


GLOBAL TAXONOMY INITIATIVE

Contracting Party:	MADAGASCAR
<i>National Focal Point</i>	
Full name of the institution:	Service d'Appui à la Gestion de l'Environnement
Name and title of contact officer:	RAMIARISON Claudine
Mailing address:	Service d'Appui à la Gestion de l'Environnement Lot IIR 179bis – 101 Antananarivo Madagascar
Telephone:	261 20 22 596 56/57
Fax:	261 20 22 597 58
E-mail:	ramiaris@wanadoo.mg
<i>Contact officer for this report (if different)</i>	
Name and title of contact officer:	RAKOUTH Bakolimalala
Mailing address:	Université d'Antananarivo – Faculté des Sciences – Département l'Ecologie des plantes et Biologie BP906 - 101 Antananarivo – Madagascar
Telephone:	261 20 32 02 465 60
Fax:	261 20 22 597 58
E-mail:	ba.rakouth@simicro.mg
<i>Submission</i>	
Signature of officer responsible for submitting national report:	
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This report was done jointly by the CDB Focal Point, the Focal Point of Global Taxonomy Initiative at the Botany Department and the chairman of the Zoology Department at the University of Antananarivo.

Further, consultations were undertaken within :

- the Malagasy national commission for the coordination of international conventions concerning sharing of necessary information for decision makings.
- national and international NGO, national institutions, researchers of National Research Centers and relevant Departments of the universities working in the biologic diversity domain (Botany Department, Zoology Department, SAGE, IHSM, ANGAP, SNGF, CNRE, MBG, WWF, WCS)
- the scientific authority of CITES,
- some members of the commission for conservation sites implementation in Madagascar.

**REPORT ON IMPLEMENTATION OF PROGRAMME OF WORK FOR THE
GLOBAL TAXONOMY INITIATIVE - MADAGASCAR
Programme of Work for the Global Taxonomy Initiative
Annex to Decision VI/8**

Operational Objective 1. Assess taxonomic needs and capacities at national, regional and global levels for the implementation of the Convention

1. Has your country undertaken any taxonomic needs assessments and identified priorities in this regard?	
a) no (please specify the reasons)	
b) no, but assessment is under way	
c) yes, some needs assessments made (please provide details)	X
d) yes, comprehensive assessments made (please provide details)	
Further comments on country-based taxonomic needs assessments and identification of priorities	
Please see below.	

2. Has your country worked with other countries in the region to undertake regional taxonomic needs assessments and identify priorities in this regard?	
a) no (please specify the reasons)	
b) no, but some collaborative projects are being considered or planned	
c) yes, some activities undertaken (please provide details)	X
d) yes, many activities undertaken (please provide details)	
Further comments on regional taxonomic needs assessment and identification of priorities	
Please see below.	
3. Is your country involved in any activities as part of a global taxonomic needs assessment?	
a) no	
b) yes (please provide details)	X
Further comments on the involvement in the activities for the global taxonomic needs assessment	
Please see below.	

4. Is your country undertaking any activities of public education and awareness to promote the implementation of the programme of work for the GTI?	
a) no	X
b) yes, some programmes developed and some activities undertaken (please provide details)	
c) yes, comprehensive programmes developed and many activities undertaken (please provide details)	
Further comments on public education and awareness programmes and activities	
Please see below.	

Operational objective 2. Provide focus to help build and maintain the systems and infrastructure needed to obtain, collate and curate the biological specimens that are the basis for taxonomic knowledge

5. Is your country working to strengthen global and regional capacity building to support access to and generation of taxonomic information ¹ ?	
a) no (please specify the reasons)	
b) no, but some programmes under development	
c) yes, limited capacity building (please provide details)	X
d) yes, significant capacity building (please provide details)	
Further comments on global and regional capacity building to support access to and generation of taxonomic information	
Please see below.	
6. Is your country working with other countries to create and/or strengthen the networks for regional cooperation in taxonomy?	
a) no	
b) no, but consultation is under way	
c) no, but some plans and programmes are under development	
d) yes, some activities undertaken for this purpose (please provide details)	X
e) yes, comprehensive activities undertaken for this purpose (please provide details)	
Further comments on strengthening of existing networks for regional cooperation in taxonomy	
In the marine and coastal domain, exist : - The project on reefs survey (IOC) - The ODINAFRICA project	

¹ Responses to question 5 are expected to focus on, but not limited to (a) human capacity building; (b) infrastructure capacity building.

