

A Working System for Classification of World Vegetation

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prepared by the IUCN Secretariat with the guidance of the IUCN
Commission on Ecology.



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INTERNATIONAL UNION FOR CONSERVATION OF NATURE
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MORGES, SWITZERLAND, 1973

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Conservation of the biotic communities of the world and the species which form them is a goal toward which the activities of the International Union for Conservation of Nature and Natural Resources (IUCN) have long been directed. An important step toward such conservation is the identification and description of those communities that exist. From this a determination can be made of the extent to which they are already effectively conserved in national parks and other protected areas, and of the magnitude of the task that remains to be accomplished.

Toward this purpose a working system for classification of world vegetation has been devised by the IUCN Secretariat with the guidance of the IUCN Commission on Ecology, and approval of the IUCN Executive Board.

The system presented in this publication is adapted from the physiognomic system developed by the Unesco Standing Committee on Classification and Mapping of Vegetation on a World Basis and presented in Unesco paper SC/WS/269 (Paris, 20/10/69). The terminology of the Unesco Standing Committee has been simplified wherever possible to make use of more common terms, and various categories have been combined for purposes of simplification. The Unesco Numbers referred to in the IUCN classification are taken from the above-mentioned paper.

At one stage Unesco was planning to further refine its classification by listing equivalent terms in other systems and by giving examples and further subdivisions of each category. Such a further development would be particularly helpful, and IUCN would look forward to this activity. In its absence, however, it is not possible for IUCN at this time to provide the more detailed descriptions that field workers would find helpful.

It is to be emphasized that this is not a new system for vegetation classification, but rather a working tool based on an existing system and intended for improvement through practical application. In particular some field workers may find it necessary to subdivide further some of the broad categories presented herein.

The vegetation classification presented here is intended to be used within a system of classification of biotic provinces being developed also by IUCN.¹ The boundaries of these biotic provinces are drawn on the basis of biogeographical as well as ecological criteria. Thus, each province is either (1) characterized by a distinctive fauna or flora or (2) in areas of similar flora and fauna, characterized by distinctive vegetation. Thus for example in areas of East and Central Africa the predominant vegetation may fall in class 1.2.1, Drought-deciduous tropical lowland forest over extensive areas. However, occurrence of this class in the Miombo Woodland-Savanna province will suggest that the forest is likely to be dominated by Brachystegia-Isoberlinia whereas in the East African Woodland-Savanna province the same class of vegetation is more likely to be dominated by Acacia or Combretum.

The system is intended for use with relatively stable natural vegetation and should not be applied to that which is clearly successional. Thus a forest should not be classified as a forbland even though the trees have been cut over and it is temporarily dominated by Epilobium. However, persistent successional stages of vegetation need to be identified and classified for what they are and not categorized in terms of some past climax vegetation that may not, in fact, develop again in that area.

¹ Dasmann, R. F. (1972) Towards a system for classifying natural regions of the world and their representation by national parks and reserves. Biological Conservation 4 (4): 247-255.

The height limits given in this classification are intended only as a general guide and not an absolute criterion. Thus a young tree, or a tree growing in adverse conditions, may be less than 5m tall, but will not be classified as a shrub unless it has a recognizable shrub life form.

The broad categories of vegetation presented here may be subdivided within any one biotic province in order to distinguish regionally important vegetation types. It is hoped that collaborators of IUCN will contribute toward necessary modifications and improvements of this system as these are indicated by field studies.

I. VEGETATION OF HUMID AND SUBHUMID TROPICAL AND SUBTROPICAL REGIONS

IUCN
number

Unesco
number

1. FORESTS⁽¹⁾

1.1 Mainly evergreen

1.1.1 Tropical rain forests

Consisting mainly of evergreen trees, many with little or no bud protection, neither cold nor drought resistant. Truly evergreen, i.e. the forest canopy remains green throughout the year, but individual trees may stand leafless for a few weeks only and not at the same time with all others.

