

NATIONAL BIODIVERSITY AUTHORITY

475, 9TH South Cross Street
Kapaleeswarar Nagar
Neelankarai, Chennai-41
www.nbaindia.org

MINUTES OF THE FOURTH MEETING



सत्यमेव जयते

6TH OCTOBER 2005

**Central Agricultural Research Institute
Port Blair**

FOURTH MEETING OF NATIONAL BIODIVERSITY AUTHORITY

6th October 2005
CENTRAL AGRICULTURAL RESEARCH INSTITUTE
PORT BLAIR

PROGRAMME
2.00 pm – 6.00 pm

- 1. Welcome Address and Major Achievements of NBA:**
- 2. Confirmation of Minutes of 3rd Meeting:**
- 3. Action Taken Report on Minutes of the 3rd Meeting**
- 4. Administrative Matters of NBA.**
- 5. Vote of thanks:**

CHAIRMAN
SECRETARY
SECRETARY
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SECRETARY

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National Biodiversity Authority

Minutes of the fourth meeting on 06.10.2005

DATE : 6th October 2005
TIME : 2.00PM to 6:00PM
VENUE : **Office of the Central Agricultural Research Institute
Garachrma, Port Blair, Andaman and Nicobar Islands.**

The proceedings of the fourth meeting of the National Biodiversity Authority commenced at 2.00 pm on 06.10.2005 at CARI, Port Blair, Andaman and Nicobar Islands. The Chairman, NBA **Prof. S. Kannaiyan** extended a warm welcome to the members of the Authority to the 4th meeting and briefed them the major achievements made by NBA during the period between 3rd and 4th meeting.

The Chairman Prof. S. Kannaiyan has given a brief account on CARI's background and its achievements in Research and Development. Central Agricultural Research Institute (CARI) is playing a significant role in Agricultural Research in these islands. The institute is catering to the need of the Island's farming community. CARI is evaluating and developing appropriate technologies in agriculture and allied fields and transferring them to farmers through its Krishi Vigyan Kendra (KVK) and Agricultural Technology Information Centre (ATIC). The Institute's major mandate is to provide a research base to improve the productivity of important agri – horticulture, livestock and fisheries of Andaman and Nicobar Islands through adaptive and basic research for attaining self – sufficiency and also to develop appropriate plans for conservation of natural resources and their sustainable use.

The Chairman, NBA, Prof. S. Kannaiyan has also briefly indicated the significant achievements of CARI to the members of National Biodiversity Authority.

- The rice varieties BG – 1639, Nanjing 57164, Quing Livon – 1 and Tai Chung Sen Yu identified by CARI displayed average productivity is the range of 5.0 to 5.5 tons / ha.
- BTS – 24, a salt tolerant rice line developed in situ showed 3.7 to 4.0 tons potential and largely grown in South Andaman.

- CARI also identified Aluminium and Iron toxicity tolerant lines i.e., IR – 72 and C 14 – 8 which recorded appreciable field tolerance under problem soil conditions at Andaman.
- Micro projectile based genetic transformation was optimized in Basmati 370 and Taraori Basmati involving diverse physico – chemical parameters. Putative transgenics involving cry 1 A (b), cry 1 A(c), Amsod and chitinase were developed.
- Molecular characterization of three economically important endemic medicinal plant species viz., *Alstonia macrophylla*, *Costus speciosus* and *Hernandia peltata* through RAPD analysis revealed ample genetic divergence among diverse collections which would be exploited for sound conservation strategy.
- CARI developed an inter crop sequence of Sowa, Kenaf, Maize with Brinjal reduced fruit borer significantly in Brinjal.
- Tomato with the intercrop of Kenaf at 4:1 rows along with NPV application twice at 250 LE / ha at 15 days interval from 45 DAT led to 78% reduction in fruit damage.
- CARI identified 29 strains of Pseudomonas – a potential biocontrol soil bacterium and characterized. The local strains developed by CARI were found to inhibit the growth of Pythium effectively.
- Technology of compositing the coirpith and dried leaves was standardized using *Pleurotus* mushroom fungus with urea application.
- CARI evaluated large number of Solanaceous vegetables against bacterial wilt and found Co – 3, Anand, DVRT – 2, Arka Vikas, BT – 120, BT – 136, MDB No 2,3 of Tomato, PB – 64 of Brinjal and JCA – 283 of Chilli with 80-100% survival against the serious wilt disease.
- A number of unexploited fruits in Andaman and Nicobar islands were studied for their habitat, Botanical description and found them rich source of vitamins, minerals and protein.
- CARI developed a consortium of five crop sequences in the raised bed system and in the furrows rice ratoon crop with pulses and their crop sequences was adopted by the farmers of the Island.
- CARI also studied the adaptability and productivity of Turkey and Guinea fowl and found these birds were well adopted in the Islands.
- The performance of the progeny of the direct and reciprocal crosses of White Leghorn (ILI – 80) with Brown and Black Nicobari was studied and found that the performance of the crosses of ILI – 80 as male parent with Brown Nicobari as female parent was found to be good based on better survivability and production under backyard system.

- Comparative evaluation of different artificial diets on fattening of mud crab, *Seylla serrata* was investigated and recommended.
- Integrated Pest Management (IPM) model was developed with Trichoderma, Pseudomonas, NPV, Neem Oil, Neem Oil Cake was widely adopted by farmers and the technology is cost effective and environmentally safe.
- Krishi Vigyan Kendra of CARI played a key role in Technology transfer in Andaman and Nicobar Islands by organizing training to the farmers and method demonstration in the farmers field.

1 A. MAJOR ACTIVITIES OF NBA

MEETINGS CONDUCTED BY NATIONAL BIODIVERSITY AUTHORITY

(i) “DISCUSSION MEETING ON THE FINALISATION OF AGREEMENTS”

Organized by National Biodiversity Authority, Chennai

Date: 23-07-2005,

Venue: NBA Conference Hall, Chennai.

(ii) “WORKSHOP ON BIODIVERSITY ACT, 2002 AND FORMATION OF PONDICHERRY BIODIVERSITY COUNCIL”

Organized by Department of Forests and Wildlife and National Biodiversity Authority

Date: 05-08-2005,

Venue: Hotel Annamalai, Pondicherry.

(iii) “INTERACTIVE DISCUSSION MEETING ON “INTELLECTUAL PROPERTY RIGHTS AND BIODIVERSITY ACT 2002”

Organized by National Biodiversity Authority,

Date: 06-09-2005,

Venue: Conference Hall, National Biodiversity Authority, Chennai.

(iv) “FACILITATING FORMATION OF STATE BIODIVERSITY BOARDS & BIODIVERSITY MANAGEMENT COMMITTEES IN INDIAN HIMALAYAN REGION”

Organizers: National Biodiversity Authority, Chennai and G.B. Pant Institute of Himalayan Environment and Development, Kosi-Katarmal, Almora

Dates: September 11-12, 2005

Venue: GBPIHED, Kosi-Katarmal, Almora, 263643 Uttaranchal.

(v) “REVIEW MEETING ON STATE BIODIVERSITY BOARDS”

Organised by National Biodiversity Authority, Chennai

Dates: September 16th 2005,

Venue: Conference Hall, National Biodiversity Authority, Chennai.

(vi) NATIONAL WORKSHOP ON INVOLVEMENT OF TAXONOMISTS IN BIODIVERSITY AND BIO-RESOURCES CONSERVATION AND FORMATION OF PEOPLES BIODIVERSITY REGISTERS

Organized by National Biodiversity Authority, Chennai

Date: 19.09.2005,

VENUE: NBA Conference Hall, Chennai.

(vii) “PLANNING MEETING FOR ORGANIZING “NATIONAL CONFERENCE ON AGRO BIODIVERSITY”

Organized by National Biodiversity Authority, Chennai

Date: 20-09-2005

Venue: NBA Conference Hall, Chennai.

(viii) “CAPACITY BUILDING FOR BIODIVERSITY MANAGEMENT COMMITTEES WITH TAXONOMISTS EXPERTISE”

Organized by National Biodiversity Authority, Chennai

Date: 23.09.2005,

Venue: Conference Hall, National Biodiversity Authority, Chennai

(ix) “NATIONAL CONFERENCE ON SAFE ENVIRONMENT FOR THE FUTURE GENERATIONS”

Organized by National Biodiversity Authority and Department of Zoology,
September 1-2, 2005

Venue: Auxilium College, Gandhinagar, Vellore, Tamilnadu, India

<p style="text-align: center;">1 B. MEETINGS ATTENDED BY NATIONAL BIODIVERSITY AUTHORITY</p>

(x) “BRAIN STORMING SESSION ON STRATEGY FOR SAFEGUARDING THE BIODIVERSITY IN A SCIENTIFIC MANNER THROUGH TAXONOMIC EXPERTISE”

Held on 2nd August 2005

Under the Chairmanship of **Secretary** Ministry of Environment and Forest, New Delhi.

Attended by the **Chairman**, NBA and the **Secretary**, NBA.

