

A PROPOSAL TO NORTH AFRICAN GOVERNMENTS  
FOR THE ESTABLISHMENT AND OPERATION OF A  
NORTH AFRICAN LOOP OF BioNET-INTERNATIONAL

KNOWN AS

**N A F R I N E T**



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organised by  
l'Institut Agronomique et Vétérinaire Hassan II, Rabat,  
The Euro+Med PlantBase Project  
and  
The Technical Secretariat of  
BioNET-INTERNATIONAL: The Global Network for Taxonomy

## Glossary

BIOCON	The consortium of expert centres in the developed world that provide input to BioNET-INTERNATIONAL's sub-regional LOOPs ( <a href="http://www.bionet-intl.org">www.bionet-intl.org</a> )
CBD	Convention on Biological Diversity ( <a href="http://www.biodiv.org">www.biodiv.org</a> )
CDI	Capacity Development Initiative ( <a href="http://www.gefweb.org/Site_Index/CDI/cdi.html">www.gefweb.org/Site_Index/CDI/cdi.html</a> )
CHM	Clearing House Mechanism (of the CBD; <a href="http://www.biodiv.org/chm/">www.biodiv.org/chm/</a> )
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora ( <a href="http://www.cites.org">www.cites.org</a> )
COP	Conference of the Parties of the CBD
EcoPort	A web-based ecology knowledge processor ( <a href="http://www.ecoport.org">www.ecoport.org</a> )
EuroLOOP	The consortium of developed country expert institutions in Europe (see BIOCON)
Euro+Med PlantBase	Web-based database of European and Mediterranean plants (see Appendix D)
FAO	Food and Agriculture Organisation of the United Nations ( <a href="http://www.fao.org">www.fao.org</a> )
GBIF	Global Biodiversity Information Facility ( <a href="http://www.gbif.org">www.gbif.org</a> )
GEF	Global Environment Facility ( <a href="http://www.gefweb.org/">www.gefweb.org/</a> )
GFAR	Global Forum for Agricultural Research ( <a href="http://www.egfar.org">www.egfar.org</a> )
GISP	Global Invasive Species Programme ( <a href="http://jasper.stanford.edu/GISP/">http://jasper.stanford.edu/GISP/</a> )
GTI	Global Taxonomy Initiative of the CBD ( <a href="http://www.biodiv.org/programmes/cross-cutting/taxonomy/default.asp?lg=0">www.biodiv.org/programmes/cross-cutting/taxonomy/default.asp?lg=0</a> )
IGO	Inter-governmental organisation
IPI	International Pollinators Initiative
IPPC	International Plant Protection Convention ( <a href="http://www.ippc.int/">www.ippc.int/</a> )
IUCN	The World Conservation Union (formerly the International Union for Conservation of Nature and Natural Resources) ( <a href="http://www.iucn.org">www.iucn.org</a> )
LCC	LOOP Coordinating Committee
LOOP	Locally Owned and Operated Partnership (= BioNET sub-regional network)
MA	Millennium Assessment of Global Ecosystems ( <a href="http://www.millenniumassessment.org/en/index.htm">www.millenniumassessment.org/en/index.htm</a> )
MEDUSA	Information network dealing with native Mediterranean plants useful to humanity <a href="http://medusa.maich.gr">http://medusa.maich.gr</a> (see Appendix D).
NACI	National Coordinating Institute of a LOOP
NECI	Network Coordinating Institute of a LOOP
NGO	Non-governmental organisation
NI	National Institute of a member country of a LOOP
NAFRINET	The proposed North African LOOP of BioNET-INTERNATIONAL
OPTIMA	Organization for the Phyto-Taxonomic Investigation of the

	Mediterranean Area (see Appendix D)
PGRFA	Global Plan of Action (GPA) for the Conservation and Sustainable use of Plant Genetic Resources for Food and Agriculture (PGRFA),
PoW	Programme of Work
Ramsar Convention	Convention on Wetlands of International Importance, especially as Waterfowl Habitat ( <a href="http://www.ramsar.org">www.ramsar.org</a> )
SBSTTA	Subsidiary Body for Scientific, Technical and Technological Advice (to the CBD) ( <a href="http://www.biodiv.org">www.biodiv.org</a> )
SDC	Swiss Agency for Development and Cooperation ( <a href="http://194.230.65.134/dezaweb2/home.asp">http://194.230.65.134/dezaweb2/home.asp</a> )
SPS	Sanitary and Phytosanitary
TCDC	Technical Cooperation between Developing Countries ( <a href="http://www.tcdwide.net/tcdweb/index.html">www.tcdwide.net/tcdweb/index.html</a> / <a href="http://www.ecdc.net.cn/">www.ecdc.net.cn/</a> )
TCN	Technical Cooperation Network
TecSec	The Technical Secretariat of BioNET-INTERNATIONAL ( <a href="http://www.bionet-intl.org">www.bionet-intl.org</a> )
UN	United Nations ( <a href="http://www.un.org">www.un.org</a> )
UNCCD	Convention to Combat Desertification
UNDP	United Nations Development Programme ( <a href="http://www.undp.org">www.undp.org</a> )
UNESCO-MAB	Man and the Biosphere Programme of the United Nations Educational, Scientific and Cultural Organisation ( <a href="http://www.unesco.org">www.unesco.org</a> )
WTO	World Trade Organisation ( <a href="http://www.wto.org">www.wto.org</a> )

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## **I. EXECUTIVE SUMMARY**

- 1) The NAFRINET Formulation Workshop was held at l'Institut Agronomique et Vétérinaire Hassan II, Rabat, Morocco, 12-17 May 2002. The Workshop was organised by l'Institut Agronomique et Vétérinaire Hassan II, the Euro+Med PlantBase project and the Technical Secretariat of BioNET-INTERNATIONAL, the Global Network for Taxonomy. [1.]
- 2) The Workshop was attended by a total of 30 participants: 2-5 national representatives from each potential NAFRINET Member country i.e. Algeria, Egypt, Libya, Mauritania, Morocco and Tunisia, 2 resource persons from the BioNET-INTERNATIONAL Technical Secretariat, UK, 1 person as Acting Programme Officer - Global Taxonomy Initiative (GTI) of the Convention on Biological Diversity (CBD) Secretariat, Montreal, Canada, a representative from the Secretariat of WAFRINET, the West African LOOP of BioNET-INTERNATIONAL and observers from IUCN, FAO, OPTIMA, Euro+Med PlantBase and MEDUSA.[2.]
- 3) The full costs of the workshop were covered by a grant from the UK Department for International Development (DFID).[3.]
- 4) The goals of the Workshop were to:
  - (i) formulate this detailed proposal for the establishment of a Technical Cooperation Network (TCN) for taxonomic capacity building in the North African region; [4.]
  - (ii) debate and agree on TCN structures to best strengthen capacity building, collaboration and networking among and between member countries and their relevant institutions; [5.]
  - (iii) develop a strategic plan for subregional taxonomic capacity building that meets the needs of national sustainable development programmes and National Biodiversity Strategy and Action Plans including: [6.]
  - (iv) development of a shared vision for pooling, sharing and optimising subregional expertise, information, records, collections, infrastructure and technologies for the further enhancement of taxonomic capacity in the subregion; and [7.]
  - (v) drafting programmes of work to meet the identified taxonomic capacity needs of regional and national development and biodiversity management plans, including the required support for implementation of international environmental conventions, for example, the Convention on Biological Diversity (CBD), the International Plant Protection Convention (IPPC) and other initiatives such as the Global Invasive Species Programme (GISP) [8.]

- 5) The Opening Address was given by the Inspector General of the Ministry of Agriculture, Morocco. [9.]
- 6) Dr. Nicholas King, Director, BioNET-INTERNATIONAL, briefed the delegates on the latest developments in BioNET-INTERNATIONAL including the progress made by existing subregional LOOPS and the wide international support for the role of LOOPS in enabling subregions to become self-reliant in taxonomic needs by building local taxonomic capacity. [10.]
- 7) Dr Chris Lyal, Acting Global Taxonomy Initiative (GTI) Programme Officer, Convention on Biological Diversity (CBD) Secretariat, briefed delegates how Parties to the CBD have identified the current inadequacy of taxonomic capacity as an impediment to implementing the CBD in most countries and how the GTI Programme of Work (endorsed in COP decision VI/8, April 2002) identifies the BioNET-INTERNATIONAL LOOPS as appropriate subregional structures and mechanisms for developing taxonomic capacity and services to support implementation of the CBD. [11.]
- 8) A short presentation was made by each of the potential partner initiatives present, ie. Euro+Med-Plantbase, FAO, IUCN, MEDUSA and OPTIMA. [12.]
- 9) National representatives of each of the six prospective NAFRINET countries presented national reports on the current status of taxonomic resources in each country. [13.]
- 10) Recognising the need to optimise the use of taxonomic resources and expertise through pooling and sharing national taxonomic capacity and making their infrastructures, material and manpower resources available to all member countries through a reciprocal arrangement, the Workshop participants unanimously recommended the establishment of a Technical Cooperation Network for the North African region, to be known as NAFRINET, the NORTH AFRICAN LOOP of BioNET-INTERNATIONAL. [14.]
- 11) The Workshop participants unanimously recommended the l'Institut Agronomique et Vétérinaire Hassan II, to be the Network Coordinating Institute (NECI). Each Member country also agreed to put forward their country's nomination for a National Coordinating Institute (NACI) and a list of the National Institutions (NIs) which agreed to participate in the network during national consultations prior to or following the Formulation Workshop. [15.]
- 12) The objectives, work programmes, membership, structure, management and coordination of NAFRINET, and the mandates of the LOOP Coordinating Committee, NECI, NACIs and NIs were debated, identified and described. The network will function as a 'Locally Owned and Operated Partnership' or LOOP of BioNET-INTERNATIONAL, whereby all decisions on priorities, activities and operations are made by the member country representatives who make up the LOOP Coordinating Committee, the decision-making body of the network. [16.]

