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Glossary of Landscape and Vegetation Ecology for Alaska

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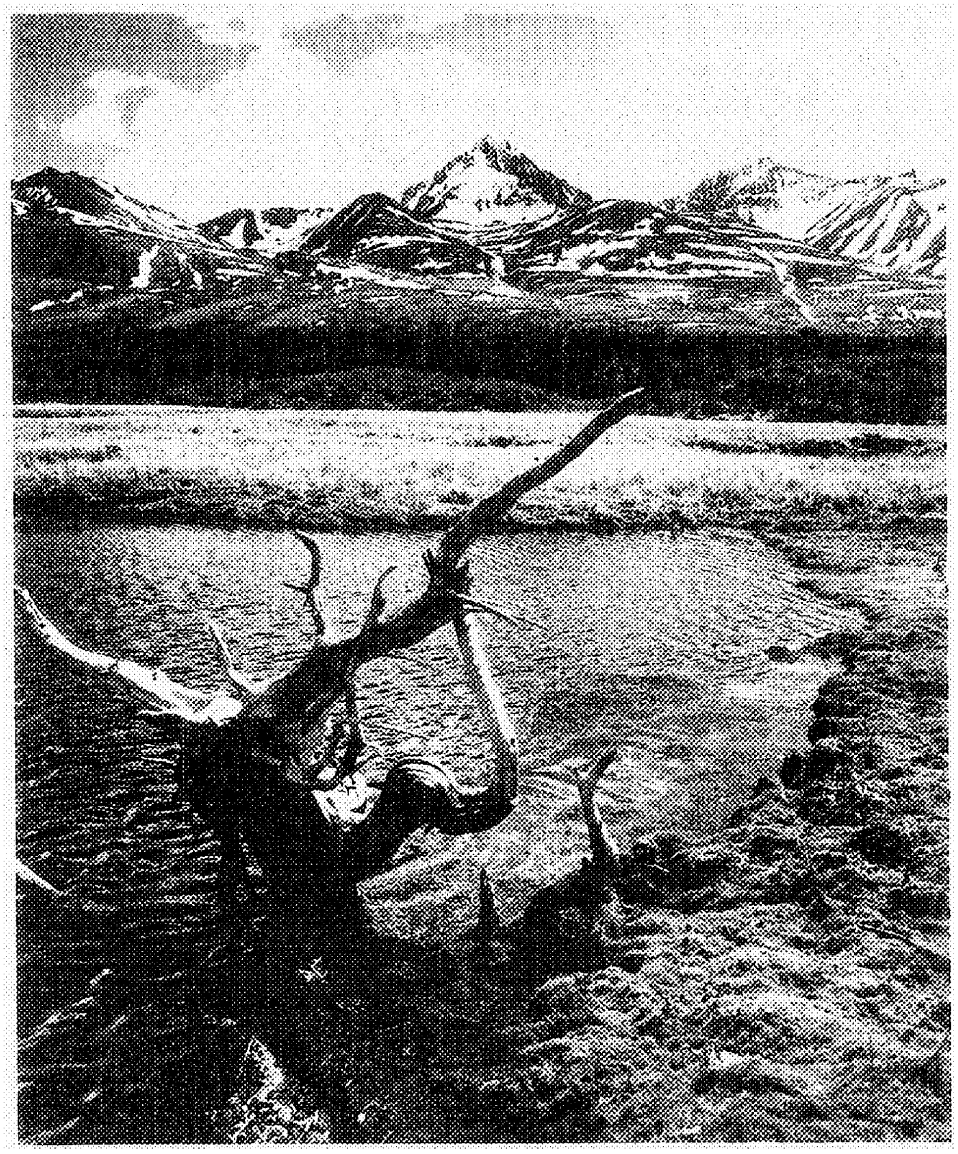

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Acknowledgement

Work on this glossary extended over a four-year period during which a number of people active in the Alaska Vegetation Description and Classification Subcommittee suggested terms and definitions for inclusion. Over 40 people reviewed various drafts of the manuscript. The authors appreciate the interest and encouragement of all those involved, and particularly the following individuals for their critical review and contributions: Dr. Dot Helm, University of Alaska Agriculture Experiment Station; Dr. J. P. Spencer and E. F. Layser, Bureau of Land Management Alaska State Office; Dr. F. R. Larson and K. C. Winterberger, USDA Forest Service, Forestry Sciences Laboratory, Anchorage.

And finally, completion of the project was due largely to the skill and good humor with which M. D. Goings revised, organized, and produced the text on her "word processor."

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Introduction

For most of the century following acquisition of Alaska by the United States in 1867, the land and its vegetational cover remained something of a mystery and an enigma to the general public. Then, in one frantic decade, oil was discovered at Prudhoe Bay, an 800 mile pipeline was proposed to transport the oil across the state, a settlement of aboriginal land claims was reached, and the federal public domain lands were rapidly transferred to new Native village and regional corporations and to the state of Alaska.

Selection of lands by the new landlords depended upon knowledge of the resources associated with the lands and a lively interest developed in being able to describe, inventory, and map the landscape and vegetation. Suddenly, instead of an academic interest in vegetation ecology shared by a few specialists, we found dozens and then hundreds of people using the new Landsat and U-2 data to describe the resources on lands in which they had an interest.

Lack of a common language impeded communication, and it seemed that an excessive portion of any meeting was devoted to defining terms and concepts. An interagency vegetation committee has, in a series of approximations, developed a scheme for classifying the vegetation of Alaska (Viereck, Dyrness, and Batten 1982), but the problem of terminology and usage remains.

OBJECTIVES

The purposes of this glossary are to: (1) compile terms useful to people wishing to describe the landscape and vegetation of Alaska, (2) make definitions and methodology for vegetation description known to a wider spectrum of users, and (3) achieve a common application of terms and improved communication.

A good glossary can provide a common frame of reference so that in a few words the user can describe to others just where his observations or samples fit into the universe. We hope that this report will serve that purpose. It was not our intention to compile a comprehensive glossary of all the possible vegetation ecology terms, but instead to define those most applicable or commonly used in Alaska.

INFORMATION SOURCES

This work began with a list of terms in use in Alaska that we knew to

be causing problems in communications because of the lack of precision with which they were used. The search for a set of useful definitions began in the glossaries and dictionaries already published by professional societies, government agencies, and others. Among the most useful were: Terminology of Forest Science, Technology, Practice, and Products (Ford-Robertson 1971), Resource Conservation Glossary (Soil Conservation Society of America 1982), A Glossary of Alpine Terminology (Habeck and Hartley 1968), Dictionary of Ecology (Hanson 1962), and The Encyclopedia of Geomorphology (Fairbridge 1968).

We then searched for more specific glossaries found in textbooks and proceedings of symposia such as those on vegetation (Billings 1964), plant geography (Daubenmire 1978), muskeg (Stanek 1977), mires (Gore 1983), and fire (Romme 1980). These sources produced additional terms and definitions, but still left some gaps in our list and sometimes presented us with conflicting definitions. The next phase of the compilation included a search of the literature on northern vegetation ecology and permafrost for definitions and usage of specific terms. This also gathered terms and synonyms from European literature.

Northern environments, geomorphology, and vegetation were described and studied in Russia, Finland, and Scandinavia many years before attention turned to Alaska. As a result, much of the terminology used now was borrowed from languages used to describe conditions in other lands. Tundra, taiga, and aufeis are examples of the many such terms included in this glossary and in general use in Alaska today. Many other infrequently used European terms have been included that may be still encountered by persons using the European literature on northern environments. Terms borrowed from Native American languages add yet another dimension to terminology in Alaska. Muskeg, pingo, and nunatak are examples from Indian and Eskimo languages.

A first draft of the glossary was distributed to people working in vegetation description and inventory in 1981. After considerable revision, successive drafts were distributed for review in 1984. Revisions of those drafts resulted in the present glossary and definitions which have been compiled, edited, and massaged to clarify their meaning.

ALASKA IS DIFFERENT

Vegetation description, inventory, and interpretation is no longer the activity of only a few ecologists in Alaska. Today there are people who have a diversity of backgrounds and a multiplicity of interests, who work for a variety of employers and do field studies, prepare maps, and write environmental statements and management plans which contain descriptions of vegetation and interpret vegetation ecology.

The literature of ecology is rich in terms with well defined meanings that facilitate communication between ecologists, but often there has been a disconcerting lack of precision in the use of those terms by persons less familiar with their application.

Some of this lapse in usage may also depend upon geographic location. It is sometimes said that a point of view depends upon where you stand, and certainly, moving to a new location sometimes requires an adjustment in interpretations and perceptions. A resident of Kansas may give little thought to words like snow, ice, and frozen ground, but on moving to Alaska he would become aware that each exists in many forms with different physical properties. Not to be aware of those differences is to court disaster. Similar situations exist with landscape terms like tundra, muskeg, bog, fen and other characteristics of the northern environment which are less frequently encountered in the lower 48. Just as the Inupiat Eskimo language has more than 40 words for snow and ice conditions (Webster & Zibell 1970), we have some four dozen terms for peat, bog, and fen conditions and at least a dozen for tundra.

The very concept of **tundra** is difficult to grasp for those who have not experienced the northern landscape and its environment. This conceptual problem is illustrated by the variety of conditions which may be referred to as tundra by the layperson, on the one hand, and the changing view of how best to treat such vegetation units in the classification scheme for Alaskan vegetation (Viereck et al. 1982) on the other hand. We now treat tundra as a landscape term which can be used as a modifier of many vegetation type names. A simple definition states that tundra is the landscape beyond the cold limits of tree growth, both to the north and west of treeline in Alaska and at elevations above treeline on mountains. Thus, there is no tundra found in the general forest zone, although laymen insist on referring to bogs, muskegs, and even the moss and lichen understory in black spruce stands as "tundra."

As with tundra, permanently frozen ground is an element of the northern environment that is not well known or widely understood. The single term **permafrost** is applied to a variety of frozen ground phenomena by people unaware of the range of terms available to describe pattern and process. There is also frequently an assumption that moisture is required, but permafrost is defined exclusively on the basis of temperature, and no moisture or ice need be present.

Because of frozen soils and poor drainage, a large proportion of the surface of Alaska is covered by a variety of landscape features collectively referred to as **wetlands**. That term encompasses many

more precise terms available to describe the wide range of wetland situations. Bog, fen, swamp, and marsh all are refinements in description, and each can be further modified for precise description of particular features within the wetland landscape. The various terms indicate that there is saturated soil, standing water, or flowing water. They also describe organic or inorganic substrates, and the range of soil acidity.

The problem of word usage and communicating ideas in science is not unique to Alaska and the north, but is more a matter of differences between academic disciplines and between philosophies within a discipline. For example, the terms **stratum** and **profile** are used in pedology to describe inplace soil characteriestics and in ecology to describe vegetation structure but the meanings are close enough to be understood in the other discipline. On the other hand, the term **association,** while used in both disciplines, has so many definitions that there is little chance of clearly communicating what is meant unless the user defines the intended meaning in the given context.

Any user of the English language is aware of words having more than one meaning, but unwary readers of scientific literature are sometimes confused by differences in usage between disciplines. In compiling this glossary we have tried to sort out those differences by providing alternate definitions and noting the discipline using each. However, the emphasis here is on plants, vegetation, and landscapes and terms which do not contribute to understanding those subjects are not included. Where alternate definitions are given, no hierarchy is implied by their order except that the first definition is preferred by the compilers of this glossary.

SOME WIDELY MISUSED TERMS

While some words have more than one meaning, most of those needed to communicate in landscape and vegetation ecology have one recognized definition. Proper use of those words adds precision and increases understanding while reducing verbage. Unfortunately, there are a number of terms which are grossly misused.

Ecotype is one such word. It refers to a genetic race within a species which is genetically adapted to life in a local habitat that is different from the habitat of other races of that species. The word is often misused by laypersons who should instead use biotope or cover type to describe a habitat or vegetational condition.

Vegetative is another frequently misused word. It refers to the

non-sexual tissues, growth, and reproduction of plants and has nothing to do with vegetation or types of vegetation. There is no such thing as a "vegetative type" despite the continued use of that term in some government agencies. "Plant," "plant material," or "organic matter" would be more appropriate in place of both "vegetation" and "vegetative" as commonly used by many people today.

Vegetation refers to the mozaic of plant communities in the landscape or to the sum total of plant life in an area. It does not refer to the plants or plant material uprooted by a bulldozer or run down by an off-road vehicle.

Soil is a natural thing out-of-doors and is a dynamic medium which changes with the seasons. It can not be put in a pot and brought indoors. "Earthy material" is a more appropriate term for what the gardener puts in the pot. Soil is also the mineral and organic material on the surface of the earth that serves as the rooting medium for land plants. Its thickness is determined by the rooting depth of plants. The engineer speaking of soil usually means "unconsolidated materials" or even "regolith."

Habitat type has a precise meaning in vegetation ecology as a collective term for all parts of the land surface supporting or capable of supporting the same kind of climax plant association. Thus, it is a landscape term which describes the potential of an environment or land area rather than just a type of vegetation. It is confusing when people speak of "habitat type" and mean something else. Communication could be improved if, when referring to wildlife habitat, the wording could be "type of habitat."

Density is another widely misused term and clarity would be served by always using it with a modifier. Stand density refers to the number of plants per unit area, while shade density is an expression of crown opacity or the percent of light passing through plant crowns. It does not refer to the amount of ground surface covered by plant crowns and use in that context by photo interpreters is confusing to others.

Cover has a variety of meanings and requires a modifier for precision in usage. When used in the context of canopy cover it is sometimes confused with canopy closure, but in general, closure indicates a process while cover indicates a condition. Thus, canopy closure indicates the progressive reduction of space between plant crowns as they grow and spread laterally, while canopy cover indicates the proportion of the ground area covered by the vertical projection of that canopy.

The terms describing low woody plants and vegetation are also frequently confused. A **shrub** is a woody perennial plant differing from a tree by its low stature and from a perennial herb by its persistent and woody stem or stems. Vegetation dominated by shrubs is known as **scrub**, and a landscape covered by scrub can be called **shrubland** or **scrubland**. Colloquial terms like bush and brush are of little value in describing vegetation.

Possibly the most confusing set of terms in this glossary are those describing **wetland** ecosystems. The terms do have rather precise meanings, but colloquial usage has blurred the distinctions. It is useful to approach the subject in sort of a dichotomous key fashion as follows: Wetlands may be considered as either peat-forming ecosystems or non-peat forming. The non-peat forming ecosystems include **marshes** and most **swamps**. Peat-forming ecosystems are known as **mires** and are subdivided into **fens** and **bogs** on the basis of the origin and chemistry of their water supplies and nutrients. A fen is a mire with little or no Sphagnum moss and with a source of water and minerals outside the limits of the mire. The **peat** in a fen ecosystem is usually composed of sedges, rushes, bulrushes, and non-sphagnaceous mosses. On the other hand, bog peat is composed mostly or entirely of Sphagnum mosses and the bog itself is generally dominated by living Sphagnum. Bog surfaces may stand above the level of the surrounding terrain and receive their moisture and nutrients as rain or snow falling directly on the surface of the bog. They are, therefore, both more acid and less well nourished (oligotrophic) than fens. Bogs may also be subdivided on the basis of the shape of their surface into **raised bogs** and **blanket bogs**. A raised bog is usually easily definable by a recognizable boundary, the **rand** (steep marginal bank). Blanket bogs are rarely confined in such a way and may cover extensive areas.

The usual alphabetical order of a dictionary or glossary facilitates the location of an individual word, but it does not reveal relationships like those just noted. We have tried to overcome that problem by making cross references to other terms for comparison. In addition, Appendix I contains groups of terms which show some of the "family relationships" and may help users find suitable terms for their purposes. Some terms can, depending upon modifiers and intent, fit into more than one group.

Appendix II contains a list of common names for plants referred to in the glossary definitions.

A

Aapa - Finnish term for extensive watery mires (peat-forming wetland ecosystems) of northern Finland. These cold-climate variants of mires have the characteristic ridge and pool pattern oriented along the contours. Similar landscapes are widespread in Alaska. Usually used in conjunction with another term to describe the environment and vegetation. See mire.

Aapa bog - Aapa mire dominated by Sphagnum mosses. See bog, string.

Aapa fen - Aapa mire dominated by sedges and nourished by water and minerals from outside the limits of the mire. See fen, patterned and fen, string.

Aapamoor - German term referring to large mires occurring near treeline and that are characteristically patterned with peat ridges.

Abundance - (1) The total number of individuals of a species in an area, population, or community. (2) Total number of individuals in a sample divided by the number of occupied sampling units gives a relative abundance. (3) May also be expressed subjectively on a five-part scale as: very rare, rare, infrequent, abundant, very abundant. Compare density and diversity. See frequency (4).

Accidential - A species that occurs with a low degree of fidelity in a plant community-type. See fidelity.

Acclimation - The increased tolerance or physiological adjustment of an organism to a change in its environment. Synonym of acclimatization.

Acidophile (n) - Plant which prefers or thrives in a relatively acid environment, e.g., Oxycoccus microcarpus.

Acidophilous (adj) - Refers to acidophile.

Acrophytia - Plant communities in alpine regions. The vegetation component of alpine tundra.

Active layer - The layer of ground above the permafrost which thaws and freezes annually. Synonym of supragelisol.

Actophilous (adj) - Refers to organisms that grow well on rocky seashores, e.g., Honckenya peploides.

Adventive - A plant growing spontaneously, not native, ephemeral or not spreading appreciably.

Afforestation - The establishment of a forest on an area not previously forested. Compare reforestation.

Age class - (1) Trees or shrubs originating in the same regeneration period. (2) One of the intervals, commonly 10 years, into which the age distribution of trees may be divided for statistical or management purposes. See even-aged and all-aged.

Age distribution - The classification of individuals of a population according to age classes or periods such as prereproductive, reproductive, and post reproductive, or into numerical intervals such as 10 year age classes.

Age, decline - The approximate age beyond which, irrespective of growth rate or apparent vigor, a tree species becomes subject to extensive decay. The age of decline acts as a limiting factor for the rotation in managed forests. See maturity.

Age, rotation - The age at which a stand of trees under management is considered ready for harvesting under the adopted silvicultural plan.

All-aged - Applied to a stand of trees in which trees of all ages are found. See even-aged and uneven-aged.

Allelopathy - A biochemical influence of higher plants upon each other (usually inhibition of germination or growth) that is caused by the release of metabolic substances under natural conditions. Several lichens, alders, and some Artemisia spp. exhibit this influence.

Allochoric (adj.) - Refers to a species occurring in two or more similar communities in the same region.

Allochthonous (adj) - (1) Originating elsewhere, not native to the place found. Compare autochthonous. (2) Sediment (or peat) formed from the remains of organic matter carried by water and settled to the site of deposition.

Allogenic - See succession, allogenic. Compare succession, autogenic.

Allopatric (adj) - (1) Refers to taxa which occupy mutually exclusive ranges. (2) Refers to organisms originating in or occupying different geographic areas. Compare sympatric.

Alluvial (adj) - Refers to material that is transported and deposited by running water. Compare colluvial.

Alluvial soil - Soil that has developed from transported and relatively recently deposited material (alluvium), characterized by little or no modification of the original material by soil-forming processes.

Alluvium (n) - A general term for all detrital material deposited or in transit by streams, including gravel, sand, silt, clay, and all variations and mixtures of these.

Alm - A high alpine or subalpine mountain meadow.

Alpine - (1) Refers to those portions of mountain landscapes above tree growth, or to the organisms living there. (2) That vegetation occurring between the upper limit of trees (timberline), and the lower limit of snow (snowline) on mountains high enough to possess both of these features. See acrophytia. (3) Implies high elevation, particularly above treeline, and a cold climate.

Alpine desert - See desert.

Alpine meadow - (1) A dense, low, meadow-like type of herbaceous plant cover found above timberline. (2) Low herbaceous vegetation dominated by grasses, sedges, and other herbs in the alpine zone. (3) Nearly synonymous with alpine grassland. See fellfield.

Alpine rockfield - See fellfield.

Alpine tundra - That portion of the landscape above the upper limit of tree growth which supports a plant cover of dwarf shrubs and herbs.

Alterne - (1) One of two or more plant communities alternating with each other in a more or less restricted area as on a string bog. (2) A kind of intrazonal feature in which two different kinds of vegetation alternate with more or less regularity; e.g., north and south facing slopes; aggrading lee slopes and eroding windward slopes of dunes. The old dune areas north of the Alaska Range, particularly the Tok Dunes and Kantishna Dunes exhibit alternes. See catena. Compare mosaic.

Altherbosa - Communities with tall herbs, especially in denuded forest areas. Epilobium angustifolium is often a major constituent of these communities in Alaska.

Alvar - A vegetation type in Sweden consisting of dwarf shrubs and resembling steppe.

Amnicolous - Refers to organisms inhabiting sandy banks of rivers.

Anabiont - A perennial plant that produces flowers and fruits many times during its lifetime.

Anaerobe(-ic) - An organism living in the absence of free oxygen.

Anemochore - A species of which the seeds, spores, or other parts capable of reproducing offspring are dispersed by wind, e.g., fireweed, cottonwood.

Anemophilous - Refers to plants in which the pollen or other spores are scattered almost exclusively by wind, e.g., willows.

Anmoor - Paludified mineral soil with a thin peat layer usually less than 30 cm; basically, an ecotone between bog and forest.

Annual plant - A plant which completes its life cycle and dies in one year or less, e.g., Bromus tectorum.

Antagonism - (1) The depressive effect of one organism upon the growth of another. (2) The simultaneous actions of two or more agents that, together, cause a total response less than their individual effects. Antonym of synergism.

Aquatic plant, emerged or emersed - A plant adapted to life with its lower parts submerged in water, its upper parts raised out of water.

Aquatic plant, immersed - A plant adapted for life submerged or almost submerged in water, e.g. Myriophyllum spp.

Aquatic sites - Are permanently or at least characteristically flooded, and on which all dominant plants are aquatics with floating or submerged leaves, e.g., species of the genera Potamogeton, Hippuris, Myriophyllum, and several others. Depth of water is not significant but its persistence is.

Aquiherbosa - Communities of herbs occurring in ponds and swamps.

Aquiprata - Communities of plants where ground water is an important factor, e.g., wet meadows.

Arctic (adj) - Pertaining to the arctic region.

Arctic (n) - (1) High latitude region from which tree growth is usually absent due to unfavorable environmental conditions of low temperatures, short growing season, etc. more or less following the 10°C mean daily isotherm for the warmest month of the year. In general, north of 67°. (2) Sometimes defined in Alaska as

north of the "P-Y-K Line," or north of the Porcupine, Yukon, and Kuskokwim Rivers.

Arctic-alpine - (1) Pertaining to arctic and alpine regions jointly. (2) One of Merriam's life zones defined as lying north of tree line and above timberline and characterized by arctic plants and arctic animals. See life zone.

Arcuate ridges - Intervals of renewed, but short-lived glacier activity during overall retreat are indicated by recessional moraines between the outermost trimline and the glacier. These commonly are in the form of arcuate (arched, curved like a bow) ridges often consisting of humps and hollows.

Arête - A narrow, jagged mountain ridge, often above snowline, sculptured by alpine glaciers and formed by backward erosion of adjoining cirque walls. Compare nunatak and tor.

Aspect - (1) The gross physical appearance of a vegetation cover type. (2) One of the seasonal appearances of vegetation. See aspection. (3) The direction toward which a slope faces. Synonym of exposure.

Aspect dominance - Situation in which a plant species or group of species appears to dominate a community for a portion of the year, usually because of conspicuous floral characteristics. Synonym of seasonal dominance.

Aspection - (1) Seasonal variability in the appearance of vegetation due to blooming, fruiting, foliation, and defoliation of the constituent plants. (2) Periodic, i.e. seasonal, changes in the appearance of a group of plant species, associated with periods of foliation or flowering, which are reflected in the appearance of the community as a whole or its members. Compare periodicity and phenology.

Association, index of - A measure of the occurrence together of one plant species with another, calculated by dividing the number of samples in which one species occurs by the number in which both occur.

Association, plant - A term with several definitions and an inconsistent usage. (1) An actual stand, concrete community, or group of plants characterized by a definite floristic composition, presenting uniformity in physiognomy and structure, and growing under uniform habitat conditions. (2) A definite or characteristic assemblage of plants living together in an area of essentially uniform environmental conditions. (3) In the abstract sense, a group of concrete communities or stands that are

classified together because they meet certain standards of similarity. (4) A recurring plant community of characteristic composition and structure. (5) In the sense of Clements, a climatic climax unit that includes all the successional stages preceding it. (6) Also various units defined by: (a) Floristic composition, character and differential species and constancy--the Zurich-Montpellier System which erects a formal hierarchy of Association, Alliances, Orders and Classes; the most generally accepted usage of the term following the 1935 Botanical Congress; (b) Stratal structure and constancy (= micro-association); the Northern Tradition including modern British sociology; (c) by one or more dominant species where the species dominant are those in the upper vegetation layer, consociation being used for single species dominance, prevalent in British ecology up to 1955, and called dominance-type by Whittaker (1962); (d) as a stratal unit, the unistratal association used by Lipmaa and other members of the Estonian School.

Association, soil - A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit. See soil classification.

Association complex - A group of plant associations which occupies a definite circumscribed area of the landscape.

Association table - A listing of plant species occurring in several stands of an association or community-type, and including such characteristics as presence, abundance, or cover.

Associes - Clements' term for the seral equivalent of an association; a non-climax community to be replaced by another in the process of succession. See association, plant (5).

Aufeis - German term for sheets of ice formed by the freezing of overflow water. See naled. Synonym of icing.

Aufnahme - German equivalent of the French releve for a sample stand of vegetation.

Autecology - The study of the individual plant, or members of a species collectively, in relation to environmental conditions. See ecology. Compare synecology.

Autochthonous (adj) - Native to or formed in the place found, e.g., peat formed in place. See indigenous. Compare allochthonous.

Autogenic - See succession, autogenic. Compare allogenic.

Autotrophic - The nutrition of those plants that are able to

construct organic matter from inorganic materials by means of energy received from outside the plant, e.g., plants with chlorophyll.

Available water - The part of the water in soil that plants can absorb.

Avalanche chute - The track or path formed by an avalanche.

Avalanche cone - Materials such as rocks, snow, ice, trees, deposited at the base of an avalanche chute.

Avalanche track - The central channel-like corridor along which an avalanche has moved; it may take the form of an open path in a forest, with bent and broken trees, or an eroded surface marked by pits, scratches, and grooves.

Average distance - The distance between plants determined by dividing the square root of an area by the density of each species within the area. See density, stand.

Azonal - (1) In Russian geobotany, term applied to natural plant community found on extreme soil conditons within a climatic zone. Corresponds more or less to an edaphic climax community in North American terminology. See zonal. (2) Geographical differentiation of the earth's surface (where) geological and geomorphical features form the basic pattern.

B

Barren - (1) An area which is devoid of trees or tall shrubs, as in the Canadian "barren ground" terminology for tundra. (2) An area devoid of vegetation or nearly so.

Basal area - (1) For trees, the area of the cross section (measured outside bark at D.b.h.) of a single tree, or of all trees in a stand, expressed in square meters/hectare or square feet/acre. (2) For range plants, the area of ground surface covered by the stem or stems of a range plant (usually measured 1 inch above the soil) in contrast to the full spread of the foliage. Compare canopy cover.