1.1.1.1 Lowland rain forest

I A 1 a

Composed usually of numerous species of fast-growing trees, many of them exceeding 40m in height, generally with smooth, often thick bark, some with plank-buttresses. Emergent trees often present or at least a very uneven canopy. Very sparse undergrowth, and this composed mainly of young trees. Palms and other tuft trees usually rare. Crustose lichens and green algae are the only constantly present epiphytic life forms; vascular epiphytes are usually not abundant except in excessively humid situations.

1.1.1.2 Montane/submontane rain forest

I A 1 b c

Emergent trees largely absent and canopy relatively even. Vascular epiphytes and pseudo-lianas abundant. Tree heights usually less than 50m; crowns extending relatively far down the stem. Bark often more or less rough. Undergrowth abundant, often represented by tree ferns or small palms or bamboos. May be dominated by trees which are broad-leaved (commonest form), needle-leaved or small-leaved.

1.1.1.3 Bamboo forest

Not listed

Dominated by bamboo. Common in tropical mountains but may occur also in temperate and tropical lowlands (e.g. Japan).

(1) Formed by trees at least 5m tall with crowns usually interlocking.

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- 1.1.1.4 Cloud forest I A 1 d e
Tree crowns, branches and trunks as well as lianas burdened with epiphytes, mainly bryophytes or lichens. Ground covered with club mosses and ferns. Trees often gnarled, with rough bark and rarely exceeding 20m in height. Most commonly broad-leaved but may be needle-leaved or small-leaved. (Tree heaths of the Afro Alpine zone may be included here, or in 1.1.2.3).
- 1.1.1.5 Riverine forest I A 1 f
Similar to submontane forest, but richer in palms and in undergrowth life-forms, particularly tall forbs (e.g. Musaceae); plank-buttresses frequent. Characteristic of areas which are: (1) riparian (on the lowest forested river banks, frequently flooded); (2) occasionally flooded (on relatively dry terraces accompanying active rivers); or (3) seasonally waterlogged (along the lower river courses, where the water accumulates on large flats for several months).
- 1.1.1.6 Swamp and bog forest I A 1 g h
Not along rivers, but on wet soils, which may be supplied with either fresh or brackish water. Similar to riverine forest, but relatively poor in tree species. Many trees with buttresses, stilt roots or pneumatophores; mostly taller than 20m, dominated by broad-leaved trees or palms. Where organic surface deposits occur, poor in tree species and with canopy often forming a pattern of tall trees at the bog fringe and shorter trees near the centre,
- 1.1.2 Tropical/subtropical seasonal forest
This is transitional between rain forest and semi-deciduous forest. Consists mainly of evergreen trees with some bud protection. Foliage reduction during dry season is noticeable, often as partial shedding.
- 1.1.2.1 Lowland seasonal forest I A 2 a
Similar to lowland rain forest in overall structure.

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- 1.1.2.2 Montane/submontane seasonal forest I A 2 b c
Differs from rain forest in absence of tree ferns and greater frequency of evergreen shrubs
- 1.1.2.3 Subalpine seasonal forest I A 2 d
Superficially resembles Mediterranean oak or other sclerophyll forests.. Usually occurs above cloud forests. Mostly sclerophyll (hard-leaved) trees (less than 20m high). Little or no undergrowth. Poor in lianas and epiphytes (except lichens).
- 1.1.3 Tropical/subtropical semi-deciduous forest
Most of upper canopy trees drought deciduous. Understorey trees and shrubs evergreen, often sclerophyllous. Various mixtures occur (e.g. shrubs may be deciduous and trees evergreen). Trees rough-barked except for bottle trees which may be present.
- 1.1.3.1 Lowland semi-deciduous forest I A 3 a
Taller trees may often be bottle trees (e.g. Brachychiton, Ceiba). Few epiphytes. Undergrowth of young trees and shrubs. Succulents often present along with sparse grass or forbs.
- 1.1.3.2 Highland semi-deciduous forest I A 3 b
Similar to lowland forest but canopy lower and covered with drought-tolerant epiphytes (e.g. Tillandsia usneoides).