Operational objective 3. Facilitate an improved and effective infrastructure/system for access to taxonomic information, with priority on ensuring that countries of origin gain access to information concerning elements of their biodiversity

7. Is your country involved in the development of a coordinated global taxonomy information system, in particular the infrastructure to access digitized data/information?	
a) no	
b) no, but some plans are being considered	
c) yes, to a limited extent (please provide details)	X
d) yes, to a significant extent (please provide details)	
Further comments on involvement in the development of a coordinated global taxonomy information system	
Please see below.	

Operational objective 4. Within the major thematic work programmes of the Convention include key taxonomic objectives to generate information needed for decision-making in conservation and sustainable use of biological diversity and its components

8. Has your country made any taxonomic studies and inventories at the national level, which provide a basic assessment of forest biological diversity, in particular in areas under current threat for habitat conversion, or of high conservation value?	
a) no (please provide the reasons)	
b) no, but some programmes are under development	
c) yes, some studies and inventories made (please provide details)	X
d) yes, comprehensive studies and inventories made (please provide details)	
Further comments on taxonomic studies and inventories made for a basic assessment of forest biological diversity	
Please see below.	
9. Has your country undertaken any taxonomy-related activities relating to marine and coastal biodiversity, in particular taxonomic work related to identification of ballast water organisms and monitoring health of mangrove systems through their invertebrate fauna?	
a) no	
b) not applicable	
c) no, but some programmes are under development	
d) yes, some activities undertaken (please provide details)	X
e) yes, many measures undertaken (please provide details)	
Further comments on taxonomy-related activities identified in the programme of work on marine and coastal biodiversity	
Please see below.	

10. Has your country developed taxonomic support for implementing relevant actions identified in the programme of work on dry and sub-humid lands biodiversity, in particular identification of key indicator taxa like lichens?	
a) no (please provide reasons and plans for improvement)	X
b) not applicable	
c) no, but some programmes are under development	
d) yes, some activities undertaken (please provide details)	
e) yes, many activities undertaken (please provide details)	
Further comments on taxonomic support for implementing the programme of work on dry and sub-humid lands biodiversity	
There are a some researches on bryophytes, but they are limited because the specialists in this domain are rare. However, the environmental program in its phase 3 will address this issue.	
11. Has your country developed taxonomic support for implementing relevant actions identified in the programme of work on inland waters biodiversity, in particular regional guides to freshwater fish and invertebrates as an input to ecosystem monitoring for river and lake health?	
a) no	X
b) no, but some programmes are under development	
c) yes, some activities undertaken (please provide details)	
d) yes, many activities undertaken (please provide details)	
Further comments on taxonomic support for the implementation of the programme of work on inland waters biodiversity	
There is no action planned in this field, however an important survey has been undertaken by CNRE and IRD, through the National Programme PEC 7 on freshwater which carried out NOE database on aquatic species and insects.	
12. Has your country undertaken any taxonomy-related activities identified in the programme of work on agricultural biodiversity as well as relevant activities identified in the International Pollinator Initiative and the International Soil Biodiversity Initiative?	
a) no	
b) no, but some activities are being planned	
c) yes, some activities undertaken (please provide details)	X
d) yes, comprehensive activities undertaken (please provide details)	
Further comments on taxonomy-related activities for the implementation of the programme of work on agricultural biodiversity	
<ul style="list-style-type: none"> - the program on the related wild plants that cover some neglected plants, endemic species (FOFIFA) - the program on the inventory of phylogenetic forest resources (SNGF) based on resources uses of: woods and fibers, human food, fauna, medicinal and aromatic use, - the numerous research applications on species used in breeding sector (plantes fourragères) 	
13. Is your country developing any taxonomic support for the implementation of the programme of work on mountain biodiversity, in particular identification of biodiversity components unique to mountain ecosystems?	
a) no	
b) no, but some programmes are under development	
c) yes, limited support (please provide details)	X

