Convention on
Biological Diversity

Secretariat

Ref: SCBD/SEL/OJ/RR/47101 5 April 2005

NOTIFICATION

Decision VII/12 on Sustainable Use: Use of terms and associated instruments (para. 5)

Dear Madam/Sir,

In paragraph 5 of decision VII/12, the Conference of the Parties requested the Executive Secretary to undertake further work on issues pertaining to use of terms for sustainable use, adaptive management, monitoring and indicators building on the outcome of the Addis Ababa workshop. The work on use of terms and associated instruments will further assist Parties in the implementation of the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity, adopted by COP-7.

In response to this request, the Secretariat organized an electronic forum in order to gather further comments and proposals on issues pertaining to use of terms for sustainable use, adaptive management, monitoring and indicators, which was informed to Parties through notification 2004-072, dated 30 August 2004.

Due to the low response received so far through the electronic forum, I wish to renew the invitation to interested experts to comment and formulate proposals, as appropriate, and to submit them to the Secretariat through the electronic forum, fax or email, in order to further advance the work on the use of terms and associated instruments based on sections I D and II D of the report of the Addis Ababa Workshop (UNEP/CBD/SBSTTA/9/INF/8), together with appendix I of annex I. For ease of reference, the aforementioned text and its appendix is attached to this notification.

Parties, Governments and relevant organizations are kindly invited to provide the Secretariat with information on the above no later than **20 May 2005**.

Comments received will be compiled by the Secretariat and integrated in a revised document for consideration at SBSTTA-11.

Accept, Madam/Sir, the assurances of my highest consideration.

Yours sincerely,

Hamdallah Zedan
Executive Secretary

To: CBD National Focal Points
Relevant organizations

UNEP United Nations Environment Programme
Tel: (1-514) 288.22.20 Fax: (1-514) 288.65.88
Email: Secretariat@biodiv.org Web: www.biodiv.org
World Trade Centre 413 St. Jacques Street, Office 800 Montréal, Québec, Canada H2Y 1N9

D. Use of terms

7. The Convention recognizes the need of the sustainable use of biological diversity, but for this exercise, the terminology is not sufficiently specific. Indeed, "sustainable use of biological diversity" is mentioned in many articles (table 1), in other articles the Convention mentions "sustainable use of its components" (table 1), and in the main article dealing with sustainable use, namely Article 10, but also elsewhere (table 1) the Convention refers to the "sustainable use of biological resources".

8. **"Biological resources**", as defined in Article 2 of the Convention, "includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity".

9. The definition of "**components of biological diversity**" is not provided in Article 2, and the definition of "**biological diversity**" should be further clarified for operational purposes. In Article 2, "*biological diversity means the variability among **living** organisms [*emphasis added*] from all sources including,* inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems*". "Variability" according to the Oxford Dictionary is derived from the word "*variable 1. that can be varied or adapted …; (Bot. & Zool., of species) including individuals or groups that depart from the type*". In this context, it is suggested to use the word "variety (defined as "*being various, diversity, absence of monotony or uniformity*").

10. In this respect the appendix to the programme of work on agricultural biodiversity adopted by the Conference of the Parties (decision V/5, annex) is enlightening, defining **agricultural biodiversity** as "*a broad term that includes all components of biological diversity of relevance to food and agriculture, and all components of biological diversity that constitute the agro-ecosystem: the variety and variability of animals, plants and micro-organisms, at the genetic, species and ecosystem levels, which are necessary to sustain key functions of the agro-ecosystem, its structure and processes*".

11. Following this example, it is proposed to adopt as the working definition of biodiversity: "*biodiversity means the variety and variability of living organisms at the genetic, species and ecosystem levels and the ecological complexes of which they are part*."

12. In this context, "components of biodiversity" include:

(a) Genetic material;

(b) Populations;

(c) Species;

(d) Functional groups (guilds such as pollinators) and communities;

(e) Ecosystems and habitats (for example, undifferentiated vegetation cover, forest, coral reefs, and other aggregate terms that denote the other biotic components of ecosystems).

