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**STRATEGIES FOR THE ESTABLISHMENT OF A
NETWORK OF IN SITU CONSERVATION AREAS**

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STRATEGIES FOR THE ESTABLISHMENT OF A
NETWORK OF IN SITU CONSERVATION AREAS

1. BACKGROUND

1. Ex situ conservation has been used as a major strategy for the safeguarding of genetic resources, especially in the case of cultivated plants of proven, present-day value. This strategy is, however, not without problems and should, wherever possible, be complemented by in situ (on-site) conservation strategies for greater security and to enable continued evolution of the species.
2. Since its First Session, the Commission has stressed the need to help strengthen the existing global network of Protected Areas, in support of conservation activities in situ. These nationally designated areas are listed periodically¹ the "United Nations List of National Parks and Protected Areas", compiled by the World Conservation Monitoring Centre at Cambridge, U.K.
3. At its Third Session, in 1989, the Commission reiterated the need for continued support to the network of Protected Areas, but added to this by requesting that a study also be conducted on the possibilities to establish a network of in situ conservation areas, covering both plant and animal genetic resources. The aim² of this latter network would be to complement already existing ex situ base collections of priority genetic resources.
4. In situ conservation means the maintenance of reproducing organisms in the area where they developed their distinctive properties, or, in the case of domesticated organisms, where they have been traditionally maintained. It includes on-farm conservation of semi-domesticated crops and primitive cultivars, nurtured in farmers' fields and used by local communities. The above request thus also ties in closely with the adoption by the Third Session of the Commission, of a resolution recognizing Farmers' Rights, and stressing the crucial role of farmers in the conservation and development of plant genetic resources.

2. THE ROLE OF PROTECTED AREAS IN IN SITU
CONSERVATION OF GENETIC RESOURCES

5. There is a clear linkage between Protected Areas and in situ conservation areas. However, Protected Areas are generally targeted for wildlife or ecosystem conservation, or established to safeguard cultural or scenic values. Although impressive in number and total area covered globally, and of value for the purposes for which they were originally created, they are often not strategically sited on the basis of genetic and biodiversity criteria. They are generally established in areas unsuitable for

agricultural development, and have been traditionally viewed as areas to be left in a wild or primitive state with no, or minimal, human interference. Several key issues have emerged in the past few years which are causing a re-examination of the role of management in the maintenance of Protected Areas, their representativeness and their capacity to protect biological diversity, including important genetic resources.

6. The principal value of plant and animal genetic resources (i.e. wild and weedy relatives, primitive breeds and land races) is their significant levels of inter- and intra-population genetic variability, including co-adapted gene complexes, representing valuable or potentially valuable traits. The main goal of in situ conservation is to manage target species in their original habitat, so that loss of genetic variability at all these levels is minimized.
7. Maintaining a site in its natural condition or ensuring the continued existence of given species will not, per se, conserve genetic variability at the various levels: it is possible to conserve an ecosystem and still lose individual species, and to conserve a species and lose genetically distinct populations or genes which may be of value in future improvement and continued survival of the species.
8. In situ conservation requires planned and systematic management early identified target species in a network of conservation areas, aimed at the maintenance of intra-specific genetic variability found in these species. The primary challenge for in situ conservation of genetic resources is thus not to select, set aside and guard Protected Areas containing genetic resources. Rather, it is to maintain genetic variability of target species within a mosaic of economically and socially acceptable land use options. These may include Strictly Protected Areas, as well as multiple use reserves, managed forests and agroecosystems. While, in general, in situ conservation of genetic resources outside of Protected Areas, in areas used for e.g. wood production, will require more intensive management and monitoring of target species, such areas are not inherently less compatible with genetic conservation of the species being harvested in a sustainable manner, or of associated species, than are Strictly Protected Areas.
9. It should thus be possible to harmonize the conservation in situ of genetic resources with sustainable use of much of the land area of a country, by including concerns for in situ genetic conservation of target plant and animal species as a major component in land use planning and management strategies.