d) yes, significant support (please provide details)	
Further comments on taxonomic support for the implementation of the programme of work on mountain biodiversity	
The association on mountains (AMMA) developed a national strategy for mountain management . For the case of Madagascar, it is to note that a great part of protected areas, and primary forests are localized in altitude, above 750 m.	
14. Has your country developed taxonomic support for the implementation of the programme of work on protected areas?	
a) no	
b) no, but some programmes are under development	
c) yes, some programmes in place and are being implemented (please provide details)	X
d) yes, comprehensive programmes are being implemented (please provide details)	
Further comments on taxonomic support provided to the implementation of the programme of work on protected areas	
These activities are located within the national network of the Protected Areas concerning different types of ecosystems. This network is foreseen to be representative of the existing ecosystems in the country. Marine protected areas are also part of the network, that will certainly allow to fill the taxonomic lack in these ecosystems .	

Operational objective 5. Within the work on cross-cutting issues of the Convention include key taxonomic objectives to generate information needed for decision-making in conservation and sustainable use of biological diversity and its components

15. Has your country taken any measures to strengthen capacity for the inventory and classification of biodiversity and its components in the development of a national strategy on access and benefit-sharing?	
a) no	
b) no, but some programmes are under development	
c) yes, some measures taken (please provide details)	X
d) yes, comprehensive measures taken (please provide details)	
Further comments on the measures to strengthen capacity for the inventory and classification of biodiversity and its components in the development of a national strategy on access and benefit-sharing	
These measures started with the inventory of the useful plants (medicinal plants, aromatic plants, commercial plants, more particularly. These inventories are limited to the sites where the projects develop activities on natural resources valorization considering the access and benefit sharing .	
16. Has your country developed taxonomic support to address the issues of invasive alien species?	
a) no	X
b) no, but relevant policy and programme under development	
c) yes, some policies and programmes in place (please provide details)	
d) yes, comprehensive policies and programmes in place (please provide details)	
Further comments on taxonomic support to address the issues of invasive alien species	

DEA studies and academic researches achieved are available	
17. Has your country developed taxonomic information system to support the maintenance, preservation and protection of traditional knowledge, innovations and practices of indigenous and local communities in accordance with Article 8(j) and related provisions?	
a) no	
b) not applicable	
c) no, but some programmes are under development	
d) yes, some activities undertaken but a system is not in place yet (please provide details)	X
e) yes, a taxonomic information system in place (please provide details)	
Further comments on the taxonomic information system to support the maintenance, preservation and protection of traditional knowledge, innovations and practices of indigenous and local communities	
Some activities are undertaken, but they are sporadic and limited. Some inventories were carried out for valorization, with the local communities, of the traditional knowledge, the protection of the innovations based on the use of the medicinal plants. Madagascar prepares a legal framework on access and benefit sharing.	
18. Has your country undertaken any taxonomy-related activities that support the implementation of the ecosystem approach and the work in the field of assessments, monitoring and indicators?	
a) no	
b) no, but some programmes are under development	
c) yes, some programmes in place (please provide details)	X
d) yes, comprehensive programmes in place (please provide details)	
Further comments on programmes and activities to support the implementation of the ecosystem approach and the work in the field of assessments, monitoring and indicators	
These activities are undertaken notably in forest corridors, in marine zones, but data are for the meantime incomplete. Survey and monitoring and indicators are planned within Environmental Programme – Phase 3.	