Other evergreen forests

- 1.1.4 Subtropical rain forest I A 4
Grading into tropical rain forest but marked by more distinct seasonal rhythms. Trees less vigorous than in tropical forest and more shrubs are present in understorey. Subdivisions similar to those of tropical rain forests may be noted.
- 1.1.5 Mangrove forests I A 5
Sclerophyll broad-leaved trees and shrubs with either stilt roots or pneumatophores. Occurs in tidal range along ocean shores and estuaries. Epiphytes, except lichens or algae, are rare.

<u>IUCN number</u>		<u>Unesco number</u>
1.2	<u>Mainly deciduous forests</u> Majority of trees shed their foliage before or during the unfavourable season, which is characterized by drought.	
1.2.1	<u>Drought-deciduous tropical lowland forest</u> Most trees with relatively thick, fissured bark; broad-leaved, small-leaved or feathery-leaved. Practically no evergreen plants except for some succulents. Woody and herbaceous lianas present occasionally, also deciduous bottle trees. Ground vegetation mainly herbaceous, but sparse.	I B 1 a
1.2.2	<u>Drought-deciduous tropical highland forest</u> Some evergreen species in the understorey. Drought-resistant epiphytes present or abundant, often of the bearded form (e.g. <u>Usnea</u> or <u>Tillandsia usneoides</u>). This formation is not frequent, but is well-developed in some areas, e.g. in northern Peru.	I B 1 b
2.	<u>WOODLANDS</u> ⁽¹⁾	
2.1	<u>Mainly evergreen woodlands</u>	
2.1.1.1	<u>Broad-leaved evergreen tropical woodland</u> Mainly sclerophyllous trees and shrubs, no epiphytes. (e.g. Caatinga of N.E. Brazil).	II A 1
2.1.2	<u>Needle-leaved evergreen woodland</u> Mainly needle- or scale-leaved. Crowns of many trees extending to the base of the stem or at least very branchy.	II A 2
2.2	<u>Mainly deciduous woodlands</u>	
2.2.1	<u>Tropical drought-deciduous lowland woodlands</u> Description similar to type 1.2.1.	II B 1
2.2.2	<u>Tropical drought-deciduous highland woodlands</u> Description similar to type 1.2.2.	II B 1

(1) Formed by trees at least 5m high, with most of their crowns not touching each other, but covering at least 30% of the surface; grass or shrub cover sometimes present. This formation class does not include savannas or parklands.

<u>IUCN</u> <u>number</u>		<u>Unesco</u> <u>number</u>
3. <u>SCRUB</u> ⁽¹⁾		
3.1 <u>Mainly evergreen scrub</u>		
3.1.1.1 <u>Bamboo scrub</u>	Dominated by bamboo. Usually thicket.	III A 1 a
3.1.1.2 <u>Palm/fern scrub</u>	Dominated by shrub-sized palms, tree-ferns or other tuft trees.	III A 1 b
3.1.1.3 <u>Tropical broad-leaved scrub</u>	Dominated by broad-leaved shrubs.	III A 1 c
3.1.2 <u>Evergreen needle-leaved scrub</u>	Dominated by upright or creeping needle-leaved or scale-leaved shrubs.	III A 2
3.1.5 <u>Paramo</u>	High alpine vegetation characterized by tall Compositae (e.g. <u>Senecio</u> , <u>Espeletia</u>), with dwarf shrubs, cushion plants and bunch grasses. Some plants of tree height.	Not listed
3.2 <u>Mainly deciduous</u>		
3.2.1 <u>Drought-deciduous/evergreen scrub</u>	Relatively equal dominance by evergreen and deciduous shrubs.	III B 1
3.2.2.1 <u>Drought-deciduous tropical scrub</u>	Drought-deciduous shrubs dominant.	III B 2

(1) Shrublands or thickets. Mainly composed of woody shrubs 0.5 to 5m high. Each of the subdivisions may either be:
shrubland - most of the individual shrubs not touching each other; often with a grass stratum; or
thicket - individual shrubs interlocked.