Table 1. *Use of the term "**sustainable use of …**" in the different articles of the Convention of Biological Diversity*

Sustainable use **of biological diversity**	Sustainable use **of components of biological diversity**	Sustainable use **of biological resources**
Articles in the Convention: 5, 6a, 6b, 7c, 8g, 8j, 12b, 13b, 16-1, 17-1, 21-4, 25-2c, 25-2d	*Articles in the Convention*: 1, 7a, 7b, 8i, 11, 12a, Annex I/1, 2, 3	*Articles in the Convention*: 8c, 10a, 10b, 10c, 10e, 12c
defined in Article 2 as: "variability of living organisms from all sources"	***Not** defined in article 2* Decision V/23 on the sustainable use of dry lands, "operational objective, 8" may be of use (q.v.).	*defined in Article 2 as*: - genetic resources - organisms and parts thereof - populations - other **biotic** components of ecosystems

13. Sustainable use is defined in Article 2 of the Convention as "the **use** (key term 1) of **components** (key term 2) of biological diversity in a way and at a rate that does not lead to the **long-term** (key term 3) **decline** (key term 4) of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations".

14. Four key terms are used in this definition, namely "use", "components", "long-term" and "decline".

Key term 1

15. *Use* is understood to be both consumptive and non-consumptive. *Use* is described in economic, social and cultural terms. The **effects** of use are described in biological, economic, social and cultural contexts.

Key term 2

16. Five categories of *components* of biodiversity are recognized:

(a) Genetic material;

(b) Populations;

(c) Species;

(d) Communities;

(e) Ecosystems and habitats.

Key term 3

17. *Long-term* decline of components of biodiversity, as in Article 2 refers, to a time period linked to the life history of the component of biodiversity concerned. Whenever one or more indicators show that a form of use is not likely to be sustainable, remedial action should be taken.

18. To meet the needs and aspirations of future generations, long term decline for biodiversity as a whole also needs to be considered in human terms. For management purposes, *long-term* in this context means up to five human generations or 100 years. This time span approximates the present generation, parents and grandparents, children and grandchildren as a realistic human timescale for resource use**.** This can set the context within which goals and objectives can be framed and will provide a time frame for accountability. This time frame is intended to be used as a moving window and refers primarily to the future use potential of a resource by people.

Key term 4

19. Decline within the context of Article 2 refers to detrimental change that results in loss of biodiversity. *Decline* is defined in the context of each of the five recognized components of biological diversity:

(a) *Genetic material*: "A measurable reduction in any appropriate measure of genetic diversity in a population";

(b) *Populations*: "A measurable reduction in the distribution and numbers of individuals of a population or increase in fragmentation or decrease in size of population range";

(c) *Species*: "A measurable reduction of the total number of individuals, populations or geographical races of a species or increase in fragmentation or decrease in size of a species' range below the limits necessary for the maintenance of viable populations";

(d) *Communities*: "A measurable reduction of the number, variety and composition of non-alien species within a defined management area";

(e) *Ecosystems, habitat, vegetation cover and other aggregate terms* "A measurable reduction in the extent or amount of the biological component within the management area; a measurable decrease in the provision of ecosystem services and goods".

20. The aspects of indicators are applied in the context of adaptive management.

D. Instruments associated with the operational guidelines

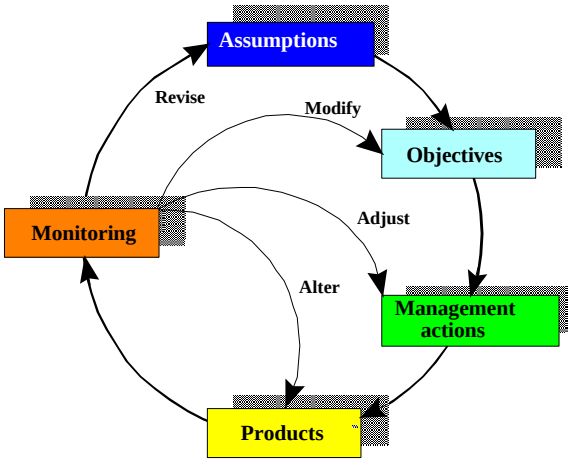
52. Implementation of the principles and guidelines for the sustainable use of biodiversity will depend on many inter-related factors including, but not limited to, existence of appropriate incentive measures, ability to manage and exchange information and sufficient capacity with which to implement. Several of these issues are being dealt with by other groups within the Subsidiary Body on Scientific, Technical and Technological Advice and the particular needs identified in the present document should be brought to their attention during detailed discussions. However, the issue of adaptive management, including monitoring and indicators, is of particular relevance to the case of sustainable use and merits more detailed description within the present document.