(xi) “BRAINSTORMING SESSION FOR OPTIMISING THE EFFECTIVENESS OF NATIONAL BIODIVERSITY AUTHORITY, STATE BIODIVERSITY BOARDS AND BIODIVERSITY MANAGEMENT COMMITTEES”

Held on 2nd August 2005

Under the Chairmanship of **Secretary**, Ministry of Environment and Forests, New Delhi.

Attended by the **Chairman**, NBA and the **Secretary**, NBA.

(xii) Review Meeting to discuss the “**PROGRESS OF NATIONAL BIODIVERSITY AUTHORITY**”

Held on 26th September 2005

Under the Chairmanship of **Special Secretary**, Ministry of Environment and Forests, New Delhi.

Attended by the **Secretary**, NBA.

(xiii) “**REGIONAL CONFERENCE ON THE AGENDA OF WTO HONGKONG MINISTERIAL; CHALLENGES FOR SOUTH ASIA**”

Organized by Research and Information System for Developing countries and IUCN Asia and Federation of Indian Chambers of Commerce and Industry.

Date 11-12 August 2005

Venue: FICCI Conference Hall, New Delhi.

Participated by the Chairman, NBA and the Secretary, NBA

Chaired a session on International Trade and Biodiversity by the Chairman, NBA.

(xiv) “**RESEARCH PROPOSAL ENTITLED ESTABLISHMENT OF MARINE BIODIVERSITY MUSEUM BY GEER FOUNDATION BY DR CN PANDAY, GER FOUNDATION, INDRODA NATURE PARK GUJARAT, RESEARCH PROPOSAL ENTITLED SEA TURTLE RESEARCH AND CONSERVATION PROGRAMME IN GUJARAT BY GUJARAT STATE FOREST DEPARTMENT AND GEER FOUNDATION, GUJARAT**”

Review meeting on 24-26th September 2005

Attended by Dr. K. Venkataraman, Secretary, NBA, Chennai.

(xv) “**INAUGURATION OF MARINE AQUARIUM**”

At Zoological Survey of India, Santhome High Road, Chennai.

Participated by the Chairman, NBA and the Secretary, NBA.

Inaugurated by Chairman, NBA on 16th September 2005

1 C. BIODIVERSITY AREAS VISITED

The Chairman and the Secretary NBA visited the “**Tsunami affected areas of Vedharanyam**” and held discussions with the Wildlife Warden and the range officers for the improvement of **Kodiayakarai wildlife sanctuary** on 3rd September 2005

**1D. PUBLICATIONS
BY
NATIONAL BIODIVERSITY AUTHORITY**

Prof. Dr S. Kannaiyan, Chairman, NBA, Chennai.

- (i) **Kannaiyan, S.2005.** Biodiversity and Bioresources Conservation. In: *Facilitating formation of State Biodiversity Boards and Biodiversity Management Committees in Indian Himalayan Region.* Workshop organized

by G.B. Pant Institute of Himalayan Environment and Development and National Biodiversity Authority, GB Pant Inst. Himalayan Environment and Development, Kosi-Katarmal, Almora, Uttaranchal. P 5-11.

- (ii) **Kannaiyan, S. 2005.** Biodiversity. Paper presented in the National Seminar on Biodiversity and Conservation Organised by CENDECT at Kamatchipuram, Theni, Tamilnadu.
- (iii) **Kannaiyan, S. 2005.** Biodiversity and Marine Bioresources. In: Interactive workshop on Marine Biodiversity, CAS, Marine Biology, Parangipettai, Annamalai University, Annamalainagar, Tamil Nadu during June, 2005.
- (iv) **Kannaiyan, S. 2005.** Biodiversity Act-Provisions and Implementation of PBR and BMC. Interactive Work shop organized by National Biodiversity Authority on PBR Methodology and Implementation Process held at NBA, Chennai, during Aug, 2005.
- (v) **Kannaiyan, S. 2005.** Biodiversity Act and IPR. Background paper presented in the Interactive Workshop on Intellectual Property Rights, held during Aug, 2005 at National Biodiversity Authority, Chennai.
- (vi) **Kannaiyan, S. 2005.** Geographic indications and IPR. Background Paper presented in the Interactive Workshop on Intellectual Property Rights held during Aug, 2005 at National Biodiversity Authority, Chennai. p 1-14.
- (vii) **Kannaiyan, S. and K.Venkataraman. 2005.** Biodiversity and Bioresources Conservation. In: *National conference on safe environment for the future generations*, Gandhinagar, Vellore, Tamilnadu.pp.22-27.

1 E. INAUGURAL ADDRESS by Prof. S. Kannaiyan, Chairman, NBA, Chennai.

- (i) Delivered Inaugural Address to the participants of Marine Biodiversity workshop held at the Centre for Marine Biology Annamalai University, Annamalainagar, Tamilnadu during June, 2005.
- (ii) Delivered Inaugural Address to the participants of National Seminar on Biodiversity and Conservation held at CENDECT, Kamachipuram, Theni, Tamilnadu during August, 2005.
- (iii) Delivered Inaugural Address to the participants of workshop on “Facilitating the formation of State Biodiversity Boards and Biodiversity Management Committees held at GB Pant Institute of Himalayan Environment and Development and National Biodiversity Authority, Kasi Katarmal, Almora, Uttaranchal during September, 2005.

- (iv) Delivered Inaugural Address to the B.Tech. (Biotech) and M.Tech (Biotech) and Ph.D scholars on “Nature Club” held at the Bharat Inst. of Engineering, Selaiyur, Chennai during September, 2005.
- (v) Delivered Presidential Address to the participants of the “Awareness and Implementation Process” in Pondicherry Union Territory organized by Pondicherry Environment Department and National Biodiversity Authority, Pondicherry.

1 F. LECTURES DELIVERED by Prof. S. Kannaiyan, Chairman, NBA, Chennai

- (i) **Kannaiyan, S.2005.** Biodiversity Act, 2002. Salient features and provisions of the Act-to the participants of the National Seminar on Biodiversity and Conservation organized by the CENDECT, Kamachipuram, Theni, Tamilnadu.
- (ii) **Kannaiyan, S. 2005.** Biodiversity Act, 2002 to the participants of the workshop on the Facilitating formation of the State Biodiversity Boards and Biodiversity Management Committees in Indian Himalayan Region organized by GB Pant Institute of Himalayan Environment and Development and National Biodiversity Authority, Kasi Katarmal, Almora, Uttranchal.
- (iii) **Kannaiyan, S. 2005.** Biodiversity Act, 2002. Awareness and Implementation Process in Pondicherry Union Territory to the participants of UT officials, College Teachers and NGOs- organized by Pondicherry Environment Department and National Biodiversity Authority, Pondicherry.
- (iv) **Kannaiyan, S. 2005.** Biodiversity of India and the Environmental scenario on the Nature club inauguration - organised by Biovision Society in the Dept. of Biotechnology, Bharat Inst. of Technology, Selaiyur, Chennai.

1 G. Dr. K. VENKATARAMAN, Secretary, NBA, Chennai.

1. **Venkataraman, K. 2005.** Biodiversity of India and Access to Bioresources. In: *Facilitating formation of State Biodiversity Boards and Biodiversity Management Committees in Indian Himalayan Region*, 11-12th September, 2005 G. B. Pant Institute of Himalayan Environment and Development and National Biodiversity Authority, GB Pant Inst. Himalayan Environment and Development, Kosi-Katarmal, Almora, Uttaranchal. p. 13-38.
2. Kannaiyan, S. and **K. Venkataraman. 2005.** Biodiversity and Bioresource Conservation. In: *National conference on safe environment for the future generations*, September 1-2, 2005 Dept. of Zoology, Auxilium College, Gandhinagar, Vellore, Tamilnadu. p. 22-27.

3. **Venkataraman, K. 2005.** Biodiversity of India and Access to Biodiversity, *Awareness and Implementation Process in Pondicherry Union Territory*, 5th August, 2005. Department of Environment, Pondicherry and National Biodiversity Authority, Pondicherry.
4. **Venkataraman, K. 2005.** Biodiversity Act 2002 and Access to Biodiversity. In: *Peoples Biodiversity Register Methodology and Implementation Process*, August 2005, Paper presented in the Interactive Work shop organized by National Biodiversity Authority, Chennai.
5. **Venkataraman, K. 2005.** Intellectual Property Rights and Biodiversity of India. In: *Interactive Workshop on Intellectual Property Rights*, August 2005, National Biodiversity Authority, Chennai.
6. **Venkataraman, K. 2005.** Biodiversity and its conservation. In: *Proc. State Level Seminar on Biodiversity and its conservation*, 28-29 July 2005 Key note address delivered at Dept. of Life Sci., KLE Society's Gudleppa Hallikeri College, Haveri, Karnataka, p. i-xii.
7. **Venkataraman, K. 2005.** Marine Biological Resources of India: An over view In: *Interactive workshop on Conservation and Sustainable utilization of Marine Bioresource*, 14th June 2005 at Centre for Advanced Study in Marine Biology, Parangipettai, Annamalai University, Annamalainagar p.1-3.