**13)** Five Work Programmes were drawn up to meet the priority needs within each country and the subregion as a whole:

- a) Information and Communication Services;
- b) Human Resource Development (Training);
- c) Curation, Maintenance and Strengthening Of Collections;
- d) Development and Application of Appropriate Technologies and Tools; and,
- e) Establishment and Sustainability of the NECI and LOOP [17.]

**14)** Following governmental endorsement of this proposal, BioNET-INTERNATIONAL will make available some US\$130 000 over the first two years of NAFRINET's existence to catalyse the establishment of the LOOP structure and activities towards ensuring future sustainability. [18.]

**15)** This Proposal is now presented to member country governments for their approval and endorsement. [19.]

## **II. BACKGROUND**

### **A. INTERNATIONAL BACKGROUND**

Taxonomy is the science of discovery, description, naming and classification of organisms. Taxonomists have been responsible for describing and naming the approximately 1.7 million species known to date, and such taxonomic work suggests that there may be a total of more than 30 million species worldwide. The ability to identify organisms is fundamental to their management. Taxonomy is therefore a tool of fundamental importance to meeting the whole spectrum of humankind's daily needs: production of food, fuel and fibre, maintenance of human, plant and animal health, and in general assuring a safe and sustainable environment to live in and the future well-being of people and the biodiversity on which we are totally dependent. Therefore, not only should taxonomy be appreciated and recognised as a critically necessary resource, but it should also be available to all in need of it world-wide. However, taxonomy's importance passes largely unnoticed and, whilst the majority of the world's population and the earth's biodiversity are to be found in the developing world, some 95% of the world's taxonomic skills and resources reside in the developed world. [20.]

The inadequacy of taxonomic skills and resources in the developing world places in jeopardy not only the people of developing countries, but also the crops, livestock and genetic material upon which the region and developed world is also increasingly dependent. Further, with globalisation there are ever-greater movements of people and commodities. The growing frequency of such movements is rapidly spreading associated organisms, particularly pests and diseases, into new countries. There is also a need to identify and monitor genetically modified organisms (GMOs), necessitating specific and strain identification at morphological and molecular levels. This has been identified as of major importance by the CBD COP VI (April 2002) in decision VI/7 on Identification, monitoring, indicators and assessments, and in decision VI/22 on Forest Biological Diversity. Within the North African subregion not only are there scientific and legal issues regarding GMOs, but religious issues concerning the specific origin of biological material also exist. The quickest and most cost effective solution to this problem is effective quarantine enforcement including "safe origin" requirements, which is only possible through prompt and accurate identification of the organisms involved at the points of exit and entry. [21.]

Implementation of a number of international conventions and agreements - such as the Convention on Biological Diversity (CBD), the Global Plan of Action (GPA) for the Conservation and Sustainable use of Plant Genetic Resources for Food and Agriculture (PGRFA), the International Plant Protection Convention (IPPC), the Sanitary and Phytosanitary (SPS) Agreement of the World Trade Organisation (WTO), the Global Invasive Species Programme (GISP) and the Cartagena (Biosafety) Protocol - is greatly hindered by the inability of countries to access adequate taxonomic capacity. In particular, Parties to the CBD have recognised that implementation of the Convention is being

significantly constrained by the lack of capacity in developing countries – the so-called ‘Taxonomic Impediment’ - and under the CBD the need for taxonomic capacity building is being explicitly addressed by its Global Taxonomy Initiative (GTI). Most recently, in April 2002, the Sixth meeting of the Conference of the Parties (COP) of the CBD has endorsed a GTI Programme of Work (PoW), which identifies in detail a range of taxonomic capacity needs to facilitate implementation of the Convention. *This Proposal therefore makes specific reference to the GTI PoW and a number of other relevant CBD Decisions and Recommendations to demonstrate how NAFRINET can contribute to implementation of the GTI PoW and thereby underpin the full implementation of the CBD (and other related activities) by member countries. [22.]*

BioNET-INTERNATIONAL, the Global Network for Taxonomy, was established in 1993 with a specific mandate to facilitate establishment of subregional Technical Cooperation Networks (TCNs) to assist taxonomic capacity building to overcome the Taxonomic Impediment and has already created an international network of more than 1000 taxonomic institutions in over 120 countries, facilitated by a Technical Secretariat based in the United Kingdom. Via its subregional TCNs known as LOOPs (Locally Owned and Operated Partnerships), BioNET-INTERNATIONAL provides a proven model for *pooling, sharing and optimising existing taxonomic resources on a reciprocal basis* in the various subregions, and for maximising the transfer of taxonomic information, expertise and new technologies from expert centres in the developed world to the relevant institutions in the LOOPs. The GTI PoW specifically identifies the subregional networks of BioNET-INTERNATIONAL as appropriate structures and mechanisms for building the required taxonomic capacity subregionally in support of national CBD obligations. Therefore, establishment of the North African subregional LOOP will be a significant step towards enhancing the capacity of the LOOP member countries to meet the decisions pertaining to the GTI and fulfil their obligations under the CBD and related international agreements and initiatives. [23.]

## **B. NORTH AFRICA BACKGROUND**

For the purposes of this proposal, the following six countries, namely Algeria, Egypt, Libya, Mauritania, Morocco and Tunisia are designated as comprising North Africa. [24.]

The North African region has abundant natural resources and a wealth of biodiversity. More than 80 percent of the region is desert, with particular taxonomic and biodiversity issues. North African countries, being conscious of their unique, rich but fragile natural inheritance have long been prominent contributors to the world's environmental conservation initiatives, as evidenced by their ratification of both the Convention on Biological Diversity and Agenda 21. There is deep common concern throughout the region over environmental sustainability and particularly over issues that sound taxonomic services can help to mitigate, such as pesticide pollution from agricultural activities, pollution caused by industrial development, identification, control and eradication of alien invasive species, e.g. agricultural pests and in ballast water, and the irreversible loss of genetic resources through ongoing habitat destruction. [25.]

The countries of the subregion are increasingly concerned about loss of biodiversity and degradation of natural resources. Thus capacities for assessment, study and systematic observation and evaluation of biodiversity need to be reinforced at both national and subregional levels. A national and subregional initiative supported by international cooperation is an effective means to assisting with the *in situ* protection of the ecosystems and the *ex situ* conservation of biological and genetic resources. [26.]

### **C. THE NEED FOR TAXONOMIC CAPACITY BUILDING**

The countries of North Africa have, through various Decisions of the Conference of the Parties (COP) to the CBD, recognised that amongst other problems there is a ‘Taxonomic Impediment’ preventing the optimal use and conservation of biodiversity in the subregion and hindering implementation of the CBD. The CBD COP in Decision IV/1D noted the *urgency for the availability of taxonomic information to countries of origin, and the need of developing countries to develop national collections and human and institutional capacities in taxonomy*. The countries of North Africa and other Parties to the CBD recognise the urgent need to overcome this impediment. [27.]

The fourth COP discussed the issue of taxonomic capacity building in detail and proposed a series of measures, including formation of the Global Taxonomy Initiative (GTI), to solve the problem. First, the importance of establishing precise capacity building needs was recognised in Decision IV/1D (Suggestions for Action 1) which identified the need for countries to conduct national taxonomic needs assessments, and to link these to national reporting under the CBD. This was reiterated at the sixth COP in the GTI Programme of Work (Decision VI/8). Such needs assessments at both national and subregional scales will form critical early steps to define priority NAFRINET activities. Both the needs assessments and the work by the participating institutions in NAFRINET will facilitate the ability of member country governments to make their national reports to the CBD. [28.]

A recent major UNDP-GEF review of capacity needs in developing countries (the Capacity Development Initiative or CDI, [www.gefweb.org/Site\\_Index/CDI/cdi.html](http://www.gefweb.org/Site_Index/CDI/cdi.html)) has identified, in each region including Africa, the need for more taxonomic capacity to conduct activities that are essential for sustainable development, such as ecosystem monitoring and assessment. The CDI found that taxonomy was commonly a high priority for capacity development. Some countries still lack the “critical mass” of expertise and reference materials in taxonomy that are needed for successful management of biodiversity. [29.]

In developed countries, lack of investment is leading to a decreasing number of taxonomic experts and inadequately maintained facilities, reducing the capability of these countries to provide the necessary underpinning scientific rationale to policies on sustainable development. Investment in training of young scientists in taxonomy and in collaboration with other relevant scientific fields (including bioinformatics) is required to support inter-regional sharing of taxonomic expertise and to maintain levels of scientific capacity. [30.]

A further widely recognised factor driving the need for subregional self-sufficiency in taxonomy is the growing difficulty that developing countries face in obtaining taxonomic services from the developed world expert institutions. Cost is a major obstacle: developed country institutions today are no longer fully subsidised by their governments and consequently charge for their taxonomic services at rates that are typically too great for developing countries. A further obstacle is the limited capacity in developed country expert institutions. Major world centres of taxonomy are overwhelmed by demands for identifications from their own national environmental programmes and international biodiversity activities in which their countries participate. Consequently, developing countries are not only badly lacking in their own taxonomic capacity to support their development programmes, but also in the opportunities to obtain such services elsewhere. [31.]

## **D. SOLUTIONS**

In these circumstances, the obvious solution to the problem of inadequate taxonomic services in developing countries is for them to achieve self-sufficiency and self-reliance in this field by the quickest and cheapest means. Experience in developed countries has shown that it is totally uneconomic and quite unnecessary to establish and sustain fully comprehensive capabilities and resources in each and every country. An approach whereby individual country resources are shared by a group of collaborating nations is much more cost-effective. [32.]

A tried and tested mechanism for such a collaborative approach at the subregional level exists in the form of the Technical Cooperation Network (TCN), devised and successfully implemented world-wide by the United Nations Development Programme (UNDP). Taxonomic self-sufficiency in developing countries can best be achieved by training, providing resources to existing taxonomic institutions, and speeding the introduction of appropriate new technologies and skills from expert centres to groups of developing country institutions within Technical Cooperation Networks. BioNET-INTERNATIONAL was devised to meet this very need by establishing subregional TCNs known as LOOPs (Locally Owned and Operated Partnerships). [33.]