If your country wishes to provide additional information on implementation of this programme of work, please do so in the following space

<p>Although taxonomic studies evolved a lot these last 10-15 years, the results are not satisfactory, for multiple reasons :</p> <p>Madagascar has an important rich tropical biological diversity of both fauna and flora, as well as for terrestrial and marine.</p> <p>Many inventories have been achieved according to diversified objectives and needs;</p> <p>One of the main problems is that, inventories do not cover the whole national territory and even less all species. There are certainly attempts and efforts, developed notably within regional or international cooperations;</p> <p>It is one of the objectives of the databases that biodiversity responsables try to implement ;</p> <p>The collections of reference (flora, fauna) exist, but they require to be maintained and updated ;</p> <p>- In the methodology point of view:</p> <p>if in the domain of the plant biology, human resources seem to be relatively satisfactory (about two hundred of families exists in the country), in that of animal biology, targeting species by group (amphibian, reptilian, fish, primates...) require supplementary researchers</p>
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Some flora taxa should be reviewed .

The changes of methodology in the domain of the animal biology penalize the countries and the researchers in a country like Madagascar, because of the revision that must be made.

Concerning research works, the main blockage for the university of Antananarivo especially comes from required identification facilities and material while the extraction of the DNA can be made locally.

But it is especially in the domain of the marine taxonomy that the gaps are very flagrant and important. Some studies were realized, but they need to be reviewed and updated (before 1972).

In general, data and information are still sporadic. No complete data are available on some plant and animal groups recently treated, in spite of the fact that several taxonomic inventories and studies have been led for the terrestrial environment. Data are generally prompt, in the time and in the space.

Many remain to do concerning taxonomy and the formation of taxonomist must be developed. For example. An evaluation has been given for the writing of a flora monography : a reasonable output for the writing of a regional flora is of 50 species/year /botanist taxonomist.

An association of taxonomistes has been put in place in 2003 in a perspective of development of the taxonomy. It aims to promote the taxonomic research in Madagascar, and therefore to palliate to the gaps in human resources and in expertise and appraisal.

The database network should be reinforced with the different projects, organizations that have some information.

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RE 1c)

Taxonomy needs have been evaluated and assessed. They were necessary for implementing Biological Diversity databases and network of computerized databases in Madagascar, such as the process coordinated by ONE (National Office for the environment), REBIOMA database, seeds databases (SNGF), GSPM on plants, specific databases on birds, reptiles and amphibians, medicinal plants, reef resources...

Some studies and disparate consultations were done to help decision makings concerning the species listed in CITES ;

Activities are mostly related to management of certains species (both flora and fauna) threatened to be extincted , that is among Madagascar priorities (cf CITES – IUCN red list).

ETP/WWF with Zoology Department of the University of Antananarivo is currently implementing a database on fauna species collected during the last 12 years. This database gathers Amphibians, Reptiles, Birds, Lemurs, Microchiroptera, Lipothyphles (Insectivore), Rodent, Carnivoras,

A request of support was transmitted to GEF through UNEP for an assessment of taxonomy needs within enabling activities.

Some priorities were identified:

- In the domain of plants, priority were given to large families that are not yet completely studied and those to be revised.

- Some specimens are not yet identified. Generally, one third of the Flora (12.000 species) is still under study and another third part need to be reviewed, as it has been published before 1960. For example, the families of Euphorbiaceae, Leguminosae, Gramineae and Rubiaceae must be revised.

- Data and herbaria are scattered in research centers, in institutions. Besides, herbaria and specimens require a security, herbaria conditions are precarious and their capacities are limited. Madagascar has 2 national herbaria (PBZT and FOFIFA). 30.000 specimens cannot be stored and are not currently exploitable at PBZT herbarium.

In the domain of terrestrial fauna :

Needs and priorities for faunistic species are very important, as inventories conducted are not continued. Besides determination of existing species need to be reviewed ; it is due to change in morphological biology methodology by the phylogeny methodology, molecular evolution and the genetic variability of some taxa(ADN). Nevertheless, some works are foreseen like for the vertebrates.