This was followed by the Chairperson requesting the members to introduce themselves. Following the introductions, Dr K Venkataraman, Member Secretary – NBA initiated the proceedings of the meeting with the permission of the Chair.

Record of the discussions agenda wise is as follows:-

2. Confirmation of Minutes of 3rd Meeting of NBA

Minutes of the Third Meeting of the National Biodiversity Authority

DATE : 15th July, 2005

TIME : 10:00AM to 5:00PM

VENUE : **Conference Hall of the National Biodiversity Authority**

The proceedings of the third meeting of the National Biodiversity Authority commenced at 10 am on 15.07.2005. The Chairman, NBA **Prof. S. Kannaiyan** extended a warm welcome to the members of the Authority to the 3rd meeting and briefed them the major achievements made by NBA during the period between 2nd and 3rd meeting.

The minutes of the meeting as well as action taken on the agenda was confirmed and appreciated by the members present during the 4th meeting of the authority held on 6th October 2005 at CARI, Port Blair, Andaman and Nicobar Islands.

3. ACTION TAKEN ON THE MINUTES OF THE THIRD MEETING OF THE NATIONAL BIODIVERSITY AUTHORITY

DATE : 15th July, 2005; **TIME :** 10:00AM to 5:00PM

VENUE : **Office of the National Biodiversity Authority**
475-9th South Cross Street
Neelankarai, Chennai-600 014.

Agenda 1: Achievements:

Agenda 2: Confirmation of Minutes of 2nd Meeting of NBA

Agenda 3: Action taken on the Minutes of the 2nd Meeting

Following the confirmation of the minutes of the second meeting the Member Secretary Presented the Action Taken Report on the Minutes of the 2nd Meeting of the Authority.

During the presentation by Member Secretary, the following points were raised by the members:

- **Appointment of Expert consultant:**

The Member Secretary informed the members that many persons are not willing to take up the appointment of Expert Consultant due to the less amount (Rs 15,000 – Rs 20,000/=) proposed as Consultancy fee in the second meeting. Based on the discussion it was decided to pay Rs.25, 000/- pm + transport allowance to the Expert consultant for preparing guidelines and the period from 60 days to 90 days.

Action: Member Secretary

Action Taken: Advertisement for inviting application for Expert consultant has been prepared and published in the web site and applications received.

- **State Biodiversity Boards:**

Dr.R.K. Rai, Addl. Director MoEF informed that before asking for Utilization Certificate from SBB, NBA should ask for the Statement of expenditure for the amount Rs 10,00,000 paid as one time establishment grant.

During the proceedings the Chairman, NBA informed the members that he is planning to make official visit to all the State Biodiversity Boards which are notified for establishment and convening a meeting of the officers in charge of SBB for effective implementation of the Biodiversity Act, 2002.

Action: Member Secretary

Action Taken: Only two SBBs have been paid the full amount of 10,00,000/=; Also a review meeting has been conducted by NBA with all the SBB that have notified for establishment.

- **Awareness Programme conducted by NBA during the year 2004:**

Members appreciated the efforts taken by NBA to organize the awareness programme and informed that more such programmes should be conducted by NBA to create awareness among public in different parts of the country.

Action: Member Secretary

Action Taken: NBA is working on the possibilities of conducting the awareness programmes throughout India.

- **Publication of ACT and Rule Book by NBA**

Members appreciated the efforts taken by NBA to publish the Biodiversity ACT and Rule Book in English and Hindi and expressed that same booklet should be published in all other official languages of India.

Action: Member Secretary

Action Taken: Efforts are being made to prepare the Act and Rule Book in Tamil, Malayalam, Bengali and Marathi of which is the first proof is received for Tamil and Malayalam.

AGENDA 4. Proposal received for consideration by NBA for funding.

Action Taken:

As decided in the 3rd meeting of the Authority the following are the action taken on the above agenda:

1. The criteria for submission of proposal is prepared,

2. Guidelines for inviting Proposals prepared
3. Roster of members of Project Evaluation Committee to scrutinize the proposals prepared
4. The above information is published in the NBA website www.nbaindia.org

The following are the information made available in the web site of NBA:

Introduction:

India is a Party to the Biological Diversity Convention held in Rio de Janeiro in 1992. The convention recognizing the rights of States to use their own biological resources, expects the signatories to facilitate access to genetic resources by other countries for the welfare of the society, subject to national legislation and on mutually agreed upon terms. The Biodiversity Act, 2002 promulgated in the parliament of India also recognizes contributions of local and indigenous communities to the conservation and sustainable utilisation of biological diversity through traditional knowledge, practices and innovations and provides for equitable sharing of benefits among the local communities arising from the utilization of their knowledge, practices and innovations.

The Government of India established **THE NATIONAL BIODIVERSITY AUTHORITY (NBA)** in 2003 in accordance with Biological Diversity Act 2002, with the following objectives:- to regulate access to biological resources of the country to conserve and sustainable use of biological diversity; to respect and protect the knowledge of local communities related to biodiversity; to secure sharing of benefits with local people as conservers of biological resources and holders of knowledge and information relating to the use of biological resources; conservation and development of areas of importance from the view point of biological diversity by declaring them as biological diversity heritage sites; protection and rehabilitation of threatened species; involvement of institutions of state government in the broad scheme of implementation of the Biological Diversity Act through constitution of committees.

NBA intends to invite proposals on projects for funding by as per the guidelines given below.

1. Projects related awareness creation about the implementation of the Biodiversity Act 2002.

- a. State Biodiversity Boards
- b. Biodiversity Management Committees
- c. Peoples Biodiversity Registers.

2. Need based special project proposals such as:

- a. Conservation and Sustainable utilization
- b. Access and Benefit Sharing
- c. Threats on Biodiversity
- d. Traditional Knowledge and Tribal issues.
- e. Intellectual Property Right and Biodiversity
- f. Specific Research Projects on Endangered and Endemic species of fauna and flora and different ecosystems such as Forest, desert, wetland, marine, mountain and fishery
- g. Medicinal plants
- h. Agro biodiversity
- i. Microbial Diversity
- j. Documentation of PBR

Guidelines:

Institutions/Universities with adequate human resources are eligible to apply.

Number of Copies of the Proposal:

Ten copies may be sent to the Chairman, National Biodiversity Authority, #475, 9th South Cross Street, Kapaleeswar Nagar, Nelankarai, Chennai 600 0041.

The following are the **PROPOSED PROJECT EVALUATION COMMITTEE** for approval by the NBA:

CHAIRMAN: Prof. Dr S Kannaiyan Chairman NBA, Chennai

Members:

1. Prof Dr Madhav Gadgil, IISc Bangalore
1. Dr Sujata Arora, MoEF, New Delhi
2. Dr A.Gopalam, NARM, Hyderabad
3. Dr Doble, Dean, Maharashtra
4. Dr Upender Dhar, GB Pant Institute, Almora
5. Dr K.Balaraman, ICMR, Pondyerry
6. Dr R P Gupta, Panjab Agri University
7. Dr KVBR. Tilak, Osmania University, Hyderabad.

Agenda 5. Applications for Access, Bio-survey, Collaborative Research and Patent received for approval by NBA

The Member Secretary informed the NBA the following information:

Since inception, NBA has received applications for Access, Application for Transfer of Bioresources and application for Patent.

NBA has received 23 applications from various sources from India and abroad.

Among the 23 applications received only 10 applications are complete with fee paid and rest of the 13 applications are not complete and are not eligible for approval

Applications received from Foreigners for Research/ Commercial Purposes

- *Emblica officinalis* plants to Srilanka
- Indian Wild ass hair sample from zoo to US
- International Flavors and Fragrance Ltd: 68 species under 35 families of Plants for research and commercial use of fragrance extraction.
- International Flavors and Fragrance Ltd: Vanilla green bean will be processed, cured and exported.

Applications for Collaborative research and Transfer of material :

- Viral infected post larvae and juveniles of freshwater prawn to France with C. Abdul Hakim College, Melvishram college, Vellore, Tamil Nadu (DR Sait Sahul Hameed)
- Cricket form Western Ghats to Paris, France with IISC Bangalore (DR Rohini Balakrishnan)
- Research on Honey Bees to US with IISC, Bangalore (Mr Gene E Robinson, Urbana, IL 61801 USA)
- Research on unprotected amphibians and reptiles by US researcher in coloboration with Indian research Institute with National Centre for Cell Science, Dept of Biotechnology, Govt of India, Pune, Maharashtra.
- Research on terrestrial venomous coral snakes by US researcher with National Centre for Cell Science, Dept of Biotechnology, Govt of India, Pune, Maharastra.
- Limnological research on Ladakh lakes and collection of plankton and organisms to UK with Dr Brig Gopal, Jawaharlal Nehru University, New Delhi.

Patent

- International Flavors and Fragrance Ltd: Patent for *Decalepis hameltonii* extract.

