

The role of forest protected areas in the landscape

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Aim: the following paper attempts to sketch out a conceptual framework for categorisation of management objectives for the world's forests, suggesting a continuum of uses that stretches from strict protection to intensive, industrial-scale activity.

Background: The Council on Foreign Relations is carrying out a study into the implications of current trends towards intensification of timber production, particularly with respect to forest conservation goals. This paper, one of a series of five, looks at the implications for forest protected areas, with particular emphasis on the suitability of current IUCN categories of protected area and the question of how much forest land could be assigned to protected areas in the future.

A brief essay such as this can provide only a very preliminary vision of the type of forest estate that we might expect, or hope to see in the future. It is put together not as a comprehensive prescription, but as a first step towards finding some common language – particularly with respect to the vexed question of what is, and is not a forest protected area or a protected forest area. Broad-scale approaches to questions of land use can help provide some necessary consistency, albeit with the recognition that flexibility is also essential to reflect local conditions, needs and aspirations.

Many of the issues we summarise are still the subjects of intense debate. The proposals laid out below are based around the principles of sustainability and of full awareness and accommodation of the needs of all stakeholders. The precise form that some land management takes – for example exactly what is meant by intensive forest management – lies outside our current remit.

Intensification of timber production and changing priorities in forest management

There is evidence that commercial timber production is becoming concentrated onto a smaller land area, as a result of plantation development and intensive forest management, and that this trend is set to continue. The latest estimates suggest that there are 61 million hectares of plantations in temperate and boreal forests and 81 million hectares in the tropics¹. In both regions, plantations make up about 4 per cent of the total area under trees. The rate of plantation establishment is likely to increase further due to a number of factors, including declining production from natural forests, market forces and the potential investments in carbon sequestration. Many countries with large plantation estates will have virtually doubled their plantation area between 1995 and 2000.

The long-term implications of this remain uncertain. Currently, there are still many problems facing plantations in some parts of the world, including concerns about their social and environmental impacts. Research suggests that the effectiveness of these plantations is very variable; for example over 60 per cent of plantations in Africa and Asia have been assessed by the consultancy Jaako Poyry as “unsuitable for commercial wood production” due to low

¹ These figures are calculated from figures collected by the UN FAO and the UN ECE; from FAO's *1997 State of the Forests* report and early returns from the Temperate and Boreal Forests Resource Assessment 2000.

productivity, poor management and poor species selection². Because intensive, commercial plantations are a new phenomenon, with at most two or three rotations having taken place, their future performance can still only be speculated about, although a recent study carried out for the UK Department for International Development was optimistic about future soil fertility³. Notwithstanding these important questions, the balance of evidence suggests that the majority of timber production from forests will probably continue to be concentrated onto a smaller area. The concept paper for the current study suggests that “commercial scale timber production will be concentrated in one quarter or less of the global forest area by the year 2050”⁴. This trend is already well advanced according to recent research by the WWF Forests and Trade Initiative⁵, although it should also be noted that the area being cut continues to increase in many countries.

Increasing intensification could in theory release more forest for alternative uses. In an ideal world, what should such forest lands be used for? If timber production is concentrated on a quarter of the forest, should three-quarters be in some form of protected area?

Forest protected areas

Forests that are designated as protected areas should all aim to meet the basic IUCN definition of a protected area⁶, where a forest protected area is:

An area of forest especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

The definition embraces the “universe” of protected areas. All categories must fall within this definition, although in practice the precise purposes for which protected areas are managed differ considerably. Along with more traditional conservation aims, for example, protected areas can also embrace the maintenance of cultural and traditional attributes, education, scientific research and tourism and recreation.