<u>IUCN</u> <u>number</u>		<u>Unesco</u> <u>number</u>
4.	<u>DWARF SCRUB AND RELATED COMMUNITIES</u> ⁽¹⁾	
4.1	<u>Mainly evergreen</u>	
4.1.1	<u>Dwarf-shrub heath</u> Closed or open cover of dwarf shrubs often with moss or lichen understorey. When open, often in clumps, colonies, or cushions and may have forb or grass cover in open areas.	IV A
4.2	<u>Mainly deciduous</u>	
4.2.1	<u>Drought-deciduous dwarf scrub</u> Similar to 4.1.1, but drought-deciduous at least in dry years.	IV B 1 2
4.3	<u>Bogs</u>	
4.3.1	<u>Dwarf-shrub bog</u> Dwarf shrubs are distributed in drier areas. Often sedges are abundant. <u>Sphagnum</u> or other moss cover. Peat accumulation.	IV E
5.	<u>HERBACEOUS</u>	
5.1	<u>Savannas</u> Tropical or subtropical grasslands or parklands with trees . and shrubs covering not more than 30% of the ground.	
5.1.1.1	<u>Tall-grass woodland savanna</u> Dominated by broad-leaved tall-grasses with forest islands or patches of woodland.	V A 1 a
5.1.1.2	<u>Tall-grass tree savanna</u> Tall-grass cover with isolated trees dispersed regularly over the area.	V A 1 b

(1) Woody plants rarely exceeding 50cm in height (sometimes called heaths or heath-like formations). According to the density of the dwarf-shrub cover the following subdivisions may be distinguished:

dwarf-shrub thicket	- branches interlocked;
dwarf-shrubland	- individual dwarf shrubs more or less isolated or in clumps;
moss-lichen formations with dwarf shrubs	- surface densely covered with mosses or lichens; dwarf shrubs occurring in small clumps or individually. In the case of bogs locally dominating grass or sedge communities may be included.

<u>IUCN</u> <u>number</u>		<u>Unesco</u> <u>number</u>
5.1.1.3	<u>Tall-grass shrub savanna</u> Thickets or shrublands in an area dominated by tall grass.	V A 1 c
5.1.1.4	<u>Tropical tall-grassland</u> Tall-grass with few or no woody plants.	V A 1 d
5.1.1.5	<u>Flood savanna</u> Tall-grass periodically flooded with tree or scrub islands.	V A 1 e
5.1.2.1	<u>Short-grass tree savanna</u> Grasses narrow-leaved and more or less short or of medium height. Trees variously dispersed over area.	V A 2 a
5.1.2.2	<u>Short-grass shrub savanna</u> Similar to 5.1.2.1, but with shrubs more numerous than trees.	V A 2 b
5.1.2.3	<u>Tropical short-grassland</u> Without trees or shrubs or with few (e.g. certain tropical montane grasslands).	V A 2 c
5.4	<u>Forblands</u>	
5.4.1	<u>Perennial forbland</u> Areas dominated by broad-leaved herbs with few or no woody plants. Permanent living ground cover of perennial plants.	V F 1
5.4.2	<u>Ephemeral forbland</u> Similar to 5.4.1, but herbs are dominantly annual, dying back in cold or dry season, or appear only episodically in favourable years.	V F 2 3
5.5	<u>Wetlands</u>	
5.5.1	<u>Fresh-water marsh</u> Herbaceous formations on constantly or periodically flooded and waterlogged ground without or with few woody plants (<u>Carex</u> , <u>Cyperus</u> , <u>Juncus</u> , <u>Scirpus</u> are characteristic genera).	V D
5.5.2	<u>Salt marsh</u> Salt-tolerant herbaceous or partly-woody formations in areas periodically or constantly flooded or waterlogged. Water saline or alkaline. Sea coasts, estuaries or inland depressions.	V E

<u>IUCN</u> <u>number</u>		<u>Unesco</u> <u>number</u>
5.6	<u>Aquatics</u>	
5.6.1	<u>Floating meadows</u> Densely interwoven or matted forbs and/or mosses covering permanent fresh water. Woody plants may be present.	VII A
5.6.2	<u>Reed-swamps</u> fall reeds rooting in soil at bottom of shallow lakes, ponds, or slow-moving rivers.	VII B
5.6.3	<u>Submerged rooted aquatics</u> Water areas dominated by rooted plants which are structurally supported by water and scarcely emergent.	VII C
5.6.4	<u>Floating aquatics</u> Water areas dominated by non-rooted floating plants.	VII D