So far NBA has received application fee Rs 60,500/= (Rs Sixty thousand five hundreds) and the amount is deposited in the National Biodiversity Fund till July 15 2005

Application fee received from July 15th 2005 to October 2005 is Rs 10,000/ only.

Approval of applications by the authority:

Following the presentation of the Member Secretary on the 3rd meeting and the Authority has taken the following decisions were taken regarding the approval of the applications:

The authority has decided in its meeting held on 15th July 2005 to give a chance to the applicants whether he will be in a position to pay the application fee or not before closing the approvals once in for all.

Action taken: A letter on the above subject has been written to all the applicants.

A committee to be constituted by the NBA to examine and recommend the applications for approval by NBA. The committee will also decide and recommend how many species can be accessed by an applicant at a time with an application.

Action taken: A roster of committee members have been prepared and circulated to all members of the authority vide the minutes of the 3rd meeting and this will be approved in the 4th Authority meeting to take further necessary action.

Applications (No 17, page 55 of the agenda) received by NBA has to be forwarded to NBPGR, New Delhi for approval since NBA is dealing only with wild Germ plasm.

Dr Anil Gupta informed that NBA needs to put up notice, guidelines in all International Airports & Ship Ports and also to send a letter to Customs office about the Biodiversity Act and its implications.

Action Taken: NBA has taken initiative to display an aquarium in Chennai Air Port and a display Board. To this effect a letter has been written to the Airport Manager, Chennai.

The Members decided that the Application Fee once received should not be refunded.

Action Taken: The decision taken has been put up in the web site and the same will be adhered to the applicants those who have paid the application fee.

The following is the COMMITTEE formed by NBA to Evaluate the Access, Patent, Transfer of Research Results and Material Transfer Applications:

CHIRPERSON:

Dr P. Tiwari, Director, National Academy of Agricultural Research Management
Rajendra Nagar, HYDRABAD 500 030

MEMBERS:

- **Shri Katwal**, Additional Director General Forests, MoEF, New Delhi
- **Dr Natesh**, Advisor, DBT, New Delhi
- **Dr Dhillon**, Director, (Research), PAU, Ludhiana
- **Dr K. Balaraman**, Deputy Director, ICMR, Pondy cherry
- **Dr Mishra**, ADG, ICAR, New Delhi
- **Dr R Saha**, Advisor, DST
- **Dr Das Gupta** IPR Consultant, Kolkatta
- **Mrs. Sumathi Swami**, CPR Foundation, Chennai.

The above committee has been proposed to be formed to deal with the applications received by NBA and based on the recommendations of the committee the NBA will give approvals to the applications received.

**TWO APPLICATIONS RECEIVED BY NATIONAL BIODIVERSITY
AUTHORITY FOR APPROVAL DURING July 15 – 6th October 2005.**

1. Reference No : F. No. 9-56/2005

Particulars of Charges: Paid Rs.10000/- : D.D.No.562706 (State Bank of Hyderabad)
dt.21-09-2005

- | | |
|---|--|
| 1. Name and address of applicant | : Dr.Nutan Kaushik, Fellow,Plant
Biotechnology, The Energy and Resources
Institute, Darbari Seth Block, Lodhi Road,
New Delhi – 110 003. |
| 2. Date of application
in the prescribed form | : 22-09-2005 |
| 3. Type of form used | : Form IV |
| 4. Name of the project | : Isolation and Characterisation of
biologically active saponins from
<i>chlorophytum</i> species |
| 5. Type of Bioresource | : Dried root powder and extracts of
<i>Chlorophytum</i> species |
| 6. Application supported by any
other Government Institution | : It has been recommended by the
Scientific Council of Indo-French centre
for promotion of advanced research
(IFCPAR), New Delhi, a joint center of |

Government of India and the French Government.

7. Collaborating Agency, Name and Address : U.F.R.des Sciences Pharmaceutiques et Biologiques, Dijon, France
8. Remarks : Colloborative research Project sponsored by Indo French Collaboration supported by Department of Science technology, Government of India, New Delhi.

2. Reference No : F. No. 9-59/2005

Particulars of Charges: Not Paid

1. Name and address of applicant : Dr.Martina Padmanabhan, Faculty of Agriculture and Horticulture, Department of Agricultural Economics and Social Sciences, Chair of Resource Economics, Humboldt-University, Luisentr.56, Berlin - 10099
2. Date of application in the prescribed form : ----
3. Type of form used : Not applied in prescribed form
4. Name of the project : Gender and Institutional Analysis of Agro-Biodiversity Management in Kerala
5. Type of Bioresource : Dried root powder and extracts of *Chlorophytum* species
6. Application supported by any other Government Institution : Department of Science and Technology, Government of India
7. Collaborating Agency, Name and Address : Deutsche Forschungsgemeinschaft (DFG), Federal Republic of Germany
8. Remarks : The applicant came to NBA for discussion and so far application in prescribed form and money has not been paid.

The above two applications are put up to NBA for consideration and necessary action to place in the National committee for approval.

6. APPROVAL OF TERMS OF REFERENCE AND THE ROSTER OF EXPERT COMMITTEES

In the second meeting of the Authority (Minutes of the meeting No. 4. appointment of Expert Committees.) five Expert Committees to deal with

1 Collaborative Research Projects.

2. Material Transfer Agreement, Patents, and Benefit Sharing.
- 3 Normally Traded Commodities.
- 4 Rare Threatened Endangered and Endemic Species.
- 5 Biodiversity Resources Centre Database.

were decided to be setup by the Authority. The terms of Reference (TOR) for the above ECs were formed and given below for approval. Also the roster of Experts drawn from various fields to enable the constitution of multi disciplinary ECs were also made available to the Authority for approval.

Action Taken:
Revised terms of reference (TOR for expert committees as per the Comments by the members of the authority has been prepared and put in the web site.

**1. EC ON COLLOBORATIVE RESEARCH FINAL LIST OF EXPERT
COMMITTEES APPROVED BY THE AUTHORITY MEMBERS DURING
THIRD AUTHORITY MEETING HELD ON 15-07-2005**

CHAIRMAN	
Dr.Dhillon, Director, Research, Punjab Agricultural University, Ludhiana, 141004	
MEMBERS	
SL .N O.	NAME
1.	Prof. P.S.Ramakrishnan, Jawaharlal Nehru University, New Mahrauli Road, New Delhi; Ph: 26717676
2.	Prof. T.C.Narendran Systematic Entomology Laboratory, Department of Zoology, University of Calicut, Calicut-673 635 Tel: 494-240 1144 / 419; Fax: 91-494-240 0269
3.	The Director General OR HIS NOMINEE ICFRE, P.O. New Forests, Dehradun – 248 006, Uttaranchal, Ph : 0135 – 755 277.
4.	Dr. Yogesh S. Shouche National center for Cell Science, Pune University Campus, Ganeshkhind, Pune-411 007. Tel: 20-256 0922(o) Fax: 20-2569 2259(o) Email: yogesh@nccs.res.in , Syogesh10@hotmail.com
5.	Dr. J. Nagaraju Staff Scientist & Chief; Laboratory of Molecular Genetics; Centre for DNA Fingerprinting and Diagnostics; 4-87/1, ECIL Road, Nacharam, Hyderabad-500 076; Tel: 91-40-27171427 (direct) (o) ; 91-40-27151344 Extn:1100(o), 1102
6.	Dr. G.S.Lavekar, Director, Central Council for Research in Ayurveda & Siddha, 61-62, Institutional Area, D Block, Janakpuri, New Delhi
7.	Dr J P Mishra Asst. Director General, ICAR, Anu Sandhan Bhavan, Pusa Campus, IARI,

	New Delhi – 110012
8.	Dr Natesh Advisor; Department of Biotechnology, CGO Complex, Block No.2, Lodhi Road, New Delhi – 110001
9.	Dr TJ Kurian Director, Dept. of Science and Technology, Technology Bhavan, New Mehrauli Road, New Delhi.
10	The Director, National Institute of Oceanography, Dona Paula – 403 004,Goa

2. EC ON Access and Benefit Sharing AND Material Transfer

CHAIRMAN	
Dr. Pushpangadan National Botanical Research Institute; Rana Pratap Marg; Lucknow – 226001	
MEMBERS	
SL. NO.	NAME
1.	Prof.R.Kumar Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur, Bangalore-560 064; Tel: 80-22932320, 22082750(O); Fax: 80-23600683, 23608121 Email: kumar@chemeng.iisc.ernet.in
2.	Dr.R.K.Gupta Head, Intellectual Property Management Division, 14, Sastang Vihar Marg, Special Institutional Area, NISCAIR Building, New Delhi-110067
3.	Dr.Suman Sahai, Gene Campaign, J-235/Asainix Farms, Khanpur, New Delhi – 110 062. Ph: 91 – 11 – 2651 7248.
4.	Dr. K. Balaraman, Dy. Director, Sr. Grade, Vector Control Research Centre, ICM Marg, Indira Nagar, Pondicherry.
5.	Ms. Sumathi Swami Legal consultant, CPR Foundation, CHENNAI.
6.	Dr.S.K.Sharma Advisor(Ayurveda), Red Cross Society Building, 1-Red Cross Road, New Delhi-110 001
7.	Dr.Chandra Mohan Former Head, NIO, GOA.Ph: 044 – 24797713 Mob: 93800 12073.
8.	Prof. Samir Brahmachari Director, Institute of Genomics and Integrative Biology, Delhi University Campus, Mall Road, Delhi-100 007 Tel: 11-27662407, 27667578, 27667298(O) Fax: 11-27667471,27662407
9.	Dr.C.K.Katiyar Director, Herbal Drug Research, R&D-II, 20, Sector 18, Udyog Vihar Industrial Area, Gurgaon, Haryana Tel: 91-0124-2397236
10.	Dr.J.P.Mishra, ADG, Anu Sandhan Bhavan, Pusa Campus, Indian Agricultural Research Institute, New Delhi – 110012