Basal cover - See basal area (2).

Base saturation - The extent to which the adsorption complex of soil is saturated with exchangeable cations (Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

Beach - Depositional area at the shore of an ocean or lake covered by mud, sand, gravel or larger rock fragments and extending into the water for some distance. The zone of demarcation between land and water. See strand.

Bedrock - The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Belt - (1) A comparatively narrow strip of vegetation with characteristics distinctive from the adjoining vegetation such as strips of Carex, Ledum, or Chamaedaphne in a bog. (2) An altitudinal distinction in vegetation of mountains. See zone.

Belt transect - See transect.

Bergschrund - Crevasse at the head of a mountain glacier which develops immediately adjacent to the rock wall of the mountain itself. As the glacier ice moves down and away from the headwall, mechanical erosion (plucking) at the bergschrund contributes to the development of the cirque characteristic of mountain glaciation. See cirque.

Bicentric - (1) Pertaining to a range of a plant that is divided between just two areas that are separated by a barrier, e.g., the Torrey pine in California. (2) Refers to a taxon with two centers of dispersion or evolution.

Biennial plant - A plant that requires two years to complete its life cycle, e.g., raspberries. Compare annual and perennial.

Biocoenosis (biocoenose) - A general term, used mainly by central and eastern European and some Canadian ecologists, for any ecological unit comprised of both the plant and animal populations of a habitat. The aggregate of interacting organisms living together in a habitat, usually including producer, consumer, reducer and transformer organisms. Similar to Clements' concept of biome.

Biogeoclimatic zone - A geographic area, as described by Krajina, et al., that is predominantly controlled by the same macroclimate and characterized by the same soils and the same zonal (climatic climax) vegetation; implies a zonal recognition not only of the vegetation and climate, but also of the animals, the soil, and geological substrate; not a vegetation scheme but an ecosystem scheme.

Biogeocoenose - A general term, used mainly by eastern European ecologists, for a community of plants, animals, and associated locality factors. An ecosystem.

Biomass - (1) The total amount of living material present in a particular area or habitat (community biomass) at any given time on a per-unit-area basis expressed in terms of either mass (g/m^2, Kg/ha) or energy (cal/m^2). (2) An expression of the total weight of matter incorporated into a population of organisms (species biomass). See phytomass, productivity, and standing crop.

Biome - A continental scale ecosystem characterized by similarities in plant life-form and environment, e.g., tundra, coniferous forest, but including all the plants and animals in the area. See formation (5). Compare biocoenose.

Biometry - Application of statistical analysis to the study of organisms and communities.

Biosphere - That portion of the earth and its atmosphere where living organisms can be and are sustained.

Biota - All the species of plants and animals occurring within a specific area or region. Compare flora and fauna.

Biotemperature (mean annual) - An index which is an average of the temperatures at which plant growth occurs relative to the annual periods calculated by summing all the mean monthly temperatures above 0° C, mean temperatures above 30° C being counted as 30° C, and dividing by 12. Approximate biotemperature ranges of the boreal and arctic regions are: arctic (3.0° C), northern boreal ($3.5-4.5^{\circ}$ C), middle boreal ($4.5-5.5^{\circ}$ C), southern boreal ($5.5-6.5^{\circ}$ C), and hemiboreal ($6.5-7.5^{\circ}$ C).

Biotic factor - Environmental influence caused by a plant or animal, such as shading by trees or trampling by animals, in contrast to abiotic factors such as climatic and edaphic influences. The influence of man alone is called anthropogenic.

Biotope - (1) An area of relatively uniform physical features (climate, soil, etc.) and therefore occupied by one particular phytocoenose of the potential natural vegetation. (2) Particular local or topographic environment. (3) A segment, usually a small segment, of a habitat. (4) The smallest geographic segment of a habitat with a highly uniform environment. Compare microcommunity.

Biotype - A genetically homogeneous population composed only of closely similar individuals; a genotypic race or group of organisms. A species usually consists of many biotypes. Compare ecotype.

Bisequum - Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons. See eluviation.

Bog - (1) A mire (peat-forming ecosystem) influenced solely by water which falls directly on to it as rain or snow and generally dominated by Sphagnum mosses. See ombrotrophic. Compare fen. (2) That stage in the physiographic succession of an area during which its surface is entirely of living Sphagnum, immediately under which is a fibrous brown peat composed mainly or entirely of partially disintegrated Sphagnum, the habitat exercising a distinctly selective influence on its flora. (3) A peat-covered or peat-filled area, generally with a high water table dominated by mosses, especially Sphagnum; although the water table is near the surface there is little standing water except in ponds. (4) In Alaska bog vegetation may be dominantly herbs, shrubs, or trees. Sphagnum spp. are usually present, and often dominate the moss layer. Substrate is composed of very wet sedge peat or Sphagnum peat. Depth of peat may range from 30 cm to several m. See mire and fen.

Basin bog - A bog which has built up to the water level in a lake or an old river channel and the upper surface of the peat is either horizontal or gently sloping.

Blanket bog - Term used in the British Isles for bog covering undulating semi-uplands. (1) Bogs of cool temperate regions formed under a maritime rainfall at lower elevations. (2) Bogs on hills developed under high rainfall and low temperatures as in Southeastern Alaska.

Dwarf shrub bog - A nutrient-poor, relatively dry bog covered with ericaceous dwarf shrubs and Sphagnum species.

Ericaceous shrub bog - Sites in Alaska on wet peaty soils on which ericaceous shrubs are co-dominant with sedges, mosses, other shrubs, and/or trees. Trees, when present, provide less than 25% cover. Peats may be either sedge or Sphagnum, and accumulations range from 15 cm to 12 m. The lowest peat accumulations are in Interior and Arctic Alaska (although some substantial peat deposits are also present in these areas); the deepest are in Southeast Alaska. Sphagnum spp. are usually present, whether or not they are the primary peat formers. These types are usually acid. The surface is usually hummocky and standing water may be present in the depressions, especially in early summer. In general, the surface is drier than wet meadows and the water table may fall several centimeters below the surface during dry spells. Peat-floored ponds one to several meters across are common in some bogs in Prince William Sound and Southeast Alaska. Mosses are present, if not co-dominant; lichens are frequently present, although usually not important. Erect shrubs, such as willows and alders, may be absent or common (but less than 25% cover). Aquatic plants are absent or non-dominant.

Flat raised bog - A bog which has a tendency for peat growth to extend up the sloping valley sides, leaving the boundary between bog and valley side poorly marked. There is a very weak rand and poorly developed lagg.

Floating bog - See bog, quaking.

Lacustrine bog - The transitional stage in which some mineral water is still a major influence in the development of the bog.

Mesotrophic bog - A wet bog with a moderately poor to poor nutrient level. Sphagnum species are abundant but higher plants help to determine the physiognomy of the vegetation. Parts of the bog are influenced by somewhat richer water. Characteristic sites for mesotrophic bogs are bog borders, surroundings of drainage channels in bogs, and shallow bogs.

Oligotropic bog - Wet, extremely nutrient-poor bog often ombrotrophic and dominated by Sphagnum species.

Paludification bog - Refers to a bog formed over previously dry land where a rise in the water table saturates the soil without forming a lake. See paludification.

Quaking bog - (1) Bog which has developed upon a mat of Carex or Sphagnum growing over a water surface. (2) A carpet of bog vegetation that is floating and sinks and quivers when walked on. Often called a floating bog.

Raised bog - (1) Ombrophilous mire in which peat accumulation at the center of the bog is greater than at its edges, giving rise to a cross-section resembling an inverted saucer. The central portion thus raised above the natural groundwater level, becomes solely dependent upon precipitation (ombrotrophic) and is therefore exceedingly low in plant nutrients. (2) A bog which has grown above its site of origin, whose center is higher than the margins and whose surface is convex. Growth is by Sphagnum proliferation and deposition of peat, water being supplied by airfall or capillary action in the peat. There is usually one or several very acid ponds near the center and around the rim is a sedgy channel (lagg) where water collects and flows away. (3) Bog with an elevated central area caused by peat accumulation. This central zone is generally isolated from the local water table and chiefly dependent on precipitation for water and minerals. (4) A bog with Sphagnum and associated plants that is typical convex and gently sloping from the center towards the steep margins and bordered by a ditch or a water course (lagg). Synonyms of Highmore, Hochmoor (German), hogmoose (Swedish), red bog (Irish).

Spruce bog - A loosely applied term describing confined areas of organic terrain where coniferous trees (not always spruce) are a prominent feature of the vegetation cover. See muskeg.

String bog - A common taiga landscape consisting of alternating low bog ridges (German-Strange) and wet sedgy hollows (Swedish-flarke, English-flarks). The ridges and hollows are orientated across the major slope of the peatland at right angles to water movement. Synonym of Strangmoor (German) and more properly termed a fen since it is usually fed by waters from outside the mire.

Transition bog - A bog with a nutrient supply and vegetation type intermediate between the raised bog and low bog types.

Treed bog - A type of ericaceous shrub bog with a 10 to 25% cover of trees at least 135 cm tall. See muskeg.

Bog lake - An area of open water, commonly surrounded either wholly or in part, by true bog margins, possessing peat deposits about the margin, in the bottom, or both; usually with a false bottom composed largely of very finely divided, floculent vegetable matter; containing considerable amounts of colloidal materials; and so constituted generally that in time it may become completely occupied by bog vegetation.

Bog meadow - Fresh wet meadows characteristically on peat accumulations greater than 30 cm, usually 1 m or more. Both sedge peat and moss peat (particularly Sphagnum) are common. The pH of the soils is weakly to strongly acid. Erect shrubs are absent or

nearly so, but a few ericaceous shrubs are often present in small numbers. Mosses are usually present and are often quite important. Lichens are generally scarce. Base-rich bog meadows in areas receiving runoff from limestone would properly be called fens.

Bog ridge - A ridge of peat moss supporting shrubs or trees and superimposed on a matrix composed primarily of sedges. The ridges are narrow, usually with their long axes across the slope and may form into net patterns. Synonyms of Strange (German), strangar (Swedish), pounu (Finnish). See laniere.

Boglands - The initial stage of bog development which, depending on the environment, can last for more or less long periods of time. The root systems of plants in boglands are in or next to mineral ground.

Boreal - (1) Northern, or having to do with northern regions. (2) One of three transcontinental regions defined by Merriam. It extends from the northern polar seas south to southern Canada. See life zone.

Boreal conifer forest - The continental scale landscape unit (biome) extending from Laborador to Alaska and generally characterized by various species of spruce and paper birch.

Boulder fields - Areas of high elevation in which the surface of the bedrock has become covered with a jumble of angular boulders of various sizes which represent the first stage in the change from rock to soil. See felsenmeer.

Boulders - Rock fragments larger than 60 centimeters (2 feet) in diameter. Compare cobblestone and stone.

Brackish water - Slightly salty water with a saline content that is intermediate between that of fresh water and sea water.

Breast height - A standard height for measurement of tree diameters 4.5 feet (1.37 m) above average ground level in the United States. In Europe and most Commonwealth countries 1.3 m (4.25 ft.).

Broad-leafed - With leaves other than linear in outline as opposed to grass-like or graminoid.

Broadleaf (adj) - A conventional term applied to trees and shrubs of the Angiospermae, in loose contrast to the generally needle-leaved Gymnospermae. See hardwood.

Broadleaf evergreen - Vegetation composed of plants with stiff, hard, or coriaceous leaves that are other than acicular or narrowly linear in outline.

Brown-moors - English term for mostly wet peat bogs without any tufts (hummocks), the moss vegetation principally consisting of so-called "brown mosses" (Amblystegium, Paludella, Meesea, etc.). There may be some Sphagnum, and the graminoid vegetation is richer than in the white-moors. See peat, Bryidae.

Browse - (n) Twigs or shoots, with or without attached leaves, of shrubs or trees, available for forage for wild or domestic animals. (v) To eat such plant materials.

Brush - (1) A colloquial term for shrubs in general or a scrub vegetation. (2) A dense growth of shrubs and small trees. (3) Sometimes confusingly used to refer to slash or debris resulting from logging.

Brushland - A colloquial term for shrubland (a landscape term) or scrub (a vegetation term).

Bryoid - (1) A moss, liverwort, or hornwort. (2) In the Preliminary Classification for Vegetation of Alaska, a herbaceous vegetation class including both bryoid communities and lichen communities.

Bryophyte - A plant of the phylum Bryophyta comprising mosses, liverworts, and hornworts.

Burn - An area over which fire has run.

Bush - (1) A colloquial term for a shrub. (2) Those areas of Alaska removed from highways and urban influences ("the bush").

C

Caespitose (cespitose) - Plants with short stems and branches usually covered with leaves and forming dense tufts or cushions, e.g., Silene acaulis. See cushion plant.

Calcareous soil - A soil containing enough calcium carbonate or magnesium carbonate to effervesce (fizz) visibly when treated with cold, dilute hydrochloric acid.

Calciphile - Preferring lime (calcareous) soils, e.g., Minuarta rubella.

Cambic horizon - A mineral soil horizon that has a texture of loamy very fine sand or finer, has soil structure rather than rock structure, contains some weatherable minerals, and is characterized by the alteration or removal of mineral material as indicated by mottling or gray colors, stronger chromas or redder hues than in underlying horizons, or the removal of carbonates. The cambic horizon lacks cementation or induration and has too few evidences of illuviation to meet the requirements of the argillic or spodic horizon.

Canopy - (1) More or less continuous cover of branches and foliage formed collectively by crowns of adjacent trees, shrubs, or herbs depending upon the type of vegetation. (2) The cover of leaves and branches formed by the tops or crowns of plants as viewed from above.

Canopy closure - In a stand, the progressive reduction of space between crowns as they grow and spread laterally. A canopy in which the individual crowns are nearing general contact is termed a close canopy; and having achieved contact, a closed canopy. In general, closure indicates a process, while cover indicates a condition.

Canopy cover - See cover.

Carr - (1) A fen (minerotrophic mire) supporting a scrub or woodland vegetation. (2) A mire (permanently wet peat-forming organic soil) supporting a scrub vegetation and little or no Sphagnum. See fen and mire.

Catena (ecology) - A regular alternation of two or more types of vegetation. See alterne. Compare mosaic.

Catena (pedology) - A sequence (chain) of soils of about the same age, derived from similar parent material, and occurring under similar climatic conditions but having different characteristics due to variation in relief and natural drainage.

Cation - Positively charged ion. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity - The total amount of exchangeable cations that a soil can absorb, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Chamaephyte - A class of plants whose perennating buds are located between the surface of the ground and a height of 25 cm. One of Raunkiaer's life forms. See life-form.

Channery soil - A soil that is, by volume, more than 15% thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a fragment.

Character (characteristic) species - (1) A plant species nearly always found in a community type regardless of its abundance or influence. (2) The plant species in classes 3, 4, or 5 of Braun-Blanquet's fidelity classification. See fidelity.

Chianophile - A plant that can endure long-lasting snow cover during winter and spring, or one that requires a snow cover in winter, e.g., Luetkea pectinata and Cassiope tetragona.

Chianophilous species - Snow bed plants. Plants exposed very late in the summer and with a short vegetative period.

Chianophobe - A plant that cannot tolerate long-lasting snow cover, or one that can live with little or no snow cover in winter, e.g., Empetrum nigrum and many of the dwarf willows.

Chianophobous species - Plant species which occur primarily in areas where the snow is shallow, and which become exposed early. They can endure very low temperatures and desiccating winds.

Chomophyte - (1) Plant that grows in a crevice in rock or on ledges where rock debris has accumulated. (2) Plant initiating succession on bare rock (scree) and in rock crevices, e.g., Saxifraga tricuspidata.

Chorology - Ecological study of regions or areas.

Chrystocrene - A mass of ice formed in the interstices of a talus by the freezing of the waters of a subjacent stream.

Circles, nonsorted - Patterned ground whose mesh is dominantly

circular and has a nonsorted appearance due to the absence of a border of stone such as that characterizing sorted circles. Spot medallions, cemetery hummocks, mud circles, frost scars, peat rings, and tussock rings are kinds of nonsorted circles. See patterned ground.

Circles, sorted - Patterned ground whose mesh is dominantly circular and has a sorted appearance commonly due to a border of stones which have been segregated to a peripheral position around the surrounding finer material. When such sorted circles are adjacent to each other, the rock margins apparently coalesce forming nets, often of a polygonal pattern. There seems to be no essential difference between unsorted circles and the centers of sorted polygons.

Circumboreal - Occurring at once in the northern parts of North America, Asia, and Europe. The zoological equivalent of this botanical term is holarctic.

Circumpolar - (1) Occurring in the polar regions of North America, Asia, and Europe. (2) Occurring around the north pole or the south pole.

Cirque - Semicircular basin in an alpine landscape resulting from mountain glaciation. Progressive expansion of neighboring cirques results in the reduction of the unglaciated slopes between them to sharp, knife-edged ridges or arêtes. Synomym of corrie (Scottish) and kar (German). See bergschrund.

Classification - (1) A "bottom-up" synthesis in which units are grouped on the basis of similarities to form a first category of classes. Classification then proceeds upward by synthesizing new categories until all the classes are included in one superclass. Compare logical division. (2) The orderly arrangement of objects according to their differences and similarities. See identification.

Clay - As a soil separate, mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40% or more clay, less than 45% sand, and less than 40% silt.

Climate - The sum total of all atmospheric or meteorological influences, principally temperature, moisture, wind, pressure, and evaporation, which influence the landforms, soil, vegetation, and land use of a region.

Continental climate - The type of climate characteristic of land areas separated from the moderating influence of oceans by distance, direction, or mountain barriers; marked by relatively large daily and seasonal changes in temperature.

Oceanic climate - The type of climate characteristic of land areas near oceans which contribute to the humidity and at the same time have a moderating influence on temperature and on the range of temperature variation.

Climax - (1) Greek term meaning "ladder" and originally implying succession. It is interpreted to mean "the final step of the ladder." (2) In monoclimax theory, that state of a biotic community that is attained when population structures of all its species fluctuate rather than exhibit unidirectional change. Such a community will remain in a self-perpetuating state so long as present climatic, edaphic, and biotic conditions continue. See monoclimax, polyclimax, and seral.

Climatic climax - (1) In polyclimax theory, the ultimate phase of ecological development of plant communities that the climate of a region will permit. (2) The apparently stable vegetation that terminates succession on zonal soils. See seral.

Edaphic climax - In polyclimax theory, any distinctive type of stable community that develops on soils different from those supporting a climatic climax.

Fire climax - (1) In polyclimax theory, any type of apparently stable vegetation whose distinctiveness depends on being burned at rather regular intervals. (2) In monoclimax theory, a disclimax maintained by burning at repeated intervals.

Zootic climax - (1) In polyclimax theory, any type of stable vegetation whose continued existence depends upon continuous stress from heavy use by animals. The animal components of all ecosystems play important roles as subordinates, but only in a zootic climax is an animal so influential as to be clearly a dominant. (2) In monoclimax theory, a disclimax maintained by heavy grazing.

Climax species - A species that is self-perpetuating in the absence of disturbance, with no evidence of replacement by other plant species.

Climax vegetation - (1) The pattern or complex of climax communities in a landscape corresponding to the pattern of environmental gradients or habitats. (2) The stabilized plant community of a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same. (3) The final, stable community in an ecological succession which is able to reproduce itself indefinitely under existing environmental conditions.

Cline - A geographical gradient in phenotypic characters within a species range. Clinal variation may be along an environmental gradient of topographical factors (topocline) or ecological factors (ecocline).

Clone - Any group of plants (ramets) derived from a single parental plant (ortet) by vegetative reproduction, i.e. aspen trees grow in clones which are readily distinguished when the leaves turn color in the fall.

Coarse fibrous - Term applied to the primary macroscopic elements of peat which may be woody or non-woody, and which have a diameter greater than 1 mm.

Coarse fragments - Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter

Cobblestone (cobble) - A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter. Compare boulder and stone.

Codominant - (1) One of several species which dominate a plant community, no one to the exclusion of the others. See dominant and dominance. (2) Trees with crowns forming the general level of the forest canopy and receiving full sunlight from above but comparatively little from the sides; usually with medium sized crown more or less crowded on the sides. See crown class.

Colluvial (adj) - (1) In soils, material that has been transported downhill and accumulated on lower slopes and/or at the bottom of the hill. (2) In geology, material consisting of alluvium in part and also containing angular fragments of the original rock; also talus and cliff debris; material of avalanches. (3) Pertaining to material transported and deposited by mass-wasting and local unconcentrated runoff on and at the base of steep slopes.

Colluvium (n) - See colluvial.

Community - (1) A general term for an assembly of plants living together and interacting among themselves in a specific location, no particular ecological status being implied. (2) A unit of vegetation that is relatively uniform in structure and floristic composition and consisting of competing plants of one or more species in a common location. The basic unit of vegetation.

Abstract community - (1) A generalized category comprising a number of similar units or stands of vegetation. A theoretical community. (2) Vegetation unit not yet placed into existing type concepts or categories and that is the result of grouping relevés or sample stands on the basis of floristic similarity.

Concrete community - Actual stands or real aggregations of plants (vs. abstract) of more or less similar uniformity in physiognomy, composition, etc. Concrete communities can be sampled or measured and then aggregated into abstract community-types and further abstracted into a general vegetation. See stand.

Community-type - (1) An abstract community, or a group or class of similar abstract communities, that is relatively stable and recurs in similar habitats. Successional status is uncertain. (2) A generalized category comprising a number of similar units of vegetation. (3) A grouping or class of phytocoenoses that are similar in species composition, or other significant characteristics.

Competition - The influence of one plant on another which results when both draw from one or more resources that are in short supply. See tolerance and succession.

Concentric domes - Descriptive term applied to the surface of raised bogs (ombrophilous mires) in which the ponds (flashets) lie at right angles to the slope of the bog, following contours and comprising a series of concentric circles. See cupola and flashet.

Congelifluction - Progressive and lateral earth flow occurring under conditions of perennially frozen ground.

Congelifracts - Individual fragments (spalls) produced by congelifraction (frost-splitting).

Congelifractate - A body of material of any grain-size formed from large and small congelifracts. Mass of material produced by frost-splitting.

Congelifraction - The process of splitting rock by frost action. Also called frost-splitting, frost riving, frost-shattering and mechanical frost weathering. Synonym of gelifraction.

Congeliturbates - Soils that owe their form and texture to frost action; formation process is called congeliturbation.

Congeliturbation - (1) The process of stirring, thrusting and heaving of the earth's mantle by frost action. (2) Frost patterning by a freeze-thaw cycle including frost heaving and differential mass movements like solifluction. Synonym of cryoturbation.

Conifer (n) - A plant belonging to the order Coniferales bearing cones and needle-like or scale-like leaves. Sometimes misleadingly referred to as a softwood.

Coniferous (adj) - Bearing cones.

Consociation - Clements' term for a climax plant community characterized by the dominance of a single species.

Constancy - (1) The relative consistency of occurrence of a taxon in stands of equal size located in a community-type, expressed as a percentage of stands in which a species occurs. Compare frequency, an analytical concept dealing with the distribution of a taxon within plots of equal size from a given stand; and presence, where there is a difference in the size of the plots.

Constancy class - Percentage of equal-sized plots in which a taxon occurs; Class: I (1-20%), II (21-40%), III (41-60%), IV (61-80%), V (81-100%).

Constancy, absolute - The number of relevés or plots in which a given species occurs.

Continuum, vegetation - (1) An area over which the vegetation is considered as varying continuously in composition, so that homogeneous communities can not be distinguished in it. (2) The occurrence of populations of plants along a gradient, forming a distribution pattern of intergrading communities.

Control section - The part of the soil on which classification is based in the United States. The thickness varies among different kinds of soil, but for many it is 40 to 80 inches (1 or 2 meters).

Cornice - An overhanging ledge of snow formed downwind from some obstruction, commonly a snow-covered mountain ridge or a large drift.

Corrie erosion - From Scottish "corie" for a circular hollow on the side of a hill or mountain; a cirque.

Cosmopolitan - A taxon native at once to all continents and widely distributed in each. Compare ubiquitous.

Couloir - French for "a strainer." A deep gully or gorge on a mountain side, especially in the Swiss Alps.

Cover - (1) Any vegetation producing a protecting mat on or just above the soil surface. (2) The plant parts, living or dead, on the surface of the ground. Vegetal cover is composed of living plants, litter cover of dead parts of plants. (3) The area of ground covered by the vertical projection of the aerial parts of plants of one or more species. (4) The entire canopy of all plants of all sizes and species found in an area. (5) Plants or vegetation used by animals for nesting, resting, escape, or protection from adverse environmental conditions.

Basal cover - See basal area (2).

Canopy cover - (1) The proportion of the ground area covered by the vertical projection of the canopy. Expressed as a percent of area. (2) Sometimes used to mean a combination of canopy closure and crown density. Expressed as a degree of opacity. See density, shade.

Crown cover - (1) The ground area covered by the crown of a tree or shrub, as delimited by the vertical projection of its outermost perimeter. (2) The canopy of green leaves and branches formed by the crowns of all trees in a stand or forest. See canopy cover.

Thermal cover - Plant cover used by animals to ameliorate the effects of weather. See cover (5).

Cover type - (1) A unit of vegetation essentially similar in composition and development throughout its extent. (2) The present vegetation on an area. (3) The classified plant community forming the cover at the present time and distinguished by the existing dominant or codominant plant canopies.

Coverage (community) - Degree to which the community, or its layers, covers the ground; not to be confused with species coverage; determined by projecting on to the ground the entire shoot system of the plants considered, expressed as a percentage of the total ground area. See cover (3).

Coverage (plant) - (1) The percentage of the area of a community covered by a plant that is attached to the substratum, as seen from above. (2) The area of ground surface included in a vertical projection of individual plant crowns. See cover (3).

Creep (pedology) - (1) Slow mass movement of soil and soil material down relatively steep slopes, primarily under the influence of gravity but facilitated by saturation with water and by alternate freezing and thawing. Under dry conditions creep constitutes a particular form of displacement brought about by thermal expansion and contraction. (2) The slow and imperceptible movement of finely broken-up rock-matter from higher to lower levels.

Crown - The upper portion of a tree or shrub, including the branches and foliage.

Crown class - Any class into which the trees forming a stand may be divided on the basis of both their crown development and crown position relative to other trees and the general canopy. Crown classes usually distinguished are: open grown, dominant, codominant, intermediate, and overtopped (or suppressed).

Crown closure - (1) The closing together of the crowns of trees in a forest as they age and grow. (2) By extension of the term, the proportion of the ground area covered by the aggregate vertical projection of all the tree crowns in a crown cover. Expressed as a percent of area. See canopy closure and canopy cover.

Crown cover - See cover.

Crown density - The thickness or compactness of an individual crown, i.e. its opacity, as measured by its shade density. Collectively, crown density of all plants in a stand is termed canopy density. See density, shade.

Crown diameter, mean - Mean figure derived from two or more measurements of the span of the crown cover of an individual plant.

Cryokarst - See thermokarst.

Cryophyte - A plant growing on snow or ice, such as the "red snow" alga Chlamydomonas.

Cryoplanation - (1) Molding of the landscape by frost action. (2) Land erosion or reduction by the processes of intensive frost action, i.e., congeliturbation including solifluction and accompanying processes of translation of congelifracts. Includes the work of rivers and streams in transporting materials delivered by the above processes. (3) The process of mass-wasting related to frost action and solifluction. See mass-wasting.