II. VEGETATION OF HUMID AND SUBHUMID TEMPERATE AND SUBPOLAR REGIONS

<u>IUCN number</u>		<u>Unesco number</u>
1. <u>FORESTS</u>		
1.1 <u>Mainly evergreen</u>		
1.1.6	<u>Temperate rain forests</u> Consisting predominantly of broad-leaved evergreen trees with or without a mixture of conifers. Found in humid, nearly frost-free climates. Rich in epiphytes with ferns in ground cover.	I A 6
1.1.7	<u>Temperate evergreen seasonal forests</u> Consisting mainly of evergreen trees with some foliage reduction during unfavourable season. Few woody epiphytes or lianas. Intermediate between rain forest and broad-sclerophyll forest.	I A 7
1.1.8	<u>Mediterranean broad-sclerophyll forest</u> Occurs most commonly in areas of winter rain and summer drought (Mediterranean climates). Dominated by trees with broad leaves or small leaves with hard or waxy surfaces. May include some conifers. Few epiphytes and these mostly lichens or moss. Evergreen woody lianas may be present.	I A 8
1.1.9	<u>Evergreen needle-leaved forest</u>	
1.1.9.1	<u>Giant conifer forest</u> Dominated by trees higher than 50-60m. (e.g. <u>Sequoia</u> or <u>Pseudotsuga</u>).	I A 9 a
1.1.9.2	<u>Rounded-crown needle-leaved forest</u> Dominated by trees with broad, irregularly rounded crowns such as <u>Pinus</u> . Needle or scale leaves.	I A 9 b
1.1.9.3	<u>Narrow-crown needle-leaved forest</u> Dominated by trees with conical or cylindrical crowns (e.g. <u>Picea</u> , <u>Abies</u>). Needle or scale leaves.	I A 9 c d
1.1.9.4	<u>Bog forest</u> Areas of peat accumulation dominated by coniferous trees.	Not listed
1.2 <u>Mainly deciduous</u>		
1.2.3	<u>Temperate drought-deciduous forest</u> Dominated by trees which shed their leaves during the dry season. Evergreen species may occur in small numbers or in understorey.	I B 1

<u>IUCN</u> <u>number</u>		<u>Unesco</u> <u>number</u>
1.2.4	<u>Cold-deciduous/evergreen mixed forest</u> Dominated by trees which shed their leaves in cold season but broad-leaved or needle-leaved evergreen trees or shrubs make up a conspicuous part of canopy or the understorey.	I B 2
1.2.5.1	<u>Broad-leaved cold-deciduous forest</u> Dominated by trees which shed leaves in cold season. Evergreen trees and shrubs sparsely represented or absent.	I B 3
1.2.5.2	<u>Riparian cold-deciduous forest</u> Similar to 1.2.5.1, but occurring in areas along river banks or near ponds or lakes that are periodically or seasonally flooded.	I B 3 d
1.2.5.3	<u>Deciduous swamp forest</u> Relatively poor in tree species and occurring on seasonally flooded or permanently wet ground with organic soil.	I B 3 c
1.2.6	<u>Needle-leaved deciduous forest</u> Dominated by needle- or scale-leaved trees which shed their leaves in cold season (e.g. <u>Larix</u>).	Not listed
2. <u>WOODLANDS</u>		
2.1 <u>Mainly evergreen</u>		
2.1.1.2	<u>Mediterranean broad-sclerophyll woodland</u> Similar to 1.1.8, but trees do not form closed canopy.	II A 1
2.1.2.1	<u>Rounded-crown needle-leaved woodland</u> Similar to 1.1.9.2.	II A 2 a
2.1.2.2	<u>Narrow-crowned needle-leaved woodland</u> Similar to 1.1.9.3.	II A 2 b c
2.1.2.3	<u>Bog woodland</u> Similar to 1.1.9.4.	Not listed
2.2 <u>Mainly deciduous</u>		
2.2.3	<u>Drought-deciduous temperate woodland</u> Similar to 1.2.3.	II B 1
2.2.4	<u>Cold-deciduous/evergreen mixed woodland</u> Similar to 1.2.4.	II B 2