Within this over-arching definition, protected areas are therefore further subdivided into six categories:

- **Category Ia: Strict nature reserve/wilderness protection area managed mainly for science or wilderness protection** - an area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring
- **Category Ib: Wilderness area: protected area managed mainly for wilderness protection** - large area of unmodified or slightly modified land and/or sea, retaining its natural characteristics and influence, without permanent or significant habitation, which is protected and managed to preserve its natural condition
- **Category II: National park: protected area managed mainly for ecosystem protection and recreation** - natural area of land and/or sea designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c)

² Commonwealth of Australia (1999); *A Study on the Global Outlook for Plantations*, Canberra

³ Julian Evans (1999); *Sustainability of Forestry Plantations: The Evidence* DFID, London

⁴ John Spears (1999); *Towards a Global Vision for Forests*, WWF-World Bank Alliance, unpublished

⁵ Justin Stead and Steve Howard (forthcoming); *Sustainable Forest Management and the Role of Certification*, WWF, Godalming, UK

⁶ IUCN and the World Conservation Monitoring Centre (1994); *Guidelines for Protected Area Management Categories*, IUCN, Gland, Switzerland

provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible

- **Category III: Natural monument: protected area managed mainly for conservation of specific natural features** - area containing specific natural or natural/cultural feature(s) of outstanding or unique value because of their inherent rarity, representativeness or aesthetic qualities or cultural significance
- **Category IV: Habitat/Species Management Area: protected area managed mainly for conservation through management intervention** - area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats to meet the requirements of specific species
- **Category V: Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation or recreation** - area of land, with coast or sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.
- **Category VI: Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural resources** - area containing predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while also providing a sustainable flow of natural products and services to meet community needs

The basis of the categorisation is by primary management objective and assignment to a category is not a commentary on management effectiveness. The categories system is international, although national names for protected areas may vary. While all categories are important, they imply a gradation of human intervention.

In recent years, the emphasis of protected area management has been broadened and extended to reflect the wider uses – and to some extent the priorities imposed from outside – that are driving protected area management.

Officially recognised protected areas now include “extractive reserves” (category VI under the WCPA definition), where a proportion of the protected area is used for sustainable forms of production, and landscape protected areas (category V) where biodiversity is embedded as one element in a working, usually traditional, landscape.

Protected areas such as rubber tappers’ reserves in the Amazon (Category VI) and some national parks in Europe (Category V) are very different from the traditional concept of a strictly protected nature reserve. However, each category has clear guidelines that separate the land from other more conventionally managed areas⁷. The key point is that the area must be managed so that the long-term protection and maintenance of its biodiversity is assured. A clear distinction still exists between protected areas and other land; this has recently been emphasised anew by WCPA:

WCPA believes that large-scale commercial activities such as clearcutting, plantation establishment and other forms of industrial management, unrestrained tourism and other major infrastructure projects are not compatible with any protected area designations⁸.

⁷ *Guidelines for Protected Area Management Categories*, op cit

⁸ Phillips, Adrian (1998); editorial in *arborvitae* issue 10, WWF and IUCN

Nonetheless, the boundaries of “protected” and “non-protected” forests are sometimes in danger of becoming blurred. As the areas listed in the *United Nations List of Protected Areas* are categorised by governments, the criteria for qualification inevitably vary between states (even though they are guided by the IUCN management categories). There is consequently continuing disagreement about exactly when an area can be classified as a “protected area”⁹.

“Forest protected areas” and “protected forest areas”

Typifying the debates about definitions is disagreement about the term for describing protected areas within forests. WCPA prefers “forest protected area” over “protected forest area” because the former places the emphasis on the “protected area” while the latter could also refer to some of the broader land-use categories referred to below.

To some extent, this confusion may be due to the fact that governments, feeling under pressure to create more protected areas, are “squeezing” as much land into protected area categories as possible. Whether this is the best approach to a truly sustainable forest management policy is open to question.

Other forest land

In the WWF/IUCN *Forests for Life*¹⁰ strategy, three broad forest classifications are identified: forest protected areas, multiple-use forest, and intensively managed forests and plantations. Even if commercial timber production is concentrated onto a smaller area than at present, the remaining forest will continue to be subject to a range of pressures, such as food production, hunting, recreation, fuel-wood collection and large and small-scale mining.

Many of these uses are legitimate, but not compatible with protected areas. Stretching the definition of a protected area to encompass, for example, industrial activity simply undermines the value of the concept of protected areas as a whole without necessarily making compensatory gains in forest management and conservation.

It is suggested that a better approach would be to develop some further classifications of forest management – *forest management categories* – to stand beside the various categories of protected areas, thus forming a *continuum* of uses from strict protected areas to intensively managed plantations.