1. Adaptive management

53. Sustainable use is not a fixed state, but rather the consequence of balancing an array of factors that vary according to the context of the use. In addition, sustainability of uses cannot be expressed with certainty, but rather as a probability that may have to change if the conditions in which management is taking place change. Achievement of sustainability is also dependent on institutional capacities to adapt to changing conditions based on monitoring and feedback. Given the uncertainties, sudden changes and different contexts in which the use of biodiversity is taking place, participants in the previous workshops recognized that sustainable use entails the adaptive management of biological resources, and elaborated on this concept.

54. Because circumstances change and thus uncertainties are inherent in all managed uses of components of biodiversity, adaptive management must be an essential part of any management for sustainable use. The basic concept is illustrated in figure 1 below.

Figure 1. Feedback loops associated with Adaptive Management



55. Adaptive management is the most appropriate approach toward the management of biological resources because of its ability to deal with the uncertainty and natural variation, its iterative nature of monitoring biological resource through the management cycles, and the feedback/decision-making mechanisms to alter the management. 6/ Adaptive management can be applied at each of the recognized components of biological diversity, where the scale of management (and adaptive-management needs) is determined by the component being used. Adaptive-management systems should operate within the context of national policies concerning the use of biological resources.

56. As illustrated in figure 1, the successful application of adaptive management is dependent on monitoring changes in the indicators being used, which could lead to changes in an array of activities associated with the management system.

57. Effective incentives are necessary for successful sustainable use.

2. Monitoring and indicators 7/

58. Monitoring is the key component of adaptive management. One of the first steps in monitoring is the establishment of baselines. The monitoring depends on separating exogenous disturbances from management action results. The monitoring requires defining and accepting benchmarks that identify the level beyond which adaptive management action should be implemented.

59. Managers should be accountable and responsible for developing and implementing the monitoring programme. The indicators and benchmarks that form part of that monitoring programme should be agreed upon by all relevant stakeholders including governments and scientists.

60. Adaptive management systems should be designed and refined so that:

(a) Monitoring should be bounded by spatial and temporal scales that are relevant to the potential impact, but should not ignore “downstream”, indirect or side-effects of management (for example, by-catch); 8/

6/ See principle 9 of the ecosystem approach recommended by the Conference of the Parties in its decision V/6: “Management must recognize that change is inevitable”.

7/ See the appendix hereto, on desirable properties for indicators.

(b) In the case of monitoring shared resources, including migratory species, Parties should ensure that the monitoring systems are compatible and that the costs and benefits of the monitoring are shared equitably. These issues may require action at higher levels, through, for example, transboundary cooperation, or even cooperation at global levels; 9/

(c) The cost of monitoring should be internalized (resource users should contribute significantly) to ensure the maintenance of monitoring programmes; 10/

(d) Resource users should participate in the design and implementation of the monitoring system; 11/

(e) Local and traditional knowledge of resources should be incorporated into monitoring systems, (and the use of such local and traditional knowledge in the management of biological resources may promote the maintenance of local and traditional knowledge systems, e.g. in the mapping of resources by communities); 12/

(f) Monitoring systems should be appropriate, cost-effective and achievable; 13/

(g) Monitoring systems and the evaluation of the results of monitoring should involve a transparent and consultative process; 14/

(h) The integrity of monitoring systems can be enhanced by measures for long-term data and information management and exchange;

(i) Monitoring systems should take into account modern techniques for statistical analyses that adequately identify limitations and possibilities of trend analyses.

61. Monitoring of consumptive use should be conducted at the following levels, i.e.:

(a) Monitoring the status of the component of biological diversity that is the focus of the management programme (in order to obtain information about its status independently from any harvest programme) and monitor the services it can provide;

(b) Monitoring the off-take (in order to obtain detailed information about the biological characteristics of the component consumed, and trends in characteristics such as age and sex distribution and fecundity) and the direct and cumulative impacts of the uses on goods and services;

(c) Monitoring harvest effort (in order to determine changes in the yield per unit effort as an index of the impact of the management programme, taking into account improvements in technology and practice relating to the efficiency of harvesting);

8/ See principle 3 of the ecosystem approach.

9/ See point 4 of the operational guidance for the application of the ecosystem approach (decision V/6, annex, section C, para. 11).

10/ See principle 4 of the ecosystem approach.