3. STATUS OF IN SITU CONSERVATION

10. Since the First Session of the Commission in 1985, some progress has been made in inventorying species in protected areas and mapping species distributions and habitats, and in the planning for national genetic conservation strategies. However, efforts in in situ conservation have been limited. Besides some pilot activities, it is still difficult to identify projects where in situ genetic resource conservation is a stated objective and were genetic management efforts are adequately planned from a technical point of view.
11. This slow progress results from shortcomings at the international level, as well as at national and local levels, and include lack of
 - (i) awareness at the decision making level of the immediate as well as long-term environmental and economic benefits of conserving genetic resources in situ;
 - (ii) trained personnel and adequate infrastructures at the local/national level;
 - (iii) identification of priority species and genepools at local/national and international levels; and
 - (iv) knowledge of intra-specific genetic variability and biology of target species.
 - (v) cross-sectoral cooperation and coordination at the local/national and international levels.

Resolving and remedying these shortcomings is a proviso for establishing efficient networks of in situ conservation networks.

4. BASIC REQUIREMENTS FOR ESTABLISHMENT OF IN SITU CONSERVATION NETWORKS

4.1 Strengthening of existing institutions

12. A global strategy for the development of coordinated networks of in situ conservation areas, must be based on efforts to support focal communities and to build up local institutions, infrastructures and expertise in participating countries. This will also include assessing and strengthening the role of community organizations and farmers in this field. No amount of action at the global level will be effective and no listings of priority genetic resources of actual or potential socio-economic

value and Protected Areas useful, unless countries in which the resources occur are sincerely committed to their sound management. Countries must also possess the financial and manpower resources necessary for prioritization, coordinated action, and supervision and monitoring of activities.

13. A primary aim of the international community must therefore be to encourage and assist countries to strengthen or establish centres for coordination of genetic resource activities. In addition to handling matters related to ex situ conservation, these centres should focus on in situ conservation, and the sustainable management of natural and man-made ecosystems so that these continue to provide habitats for priority genetic resources. Data centres at the national (or local) level, should interact and share information with regional and global data centres concerned with genetic resources. This integration does not yet exist, and a mechanism is needed to promote such vertical information exchange.

4.2 Identification of target species

14. Protection or sustainable use of ecosystems can contribute towards the conservation of the genetic variability of component species. However, siting of reserves to reflect intra-specific variation and their management will differ between species. Thus, initial planning and programming must be made at the species and intra-specific levels, subsequently combining the various species networks, as feasible and practicable. In addition to species management, in situ conservation will also generally require habitat management aimed at protecting existing levels of genetic diversity, and to help maintain presently little-known, co-evolved biological systems.
15. The identification and formal recognition of priority genetic resources and gene pools in need of conservation is basic to the establishment of effective networks of in situ conservation areas. A centralized information exchange system for arriving at an overall perspective on globally significant genetic resources and action in various groups of species or biomes, is urgently needed. This should be based on actual or potential usefulness of species according to clearly defined, common criteria, rather than on their rareness.
16. To be an effective monitoring and analysis tool, a global information system for in situ genetic conservation must derive its data from continuing, intensive, national or local programmes, developed in-country. This should, whenever possible, include map-based distributional information of

intra-specific variability, habitat relationships and relative abundance. Only a few countries have information at this level of detail, even for well-known plant and animal species, and greatly expanded research is needed on the distribution, variation, variation patterns, biology and genetics of priority species and on their inter-relationships in natural ecosystems.