Generally, the priorities are focused on CITES listed species management and for the purpose of the IUCN red list.

In the marine and coastal domain: Very few extended activities have been led, however important priority needs have been identified such as for rocky facies, invertebrates groups, **pélagics, the benthics**, in all categories of size (macrofauna, méiofauna), coral species, the cnidaires, the sponges, the annelids, the crustaceans,... Indicators identification through monitoring of the marine and coastal ecosystems, reefs, mangroves has been defined among priorities in this domain.

RE 2 c)

In the Indian Ocean and Eastern Africa Region, certain initiatives are developed, as on:

- medicinal and aromatic plants of the Indian Ocean region. This project allowed the inventory and the survey of 700 species and a chemical screening of 300 species of these. 10 species were prioritised ;
- For marine species , some initiatives were done within regional cooperation (Ocean Indian and Eastern Africa) , on coral reefs survey or within ODINAFRICA project (Ocean Data and Information Network for Africa) that aims to facilitate data access in the region and to develop some infrastructures for data storage, analysis and dissemination .
- Madagascar contributed to the activities of the inventory of the marine Biodiversity program (cf workshop regional SWIO - Census of Marine Life)

RE 3 b)

- Within the CDB process on taxonomy and GTI, particularly concerning the enabling activities, Madagascar made a request of funds through the UNEP .
- the university of Antananarivo, PBZT, RBG, Kew, MBG, MHNP cooperate to develop activities on taxonomic researches for flora .
- For the terrestrial fauna, some international cooperations exist according to groups, for research on reptiles and amphibians (Museum New York), on batracians (Amsterdam).
- For the marine environment, actions are limited

RE 4 a)

Nevertheless several prompt inventories have been led within biological diversity management, involving local communities for species identification and ecological monitoring . That is done especially for forest ecosystems.

Feed back of flora inventories is given to local communities, in order to sensitize them on species ecological and economic value, on species uses , but these are done at a small scale.

RE 5 c)

Capacity building at international and regional level to support and help access and generation of taxonomic information are done through multiple manners :

- cooperation with taxonomic research centers or universities, notably for flora and sometimes fauna ;
- through inventory and research publications;
- through information and data exchanges;

In general, at international level, it concerns especially terrestrial flora and fauna, and at regional level, marine resources.

RE 7 c)

The country contributes to some information system networks such as the following databases:

- TROPICOS/MBG implemented in 1993 with the Conspectus project of the vascular plants of Madagascar. The main objective was to make informations on these plants available for a large scientific community. The first use of TROPICOS was taxonomy needs, but currently it is used for Conservation needs
- Royal Botanical Garden-Kew on plants
- Phylogeny of plants
- ODINAFRICA, for the marine species,

RE 8 c)

- Several studies and inventories have been done or are in progress in various ecosystems and forest corridors, as dry, humid and sub-humid forests. They deal with fauna and flora, but these studies and inventories are not complete. They sometimes deal with precise cases, or limited areas.
- Taxonomic studies and inventories are undertaken within protected areas in Madagascar. Information and data cover these Protected Areas, in principle, but for fauna, the adoption of phylogenetic methodology requires the revision of taxa. Besides, studies, collections and data networking are in progress in the process to achieve objectives of 6 millions of ha of conservation sites in Madagascar (cf Objective of Durban on Protected Areas).

RE 9 d)

- Concerning ballast water, no inventory has been undertaken for the meantime, however, perspectives supported by Globallast Programme in South Africa are in progress with an informal committee.
- Mangrove health monitoring will be considered in the 3rd phase of Malagasy Environmental Program
- inventories of coral reefs have been done by national research centers and the university. The project on reefs survey is currently in progress.
- ODINAFRICA on marine data bases
- Concerning mangrove, there were inventories that should be updated