11/ See principle 2 of the ecosystem approach.

12/ See principle 11 of the ecosystem approach.

13/ See principle 12 of the ecosystem approach.

14/ See principle 11 of the ecosystem approach.

(d) Monitoring indirect impacts, downstream and side effects of the consumptive use, or use associated activities on other species (in order to obtain information about this status independently from any other consumptive-use programme).

62. Monitoring of non-consumptive use can be conducted at the following levels;

(a) Monitoring the status of the component of biological diversity that is the focus of the management programme and monitor the services it can provide;

(b) Monitoring indirect impacts, downstream and side-effects of the non-consumptive use.

63. Monitoring of both consumptive and non-consumptive use need not be conducted at the same frequency and by the same agencies, but the combination of monitoring may result in a greater probability that use-related impacts will be detected and that monitoring systems will be maintained in the long term. Monitoring at multiple levels is particularly important in cases where limited information is available about the current status of the component of biological diversity that is being used, or to avoid bias resulting from information derived as the result of use. (e.g., harvesting is most often targeted at specific components only).

64. It is important to consider impacts on a resource other than influence by direct management actions, such as illegal off-takes, and to use all other relevant sources of information to verify conclusions about the trends in resource status and recommendations concerning its management.

65. Indicators within the context of sustainable use were defined to describe; status of a system, change in a system, trends in a system, combinations of the above. Desirable characteristics of indicators are included in the appendix to the present document (see page 33 below).

66. Indicators are a practical tool for achieving sustainable use as referenced in the following articles of the Convention:

(a) Article 2: "Sustainable use" means the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, **thereby maintaining its potential to meet the needs and aspirations of present and future generations;**

(b) Article 6(a): Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, *inter alia*, the measures set out in this Convention relevant to the Contracting Party concerned;

(c) Article 10(a): Integrate consideration of the conservation and sustainable use of biological resources into national decision-making;

(d) Article 10(b): Adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity;

(e) Article 10(c): Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements.

67. Indicators are being developed at various scales. Some will be national-context, some will be management-area indicators. It is important for managers/planners to include in the monitoring system indicators relevant to their specific situation. Managers should be aware that there are many existing

sources of information on indicators (e.g. FAO, Agenda 21, United Nations System-Wide Earth Watch Indicators, World Bank).

Biological context

68. Annex I to the Convention indicatively identifies three components of biodiversity: ecosystems and habitats; species and communities; genomes and genes. The workshops listed five components (genetic material; populations; species; communities; and ecosystems, habitat, vegetation cover and other aggregate terms, that denote the other biotic components of ecosystems 15/) and for each of those developed a set of indicators to measure their decline. In this biological context, indicators were identified for the components of biological diversity that can be subject to use. The assessment of the sustainability of use on a particular component will largely depend on the scale and extent of use. The components of biological diversity are nested. Indicators of sustainability should be applied to the component of biological diversity that approximates the unit of management.

69. The indicators outlined in the table below were identified as suitable to demonstrate the impact of use**,** and only refer to the biological status of each component of biological diversity.

70. In line with the mandate to develop indicators to detect decline in the status of biodiversity components, table 2 below sets forth the basis of declines in status. In the event that a decline is detected in any one or more categories of biodiversity components, it would prompt remedial management action.

71. The indicators outlined in Table 2, based on definitions of components of biodiversity mentioned in the introduction above, were identified as suitable to demonstrate the impact of use, and only refer to the biological status of each component of biological diversity.

Table 2: *Indicative list of indicators for measuring the decline in the status of categories of biodiversity components.*

Category of component	**Parameters measured**	**Elements to be assessed**	**Indicators**
Genetic material	A measurable reduction in any appropriate measure of genetic diversity in a population.	**Genetic material**	• genetic variation • frequency of rare alleles • traditional varieties, cultivars and breeds • ecotypes
Populations	A measurable reduction in the distribution and numbers of individuals of a population or increase in fragmentation or decrease in size of population	**Population size**	• number of individuals (and other indices of abundance) • biomass or volume • density

15/ This component was inspired by the definition in Article 2 of "biological resources" and by decision V/23 of the Conference of the Parties (activity 7 (b): "The sustainable use or husbandry of plant and animal biomass …").