Cryoturbation - (1) Process of stirring, heaving, and thrusting of the earth's mantle by frost action including frost heaving and differential mass movements like solifluction. Synonym of congeliturbation.

Cryptogam - (1) Any plant reproducing sexually without forming seeds. (2) Collective term for the Thallophytes, Bryophytes, or Pteridophytes. Compare phanerogam.

Cryptophyte - A plant in Raunkiaer's life-form classes in which the buds are covered with soil or water; includes geophytes, helophytes, and hydrophytes. See life-form.

Cupola - The dome-shaped portion of an ombrophilous mire dominated by Sphagnum and flanked on one or both sides by the lagg. See bog and rand.

Cushion plant - An herbaceous or low woody plant so densely branched that it forms a dense resilient mat or cushion, e.g., Silene acaulis. See caespitose.

D

D.b.h. (diameter breast high) - The diameter of a tree, measured outside the bark, at 4.5 feet (1.37 m) above average ground level. See breast height.

De-pergelation - The act or process of thawing permanently frozen ground.

Decadent - Declining or decaying.

Deciduous - (1) Falling off. (2) Woody plants, or pertaining to woody plants, that seasonally lose all of their leaves and become temporarily bare-stemmed. See aspection.

Decreaser - Plant species of the original natural vegetation that will generally decrease in relative abundance with continued overuse by animals. Compare increaser.

Degree day(s) - (1) Generally, a measure of the departure of the mean daily temperature from a given standard: one degree day for each degree (^{o}C or ^{o}F) above or below the standard for one day. (2) Degree days accumulated over a certain threshold (variously stated as $4.4^{o}C$ to $6^{o}C$) are used to describe the growing season for plants.

Delta - An alluvial deposit, commonly triangular in shape, formed largely beneath water and deposited at the mouth of a river or stream. Sometimes incorrectly used to describe stream braiding.

Density, shade - (1) The percent of light passing through crowns, assuming uninterrupted light to have a value of 100%. (2) An expression of opacity. See crown density and canopy density.

Density, stand - (1) The number of plants per unit area at a given time. Expressed as number/square meter, stems/acre, etc. This term has been misused in photo interpretation and mapping to mean canopy cover or crown closure. (2) Abundance by number on a unit area basis. Compare abundance.

Depauperate - Describing an unusually sparse growth of undergrowth plants.

Desert - (1) Landscape which is barren (deserted) because it is dry and capable of supporting only a few plant species. (2) A landscape in which plants are so widely spaced, or sparse, that enough of the substratum shows through to give the dominant tone to the landscape; for practical purposes, where the plants are separated from each other by more than their diameter on the average. See sparse

vegetation.

Alpine desert - Rather barren area in the alpine zone with little or no soil, either with or without scant vegetation.

Polar desert - Desert landscape near the poles, as in the Canadian "high arctic."

Shrub desert - Desert landscape with vegetation predominantly of shrubs; desert scrub.

Differential species - Plant species which, because of its greater fidelity in one kind of community than in others, can be used to distinguish vegetation units. See indicator (3).

Disclimax - In monoclimax theory, a distinctive type of climax community which retains its character only under continuous or intermittent disturbance such as heavy grazing or periodic burning.

Disjunct - Pertaining to a discontinuous range having two or more potentially interbreeding populations separated by a distance precluding genetic exchange by pollination or dessemination.

Dissemination - The processes by which plants or their parts (spores, seeds, fruits) are scattered.

Disseminule - General term for seeds, spores, etc. by which plants spread their offspring.

Distance measure - Any of a number of ways of estimating stand density based on measuring certain distances between indivudual plants and/or points in a stand.

Distribution - (1) The geographic range of a species at any one time. See range and habitat. (2) The pattern of occurrence of individuals of a taxon in an area such as random or poisson (normal) distribution; and non-random (above normal) contagious distribution; and non-random (below-normal) even-spaced distribution..

Disturbance - Any mechanism which limits plant biomass by causing its partial or total destruction.

Diversity - An expression of the variety of species that exists in a community, or of the variety of communities in a landscape. It bears to qualitative observations the relationship that variance bears to quantitative measurements. Diversity is a property which varies greatly between communities, and its definition also varies between authors. Many define diversity in terms of the diversity index being used. Compare species richness and species evenness.

Diversity index - (1) Any one of a number of indexes used to express diversity. (2) The number of species in a given area divided by the number of individuals of all those species. (3) A number that indicates the relative degree of diversity in habitat per unit area, based on the length of perimeter and edge.

Dominance - The degree of influence that a plant species exerts over a community as measured by its mass or basal area per unit area of the ground surface, or by the proportion it forms of the total cover, mass, or basal area of the community. Compare predominance and prominence.

Dominance-type - A class of communities defined by the dominance of one or more species. These species are usually the most important ones in the exterminate stratum of the community, but sometimes of a lower stratum of higher coverage. The concept of dominance has no clear boundary.

Dominant - A relative term requiring a modifier for clarity. It may mean dominant in height, dominant in crown cover, dominant in basal area, or dominant in numbers. (1) Individual trees with crowns extending above the general level of the canopy. See crown class. (2) The plant species having the greatest canopy coverage.(3) The most numerous or vigorous species in a stand. (4) A taxon or group of taxa which characterizes the community in its larger aspects, usually preponderant either numerically or in mass.

Drainage (hydrology) - Process of downward removal of water from soil, particularly by surface and subsurface run-off and artificially by ditching and other measures for hastening removal. See watershed.

Drainage (pedology) - Frequency and duration of the periods when the soil is free of saturation or partial saturation. Commonly expressed in terms of seven subjective drainage classes extending from very poorly drained to excessively drained. See moisture, soil.

Very poorly drained - Drainage class where water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown.

Poorly drained - Drainage class where water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artifically drained.

Somewhat poorly drained - Drainage class where water is removed

slowly enough that the soil is wet for significant periods during the growing season. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Moderately well drained - Drainage class where water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically for long enough that most mesophytic crops are affected.

Well drained - Drainage class where water is removed from the soil readily, but not rapidly. Water available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured.

Somewhat excessively drained - Drainage class where water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow.

Excessively drained - Drainage class where water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow.

Drift - (1) Any rock material such as boulders, till, gravel, sand, or clay transported by a glacier and deposited by or from the ice or by water derived from melting of the ice. (2) Snow lodged on the lee of a surface irregularity under influence of the wind. (3) The direction taken by smoke from a fire.

Drumlin - An elongate or oval hill of glacial till, molded by moving ice and oriented in the direction of ice flow. The long gentle slope points in the direction to which the ice moved.

Drumlinoid - A rock structure superficially modified by ice movement and having the form of a drumlin.

Dryas island - A circular plant community, several feet in diameter, mainly of Dryas spp. surrounded by gravel and cobbles.

Duff - (1) Forest litter and other organic debris in various stages of decomposition, on top of the mineral soil, typical of conifer forests in cool climates where the rate of decomposition is slow and where litter accumulation exceeds decay. (2) Decomposition products of litter lying on mineral soil, in which the identity of the original tissue can no longer be discerned. A product of litter decay. (3) A general term for vegetal matter including fresh litter and well decomposed organic material and humus lying on

mineral soil in a forest. See litter and humus.

Dwarf scrub - Vegetation made up of dwarf shrubs, averaging less than 0.2 m tall.

Dwarf shrub - A shrub or woody plant usually less than 0.2 m tall.

Dwarf tree forest - In Alaska, vegetation with 10% or more crown cover in dwarf trees which will not achive heights of 3 m or more at maturity, e.g., some black spruce bogs.

Dwarf shrub bog - Nutrient-poor, relatively dry bog with abundant ericaceous dwarf shrubs, with or without hummocks, and moss principally consisting of Sphagnum. They almost always grow trees, the most usual trees being Picea mariana and Larix laricina.

Dystrophic (adj)- (1) Refers to habitats which are both low in basic nutrients and toxic. (2) Term used to denote high concentrations of humic acid in water. It generally refers to bog ponds with peat-filled margins which eventually develop into peat bogs. Compare eutrophic, mesotrophic, oligotrophic.

E

Ecad - An organism showing somatic adaption to a specific environment. A habitat adapted form. Compare phenotype, ecotype.

Ecesis - The process whereby a plant establishes itself in a new area, from germination or its equivalent (e.g., the rooting of some detached portion) to reproduction, whether sexual or vegetative. Synonym of colonization. The third of six steps in succession as described by Clements.

Ecocline - (1) A series of populations (ecotypes) distributed along an environmental gradient, with each population exhibiting small difference in its genetic makeup which adapt it to its own segment of the environmental gradient. (2) A series of gradual changes in the morphological or physiological features in members of a species along an environmental gradient. (3) Sometimes, the environmental gradient itself.

Ecological amplitude - (1) The breadth of environmental requirements and tolerances of a taxon. (2) Describes the breadth or degree of a species' tolerance to an environmental factor such as moisture, drought, cold, etc. (3) The range of one or more environmental conditions in which an organism or a process can function. Shelford's law of tolerance. Amplitude of tolerance.

Ecological equivalence - (1) Situation or condition in which two or more species because of their similarity in ecological amplitude, can occupy the same ecological niche, thus being able to replace each other. (2) Situation in which two species, even though occurring in ecosystems widely separated in space, may occupy similar niches and thus play equivalent roles in their ecosystems. See niche.

Ecological group - (1) Species of closely similar life forms growing together in the same habitat and showing closely similar distribution ranges with regard to a specific environmental gradient. (2) Groups of species exhibiting closely coinciding modes along a specific environmental gradient. Therefore, when ranges are broadly overlapping, may be species of different life-forms. See union.

Ecological niche - See niche.

Ecological reserve - In Alaska, an area with special qualities that makes it particularly well suited for scientific research and public education. More than 200 sites have been nominated for inclusion in an Ecological Reserves System. Similar in concept to research natural area.

Ecology - (1) The study of plants and animals in relation to their environment. (2) In European usage, the study of habitats.

Ecophene - See ecad.

Ecosystem - (1) In Tansley's original concept, any complex of living organisms with their environment that we isolate mentally for purposes of study. (2) Totality of an environment plus its included organisms, or habitat and community as an interacting unit. (3) A community, including all the component organisms, together with the environment, forming an interacting system. The fundamental unit in ecology. Ecosystems exist in both space and time but their exact outlines are somewhat arbitrary because each is interconnected with other ecosystems as components of larger systems.

Ecotone - (1) A transition zone between two well defined plant communities or units of vegetation. Does not apply to seral stages of an adjacent community. (2) Any zone of intergradation or interfingering, narrow or broad, between contiguous types of vegetation including seral stages. Recognition of ecotones may depend upon the scale at which one is working, and one man's ecotone may be another man's community.

Ecotope - Abiotic environment. See biotope.

Ecotype - (1) A race within a species which is genetically adapted to a local habitat that is different from the habitat of other races of that species. An ecotype usually consists of many biotypes, all of which have closely similar habitat requirements, but differ in other respects. See ecad, ecocline, and biotype. (2) An arbitrary segment of an ecocline. (3) Individuals or groups of individuals of a species that react differently to environmental factors than the rest of the individuals of that species. Terms race, ecological race, and genotype are sometimes used as synonyms. (4) This word is often misused by people who should use biotope or cover type to describe a habitat or vegetational condition. See ecad, ecocline, and biotype.

Edaphic (adj) - Pertaining to the soil and particularly the influence of soil on organisms.

Edge - (1) The more or less well-defined boundary between two or more elements in a landscape, e.g., forest/grassland. (2) The line along which two plant communities meet. A wildlife management term. Compare ecotone and interspersion.

Edge effect - (1) The influence of two communities upon their adjoining margins or fringes, affecting the composition and density of the populations in these bordering areas. (2) Phenomena such as

changed diversity and/or density of organisms that occur in the vicinity of boundaries. A wildlife management term.

Elfin forest - See krummholz.

Eluviation - The movement of material in colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial. Compare leaching which is the movement of material in solution.

Emergent - (1) Aquatic plant, usually rooted, which during part of its life cycle has portions above water, e.g., cattail, bulrush. (2) Tree whose crown at maturity projects well above the level of the highest forest canopy. Usually found in tropical rain forests.

Enclosure - Any fenced area, usually of limited extent, within which livestock or wild animals may be held for specific purposes. Compare exclosure.

Endangered species - A species of native plant found by the Secretary of the Interior to be threatened with extinction because its habitat is threatened with destruction, drastic modification, or severe curtailment, or because of over-exploitation, or other factors its survival requires assistance. Generally a species with extremely narrow ecological amplitude. See endemic.

Endemic (ecology) - A taxon confined to a particular region and with a comparatively restricted distribution (usually a relatively small geographic area or an unusual or rare type of habitat). Compare indigenous. Antonym of cosmopolitan.

Endemic (pathology) - Applied to populations of plants, animals, or viruses that are at their normal, balanced level, in contrast to epidemic.

Entropy - The state of thermal disorganization of an ecosystem. Entropy is proportional to the nonuseable heat produced in a system.

Environment - The sum total of all the external conditions that may act upon an organism or community to influence its development and existence.

Eolian soil material - Material accumulated through wind action. Commonly refers to sandy deposits in dunes or to silt (loess) in blankets on the surface.

Ephemeral - Short-lived existence, or occupying a site for a brief period.

Epiphyll - An epiphyte growing on a living leaf.

Epiphyte - A plant utilizing another living plant as a substratum, i.e. growing upon another plant, but deriving no sustenance from the supporting structure, e.g. many mosses and lichens growing on trees.

Equiplanation - (1) The molding of the landscape by frost action, particularly the widespread and extensive reduction of elevation where frost action is the dominant process. (2) Includes all geomorphic processes which tend to reduce the relief of a region and so cause the topography eventually to become more plain-like in contour, without involving any loss or gain of materials.

Ericaceous - Refers to the heath family, Ericaceae, e.g., blueberry.

Ericaceous shrub bog - See bog, ericaceous shrub.

Erosion (geology) - (1) The wearing away, or denudation, of the land surface. Strictly speaking, a term for the way in which geologic agencies of movement secure earth materials. Used loosely to include processes both of acquisition and transportation by running water, wind, ice or other geologic agents. (2) Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym of normal erosion.

Erosion, accelerated - (1) Washing away or blowing away of soil material in excess of normal (geologic) erosion resulting from changes in the vegetal cover or ground conditions. (2) Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a natural catastrophy, i.e., fire, that exposes a bare surface.

Erratic - A rock transported by glacier action from a distant source.

Esker (geology) - A narrow, winding ridge of stratified gravelly and sandy drift deposited between ice walls by meltwater channels flowing on, in, or under the glacial ice. See kame.

Eutrophic (adj) - (1) Literally, "well fed." Refers to habitats, particularly soils and water, that are rich in nutrients. (2) Applied to fens composed of plants growing in "hard waters" which are rich in nutrients. Compare mesotrophic, oligotrophic, dystrophic.

Even-aged - A stand of trees with individuals originating at nearly the same time and thus having essentially the same age. The maximum difference in age permitted in an even-aged stand is usually 10 to 20 years. See all-aged and uneven-aged.

Evergreen - Plants, or pertaining to plants, which remain green the year round, either by retaining at least some of their leaves at all times, or by having green stems which carry on the principal photosynthetic functions.

Exclosure - An enclosure viewed from the standpoint of what it excludes, e.g., a fenced area enclosing vegetation and keeping out livestock or wildlife. Compare enclosure.

Exclusive species - A plant species belonging to Braun-Blanquet's highest fidelity class, one which occurs exclusively or almost so in a specific plant community-type. See fidelity.

Exotic - A plant or species that is not native to the region in which it is growing, e.g., clover in alpine tundra. Compare indigenous and endemic.

Exposure - (1) The openness of a site to weather conditons, particularly sun and wind. (2) The direction in which a slope faces. See aspect (3).

F

Faciation - (1) Clements' term for a subdivision of an association characterized by a particular group of dominant species and determined by minor climatic differences. (2) A portion of a plant association in which one or more of the dominant species have dropped out and been replaced by other forms with the general community aspect remaining unchanged.

Facies - (1) Braun-Blanquet's term for a local modification of an association, generally of small extent, characterized by great abundance of some one species. (2) Clements' term for the seral equivalent of his faciation. (3) The general appearance or aspect of a plant population or community. Compare aspection. (4) A modification of the biotope, differing recurrently from the typical conditions in minor ways.

Facultative (adj) - Refers to the capability of an organism to live under various conditions of environment or life such as parasitism and saprophytism. Compare obligate.

Fauna - (1) A list of all animal species living in a particular area at a particular time. (2) The sum total of all species of animals living in a defined area at one time. (3) A collective term for all animal species in the same way that "vegetation" is a collective term for all plant communities.

Feathermoss - Common name for some species of mosses, e.g., Hylocomium splendens, Pleurozium schreberi, Ptilium crista-castrensis, Rhytidiadelphus triquetrus.

Fell community - Plant community found on a fellfield landscape. See fellfield.

Fellfield - (1) From the Danish "fjoeld-mark," or rock desert. A type of tundra ecosystem characterized by rather flat relief, very stony soil, and low, widely spaced vascular plants. (2) Rocky habitats with a cover of low plants on exposed alpine summits and ridges, characterized by low mat and cushion plants and an abundance of surface rocks. (3) Those stony, sparsely vegetated alpine habitats which are intermediate between a boulder field and a alpine meadow. Compare felsenmeer.

Felsenmeer - German term ("sea of rocks") for extensive areas, usually fairly level or with only moderate slope, characterized by a chaotic assemblage of moderate to large size blocks of rock. Generally applied to polar regions where well-jointed bedrock is shattered by intensive frost action (frost riving) into jagged

boulders and rock fragments, but may also refer to areas above timberline with similar characteristics. Synonym of blockfield. Compare fellfield.

Fen - (1) A general term for a mire (peat-forming ecosystem) with little or no Sphagnum and with a source of water and minerals outside the limits of the mire. Fens are, in comparison with bogs, less acid or even alkaline and mineral rich. Fens generally support a more varied vegetation composed of grasses, sedges, or reeds. Those supporting a scrub or woodland vegetation are termed a carr. See mire, carr, and swamp. Compare bog. (2) A class of eutrophic mires lacking Sphagnum, with gramminoids dominant. (3) A European term applied to grass, sedge, or reed covered peatlands. The water table is at the surface most of the time. The water and peat are not as acid as a bog and richer in nutrients. (4) A tract of low, wet ground containing sedge peat, relatively rich in mineral salts, alkaline in reaction, and characterized by slowly flowing water. Vegetation is generally sedges and grasses, often with low shrubs and sometimes a sparse cover of trees. Sphagnum mosses are absent or of low cover.

Eutrophic fen - Nutrient-rich fen (minerotrophic mire) with green sedges predominate and Sphagnum absent. Usually on sites with nutrient-rich telluric ground water. See mire.

Forested Fen - See alder swamp and swamp

Mesotrophic fen - A moderately nutrient-poor fen (minerotrophic mire) where greyish-green sedges are predominant and Sphagnum species occur. With an increase in Sphagnum it would become a bog. See mire.

Patterned fen - A mire (peat-forming ecosystem) characterized by low peat ridges alternating with parallel wet hollows, the pattern developing parallel to the contour (at right angles to water movement) on gentle slopes.

String fen - A patterned fen with long strings and flarks. See laniere.

Shrub fen - A type of mire (peat-forming ecosystem) usually flooded with slowly flowing water. Vegetated with low (less than 1.5 m) erect shrubs and a generally open canopy. Trees may be present or absent. Sedge peat is often present. See carr.

Fertility, soil - The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material - The least decomposed of all organic soil material. Synonymous with peat.

Fidelity - Braun-Blaunqet term expressing the degree of regularity or "faithfulness" that a species occurs in certain plant communities. Expressed on a five-part scale: (5) exclusive, (4) selective, (3) preferential, (2) companion, indifferent, (1) accidental, strangers.

Field capacity - The amount of water retained in a soil after it has been saturated and has drained freely.

Fire, ground - A fire that not only consumes all the organic materials on the forest floor, but also burns into the underlying soil itself, e.g., a peat fire. (Usually combined with but not to be confused with a surface fire).

Fire, passive crown - A surface fire of sufficient intensity to ignite tree crowns as it advances. The leading edge of the surface fire is usually ahead of the burning crowns. A common type of fire in Interior Alaska.

Fire, running crown - (1) A fire which runs through the tops of living trees and/or shrubs. (2) A fire that advances from crown to crown of trees or shrubs more or less independently of the surface fire.

Fire, surface - A fire which runs over the forest floor and which burns only the surface litter, the loose debris, and the forest undergrowth.

Fire cycle - The length of time necessary for an area equal to the entire area of interest to burn. The size of the area of interest must be clearly specified. Expressed as years/area. Synonym of fire rotation.

Fire effect - Any consequence neutral, detrimental, or beneficial resulting from a fire.

Fire frequency - The number of fires per unit time in some designated area (which may be as small as a single point). The size of the area must be specified. Expressed as number/time/area.

Fire history - The chronological record of fires in an area of given size. A record of past fires, locations, areal extents, causes, and effects.

Fire incidence - See fire occurrence.

Fire intensity - (1) A measure of the rate of energy transmission at the fire front. Expressed as heat energy/length of fire line/time, e.g., kilo calories/meter/second or btu/ft/sec. (2) In a broader usage, the qualitative indication of the type or amount of heat created by a fire. See fire severity.

Fire interval - The number of years between two successive fires documented in a designated area (i.e. the interval between two successive fire occurrences). The size of the area must be clearly specified. Unit of measurement is years. Synonym of fire free interval and fire return interval.

Fire interval, mean - The arithmetic average of all fire intervals determined in a designated area during a designated time period. The size of the area and the time period must be specified. Unit of measurement is years.

Fire occurrence - One fire event taking place within a designated area during a designated time. There are no units of measurement; either yes, a fire occurs, or no, a fire does not occur. Synonym of fire incidence.

Fire regime - The type, intensity, size and frequency of fires typical for a specific land area. The fire regime determines the scale of fire effects and the way fire influences an ecosystem.

Fire return interval - Synonym of fire interval.

Fire rotation - See fire cycle.

Fire scar - The wound on a tree caused by one or more fires. It results from the death of part of the cambium and the formation of protective calluses by successive annual growth on each side of the wound.

Fire severity - A qualitative indicator of the effect of fire on the ecosystem, whether it affects the forest floor, canopy, or some other part of the system. See fire intensity.

Fire severity classes (forest floor) - Five classes of severity have been used in Alaska to indicate the effects of fire on the forest floor as follows: (1) Heavily burned: Deep ash layer present, organic material in the soil consumed or nearly so to mineral soil, no discernable plant parts remaining. (2) Moderately burned: Organic layer partially consumed, shallow ash layer present, parts of woody twigs remaining. (3) Lightly burned: Plants charred but original form of mosses and twigs visible. (4) Scorched: Moss and other plants brown or yellow but species usually identifiable. (5) Unburned: Plant parts green and unchanged.

Firn - (1) A German term for snow above the glaciers which is partly consolidated by alternate thawing and freezing, but has not yet become glacier ice. (2) Compacted, granular, but still pervious, snow with a relative density usually greater than 0.4, but less than 0.82. Considered by some to be any snow that has survived one or more ablation seasons. Firn may later become glacial ice. Synonym of neve.

Firn basin - Snow accumulation area for a glacier.

Firn field - A mass of firn which is not part of a glacier; an accumulation area for a glacier. Synonym of neve field.

Flachmoor - German term for a mire (peat forming ecosystem) with a flat or even slightly concave surface and soil poor in salts and acid in reaction. Synonym of bog. Compare hochmoor and high moor.

Flagtree - Trees growing on exposed windswept areas (shores, ridges, treeline, avalanche chutes) that assume characteristic forms due to the pruning of branches on the windward side. Branches on the lee side continue to grow horizontally as streamers (the tattered flag) while the leader grows erect (the flagpole).

Flark - A swedish term referring to limited, usually elongated, wet areas of exposed peat having an algal film and sometimes a sparse cover of sedges. The flark may be several hundred meters in length. On sloping sites flarks are narrow, being only a few meters wide but on horizontal peatland they may be a hundred or more meters wide. The flark axis is always perpendicular to direction of the contours. Synonym of mare (French-Canadian), rimpi (Finnish), kulju.

Flashet - Term used commonly in Newfoundland to denote any small pond found in bogs and fens. On raised bogs flashets usually form concentric circles outward from the center. Called seepages and rullen in other countries.

Floating aquatic plant - Plant adapted to a floating aquatic existence, not rooted in soil, e.g., duckweed, and some algae.

Flood plain - A nearly level alluvial plain that borders a stream and is subject to periodic flooding unless protected artificially.

Flooding - The temporary covering of soil with water from overflowing streams, runoff from adjacent slopes, and tides. Water standing for short periods after rainfall or commonly covering fens, swamps, and marshes is not considered flooding.

Flora - (1) A list of all (or the sum total of) plant species living

in a defined area at a particular time. (2) A book describing all the plant species of a specific area. (3) A collective term for all plant species in the same way that "vegetation" is a collective term for all plant communities. Flora tells us only what species are present, not how many plants, or in what spatial arrangement. See silva. Compare vegetation.

Floristic - Pertaining to the species composition of vegetation.

Floristic element - (1) Plant species that are characteristic of a certain territory, but occur also in a different one, e.g., an arctic species growing in the high Rocky Mountains is an arctic element in the flora of the Rockies. (2) A group of plants sharing a distribution pattern, a migratory history, or some other common feature important in plant geography.

Floristics - Study of the composition of vegetation in terms of the plant species (flora) present.

Flowe - Term for a flat area of bog land.

Foliage cover - See cover.

Foot slope - The inclined surface at the base of a hill. Also, the toe of a hill.

Forage - (1) Plant material used as feed by domestic animals. Forage can be grazed or cut for hay. (2) All browse and herbaceous food that is available to livestock or game animals, used for grazing or harvested for feeding.

Forb - (1) An herbaceous plant other than a grass, sedge, or other grass like plant. (2) A broadleaf herbaceous plant, e.g., fireweed. Compare graminoid.

Forest - (1) Plant community predominately of trees and other woody plants, growing more or less closely together. (2) Ecosystem characterized by more or less dense and extensive tree cover, i.e., larger than what might be called a grove. (3) In the Preliminary Classification for Alaskan Vegetation, vegetation with at least a 10% crown cover by trees; i.e., single stemmed woody plants at least 5 m in height at maturity.

Broadleaf forest - In the Preliminary Classification for Vegetation of Alaska, forest vegetation in which 75% or more of the forest canopy is made up of broadleaf trees.

Closed forest - A community completely dominated by the tree stratum due to the closure of the crowns. See canopy closure.

Conifer forest - See forest, needleleaf.

Gallery forest - See gallery.

Hardwood forest - See forest, broadleaf.

Mature forest - A forest which has reached the age of utilization specified in a silvicultural plan. The meaning differs with the object of management. See maturity.

Mixed forest -(1) A forest composed of two or more species of trees. (2) In Alaska, a forest composed of both needleleaf and broadleaf trees.

Needleleaf forest - In the Preliminary Classification for Vegetation of Alaska, forest vegetation in which 75% or more of the forest canopy is made up of needleleaf trees.