Deciding on the *proportion* of each type of forest management within a particular area would then form the basis of developing a truly sustainable approach to forest management within the landscape.

⁹ This is particularly apparent in the case of forests in the year 2000 Temperate and Boreal Forest Assessment run by the UN Economic Commission for Europe, where there were marked differences in interpretation leading in extreme cases to countries listing *all* their forests as being in protected areas. Confusion about definitions was one of the reasons cited for holding an intersessional meeting of the Intergovernmental Forum on Forests in Puerto Rico in March 1999. This meeting confirmed the accuracy of the IUCN definition, while recognising that a measure of protection is a component of any good forest management regime.

¹⁰ Nigel Dudley, Don Gilmour and Jean-Paul Jeanrenaud [editors] (1996); *Forests for Life*, WWF and IUCN, Gland, Switzerland

Forest management categories

While precise definitions of land-use are difficult and risk over-simplification, it is possible to distinguish some broad categories, and an initial attempt is made below. An overall definition of a forest management category might be

An area of forest and associated lands primarily managed for resource protection and sustainable use.

- Five categories are suggested, running from areas that are managed for general resource protection but fall outside convention protected areas, to land managed for industrial and intensive forestry. *In all of them, any associated biodiversity conservation is a secondary aim.*

Such categories should, in time, be developed along the same lines as those relating to protected areas, i.e. including a **definition, objectives of management, guidance for selection and organisational responsibility**. The current suggestions are summaries of what should eventually be more fully worked out descriptions, complete with examples and explanatory case studies. Such a typology could be one outcome of the current research being co-ordinated by the Council on Foreign Relations.

- **A: Managed for resource protection** – an area of forest which is protected in order to provide a range of environmental services, such as soil and watershed protection, avalanche control and buffers against fire and flood.
- **B: Managed for community benefit** – an area of forest and associated lands which is used primarily to meet community needs such wood gathering, non-timber forest products, farming, artisanal mining and small settlements, including subsistence needs and small-scale trading.
- **C: Reserved for future use** – an area of forest that is reserved for potential future resource needs
- **D: Managed for multiple use** – a landscape area, usually including forests agricultural land and settlements that is as a whole sustainably managed for a range of *both* community and industrial uses.
- **E: Managed for industrial and intensive forestry** – an area of forest which is managed primarily for sustainable resource production such as production and management of timber, non-timber forest products, agriculture, mining and energy.

These categories may have implications for the ways in which governments interpret the existing protected area categories. It may be, for example, that some of the areas classified as category V protected areas should be more accurately classified as category A above.

Within all these categories, a range of uses and actions will be important. The importance of these will vary with the category. In the following table, an initial attempt is made to identify the types of actions in the various categories of protected areas and forest management.

Proposed forest categories

Objectives	Protected Area Management Categories							Forest Management Categories				
	Ia	Ib	II	III	IV	V	VI	A	B	C	D	E
	Strict nature reserve/ wilderness protection	Wilderness area	National park	Natural monum't	Habitat/ Species Management Area	Protected Landscape/ Seascape	Managed Resource Protected Area	Managed for resource protection	Managed for community benefit	Reserved for future use	Managed for multiple use	Managed for industrial/intensive forestry
Scientific research	1	3	2	2	2	2	3	/	3	2	3	/
Wilderness protection	2	1	2	3	3	/	2	/	/	2	/	/
Preserve species and genetic diversity	1	2	1	1	1	2	1	3	2	2	3	3
Maintain environmental services	2	1	1	/	1	2	1	1	2	2	2	3
Protection of natural/cultural features	/	/	2	1	3	1	3	3	2	3	3	3
Tourism and recreation	/	2	1	1	3	1	3	3	3	3	2	/
Education	/	/	2	2	2	2	3	/	3	/	3	/
Sustainable use of natural ecosystems	/	3	3	/	2	2	1	2	2	2	3	/
Maintain cultural/traditional attributes	/	/	/	/	/	1	2	3	1	3	2	/
Subsistence/local scale	/	/	/	/	3	2	1	3	1	2	1	/
Long-term resource protection	/	/	/	/	/	/	2	2	3	1	3	/
Commercial/industrial	/	/	/	/	/	/	/	/	/	/	2	1
Infrastructure/ transport	/	/	/	/	/	3	3	/	2	3	2	2
Defence	/	/	/	/	/	3	/	3	/	3	2	/