11.	Dr Arivudai Nambi , Scientist, MSSRF, Tharamani, Chennai 600 113
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3. EC ON NORMALLY TRADED COMMODITIES

CHAIRMAN	
Dr. Prakash Tiwari , Director, National Academy of Agricultural Research Management, Rajendranagar, Hyderabad – 500 030	
MEMBERS	
Sl no.	NAME
1.	The Director , Agricultural Trade, Indian Council of Agriculture Research, Anu Sandhan Bhavan, Pusa Campus, IARI, New Delhi – 110012
2.	Dr Vandana Aggarwal , Director (TPD), Ministry of Commerce, New Delhi
3.	Dr.D.Ramanathan General Secretary, Ayurvedic Medicine Manufacturers Organisation of India No.33, Arafa Towers, Velliyannoor Road, Thrissur-680021Tel: 487-2420540 / 242395
4.	Dr.G.N.Qazi Director, Regional Research Laboratory, Canal Road, Jammu-181001
5.	The Director or his nominee Central Marine Fisheries Research Institute, Tatapuram (P.O), Cochin – 14, Kerala, Ph: 0484 – 2394867/ 2391407
6.	The Director , Marine Product Export Development Authority, MPEDA House, Panampilly Avenue, P.B.No:4272, Cochin – 682 036. Ph : 91 – 484 – 2311979/2311803
7.	The Director , AYUSH, Red Cross Building, Parliament Street, New Delhi 110 001
8.	Dr.S.S. Handa , Former Director, Regional Research Laboratory, Canal Road, Jammu-181001

4. EC ON THREATENED, ENDANGERED AND ENDEMIC SPECIES

CHAIRMAN	
Prof. T.N.Ananthkrishnan Emeritus Scientist, Dwaraga, Nungambakkam, Chennai	
MEMBERS	
SL.NO.	NAME
1.	Dr.R.Uma Shanker Department of Crop Physiology, University of Agricultural Sciences, Bangalore-560065, Karnataka Tel: 11-27666237, 27667899, 27667819; Fax: 11- 27666237, 27667093 Email: rus@vsnl.com
2.	Dr. Janardhanam ,

	Botany Department Taleigao Plateau, Taleigao, Goa – 403 206.
3.	Shri.RPS. Katwal, Additional Director General (Forests) Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, Lodhi Road, New Delhi 110003
4.	Prof. Dr T Balasubramaniam Director, CAS in Marine Biology, Parangipettai, Tamil Nadu
5.	The Director Salim Ali Centre for Ornithology and Natural History (SACON), Anaikatty (PO), Kalayampalayam, Coimbatore – 641 108. Ph : 0422 – 2857101.
6.	The Director Zoological Survey of India, M block, New Alipore, Kolkatta-700053
7.	Dr.M. Swamiappan, Professor of Entomology, Agricultural College and Research Institute, Madurai.
8.	The Director Bombay National History Society, Horn Bill House, SB Singh Road, Bombay- 400 023
9.	Dr.Narayanan Nair Director, National Botanical Research Institute, Rana Pratap Marg, P.B.No.436, Lucknow-226001,U.P.
10.	Dr. M. Subramanian Former Director (Research), Madurai.
11.	The Director Botanical Survey of India, 3 MSO Building, 5 Floor, CGO Complex, Salt Lake, Kolkata 70 064. Tel 033 23344963; Fax: 23346040; Email: m.sanjappa@nic.in
12.	Dr B R Subramaniam, Advisor, ICMAM, DOD, NIOT Campus, Pallikaranai, Velacery, Chennai-

**5. EC ON DATABASES ON BIO-RESOURCES AND
TRADITIONAL KNOWLEDGE**

CHAIRMAN	
Prof. Madhav Gadgil Centre for Ecological Sciences, Indian Institute of Science, Bangalore – 560 012	
MEMBERS	
SL.NO.	NAME
1.	Dr A. K. Ghosh Director, Centre for Environment and Development, 329, Jodhpur Park Kolkata -700 068
2.	Dr.K.N.Ganeshiah Department of Genetics & Plant Breeding, University of Agricultural Sciences, GKVK Campus, Bangalore-560065, Tel: 80-23636276(o), 23330153 Extn:286; Fax: 80-23530070; Mobile: 98450 30767; Email: kng@vsnl.com
3.	Shri.V.K.Gupta Director, Planning and Management, National Institute of Science Communication and Information Resources(NISCAIR), Dr.K.S.Krishnan Marg, New Delhi-110012; Tel: 11-25846024, 2584835(o); Fax: 11-25847062 Email: vkg@niscair.res.in
4.	Shri.Darshan Shankar

	Director, Foundation for Revitalisation of Local Health Traditions(FRLHT) 74/2, Jarakbande Kaval, Yalahanka BG; Bangalore-560064; Tel: 80-28565760(o); Fax: 80-8567926; Email: darshan.shankar@frlht.org.in
5.	V.N.Sanjaran Department of Ocean Development, CMLRE, Salim Ali Road, Kochi – 682 014. Ph : 0484 – 2390814.
6.	The Director National Bureau of Plant Genetic Research, ICAR, Pusa Campus, New Delhi – 110 012. New Delhi –12
7.	The Director Central Marine Fisheries Research Institute, Kochi
8.	The Director National Bureau of Fish Genetic Resources, Canal Ring Road, P.O.Dilkusha, Lucknow – 226 002, Uttar Pradesh.Ph : 91 – 522 – 2442440
9.	The Director National Bureau of Animal Genetic Resources, P.B.No : 129, Makrampur Campus,Karnal, Haryana – 132 001.Ph : 0184 – 2267918.
10.	Dr L. Kannan , Director Research, CAS in Marine Biology, Annamalai University, Parangipettai -

7. Discussion on suggestions by members and NGOs

The members of the Authority discussed in detail about the suggestions given by **Mr A J Kurian** Director, DST and others such as Hindustan Lever Ltd and Ayurvedic Drug Manufacturers Association and decided to take it in to account all the relevant points mentioned in their submission.

Most of the suggestions given by Dr Kurian are more relevant for implementing the Biodiversity Act 2002. As such in there was no mention about enforcement component. This particular issue can be taken in to account for the purpose of implementation.

Action: Member Secretary:

Action taken: The suggestion given by the member on enforcement is under consideration and same will be sent to administrative ministry to be approved and vetted by Ministry of Law and Justice for notification.

The suggestions given by Hindustan Lever Ltd and Ayurvedic Drug Manufacturers Association has been discussed in detail the expert committee formed by the National Biodiversity Authority will examine in detail.

Action: Member Secretary.

Action Taken: The Expert committee formed in accordance with Section 40 of Biodiversity Act 2002 will deal with the points mentioned by the Ayurvedic Drug manufactures association and Hindustan Lever Ltd. The above suggestions will be placed by the authority to the EC formed.

AGENDA 8. Administrative Matters of NBA.

1. BUDGET AS APPROVED IN THE NATIONAL BIODIVERSITY AUTHORITY MEETING HELD ON 15.07.2005. CHENNAI

1.	Grants-in-aid sanctioned for 2004-05	Rs.70,82,211/-
2.	Amount spent during 2004-05	Rs.59,26,982/-
3.	Unspent amount during 2004-05	Rs.11,55,229/- * (1-2)
4.	Additional grants in aid released for the financial year 2004-05 for NBA, vide MoEF Ir.no.J-22018/21/2003-CSC(BC) dated 3.3.2004.	Rs.30,00,000/-**
5.	Additional grants-in-aid required for 2005-06 (5-3+4) [Rs.30,00,000 (+) Rs.11,55,229]	Rs. 6,90,74,771 (-)

TOTAL (5-3+4) Rs.6,49,19,542/=

(Rupees six Crores forty nine lakhs nineteen thousand five hundred and forty two only)

* Unutilized amount at the end of the year 2004-2005 will be adjusted towards the grants-in-aid payable during the next year 2005-2006.