Parties to the CBD have also recognised the important capacity building role played by subregional networks such as NAFRINET by endorsing (via Decision III/10) recommendation II/2 of SBSTTA regarding capacity building: “*national institutions and regional and subregional networks should be established or strengthened and linkages enhanced with taxonomic institutions in developing and developed countries*”. In COP decision VI/8 the Parties considered “*capacity development at the national and regional levels as a driving force in implementing the programme of work*” [of the Global Taxonomy Initiative], and requested all Parties and governments to “*Initiate the setting up of national and regional networks to aid the Parties in their taxonomic needs in implementing the Convention on Biological Diversity*”. Thus the proposed structure and work programmes of

NAFRINET are designed to assist the countries of the subregion to build the taxonomic capacity needed for development, including implementation of the COP Decisions. [34.]

The LOOPS of BioNET-INTERNATIONAL attempt not only to work in close partnership with relevant global and subregional initiatives but also to provide a sub-regional central point and national central focal points for all such activities to work through. NAFRINET will strive to work with, and provide taxonomic support to, globally recognised initiatives and programmes such as the Global Invasive Species Programme (GISP), International Pollinators Initiative (IPI), the Millennium Assessment of Global Ecosystems (MA), Global Biodiversity Information Facility (GBIF) and the Clearing House Mechanism of the CBD (CHM), and others. Subregionally, NAFRINET will seek to build supportive relationships and avoid duplication of effort of a number of initiatives including, for example: Euro+Med PlantBase, MEDUSA, IUCN, OPTIMA and EcoPort. [35.]

The North African LOOP is tailor-made to meet the specific taxonomic needs of its member countries and sub-regional development priorities and this document - the detailed Proposal for establishing and operating this LOOP - derives from the deliberations and recommendations of the LOOP Formulation Workshop convened in Rabat, Morocco from 13 to 16 May, 2002. It is intended for submission to relevant government institutions in each country for approval and endorsement. [36.]

## **E. NORTH AFRICAN PRIORITIES**

The NAFRINET LOOP Formulation Workshop identified nine priority needs that must be addressed before the subregion can start to be considered reasonably self-reliant in taxonomy. This initial assessment of priority needs is consistent with the lack of capacity recognised as comprising the ‘Taxonomic Impediment’ to implementation of the CBD. Further identification of the detailed, specific measures that will lead to the most cost-effective development of taxonomic self-sufficiency in the subregion requires a detailed needs assessment at both the national and subregional levels (as noted in COP Decisions IV/1D, V/9 and VI/8). This would identify specific user needs and elaborate the national priorities in taxonomic infrastructure, human resources and new technologies. At the subregional level, such an assessment will allow identification of options for achieving economies of scale by pooling, optimising and sharing resources, a goal that can be most effectively facilitated by the full operationalisation of a TCN such as NAFRINET. [37.]

Of particular relevance to North African countries is COP decision V/32 “*Consideration of options for conservation and sustainable use of biological diversity in dryland, Mediterranean, arid, semi-arid, grassland and savannah ecosystems*”. In it Parties establish a programme of work on the biological diversity of dryland, Mediterranean, arid, semi-arid, grassland and savannah ecosystems, bearing in mind the close linkages between poverty and loss of biological diversity in these areas. In paragraph 3 of the decision Parties, countries and international and regional organisations, major groups and other relevant bodies are urged “*to support scientifically, technically and financially [the] activities [of the programme of work]*”

*at the national and regional levels and to foster cooperation among countries within regions and subregions sharing similar biomes.”. In decision VI/4 on Dry and subhumid lands the COP recommended that Parties “enhance synergies in the implementation of this and other thematic programmes of work of the Convention”. [38.]*

Within the Programme of Work on Marine and Coastal biodiversity set out in COP decision IV/5, it is stated as part of Operational Objective 6.2 that “*Special consideration should be given to regional perspectives and the setting up of regional centres of taxonomic expertise, as well as to the taxonomy efforts of other intergovernmental programmes, agencies and relevant institutions.*”. [39.]

Mountain biodiversity is clearly a major issue for the subregion. This thematic area of the CBD will be developed through a decision at COP VII. However, the GTI has as part of its mandate to support its work programmes in all thematic areas including mountain biodiversity. In the programme of work of the GTI planned activity 13 on mountain biological diversity notes that the coordinating mechanism of the GTI could play an important role in proactively defining taxonomic needs relating to this planned thematic activity (COP VI/8). Moreover, a format for a thematic report on mountain ecosystems has been agreed at COP 6 (VI/25), to assist consideration of the status of implementation at COP 7; this includes the question “*Has your country identified taxonomic needs for conservation and sustainable use of biological diversity of mountain ecosystems?*”. [40.]

## **Regional Priority Needs<sup>1</sup>:**

### **1. Integration of taxonomy with other sectors**

The contribution of taxonomists is particularly vital for national implementation of the CBD (COP Decisions III/10; IV/1D; V/9; VI/8), other related conventions (eg. IPPC), international initiatives such as the GISP, GBIF, PGRFA and MA, subregional and national development plans and trade in agricultural products, and is further recognised by the assessments compiled by the Capacity Development Initiative of UNDP-GEF. Taxonomists need to become better informed on, and where appropriate participate in, these initiatives, and national development and biodiversity management programmes need to communicate their needs for taxonomic tools and services more effectively to taxonomic institutions. Linkages between the taxonomic community and national focal points for the CBD and other initiatives need to be strengthened. [41.]

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<sup>1</sup> The full national reports are available from the NAFRINET Coordinator, Prof Moh Rejdali or from [www.bionet-intl.org/nafrinet](http://www.bionet-intl.org/nafrinet).

## **2. Core funding**

As recognised at the global level, the taxonomic tools needed to achieve sustainable development can only be delivered if there is sufficient funding to maintain adequate trained human resources and core reference resources such as biological collections. Taxonomy is thus in urgent need of greater sustained long term funding from various sources, including governments, international organisations and NGOs, to support the production of the required taxonomic tools and expertise. For example, many institutions and research centres do not have sufficient core funding for full-time posts to attract young graduates. Where funds are available nationally and internationally, there are sometimes serious constraints in accessing them, including lack of clarity on mechanisms. [42.]

## **3. Human Resources**

COP Decision III/10 endorses recommendation II/2 of SBSTTA regarding capacity building: *“for new taxonomists to be recruited there is a need to provide employment opportunities. It is urgent that parties take this need into consideration and integrate it into the programme of capacity building”*. The need for training of adequate numbers of taxonomists, especially young taxonomists, in the subregion is urgent. There is also a need to develop training for technicians and other support staff in the field of taxonomy. Insufficient capacity exists to do even basic biodiversity inventory work, as called for by the CBD (COP Decision III/10). Addressing the skills shortage requires, for example, the strengthening of curricula for taxonomy in universities, retention of taxonomic posts and the establishment of an incentives mechanism to attract students to the profession of taxonomy. Overall, as is common on a global scale, the greatest deficiency in expertise is in lower organisms such as insects, fungi and soil microbes, the critical species which drive ecosystem processes such as soil nutrient turnover and pollination, and which are the greatest causes of agricultural loss. Further, collections facilities need professional managers to manage and maintain the critical biological collections and other reference materials. Providing a training programme for customs and quarantine officers in identification of key organisms is also a priority. [43.]

## **4. Collections Facilities**

‘National Taxonomic Reference Centres’ to ensure efficient management of and access to subregional biological collections and data are recognised as important by the CBD (COP Decisions IV/1D, V/9.2C and VI/8). Such reference centres might be national museums or other institutes as deemed appropriate by the countries concerned. The national and subregional needs assessments can facilitate identifying the level to which each country requires national facilities as opposed to shared subregional facilities. Existing collections require upgrading and expansion as most are held in facilities that are inappropriate for the long term storage of degradable biological materials and have had insufficient funding to allow procuring of adequate reference materials such as published journals or to conduct fieldwork to supplement the materials. [44.]

## **5. Mechanisms that promote scientific collaboration**

Taxonomy is a highly interdisciplinary and international endeavour – like all science, it depends on access to people, materials, data and publications between institutions and across borders. For example, management of invasive alien species and transfer of genetic resources are by definition international and multilateral problems. In particular, the subregion needs to support greater international cooperation in information exchange, training of taxonomists and in studies of biodiversity, ecosystems and environmental protection. The LOOP, not only between its member countries, but also through its linkage to the rest of BioNET-INTERNATIONAL's Global Network, is a highly appropriate mechanism to facilitate collaboration and international linkages. [45.]

## **6. Modern technology facilities**

Subregional taxonomic self-sufficiency also requires in the longer-term the development of facilities for sophisticated taxonomic investigations at the tissue, cell and molecular levels, in addition to traditional morphological analytical techniques. Facilities for modern analytical techniques for treatment of data are also required. [46.]

## **7. Reference Materials**

Some institutions in the subregion do not have adequate access to standard reference texts such as monographs and regional and international journals. [47.]

## **8. Information management and electronic databases**

Some electronic tools have been developed in a minority of institutes in the subregion but significantly greater investment is needed to establish databases that facilitate access to appropriate information and make it available to users across the subregion and more widely. Internet connectivity and improved accessibility to collections data accelerate the building of taxonomic capacity in the region. By participating in such initiatives as EcoPort, Euro+Med PlantBase, OPTIMA, MEDUSA and the GBIF, the sharing of data with the global taxonomic and biodiversity community will be facilitated, which will help to increase the capacity of the taxonomic institutions in the subregion. [48.]