Open boreal forest - (1) A mosaic of trees (rarely krummholz) and a deep lichen mat (mostly Cladonia) with herbs and shrubs derived from a boreal-type vegetation. The proportion of trees to lichen mat gradually changes southward till trees become dominant and there is an economically useful, dense needleaf forest with a moss, rather than a lichen, understory. (2) The widespread forest within the subarctic zone between the forest line and closed boreal forest. Synonym of subarctic woodland, open woodland, and lichen-woodland.

Overmature forest - A forest in which net growth has almost ceased due to decay and deterioration of older trees. See old-growth stand.

Forest cover - (1) All trees and other woody plants occupying the ground in a forest. (2) All trees and other plants occupying the ground in a forest, including shrubs, herbs, and litter and the rich humus of partly decayed vegetable matter at the surface of the soil.

Forest cover type - See cover type.

Forest floor - A loose term for the deposit of dead plant matter on the mineral soil surface in a forest. Includes litter and unincorporated humus. See duff.

Forest land - Land bearing forest growth or land from which the forest has been removed but which is not now in other use.

Commercial forest land - Forest land bearing or capable of bearing timber of commercial character and economically available now or

prospectively for commercial use and not otherwise withdrawn from such use. A relative term under which the amount of land so defined changes over time with changes in management objectives and policies.

Noncommercial forest land - Forest land not qualifying as commercial forest land. Two classes of forested areas are included: (1) commercially valuable forest land withdrawn from timber use for such purposes as parks, wildlife refuges, and wilderness; and (2) forest land which because of poor growing conditions or inaccessability will not produce trees of commercial quality.

Forest limit (forest line) - (1) The upper elevational or latitudinal limit beyond which natural tree regeneration can not develop into a closed forest stand. (2) The general upper elevational or latitudinal limit of contiguous forest growth. (3) The limit of forest vegetation covering 50% or more of the landscape. Compare treeline and tree limit.

Forest type - A forest stand, community, or association, essentially similar throughout its extent as regards composition and development under essentially similar conditions. Usually used in an abstract sense to mean both the climax and seral stages. Compare cover type.

Forest-tundra - Characterized by a mosaic of forest communities, krummholz, tree islands, or trees growing along river and lake shores or in sheltered positions, and a tundra vegetation on exposed ridges between the rivers and in xeric habitats. A transition belt between arctic and boreal. Synonym of subarctic forest. Compare lichen-woodland and open boreal forest.

Forest-tundra ecotone - A transition belt between the dense confer forest and alpine tundra. Similar to Merriam's Hudsonian Zone and the subalpine of Dansereau.

Form class - A numerical expression of the taper of a tree stem or a log, or one of the intervals into which the expression may be divided for classification.

Formation - (1) In the oldest and widest (global) sense, a continental scale vegetation unit comprising all plant communities that resemble each other in appearance and in major features of their environment, e.g., northern coniferous forest, tropical rain forest defined through properties of the vegetation cover. (2) Clements' term for the climatic climax of a natural area defined geographically and climatically rather than through properties of the vegetation itself. (3) Tansley's term for a group of climatic climax communities that resemble each other in appearance and in

major features of their environment within a single floristic region. (4) The vegetation component of a biome. The largest subdivision of the vegetation of the earth. See biome.

Formation-type (formation class) - A group of geographically widespread communities of similar physiognomy and life form and related to major climatic and other environmental conditions.

Fragipan - A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly. Does not soften on wetting, but can be broken by hand.

Freezing index - Number of degree days (above and below $0^{o}C$ or $32^{o}F$) between the highest and lowest points on the cumulative degree-days time curve for one freezing season.

Frequency - (1) Number of recurring events in unit time, i.e. forest fires per year. (2) The degree of uniformity with which individuals of a species are distributed in an area, and more specifically a stand. Expressed as a percentage of plots (quadrats) of equal size in which a taxon occurs in a stand. (3) A loose measure of the quantity of a species in a community. May be estimated ocularly (in the United Kingdom and Europe in 5 or 6 grades) or by the % of quadrats in which a species occurs. (4) Braun-Blanquet differentiates frequency as a subjective figure derived from ocular estimates, from abundance as a quantitative measure determined by quadrats within a concrete community. Compare constancy and abundance.

Frequency index - A statement of the percentage of equal sized sample plots or quadrats in which a species occurs within a plant community. It is a statistical expression of the uniformity of species distribution within a community.

Frost - (1) Particles of frozen water appearing on the earth's surface at 0° C or lower. (2) A light, feathery deposit of ice caused by the condensation of water vapor, directly in the crystalline form, on terrestrial objects whose temperatures are below freezing: the process being the same as that by which dew is formed, except that the latter occurs only when the temperature of the be-dewed object is above freezing.

Frost action - (1) The weathering process caused by repeated cycles of freezing and thawing the ground in the presence of water. (2) Freezing and thawing of soil moisture. See congelifraction and multigelation.

Frost boil - Areas of bare soil which are sufficiently disturbed by frost action to prevent plant colonization. On slopes, fine material in unsorted circles moves slowly downslope producing banked or "stepped" frost boils. See circles, nonsorted.

Frost heaving - The lifting of a surface by the internal action of freezing moisture. It generally occurs after a thaw when the soil is filled with water droplets and when a sudden drop of temperature below freezing changes the water to ice crystals with consequent expansion and upward movement of the soil. See congeliturbation, cryoturbation, and sod peeling.

Frost hollow - Low-lying area into which cold air drains by katabatic flow and in which frosts are more frequent and more intense than in the surrounding locality. Synonym of frost pocket.

Frost hollow vegetation - Vegetation which is strikingly different from surrounding areas due to more frequent and severe frosts within a topographic depression.

Frost line - (1) In permafrost-free areas, the maximum depth to which the ground becomes frozen; it may be given for a particular winter, for the average of several winters, or for the extreme depth ever reached. (2) The height above ground to which frost damage to plants is likely to extend.

Frost scars - Small patches of bare soil often scattered through the vegetation in tundra areas; produced by frost action and thus a cryopedologic feature. Also called "spot medallions" and "mud spots" by some authors.

Frost-free season - A period between the last frost of spring and the first of autumn; average frost free season is a meterological concept for which dates are frequently available.

Frost-splitting - See congelifraction.

Fruticose - Shrubby, as in fruticose lichens, e.g. Cladonia rangiferina.

Fuel- (1) Any combustible material which will support a forest or range fire. (2) Dead and down woody material in a forest.

Fine fuels - Grass, leaves, tree needles, ferns and similar materials which ignite readily and are consumed rapidly when dry.

Heavy fuels - Snags, logs, and other large diameter fuels which ignite and are consumed more slowly than small diameter fuels.

Small diameter fuels - Twigs, stems, and other small diameter woody fuels that ignite and are consumed more rapidly than large diameter fuels.

Fuel moisture content - Quantity of moisture in fuel expressed as a percentage of the weight when thoroughly dried at 100°C.

G

Gallery forest - A narrow fringe of forest closely confined to the margin of a stream running through otherwise unforested terrain. Synonym of galleria. See riparian.

Garlands - (1) A soil pattern type in which some portions of raised earth stripes have moved more rapidly than others forming curves and off-sets. (2) Masses of soil confined laterally and on the down-slope side by crescent or garland-shaped stony banks. (3) Called stone-banked terraces by Antevs.

Gelifluxion - Solifuction over frozen ground. See solifluction.

Gelifraction - Synonym of congelifraction.

Genesis, soil - The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Genotype - (1) The entire genetic constitution (expressed or latent) of one individual. (2) The actual gene makeup of an organism as revealed by isozyme analysis or classical studies of inheritance patterns of certain characteristics. Compare phenotype and growth form.

Geophyte - (1) Perennial herb with its perennating bud(s) located well below the soil surface. (2) Perennial plant with an annual shoot and perennial underground parts. One of Raunkiaer's life-forms. See life-form.

Glacial drift - Rock debris transported by a glacier and then deposited either directly from the ice or from the melt water.

Glacial outwash - Gravel, sand, and silt, commonly stratified, deposited by melt water as it flows from glacial ice.

Glacial till - Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glacieret - (1) Small alpine glacier. (2) When visible high in the sides of mountain valleys, called hanging glacier. (3) Very small glacier in a cirque is sometimes called a cirque glacier.

Glacier, alpine - (1) Glacier flowing in a stream-like tongue from the valley head between lofty peaks and ridges. (2) A glacier occupying a depression within or lying on mountain terrain. Also

called mountain glacier.

Glacier, rock - A tongue-like body of angular boulders, resembling a small glacier, generally occurring at high altitudes in rugged terrain and heading in a cirque or steep walled amphitheater.

Glade - An open space in a woods or forest. See park.

Glaze - A smooth, transparent or translucent coating of ice formed by the freezing of rain on terrestrial objects. Compare rime.

Gleization - A soil-forming process in cold climatic conditions whereby a structureless horizon containing reduced iron compounds forms at the bottom of the alluvial layer and peat accumulates at the surface.

Gleyed soil - A soil having one or more neutral gray horizons as a result of waterlogging and lack of oxygen. The term "gleyed" also designates gray horizons and horizons having yellow and gray mottles as a result of intermittent waterlogging.

Gnarled - Pertaining to trees or shrubs with a twisted, bent or distorted appearance. See krummholz.

Graben - Generally elongate fault block that has been lowered relative to the blocks on either side without major disturbance or tilting. A long fault trough is a characteristic feature.

Gradient - A more or less continuous change of some property in space. Gradients of environmental properties are ordinarily reflected in gradients of biota. See cline.

Graminoid - (1) Grass-like in appearance, with leaves mostly very narrow or linear in outline. (2) An herbaceous grass or plant of similar growth form. (3) Plants which are grasslike in appearance even though they are not grasses in a taxonomical sense, such as sedges, reeds, cattails, and others, e.g., cottongrass. Compare forb.

Grass - (1) A member of the botanical family Gramineae, characterized by hollow stems that are circular in cross section and bladelike leaves arranged on the culm or stem in two ranks. (2) Vegetation composed mostly of grasses.

Medium-height grass - Grasses ranging from 0.5 to 1.5 m in height.

Short grass - Grasses that grow only a few decimeters in height.

Grassland - (1) A landscape in which the existing plant cover is dominated by grasses. See meadow and savanna. (2) The continental

scale landscape unit (biome) or ecosystem extending from Alberta to Texas and characterized by various species of grasses.

Gravel - Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material - Material from 15 to 50%, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Ground ice - See ice.

Groundwater - (1) Water that moves downward from the upper soil layers and into soil and geologic zones that are permanently saturated. Underground formations in which ground water is stored are called aquifers. (2) Water filling all the unblocked pores of underlying material below the water table, which is the upper limit of saturation. Synonym of phreatic water.

Grove - (1) A stand of forest or woodland of small extent, surrounded by lower vegetation or bare soil. (2) A small group of trees without an understory of smaller trees.

Groveland - A landscape in which groves of trees are scattered through a lower vegetation of grass or shrubs. In some situations, krumholz. See parkland.

Growth form - The characteristic shape or appearance of a plant as a result of its development in response to environmental conditions within its genetic constitution. Compare life-form and habit. See phenotype.

Growth ring - Any growth layer as viewed on the cross section of a woody stem, branch, or root.

H

H - See von Post humification scale.

Habit - (1) The general appearance of a plant. (2) The general form of arrangement of stem, roots, and branches of a plant. Compare growth form and life-form.

Habitat - (1) The particular kind of environment in which a plant or plant community is living or the environment in which the life needs of a plant, population, or community are supplied. (2) The natural abode of a plant or animal; refers to the kind of environment in which a plant or animal normally lives, as opposed to the range or geographical distribution.

Habitat niche - See niche.

Habitat type - (1) Daubenmire's term for an aggregation of land areas having a narrow range of environmental variation and capable of supporting a given plant association. Each habitat type is named for its climax plant community type which is termed an association. Seral stages of vegetation on the habitat type are termed community types. (2) A collective term for all parts of the land surface supporting or capable of supporting the same kind of climax plant association. An environment or landscape term.

Habitat, type of - Preferred collective term for a group of communities or sites resembling one another through habitat relationships, but which are not a "habitat type" as defined by Daubenmire.

Half-shrub - A perennial plant with a woody base whose annually produced stems die back each year e.g., Artemisia frigida. See suffruticose.

Halophyte (n) - A plant adapted to existence in a saline environment and more or less restricted to saline or alkaline soils or to sites that are influenced by salt water.

Halophytic (adj) - Refers to halophyte.

Hammock - A colloquial term used mainly in Florida for island like stands of broadleaf forest in a landscape covered mostly by needleleaf forest. See hummock.

Hardening - The natural process of adaptation whereby a plant becomes physiologically conditioned to cold, drought, etc.

Hardwood - (1) Generally, a colloquial term for trees that have broad leaves, in contrast to the needleleaf conifers. (2) In common usage, the wood of a broadleaf tree. Inaccurate, in that the wood of many conifers is harder than that of many "hardwoods."

Heath - Community of grass-like plants and shrubs of one or more of the heath families Ericaceae, Empetraceae, or Diapensiaceae found on infertile sites. Frequently found on bogs in Alaska.

Heather - Common name for Calluna vulgaris found in Europe and the British Isles.

Heathland - Landscape dominated by evergreen sclerophyllous shrubs growing on soils very low in plant nutrients. The vegetation always contains members of the heath families - Ericacae, Empetraceae, and Diapensiaceae. The infertile soils may be well-drained (dry-heathland or sand heath) or seasonally waterlogged (wet-heathland).

Heliophyte - A plant that grows usually fully exposed to the sun. An obligative heliophyte requires full sun. A facultative heliophyte can tolerate full sun, but usually grows in shade.

Helophyte - A cryptophyte that mainly grows in soil saturated with water or in the water itself, and from which leaf and flower-bearing shoots emerge. Helophytes do not include all the plants ordinarily known as marsh plants.

Hemic soil material - Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material. Synonym of mucky peat.

Hemicryptophyte - An herb with its perennating bud(s) at the soil surface, so that during the most unfavorable season it (they) are protected by a cover of litter or snow. See life-form.

Herb - Flowering plant with no significant woody tissue above the ground, including both forbs and grasses.

Herbaceous - In the Preliminary Classification for Vegetation of Alaska, vegetation with 5% or more crown cover in vascular and nonvascular (mosses and lichens) plants and less than 10% crown cover of woody plants.

Aquatic herbaceous - In the Preliminary Classification for Vegetation of Alaska, vegetation in which there is a predominence of cover in floating or submerged plants growing in water. It can include mosses and algae as well as vascular plants. In this classification scheme emergent plants are not included in aquatic

vegetation, but are placed in the wet forb herbaceous and graminoid herbaceous units.

Bryoid herbaceous - In the Preliminary Classification for Vegetation of Alaska, a category of vegetation in which the predominance of cover is in mosses or lichens.

Forb herbaceous - In the Preliminary Classification for Vegetation of Alaska, herbaceous vegetation in which the predominance of cover is in nongrass-like plants. This includes forbs, ferns, and horsetails.

Graminoid herbaceous - In the Preliminary Classification for Vegetation of Alaska, herbaceous vegetation with the predominance of cover in grasses or sedges.

Herbland - Any landscape on which herbaceous species dominate the vegetation.

High moor - Type of bog in which both the vegetation and the peat have low nutrient status, the vegetation having developed either on basin sites receiving run-off water poor in minerals and N or on sites in a cool humid climate where heavy precipitation has leached most of the nutrients from the soil and caused waterlogging for much of the year creating a blanket bog. Sphagnum, Eriophorum, and ericaceous shrubs typically dominate high moor vegetation. Compare low moor which is rich in nutrients. Synonym of Hochmoor (German). See bog, raised.

Higher plants - "Flowering" plants which reproduce by seeds; phanerogams, not cryptogams.

Hillock - See hummock.

Hochmoor - German synonym for the English high moor.

Holarctic - Occurring at once in the northern parts of North America, Asia, and Europe. The botanical equivalent of this zoological term is circumboreal.

Hollow - The lower wet areas between bog hummocks. The hollow may be characterized by a flashet or the remnants of a small pond with more hygrophilic Sphagnum sp. dominant. Sedges also make up a major component of the plant cover in the hollow.

Homogeneity - (1) The property of two or more samples which implies that they have been drawn from the same population. (2) An analytic concept, based on comparing similar plots from different stands of the same community-type.

Horizon, soil - A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil forming processes. The major horizons of mineral soil are as follows:

O horizon An organic layer of debris and decaying plant residue at the surface of a mineral soil.

A horizon The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material.

A2 horizon A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.

B horizon The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The combined A and B horizons are generally called the solum, or true soil. If a soils lacks a B horizon, the A horizon alone is the solum.

C horizon The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon.

Hudsonian life zone - Defined by Merriam as being the land of spruce, fir, and caribou. It includes the northern coniferous forests and conifer forests in high mountain ranges to the south. See life zone.

Humification - (1) The process of decomposition whereby organic material is humified and becomes humus. See humus and von Post humification scale. (2) The degree of decomposition of organic matter. Three degrees of humification are recognized in organic soil materials: fibric, hemic, sapric.

Hummock - (1) A microtopographic elevated area on a raised bog; composed principally of hummock-forming species such as Sphagnum fuscum, S. imbricatum and S. flavicomans. (2) Structures built up by high Sphagnum cushions and usually covered by dwarf shrubs. This Sphagnum is later partially replaced by other bryophytes or lichens.

Hummocks, earth - (1) A type of nonsorted net with a mesh characterized by a three-demensional knob-like shape and a cover of vegetation. (2) Low rounded knobs of fine material covered by a tight mass of moss, grass and scrubby plants. (3) Thufur (Swedish), Hugelboden (German) and Palsen are large earthhummock features

typical of Scandinavia and Siberia.

Hummocky - Refers to a landscape of hillocks, separated by low sags, having sharply rounded tops and steep sides. Hummocky relief resembles rolling or undulating relief, but the tops of ridges are narrower and the sides are shorter and less even. Often used to describe landslide deposition areas.

Humus - (1) The finely divided, amorphous organic matter that is diffused through mineral material in a soil profile. (2) That more or less stable fraction of the soil organic matter remaining after the major portion of added plant and animal residues have decomposed. (3) The well decomposed, more or less stable part of the organic matter in mineral soils. (4) The plant and animal residues of the soil, litter excluded, which are undergoing decomposition. See mull and mor.

Hydrarch (adj) - Of successions or seres which originate in aquatic habitats such as lakes and ponds and progress toward more terrestrial conditions, as in bogs and swamps. Can be observed in lakes and ponds on northern end of Kenai Peninsula. See hydosere.

Hydric (adj) - (1) Relating to or containing hydrogen. (2) Sometimes used incorrectly in the sense of "wet" as a substitute for hydrophyte. See hygric.

Hydrogen-ion concentration - See pH.

Hydrophyte - (1) A cryptophyte which survives the unfavorable season by means of buds that live at the bottom of the water; the vegetative shoots remain submerged, only the flowers and inflorescences rising above the surface. (2) A plant usually found growing in water, or in soil containing water well in excess of field capacity most of the time.

Hydrosere - A time (not space) sequence of seral communities which starts with hydrophytes and eventually leads to a mesic climax community.

Hygric (adj)- Referring to sites or habitats characterized by decidedly moist or wet conditions. Compare hydric.

Hygrophile (adj & n) - Refers to organisms inhabiting moist sites.

Hygrophyte (n) - A plant that is more or less restricted to moist sites, e.g., Drosera rotundifolia.

Hyperdispersion - An irregular distribution of plants which results in crowding of individuals in some areas and their complete absence from others.

Hypodispersion - A distribution or arrangement of plants which is more regular than would be expected by chance, e.g., cultivated row crops of corn, etc.

I

Ice, buried - In permafrost includes buried glacier, sea, lake, and river ice and recrystalized snow.

Ice, foliated - Large masses of ground ice which grow in thermal contraction cracks in permafrost. Also known as wedge ice, and the most conspicuous type of ground ice on the arctic slope of Alaska.

Ice, ground - Term used to denote bodies of more or less clear ice in permanently frozen ground. Ground ice may occur as pore ice, segregated or Taber ice, foliated or ice-wedge ice, pingo ice, and buried ice.

Ice, pingo - The ice core of a conical shaped mound formed under artesian or hydrostatic pressure. See pingo.

Ice, pore - Formed by freezing of water filling small voids between soil granules, there is no addition of water required.

Ice, segregated - Or Taber ice, forms films, seams, lenses, pods, or layers of ground ice which grow by drawing water from adjacent areas as the ground freezes. One of the most extensive types of ground ice, it represents 75 percent of the ground volume in some places on the arctic slope.

Ice lenses - Segregated ground ice oriented more or less parallel to the ground surface.

Ice needles - (1) Slim crystals of ice which grow upward from the ground in miniature columns, 2 to 10 cm high, crowned by chips of rock, sticks, etc. (2) Dense bundles of needle-like ice crystals beneath the ground surface, and at right angles to it. Synonym of piprake (Swedish), kammeis (German), brush ice and spew ice. See sod peeling.

Ice wedges - Wedge-shaped vertical or inclined sheets of foliar ground ice which form in thermal contraction cracks in permafrost. Formation and active growth of wedges requires temperatures of -40°C to -45°C for creation of contraction cracks. Inactive wedges may be found in the discontinuous permafrost zone.

Ice-wedge polygon - See polygon.

Icing - See aufeis and naled.

Identification - The placing of an individual object, e.g., plant community, into its proper class according to some preestablished classification. See classification.

Impervious soil - A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Importance - (1) Either density, basal area, or frequency may be interpreted as "importance values" depending upon the values the investigator considers most important for a particular species or community. (2) Curtis defined importance value as the sum of relative density, relative frequency, and relative dominance. The use of relative rather than actual parameters is of limited information value since densely vegetated and sparsely vegetated habitats can have the same relative values.

Increaser - Plant species of the original natural vegetation that will generally increase in relative abundance, at least for a time, under continued use by grazing animals. Compare decreaser.

Increment - The increase in diameter, basal area, height, volume, quality, or value of individual trees or stands during a given period.

Indicator - (1) A plant whose presence, abundance, or vigor is considered to be indicative of certain site conditions, e.g., Cassiope tetragona on sites with late melting snowbeds. (2) A plant which by its presence, increase, or decrease in numbers, serves to demonstrate that there had been some particular or material change in site, cover, soil, water, or use condition. (3) A species with narrow amplitudes of tolerance (extremely specific and limited environmental requirements). (4) In a more general sense, a plant community which indicates the presence of certain environmental conditions. The habit type system is a method of site classification that uses the plant community as an indicator of integrated environmental factors affecting plant community development.

Indifferent species - One which, in Braun-Blanquet's system, occurs in many different communities and thus exhibits low fidelity. See fidelity.

Indigenous - Native to the area; not introduced by man. Compare endemic and exotic.

Infranival cushion - Portion of a krummholz thicket nearest the ground, which is a springy mass of more or less horizontal branches protected by the snow mat.

Insolation - Solar radiation received by the earth, also, the rate of delivery of the same per unit of horizontal surface. See sunscald.

Interception (hydrology) - Generally, the physical interference by vegetation with free precipitation, giving rise to interception loss (i.e. above-ground evaporation, as distinct from transpiration) along with redistribution of the intercepted remainder, via stemflow and canopy drip, to the ground.

Interspersion - An expression of the degree to which plant communities are mixed in a landscape. A wildlife management term for the degree of mixing of plant community-types or seral communities which increase the amount of edge. See edge.

Inversion (meteorology) - Phenomenom of increase of air temperature with vertical height, associated with minimal air movement. Shorthand for "inversion of the vertical gradient of temperature."

Isohel - A line drawn on a map connecting places with equal duration of sunshine.

Isohyet - A line drawn on a map connecting places with equal quantity of rainfall.

Isophene - A line drawn on a map connecting areas where events in the life history of a plant species (e.g., flowering) occur at the same time. See aspection.

Isotherm - A line drawn on a map connecting places with the same temperature at a particular time or for a certain period. Synonym of isogram.

K

Kame - An irregular short mound, hill, or ridge of poorly sorted sand and gravel deposited by melt water in contact with glacial ice. A long, winding kame is termed an esker.

Karst - (1) Originally the name (from Serbo-Croat Krs for "waterless region") of a barren limestone plateau in Yugoslavia. Now any limestone or dolomitic region showing the pits, sinks, and other features characteristic of subterranean solution and diversion of surface water. (2) A limestone plateau marked by sinks, or Karst holes, and solution channels interspersed with abrupt ridges. Not a single feature, but a landscape. See thermokarst.

Key area - In range management, the portion of a grazing unit that because of its nature, location, and pattern of grazing use, will indicate the use of the entire unit.

Key species - (1) In range management, the plant species most palatable and most used by livestock. (2) Species whose use indicates the degree of use of key grazing areas. (3) Species on which management of a grazing unit is based.

Krummholz - (1) A german term meaning "bent wood" for the twisted and distorted woody vegetation characteristic of mountain timberlines. (2) Scrubby, stunted trees, often forming a characteristic zone at the limit of tree growth in mountains. (3) The belt of discontinuous scrub or groveland at alpine timberlines, composed of species which have the genetic potential of the tree life-form, but in this belt are both strongly dwarfed and misshapen.

L

Lacustrine deposit (geology) - Material deposited in lake water and exposed when the water level is lowered or the land is raised.

Lagg - (1) Marginal zone outside the rand containing fen vegetation and representing the transition between raised bog peat and mineral soils. (2) Fen belt which separates a bog from mineral soil. (3) Natural ditch around the perimeter of a raised bog or confined muskeg. See fen, rand, and bog, raised.

Landscape - (1) All the natural features, such as hills, forest, and water which distinguish one part of the earth's surface from another. (2) Land form plus the vegetation as seen from a particular vantage point.

Landscape terms - Alpine, taiga, tundra, fen, bog, meadow, marsh and similar terms that describe landform or habitat and vegetation together.

Landscape-type - An extensive area of land characterized by all major aspects of vegetation and environment.

Landslide - (1) The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. (2) A mass of material that has slipped downhill under the influence of gravity. See mass movement.

Lanieres - In a fen or bog, the drier, low, winding peat ridges located between the flarks or mares. They have a slight damming effect on the water drainage down the seepages. Synonym of strings, ribs, and banks.

Layer (vegetation) - (1) A structural component of a community consisting of plants of approximately the same stature or height, e.g., tree layer, shrub layer, herb layer, cryptogam layer. (2) The aggregate of plants of a given and limited range of heights in a plant community, usually set off by a relative discontinuity from the layers above and below it, if any. See stratum. Compare union.

Leaching - The removal of soluable material from a soil horizon in solution by percolating water. Compare eluviation.

Lichen line - The edge of lichen growth on undisturbed rock surface, the clear portion of the surface indicating the extent to which soil has been eroded from around the rock.

Lichen-woodland - Subarctic forest in which the open ground between trees is covered with light-colored fruiticose lichens. See forest,

open boreal.

Liebig's Law - The law of the minimum. The growth and reproduction of an organism is dependent on the nutrient substance that is available in minimum quantity. Compare limiting factor.