** Demand Draft No.733190 dated 26.4.05 for Rs.30,00,000/- received by this office on 5th May, 2005 vide MoEF Ir.No.14/16/2004-CSC dt.29.4.05

Interest received from Short Term Deposits Rs.87,252/-

Action: Member Secretary:

Action Taken: A budget proposal was sent to the tune of Rs. 6.49,19, 542/= to the Administrative Ministry for sanction. However the following sanction has been received:

SANCTIONED BUDGET FOR THE YEAR 2005-2006

(Rupees in lakhs)		
Sl.No.	Item	Amount
1.	Salary and wages	28.00
2.	Equipment & Furniture	10.00
3.	Office Expenses/Contingency	15.00
4.	Website and computers	10.00
5.	Authority/ Expert meeting expenses	08.00
6.	Rent and taxes	7.30

7.	Travel	10.00
8.	Books	3.70
9.	State Board	100.00
	Total	192.00

FIRST INSTALMENT RELEASED FROM THE SANCTIONED AMOUNT Rs. 192 Lakhs.

Sl.No.	Item	Amount
1.	Salary and wages	8.00
2.	Equipment & Furniture	2.00
3.	Office Expenses/Contingency	3.00
4.	Website and computers	2.00
5.	Authority/ Expert meeting expenses	2.00
6.	Rent and taxes	2.00
7.	Travel	2.00
8.	Books	1.00
9.	State Board	18.00
	Total	40.00

The above expenditure will be debitable to Major Head “3435” – Ecology and Environment 60.800 other expenditure (Minor Head), 06 Biodiversity Conservation, 06.00.31 Grants-in-aid under Demand No.30 Ministry of Environment and Forests during the financial year 2005-06.

2. Approval and Agreements

Action Member Secretary:

Action Taken: As per the decision taken in the Interactive meeting held on 23rd July, 2005, all the agreements were scrutinized in detail. The final version of the agreement will be placed before the committee approved by the Authority.

List of Members of the committee proposed to the authority for approval:

CHAIRPERSON: Mr Vishwanath Anand, Vice Chairperson, Environment Appellate Authority, Govt of India, New Delhi 110 003.

Members:

1. Ms. Sangeetha,
2. Mr.Gopinathan

3. Ms. Sumathy, CPR
4. Mr.R. Saha, DST
5. Mr. Chandramohan
6. Mr. R.K. Gupta, CSIR
7. Dr.J.P. Mishra, ICAR
8. Dr. K.Balaraman, ICMR
9. Representative from AYUSH
10. The Director, ZSI or his nominee
11. The Director BSI or his nominee.
12. The Director, NBPGR
1. Dr. R.K. Rai, MoEF

3. Implementation of PBR at village level

The authority in its meeting approved the recommendations for implementation on the **Peoples Biodiversity Register** interactive meeting held on 30.06.2005.

Action: Member Secretary

Action Taken: Two meetings were organized by National Biodiversity Authority
The first meeting was held on 28.6.2005 at Koodal Hall, Chennai

And

A Second meeting on **NATIONAL WORKSHOP ON INVOLVEMENT OF TAXONOMISTS IN BIODIVERSITY AND BIO-RESOURCES CONSERVATION AND FORMATION OF PEOPLES BIODIVERSITY REGISTERS**

Organized by National Biodiversity Authority, Chennai

Date: 19.09.2005; VENUE: NBA Conference Hall, Chennai.

The minutes of the meeting are as follows:

**WORKSHOP ON THE FORMATION OF BMC AND PBR FOR THE CONSERVATION OF
BIOLOGICAL RESOURCES PROGRAMME
NATIONAL BIODIVERSITY AUTHORITY
CHENNAI**

Date: 19.09.2005

VENUE: NBA Conference Hall

RECOMMENDATIONS

1. **The formats of methodology and PBR developed by West Bengal, Kerala and Madhaya Pradesh and IISC can be compared and consolidated in a single version. (Target: March 2006)**

DR K VENKATARAMAN
MEMBER SECRETARY, NATIONAL BIODIVERSITY AUTHORITY, CHENNAI
14.11.2005

2. During 1st February 2006 draft be circulated and an interactive workshop to be organized in the 3rd week of February to finalise the manual.
3. An Expert committee set up by NBA should examine the formation of model PBR database.
4. NBA would undertake funding for translation of the book written in Malayalam in English “Jaiva Vaividhyam” by MP Nayar and Dr Pushpangadhan. (Target 30th November 2005 in MS form)
5. NBA would give a funding formulating the Biodiversity Register undertaken by the sacred groves in the Alapuzha. (Including a Database and elaborate view in sacred groves).
6. NBA would undertake funding for translation of the book written in Bengali on Methodology for preparation of PBR written by Dr AK Ghosh and Dr SK Das. (Target 30th November 2005 MS form).
7. Four Model PBR documents will be presented by Madhya Pradesh during February 2006 3rd week meeting.
8. Two models one on School level and the other on the elaborate model from Karnataka will be presented by Prof Madhav Gadgil during February 2006 3rd meeting. The model should be circulated in the first week of February.
9. Model PBR will be presented by Prof MK Prasad from ERNAKULAM District.
10. A model PBR from West Bengal will be presented by DR A K Ghosh.
11. NBA may take up with Ministry of Human Resource Development, New Delhi linking Environmental Education activities with process of implementation of Biodiversity Act 2002.
12. NBA will support preparation of CDs to promote Biodiversity literacy.
13. Involvement of Taxonomists from the region in preparation of PBR may be ensured for validation of data.

4. Approval Annual Report 2004-2005

The authority in its meeting approved Annual Report for the year 2004 – 2005 with the following modifications.

1. Audited Report should be included in the Annual Report for the year 2004 – 2005.
2. The Member Secretary may right to CAG for nominating Auditor for auditing the Annual Report.
3. The annual report is to be prepared in Hindi.

Action: Member Secretary:

Action Taken: A letter was written to the CAG New Delhi and a copy to Chennai office to conduct the audit at the earliest.

5. Inauguration of NBA

The authority in its meeting approved the Inauguration of the National Biodiversity Authority.

Action: Member Secretary

Action Taken: The Chairman approached the VVIPs for convenient date for inauguration

6. Purchase of Vehicle for the office

The authority in its meeting approved the purchase of vehicle for the Chairman and ten seated vehicle for the office.

Action: Member Secretary

Action Taken: A proposal for purchase of vehicle has been sent to MOEF for consideration and approval and it was approved in the 26th September 2005 Review committee meeting with Special Secretary at MoEF, New Delhi.

7. Establishment of permanent office building

The authority in its meeting approved the establishment of permanent office in principle. However the same may be deferred for some time.

Action: Member Secretary

Action Taken: The proposal will be put up to NBA during the year 2006-2007.

8. Formation of Expert committees

The authority in its meeting approved the formation of

- 1. Expert Committee on Repositories,**
- 2. Expert Committee on the preparation of guidelines on publication of results of research and the formation of**
- 3. Expert Committee to deal with Agro biodiversity.**

The Member Secretary may prepare the roster of Experts to be made as the members of the above Committees.

Action: Member Secretary

Action Taken: The following are the roster of Experts for the EC proposed. This is place before the NBA for approval.

Proposed Chairman and Members of the Expert Committees

1. Expert Committee on Repositories:

Chairman: Dr A K Ghosh, Non Official Member, NBA

Members:

- 1. Director, ZSI, Kolkata**
- 2. Director, BSI, Kolkata**
- 3. Dr Natarajan, Univ. of Madras, Chennai**
- 4. Director, NHM, New Delhi**
- 5. Joint Director, IARI**
- 6. Director, NBPGR, New Delhi**
- 7. Dr SS Kadam, Director , MSKVV Pune**
- 8. Dr M Subramaniam, Chennai**
- 9. Dr M Swamiappan, Madurai**

2. Expert Committee on preparation of guidelines on publication of results of research:

Chairman: Dr S M Paul Khurana, VC, Gangavathi Univ., Jabalpur.

Members:

- 1. Dr Thawasi, Veterinary University, Chennai**

2. Dr V.A. Parthasarathi, Calicut
3. Dr TKS Gowda, Univ. Agri. Sci., Bangalore
4. Dr M. Balasubramanian, DBT, New Delhi
5. Dr Koandal, Principal Scientist, IARI, New Delhi
6. Dr Brehmami, NBPGR, New Delhi
7. Dr S. Maiti, NRC, Medicinal Plants, Gujarat

3. Expert Committee on Agro biodiversity

Chairman: Dr B.S. Dhillon ICAR

Members:

1. Dr Jambalai, Director of Research, Dapoli, Maharashtra
2. Dr SS Kadam, Director, Rahuri, Pune
3. Dr J.P. Mishra, ADG, ICAR, New Delhi.
4. Dr M Swamiappan, Professor, AC & RI, TNAU, Madurai
5. Dr Kalpana Sasthry, Principal Scientist, NAARM, Hyderabad
6. Dr S Anandraj, Principal Scientist, IISR, Calicut
7. Dr K. Balaraman, Dy. Director, VCRC, ICMR, Pondicherry
8. Dr Moorthy Anushetty, Former FAO Specialist, Hyderabad.