## **9. Mechanisms to facilitate the exchange of specimens and information**

In all countries of the subregion a proportion of specimens collected within national borders are now held by institutes elsewhere, both within the region and in other regions. The lack of these reference specimens, and the information associated with them, pose a significant obstacle to effective taxonomic work within the subregion and countries of the subregion. Formalisation of agreements to facilitate the loan and exchange of specimens and access to information between countries in the proposed network will help to overcome this lack of access to material and increased access to information will help leverage further material and information from countries outside the region (CBD Decision III/10). In addition, the work

of NAFRINET is likely to involve movement of specimens across national boundaries. Agreements between countries will assist in this process, taking into account as appropriate the guidelines on Access and Benefit-Sharing in COP decision VI/24, noting particularly the paragraph 11(l) of the Bonn Guidelines: *“Taxonomic research, as specified in the Global Taxonomy Initiative, should not be prevented, and providers should facilitate acquisition of material for systematic use and users should make available all information associated with the specimens thus obtained”*. Paragraph 16(b) of the guidelines notes that *“Special terms and conditions should be established under mutually agreed terms to facilitate taxonomic research for non-commercial purposes;”* and paragraph 34 *“Prior informed consent should be based on the specific uses for which consent has been granted. While prior informed consent may be granted initially for specific use(s), any change of use including transfer to third parties may require a new application for prior informed consent. Permitted uses should be clearly stipulated and further prior informed consent for changes or unforeseen uses should be required. Specific needs of taxonomic and systematic research as specified by the Global Taxonomy Initiative should be taken into consideration.”* [49.]

## **F. RECOMMENDATIONS**

The North Africa LOOP Formulation Workshop proposed the following recommendations:

### **1. TO THE GOVERNMENTS OF COUNTRIES WITHIN THE NETWORK**

That they accord proper recognition to the fundamental importance of sound taxonomic capacity and services in their implementation of the Convention on Biological Diversity, within National Strategies and Action Plans by: [50.]

- 1) Allocating adequate financial and manpower resources to their existing taxonomic centres in accordance with COP Decisions IV/1D, V/9 and VI/8; [51.]
- 2) Approving the establishment and sustaining of a TCN or LOOP of BioNET-INTERNATIONAL in the form of NAFRINET, a structure designed to enable achievement of subregional self-sufficiency in the taxonomic services that are needed to support national development programmes and the meeting of national obligations under the CBD and Agenda 21; [52.]
- 3) Actively seeking funding support, both public and private, to supplement local inputs to ensure the successful execution of the LOOP’s work programmes and enable achievement of subregional self reliance in taxonomy. [53.]

## 2. TO GOVERNMENTS OF DEVELOPED COUNTRIES

In accordance with the *modus operandi* established by BioNET-INTERNATIONAL and facilitated by the LOOP structure, that they support the activities and programmes of the LOOP by making available their taxonomic expertise and resources and otherwise assist the member countries to achieve subregional taxonomic self-sufficiency and self-reliance, in accordance with COP Decision IV/1D and VI/8. [54.]

## 3. TO FUNDING AGENCIES AND PRIVATE ENTERPRISE

That they, recognising the critical nature of NAFRINET's objectives, provide financial, technical, material and other inputs to enable the establishment and subsequent sustainability of the LOOP, the execution of its work programmes, the provision of NECI and NACI services and otherwise assist the LOOP to achieve its technical and development objectives, in accordance with COP IV/1D, VI/8 and VI/17. [55.]

### **III. THE NORTH AFRICAN LOOP**

#### **A. TITLE AND DESCRIPTION**

The Formulation Workshop proposed that:

the LOOP should be known as *NAFRINET, THE NORTH AFRICAN LOOP of BioNET-INTERNATIONAL: a subregional Technical Cooperation Network (TCN) for taxonomic capacity building.* [56.]

The short name for the LOOP will be “**NAFRINET**”. [57.]

#### **B. GOAL**

To establish and sustain within the North Africa subregion realistic self-reliance in required taxonomic infrastructure, human resources and services to meet national and subregional sustainable development needs. [58.]

#### **C. OBJECTIVES**

- 1) To enable the achievement of national and subregional objectives in the development of sustainable management of all biological resources and ecological systems. [59.]
- 2) To strengthen existing centres of expertise and establish new facilities, capabilities and resources so as to provide the region with the appropriate infrastructure and cadre of taxonomists needed to ensure self-sufficiency and self-reliance in taxonomy. [60.]
- 3) To conduct training, rehabilitate collections and develop and maintain records, develop user-friendly aids for identification, and transfer information and technology under donor supported institutional strengthening and capacity-building programmes. [61.]
- 4) To assist North African countries to meet their commitments to the Convention on Biological Diversity, and other relevant international conventions, protocols and initiatives, particularly the International Plant Protection Convention, Convention to Combat Desertification, (UNCCD), Barcelona Convention, CITES, Ramsar and Agenda 21. [62.]
- 5) To provide individual member governments, international organisations, NGOs, IGOs and donors, with a taxonomic structure and focal points within the sub-region and each country in order to facilitate economies of scale, and provision of the best possible advice on taxonomic matters, and the best possible taxonomic services in support of their programmes. [63.]

## D. MEMBERSHIP

Membership is non-exclusive and initially shall comprise the six named member countries of North Africa, represented by their designated National Coordinating Institutes (NACI's). [64.]

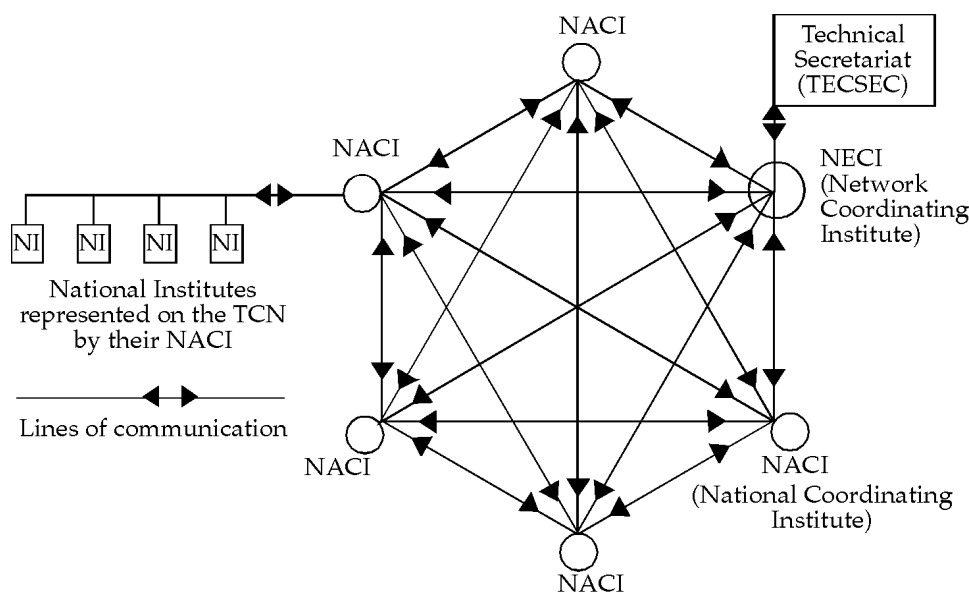
Other institutes and organisations are welcomed as Associate Members, by application and/or invitation as deemed desirable by the LOOP members. [65.]

## E. STRUCTURE (Figure 1)

### 1. National Level

Those national organisations and other bodies within individual countries, which are identified by national representatives as being appropriate and desirable member institutes, and designated as **National Institutes (NIs)**, shall form 'in-country' national networks to facilitate cooperation and collaboration. A single National Institute elected by the NI's to coordinate this national network shall be designated the **National Coordinating Institute (NACI)**. [66.]

**Figure 1: Conceptual model of a 6-Member LOOP or TCN**



### 2. Subregional Level

The activities of the LOOP shall be coordinated by a designated **Network Coordinating Institute (NECI)**, with a dedicated Coordinator and supporting staff (as appropriate), and located at an appropriate taxonomic institute in a member country. It shall function as the

LOOP Focal Point, a centre for receipt and dissemination of information, and the liaison link with the BioNET-INTERNATIONAL Technical Secretariat and other LOOPS, etc. It shall provide a first point of contact for all external bodies. [67.]

L'Institut Agronomique et Vétérinaire Hassan II, Rabat *has been designated as the NECI of NAFRINET for the first 3 years.* [68.]

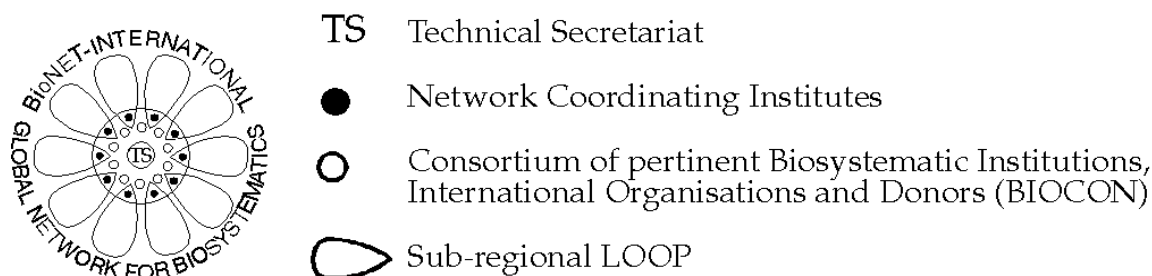
The designation of the NECI will be reviewed every three years by the LCC and can be rotated among the member countries or repeated, as agreed by the LCC. [69.]

### 3. Global Level (Figure 2)

#### i) LOOPS

The LOOPS (Locally Owned and Operated Partnerships) are the very core of the Global Network. They are based on the UN concept of *Technical Cooperation Networks* (TCNs) and are dedicated, through South - South cooperation, to mobilising, pooling and optimising the use of existing taxonomic skills and resources within the subregions for the benefit of all LOOP Members. The Global Network subregions accord closely to those prescribed by the United Nations. [70.]