Life zone - There have been two definitions used in the western hemisphere. (1) From observations of the sharp zonation of life on a mountain in Arizona, Merriam proposed life zones as broad transcontinental belts running east and west. The differences between the life zones, expressed by the animals and plants living there, are supposedly controlled by temperature. Merriam divided North America into Boreal, Austral, and Tropical regions. The Boreal region was subdivided into three life zones, the Arctic-Alpine zone, the Hudsonion zone, and the Canadian zone. (2) Holdridge defined life zones on the basis of an interaction of heat, precipitation, and moisture. He developed a four-axis diagram for the classificaton of life zones world-wide based on biotemperature and the finding that the steps in increasing heat and precipitation significant to vegetation form a logorithmic progression. Holdridge's concepts were developed in tropical Central America and are most popular there.

Life-form - (1) The visible expression of those features in a plant which determine its adaptation to environment. In its broadest sense, includes all features of form and structure by which a plant is adapted to cope with various conditions of environmental peculiarities; for example, size and habit of growth, duration of the plant as a whole and of the stem above ground, duration and structure of the leaves, position and structure of the roots, and methods of vegetative reproduction. (2) Raunkiaer's term for one of his selectively morphological categories, which are based mainly on the position and nature of the resting (perennating) buds that survive any periods unfavorable to growth, e.g. cold or dry seasons. Raunkiaer defined five life-form classes. See therophyte, geophyte, hemicryptophyte, chamaephyte, and phanerophyte. Compare habit.

Limiting factor - An environmental factor which, because of either scarcity or abundance, limits the distribution and/or abundance of a plant species or population. Compare Liebig's Law.

Line-intercept - A method of sampling vegetation by recording the plants intercepted, and the length of intercept, by a measured line set close to the ground or by a vertical projection from the line. Provides a measure of presence and cover for each species. See transect.

Line-plot inventory - A method of sampling vegetation by means of plots of uniform size located at regular intervals along a measured

line. See transect.

Line-transect - See line-intercept.

Linear leaf - A leaf many times as long as wide and with essentially parallel sides at least in the middle portions.

Lithophyte - A plant growing on a rock, e.g., lichens and mosses.

Lithosol - (1) A soil consisting mainly of partly weathered rock fragments or of nearly bare rock. (2) One of a group of azonal soils having no clearly expressed soil morphorphology and consisting of a freshly and imperfectly weathered mass of rock fragments; largely confined to steep hillsides.

Litter - (1) A surface layer on the forest floor of loose organic debris consisting of freshly fallen or slightly decomposed plant parts. (2) Plant parts dropped on the soil surface so recently that the organ from which they originated can be discerned rather readily. See forest floor and duff.

Littoral - That portion of a sea shore subject to alternate submergence and emergence by abnormal tides.

Liverwort - A small plant in the class Hepaticae, phylum Bryophyta, usually growing in moist places, e.g., Marchantia.

Loam - (1) Soil material that is 7 to 27% clay particles, 28 to 50% silt particles, and less than 52% sand particles. (2) A loose term for any non-sandy, non-stickly, friable soil.

Loess - Soil material transported and deposited by wind and consisting of predominantly silt sized particles.

Log - (n) Any section of the bole of a felled tree after trimming and cross-cutting (bucking). (v) To cut and remove sections of trees (logs) from a forest.

Logical division - An analytical approach which starts with the world and procedes "top-down" to divide it into a number of classes and subclasses on the basis of a number of stated principles. Compare classification.

Long-day plants - Plants that flower and fruit in the relatively long days of late spring.

Low moor (lowmoore) - (1) Type of fen (eutrophic mire) composed of peat or muck soil, formed in eutrophic or mesotrophic waters (commonly a former lake) and, therefore, relatively rich in minerals, and supporting a rich vegetation. Compare to high moor

which is poor in nutrients. (2) A common European term for fen peatland occupying basins or depressions and not elevated above their perimeter. (3) Peatland in which the peat is made up of sedges, reeds, and certain trees and shrubs, Sphagnum species are absent or rare. Occurs chiefly in river valleys and is fed by ground waters rich in mineral salts. Synonym of Flachmoor (German), niedermoor, niederungs. See fen and bog.

Lowland - (1) A relative term for land lying along streams, flood plains, etc. (2) A relative term when referring to the flow of water through the ground. When a barrier lies across the flow, water may rise above the surface of the ground. See flood plain and upland.

M

Macroclimate - Climatic conditions (temperature, precipitation, relative humidity, wind, pressure, evaporation, and sunshine) as recorded approximately 1.5 m above level ground, so that the data are relatively uninfluenced by topography, the character of the soil, or by vegetation taller than a mowed lawn. Most data gathered by official weather stations in the United States are of this character to facilitate geographic and regional comparisons. See microclimate and climate.

Macrophyllous - Applied to aquatic plants, denoting approximately isodiametric leaves of the order of 10 cm across or larger, as opposed to leaves of other shapes and usually smaller; could be applied to a size category between mesophyllous and megaphyllous for any plants.

Macrophytic - Refers to large aquatic plants such as kelps.

Marine aquatic - Aquatic plant community types in ocean settings, either subtidal or intertidal, but low enough to be inundated at least once daily by high tides.

Marl - An earthey, unconsolidated deposit formed in freshwater lakes or flark fens fed by calcareous waters, consisting chiefly of calcium carbonate mixed with clay or other impurities in varying proportions.

Marsh - (1) A periodically wet or continually flooded but nonpeat-forming ecosystem where the surface is not deeply submerged and supporting sedges, cattails, rushes or other hygrophytic plants. Subclasses include fresh and salt water marshes. Less acid and less continuously flooded than a bog, often only intermittently flooded. (2) An ecosystem dominated by herbaceous plants, and with the soil saturated for long periods if not permanently, but without surface accumulations of peat. (3) In Alaska sites are characteristically flooded with 15 cm or more of water, but may have no standing water late in the summer, but soils remain saturated. Vegetation is usually dominated by emergent herbaceous plants. Typical species are Arctophila fulva, Scirpus spp., Equisetum fluviatile, and Eleocheris palustris. Woody plants, lichens, and Sphagnum are absent or rare. Compare fen.

Salt marsh - Similar to a fresh marsh, but adjacent to the sea and inundated periodically (tidally or seasonally) with saline water.

Tidal marsh - Low marsh lands traversed by interlacing channels and sloughs and subject to tidal inundation. Usually the

vegetation is composed of salt-tolerant (halophytic) grasses and sedges.

Mass movement - Gravity induced movement of a large mass of the land surface as a unit. Usually refers to high velocity movement as in a landslide or slip. Does not usually include slow processes such as creep and solifluction. Compare mass-wasting.

Mass-wasting - (1) A general term for a variety of processes by which large masses of earth material are moved by gravity either slowly or quickly from one place to another. Includes mass movement. (2) A set of geomorphic processes which does not require a suspending medium (air, water, or ice) to carry away its detritus. (3) The slow downslope movement of rock and earth debris. See cryoplanation.

Massif - (1) A principal, relatively uniform mountain mass with peaks on top. (2) A mountainous mass or a group of connected heights, whether isolated or forming a part of a larger mountain system. A massif is more or less clearly marked off by valleys.

Maturity - A loose term for the stage at which a tree or other plant has attained full development, particularly height, and is in full seed production. In some species, maturity may last for hundreds of years. A decline in vigor, health, and soundness (for woody plants) marks the stage of overmaturity. See age.

Meadow - Closed herbaceous vegetation, commonly in stands of rather limited extent, the term not usually applied to extensive grasslands.

Brackish marsh meadow - Coastal flats and lower beach habitats regularly inundated by tides. Soils are mineral (usually fine silts but sometimes sands or gravels), sometimes overlain by a tough sod of roots and rhizomes or by shallow (up to 20 cm) peat. Erect shrubs are absent or nearly so. Mosses and lichens are absent. See marsh.

Fresh marsh meadow - Fresh or essentially fresh community types, predominately on mineral soils or less than 30 cm peat. Where peat is present it is usually sedge peat. The full range of wet meadow soil pH conditions (3.0-9.0) is represented in this type. All wet meadow types occurring predominantly in tundra settings are included here. Common non-tundra sites supporting fresh marsh meadow vegetation are wet alluvium, margins of oxbow lakes, and silted-in sloughs. Erect shrubs are absent or nearly so, but small quantities of prostrate willows are present in some stands. Mosses may be common or absent, and lichens are absent or scarce. See fen.

Sedge meadow - A vegetation unit (usually in wet situations) consisting of low grass-like plants belonging to the family Cyperaceae; e.g. cottongrass.

Wet meadow -(1) In Alaska, sites characterized by saturated soils or by flooding to depths of less that 15 cm and vegetation dominated by herbaceous species, usually graminoids. Moss cover varies, but is generally low. Soils are mineral but may be overlain by a shallow organic layer. Compare marsh and fen. (2) Sites with soils characteristically saturated or flooded with less than 15 cm water. The vegetation is predominantly herbaceous and usually dominated by graminoids. Virtually entirely herbaceous in most types but scattered erect woody plants are present in some types and prostrate willows are present in others. Aquatic plants may be absent, present, or co-dominant. Lichens are usually absent or nearly so. This is the largest and most diverse class of wetlands, with a great variety of vegetation types occurring under a wide range of environmental conditions. Soils range from entirely mineral to deep peats. Soil pH ranges from 3.0 to 9.0. See fen.

Megaphanerophyte - See phanerophyte.

Merriam's life zones - See life zone, arctic-alpine, and Hudsonian.

Mesh - The unit component of patterned ground, such as circle, polygon, or intermediate form, but not a step or stripe. See patterned ground.

Mesic (adj) - Refers to sites or habitats characterized by intermediate moisture conditions, i.e. neither decidedly wet (hygric) nor decidedly dry (xeric).

Mesophanerophyte - See phanerophyte.

Mesophyte - A plant whose normal habitat is neither very wet nor very dry, e.g., paper birch.

Mesotrophic (adj) - (1) Habitats of moderate nutrient capacity. (2) Used in European literature to describe bogs in transition between lowmoore and raised bogs. Compare eutrophic, oligotrophic, dystrophic.

Metamorphic rock - Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat and pressure. Nearly all such rocks are crystalline.

Microclimate - (1) Generally, the climate of a small area, especially in so far as this differs significantly from the general

macroclimate of the region. (2) The sequence of atmospheric changes within a very small region. (3) Any set of climatic conditions differing from the macroclimate, owing to closeness to the ground, to vegetation influences, to aspect, to cold air drainage, etc. (4) More particularly, the climate under a plant or other cover, differing from the climate outside that cover.

Microcommunity - A community of very limited extend, such as the plants living in and on a decaying stump in a forest. Compare biotope.

Microphanerophyte - See phanerophyte.

Microphyllous - With very small leaves; generally, for trees, leaves 25 mm in greatest diameter and less, for shrubs 10 mm and less, for dwarf shrubs 5 mm and less.

Microrelief - Small scale local differences in topography, including mounds, swales, and pits that are only a few feet in diameter and height.

Microsere - A time sequence of communities, of small areal extent, that may be observed even in climax stands. Microseres involve such processes as the replacement of a large individual plant after it dies, the sequence of decomposers that follow each other in a unit of litter, the development of vegetation on an abandoned ant nest. See sere.

Midgrass - See grass, medium-height.

Mineral soil - Soil that is mainly mineral material and low in organic material (usually less than 20%). Its bulk density is greater than that of organic soil.

Mineral soil water limit - A line of demarcation between bog and fen. It reflects an equally sharp boundary or limit of minerotrophic ground water flow. Du Rietz refers to it as the boundary for mineral soil water indicators.

Minerotrophic - Sites which receive terrestrial mineral nutrition in addition to precipitation, indicating that nutrients are brought to the peat by water that has previously extracted them from a mineral soil. See soligenous.

Minimal area - See species-area curve.

Mire - (1) General term which embraces all those peat-forming ecosystems described in English by such other terms as bog, fen, carr, muskeg, moor, and peatland. Does not include marshes since

they are, by definition, nonpeat-forming and are seasonally flooded. Mires are subdivided into fens and bogs on the basis of the origin and chemistry of their respective water supplies. Terms for conditions similar to mire in other languages are: myr (Swedish and Norwegian), Moor (German), myri (Icelandic), and suo (Finnish). See fen and bog. (2) An ecosystem in which the rooting medium consists of wet peat.

Mire complex - The occurrence, together, of bog and fen systems.

Miscellaneous areas - A soils mapping unit for areas of land that have little or no natural soil, are too nearly inaccessible for orderly examination, or cannot otherwise be feasibly classified.

Moisture, soil - The relative amount of moisture in the soil, usually applied to the A and B horizons and occasionally to the humic material. Soil is classed as wet when water drips from a piece of soil held in the hand; moist when water drips from a piece pressed tightly in the hand; fresh when no water drips when pressed though its presence is unmistakeable; dry when there is little or no trace of moisture; very dry when the soil is caked, hard, and crumbles apart under pressure. See drainage.

Mollisol - Term with two meanings. (1) An order of soils with deep, dark, relatively fertile topsoil (mollic epipedon) formed under grassland vegetation. (2) Seasonally thawed ground above the pergelisol; the zone of annual melting in which movement of the surface material occurs.

Monoclimax - Theory which suggests that there can be only a single stable vegetation type as the result of succession within a climatic region. See climax and polyclimax.

Montane - Pertaining to mountain slopes below the alpine zone.

Moor - (1) A Germanic term applied to any area of deep peat whether acid or alkaline (bog or fen). (2) In English, the term is applied to high lying country covered with heather and other ericaceous dwarf shrubs, mainly Vaccinium. It is often used to refer to land having any of the oxyphylous communities.

Moor, string - See fen, string and bog, string.

Mor - A type of forest humus layer of unincorporated organic material, usually matted or compacted or both, distinctly delimited from the mineral soil and generally overlain by litter. Formed in the absence of earthworms. See duff. Compare mull.

Moraine - An accumulation of glacial drift built within a glaciated

region by the direct action of glacial ice. Examples are lateral, terminal, and recessional moraines.

Mosaic - An irregular patchwork of vegetation in which two or more types of communities are interspersed in a mosaic pattern in contrast to a regular pattern or zonation. Compare catena.

Moss - (1) Term synonymous with bog in the English texts and related to the words "Mosse" (Swedish), "Mose" (Danish and Norwegian) and "Moos" (German) which are applied to areas dominated by mosses, with considerable peat accumulation, and containing acidic water. (2) A plant in the class Musci of the phylum Bryophyta, and which usually occurs in a damp habitat.

Moss peat - Peats composed generally of Sphagnum such as cymbifolia peat and acutifolia peat. It also includes peats which have a high percentage of other constituents such as Carex-moss peat, woodmoss peat, and moss-Carex peat. Compare peat moss.

Mottling, soil - Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance--few, common, and many; size--fine, medium, and coarse; and contrast--faint, distinct, and prominent. The size measurements are of the diameter along the greatest dimension. Fine indicates less than 5 millimeters (about 0.2 inch); medium, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and coarse, more than 15 millimeters (about 0.6 inch).

Muck - (1) Black well-decomposed organic material in which the original plant parts are hardly recognizable. (2) Well-decomposed organic soil material, dark in colour and accumulated under conditions of imperfect drainage. Contains more mineral matter and is usually darker than peat, and the original plant parts are not recognizable. (3) Dark-colored, finely divided, well decomposed organic soil material mixed with mineral soil material. The content of organic matter is more than 20%. (4) Any peat material that has been altered by drainage and aeration, the action of micro-organisms, or cultivation and consequently has advanced in stage of decomposition so far that its botanical character is no longer evident. See sapric soil.

Mud circles - See circles, nonsorted.

Mud spots - See frost scars.

Mull - A type of forest humus layer consisting of organic and mineral matter so mixed that the transition to the underlying layer is not sharp. Mixed mainly through the activities of earthworms. See humus. Compare mor.

Multigelation - Repeated freezing and thawing.

Multistratal - As applied to vegetation, having several distinguishable layers or strata, e.g. tree, shrub, herb strata. See layer.

Muskeg - (1) An old Algonquin Indian term applied to a large expanse of Sphagnum peatland bearing stunted black spruce and tamarack with ericaceous shrubs prominent. (2) A wet area usually moss-floored, characterized chiefly by an organic soil. Muskeg most often refers to a black spruce woodland with a thick mat of mosses (Hypnaeae and Sphagnum) underlain by peat. It can be used loosely to refer to a willow-grown sedge low place, and in loosest terms is any wet lowland such as a slough or bog. (3) A bog in northern North America characterized by an abundance of Sphagnum and a sparse cover of shrubs and small trees such as black spruce. See organic terrain.

Flat muskeg - The surface of these muskegs is flat or concave and their development cannot go beyond a certain height nor can it spread laterally. Limited to lowlands, valley streams, an edges of lakes and ponds of which the water is more or less acid in reaction and relatively poor in soluable mineral salts.

Raised muskeg - Muskeg having a convex surface and hummocks of Sphagnum mosses which by their continual upward growth lead to accumulation of moss peat reaching several feet in thickness. Ledum, Kalmia, and Andromeda are the dominant shrubs. Raised muskegs develop in less extremely wet climatic conditions than those necessary for the formation of slope muskegs. Synonym raised bog.

Slope muskeg - Muskegs which have a sloping surface and which usually develop in coastal regions where the peat-forming vegetation is dependent upon cool summers, high precipitation, and high humidity. Usually support mixed communities of sedge and moss vegetation with Scirpus, Eriophorum angustifolium, E. vaginatum, Rhyncospora alba, and several species of Sphagnum.

Smallpox muskeg - Areas of former lake and pond beds now free of water and characteristically saucer-like in shape. The former rims have a good growth of small trees and shrubs which produce a pock-marked effect.

Myr - Swedish term which means any type of peatland and at the same time the vegetation characteristic of such land. The nearest English equivalent is mire. See organic terrain.

N

Naled - Ice mass formed when water under pressure is forced to the surface, as in a stream icing. Russian synonym for the German aufeis.

Nanism - The dwarfed appearance of plants, such as those at tree line. Compare krummholz.

Nanophanerophyte - See phanerophyte.

Narrow sclerophyll - Vegetation composed of plants with needle-like or narrowly linear hard or stiff leaves or equivalent organs (photosynthetic branchlets, cladodes, phyllodes, etc.), e.g., an ericaceous heath or a spruce stand.

Natural vegetation - See vegetation, natural and vegetation, potential natural.

Naturalized - Said of an alien plant that continues to perpetuate itself after being introduced into a new area.

Nearest neighbor - Method of determining plant density in a stand by measuring distance between individuals closest together near randomly selected sample points.

Needleleaf - Plant bearing stiff, linear, needle-like leaves, or vegetation composed of needleleaf plants, e.g., Picea glauca.

Needleleaf deciduous - Needleleaf plant which loses its leaves and has bare stems seasonally, e.g., Larix laricina.

Nets, nonsorted - Patterned ground with a mesh intermediate between that of a nonsorted circle and a nonsorted polygon, and with a nonsorted appearance due to absence of a border of stones such as characterize a sorted net. See patterned ground and mesh.

Nets, polygonal - Honeycomb patterns in the soils of arctic and alpine regions, the borders of which are formed of relatively large stones or boulders, while centers consist of finer particles sorted by solifluction processes. See patterned ground.

Nets, sorted - Patterned ground with a mesh intermediate between that of a sorted circle and a sorted polygon, and with a sorted appearance commonly due to a border of stones surrounding finer material. See patterned ground.

Neutral soil - A soil having a pH value between 6.6 and 7.3.

Névé - (1) Granular, compacted snow at the head of a glacier, or similar snow elsewhere. (2) French equivalent of the German term "firn" for the snow that accumulates on high mountains especially in temperate latitudes, is frequently not completely melted during the summer, and thus tends to increase indefinitely.

Niche, ecological - (1) The role an organism plays in the functioning of a natural system. The way an organism makes its living. (2) The range of sets of environmental conditions which an organism's behavioral, morphological, and physiological adaptions enable it to occupy.

Niche, habitat - (1) A habitat that supplies the factors necessary for the existence of an organism or a species. (2) The specific part or smallest unit of a habitat occupied by an individual organism.

Nivation - (1) Frost action and mass-wasting beneath a snowbank. (2) Mass-wasting phenomenon of subpolar latitudes and high mountain landscapes associated with freeze and thaw under neve. This "snow patch" erosion results in nivation hollows or small amphitheatres and the conversion of small V-shaped valleys into flat U-shaped ones.

Nivation depression - The hollow or amphitheatre where a snow patch (névé) has dug into the landscape. Maximum erosion is always on the upper border of the snow patch.

Nodum - An abstract, neutral term applied to a vegetation unit of any rank. It corresponds to the use of taxon in systematic botany.

Nordenskiöld line - Line connecting all places at which the mean temperature of the warmest month is equal (in ^{o}C) to 9-0.1k, where k is the mean temperature of the coldest month. This line fits the arctic tree line better than any other purely climatic isopleth.

Nunatak - Eskimo word (meaning "lonely peak") referring to an isolated mountain peak, usually of bare rock, projecting above the surrounding ice sheet, ice field, or glacier. Compare arête and tor.

Nunatak theory - A once popular theory that certain mountains projected above the continental ice sheets and formed glacial refuges where hardy plants could survive the rigorous climate for several thousand years and then serve as centers for rapid reoccupation of the later deglaciated landscape. See refugium and relict.

O

Obligate (adj) - Refers to an organism restricted to a particular condition of life, e.g., a parasite incapable of existing independently of a host. Compare facultative.

Old-growth stand - Not synonymous with old-aged forest and must be recognized on the basis of stand characteristics rather than age of trees. Old growth stands contain trees of a wide range of sizes and ages and have a deep, multilayered canopy. They contain large standing dead snags and large down dead trees and other coarse woody debris. Nutrient cycling is low and much energy accumulates on the forest floor.

Old-aged - Applied to a stand in which all the trees are physiologically old; usually past the age of decline. A relative term that varies with the species. See age and maturity.

Oligotropic (adj) - (1) Literally, "poorly fed." (2) Describing bog formed of plants growing in "soft" waters which are poor in nutrients as in a raised bog. (3) Pertaining to water that is poorly supplied with the basic nutrients needed by plants. Compare eutrophic, dystrophic, and mesotrophic.

Ombrogenous (adj) - Term meaning "produced by rain" and describing bogs with a convex surface which are entirely dependent on precipitation for their water and nutrient supply. See raised bog.

Ombrotrophic - Term meaning "nourished by rain" and referring to areas exclusively dependent on nutrients from precipitation.

Open boreal forest - See forest, open boreal.

Open vegetation - See vegetation, open.

Ordinate - (n) The vertical coordinate in a two-dimensional rectangular coordinate system. (v) To arrange observations in a uni- or multidimensional order.

Ordination - Arrangement of sample units (species or stands) by individual values rather than by group values. Compare classification which is an arrangement by group values or within a range of values.

Organic matter - The more or less decomposed material of the soil derived from organic sources, usually from plant remains. The term covers matter in all stages of decay.

Organic terrain - (1) Tract of land having a surficial layer of

living plant material (vegetation) and a sub-layer of peat or fossilized plant detritus of any depth existing in association with various hydrological conditions and underlying mineral formations. (2) Term used somewhat interchangably with muskeg in Canada. See myr.

Oriented lakes - Term applied to groups of lakes and lake basins with a common oval or rectangular shape and long axis orientation. Wind is the primary agent of basin enlargement, with tundra thaw lakes becoming oriented and elongated along an axis perpendicular to the mean wind direction.

Original vegetation - Exists in a landscape before modern (European) man affects it significantly. See natural vegetation.

Ortet - The original plant from which a clone has been derived. Compare ramet.

Orthophyll - Vegetation with leaves mostly of ordinary texture, as opposed to sclerophyll.

Orthophyllous - Texture of leaves ordinary, as opposed to sclerophyllous.

Outwash, glacial - Stratified sand and gravel produced by glaciers and carried, sorted, and deposited by water that originated mainly from the melting of glacial ice. Glacial outwash is commonly in valleys on landforms such as valley trains, outwash terraces, eskers, kame terraces, kames, outwash fans, or deltas.

Outwash fan - Material deposited by fast-flowing, heavily loaded water whose velocity is suddenly reduced, e.g. at the mouth of a gorge or ravine. See delta.

Outwash plain - A land form of mainly sandy or coarse textured material and of glaciofluvial origin deposited gradually. An outwash plain is commonly smooth; where pitted, it is generally low in relief.

Overstocked (adj) - (1) In forestry, refers to a forest stand condition in which an excess number of trees on the site retards the growth of all trees. (2) In range management, refers to a grazing unit on which there is a number of animals that will result in overuse of the area at the end of the grazing period.

Overstory - The portion of the trees forming the upper canopy in a forest stand of more than one story. See understory and stand, two-storied.

Over-mature tree - See maturity.

Oxbow Lake - Semi-circular lake located in an abandoned meander river channel (loop) on a flood plain. See slough.

Oxylophytes - Plants of acid peaty soils, which are low in nutrients, especially calcium and nitrogen, found in cool temperate climates.

Oxyphylous (adj) - Referring to a habitat which is controlled by excessive acidity of the substratum.

P

Paleoendemic - An endemic plant species that was once more widespread and has narrowly escaped annihilation by some change in the earth's surface or its climate. See endemic.

Palsa (palsen) - (1) Peat-covered mound with a perennially frozen core. Usually ombrotrophic and generally much less than 100 meters across and from one to several meters high. In Fennoscandia palsas are generally treeless but in North America they commonly have a few stunted larch or black spruce. (2) Large earth-hummock-like feature typical of parts of Scandinavia and Siberia. (3) Earth mounds, believed to be of periglacial origin and occurring in arctic and alpine regions. They are composed entirely or earth and persist long after amelioration of the climatic conditions that produced them. (4) Peat mounds. Compare pingo.

Paludel - Refers to marshes.

Paludification - (1) Literally, "swamping." Process of mire (peat-forming ecosystem) formation over previously forested land or grassland due to climatic or autogenic processes leading to waterlogging and anaeroby. (2) Conversion of previously dry land to swamp. Compare terrestrialization.

Palynology - The study of pollen, spores and other microfossils. For example, pollen analysis is one aspect of palynology concerned with a record of fossil pollens in bogs.

Pan - A horizon or layer in soil that is strongly compacted. A pan impedes the movement of water and the growth of roots. The word "pan" is commonly combined with other words that more explicitly indicate the nature of the layer; for example, hardpan, fragipan, claypan, plowpan, and traffic pan.

Panclimax - Two or more related climaxes according to Clements that have the same life-form, common genera of dominants, and the same general climatic factors. See climax.

Parameter (statistics) - (1) Generally, any quantitative characteristic of an individual or a population. Parameters measured in vegetation ecology include density, cover, frequency, abundance, basal area, diameter class, etc. (2) More particularly, any measureable characteristic of a statistical population, e.g. the mean or the variance.

Parent material - (1) The great variety of unconsolidated more or less chemically weathered organic and mineral material from which soil forms. Consolidated bedrock is not yet parent material by this concept. (2) The C horizon of the soil.

Park - A relatively small opening of grassland in a forest, but usually larger than a glade. See glade.

Parkland - A landscape made up of both forest and grassland intermingled in a mosaic of more or less solid stands and irregular isolated parks and groves. Compare groveland.

Patterned ground - A group term for the more or less symmetrical forms such as circles, polygons, nets, steps, and stripes, that are characteristic of, but not necessarily confined to, ground subject to intensive frost action. Circles, polygons, and nets are most typically formed on level ground, and stripes and steps are found on slopes. Patterns may be sorted when the individual units of the pattern are bordered by coarse materials ejected from the fines by freezing and thawing. Two characteristics of patterned ground used in classification are (1) the pattern, and (2) the presence or absence of obvious sorting. See polygons and stripes.