1 = primary objective (outlined in **black**)

2 = secondary objective

3 = acceptable objective

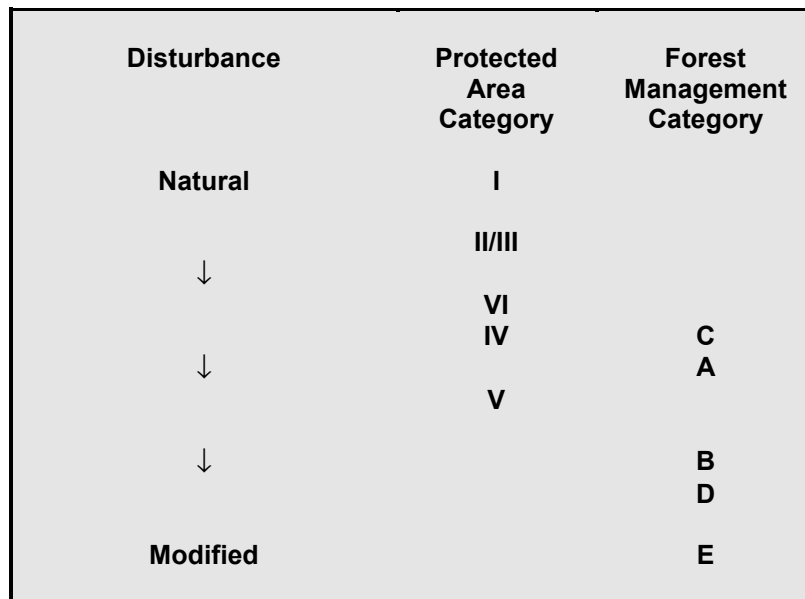
/ = objective not applicable

The **grey box** = the main attributes of the six IUCN protected area categories and is reproduced directly from *Guidelines for Protected Area Management Categories*, CNPPA with the assistance of WCMC, IUCN, Gland, Switzerland

Category E coloured **dark grey** = the proportion (around 25 per cent) of the forest estate that will be dedicated to intensive forest management.

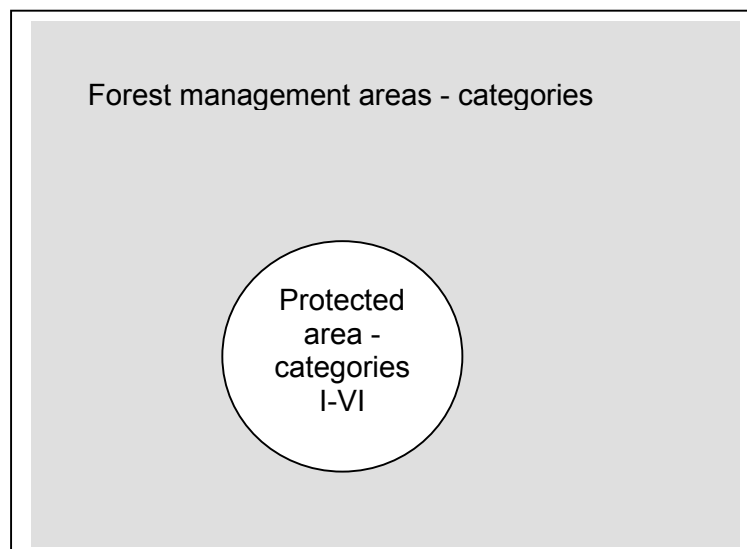
The **white** area = other categories of forest use outside protected areas and intensive forest management

Protected area categories and forest management area categories are thus on a continuum from strict protection to virtual dedication to timber production. An approximate transition is shown in the diagram below, where the categories are plotted against the degree of disturbance (there is no attempt to represent this as an accurate scale).



This classification system is admittedly crude and would require further subdivisions, particularly with respect to the community benefit and multiple use categories; for example a typology of approaches to forest management might be useful.