<u>IUCN number</u>		<u>Unesco number</u>
2.2.5	<u>Broad-leaved cold-deciduous woodland</u> Similar to 1.2.5.1.	II B 3 a c
2.2.6	<u>Needle-leaved deciduous woodland</u> Open stands of needle- or scale-leaved trees.	II B 3 b
3.	<u>SCRUB</u>	
3.1	<u>Mainly evergreen</u>	
3.1.1.4	<u>Broad-sclerophyll scrub</u> Dominated by broad-leaved shrubs with hard or waxy leaves (chaparral, maquis, macchia).	III A 1 d
3.1.2	<u>Evergreen needle-leaved scrub</u> Dominated by creeping or upright coniferous shrubs or heath-like needle-leaved shrubs.	III A 2
3.2	<u>Mainly deciduous</u>	
3.2.2.2	<u>Temperate drought-deciduous scrub</u> Shrubs which lose leaves in dry season predominate, with or without a mixture of evergreen shrubs.	III B 1 2
3.2.3.1	<u>Temperate, cold-deciduous scrub</u> Cold-deciduous scrub of areas of temperate climate.	III B 3 a
3.2.3.2	<u>Subpolar deciduous scrub</u> Characteristic of subpolar or Subalpine regions with snow cover at least half of year. Forb, dwarf-shrub, or lichen under- storey.	III B 3 b
3.2.3.3	<u>Riparian deciduous scrub</u> Characteristic of regularly flooded river banks or islands. Fast-growing with sparse undergrowth.	III B 3 c
3.2.3.4	<u>Deciduous bog scrub</u> Cold-deciduous scrub of peat areas with <u>Sphagnum</u> or other peat moss in understorey.	III B 3 d

<u>IUCN</u> <u>number</u>		<u>Unesco</u> <u>number</u>
4.	<u>DWARF SCRUB</u>	
4.1	<u>Mainly evergreen</u>	
4.1.1	<u>Dwarf-shrub heath</u> Closed or open cover of dwarf shrubs often with moss or lichen understorey. When open, often in clumps, colonies, or cushions and may have forb or grass cover in open areas.	IV A
4.2	<u>Mainly deciduous</u>	
4.2.1	<u>Drpught-deciduous dwarf scrub</u> Dwarf shrubs may shed leaves annually or only in unusually dry years. Evergreen dwarf shrubs may be present in lesser numbers.	IV B 1 2
4.2.2	<u>Cold-deciduous/evergreen dwarf scrub</u> Cold-deciduous dwarf shrubs with mixture of evergreen dwarf shrubs.	IV B 3
4.2.3	<u>Cold-deciduous dwarf scrub</u> Predominantly covered by dwarf shrubs which are leafless in cold season.	IV B 4
4.3	<u>Bogs</u>	
4.3.1.1	<u>Raised bogs</u> Areas with peat accumulations and peat mosses as surface cover. Dwarf shrubs scattered or on drier areas. Raised above general ground water and supplied by rain water.	IV E 1
4.3.1.2	<u>Low bogs (fens)</u> Similar to 4.3.1.1, but not raised above ground water and therefore wetter. Often with abundant sedge cover.	IV E 2
4.4	<u>Tundra</u>	
4.4.1	<u>Dwarf-shrub/moss tundra</u> Dominated by ground cover of mats or cushions of moss with dwarf shrubs scattered. In subpolar regions and boreal mountains.	IV D 1
4.4.2	<u>Dwarf-shrub/lichen tundra</u> In similar areas to 4.4.1, but with lichen mats dominating.	IV D 2