Peat - (1) Partially decomposed plant remains including both bog and swamp peat (formed under waterlogged conditions) and heath peat, mor, or raw humus (formed under well-drained conditions). (2) Layer consisting largely of organic residues originating under more or less water-saturated conditions through the incomplete decomposition of plant and animal constituents, and being due to anaerobic conditions, low temperatures and other complex causes. (3) Unconsolidated soil material, largely undecomposed organic matter, that has accumulated under conditions of excess moisture.

Acutifolia Peat - Peat which is composed of Sphagnum species with nearly flat leaves, and in-rolled edges. It is generally dense in structure and has great resistance to humification. It is also characterized by low acidity and poor aeration. Compare peat, cymbifolia.

Allochthonous peat - Peat of sedimentary origin. This peat is formed from the remains of plants brought in from outside the site of deposition. Compare peat, autochthonous.

Amorphous granular peat - Descriptive term applied to one of the primary macroscopic elements of peat which is granular in nature but to which no particular shape can be ascribed.

Autochthonous peat - Refers to true peat which has formed in place, that is, from plants growing in situ.

Basin peat - Referring to peat deposited in a water-filled basin. Begins with limnetic deposits up to the surface level of the pond and is succeeded by a gradual formation of autochthonous peat. Synonyms: lowmoor peat, flachmoor, niederungs.

Brown moss peat - Synonym of Bryidae peat and Hypnum peat.

Bryidae peat - Eutrophic fen peat composed predominantly of the non-sphagnaceous "brown mosses" such as species of Campylium, Amblystegium, Paludella, etc.

Carex peat - Peat developed on wet fens. In some fens and bogs it forms a lower thin layer, while in others it is quite thick, generally mixed with Amblystegium peat. See peat, sedge.

Cymbifolia peat - Peat composed of Sphagnum species in which the leaves are not flat, but boat-shaped, and with rolled edges; it is generally loose and bulky with good water movement. This type of peat mainly comprises raised bog formation and is composed of such species as Sphagnum imbricatum, S. papillosum and S. magellanicum. Compare peat, acutifolia.

Drift peat - A peat deposit associated with or embedded in glacial drift.

Forest peat - Fluffy and somewhat fibrous forest mold or litter that is brown to dark brown. Its reaction is between pH 3.8 and 5.5. The total nitrogen is 1.0 to 2.5% on a dry basis, and the ash content is between 4 and 20%.

Limnic peat - Material deposited in water such as ooze, mud, detritus, shore and inundation peat, Equisetum, Scirpus, and similar peats stratified below the water. See peat, allochthonous.

Sedge peat - Peat composed of sedge species, primarily Carex, with Juncus, Eriophorum, and Scirpus. In some instances sedge peat is so termed because a unit proportion of peat has more than 50% sedge.

Semiterrestric peat - Eriophorum, Sphagnum, and some broadleaf forest peat grown near the water surface and in moist conditions such as older peat.

Sphagnum peat - Peat which develops in drier areas than does Carex peat and forms thick deposits whose plant composition is exceptionally pure and homogenous. The mosses are chiefly cymbifolium and acutifolium and generally raw. Wood fragments may be more abundant in certain horizons. Synonym of bog-moss peat.

Telmatic peat - (1) Carex peat as well as those belonging to the Amblystegium and Sphagnum cuspidatum group of mosses. (2) A general term for peat developed on wet ground, such as Carex peat.

Terrestric peat - Peat consisting primarily of tree remnants.

Upland peat - Peat on slopes and undulating uplands. It has no particular water table.

Peat deposit - A consequence of mire (peat-forming ecosystem) function. It includes bogs with water and bog vegetation as well as dried-up bogs where a peat bed is the only remaining characteristic of the former vegetation.

Peat moss - (1) In general usage, a trade name for peat sold for horticultural uses and composed mainly of Sphagnum sp. (2) Refers to a peat which consists mainly of Sphagnum and which is not humified or only slightly humified. Synonym of raw (unhumified) moss.

Peat mound - Mound of peat elevated above the surrounding terrain and usually ombrotrophic. Without a permafrost core.

Peat rings - (1) Low ridges of peat surrounding circular or oval patches of mineral soil. Peat rings, tussock rings and tussock groups-vegetation patterns associated with widely spaced mounds of mineral soil projecting through otherwise continuous layers of peat or turf (Hopkings & Sigafoos, 1950). (2) Peat rings with centers of silt described above essentially the same as frost boils (Billings & Mooney, 1959).

Peatland - A generic term including all types of peat-covered terrain. Many peatlands are a complex of bogs and fens, sometimes called a "mire complex." A loose synonym of muskeg and organic terrain.

Pedon - The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 1 square meter to 10 square meters, (10 to 100 square feet), depending on the variability of the soil.

Perennate - The continuance of life in a plant from year to year as in a seed or rhizome. See life-form (2).

Perennial - A plant that lives for three or more years. Compare annual and biennial.

Pergelation - The act or process of forming permanently frozen ground in the present or in the past.

Pergelic - A soil temperature regime that has mean annual soil temperatures of less than $0^{o}C$. Permafrost is present.

Pergelisol - Permanently frozen ground. Synonym of tjaele. See supragelisol. Nearly synonomous with permafrost, but permafrost

refers to both the phenomenon of frozen ground and the frozen material while pergelisol refers only to the material.

Pergelisol, dry - Soil material having the requisite mean temperature to be permanently frozen but lacking water.

Pergelisol table - The top or upper level of the pergelisol. Synonym of permafrost table.

Periglacial - (1) Originally used to indicate the climate and climatically controlled features adjacent to Quaternary ice sheets. Now loosely used to refer to supposedly similar climates and features whether or not they are related to glaciers. (2) Refers to a family of phenomena which are a result of frost-weathering and which have developed in belts of terrain marginal to quaternary ice sheets, including patterned ground in general. The influence of freeze-thaw oscillations is predominate. (3) Refers to areas, conditions, processes and deposits adjacent to the margin of a glacier.

Periodicity - Repeated occurrence of events at fairly frequent and regular intervals. See aspection and phenology.

Permafrost - (1) Perennially frozen ground, or ground in which a temperature below $0^{o}C$ has existed continuously for two or more years. Permafrost is defined exclusively on the basis of temperature and no moisture or ice need be present. The upper surface of permafrost is known as the permafrost table. The layer of ground above the permafrost which freezes and thaws each year is called the "active layer." See pergelisol and tjaele. (2) Refers to both the phenomenon of permanently frozen ground and to the frozen material.

Continuous permafrost - A zone of perennially frozen ground in which permafrost is present everywhere except under lakes and rivers which do not freeze to the bottom. See talik.

Discontinuous permafrost - A zone including numerous permafrost-free areas that progressively increase in size and area from north to south until the permafrost free zone is reached.

Permafrost table - The upper surface of permafrost.

pH value - A numerical designation of acidity and alkalinity in soil, the negative logarith of hydrogen-ion concentration, in which pH 7.0 is neutral. Values above 7.0 indicate alkalinity and those below 7.0 indicate acidity. See reaction, soil.

Phanerogam - A seed-bearing plant; any of the Spermatophyta.

Phanerophyte - A shrub or tree. Divisible into nanophanerophytes 0.25-2 m tall, microphanerophytes 2-8 m tall, mesophanerophytes 8-30 m tall, and megaphanerophytes over 30 m tall. One of Raunkiaer's major life-form classes. See life-form.

Phase (ecology) - Subdivision of an association and a habitat type representing a characteristic variation in climax vegetation and environmental conditions, respectively.

Phase (soil) - A subdivision of a soil series or other unit in the soil classification system based on differences in the soil that affect its management. A soil series, for example, may be divided into phases on the bases of differences in slope, stoniness, thickness, or some other characteristic that affects management. These differences are too small to justify separate series.

Phenology - The study of the time of appearance of characteristic periodic events in the life cycles of organisms in nature and how these events are influenced by environmental factors, such as temperature, latitude, and altitude, e.g. flowering and leaf-fall in plants. See aspection.

Phenotype - (1) The appearance of an individual plant as we see it in contrast with its genetic makeup or genotype. (2) A group of individuals of similar appearance but not necessarily of similar genetic constitution. Compare genotype.

Phenotypic growth forms - Impressed or acquired manner of growth that is distinctive to one or several species by virtue of their genetic constitution, and which growth-form becomes a characteristic of the vegetation composed of those species. The growth-form may or may not be related to single or to several known situations in the environment. Phenotypic growth-forms are limitless in number.

Photoperiodism - Physiological response of an organism to the periodicity and duration of light and darkness, affecting growth, flowering, germination, etc. in plants.

Phreatic line - The line marking the upper surface of the zone of water saturation in a soil profile.

Phreatophyte - Plant deriving its water supply from subsurface sources and more or less independent of rainfall. Commonly used to describe nonbeneficial, water-loving plants. See riparian.

Physiognomy - (1) The general outward appearance of a plant community, determined by the life-form of the dominant species; e.g., forest or scrub. (2) The over-all appearance of a phytocoenose. (3) The superficial appearance of a mass of vegetation.

Physiographic Province - The first subdivision of a major physiographic division. There are 4 physiographic divisions and 12 physiographic provinces recognized in Alaska.

Physiographic Section - A subdivision of a physiographic province. there are 60 physiographic sections recognized in Alaska.

Physiography - (1) Branch of physical science dealing with the physical features of the earth's surface and the description of landscape. (2) Study of the genesis and evolution of land forms.

Phytocoenose - (1) Plant community; one particular concrete stand, or an abstraction of many stands which are more or less alike. (2) A particular plant community, in its particular local or topographic environment or biotope.

Phytocoenosis - The entire plant community or totality of plants in a stand of vegetation.

Phytogeography - Plant geography.

Phytograph - A polygonal diagram used to express the role of a species in a plant community. The polygon is formed by straight lines connecting points on various axes representing characteristics such as frequency, basal area, size class, etc.

Phytomass - The total mass of plants, including dead attached parts, per unit area, at a given time expressed in terms of mass as g/m, kg/ha, lb/acre, etc. Differs from biomass by including dead attached organic material. See biomass and standing crop.

Phytosociology - The study of plant communities, origin, composition, structure, distribution, dynamics, etc. See sociability.

Pingo - An eskimo term for a perennial, conical-shaped ice-cored mound as much as 65 m high and 1,000 m in diameter. Generally found on the arctic slope, but open-system pingos also occur south of the Brooks Range. Compare palsa.

Piprake - See ice needles.

Pioneer - (1) Plant capable of invading bare sites and persisting there, i.e. colonizing, until replaced by other species as succession proceeds, e.g., Stereocaulon spp. and Epilobium spp. See ecesis. (2) A plant getting established on a relatively or absolutely bare area where there is as yet little or no competition.

Placic horizon - A black to dark reddish mineral soil horizon that

is usually thin but that may range from 1 mm to 25 mm in thickness. The placic horizon is commonly cemented with iron and is slowly permeable or impenetrable to water and roots.

Plant community - See community.

Pleistocene - The geological epoch preceding the Recent in the Quaternary period of the Cenozoic era, which began about one million years ago and lasted for about one million years. See Quaternary.

Plot - An area of land of any size that is studied or used for experimental purposes. A sample unit in an inventory. See sample.

Point sampling - Forest sampling by the angle-count method where the probability of selection is proportional to the size of the variable being measured. Also called variable-plot sampling and plotless cruising.

Point-contact (point-frame) method - Technique for determining the area of herbage cover by listing the number of times that various species are touched by the point of a pin or rod lowered in a predetermined pattern.

Polyclimax - Theory which permits two or more simultaneously existing, stable, self-maintaining plant communities controlled by local environmental conditions in a larger climatic region. See climax and monoclimax.

Polygons - One of the forms of patterned ground characteristic of earth subject to intensive frost action. See patterned ground.

Ice wedge polygons - (1) Nonsorted polygons bounded by ice wedges. (2) Large-scale polygonal features commonly outlined by shallow trenches underlain by ice wedges. Synonym of tundra polygon and Taimyr polygon. See ice wedge.

Cake polygons - Described from Russia by Antevs as a type of stone net with exceptional assortment, with sharply segregated stone-free clay fields. The clay cakes are frozen, harden nightly, and have become raised by frost heave.

High-centered polygons - Polygons bordered by eroding ice wedges that have permitted the polygon margin to collapse into the thermal contraction cracks. Generally, a later developmental stage of ice-wedge polygon associated with improved drainage.

Low-centered polygons - Polygons bordered by active ice wedges which are covered by low ridges of peat that cause the margins of the polygon to be higher than the surface of the center.

Generally, an earlier developmental stage than the high-centered ice-wedge polygons.

Nonsorted polygons - Patterned ground whose mesh is dominantly polygonal and with a nonsorted appearance due to the absence of a border of stones or course materials such as that characterizing sorted polygons. Special varieties of nonsorted polygons are frost-crack polygons, ice-wedge polygons, and desiccation polygons. See patterned ground.

Sorted polygons - Patterned ground whose mesh is dominantly polygonal and with a sorted appearance due to a border of stones or course material surrounding finer material. See patterned ground and stone ring.

Pond, closed - (1) A pond filled with organic material often made up of living plants. (2) Refers to a pond which has its surface covered by a recent Spaghnum growth, but which cannot support much weight because the cover is underlain by water. Synonym of quaking bog.

Pond, open - Refers to a pond in which peat is accumulating but in which open water lies above the organic debris.

Population (ecology) - A group of individual plants of the same species in a common location or habitat. Population always refers to one species. In referring to more than one species, the term is populations.

Population (statistics) - An aggregate of sample units from which a sample may be drawn, e.g., a tree within a stand of trees, or a stand within all the stands in a forest.

Predominance - Indication that a certain species is numerically the most abundant, considered in relation to others of the same general size or life-form, but without support of exact data measurements. Compare prominence and dominance.

Predominant - (1) Organism that is of outstanding abundance or conspicuous importance in a community. (2) A tree whose crown has grown above the general level of the upper canopy of a stand.

Prescribed burning - The use of fire under controlled and prescribed conditions to modify vegetation for a management objective.

Presence - The occurrence of a taxon in a vegetation (association or stand) table. Plots do not have to be of equal size. See constancy.

Presence degree - Percentage of unequal-sized plots in which a taxon

occurs. It is usually measured by the number of relevés in which the taxon occurs (regardless of abundance and cover) expressed as a percentage of the total number of releve's compared. May also be expressed subjectively on a five-part scale as: rare, seldom present, often present, mostly present, and constantly present. See constancy class.

Production - The biomass or energy incorporated into an ecosystem during a specific time period. Expressed in terms of mass (kilogram/area/time) or energy (joule/sq. meter/year). Production is a rate process and the time interval should always be stated when the term is used. A loose synonym for productivity.

Productivity - The rate at which organic matter is produced by biological activity in an area and bound by organisms in the form of biomass. Expressed in terms of mass (grams/sq. m/day) or energy (joule/ sq. meter/year). See biomass, phytomass, yield, and standing crop.

Net primary productivity - Essentially equal to the rate of photosynthesis minus the respiratory costs of carrying on growth, photosynthesis, and synthesis of other compounds in an ecosystem.

Primary productivity - (1) In an ecosystem is the rate at which solar energy is captured by the vegetation per unit area of land surface or water volume. (2) The rate at which organic matter is stored by photosynthetic and chemosynthetic activity of plants. Expressed in kilograms/area/time.

Secondary productivity - (1) The rate at which organic material is produced by consumer organisms (animals) which eat plants (the primary producers). (2) The rate at which organic matter is stored in consumer organisms.

Profile, soil - A vertical section of the soil extending through all its horizons and into the parent material.

Profile, vegetation - See vegetation.

Prominence - The degree to which a species characterizes or dominates the community, or conspicuously impresses the observer, regardless of any numerical abundance. Compare predominance and dominance.

Provenance - The geographical source or place of origin of something; e.g., tree seed for reforestation.

Province (geography) - A subdivision of a region that is restricted to part of one continent, and distinguished by dominant species that

have had a common past history. It has a more narrowly defined range of climate than the region of which it is part. It is composed of sections.

Psammophyte - Plant growing in sands or sandy soil.

Pteridophyte - (1) A fern. (2) A vascular plant with roots, stems, and and leaves, but lacking flowers or seeds.

Pyrophyte - Plant species adapted to survive severe fires, e.g. *Pinus palustris*, *P. banksiana*.

Q

Quadrat - A small clearly demarcated plot or sample area of known size on which ecological observations are made. Quadrats may be square, rectangular, or circular and are usually no more than one square meter in area.

Chart quadrat - Chart or plan view showing the location and area covered by each plant in a quadrat. Compare vegetation profile.

List quadrat - Small sample area in which plants are merely tabulated by species.

Major quadrat - Quadrat 10 meters square.

Nested quadrats - Method of placing quadrats in one area so that the size of the area sampled becomes progressively larger to either (1) determine the proper size of quadrat for sampling the particular vegetation, or (2) sample various strata in areas of different sizes for increased efficiency. See species-area curve.

Quagmire - Wet, boggy area which quakes or yields underfoot. See bog, quaking and pond, closed.

Quaternary - The latest geologic period of the Cenozoic era which began about one million years ago and includes the Recent and Pleistocene epochs.

R

Rain shadow - The area of little or no rainfall immediately to the leeward of a mountain. Found where moisture-laden air masses move prevailingly in one direction across, and are intercepted by, the mountain.

Ramet - An individual member of a clone, descended from the ortet.

Rand - Outwardsloping margin at the perimeter of a raised bog. See bog, raised and cupola.

Range - (1) The geographical and altitudinal limits of occurrence of a species of plant or animal. (2) That portion of the earth's surface enclosed by a line drawn about the outermost limits of the distribution of a taxon. A species does not occupy all the area within its range owing to differences in soil, topography, etc. See distribution and habitat. (3) Rangeland.

Range condition - (1) The present state of the plant community on a range site in relation to the potential natural plant community for that site. (2) The state of health of a range site in relation to its full potential.

Range condition trend - The direction of change in range condition observed or measured over time.

Range site - Distinctive kind of rangeland that differs from other kinds of rangeland in its potential to produce native plants either in kinds, proportions, or total annual yield.

Range type - A broad classification of rangeland according to vegetation aspect and the dominant species, or what appears to be dominant. No ecological status is implied. See community.

Rangeland - Land used for grazing by livestock and big game animals on which the native vegetation is predominantly grasses, grass-like plants, forbs, or shrubs. Rangelands may include grasslands, shrublands, meadows, marshes, and tundra.

Raunkiaer's life-form classes - A classification of plant life-forms based on the kinds of organs that survive unfavorable environmental periods and their position with respect to the soil level. See therophyte, geophyte, hemicryptophyte, chamaephyte, and phanerophyte.

Raw humus - A loose term for any appreciable accumulation of slightly to moderately decomposed organic matter on the surface of a mineral soil.

Raw moss - Moss (especially Sphagnum) which is not humified or only lightly humified. It would range between H 1 and H 2.5 on the Von Post Scale.

Reforestation - The natural or artificial establishment of forest trees on an area previously cut or cleared. Compare afforestation.

Refugium - (1) A small area in which organisms have survived when most of their former range became uninhabitable owing to climatic change or glaciation. (2) An area that has not been exposed to great changes undergone by the region as a whole, and as a result provided conditions suitable for the survival of relict species. See relict and nunatak theory.

Regelation - (1) Term in some European literature meaning often repeated freezing and thawing by any process. The term multigelation is preferred for this process in the U.S.. (2) Theory that the movement of glaciers is accomplished by the repeated fracturing and later freezing together (regelation) of the surfaces of the fractures when they again come into contact. (3) Refreezing ice which has melted under pressure.

Regeneration - Renewal of a tree crop, whether by natural or artificial means, also the young crop itself. See revegetation and reforestation.

Regeneration complex - A theory of bog growth related to the aggregation of hummocks and hollows on the surface of a bog. The hollows are characterized by more aquatic Sphagnum species such as Sphagnum cuspidatum,. S. dusenii and S. cymbifolium. The hummocks are formed by the hummock-forming species such as Sphagnum flavicomans, S. rubellum and S. fuscum. The bog growth is achieved by an alternation of these successions resulting in the formation of a raised bog with an ombrotrophic surface.

Region - (1) Collective term for all provinces over the earth's surface which share a common physiognomy, and a grossly similar climatic pattern. (2) Areas of homogeneous vegetation that have been distinguished within horizontal zones rather than vertical belts.

Regolith - (1) The layer or blanket of loose, incoherent rock material of whatever origin, that nearly everywhere forms the surface of the land and rests on the hard or "bed" rocks. It comprises rock waste of all sorts, volcanic ash, glacial drift, alluvium, wind-blown deposits, vegetal accumulations and soils (2) The unconsolidated mantle of weathered rock and soil material overlying the solid rock of the earth.

Relevé -A sample of a stand of vegetation in which characteristics

such as species found, cover, density, etc. are determined. French for "abstract."

Relict (relic) - (1) A species properly belonging to an earlier vegetation than that which is now found. (2) A plant community or species which, through the operation of some compensatory or protective environmental feature has survived some important change, e.g., climate or land use, that has altered the general vegetation in the surrounding area. (3) A remnant or fragment of a flora that remains from some former period when it was more completely developed. (4) A remnant of the population of a species that was formerly more widespread. See refugium and nunatak theory.

Relief - Variations in elevation of the earth's surface.

Reproduction, vegetative - (1) Production of new plants by any asexual method. (2) Propagation of a plant by stems, roots, or other asexual organs, e.g., strawberry plants increase in number by means of runners.

Research natural area - Designation used by Federal land management agencies to establish areas on which natural features and processes are preserved for research and educational purposes with minimal human intervention. Usually contain an exemplary tract of vegetation along with its major supporting factors.

Residuum - (1) residual soil material. (2) Unconsolidated, weathered, or partly weathered mineral material that accumulates over disintegrating rock.

Retrogression - The change from a more highly organized individual, group, or state of organization to one on a lower level.

Revegetation - The reestablishment or improvement of a plant cover. It may take place naturally through reproductive processes of the existing flora or be induced by humans through seeding or transplanting. See reforestation and regeneration. Compare ecesis.

Rheophilous (adj.) - Referring to peat formed of plants which grow under the influence of mobile ground water. See fen and mire.

Rhizoid - A filamentous organ, one cell thick, found in mosses, fern gametophytes, and other plants, used for attachment and probably also for absorption of water and nutrient salts.

Rhizome - A stem, generally modified (particularly for storing food), that grows along but below the surface of the ground and produces adventitious roots, scale leaves, and suckers irregularly along its length, not just at nodes, e.g. Equisetum and Pteridium spp. Compare runner and stolen.

Rhizomorph - A compact strand of fungus hyphae, capable of increase in length by apical growth, that transports food materials from one thallus part to another and assists in spreading the fungus through the substratun.

Rime - (1) White frost, hoarfrost. (2) An opaque ice coating on exposed surfaces formed by freezing of very small water droplets immediately upon contact. Compare glaze.

Riparian (adj) - (1) Pertaining to streamside environment. (2) Vegetation growing in close proximity to a watercourse, lake, or spring and often dependent on its roots reaching the water table. See gallery forest.

Rock glacier - See glacier, rock.

Rock stream - A landslide of special character, a rock mass which was completely broken up in falling and whose debris acquired a momentum so great that it became a rapidly flowing body and descended in a streamlike form far beyond the normal limit of a landslide mass.

Rockfield - See fellfield.

Rootstock - See rhizome.

Rosette - A crowded cluster of leaves, appearing to rise from the ground rather than a plant stem.

Ruderal - Plant species growing on disturbed sites or in waste places. A weed. A plant which exploits conditions of low stress and high disturbance.

Runner - (1) An above-ground, more or less horizontal stem that forms roots and shoots at some of the nodes under favorable conditions, e.g., strawberry and Saxifraga flagellaris. Compare rhizome and stolon. (2) A slender aerial branch rooting at the tip and forming a new plant which eventually becomes detached from the parent.

S

Saline - Pertaining to soil or water containing sufficient soluble salts to interfere with normal plant growth.

Sample - Part of a population (statistical) consisting of one or more sampling units selected and examined as representative of the whole.

Sample area - A portion of an area that is used for sampling vegetation. See quadrat and plot.

Sample plot - (1) An area of land, usually small and chosen as representative of a much larger area, used for measuring or observing plant presence, condition, behavior, etc. (2) An area of land used for experimentation.

Sand - As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grans consist of quartz. As a soil textural class, a soil that is 85% or more sand and not more than 10% clay.

Sandstone - Sedimentary rock containing dominantly sand-size particles.

Sapric soil material - Muck. The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saprophyte - A plant that is incapable of synthesizing its nutrient requirements from inorganic sources and obtains food from dead or decaying organic material.

Savanna - (1) A physiognomic type of vegetation in which tall, widely spaced plants, especially trees, are scattered individually over a landscape otherwise covered with low-growing plants, especially graminoids. (2) Closed grass or other predominantly herbaceous vegetation with scattered or widely spaced woody plants. The term implies not only a vegetation, but also a characteristic landscape, climate, and soils. Also spelled savana.

Shrub savanna - Closed grass or other predominantly herbaceous vegetation with scattered or widely spaced shrubs.

Shrub steppe savanna - Open grass or other herbaceous vegetation with scattered or widely spaced shrubs.

Saxicolous (adj) - Refers to plants growing on or among rocks, e.g., saxifrages and many mosses.

Sciophyte - A plant usually found growing in shaded environments.

Sclerophyllous - (1) Texture of leaves hard, stiff or coriaceous, as opposed to orthophyllous. (2) Pertaining to plants having thick, firm-textured leaves that are usually evergreen, e.g., Vaccinium vitus-idaea and Arctostaphylos uva-ursi.

Sclerophyte - Plant with predominantly hard, stiff or coriaceous leaves or equivalent organs (photosynthetic branchlets, cladodes, phyllodes, etc).

Scree - Sheet of coarse rock debris mantling a mountain slope. Whereas talus is an accumulation of rock material at the base of a cliff, scree includes loose material lying on slopes without cliffs. See talus.

Scrub - (1) Vegetation dominated by shrubs. (2) Woody vegetation predominantly of shrubs, ranging between 0.2 and 3 m in height. (3) In the Preliminary Classification for Vegetation of Alaska, treeless vegetation (or with less than 10% tree crown cover) and with shrubs comprising 25% or more of the absolute crown cover.

Dwarf shrub scrub, - In the Preliminary Classification for Vegetation of Alaska, scrub vegetation that is less than 20 cm tall and with 25% or more crown cover in dwarf shrubs. If tall and/or low shrubs are present their combined cover should be less than 25%.

Dwarf tree scrub - In the Preliminary Classification of Vegetation of Alaska, vegetation with 10% or more crown cover in dwarf trees which will not achieve heights of 3 m at maturity on those sites.

Low shrub scrub - In the Preliminary Classification for Vegetation of Alaska, scrub vegetation between 20 cm and 1.5 m in height and with 25% or more crown cover in shrubs.

Tall shrub scrub - In the Preliminary Classification for Vegetation of Alaska, scrub vegetation more than 1.5 m in height and with 25% or more crown cover in shrubs.