9. Project consultants

The project consultant access and Benefit sharing intellectual property right agro biodiversity training and awareness has been approved by the authority based on the following points. The terms of reference and the advertisement for the recruitment should be placed in NBA website. The consultant should be paid with vehicle and secretarial allowances besides a monthly sum of Rs.25, 000/- (Rupees Twenty Thousand Only).

Action: Member Secretary

Action Taken: An advertisement for Expert consultant/Project Consultant has been prepared and published in the NBA website inviting applications.

10. Seminars and workshops

The authority in its meeting approved the conduct of seminars and workshops such as IPR, National Seminar on Agro Biodiversity workshop on ABS proposed by NBA in its agenda.

Action: Member Secretary

**Action Taken: A planning meeting for the conduct of “NATIONAL AGROBIODIVERSITY CONFERENCE HS BEEN PROPOSED”. Date 20.09.2005
Venue: NBA conference Hall. Chennai**

The following are the decision taken in the meeting

MINUTES OF THE PLANNING MEETING ON AGRO-BIODIVERSITY CONFERENCE

20.09.2005

Conference Hall, NBA, Chennai

Theme of the Conference; Tentative List of Sessions such as *In-situ* and *Ex-situ* Conservation; Agrobiodiversity and Intellectual Property (IP) Agrobiodiversity and Climate Change Agrobiodiversity, Biotechnology and Genetically Modified Organisms (GMOs) Access and Benefit Sharing Microbial Diversity Traditional Knowledge and Geographical Indications (GI) Fish Genetic Resources Medicinal Plants Policy Issues in Agrbiodiversity and Social Interventions in Agrobiodiversity and Bioresources as well as a **Poster Session for young scientists**

The Duration of the conference is decided as **Four days and the tentative dates are as follows: 12.02.2006 Inauguration; 13-15-02.2005 Technical Session/ or 19-22 of February 2006.**

Identification of Scientists in different areas of Agriculture Research Institutes: TNAU (46 scientists); IARI (57 Scientists); CRISAT; NARRM (6 scientists); GB Pant, Almorah; NRC; Fisheries College Thoothukudi; TANUVAS; Annamalai University; CARI, Port Blair; Vivekanatha Agricultural Research Institute, Almorah; ICAR Ooty; Central Potato Research Institute, SHIMLA; Indian Institute of Spices, Calicut; CTCRI; CPCRI; NRC Onion, Maharashtra; NRC Grapes; NRC Banana, Tiruchi; NRC Medicinal Plants; NRC Pulses Ground Nut and Cashew Nut; NBPGR New Delhi; NBFGR; NBAGR Animal Genetic Resources, Karnataka; IARI; MUSHROMS; Gujarat Medicinal Plants; MICO, ARI Regional Stn Pune; National Horticulture Research and Develop Centre, Pune; Central University Manipur; Central University, Arunachal Pradesh; Agricultureal University, Tapoli; Central Tobacco Insitute Dharwar; Bangalore; NRC Vegetables, Varanaci; TNAU, Coimbatore; GB Pant University, Pant Nagar, Uttranchal; TAUVAS, Chennai; Tamil Nadu Fisheries College and Agirultural Institute, Toothkudi; NARM Hydrabad

The Venue of the Conference has been decided as NIOT Campus, Chennai

Other than the above the following things have also been discussed:

- Approaching VCs of Agricultural Universalities for nomination of Two Scientists for each University also containing ICAR DL for nomination f ICAR scientists from different regions.

- Inviting all task force members for attending the conference
- Identification of lead papers and speakers
- Fixing accommodation IIT, CLRI, GUEST HOUSES
- Abstract preparation model.
- EXTENDED ABSTRACT: Format will be provided.
- Next discussion meeting is fixed on 15th October
- Brochure preparation
- TA/DA provisions and funding
- Format of invitation
- Inviting VIP for inaugural function
- Planning of proceedings publication
- Fixing the publishers for the publication of proceedings
- University and ICAR for National Advisory Committee
- Registration
- Resource material, Souvenir including Bag and abstract book etc.

11. Establishment of Bio-parks

The authority in its meeting informed that NBA is a regulatory authority cannot be an implementing authority. In this connection NBA may give directions to State Government for implementing the Butterfly garden, Plant Genetic Resource Park, Management of Sacred Groves, Establishment of Botanical parks and aquaria.

Action Member Secretary

Action Taken: Directions will be provided to State Biodiversity Boards whenever approach for Butterfly Garden, Plant Genetic Resource Park, Management of Sacred Groves, and Establishment of Botanical parks and aquaria.

12. Advisory Committees and Scientific Panels

Action Member Secretary

Action taken: The authority in its meeting approved the formation of Task Force on Agro Biodiversity. The other committees suggested in the Agenda was agreed in principle but may be formed at a later stage.

Advisory Committee on AGRO BIODIVERSITY

CHAIRMAN : Dr E A Siddique, Former Deputy Director General, ICAR, New Delhi.

Members:

1. Dr. Anishetty Murthy, Former Senior Advisor (PGR), FAO, Rome.

2. Dr. S. P. Tewari, Director, NAARM.
3. Dr. Bhagmal, Regional Representative, IPGRI, South Asia Office.
4. Dr. B.S. Dhillon, Director, PAU, Ludhiana.
5. Dr. S. Edison, Director, CTCRI.
6. Dr. J. L. Karihaloo, Project Director, National Centre for DNA Finger printing.
7. Dr. S.S. Kadam, Former Director, Research, MPKVV.
8. Dr. Thaplyal, Former Registrar, Pantnagar.
9. Dr. A. Kamal, Former Vice-Chancellor, Kashmir.
10. Dr. S. K. Pandey, Director, CPRI.
11. Dr. V.A. Parthasarathy, Director, IISR.
12. Dr. R.S. Rana, Former Director, NBPGR.
13. Dr. Shikamani, Director, IIHR.
14. Dr K. Balaraman, ICMR, Pondicherry.
15. Dr. M. Subramaniam, Former Director of Research TNAU, Member Secretary.

13. Establishment of National Institute of Biodiversity

The authority in its meeting discussed the establishment of Indian Institute of Biodiversity in detail. The proposal was principally agreed and the members suggested that establishment of the Institute may be taken up by the authority next year.

Action Member Secretary:

Action Taken: The proposal for National Institute of Biodiversity will be submitted at a later date with the approval of NBA

14. Establishment of Institute of Marine Biodiversity

The authority in its meeting discussed the establishment of Institute of Marine Biodiversity in detail. The proposal was principally agreed. The members suggested that establishment of the Institute may be taken up next year.

Action Member Secretary:

15. Regional Biodiversity and Bio-resources Centre (RBBC)

The authority in its meeting discussed the establishment of Regional Biodiversity and Bio-resources Centre in detail. The members suggested that establishment of the RBBC may be taken up by the authority at a later date.

Action Member Secretary:

Action Taken: The proposal for National Institute of Biodiversity will be submitted

at a later date.

16. Involvement of Taxonomists in Biodiversity Conservation

The authority in its meeting discussed the involvement of Taxonomists in Biodiversity Conservation at District and Panchayat Level. The members suggested that a meeting with experts may be conducted at Chennai and the recommendation may be placed before the Govt. of India.

Action Member Secretary:

Action Taken: a meeting has been conducted on “CAPACITY BUILDING FOR BIODIVERSITY MANAGEMENT COMMITTEES WITH TAXONOMISTS EXPERTISE” on Date: 23.09.2005 at VENUE: NBA CONFERENCE HALL by NBA, Chennai.

The following are the recommendations emerged during the workshop:

1. Formation of Task Force on Taxonomy
2. Formation of Taxonomy and related Ecology and Biogeography Knowledge centers
3. Inclusion of Taxonomy in the Curriculum – School, College and University at MSc level.
4. Summer/Winter School on Taxonomy for School and College Teachers
5. Summer Camps for Training in Biodiversity/Ecosystem/Environment for the School/College students (3 weeks)
6. National Workshop on Biodiversity/Taxonomy/Ecology/Biogeography and Environment (April 2006)
7. Employment Opportunities for Taxonomists in India
8. Funding for maintenance and strengthening of Biological collections
9. Strengthening of taxonomic research in lower groups of plants, animals and Microorganisms
10. Development of layman identification manual both electronic and printed version of plant, animals & microbes.
11. Creation of Chairs for taxonomists at Universities and other research centres
12. Utilising the services of retired scientists/Emeritus for Training the trainers.
13. Publication of Monographs of different groups of plants, animals and microbes as well as gray literatures (University thesis).
14. Identification different groups of Research Centres (Mapping of Taxonomy Research Organisation in India).
15. Providing Fellowship for Taxonomy Research
16. Establishment of Centres of Excellence
17. Identification of Taxonomic Thrust Areas
18. Establishment of Culture collection Centres
19. Identification of Priority Areas on Taxonomy
20. Lesser known habitats/organism groups

21. Strengthening of Existing Museum and Herbaria
22. Consolidation of Expertise on Taxonomy
23. Reviving of eroding taxonomic Centers
24. Linkages between Taxonomic organization- groups
25. Biotechnology should be supported with taxonomy
26. Assessment of Status and identification of gap areas of Taxonomy
27. Training need assessment
28. Lateral learning between BMCs and other Technical support groups (visiting other biodiversity rich areas)
29. Involving the indigenous knowledge holders in the learning process of Biodiversity.
30. Encouraging Conservation and Management of Agro/coastal and Marine biodiversity
31. Regional Taxonomy meeting
32. National network of Taxonomists
33. International cooperation-SACEP
34. Inviting International Taxonomic experts for capacity building, Involving British Council.
35. Human Resource Development in Taxonomy funded by MoEF
36. Regional Centres for Taxonomic expertise Development

17. Medium-Sized Project Proposal for GEF Funding

The authority in its meeting discussed the above project and decided the project such as knowledge based output may be taken up for consideration.