<u>IUCN</u> <u>number</u>		<u>Unesco</u> <u>number</u>
5.	<u>HERBACEOUS</u>	
5.2	<u>Steppes</u>	
5.2.1	<u>Tall-grass prairie</u> Dominated by tall, seasonally dry, grassland. Scattered or patches of trees or shrubs may be present usually in sheltered or moist locations.	V B 1
5.2.2	<u>Mid-grass prairie</u> Similar to 5.2.1, but dominated by grasses of medium height.	V B 2
5.2.3	<u>Short-grass steppe</u> Similar to 5.2.1, but dominated by short, usually mat-forming grasses. Often subject to prolonged seasonal drought.	V B 3
5.3	<u>Meadows/pastures</u>	
5.3.1	<u>Forest meadows/pastures</u> Dominated by grass-like plants in forest climate hence cover commonly remains green throughout most of the year. Isolated trees or shrubs may be present. Occur as openings, often man-created, in forested regions.	V C 1
5.3.2	<u>Alpine/subpolar meadows/pastures</u> Dominated by grass-like plants occurring above mountain tree line or beyond forest edge in subpolar regions. Usually with some forbs or dwarf shrubs.	V C 2
5.4	<u>Forblands</u>	
5.4.1	<u>Perennial forbland</u> Areas dominated by broad-leaved herbs with few or no woody plants. Permanent living ground cover of perennial plants.	V F 1
5.4.2	<u>Ephemeral forbland</u> Similar to 5.4.1, but herbs are dominantly annual, dying back in cold or dry season, or appear only episodically in favourable years.	V F 2 3

<u>IUCN</u> <u>number</u>		<u>Unesco</u> <u>number</u>
5.5	<u>Wetlands</u>	
5.5.1	<u>Fresh-water marsh</u> Herbaceous formations on constantly or periodically flooded and waterlogged ground without or with few woody plants (<u>Carex</u> , <u>Cyperus</u> , <u>Juncus</u> , <u>Scirpus</u> are characteristic genera).	V D
5.5.2	<u>Salt marsh</u> Salt-tolerant herbaceous or partly-woody formations in areas periodically or constantly flooded or waterlogged. Water saline or alkaline. Sea coasts, estuaries or inland depressions.	V E
5.6	<u>Aquatics</u>	
5.6.1	<u>Floating meadows</u> Densely interwoven or matted forbs and/or mosses covering permanent fresh water. Woody plants may be present.	VII A
5.6.2	<u>Reed-swamps</u> Tall reeds rooting in soil at bottom of shallow lakes, ponds, or slow-moving rivers.	VII B
5.6.3	<u>Submerged rooted aquatics</u> Water areas dominated by rooted plants which are structurally supported by water and scarcely emergent.	VII C
5.6.4	<u>Floating aquatics</u> Water areas dominated by non-rooted floating plants, not forming interwoven or matted islands.	VII D

III. VEGETATION OF DESERTS AND SUB-DESERTS

<u>IUCN number</u>		<u>Unesco number</u>
2. <u>WOODLANDS</u>		
2.1.1.3	<u>Broad-leaved sub-desert woodland</u> Rarely occurs as closed-canopy forests. Dominated by evergreen broad-sclerophyll trees often with bulbous stem bases.	I C 1, II C
2.1.3	<u>Succulent woodland</u> Succulents of tree height are dominant (e.g. <u>Cactaceae, Euphorbiaceae</u>).	I C 3, II C
2.2.7	<u>Thorn woodland</u> Rarely as closed-canopy forests. Trees with thorny appendages predominate. Deciduous or mixed deciduous/evergreen.	I C 2, II C
3. <u>SCRUB</u>		
3.1.1.5	<u>Evergreen desert scrub</u> Open shrubland dominated by woody, non- succulent evergreen shrubs. Some may lose leaves in extremely dry years (e.g. mulga scrub, saltbush scrub, <u>Larrea</u> scrub).	III C 1 a (1) (2), 1
3.1.3	<u>Succulent scrub</u> Open shrubland dominated by succulent plants of shrub height.	III C 1 a
3.2.4	<u>Deciduous desert scrub</u> Dominated by seasonally deciduous shrubs with or without some evergreens and succulents.	III C 2
4. <u>DWARF SCRUB</u>		
4.1.2	<u>Desert evergreen dwarf scrub</u> Similar to 3.1.1.5, but dwarf shrubs predominate.	IV D
4.1.3	<u>Succulent dwarf scrub</u> Similar to 3.1.3, but succulents are predominantly of dwarf-shrub height.	IV D
4.2.4	<u>Desert deciduous dwarf scrub</u> Similar to 3.2.4, but with dwarf shrubs most common.	IV D