Scrubland - In the Preliminary Classification for Vegetation of Alaska, landscape occupied by scrub vegetation or capable of growing shrubs.

Scrubline - The general upper elevation of shrublike tree growth. See tree line.

Seasonal - Applied to vegetation having a dormant season marked by conspicuous physiognomic change. See aspection.

Second growth - A forest which grows in after the removal of the old stand by cutting, fire, or other causes. Young growth, but not the trees left after cutting all the merchantable trees. See regeneration.

Secondary forest - Forest vegetation following clearing or burning of the former cover. A term similar in meaning to second growth, but usually applied to tropical forests where the new stand is often different in composition and character from the one it replaces.

Secondary species - (1) Plant species subordinate to a dominant species in a community. (2) Tree species of inferior quality and/or size, and of relatively little or no silvicultural value, associated with the principal tree species.

Section (geography) - Subdivision of a province. See province and region.

Sedge - A plant in the family Cyperaceae, grass-like in appearance, but with solid stems that are triangular in cross-section.

Sedimentary rock - Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepages - These consist of ladder-like rows of small, shallow, narrow pools or flarks in a step-like arrangement. The pools parallel the contours and are at right angles to the slope. See flashet and string bog.

Selective species - A plant species which occurs with a high degree of fidelity in a specific type of vegetation. See fidelity.

Seral (adj) - (1) Refers to sere. (2) Nonclimax, i.e., a species or a community demonstratably susceptible to replacement by another species or community, usually within a few decades or a few centuries at most. See climax and climatic climax.

Sere (n) - A sequence of plant communities that follow one another in an ecological succession on the same habitat from a pioneer stage to, and terminate in, a particular kind of stable (climax) association.

Series (ecology) - Daubenmire's term for a group of habitat types having the same tree species dominant at climax, i.e., white spruce series, black spruce series, etc. See habitat type.

Series (pedology) - A group of soils, formed from a particular type of parent material, having horizons that, except for the texture of the A or surface horizon, are similar in all profile characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineralogical and chemical composition. The basic unit of soil classification.

Serotinous - Late developing or late ripening of fruits. Term applied to the cones of those Coniferae that remain on the tree and closed without allowing dissemination of the enclosed seeds long beyond the time of maturing, e.g., Picea mariana and Pinus contorta. Sometimes confused with the method of opening, but heat from a fire is not a necessary aspect of serotiny.

Shade density - See density.

Shelford's Law - See limiting factor.

Shoot - (1) Any young, slender, aerial outgrowth from a plant body, particularly a sprouting stem or branchlet, often taken to include its leaves. (2) The above-ground portion of a plant, or the part of a plant above the roots or rhizomes. The stem and leaves of a plant collectively.

Short-day plants - Plants which flower and fruit in the relatively short days of autumn.

Shrub - A woody perennial plant differing from a tree by its low stature and by generally producing several basal stems instead of a single bole, and from a perennial herb by its persistent and woody stem(s). Compare half-shrub and tree.

Dwarf shrub - A shrub less than 20 cm tall.

Low shrub - In the Preliminary Classification for Vegetation of Alaska, a shrub between 20 cm and 1.5 m in height.

Tall shrub - A shrub more than 1.5 m in height.

Shrubland - A landscape occupied by a scrub vegetation and probably not capable of growing trees. See scrub.

Silt - As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80% or more silt and less than 12% clay.

Silva - The aggregate of the forest tree species in an area. Compare flora.

Silvics - The life history and general characteristics of forest trees and stands, with particular reference to environmental factors.

Site - (1) An area considered in terms of its environment and ecological factors with reference to capacity to produce a particular vegetation; the combination of biotic, climatic, and soil conditions of an area. (2) An area delimited by fairly uniform climatic and soil conditions, essentially equivalent to habitat.

Site class - A quantitative expression of site potential for a particular crop. A measure of relative productive capacity of a site for a crop based on weight, volume, height, etc. attained within a given period.

Site index - In forestry, a numerical expression commonly accepted as an indicator of the quality of a site for growing timber. Expressed as the height of dominant and codominant trees at a given age, such as 50 or 100 years.

Site quality - (1) A loose term denoting the relative capacity of a site to produce a particular vegetation. (2) In forestry, used to describe relative productivity of a site for a particular tree species. See site class and site type.

Site type - In range management, a qualitative grouping or classification of sites by climate, soil, and vegetation. See habitat type.

Slash - Branches, bark, tops, cull logs, and broken trees left on the ground after logging. Sometimes confusingly referred to as "brush."

Slope - The inclination of the land surface from the horizontal measured in a numerical ratio, percent, or degrees. Thus a 1:1 slope is a 100% slope and also a 45° slope. Slopes may also be characterized as uniform, concave, or convex.

Slough - (1) Wet or marshy area. (2) A former stream channel now containing standing water. See oxbow.

Snag - Standing dead tree from which the leaves and most of the branches have fallen.

Snow, old - Any fallen snow which has lost all traces of dendritic structure, regardless of grain size. See firn.

Snow line - (1) A line marking the lower limit in altitude of perpetual snow. Also called firn line, regional snow line, or orographic snow line. (2) The altitude above which snow accumulates indefinitely on flat surfaces fully exposed to the sun and wind.

Snowbed - Area where snow accumulates each winter and melts late each growing season, e.g., cornice on the lee of a ridge.

Snowbed vegetation - See chionophilous species.

Snowfield - (1) An area or mass of snow that remains throughout the summer. (2) Snow that endures from year to year over any considerable area. See névé.

Snowflush - (1) A deposit, following melting of the snow, of soil material accumulated in a mass of snow. (2) "Snowflush association" where the soil is kept saturated during much of the growing season by water from the late melting snow cover.

Snow-patch - An area in which snow melts late in the year, and where snowflush forms and vegetation is characteristic of such a site or is lacking. See snowbed and snowflush.

Soaks - Strips in the bog that have minerotrophic water. They may be present even near the center of a large ombrotrophic bog.

Sociability (plant) - (1) The distribution of plants in relation to one another as individuals or as groups within a community. (2) An expression of the tendency of plants to grow together with others of the same kind; horizontal pattern of species; measure of the degree of clustering (contagion) of the plant units of a species. (3) Braun-Blanquet recognized five classes of sociability as follows: 1. Growing solitary, singly, 2. Growing in small groups of a few individuals, or in small tussocks, 3. Growing in small patches, cushions or large tussocks, 4. Growing extensive patches, in carpets or broken mats, 5. Growing in great crowds or extensive mats completely covering the whole plot area.

Socies - Clements' term for the seral equivalent of a society.

Society (plant) - (1) A subdivision of a particular phytocoenose that is based primarily upon life-form, secondarily on position or manner of function of its species in the community. (2) In Clements' system, a localized climax community occurring within an area controlled by a single or a few dominant species, which is characterized by a single subdominant species.

Sod peeling - Type of erosion caused by needle ice, in which the ice excessively raises the edge of the sod, causing it to break off and fall apart. See needle ice and frost heaving.

Softwood - In common usage, the wood of a coniferous tree. Inaccurate, in that the wood of many conifers is harder than that of many "hardwoods," e.g., spruce is harder than aspen.

Soil - (1) The unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants. In this sense, soil has a thickness that is determined by the rooting depth plants. (2) The terms "the soil" and "soil" are collective terms used for all soils in the way "vegetation" is used for all plant communities in an area. (3) The term "earthy" should be used for unconsolidated material such as that put in a pot for growing flowers.

Soil classification - The systematic arrangement of soils into groups or categories on the basis of their characteristics. The system used in the U.S has six categories: order, suborder, great group, subgroup, family, and series.

Soil consistence - (1) The feel of the soil and the ease with which a lump can be crushed in the hand. (2) The degree of cohesion or adhesion of a soil mass.

Soil creep - See creep.

Soil reaction - The degree of acidity or alkalinity of a soil, expressed in pH values as follows: Extremely acid below 4.5; Very strongly acid 4.5 to 5.0; Strongly acid 5.1 to 5.5; Medium acid 5.6 to 6.0; Slightly acid 6.1 to 6.5; Neutral 6.6 to 7.3; Mildly alkaline 7.4 to 7.8; Moderately alkaline 7.9 to 8.4; Strongly alkaline 8.5 to 9.0; Very strongly alkaline 9.1 and higher.

Soil separates - Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: very coarse sand (2.0 millimeters to 1.0 mm); coarse sand (1.0 to 0.5 mm); medium sand (0.5 to 0.25 mm); fine sand (0.25 to 0.10 mm); very fine sand (0.10 to 0.05 mm); silt (0.05 to 0.002 mm); and clay (less than 0.002 mm).

Soil series - See series.

Soil stripes - Similar to stone stripes except that the texture of both coarse and fine material is considerably finer than in stone stripes. See stone stripes, sorted stripes, nonsorted stripes.

Soil texture - A property defined on the basis of particle size distribution and thus dependent on relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are sand, loamy sand, sandy loam, loam, silt, silty loam, sandy clay loam, clay loam, silty clay loan, sandy clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Coarse textured (light textured) soil - Sand or loamy sand.

Moderately coarse textured (moderately light textured) soil - Sandy loam and fine sandy loam.

Medium textured soil - Very fine sandy loam, loam, silt loam, or silt.

Moderately fine textured (moderately heavy textured) soil - Clay loam, sandy clay loam, and silty clay loam.

Fine textured (heavy textured) soil - Sandy clay, silty clay, and clay.

Solifluction - Downslope movement ("flowing soil") of earth materials resulting from frost action characteristic of areas with cold arctic or alpine climate. A potent agent of mass-wasting, more effective than those generally operating in temperate regions, solifluction prevents the development of typical soil profiles and influences the development of plant cover. See mass-wasting.

Solifluction, amorphous - No visible separation of larger and finer fractions and the stones on the surface are not sorted in any conspicuous pattern. Typical of late snowbeds, while structured solifluction is typical of localities with little snow cover in winter.

Solifluction lobe - Tongue-like mass of solifluction debris commonly with steep front and relatively gentle upper surface.

Solifluction sheet - Broad solifluction mantle.

Solifluction slope - Smooth slope produced by solifluction.

Solifluction streams - (1) Stone stripes or stone streams, their presence and movement being due to solifluction and creep. (2) Narrow, laterally confined, streamlike solifluction mantle.

Soligenous (adj) - (1) Referring to peatlands with water percolating through them that carries minerals into the peatland from outside sources. (2) Pertaining to muskeg formed on sloping ground where formation and development are controlled by the movement of surface water and by climate. See minerotrophic.

Solum - The upper and most weathered part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soils consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristic of the soil are largely confined to the solum.

Sparse vegetation - See vegetation, sparse.

Species line - The altitudinal or latitudinal limit of one species regardless of growth form (i.e., tree or prostrate shrub). Compare tree line and scrubline.

Species-area curve - (1) A graph showing the number of species encountered over varying sizes of quadrats. Used to determine the most efficient plot area to use in sampling a given vegetation. (2) A graph describing the increasing number of species found per unit increase in area.

Species-number curve - A graph showing the number of species encountered over the number of quadrats of uniform size. Used to determine the most efficient number of plots to use in sampling vegetation.

Species diversity - A product of richness and evenness; species richness weighted by species evenness and expressed as an index number.

Species evenness - Expression of the apportionment of the number of individuals among the species present in a community. Evenness is greatest when all species have the same number of individuals. Compare species richness and species diversity.

Species richness - Expression of the number of species of plants or animals present in an area. The more species present, the higher the degree of species richness. Compare species evenness and species diversity.

Sphagnum moss - (1) Moss plants of the genus Sphagnum. (2) Peat moss which is almost raw, consisting of Sphagnum with an admixture of residues from Eriophorum, Carex, Andromeda glaucophylla, Ledum groenlandicum, Vaccinium oxycoccus and Empetrum nigrum. There are other plant residues in smaller amounts. Synonym of white moss, genuine peat moss

Spruce bog - A loosely applied term describing confined areas of organic terrain where coniferous trees (not always spruce) are a prominent feature of the vegetational cover. See muskeg.

Stability - The ability of a community to withstand catastrophe or to return to its original state after severe alteration.

Stand - (1) A concrete (vs. abstract) aggregation of plants of more or less similar uniformity in physiognomy, species composition, spatial arrangement, and condition to distinguish it from adjacent communities. Concrete stands which we sample or measure are

aggregated into abstract communities, and communities are further abstracted into a general vegetation. (2) An aggregation of trees or other plants occupying a specific area and sufficiently uniform in species composition, age distribution, spatial arrangement, and condition to be distinguishable from the forest or other growth on adjoining areas.

Stand, two-storied - A forest stand in which trees of two height classes of considerable difference occur, the overstory and understory. The term is not applicable to a forest in process of regrowth, in which the appearance of two stories is the temporary result of an incomplete process.

Stand condition - Determined by composition, age, healthy, and structure of a stand.

Stand origin date - The year in which the trees in an even-aged stand originated.

Stand origin map - A map showing the extent of individual stands and the date of origin of each.

Stand table - A summary table listing number of trees by species and diameter class per unit area (hectare or acre) in a given stand. May be presented in the form of a frequency distribution of diameter classes.

Standing crop - Generally considered synonymous with biomass, but sometimes used in the sense of phytomass. Meaning should be defined when the term is used. Expressed as mass/area. See biomass, phytomass, and productivity.

Statistic - A value that can be calculated from sample observations, generally as an estimator of some population parameter.

Stem - (1) The principal axis of a plant from which buds and shoots are developed. (2) The trunk of a tree.

Steppe - (1) A landscape term referring to the broad, undulating, treeless and grassy plains of eastern Russia and Siberia. It implies a characteristic landscape, soils, climate, and vegetation similar to prairie in Northern America. (2) Temperate zone vegetation dominated by grasses and occurring in climates where zonal soils are too dry to support trees. Open grass or other herbaceous vegetation, the plants or tufts discrete but averaging less than their diameters apart.

Steppe savanna - Savanna with an open rather than a closed grass layer.

Steppe scrub - Open scrub with the herb layers also open, that is, the average distance separating plants is greater than their average diameters.

Steps - Patterned ground with a step-like form due to a downslope border of vegetation embanking an area of relatively bare ground upslope. See patterned ground.

Stocking - Loose term for the amount of trees or shrubs on an area. More precisely, a measure of the proportion of an area actually occupied by trees or shrubs in terms of stocked quadrats.

Stolon - A horizontal stem which grows along the surface of the soil and which propogates vegetatively by forming new shoots and roots at its nodes. Compare rhizome and runner.

Stones - Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter. Compare boulder and cobble.

Stone nets - See patterned ground and nets, sorted.

Stone ring - A ring or polygon of stones surrounding a central area of fine debris in a bouldery soil region. See patterned ground.

Stone streams - Linear concentrations of boulders and smaller stones on a slope or valley floor; a lag concentrate resulting from the washing-out of finer sediments or a deposit moved downslope without much fine material by frost heaving. See stone stripes, nonsorted; stripes, sorted.

Stone stripes - Patterned ground with bands of fine rock debris which alternate with channels filled with coarse rock fragments and are oriented parallel to the direction of the steepest slopes. See stripes, sorted; stripes, nonsorted.

Stony - Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Strand - That portion of the shore between high and low water on beaches, spits, reefs, etc.

Strand, emergent - Old, abandoned beaches and spits left above sea level by emergence of the land.

Stratification (seeds) - Artificial application of cold period to seeds, in order to induce certain physiologic processes, which then allow germination under subsequent warmth.

Stratification (vegetation) - (1) Pertaining to the grouping of plants in a community according to height classes. (2) A state of vegetation in which horizontal layers (strata) are clearly apparent.

Stratified (pedology) - Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Stratum (vegetation) - A horizontal layer in a community in which the plants are of about the same height. See layer. Compare crown class and union.

Stripes, nonsorted - Patterned ground with a striped pattern and a nonsorted appearance due to parallel lines of vegetation-covered ground and intervening strips of relatively bare ground oriented up and down the slope. Such stripes change their dimensions with changes in slope steepness and position on a slope. See patterned ground.

Stripes, sorted - Patterned ground with a striped pattern and a sorted appearance due to parallel lines of stones and intervening stripes of dominantly finer material oriented down the steepest available slope. Also called stone-bordered stripes, earth stripes and rock stripes.

Structure (soil) - The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. the principal forms of soil structure are--platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tyops), blocky (angular or subangular), and granular. Structureless soils are either single grained (each grain by itself, as in dune sand) or massive (the particles adhering without any regular cleavage, as in many hardpans).

Structure (vegetation) - (1) Defined by Dansereau as the organization in space of the individuals that form a stand and a vegetation type. The primary elements of vegetation structure are growth form, stratification, and coverage. (2) The spatial distribution pattern of life forms in a plant community (phytocoenose), especially with regard to their height, abundance, or coverage within the individual layers (synusia). (3) The three components of vegetation structure are (a) vertical structure (stratification into layers), (b) horizontal structure (spatial distribution of individuals and species populations), and (c) quantitative structure (abundance of each species).

Biomass structure- Relates to the spacing and height of plants forming the matrix of a vegetation cover.

Life form structure - Relates to the organization in space of growth forms or life forms of plants in the vegetation.

Stand structure - The composition of a forest stand with respect to species, age-class, size, vertical strata, or other criteria.

Subalpine - (1) The first distinctive type of vegetation, usually open forest, below the alpine tundra. (2) A plant growing in a subalpine location.

Subalpine belt - (1) The forest-tundra ecotone with dwarf tree growth and subalpine meadows. (2) The natural belt below the treeless belt from the upper altitudinal treeline to the closed montane forest at lower elevations. It is an ecotone, a mosaic from the treeless alpine belt above and the forested belt below.

Subarctic - Zone between the polar tree limit, more or less following the 10°C mean daily isotherm for the warmest month of the year, and the economical forest line as defined by Hustich (1966) to the south. This zone is climatically related to the summer position of the arctic frontal weather system. It constitutes a biotic transition belt (the forest-tundra ecotone) between the treeless arctic zone and the forested boreal zone.

Subarctic forest - The northern part of the boreal forest, characterized by open stands of small conifers, chiefly black spruce, with abundant lichens on the ground. See open boreal forest.

Subarctic woodland - See open boreal forest.

Subclimax - In monoclimax theory, the (seral) stage in development (succession) of plant communities immediately preceding the final (climax) stage in that habitat.

Subgelid climate - Climatic zone of intensive frost action.

Subgelisol - Zone of unfrozen ground below the permanently frozen ground or pergelisol (permafrost). See talik.

Submerged aquatic plant - Plant adapted to totally submerged aquatic existence or with only leaves floating.

Subsoil - Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsolifluction - (1) The sliding of subaqueous sediments on relatively low slopes. (2) The flow and sliding of soft materials under sublacustrine and submarine conditions.

Substitute communities - Cultural plant communities which may take the place of given natural plant communities. As in the Matanuska Valley where certain forest types were converted to pasture.

Substratum - (1) The soil or other material in or on which plants are rooted or attached. (2) The part of the soil below the solum.

Subsurface layer - Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Succession - (1) The gradual replacement of one community of plants by another, the sequence of communties being termed a sere and each community a seral (successional) stage. A sere whose first stage is open water is termed a hydrosere, one whose first stage is dry ground is a xerosere. (2) Any series of vegetational communities following one another in an area, repeating themselves under similar conditions (habitat or environment) and clearly due in each case to the same or a similar set of causes. (3) The process of replacement of one plant species by another.

Allogenic succession - The kind of succession in which one kind of plant community replaces another because of a change in the environment which was external to and independent of that produced by the plants themselves. e.g., decrease in soil moisture by improved drainage. See autogenic succession.

Autogenic succession - A sere in which the replacement of one plant community by another results chiefly from the transformation of the site by the plants themselves. Antonym of allogenic succession.

Primary succession - (1) Plant succession on newly formed soils or upon surfaces exposed for the first time, which have never borne vegetation. Primary succession is autogenic, or internally controlled by the developing vegetation. (2) The community formation process that begins on substrates that had never before supported any vegetation. Colonization is by pioneers. See ecesis.

Secondary succession - (1) Plant succession which is subsequent to the destruction of part or all of the original vegetation on a site. An allogenic succession. (2) All non-phenomenological vegetation changes that occur in already established ecosystems; originates only from a partial disturbance of an ecosystem.

Succulent - Having the stems or leaves conspicuously fleshy.

Sucker - A vegetative, i.e., nonsexual, shoot of subterranean origin. Aspen clones are produced by suckers from the ortet.

Suffrutescent - Refers to perennial plants that normally are somewhat woody at the base so that they do not die down to the ground each year.

Suffruticose - Refers to perennial plants that are distinctly woody at the base and herbaceous above, intermediate to suffrutescent and fruticose. See half-shrub.

Summer needle ice - See needle ice.

Sunscald - Death of plant tissues caused by high temperature and loss of water in organs exposed to high temperatures from intense sunshine. Synonym of bark scorch.

Sunscald, winter - Localized injury to bark and cambium caused by freezing following the unseasonable heating of the bark by the sun in late winter; hence localized on the side of the stem exposed to mid-day and afternoon sun. Synonym of winter bark-scorch.

Supragelisol - (1) The zone above the pergelisol. (2) The active layer.

Supranival flags - Erect stems arising from krummholz cushions on windswept ridges that assume flag form due to the pruning of branches on the windward side. See flagtree.

Surface soil - The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Swale - A moist or marshy depression, particularly in a grassland or prairie.

Swamp - (1) A loose term for a wetland area characterized by tree or shrub vegetation and saturated with water throughout much of the year, but with the surface of the soil not deeply submerged. Peat-forming ecosystems (mires) supporting a tree or shrub vegetation are properly termed fen or carr. (2) An ecosystem dominated by woody plants and with soils saturated for long periods if not permanently, but without a surface accumulation of peat. (3) A flat, wet area usually or periodically covered by standing water and supporting a growth of trees, shrubs and grasses; in contrast to a bog, the organic soil is thin and readily permeated by roots and nutrients. (4) Swamp is forested wetland, usually with little or no peat and waters having a slightly acid reaction. It is chemically allied with fens (American). (5) In the Preliminary Classification for Vegetation of Alaska, sites dominated by tall shrubs and occasional trees. Standing or flowing water is usually present. Although peat is generally absent, soils may be high in organic matter content. (6) A wooded fen whose mucky substratum is intermittently flooded; peat accumulation is not characteristic.

Swamp, alder - Wet, nutrient rich site, often with mucky soils and the vegetation dominated by alders. The nutrient-poorer alder swamps with abundant black spruce and poorly growing alder shrubs have been separated as mesotrophic alder swamps. Alder swamps often occur at bog borders influenced by seepage water.

Sympatric - Refers to taxa occupying the same or overlapping ranges. Compare allopatric.

Synchorology - Branch of plant sociology dealing with the occurrence and distribution of communities. Compare phytogeography.

Synecology - (1) The study of plant communities and their environmental relations. (2) The study of the environmental relations of plant communities. Compare autecology.

Syntaxa - (1) The standard vegetation units of the Braun-Blanquet school of plant ecology. (2) Community-types.

Synthesis table - See association table.

Synusia - (1) Any component of a community of one or more species, belonging to the same life-form, having similar environmental requirements and occuring in a similar habitat, e.g. a layer of moss on the ground or lichens on tree limbs. (2) A subdivision of a plant community distinguished by its life-form or microsite. Often correspond to horizontal layers of a community. See union and structure.

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Taiga - (1) A Russian term meaning "land of little sticks," and originally applied to the open conifer lichen woodland between the boreal conifer forest and the tundra. (2) Ecosystems adjacent to arctic tundra in which Abies, Picea, Larix, or paper-barked Betula are characteristic tree genera and muskeg, fen, and bog are prominent features of the landscape. Sometimes narrowly applied to just the arctic timberline transition zone; sometimes extended to all subarctic and even subalpine forests of the north temperate zone. (3) The wooded vegetation of boreal-subarctic latitudes that occupies the subarctic climatic zone adjacent to the treeless tundra.

Talik - (1) Thawed zone within the permafrost. (2) A layer of unfrozen ground between the seasonal frozen ground (active layer) and the permafrost. (3) An unfrozen layer or zone within the permafrost. Synonym of tabetisol.

Talus - In polar and arid temperate climates the debris from rock falls is accumulated by gravity at the foot of cliffs and steep slopes. The sloping heap of rock fragments is termed talus (from the French term for slope). Sometimes confused with scree and used in a synonomous way with that term, but scree is found on slopes without cliffs and is usually composed of smaller fragment sizes. See scree.

Taxon - A neutral term for a taxonomic group of any rank, such as subspecies, species, genus.

Taxonomy - (1) The science of classification of natural objects and the laws and principles governing the classification. (2) Classification of plants and animals into taxonomic units such as species, genus, family, and order.

Temperate - Climates with regular winter seasons of freezing weather, alternating with summer seasons that are either hot, or only warm but of long duration.

Terminal moraine - A belt of thick glacial drift that generally marks the termination of important glacial advances.

Terrace (geology) - An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently called a second bottom, in contrast with a flood plain, and is seldom subject to overflow. Terraces are easily seen along the Nenana River north of Healy.

Terrestrialization - Formation of a mire (peat-forming ecosystem) system by filling a water body with organic material. Usually

occurs by gradual extension of peat-forming plant communities outward from the shore of a pond or lake. A common high school text example of succession. Compare paludification.

Thalliform - Pertaining to plants with the shoot not clearly differentiated into stem and leaves, e.g. liverworts and lichens.

Thaw depressions - (1) Depressions which result from subsidence following the thawing of perennially frozen ground. (2) Hollow formed by the melting of ice in perennially frozen ground. See thermokarst.

Thaw lakes - (1) Lakes which occupy thaw depressions. (2) Lake or pond in permafrost region whose basin is formed by thawing of ground ice. See thermokarst. (3) A pool of water on the surface of sea ice or large glaciers formed by accumulation of melt water.

Thaw sinks - Closed depressions with subterranean drainage.

Thawing index - Number of degree-days between the lowest and highest points on a curve of cumulative degree-days over time for one thawing season; a measure of combined duration and magnitude of above-freezing temperature during a thawing season. Compare freezing index.

Thermokarst - A permafrost related landscape characterized by a peculiar topography of pits, hummocks, depressions, and small ponds caused by the melting of ground ice and the settling or caving of the ground surface. Considered to be a misuse of the word karst by most geomorphologists. See karst. "Cryokarst" has been suggested as an alternate term.

Thermokarst mound - Residual polygonal hummock bordered by depressions formed by the melting of ground ice in a thermokarst terrain.

Thermokarst pit - Steep-walled depression formed by thermokarst processes.

Therophyte - A plant which completes its life cycle, from germination to ripe seed, within a single growth period. An annual.

Threatened species - A species likely to become endangered within the forseeable future because of overutilization for commercial, scientific, or educational purposes, or modification or destruction of its habitat. See endangered species.

Tidal (adj) - Refers to plants or vegetation within reach of the influence of tides.

Tidal marsh - Low marshlands traversed by interlacing channels and sloughs and subject to tidal inundating as in the Portage area at the head of Turnagain Arm. Usually the vegetation is composed of salt-tolerant grasses and sedges.

Till - (1) An unstratified, nonsorted deposit of gravel, boulders, sand and finer materials which has been transported and laid down by glacial ice with little or no transportation or sorting by water. (2) Nonsorted, nonstratified glacial drift deposited directly by the ice. (3) Sometimes equivalent to moraine in European usage.