**Figure 2: Conceptual model of the global network**



#### ii) BIOCON (The Consortium for Technical Support for BioNET-INTERNATIONAL)

This consortium of the world's major centres of taxonomic expertise and resources is designed to provide, where necessary, the information, skills, materials and technologies needed by developing country subregions to achieve self-reliance in taxonomy. It is an important source of technical support for donor-funded programmes for capacity building and human resource development in the BioNET-INTERNATIONAL LOOPS of the developing world i.e. North - South cooperation. [71.]

This consortium is being created world-wide as developed country institutions begin to collaborate to make their diverse resources available. The first subregional consortium,

EuroLOOP, with some 100 institutions spread through some 25 European countries was established in 1994 and is now expanding as it embarks on the task of inventorying the resources it has to offer to developing country LOOPS. [72.]

## F. MANAGEMENT AND COORDINATION

Management of LOOPS is founded on four functional levels:

- |   |  |
|---|--|
| <b>(i) National Institutes (Nis)</b>                  | the relevant bodies within individual countries who work together as a national network to implement LOOP work programmes. [73.] |
| <b>(ii) National Coordinating Institutes (NACIs)</b>  | the single institutes in member countries designated to coordinate the activities of the National Institutes (NIs). [74.]        |
| <b>(iii) The LOOP Coordinating Committee (LCC)</b>    | the governing body of the LOOP comprised of the NACIs together with any other invited bodies. [75.]                              |
| <b>(iv) The Network Coordinating Institute (NECI)</b> | the executive of the LCC, elected to coordinate and manage the affairs and work of the LOOP. [76.]                               |

The LOOP will be managed by a **LOOP Coordinating Committee (LCC)**, comprised of the member country National Coordinators from the NACIs (and Associate Members where such exist). [77.]

The affairs and activities of the LOOP will be coordinated in accordance with the plans and directions of the LCC by the Network Coordinator of the **Network Coordinating Institute (NECI)**. The NECI will also serve as the direct link between the National Coordinating Institutes of the member countries, between the LOOP and the central **Technical Secretariat (TecSec)**, between the LOOP and NECIs of other BioNET-INTERNATIONAL LOOPS, as well as with the consortium of developed country technical support institutes of **BIOCON**. [78.]

Designated **Working Groups** may conduct identified work programmes with leadership provided by elected institutions, which will serve as the focal point for these programmes, in accordance with the directions and wishes of the LCC and with the assistance of the NECI as Coordinator. [79.]

## **G. MANDATES**

### **1. The LOOP Coordinating Committee (LCC)**

This is composed of the NACIs and other Members in the LOOP structure and the NECI which also serves as its executive arm or Secretariat. Thus, there will be at least one representative from each member country and from each of the other identified Associate Member bodies (where such exist). The LCC's responsibilities are as follows: [80.]

- 1) Promote, maintain and sustain the LOOP and its activities, by securing the necessary commitment and financial support of LOOP member governments and funding for core activities and Work Programmes from donor agencies, and through good management of resources. [81.]
- 2) Serve as the subregional advisory body on taxonomy and its development in providing the best possible advice to LOOP member governments, international organisations and donors and others on all taxonomic matters in the region. [82.]
- 3) Appoint and oversee the activities of the NECI and enable it to serve as an effective Secretariat and executive arm of the LCC. [83.]
- 4) Prescribe the mandates of all coordinating institutes within the LOOP (NECI and NACIs) and terms of reference for Working Groups. [84.]
- 5) Devise and enable the implementation of Work Programmes and other activities designed to achieve LOOP objectives. [85.]
- 6) Draw up the LOOP Budget for core activities and work programmes and oversee use of allocated resources. [86.]
- 7) Seek funding for specific programmes, from member country contributions and funding agencies. [87.]
- 8) Meet at least annually for the purpose of conducting LOOP business, especially to evaluate progress and outputs in relation to inputs and identify needs, with rotational venues if practical. [88.]
- 9) To decide on inviting and/or approving applications for membership. [89.]

### **2. The Network Coordinating Institute (NECI)**

This is the core of the LOOP and carries substantial responsibilities. It is the centre for receipt, collation and distribution of information and contacts. It is the Secretariat of the LOOP Coordinating Committee (LCC). It is the link between the NACIs and the direct link between the LOOP and TecSec and the link through TecSec with all other

BioNET-INTERNATIONAL LOOPS and with BIOCON. *The designated NECI needs to provide adequate logistical and operational support for the Network Coordinator to fulfil their role.* [90.]

The responsibilities of the NECI are as follows:

- 1) Coordinate the activities of the network in accordance with the instruction and directions of the LCC. [91.]
- 2) Prepare programmes of work and budgets as approved by the LCC and with the appropriate support and inputs from NACI's and others. [92.]
- 3) Draft reports on activities and the Annual Report of the network as required by the LCC, again and with the appropriate support and inputs from NACI's and others. [93.]
- 4) Serve as, and provide an effective link between, the NACIs and the Technical Secretariat. [94.]
- 5) Collect, collate and disseminate information; issue a Newsletter at agreed intervals (again dependent on receiving adequate contributions from the NACIs and others). [95.]
- 6) Organise LCC meetings. [96.]
- 7) Serve as the repository of literature, documents and papers relating to the network, as required. [97.]
- 8) Liaise with and facilitate the operation of Working Groups. [98.]
- 9) Generally function as the executive arm of the LCC. [99.]
- 10) Process funding proposals on behalf of the LCC where these have been drafted by the LCC and others. [100.]

### 3. The National Coordinating Institutes (NACIs)

The NACI is the anchor-point of national activities, and has within it at least one person designated as the National Coordinator to whom responsibility for LOOP affairs is delegated (an 'alternate' should also be designated). The responsibilities of the NACI are as follows: [101.]

- 1) Nominate a National Coordinator (person and post) and an 'alternate' in the case of the non-availability at a particular time of the nominated Coordinator, and *allocate institutional time and budget within that post to allow for the proper execution of NACI responsibilities.* [102.]

- 2) Designate and support the Coordinator to serve as the national representative on the LCC and to implement the decisions and recommendations of the LCC at national level. [103.]
- 3) Coordinate a national network of NI's and national taxonomic activities and programmes in support of the LOOP work programmes (which are focussed on meeting national needs). [104.]
- 4) Liase with and exchange information with other NACIs and the NECI on a continuous basis. [105.]
- 5) Provide, as delegated, leadership and/or support for Working Groups and other programmes. [106.]
- 6) Communicate, on a continuous basis, on all LOOP and BioNET-INTERNATIONAL activities to and from National Institutes and to and from the NECI. [107.]
- 7) Liase with all CBD and GTI Focal Points of the subregion to ensure the LOOP is supporting, where appropriate, subregional activities aimed at implementing the CBD. [108.]

#### 4. National Institutes (NIs)

These are those Government institutes, organisations, services (e.g. quarantine), NGO's and other private and public sector bodies which have something to offer to LOOP activities or who need LOOP services (i.e. *both providers and users of taxonomic services and products*). Together they constitute the National Network within which the National Coordinator is the focal point. Their responsibilities are as follows: [109.]

- 1) Assist the NACI in the implementation of decisions and recommendations of the LCC at national level. [110.]
- 2) Contribute expertise, resources, information, research findings etc. to the LOOP through the NACI and NECI. [111.]
- 3) Actively participate in all feedback systems of the LOOP (e.g. identification of needs, achievements, problems, solutions, new knowledge, technologies, new records, newsletters etc.). [112.]
- 4) Lead, support and facilitate, as delegated, and otherwise contribute to Working Groups, and other LOOP programmes. [113.]
- 5) Communicate on a monthly basis with the NECI and with the designated National CBD and GTI Focal Points to report on LOOP activities (and thereby assist the Focal

Points in writing their National and other reports) and learn of the latest progress in national implementation of the CBD and other initiatives. [114.]

- 6) Provide and maintain the GTI Programme Officer at the Secretariat of the CBD with a list of national taxonomic experts, indicating which CBD thematic areas and Cross-cutting issues they are expert in and including their regularly updated contact details. [115.]

## 5. Working Groups

The members of Working Groups consist of a group of specialists appointed by the LOOP Coordinating Committee. The size of these groups may vary according to the workload of the Working Group. The LCC may change members or size of the various groups or modify their Terms of Reference from time to time if necessary or useful. One member of each group should function as the Focal Point for that Group, and be responsible for maintaining the necessary contacts between the group members, other groups and the NECI. [116.]

Working Groups should be established to deal with specific problems in the region. Working Groups may be permanent, addressing matters that need constant attention such as training, or may be temporary e.g. to deal with difficult taxonomic group problems, suspected invasive alien introductions etc. [117.]

The LCC should establish Terms of Reference for each Working Group, and the Working Group should submit a Technical Report on activities, conclusions and recommendations to the NECI to be presented and discussed at the LCC. [118.]

## H. RESPONSIBILITIES

Designated National Institutes, National Coordinating Institutes, the Network Coordinating Institute, and the LOOP Coordinating Committee assume the responsibility to function in accordance with the mandates provided in this Proposal. [119.]

*By agreeing to this Proposal each government undertakes to allocate sufficient staff time and resources to enable the designated coordinator in the NACI to perform their LOOP role effectively, as described in the NACI mandate. In the case of the country hosting the NECI, the host government further agrees to providing sufficient staff time, resources and operational costs (such as internet connections, telephone calls, postage, etc.) to enable the NECI to function effectively as described in the NECI mandate. [120.]*

## I. FUNDING

The ultimate objective of NAFRINET is to provide an effective mechanism for the institutions of one member country to provide taxonomic services to those in other

countries on a reciprocal basis in the true spirit of a TCN. Such an arrangement should involve no money transfers or foreign exchange and hence is sustainable even in circumstances of economic stringencies. [121.]