IUCN <u>number</u>		Unesco <u>number</u>
5. <u>HERBACEOUS</u>		
5.2.4 <u>Sub-desert grassland</u>	Dominated by open stands of bunch- or mat-forming grasses usually with mixture of shrubs and dwarf shrubs,	V B 3
5.4.3 <u>Tropical cloud-desert forbland</u>	Ephemeral or episodic forb cover in areas where condensation from clouds provides surface moisture (e.g. Loma vegetation of Peru).	V F 2 a
5.4.4 <u>Episodical desert forbland</u>	Areas periodically covered with ephemeral forbs following episodical rainfalls,	V F 3 a
5.5 <u>Wetlands</u>		
5.5.1 <u>Fresh-water marsh</u>	Herbaceous formations on constantly or periodically flooded and waterlogged ground without or with few woody plants (<u>Carex</u> , <u>Cyperus</u> , <u>Juncus</u> , <u>Scirpus</u> are characteristic genera).	V D
5.5.2 <u>Salt marsh</u>	Salt-tolerant herbaceous or partly-woody formations in areas periodically or constantly flooded or waterlogged. Water saline or alkaline. Sea coasts, estuaries or inland depressions.	V E
5.5.3 <u>Alkaline marsh</u>	Around desert depressions and wetlands. Grass, sedge, rush, or forb cover with dwarf shrubs.	V E, V F 2 b
5.6 <u>Aquatics</u>		
5.6.1 <u>Floating meadows</u>	Densely interwoven or matted forbs and/or mosses covering permanent fresh water. Woody plants may be present.	VII A
5.6.2 <u>Reed-swamps</u>	Tall reeds rooting in soil at bottom of shallow lakes, ponds, or slow-moving rivers.	VII B

<u>IUCN number</u>		<u>Unesco number</u>
5.6.3	Submerged rooted aquatics Water areas dominated by rooted plants which are structurally supported by water and scarcely emergent.	VII C
5.6.4	Floating aquatics Water areas dominated by non-rooted floating plants, not forming interwoven or matted islands.	VII D
6.	<u>BARREN DESERT</u>	
6.1	<u>Rock desert</u> Ground surface dominated by bare rocks of screes with occasionally plant cover in crevices, fissures, etc.	VI A
6.2	<u>Sand desert</u> Ground surface dominated by wind-blown sand, often forming dunes. Vegetation scarce or absent.	VI B

The International Union for Conservation of Nature and Natural Resources (IUCN) is an independent international body, formed in 1948, which has its headquarters in Morges, Switzerland. It is a Union of sovereign states, government agencies and non-governmental organizations concerned with the initiation and promotion of scientifically-based action that will ensure perpetuation of the living world - man's natural environment - and the natural resources on which all living things depend, not only for their intrinsic cultural or scientific values but also for the long-term economic and social welfare of mankind.

This objective can be achieved through active conservation programmes for the wise use of natural resources in areas where the flora and fauna are of particular importance and where the landscape is especially beautiful or striking, or of historical, cultural or scientific significance. IUCN believes that its aims can be achieved most effectively by international effort in co-operation with other international agencies, such as Unesco and FAO.

The World Wildlife Fund (WWF) is an international charitable organisation dedicated to saving the world's wildlife and wild places, carrying out the wide variety of programmes and actions that this entails. WWF was established in 1961 under Swiss law, with headquarters also in Morges.

Since 1961, IUCN has enjoyed a symbiotic relationship with its sister organization, the World Wildlife Fund, with which it works closely throughout the world on projects of mutual interest. IUCN and WWF now jointly operate the various projects originated by, or submitted to them.

The projects cover a very wide range, from education, ecological studies and surveys, to the establishment and management of areas as national parks and reserves and emergency programmes for the safeguarding of animal and plant species threatened with extinction as well as support for certain key international conservation bodies.

WWF fund-raising and publicity activities are mainly carried out by National Appeals in a number of countries, and its international governing body is made up of prominent personalities in many fields.