Till plain - An extensive flat to undulating area underlain by glacial till.

Tiller - An erect or semi-erect branch arising from a bud in the axils of leaves at the base of a plant. Some annual and perennial grasses increase in circumference by tillers.

Tilloid - Gravel or conglomerate resembling glacial till.

Timber atols - Formation of hollow circles of trees developed from snow mats, primarily of fir, in which the lateral branches take root forming a ring. More concentric rings are formed as the new ring branches outwardly and takes root, followed by the eventual dying of the center trunk.

Timberline - (1) The upper altitude or latitude at which erect marketable trees grow; not synonomous with tree limit. (2) Any altitudinal or latitudinal limit of forest growth. (3) Some consider the upper edge of continuous forest to be timberline, while others recognize it as the altitude of the highest tree, and still others accept a midpoint between these extremes. See tree line, tree limit, and forest limit.

Timberline, double - In reference to two species, one of which forms a timberline beneath the upper limits of the other species.

Timberline ecotone - A zone of dynamic equilibrium between the forest limit and krummholz limit. See subalpine belt.

Tjaele - Scandiavian term synonymous with pergelisol.

Tolerance - The relative ability of a plant species to survive and develop under a deficiency of an essential growth requirement, such as light, moisture, or nutrient supply, or an overabundance of a factor such as excessive water, toxic salts, etc. Antonym of intolerance. See competition and succession.

Tolerance, amplitude of - See ecological amplitude.

Topogenous (adj) - Indicating that the source of water for a peatland is the regional water table in a depression that predated peat formation.

Tor - Isolated mass of granitic rock composed of either a single or numerous joint blocks standing above unaltered bedrock and the surrounding terrain. Tors usually contain numerous blocks piled one upon the other forming castellated piles or fingers of rock.

Transect - A cross section of an area used as a sample for recording, mapping, or studying the vegetation and its behavior or use. A transect may be a series of plots, a belt or strip, or merely a line taken through vegetation chosen for study, e.g. analysis, profiling, charting.

Belt transect - A long, narrow plot or strip of vegetation, usually only a few centimeters or meters wide, in which the constituent plants are recorded, measured, etc.

Line transect - A method of sampling vegetation by recording the plants or communities intercepted by a measured line. See line intercept.

Tree - A woody perennial plant, typically large (a mature height of at least 5 meters) and with a single well-defined stem and a definite crown shape. Some plants, such as willows, may grow as either trees or shrubs.

Tree island - A type of krummholz which forms clusters of flagged trees in the subalpine zone. See timber atol and grove.

Tree limit - The point in latitude beyond which trees can no longer grow due to the interaction of their biological requirements with the complex of environmental factors. Compare forest limit.

Tree line - A loose term for the limit beyond which trees cannot or do not occur. Tree line is more generally used for the altitudinal boundary and tree limit for the latitudinal boundary. Compare timberline which is the rough limit of timber (forest) rather than isolated trees. See forest limit.

Tree ring analysis - The use of tree ring counts to date past events such as glacial flucuations, lake level fluctuations, landslides, fires, floods, and other natural or man-made changes.

Tree, dwarf - In the Preliminary Classification for Vegetation of Alaska, a plant species which would, under normal conditions, be a tree but which will not achieve a height of 3 m on the site where found. Usually refers to black spruce on bogs or near tree line.

Trimline - (1) A line marking the former extent of the margins of a glacier. It is formed by advance of the ice into a vegetated area. A corresponding line is also sometimes indicated by differences in degree of rock weathering. (2) The point of furthest advance of a glacier into a forested area. Trimline can be observed at the Black Rapids Glacier south of Delta.

Tuber - An enlarged underground stem, usually rich in starch, and with many buds capable of vegetative reproduction of the plant, e.g., potato.

Tundra - (1) From the Finnish "tunturi," meaning a treeless plain and describing the landscape beyond the cold limits of tree growth. (2) A cold climate landscape having a vegetation without trees. The absence of trees is caused by a complex of conditions that is ultimately related to regional climate. This regional aspect distinguishes tundra from treeless bogs and similar local areas without trees due to edaphic extremes in areas that otherwise support a forest cover. (3) The landscape beyond the temperature limits of tree growth, both to the north and west of treeline in Alaska and at elevations above treeline on mountains. (4) The so-called "barren ground" north of the circumpolar coniferous forests. (5) Treeless areas where dwarf shrubs and low herbaceous plants predominate, often with many lichens and mosses, on a permanently frozen subsoil.

Alpine tundra - That portion of the landscape above the upper limit of tree growth in the higher mountain regions which supports a plant cover of dwarf shrubs and herbs.

Dwarf shrub scrub tundra - A tundra landscape (beyond the limits of tree growth) with a dwarf shrub scrub vegetation.

Herbaceous tundra - A tundra landscape (beyond the limits of tree growth) with an herbaceous vegetation.

Mat and cushion tundra - A tundra landscape (beyond the limits of tree growth) with a vegetation composed of mat and cushion plants. See fellfield.

Sedge-grass tundra - A tundra landscape (beyond the limits of tree growth) with a herbaceous vegetation of non-tussock-forming sedges and grasses.

Shrub tundra - A tundra landscape (beyond the limits of tree growth) with a scrub vegetation.

Tussock tundra - A tundra landscape (beyond the limits of tree growth) with a herbaceous vegetation of tussock forming plants, particularly Eriophorum spp.

Turf - A layer or mat composed of the above ground portions of dense grass and the upper roots and rhizomes with attached soil particles.

Turion- A winter bud on some water plants that becomes detached, overwinters, and under favorable conditions develops into a new plant, e.g., Myriophyllum verticillatum.

Tussock - A plant-form that is tufted, bearing many stems arising as a large dense cluster from the crown.

Tussock rings - See circles, nonsorted.

Type - A kind of vegetation, e.g., cover type, community-type, forest type.

Cover type - A descriptive term used to group stands of similar character as regards composition and development, by which they may be differentiated from other groups of stands (cover types). It suggests repetition of the same character under similar conditions.

Forest type - See forest.

Habitat type - See habitat.

Vegetation type - See vegetation.

Type of habitat - See habitat.

U

Ubiquist - A plant that flourishes in several kinds of communities or ecosystems, e.g., Calamagrostis canadensis.

Ubiquitous (adj) - Refers to a ubiquist. Compare cosmopolitan.

Undergrowth - (1) A loose term generally meaning shrubs and herbs growing under a forest canopy. (2) Tree seedlings and saplings under an existing stand of trees.

Understory - (1) In forestry, that portion of the trees in a stand below the upper crown cover or overstory. See overstory and stand, two-storied. (2) In range management, any plants growing under the canopy formed by others, e.g., herbs under shrubs, and shrubs under trees.

Uneven-aged - A stand of trees in which the individuals are of considerably different ages, but not of all ages. See even-aged and all-aged.

Union - (1) In Daubenmire's terminology, a classified vegetational layer as a subdivision of a plant association. It may be identified by a single species of high abundance and distinctive ecology, or a rather well-defined list of species which are restricted to approximately the same narrow range of environmental variation in a vegetation mosaic. Commonly unions have physiognomic as well as taxonomic distinctiveness, i.e., they may consist of tall shrubs, or of herbs or of tree species, but this is not necessarily true. Therefore, union is a more flexible term than layer, emphasizing similar patterns of distribution rather than height. The unions in a landscape occur in different combinations. (2) A stratal community consisting of one or more species of related physiognomy and life form. See synusia and structure. (3) Plant unions exist at each level in the canopy, e.g., tree union, shrub union, herb union, cryptogam union. See layer and stratum.

Unistratal - As applied to vegetation of only one layer or stratum, or not distinguishably layered in structure. See structure.

Upland (geology) - Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams. See lowland.

V

Vascular plant - Fern or seed plant which has an internal system of vascular tissue for transport of food (via phloem) and water (via xylem).

Vegetal (adj) - Another form of the term vegetative.

Vegetal cover - See cover (2).

Vegetation (n) - (1) The mozaic of plant communities in the landscape. (2) Plants in general, or the sum total of plant life in an area. Compare flora. (3) Plant life considered in mass.

Actual vegetation - The currently existing vegetation mozaic of an area. That vegetation which actually exists at the time of observation, regardless of the character, condition, and stability of its component communities of original, natural, potential natural, or cultural vegetation.

Closed vegetation - Vegetation in which the individual plant crowns are touching.

Cultural Vegetation - All anthropogenic vegetation. Can be subdivided into (1) strictly cultural vegetation such as barley fields and apple orchards, also termed messicol vegetation; and (2) semi-natural vegetation which is a more indirect result of human activity, e.g., Matricaria matricarioides, Taraxacum officinale, etc. See weed.

Existing vegetation - See vegetation, actual.

Natural vegetation - An ambiguous term since almost all vegetation has now been influenced in some way by man's activities. See vegetation, original and vegetation, potential natural.

Open vegetation - Vegetation with the plants mostly discrete rather than touching, but separated by less than their crown diameters. Open may also be applied to individual strata (layers) when describing community structure. Compare vegetation, closed and vegetation, sparse.

Original vegetation - Exists in a landscape before modern (European) man affects it significantly. See natural vegetation.

Potential natural vegetation - (1) The vegetation which would develop if humans were removed from the scene so that the resulting succession of plant communities be telescoped into a single moment in order to exclude the effects of climatic

changes. (2) The vegetation that would exist today if human activity were removed from the scene and if the resulting plant succession were telescoped into a single moment. The latter point eliminates the effects of future climatic fluctuations while the effects of earlier human activities are permitted to stand. See climax.

Real vegetation - See vegetation, actual.

Sparse vegetation - Vegetation in which the plants are discrete rather than touching, and separated by more than twice their crown diameters.

Zonal vegetation - The vegetation of zonal soils.

Vegetation class - A grouping of individuals or observations by their shared characteristics; e.g. the class (may) unite a number of stands.

Vegetation structure - See structure.

Vegetation profile - Diagram or elevation view of the above ground profile of plants along a line-transect. Compare chart quadrat which is a plan view.

Vegetation structure - See structure.

Vegetation type - A kind of vegetation, or the kind of community of any size, rank, or stage of succession. (There is no such thing as a vegetative type.) See nodum.

Vegetation unit - See vegetation type and nodum.

Vegetation zone - The vegetation cover found in a specified geographic region or zone which has a uniform macroclimate.

Vegetational (adj) - Refers to vegetation, in contrast to vegetative. Compare vegetal.

Vegetative (adj) - Refers to the non-sexual tissues, growth, and reproduction of plants, e.g., to stems in contrast to stamens, to rooting versus seed development and to propagation not involving the union of gametes in contrast to (sexual) reproduction by seed. Not to be confused with vegetation or vegetational. See vegetal and reproduction.

Vegetative cover - More properly called plant cover, vegetal cover, or vegetational cover.

Vegetative propagation - The increase in number of a plant species

by the use of vegetative parts such as rhizomes, runners, or turions.

Virgin forest - Essentially uninfluenced by human activity.

von Post humification scale - A scale describing peat moss in varying stages of decomposition (humification) ranging from H 1 which is completely unconverted to H 10 which is completely converted.

W

Water table - (1) The upper limit of the soil or underlying rock material that is wholly saturated with water. (2) The upper surface of ground water or that level below which the soil is saturated with water.

Apparent water table - A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Artesian water table - A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Perched water table - The surface of a local zone of saturation held above the main body of ground water by an impermeable layer or stratum, usually clay, and separated from the main body of ground water by an unsaturated zone.

Water track - Term for vegetation types marking the path of mineral-influenced waters through a peatland. On airphotos, water tracks contrast sharply with the surrounding tussock tundra, bog forests, or muskegs depending upon the location.

Waterlogged - Saturated with water. Replacement of most of the soil air by water. Soil condition in which seepage inadequate drainage, or over-irrigation causes a high or perched water table.

Watershed - (1) In American usage, an entire drainage basin including all living and non-living components of the system. (2) In European usage, the divide between two drainage basins.

Weather - The state of the atmosphere at any given time with regard to precipitation, temperature, humidity, wind, cloudiness, and barometric pressure. See climate.

Weathering - (1) The erosive effects of the forces of weather on the surfaces of the earth; one of the soil forming factors. (2) Process of physical and chemical disintegration of rocks and minerals.

Weed - A plant growing where man or woman does not want it to grow. Generally a species with wide amplitudes of tolerance for disturbed site conditions.

Weight method - A method of arriving at the volume of forage or herbage on a range area by clipping and weighting samples or by weight estimate.

Wetland - (1) Lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. (2) A general term for sites which are permanently, seasonally, rarely, or never flooded, but which support plants characteristic of saturated soils. Dominant plants, or at least one co-dominant plant, are terrestrial or emergent, with subaerial stems and leaves. See bog, carr, fen, marsh, and swamp.

Wind-saddle vegetation - A phenomenon caused by the topography e.g. dip in the crest of a mountain range being so oriented to the prevailing winds that the winds are channeled through the saddle. Communities which are distinctively different from the surrounding vegetation may occupy such sites, e.g., dwarf-scrub in an area of forest.

Windfall - Tree or trees thrown down or broken off by the wind.

Winter sunscald - See sunscald.

Witches' broom - Abnormal broom-like or brush-like local growth of many weak shoots near the tip of a branch of a tree or shrub, caused by a fungus, virus, or insect.

Wolf tree - A vigorous tree occupying more growing space than its silvicultural value warrants, curtailing better quality neighboring trees. A term usually applied to broad-crowned, short-stemmed trees. See crown class.

Woodland - (1) Vegetation in which trees, often small and characteristically short-boled in relation to their crown depth, are present but form only on open or sparse canopy, the intervening areas being occupied by shrubs or herbs. (2) In the Preliminary Classification for Vegetation of Alaska, forest vegetation with 10 to 25% crown cover by the tree crowns.

Broadleaf woodland - In the Preliminary Classification for Vegetation of Alaska, a broadleaf forest vegetation with 10 to 25% crown cover of the tree crowns.

Conifer woodland - See woodland, needleleaf.

Lichen woodland - See open boreal forest.

Mixed woodland - In the Preliminary Classification for Vegetation of Alaska, a mixed broadleaf and needleleaf forest vegetation with 10 to 25% crown cover by the tree crowns.

Needleleaf woodland - In the Preliminary Classification for Vegetation of Alaska, a needleleaf vegetation with 10 to 25% crown cover by the tree crowns.

Subarctic woodland - See open boreal forest.

Woods - A community of trees growing more or less closely together, of smaller extent that a forest. May or may not constitute a stand, depending upon its degree of homogeneity.

X

Xerarch (adj) - Refers to a successional sequence which begins in a dry habitat. See xerosere. Compare hydrarch.

Xeric (adj) - Refers to a dry habitat or site.

Xeromorphic - Having structural characteristics common among xerophytes, i.e., small thick leaves with sunken stomata or revolute margins, surfaces that are pubescent, waxy or highly reflective, and small vein islets. Xeromorphy is by no means restricted to xerophytes. It can be induced in mesophytes by low nutrient supplies, or it may be carried along in mesophytes or even hydrophytes that have evolved from xerophytes.

Xerophyte (n.) - A plant capable of surviving periods of prolonged moisture deficiency. A plant that grows on dry sites.

Xerophytic (adj.) - Refers to xerophyte.

Xerosere (n) - (1) A series of successional stages beginning on a dry habitat. (2) Primary succession emerging from geomophological exposure of rock material, either solid bedrock, coarsely broken rocks, or fine rock and sand particles. See xerarch.

Y

Yield- A term with several definitions and an inconsistent usage. Generally, that part of the production or productivity of a population or stand that is removed or expected to be removed by man, e.g., the timber produced by a stand of trees or the forage consumed by a herd of cows. Meaning should be defined when the term is used. See productivity and standing crop.

Z

Zonal - (1) In Russian geobotany, term applied to vegetation unit which reflects close relation to current climatic conditions of a large region on soils with nonextreme properties. Zonal plant community corresponds more or less to climatic climax community. See azonal. (2) Geographic differentiation of the earth's surface following the pattern of climate, which is reflected in a latitudinal zonation of vegetation and soil formations.

Zonal soil - (1) A soil having well developed characteristics reflecting the full influence of the prevailing climate, flora, and fauna, and, therefore, characteristic of that climatic zone. (2) Moderately deep to deep soil profile developed from loamy parent materials, having moderate internal and surface drainage, and, except in extreme environments, with evident horizon differentiation. Soils in this category show the maximum correlation with climatic types.

Zone - (1) An area characterized by similar flora or fauna; a belt or area to which certain species are limited. (2) In Daubenmire's terminology, all the area in which zonal soils have the potentiality of supporting the same climatic climax plant association. It may be composed of several to many habitat types, only one of which is the climatic climax.

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Appendix I

FAMILIES OF TERMS

Community Classification Terms

abstract community
altherbosa
association
associes
biocoenosis
biogeocoenose
community
community-type
concrete community
consociation
ecosystem
faciation
facies
forest type
formation
microassociation
microcommunity
natural vegetation
nodum
original vegetation
potential natural vegetation
phytocoenose
phytosociology
socies
society
stand
synchorology
synecology
syntaxa
synusia
type

Quantitative Description Terms

abundance
accidental
average distance
basal area
constancy
continuum
coverage
d.b.h.
density
differential species
diversity index
dominance
exclusive species
fidelity
frequency
homogeniety
importance
indifferent species
plot
presence
productivity
profile
quadrat
releve´
stand table
structure
synthesis table
transect

Qualitative Description Terms

climax
cline
codominant
competition
dominant
dwarf scrub
ecotone
even-aged
flora
floristic
gallery forest
gradient
grove
heath
hydrarch
hydrosere
krummholz
layer
life-form
multistratal
overstocked
overstory
phenology
predominance
sere
sociability
stratification
stratum
succession
understory
woods

Cover Terms

canopy
canopy closure
canopy cover
cover
cover type
close canopy
closed canopy
closed vegetation
crown cover
crown closure
crown density
forest
forest cover
grove
herbaceous
open vegetation
overstory
scrub
sparse vegetation
undergrowth
understory
woodland

Crown Terms

crown closure
crown cover
crown density
crown diameter
crown height
crown length
crown classes
emergent
codominant
dominant
intermediate
open grown
overtopped
suppressed

Production Terms

biomass
phytomass
production
productivity
primary productivity
net primary productivity
secondary productivity
standing crop
yield

Form and Appearance Terms

aspect
aspection
caespitose
chamaephyte
cryptophyte
cushion plant
dwarf shrub
emergent
flag tree
forb
form class
fruticose
geophyte
graminoid
grass
growth form
habit
half-shrub
hemicryptophyte
herb
life-form
phanerophytye
physiognomy
shrub
suffruticose
suffrutescent
tree

Plant Location and Habitat Terms

acidophile
acrophytia
actophilous
amnicolous
aquatic
aquiherbosa
aquiprata
calciphile
chianophile
chianophobe
chomophyte
cosmopolitan
cryptophyte
endemic
ephemeral
epiphyte
exotic
habitat
halophyte
helophyte
hydrophyte
hygrophyte
indigenous
mesophyte
naturalized
oxylophyte
phreatophyte
pioneer
provenance
psammophyte
relict
riparian
ruderal
sciophyte
tolerance
ubiquitous
weed

Vegetation Pattern Terms

alterne
belt
catena
ecotone
mosaic

Some Landscape Terms

aapa
alpine
arctic
avalanche chute
bog
brushland
carr
fellfield
felsenmeer
fen
flark
flood plain
forest land
glade
grassland
groveland
habitat
heathland
herbland
hollow
lagg
lanieres
lowland
marsh
meadow
mire
moor
montane
muskeg
organic terrain
palsa
park
parkland
patterned ground
peatland
pingo
polygons
rangeland
shrubland
swale
swamp
taiga
tundra
wetland

Some Wetland Terms

aapa
bog
carr
cupola
fen
flark
lagg
lanieres
marsh
mire
moor
muskeg
peat
peatland
rand
swamp
wetland
wet meadow

Some Frozen Ground Terms

active layer
aufeis
congelifraction
congeliturbation
de-pergelation
gelifluxion
high-centered polygon
ice-wedge polygon
low-centered polygon
naled
patterned ground
pergelic
pergelisol
pergelation
permafrost
pingo
solifluction
sorted polygons
talik

Some Climax Terms

Monoclimax Theory

association
associes
climax
consociation
disclimax
panclimax
postclimax
preclimax
proclimax
subclimax

Polyclimax Theory

association
biotic (zootic) climax
climax
climatic climax
edaphic climax
fire (pyric) climax
seral stage
topographic climax

Appendix II

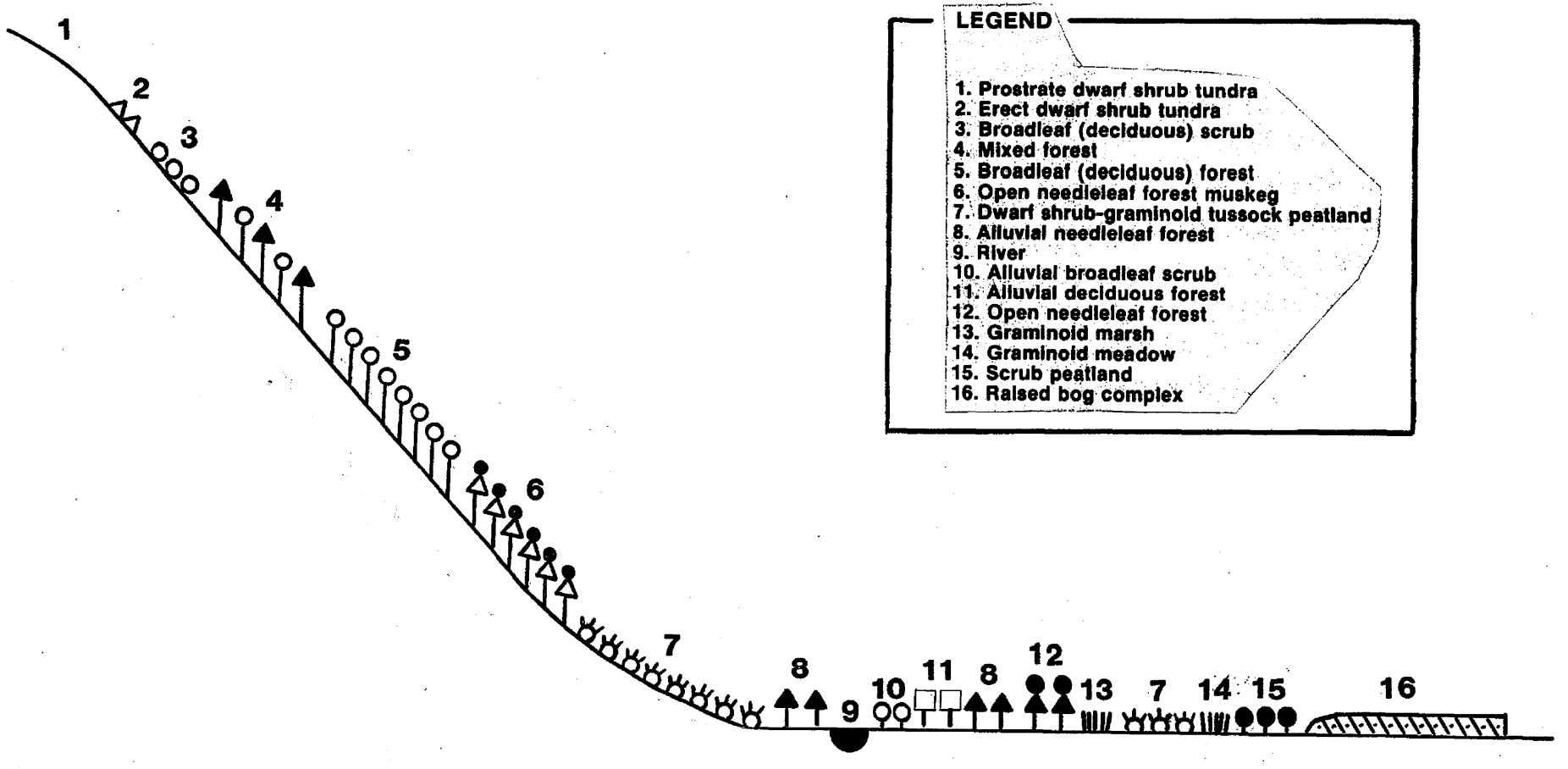
PLANT NAMES

Botanical Epithet	Common Name
Abies spp.	fir
Amblystegium spp.	brown moss
Andromeda spp.	
Arctophila fulva	pendent grass
Arctostaphylos uva-ursi	kinnikinnick
Artemisia frigida	prairie sagewort
Artemisia spp.	wormwood and sage
Betula spp.	birch
Bromus tectorum	cheat grass
Calamagrostis canadensis	bluejoint
Calluna vulgaris	heather
Carex spp.	sedge
Cassiope tetragona	mountain heather
Chamaedaphne spp.	cassandra
Chlamydomonas spp.	"red snow" algae
Cladonia rangiferina	reindeer moss (lichen)
Cladonia spp.	reindeer moss (lichen)
Drosera rotundifolia	sundew
Eleocharis palustris	spike rush
Empetrum nigrum	crowberry
Epilobium angustifolium	firewood
Equisetum fluviatile	horsetail
Eriophorum spp.	cotton grass
Hippuris spp.	mare's tail
Honckenya peploides	seabeach sandwort
Hylocomium splendens	feathermoss
Hypnum spp.	moss
Juncus spp.	rush
Kalmia polifolia	bog laurel
Larix laricina	tamarack
Ledum spp.	Laborador tea
Luetkea pectinata	
Marchantia spp.	liverwort
Matricaria matricarioides	pineapple weed
Meesea spp.	brown moss
Minuarta rubella	sandwort
Myriophyllum spp.	water milfoil
Myriophyllum verticillatum	water milfoil
Oxycoccus microcarpus	bog cranberry
Paludella spp.	brown moss
Picea glauca	white spruce
Picea mariana	black spruce
Pinus banksiana	jack pine
Pinus contorta	lodgepole pine
Pinus palustris	longleaf pine
Pleurozium schreberi	feathermoss

APPENDIX Continued

Botanical Epithet	Common Name
Populus tremuloides	aspen
Potamogeton spp.	pondweed
Ptilium crista-castrensis	feathermoss
Rhynchospora alba	beak rush
Rhytidiadelphus triquetrus	feathermoss
Saxifraga flagellaris	spiderplant
Saxifraga tricuspidata	prickly saxifrage
Scirpus spp.	bulrush
Silene acaulis	moss campion
Sphagnum spp.	sphagnum moss
Stereocaulon spp.	lichen
Taraxacum officinale	dandelion
Vaccinium vitis-idaea	lingonberry

Schematic Profile of a Topographic Gradient in Kanuti National Wildlife Refuge



LEGEND

1. Prostrate dwarf shrub tundra
2. Erect dwarf shrub tundra
3. Broadleaf (deciduous) scrub
4. Mixed forest
5. Broadleaf (deciduous) forest
6. Open needleleaf forest muskeg
7. Dwarf shrub-graminoid tussock peatland
8. Alluvial needleleaf forest
9. River
10. Alluvial broadleaf scrub
11. Alluvial deciduous forest
12. Open needleleaf forest
13. Graminoid marsh
14. Graminoid meadow
15. Scrub peatland
16. Raised bog complex