4.3 Development of management strategies for priority genetic resources

17. Significant genetic resources should be subject to a management planning process that considers viable population requirements, based on the biology and on the level and distribution of genetic variation in target species. If a given target species occurs in different land use areas (e.g. national parks, and managed forest reserves or indigenous farming systems), criteria should be developed to ensure complementary management programmes.
18. The management of biological diversity will vary widely within and among species and biota, depending on available techniques and, above all, their biology. Therefore, even in cases where geographic overlap occurs between priority species of plants and animals to be conserved in situ, the methods to be used for their management may be entirely different, and will require the expertise and skills of different specialists. Coordination among various local and national agencies involved in land and natural resources management will thus be necessary, coupled with intersectoral linkages and collaboration between groups of scientists and technicians, as well as NGOs.
19. Management planning and management alike, are on-going processes, the first phase of which begins with identifying the target species, and definition of specific management interventions necessary for maintaining genetic variation at the levels specified. Accumulation of information on the species and its environment, and of technical and scientific knowledge of in situ conservation in general, are continuous and will make regular revision and up-dating of the plans and networks necessary. This is especially true in the case of assessing the contribution to conservation of indigenous farming systems, as knowledge in this field is very limited.

4.4 International coordination

20. Because the conservation of genetic resources in situ is broadly complementary to development activities, the number of national and international agencies, institutions and organizations that potentially can, and are, mandated to contribute, is substantial. The need is for greater information exchange, over-all

coordination and focus of this collective effort toward specific activities that result in measurable progress on the ground. The existing mechanism of the Ecosystem Conservation Group-and its Working Group on Conservation of Biodiversity, must be activated and greatly strengthened.¹ Efforts of NGOs working at the community level in the field of conservation and sustainable agriculture or forestry, should also be strengthened, and information exchange between them should be promoted.

21. Activities at the international level should focus on raising of awareness of the importance of in situ conservation and management of genetic resources; coordinating information exchange and the exchange of know-how and experiences of national genetic resources units; and experiences of national genetic resources units (which should reflect the work of national governmental and non-governmental organizations in the country); facilitating dialogue between developing countries and the international donor community; and providing information on regional and global genetic resources priorities.
22. Due to its cross-sectoral responsibilities and expertise, global coverage, and the clear linkage between resource conservation and sustainable development in its mandate, FAO is the logical organization to take the lead in activities in the field of in situ conservation.

5. ACTION PROPOSED

23. Immediate action should be taken by FAO to:

- (i) identify target species making use of existing information, validating distribution data of species chosen through national and international data banks, research centres and e.g. herbaria, and collaborating closely with national programmes in defining priority areas for in situ conservation for these species, inside and outside of protected areas.

1/ The following organizations are presently members of the Ecosystem Conservation Group: FAO, Unesco, UNEP, IUCN, UNDP, and the World Wide Fund for Nature (WWF).

- (ii) draw up management guidelines based on existing information, and research carried out through national institutes and local communities, in support of the conservation and management actions specified.
- (iii) help establish a small number of pilot in situ networks in each major category, i.e. land races, crop relatives; forest and multipurpose trees; domestic and wild animals.
24. In the pilot in situ networks, special attention should be given to the role of indigenous farming systems and their contribution to conservation efforts. Such efforts should be supported and, where possible and feasible, expanded through strengthening of relevant governmental and community organizations involved in the work. All in situ conservation activities should be based on a participatory approach, giving local people and their organizations a central role in the formulation, planning and execution of the projects.
25. In parallel with the activities above, efforts should be made to develop or strengthen national genetic resources units in individual countries. The Tropical Forestry Action Plan, published by FAO in 1985, provides examples of activities of such centres, coordination at global level, as well as cost and investment figures (see Programme on the Conservation of Tropical Forest Ecosystems of the TFAP).
26. Future in situ conservation action will be greatly facilitated by development a Global Information and Early Warning System and Reports on the State of the World's Genetic Resources reported on separately to the Commission; early development and implementation of the GIEWS is recommended.
27. As stressed above, awareness of problems and solutions involved, is fundamentally important for success. Continued efforts should be made by FAO to publish and widely disseminate factual information on in situ conservation, at decision-making, technical and grass-roots levels, as well as for the public at large.