Functioning of the LOOP requires sustained commitment by individual member governments, who must be prepared *through institutional core budgets* to contribute their share of manpower and material resources to LOOP activities and services, for the benefit of the LOOP members as a whole, and in return for their reciprocal inputs. This contribution in kind will almost inevitably involve, above all else, manpower and the allocation within national budgets of greater support for existing taxonomists, and possibly the appointment and provisioning of new taxonomic posts (in accordance with COP Decisions IV/1D, V/9 and VI/8). It may also involve hosting exchange visits by other member country scientists and meetings, and providing facilities and material support. [122.]

The success of the LOOP and the achievement of its objectives, like those of BioNET-INTERNATIONAL as a whole, depend on substantial funding support. An important advantage of Technical Cooperation Networks is that they provide a permanent structure that can ensure the long-lasting impact of donor inputs. They are cost-effective given due commitment by member governments, effective performance by their NECIs, realistic work programmes and adequate technical support. NAFRINET, as a part of BioNET-INTERNATIONAL, has the support of BioNET-INTERNATIONAL's dedicated Technical Secretariat and the technical support consortium of major world centres in the form of BIOCON. [123.]

Subject to government endorsement of the NAFRINET LOOP, BioNET-INTERNATIONAL will provide catalytic start-up funding of £90,000 (currently equivalent to approximately US\$130,000) over two years for NAFRINET. This funding will be managed by the NECI on behalf of the LCC and used in the first two years of LOOP operation to establish the required networking infrastructure, support some core activities and, importantly, as matching cofinancing to help leverage funds from governments and funding agencies. Whilst the CBD's GTI does not have funds and is not a funding mechanism, its establishment by the Parties to the CBD is a powerful call to all governments and donors to provide the financial resources needed to implement the GTI Programme of Work, and the establishment of sub-regional LOOPS via BioNET-INTERNATIONAL is an important facilitating step in doing so. [124.]

## **J. PARTNERSHIPS**

Encouragement for involvement of partnerships between initiatives and institutions in carrying out the GTI programme of work has been given strongly by the CBD COP in decision VI/8. Such partnerships are and will be of importance to the development of taxonomic work in North Africa. This is reflected by the presence in the Formulation Workshop of representatives of several potential partner initiatives of NAFRINET (see

Appendix B). Further details of these partners, and some other relevant organisations, are given in Appendix D.

## **IV. WORK PROGRAMMES**

The five priority Work Programmes of the Network, designed to ensure successful establishment of a network, its long-term sustainability and the operationalisation of the identified priority capacity building needs are: [125.]

1. Information and Communication Services; [126.]
2. Human Resource Development (Training); [127.]
3. Curation, Maintenance And Strengthening Of Collections; [128.]
4. Development and Application of Appropriate Technologies and Tools; and, [129.]
5. Establishment and Sustainability of the NECI and LOOP [130.]

### **A. INFORMATION AND COMMUNICATION SERVICES**

#### **1. GOAL**

To develop in the North African subregion an information and communication infrastructure and service for the NAFRINET LOOP. [131.]

#### **2. OBJECTIVES**

- 1) To ensure the NECI and NACIs have sufficient communications infrastructure and agreed reporting structures to support effective networking and the exchange of relevant information regarding taxonomy-related activities. [132.]
- 2) To ensure, by proactive networking, that the LOOP is working in partnership with other relevant initiatives, such as Euro+Med PlantBase, MEDUSA, OPTIMA, IUCN, EcoPort and GBIF nationally, subregionally and globally. [133.]
- 3) To ensure access to databases and major published reference works such as taxonomic monographs, Red Lists of endangered species, quarantine checklists and back subscriptions of key serial journals and ensure future subscriptions to and purchase of journals and other appropriate publications. [134.]
- 4) To ensure the priority taxonomic information needs of the region are identified and addressed (COP V/9, VI/8). For example, an information service providing all

relevant knowledge is needed, to cover such elements as economically-important species, endemic status, traditional taxonomy, molecular techniques, new records, current pest distribution maps and A1 and A2 quarantine pest lists, and incidence and threats of invasive alien species. Relevant information on natural enemies, beneficial organisms, bioindicators and bioremediation agents needs to be accessed and kept up to date (COP IV/1D). [135.]

- 5) To promote further development of the subregion's databases and provision of information in national languages and in a common working language, chosen by the delegates to the Formulation Workshop to be Arabic, French, or English as appropriate (COP IV/1D). [136.]
- 6) To encourage new taxonomic work in response to identified needs (e.g. national inventories of fauna, flora and microroganisms, revisions and checklists of priority groups such as fungi, crop pests, natural enemies, pollinators, bioindicators, etc., and in support of the Global Strategy for Plant Conservation) and in support of CBD thematic areas and cross-cutting issues (COP III/10; V/7; VI/8, VI/9). [137.]
- 7) To make available for use relevant information products e.g. identification and diagnostic tools, interactive and pictorial keys, pest distribution maps, species inventories, lists of threatened and endangered species, specimen and living organism collections inventories etc. in a variety of hard copy and electronic media (COP V/9:2b). [138.]
- 8) To promote rapid transfer and sharing of taxonomic and biodiversity information throughout the subregion (COP IV/1D) as well as with international, regional and national initiatives such as the CBD CHM, the GBIF, Euro+Med PlantBase, MEDUSA, OPTIMA and EcoPort. [139.]
- 9) To assist with rapid information collation and dissemination for purposes of facilitating national CBD and other reports. [140.]

### 3. ACTIVITIES

- 1) **Within the first six months:** Conduct a LOOP information and communications needs assessment. [141.]
- 2) Ensure access of NACIs and NECI to appropriate computer hardware and software including computers with modem, CD-ROMs, e-mail access, and Internet (all ongoing operational costs e.g. telephony costs to be covered by the host Institute). [142.]
- 3) Design, set up and maintain a regularly updated NAFRINET website, linked with the BioNET-INTERNATIONAL website ([www.bionet-intl.org](http://www.bionet-intl.org)). [143.]

- 4) Electronic networking, including production and dissemination of Newsletters, and a mailing list updated quarterly, to include CBD Focal Points and other collaborating partners. Newsletters and hardcopies of data and information to be posted to physical addresses where access of these locations to internet connectivity may be difficult. [144.]
- 5) Establish contact with all relevant initiatives nationally, subregionally and globally. [145.]
- 6) Produce a preliminary subregional database of experts (COP IV/1.D).

**Longer term:** the needs assessment will determine priority areas of activity for action over the longer term, for example, suggested needs might include acquisition of relevant standard references such as text books and taxonomic monographs; subscription to taxonomic journals; develop or commission computerised identification tools, pictorial keys and distribution maps; produce a subregional database of expertise and specialists in taxonomy. [146.]

## **B. HUMAN RESOURCE DEVELOPMENT (TRAINING)**

### **1. GOAL**

To increase the level of taxonomic self-reliance within the subregion via human resources capacity building (including expanding on existing capacity and building new capacity) in priority taxonomic areas (COP V/9:2d; VI/8). [147.]

### **2. OBJECTIVES**

- 1) Identify taxonomic training needs and resources required (COP IV/1D; V/9:2b; VI/8). [148.]
- 2) Ensure that a core group of taxonomists at all NACIs is available as a LOOP resource with the intent of covering all taxonomic groups at the subregional level. [149.]
- 3) To provide training in key taxonomic groups at different educational levels, including vocational, technical and higher academic levels (COP IV/1D: Suggestions for Action 5). [150.]
- 4) To develop joint training programmes for the subregion with support from institutes as part of North-South and South-South cooperation (COP IV/1D: Suggestions for Action 3 and 11; VI/8). [151.]

### 3. ACTIVITIES

#### **Identification of Needs**

- 1) Knowledge and skills gaps at different educational levels, including vocational, technical and higher academic levels, including technicians and other support staff, applied biologists and taxonomists, identified at NACIs and NIs. [152.]
- 2) Participatory learning models for training of taxonomists, natural resource managers, extension agents and farmers/producers assessed for appropriateness to the subregion. [153.]
- 3) Training courses, workshops, materials, resource institutes, trainers and other opportunities identified. [154.]

#### **Training - Technicians and other support staff**

Technicians are diploma or degree holders, whose duties are to provide assistance to professional officers, and supervise and train technical assistants. They may require training in basic and advanced aspects of field specimen collection, preparation, processing, documentation and curation; advanced laboratory techniques applicable to taxonomy; data input and retrieval; illustration techniques; identification and classification of priority taxa, for example economically important pests and diseases, endangered species and human disease vectors. Training of technicians and other support staff will expand the range of organisms that can be processed in the subregion, reducing the need for international identifications to be carried out and paid for. A target for the number of people to be trained at each level in each country will be determined by the needs assessment. A short-course (6-12 weeks) option is usually most cost-effective and should be undertaken at key sites within the subregion where possible depending on the outcome of the needs assessment. [155.]

#### **Training - Professional Officers**

Professional officers are usually degree holders, and include applied biologists as well as specialist taxonomists. To utilise and develop existing subregional expertise five key elements are required: [156.]

- 1) Upgrading of knowledge and skills of both applied biologists and taxonomists already working in key areas; [157.]
- 2) Full training of specialists in all groups of organisms important in the region. [158.]
- 3) Ensuring that there is at least one qualified specialist at each NACI to serve as the reference point for development of further expertise and sustaining the institutional capacity (i.e. 'train the trainer'). [159.]

- 4) Applied taxonomists trained in the broader areas of application for example, bio-safety, bio-prospecting, and Intellectual Property Rights and associated taxonomic techniques. [160.]
- 5) Training in business and administrative management for managers of taxonomic institutions as part of efforts to strengthen capacity in those institutions (COP IV/1D: 11), and for project managers [161.]

In all training programmes a key element of sustainability of capacity is the sustained provision of employment for those undergoing the training (COP IV/1D: Suggestions for Action 5). [162.]