Such categories can never be absolute and a degree of overlap is probably inevitable. It will be noted, for example, that with respect to the degree of disturbance (the “naturalness”) of the system, some forest management categories are equivalent to some protected area categories, although of course their management aims and long-term futures may be different. For example, setting aside an area of forest as a strategic reserve may have much the same impact in the short term as creating a protected area, but because it is designated for possible future exploitation, a strategic reserve does not serve the same long-term function as a protected area. Under this approach, protected area categories remain as a distinct sub-group of forest management, as shown in the diagram below:



Examples of protected area and forest management categories

The distinctions are perhaps best illustrated by means of examples. Some preliminary thoughts are outlined in the following table.

Category	Example
Protected areas	
Ia: Strict nature reserve	Sundarbans National Park, India Swiss National Park, Switzerland Laguna Lachuá National Park, Guatemala
Ib: Wilderness area	Collegiate Peaks Wilderness, USA Bolshoi Arkticheskiy State Nature Reserve, Russia Prypyatskiy Zapovednik, Belarus
II: National Park	Canaima National Park, Venezuela Kakadu National Park, Australia Pyhä-Häkki National Park, Finland
III: Natural monument	Skocjanske Jame Natural Monument, Slovenia Victoria Falls National Monument, Zimbabwe Skiathos Island, Greece
IV: Habitat/species management area	Selous Game Reserve, Tanzania Banyuwangi Game Reserve, Java Indonesia Cairngorms National Nature Reserve, UK
V: Landscape protected area	Martinique Regional Nature Park, Martinique (France) Setonaikai National Park, Japan Ganaraska Forest Centre Conservation Area, Canada
VI: Managed resource protected area	Tamshiyacu-Tahuayo Communal Reserve, Peru Tonda Wildlife Management Area, Papua New Guinea Juruena Forest Reserve, Matto Grosso, Brazil
Forest management areas	
A: Managed for resource protection	Ski protection areas, Austria Watershed protection areas, Brazil Fire-break forests, Australia
B: Managed for community benefit	Commune forests, Switzerland Forests in indigenous territory reserves, Colombia Forest farms in Indonesia
C: Reserved for future use	Forest Reserves, Thailand Forests set aside for carbon sequestration
D: Managed for multiple use	Machakos Hills, Kenya Forest of Dean, UK
E: Managed for industrial and intensive forestry	Plantations certified by the Forest Stewardship Council in South Africa Forests certified by the Forest Stewardship Council in Sweden Forest used for mining

Note that within a sustainable forest management policy, category E does not provide *carte blanche* for uncontrolled exploitation; rather it reflects the need for some intensive forest use within acceptable social and environmental parameters.

Conclusions

Further work is needed to define the forest management categories to the extent that has already taken place with the protected area categories. When complete, such a typology could provide a common language for forests both inside and outside protected areas, thus hopefully clarifying and strengthening understanding about both.

Such categories can be used to help both summarise and plan forest management approaches on a landscape, national or regional level as required. In a future with more of the industrial timber production centred on a smaller area, the options for other uses could increase. We are already seeing, for example, greater opportunities for forest protected areas, particularly in Categories V and VI in highly populated areas and in the stricter categories in unpopulated or minimally populated areas. However, there is also room for expansion of other forest management categories, including for example forest managed mainly for community needs or for a range of multiple-purpose options.

The optimal mix of variety and size of categories needs to be determined on a case by case basis and will depend on many social and environmental factors. The number and area of forest protected areas required, for example, is influenced to a great extent by forest use outside the protected areas. Setting global or even national numerical targets is therefore often simplistic and misleading.

Categories such as the ones outlined above can only ever be approximate and overlaps or ambiguities can be expected routinely in real-life situations. As with protected areas, forest management categories should be used as a guide rather than a straitjacket.

References

Dudley, Nigel and Sue Stolton with Don Gilmour, Jean-Paul Jeanrenaud, Adrian Phillips and Pedro Rosabal (1998); *Protected Areas for a New Millennium*, WWF and IUCN, Gland, Switzerland

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Adrian Phillips, Nigel Dudley and Sue Stolton have written this draft paper. Comments and corrections will be very welcome.