines)
9. Needle-leaved
10. Broad-leaved evergreen
11. Evergreen-sclerophyll
12. Broad-leaved deciduous
13. Thorn-shrubs
14. Rosette shrubs (yucca, agave, aloe, palmetto, and so on)
15. Stem succulents (cacti, certain euphorbias, and so on)
16. Semishrubs (suffrutescent, that is, with the upper parts of stems and branches dying back in unfavorable seasons)
17. Subshrubs or dwarf-shrubs (low shrubs spreading near the ground surface, less than 25 cm high)
18. Ferns
19. Graminoids (grasses, sedges, and other grasslike plants)
20. Forbs (herbs other than ferns and graminoids)
21. Lichens
22. Mosses
23. Liverworts

## Raunkiaer Plant Life-forms

1. Phanerophytes: trees and shrubs with buds  $> 25$  cm above the ground
2. Chamaephytes: shrubs with buds  $< 25$  cm above the ground
3. Hemi-cryptophytes: perennial herbs with bud at ground surface
4. Geophytes: perennial herbs with perennating organ below the ground surface
5. Therophytes: annual plants