**Develop or acquire appropriate training materials:**

- 1) Training manuals developed and acquired in areas of interest. [163.]
- 2) Diagnostic keys and guides developed. [164.]
- 3) Existing distance learning and multimedia packages on taxonomy and biodiversity acquired and disseminated. [165.]
- 4) NAFRINET multimedia packages for specialists and non-specialists developed. [166.]
- 5) Available taxonomic keys and guides adapted into extension support materials to aid farm/field-level biodiversity identification and utilisation. [167.]
- 6) Materials for field training, including transport, collecting equipment etc.
- 7) Materials for training of technicians in specimen preparation and conservation.
- 8) Improvement of university curricula in their inclusion of taxonomy and taxonomic work to be encouraged and aided.

## **C. CURATION, MAINTENANCE AND STRENGTHENING OF COLLECTIONS**

### **1. GOAL**

To secure, maintain, strengthen, and make accessible, existing reference and research collections containing material from the North African subregion through National Taxonomic Reference Centres (COP III/10; VI/8). [168.]

## 2. OBJECTIVES

- 1) To assess the status of existing facilities and resources (COP V/9:2a, 2b; IV/1D: Suggestions for Actions 11.i) and identify priorities (COP IV/1D: Suggestions for Action 3). [169.]
- 2) To recommend to LOOP member governments one or more NIs as dedicated National Taxonomic Reference Centres (COP V/9: 2c). [170.]
- 3) To enhance the existing strengths in collections, and related human resource capability and scientific literature (COP III/10 endorsing SBSTTA recommendation II/2; VI/8). [171.]
- 4) To promote the use in the subregion of compatible collection management procedures to facilitate effective network access to collections and collection information within and between the countries of the NAFRINET subregion (COP IV/1D: Suggestions for Action 3 & 4). [172.]
- 5) To facilitate access to collections of North African material held outside the subregion and access to and repatriation of information held therein (COP IV/1D: Suggestions for Action 3; VI/8). [173.]
- 6) To maintain and enrich collections for both scientific investigations and educational museums of natural history, with special consideration for type material, as well as to produce popular products such as field guides, didactic aids, and materials for general public awareness. [174.]
- 7) To establish new collections and reference materials in response to priority subregional needs and demands, for example of microorganisms and invertebrates. [175.]

## 3. ACTIVITIES

### **Needs assessment**

Conduct a needs assessment of the current strengths and weaknesses, including collections, taxonomic range, housings, environmental control, collection documentation and management procedures and support services, curatorial expertise and taxonomic capability. NACIs to submit copies of the report to the NECI and their national CBD Focal Point for inclusion in Country Reports to COP (COP IV/1D: Suggestions 1 & 7; VI/8). The needs assessment would include: [176.]

- 1) Establish the needs assessment team; methodologies developed and standardised (possibility to acquire the process outline and questionnaire from other LOOPs). [177.]
- 2) Taxonomic facilities and resources inspected at NACIs and NIs and those needing rehabilitation identified. [178.]
- 3) Sustainable options for establishing specialised National Taxonomic Reference Centres and/or museums recommended. [179.]

## **Implementation**

Initial needs identified could result in the following phased activities:

- 1) Specimen collection, culturing, preservation, storage and curation equipment/materials, including adequate housing (COP IV/1.D). [180.]
- 2) Key groups, e.g. insect/arthropod collections, herbaria, and fresh water collections upgraded and maintained [181.]
- 3) Microbial collections (fungi, bacteria, microalgae and virus collections) upgraded and maintained. [182.]
- 4) Specialised identification tools available at a subregional centre. [183.]
- 5) Methodological guides for technical support to collections. [184.]

## **D. DEVELOPMENT AND APPLICATION OF APPROPRIATE TECHNOLOGIES AND TOOLS**

### **1. GOAL**

To improve specialist and non-specialist skills, knowledge and taxonomic capability through the development, provision and use of the full range of existing and new user-friendly taxonomic tools (COP IV/1.D: Suggestions for Action 3). [185.]

### **2. OBJECTIVES**

- 1) Ensure access to appropriate existing or new user-friendly tools such as:
  - methods to extract locally relevant data from global information systems (COP IV/1.D: Suggestions for Action 9); [186.]

- monitoring systems for quarantine species and invasive alien species (CBD Article 8(h); COP VI/23); [187.]
  - biodiversity monitoring and assessment methodologies within the thematic areas of the CBD (COP III/10; V/7; VI/8); [188.]
  - information products and field-guides for ‘non-taxonomic’ user-groups e.g. extension officers, rangeland managers, sustainable ecotourism (COP IV/1.D: Suggestions for Action 6; VI/8); [189.]
  - morphological and molecular techniques (COP IV/1.D: para 11d); [190.]
  - tools to develop taxonomic databases locally that can be made accessible to and from global information systems (COP IV/1.D). [191.]
- 2) Adapt and/or develop species monitoring protocols. [192.]

### 3. ACTIVITIES

- 1) Identify the priority animal, plant and micro-organism groups at morphological and molecular levels and the appropriate technologies and tools according to needs. [193.]
- 2) Commission and/or produce multimedia diagnostic kits and according to prioritised needs such as: [194.]
  - Field guides to assist on species identification and monitoring in agriculture (e.g. electronic keys for fruit flies) as called for in COP Decision V/5, forestry (COP Decision IV/7), marine and coastal ecosystems (COP Decision IV/5), inland waters (IV/4, VI/2), dry and sub-humid lands (COP Decision V/23, VI/4) and public health; [195.]
  - Historical profiles showing incidence, abundance and distribution of species in any of agriculture, forestry, marine and inland waters fisheries, public health and soil ecosystems (COP III/10; V/7); [196.]
  - National and subregional lists of pests, pathogens, weeds, migratory species, invasive (Article 8(h)), endemic and threatened species; [197.]
  - biological control agents; [198.]
  - economically and culturally valuable organisms. [199.]
- 3) Dissemination of new or adapted tools. [200.]
- 4) Training in use of acquired tools. [201.]

## **E. ESTABLISHMENT AND SUSTAINABILITY OF THE NECI AND LOOP**

Sustainability of the network and the NECI is dependent on the commitment of member country governments to underpin the operational costs of the network over the long term, in accordance with COP Decision IV/1D and Decision VI/8, which call on parties to support national and regional capacity building activities. [202.]

The NAFRINET Formulation Workshop unanimously recommended that l'Institut Agronomique et Vétérinaire Hassan II should serve as the Network Coordinating Institute (NECI) of NAFRINET for the first phase (3 years). [203.]

### **1. OBJECTIVES**

- 1) Ensure a system is in place for the sustainable operation of the NECI through a combination of BioNET-INTERNATIONAL seed funding, NECI support and funding agency contributions; [204.]
- 2) Support NAFRINET linkages with NACIs, NIs, other LOOPS and the Technical Secretariat of BioNET-INTERNATIONAL; [205.]
- 3) Increase awareness, commitment and use of national and subregional taxonomy services; [206.]
- 4) Promote national and subregional policies on taxonomy and biodiversity studies; [207.]
- 5) Assess the impact and effectiveness of NAFRINET activities. [208.]

### **2. ACTIVITY**

- 1) Develop a plan for sustainable provision of NECI operational costs and activities. [209.]
- 2) Submit to funding agencies a request for funding of the NECI budget for the first 3 years from NAFRINET's inception; [210.]
- 3) Establish the NECI office. [211.]
- 4) Appoint a LOOP Coordinator. [212.]
- 5) Recruit a NECI Secretary if required. [213.]

- 6) Equip the NECI Office if required. [214.]
- 7) Train Coordinator/Secretariat in project management and proposal development if required at the NECI and at each NACI. [215.]
- 8) Establish budgets and put in place financial sustainability control mechanisms;
- 9) Establish quantifiable outputs or activities such as: [216.]
  - A list of collaborating partners with their major activities developed in year 1, updated annually and disseminated to members and partners; [217.]
  - A NAFRINET newsletter established in year 1 and issued twice a year to members and collaborating partners (such information products are dependent on adequate participation in information provision by NACI's, NI's and others); [218.]
  - 1 technical and scientific exchange visit completed by 1 or more participants per country every year; [219.]
  - NACIs update NECI on activities on a monthly basis; [220.]
  - Contact between NACI and NECIs on a regular and frequent basis; [221.]
  - LOOP publicity material available at events organised by collaborating partners; [222.]
  - Taxonomic services publicised nationally through print, television and radio media; [223.]
  - An award system for innovative taxonomic work established by the end of year 2 to motivate national taxonomists; [224.]
  - A system for public recognition of the contribution of funding agencies, private donors etc to be put into place; [225.]
  - 1 taxonomic/biodiversity sensitisation workshop held for policy makers in year 1 and year 3 per country; [226.]
  - 1 public sensitisation workshop on bio-safety, bio-prospecting and Intellectual Property Rights completed in year 1 and year 3 per country; [227.]
  - 1 technical seminar on the role of taxonomy in bio-safety, bio-prospecting and Intellectual Property Rights completed for policy makers in each country by end year 2; [228.]

- NACIs liaise with CBD Focal Points on a continuous basis to assist with drafting subregional policies on taxonomy and biodiversity and provide information for Country Reports; [229.]
- All NI and collaborating institutes are made aware of taxonomic keys, tools and other materials developed and/or adapted by NAFRINET, and provision is made through training or acquisition of appropriate equipment to use the materials in at least one institute in each participating country; [230.]
- Governments of all participating countries are encouraged to integrate NACI operations into their national institutional budgets by the end of year 1; [231.]
- CBD Focal points use the services of NAFRINET in the member countries. [232.]

## APPENDIX

### A. NATIONAL COORDINATING INSTITUTES (NACIs) AND THEIR ASSOCIATED NATIONAL INSTITUTES (NIs)<sup>2</sup>

Country	National Coordinating Institute (NACI)	National Institute (NIs)
Algeria		
Egypt		
Libya		
Mauritania		
Morocco		
Tunisia		

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<sup>2</sup> The list of National Institutes is subject to ongoing revision according to national priorities.