Category of component	Parameters measured	Elements to be assessed	Indicators
	range	**Extent of distribution**	• extent of occurrence (sq. km) • area of occupancy (presence/absence) • area of habitat loss • evenness of distribution
		Fragmentation	• number of sub-populations • area of habitat loss • change in habitat
		Population structure	• age structure • sex ratio
		Production potential	• reproductive success and recruitment • fecundity • physical/physiological condition
Species	A measurable change of the total number of individuals, populations or geographical races of a species or increase in fragmentation or decrease in size of a species' range below the limits necessary for the maintenance of viable populations".	**Population size**	• number of individuals (and other species of abundance) • biomass or volume • density
		Geographical races, populations, and sub-species	• number of geographical races • number of populations • number of sub-species
		Variability of populations	• extent of decline and proximity to thresholds of viability • vulnerability

Category of component	Parameters measured	Elements to be assessed	Indicators
		Fragmentation	• number of fragments (sub-ranges) and distance between fragments • connectivity • form and size of fragments
		Extent of distribution	• extent of occurrence • area of occupancy • area of habitat loss
Communities	A measurable change in the number, variety and composition of non-alien species within a defined management area	**Number of species (species richness)**	• total number of species per specified management area
		Variety of species (diversity of species)	• appropriate index of community diversity • species/biomass relationship • species/abundance relationship
		Composition of species	• changes in species inventories • predators and top predators as indicators species • structurally dominant species • trophic relationships • bio-monitors (e.g. diet of selected species) • endemic species • number of threatened species (at different scales) • number of alien species • categories of species of special significance.

Component	Decline	Elements of decline	Indicator
		Community stress	• any appropriate indicator of stress (e.g. invasive species) • decline in extent • increase in fragmentation • abnormal mass mortality
Ecosystems, habitats and other aggregated terms	A measurable reduction in the extent or amount of the biological component within the management area; a measurable decrease in the provision of ecosystem services* and goods * See appendix 3 to the annex to decision VI/7 of the Conference of the Parties for description of services.	**Extent and amount of ecological services that can be provided**	• components of ecosystem • coverage (e.g. vegetation, coral reefs) • fragmentation (including measures of distribution, heterogeneity and connectivity) • fractal dimension, size and shape of patches • standing biomass • albedo, spectral reflectance • turbidity, light penetration • primary production • secondary production • keystone species • top predators • pollinators

Economic context

72. Economic indicators are essential in indicating status, change and trends of use of biological components of biodiversity in economic terms. Indicators can be used to assess sustainability of the use. For example, the degree to which biological resources are priced and reflect true value, being a condition for effective management, may serve as an economic indicator. Some useful example are:

(a) Maximum sustained yield for a renewable biologic resource being used;

(b) Household income;

(c) Market prices of components;

(d) Volume of natural resource products on the market;

(e) Household food security;

(f) Percent contribution of managed resource to green and net domestic product;

(g) Earned revenue from biological resource management (e.g. nature tourism);

(h) Market prices for ecological goods and services from biodiversity;

(i) Market value of environmental permits traded or sold;

(j) Value of exported environmental services, products and technologies.

Social context

73. Social indicators reflect social values with respect to the sustainable use of biological components. The indicators identified below are suitable examples to demonstrate: (i) the incorporation of social values into the use of biological resources; (ii) how unique needs of individuals and communities are considered in management decisions; and (iii) the extent to which the allocation of resources can be considered to be fair and equitable:

(a) Percentage of public participation in design, decision making and implementation of monitoring of sustainable use management programme;

(b) Number of benefit-sharing arrangements and schemes associated with the particular programme;

(c) Number of laws and regulations implemented and enforced (i.e. number of successful convictions for illegal off-take, corrected for enforcement effort);

(d) Protected areas as a percent of total area;

(e) Dependence of local and indigenous people on particular components of biological diversity (e.g., bushmeat/wild meat);

(f) Demographics (population, poverty, distribution);

(g) Percentage ownership of particular biological resource (public, private ownership, or other groups);

(h) Number of laws or regulations or best management practices pertaining to sustainable use of biological resources;

(i) Rate of change of wilderness areas.