## B. Participants List

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## **C. CBD COP Decisions Cited in NAFRINET Formulation Proposal Document**

The text of all COP Decisions can be found on the website of the Convention on Biological Diversity, at the URL: <http://www.biodiv.org/decisions>

Within the Formulation Document specific mention is made to the following Decisions:

- III/10: Identification, Monitoring and Assessment, which endorsed SBSTTA Recommendation II/2: Practical approaches for capacity-building for taxonomy
- IV/1.D: Global Taxonomy Initiative
- IV/4: Status and trend of the biological diversity of inland water ecosystems and options for conservation and sustainable use
- IV/5: Conservation and sustainable use of marine and coastal biological diversity, including a programme of work.
- IV/7: Forest biological diversity
- V/5: Agricultural biological diversity: review of phase 1 of the programme of work and adoption of a multi-year work programme
- V/7: Identification, monitoring and assessment, and indicators
- V/9: Global Taxonomy Initiative: Implementation and further advance of the suggestions for action.
- V/23: Consideration of options for conservation and sustainable use of biological diversity in dryland, Mediterranean, arid, semi-arid, grassland and savannah ecosystems.
- VI/2 Biological diversity of inland water.
- VI/7 Identification, monitoring, indicators and assessments
- VI/4: Biological diversity of dry and sub-humid lands
- VI/8: Global Taxonomy Initiative Programme of Work
- VI/9: Global Plant Conservation Strategy
- VI/17: Financial Mechanism under the Convention
- VI/22: Forest Biological Diversity
- VI/23: Alien species that threaten ecosystems, habitats or species
- VI/25: National Reports

## D. PARTNERSHIPS



### **The Information Resource for Euro-Mediterranean Plant Diversity**

Euro+Med PlantBase is a regional initiative that involves all the countries of Europe and the Mediterranean region, including all of the NAFRINET partners with the exception of Mauritania. The first phase has been funded by the European Community under Framework V and involves establishment of structures, the completion of an electronic catalogue of all the flowering plants and ferns of the region, preparation of the necessary protocols and software, the design of verified summaries ('beads') of information on karyology and biosystematics, conservation, mapping and distributions, and taxonomic revision. A mechanism for the regional co-operative revision of the taxonomic status of all families, genera, species, subspecies and, where appropriate, cultivars described from the Euro-Mediterranean region has been developed. The organisation of this work will involve specialists from over fifty countries and territories within the region. This revisionary process will result in an agreed taxonomic core, which will be one of the main outputs of the project. Networks of Regional and National Centres, Associated Centres, Taxonomic Centres, Thematic Specialists and Authors have been established throughout the region; the Regional Centre for North Africa is in Rabat.

Euro+Med PlantBase will provide an on-line database and information system for the vascular plants of Europe and the Mediterranean against an up-to-date and critically evaluated taxonomic core. It will be a rich resource of information on the plant diversity of the Euro-Mediterranean region that will be of use to a wide variety of users including professional biologists, agronomists, foresters, horticulturalists, conservationists, environmental planners, and national and international conservation organizations.

Euro+Med PlantBase welcomes the establishment of NAFRINET and looks forward to working with members of the network in achieving its goals, especially in the areas of plant taxonomy, mapping, karyology and biosystematics and conservation. It will provide partners with access to its database which will contain the first ever comprehensive listing of the flowering plants and ferns of the Mediterranean region, including North Africa (Algeria, Egypt, Libya, Morocco, Tunisia) and thus provide a major contribution to the work of the network. Euro+Med PlantBase will be pleased to cooperate in the design and implementation of relevant activities. A close association with NAFRINET will greatly assist it in implementing its objectives through enhanced participation of colleagues in the North African region.

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## **IUCN (WESCANA)**

<http://www.iucn.org/places/wcana/>

Founded in 1948, The World Conservation Union brings together States, government agencies and a diverse range of non-governmental organizations in a unique world partnership: over 980 members in all, spread across some 140 countries.

IUCN seeks to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. A central secretariat coordinates the IUCN Programme and serves the Union membership, representing their views on the world stage and providing them with the strategies, services, scientific knowledge and technical support they need to achieve their goals. Through its six Commissions, IUCN draws together over 10,000 expert volunteers in project teams and action groups, focusing in particular on species and biodiversity conservation and the management of habitats and natural resources. The Union has helped many countries to prepare National Conservation Strategies, and demonstrates the application of its knowledge through the field projects it supervises. Operations are increasingly decentralized and are carried forward by an expanding network of regional and country offices, located principally in developing countries.

The World Conservation Union builds on the strengths of its members, networks and partners to enhance their capacity and to support global alliances to safeguard natural resources at local, regional and global levels.

WESCANA (West Asia, Central Asia and North Africa) is one of the nine regional programmes of IUCN. Its mission is “to conserve natural resources and biodiversity on the basis of sustainable, equitable and environmentally responsible development in the region on using local knowledge, experiences and expertise”. After an in-depth analysis in North African members – governments, NGOs, commissions experts and partners – it is carrying out an arid land biodiversity programme focussing on conservation and sustainable use of medicinal plants in North Africa. The programme is being undertaken by members from five North African countries coordinated by a regional coordinator based in Tunisia in full cooperation with IUCN HQ and medicinal plant specialist groups. Through a participatory approach both at regional and national level, it is in the process of setting up a medicinal plants database.

North African countries will also benefit from the WESCANA Biodiversity Initiative Thematic Centre in Lebanon for Arab States on biodiversity information support programme. In addition, SSC launches a programme enhancing biodiversity conservation on activities through the effective collection, management and exchange of high-quality species data and information using interlinked databases for more information content.

## **MEDUSA PARTNERSHIP**

The MEDUSA network deals with gathering information concerning all native Mediterranean plants that are useful to Man, including details of their conservation status, geography, habitat and especially documenting knowledge on their use as food, food additives, animal food, bee plants, invertebrate foods, materials, fuel, social uses, vertebrate poisons, non-vertebrate poisons, medicines, environmental uses and gene sources.

The particular goal of the Network is the exploration of possibilities for the sustainable utilization of the plant resources of the area, as alternative crops for marginal lands.

The MEDUSA Information System, a tool for the Identification, Conservation and Sustainable use of the Mediterranean Plant Diversity, provides the basis for activities aiming at protecting the valuable cultural heritage represented by these plants, ensuring their survival via “conservation through use”.

The exchange of information and the collaboration in activities of common interest between MEDUSA and NAFRINET will facilitate the achievement of the aims and objectives of both Networks particularly in the field of documentation, conservation and sustainable use of Mediterranean plants useful to Man.

Information: <http://medusa.maich.gr>

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## **OPTIMA**

OPTIMA, the Organization for the Phyto-taxonomic Investigation of the Mediterranean Area, is a non-governmental, not for profit scientific organisation currently with 38 institutional and 746 individual members, mainly from European and circum-Mediterranean countries.

OPTIMA can help to improve communication and collaboration amongst experts within each NAFRINET country and between experts from NAFRINET and European and Eastern Mediterranean countries. This could be accomplished by the incorporation into OPTIMA of as many experts from NAFRINET into the different OPTIMA Commissions and Committees (14 altogether) and by the participation of NAFRINET experts in the OPTIMA meetings.

NAFRINET can contribute to OPTIMA by informing the Secretariat about experts from the different country members on different taxonomic groups and sharing their expertise with

other colleagues in OPTIMA. Further, NAFRINET can inform OPTIMA about floras and other botanical publications produced in the member countries.

## **EcoPort ([www.ecoport.org](http://www.ecoport.org)) THE ACCESS PORTAL TO ECOLOGY KNOWLEDGE FOR NATURAL RESOURCE MANAGERS.**

EcoPort is a collaborative programme on the Internet whereby individuals and institutions share information to make knowledge available as a free, public good. Under the patronage of Nelson Mandela and E.O. Wilson, EcoPort operates under the auspices of a consortium consisting of the University of Florida; the United Nation's Food and Agriculture Organization (FAO) and the National Museum of Natural History of the Smithsonian Institution. In addition, and at the time of writing this, about 700 individuals and over 100 partnership institutions are generously sharing their knowledge using EcoPort as an empowering mechanism.

It is a global database. Its contents are created by volunteers who 'write' it as an encyclopaedia - somewhat similar to the way in which a global community of English-language speakers 'create' the Oxford English Dictionary. Each contributor's information appears under the author's name and logo. Changes require a password and authors can only modify their own records. Individuals can 'adopt' records, e.g. species descriptions of 'Plants', 'Birds', 'Fishes', 'Arthropods', 'Mammals', etc and then they insert information into the database in real-time using a live Internet connection. At this time, this 'collective writing' results in an average of 300 changes to the communal database per day.

EcoPort went public on 1 January 2000 and in May 2002, 300,000 entity records were established, including 90,000 plants. There are over 520,000 references, 100 slide shows, 45,000 glossary terms, 25,000 pictures, 215 HyperMemes, 58 Taxonomic keys, 335 Interactive tables, etc. NAFRINET can benefit by using the existing resources and knowledge management structure already in place for (say) listing the Member Countries' taxas.

***Contributing to EcoPort*** Each contributor receives a username and password that enables them to write information into the shared database, much as a group of authors write chapters for a book, except that the 'book' we are writing is a public database on the Internet. This process uses methods and tools invented at FAO which allow editors (not only webmasters) to write HyperText directly.

Data quality is maintained by the same process of peer review that has kept scientific publishing going ever since it started by automatic email notification to supervisors. Each contributor's shared information is displayed under a banner and logo that reflects ownership and responsibility, and we clearly demonstrate that sharing and generosity does not threaten identity.

As we all put sharing ahead of copyright and many other territorial aspects that unnecessarily increase the transaction costs associated with using data, our pooled knowledge grows very rapidly. And, because many users either do not have Internet access or have slow and expensive connections, we will soon distribute EcoPort data sets on free CD-ROMs as well.

Please contact [peter.griffie@fao.org](mailto:peter.griffie@fao.org) if interested. **You are invited to join the EcoPort community.**