Cultural context

74. All cultures use aspects of biological diversity for the maintenance of their cultures. Therefore using indicators to monitor sustainable use in a cultural context is important to understand the impact of the use upon cultures, and vice versa. Cultures need to be defined beyond indigenous groups; to include the beliefs, customs, practices and social behaviour of all people:

(a) Components of biological diversity used for cultural purposes;

(b) Number of new initiatives;

(c) Effectiveness of traditional norms and their enforcement on the use of the components of biological diversity;

(d) Percentage of women/men participating in resource extraction and decision making;

(e) Size of culturally cohesive local /traditional indigenous groups;

(f) Percentage of involvement of indigenous peoples in the management decision-making process;

(g) State of traditional biodiversity-component management practices;

(h) Proportion of formal and informal leadership involved in sustainable use programmes;

(i) Number and extent of sacred sites;

(j) Number of active nature- (conservation-) based non-governmental organizations;

(k) Number of culturally-based off-take permits.

Appendix I

DESIRABLE PROPERTIES OF INDICATORS

1. Indicators of the status and trends of biological diversity are important in a monitoring programme. SBSTTA recommendation III/5, endorsed by the Conference of the Parties at its fourth meeting (decision IV/1 A), and decision V/7 of the Conference of the Parties provide for the development of a set of principles for designing national-level monitoring and indicators, addressing issues such as:

(a) The way that indicators relate to management questions;

(b) The ability to show trends;

(c) The ability to distinguish between natural and human-induced change;

(d) The ability to provide reliable results (i.e., through the establishment of standard methodologies);

(e) The degree to which indicators are amenable to straightforward interpretation; and

(f) The question of baselines for measurement, in light of the fact that application of a pre-industrial baseline may often prove problematic.

2. The Workshop noted that adaptive management does not rely on knowing pre-industrial baselines and has used the issues outlined in SBSTTA recommendation III/5 as a starting-point, but has added the ability to distinguish between external and internal causes of change. The Workshop identified the following desirable properties of indicators. The validity of indicators will be enhanced if they have as many of the following properties as possible, i.e., if they are:

(a) *Unequivocal and reliable descriptor of a specific measurable characteristic*: This property describes the bare essence of an “indicator”(see paras. 1 (a) and (d) above);

(b) *Sensitive to changes in components and systems subject to impact of use*: An ideal indicator should detect a signal of real change fast and reliably and should be robust (i.e. So that a measuring error does not affect the interpretation) (see paras. 1 (b) and (d) above);

(c) *Viable*: The costs of measuring the indicator should be proportional to the benefit from using the biological resource;

(d) *Amenable to the use of appropriate technology*: Some technologies may become outdated due to rapid technological changes, but many user groups, including local and indigenous ones, readily accept new technologies (see para. 1 (d) above);

(e) *Repeatable*: The aim of using indicator is to determine whether there are long-term negative trends in the availability of the biological resource, and the measurement of any indicator should accordingly be repeatable. It is therefore imperative that the measurement is cost-effective and amenable to using appropriate technology (see para. 1 (b) above);

(f) *Relevant to the impact of management*: The purpose of using indicators is to measure the impact of management on the status of a biological resource, and, ideally, it should enable the

resource manager to distinguish between natural and human-induced change. It is consequently important that the measurements are conducive to sound analysis (see paras. 1 (a) and (d) above);

(g) *Acceptable to all stakeholders by mutual agreement*: The repeatability of measurement often depends on the fact that measurement has to be carried out by resource managers who, in many cases, will be people living with the resource. The data that are collected should, on the other hand, be open to sound analysis and acceptable as reliable descriptors of change. Data should be accessible for inspection by either higher authorities or by other interested parties, including groups of civic society;

(h) *User-friendly for resource managers/users*: Methods for measuring indicators should be user-friendly or users may lose their interest and cease measuring, which negatively affects repeatability;

(i) *Appropriate to the scale of management*: The measurement of indicators should not result in making statements at the "wrong" scale; if resource management has to take place at, for example, a large scale and indicator measurement takes place at a small scale, then trend analysis may sometimes lead to "false alarm" or to a false sense of security;

(j) *Appropriate to the social and cultural contexts of resource managers/users*: The repeatability and accuracy of measurement of an indicator will be enhanced if the indicator is meaningful in the social and cultural contexts of resource managers/users;

(k) *Able to show trends*: This property is a fundamental requirement of an indicator that has been selected to be able to detect trends in the state of a biological resource (see para. 1 (b));

(l) *Conducive to sound analysis*: Sound analysis often may mean proper statistical analysis but as there are other knowledge systems that do not rely on classical statistical methods or Bayesian methods, other ways of sound analysis may be envisaged too (see para. 1 (e) above).