18. Venue of the Next Meeting

The Chairman and Members decided to have the next meeting either at CARI, Portblair or at Indian Institute of Spice Research, Calicut. The tentative date for the next meeting is fixed during October, 2005.

Action: Member Secretary

Action Taken: The proposed meeting is organized at CARI, Port Blair.

9. Any other matter with the permission of the Chair

The Chairman of the authority meeting agreed to place the views of Prof. Anil Gupta sent by him on 14th July, 2005 by Fax.

The following are the points placed for discussion:

1. A framework for prioritization of activities of NBA whether for supporting projects, taking initiative for consultations or dissemination.

The members agreed to the above point to prepare a framework for prioritization of activities of NBA.

1. Possibilities of MOU between NBA and National Innovation Foundation (NIF) so that the national register for green grassroots innovations and traditional knowledge at NIF becomes a depository of traditional knowledge regarding biodiversity and is supported by NBA for the purpose. At the moment, more than 65 per cent of the 51000 practice of innovations and traditional knowledge from over 300 districts relates to biodiversity based knowledge systems.

The members did not agree for the MOU between NBA and National Innovation Foundation (NIF). However, NBA can workout a modality to include NIF in the Biodiversity Information System (BIS).

1. Given the raising expectations of the tribal and other communities dependent on biodiversity based livelihood, developing a time bound plan for documentation, value addition, dissemination and commercialization with fair and just benefit sharing system is imperative. This is a priority because out of all resources spent by NBA so far, not one penny has gone to the communities whose knowledge and resources we are supposed to care for.

The members discussed the above point and decided to adhere.

2. Commissioning straight reviews of specific orders and families in which the national records of BSI and ZSI are weak and obsolete ensuring an urgent capacity building for taxonomy in the country to overcome the problem of very high attrition and consequent gap in our knowledge and skill base.

The members discussed the above point and informed that NBA may take steps to strengthen the National records of ZSI, BSI.

3. A joint all India coordinated research project between NBA and NIF involving all the Botany and Zoology departments in the country to systematically document the knowledge base and implement the provision of prior informed consent in the process so that knowledge providers don't become anonymous.

The Chairman, NBA has indicated that it is difficult to form a coordinated Project among the colleges because of their workload on teaching, Research and examinations. Instead the Chairman has suggested the utilization of NCC, NSS and Social Service League groups may be utilized in an in an informal way whenever the colleges are keen to involve themselves.

4. Developing an ethical code governing all support and activities of NBA so that the highest principles of accountability towards conservators of biodiversity and associated knowledge systems are maintained.

The Chairman, NBA informed that an Expert Committee chaired by Prof Madhav Gadgil And ten other members has been proposed to maintain the Database on Biodiversity and Associated Knowledge Systems.

5. NBA as co-sponsor of the national campaign of NIF.

The members of the authority decided that NIF campaign may be organized annually with the co-sponsorship of NBA.

4. ADMINISTRATIVE MATTERS FOR DISCUSSION 4th MEETING

1. Appointment of Legal consultant in NBA, Chennai

As advertised in the NBA website for the post of “Legal Consultant” with the Terms of reference (TOR) and Eligibility, keeping in mind the specific and peculiar nature of job in connection with the legal aspects of Biodiversity Act, 2002 and its related issues such as IPR’s, knowledge of Access and Benefit sharing. National Biodiversity Authority has so far received only one application for the post of “Legal Consultant”.

The Biodata of the candidate applied for the post of Legal Consultant:

Name of the Candidate: Shri. **Yeshwanth Shenoy**

Qualification: B.A., LL.B, Diploma in Private Investigation; LL. M. Intellectual Property Rights Post-graduate, Diploma in International Trade Law, LL.M. Commercial and Consumer Law with International Business Transaction. He has the credit of publishing a book on “Biodiversity: Law and Practice. Modern concepts in Company Law”. He has written several legal articles on Biodiversity issues. He is a practicing lawyer in Bombay and Kerala High court. He has experience in research consultancy for law firms (Sun Tec Business solutions), government institutions such as Kerala State Electricity Board, Central Government at Kerala High Court and Tropical Botanical Garden Research Institute. Has done Internship at UNICCRJI

The Authority is requested to approve

The members after discussion agreed to appoint Shri. **Yeshwanth Shenoy** for a period of **ONE YEAR** as per the terms and conditions laid down by NBA.

Action Member Secretary

2. Appointment of Expert consultant for the Expert committees formed by NBA, Chennai

It has been advertised in the NBA website for post of “Expert Consultant”. Terms of reference (TOR) and Eligibility requirements have been made available in the website. TOR and Eligibility have been framed keeping in mind the specific and peculiar nature of job that has to be performed in connection with the Biodiversity Act, 2002 and its related issues.

1. Application for the post of an Expert Consultant on Collaborative Research as indicated in the website

Dr Hemal Kanvinde
160 Sivananda Road, Gillnagar ext 2,
Choolaimedu, Chennai 600 094
email: caress@eth.net
Tel: 23612691

The Authority is requested to approve

The members after thorough discussion agreed to appoint **Dr Hemal Kanvinde** for a period of ninety days as per the terms and conditions laid down by NBA.

3 APPOINTMENTS OF ADMINISTRATIVE OFFICER ON DEPUTATION BASIS

Mr R. Naryanan, Assistant Commandant of II-India Reserve Battalion, Arunachal Pradesh has applied for consideration as “Administrative Officer” on deputation. He has wide experience in working central government organization such as Anti-Corruption Inspector, CBI and also as Vigilance Inspector in Arunachal Pradesh Secretariat. Since National Biodiversity Authority is in urgent need of “Administrative Officer” to conduct its day today administrative activities, the Authority may kindly consider the proposal.

The Authority is requested to approve

The members after thorough discussion agreed to appoint **Mr R. Naryanan** for a period of one year as per the terms and conditions laid down by NBA and Government of India.

ACTION: MEMBER SECRETARY

4. APPOINTMENT OF STAFF ON DEPUTATION BASIS AS PER THE APPROVED RECRUITMENT REGULATION BY NBA

As decided in the Review meeting with the Special Secretary (Minutes of the meeting is to be received from MOEF, New Delhi) held on 26-09-2005, it was decided to fill up the essential posts on Deputation basis at the earliest.

The proposal is put up to the NBA for approval.

The following are the recruitment committee

Chairman:

Prof. Dr S Kannauyan, Chairman, NBA, Chennai

Members:

- 1. Shri D D Verma JS, MoEF, New Delhi**
- 2. Dr. S N Saha, Principal Scientist, NAARM, Hyderabad**
- 3. Dr. Balraj Paramar, Joint Director, IARI, New Delhi**
- 4. Dr. S S Kadam, Director, Pune**
- 5. Dr. V V Sreenarayanan, Coimbatore**
- 6. Dr. Ravishankar, CFTRI, Mysore.**

The Authority is requested to approve

The authority approved the filling up the essential posts on Deputation basis along with the above committee for recruitment.

ACTION: MEMBER SECRETARY:

5. AWARDS TO STATE BIODIVERSITY BOARDS AND BIODIVERSITY MANAGEMENT COMMITTEES

To encourage the competitive spirit of the **State Biodiversity Boards** in terms of Biodiversity and Bioresources management and conservation, a cash Award of Rs 1,00,000/= (Rs One lakh only) and a memento with Awarded Certificate to one SBB and Rs 25,000/= (Rs Twenty five thousands) for four **Biodiversity Management Committees** per year would activate the process of Biodiversity and Bioresources conservation. These award money could be used for State Biodiversity Fund and Local Biodiversity Fund for conservation of Bioresources.

The Authority is requested to approve

The authority approved the establishment of awards for SBB and BMC and also recommends establishing a committee to recommend the best performers of SBBs and BMCs.

ACTION: MEMBER SECRETARY

COMMITTEE FOR SELECTION OF AWARDS:

CHAIRMAN: Prof. Dr S Kannaiyan, Chairman, NBA, Chennai

MEMBERS:

1. Prof Madhav Gadgil, Bangalore
2. Dr Nayar, Former Director, BSI
3. Dr Samanta, Joint Director, NAARM, Hyderabad
4. Dr JRB Alfred, Director, ZSI, Kolkata
5. Dr Anishetty Murthy, FAO

**6. AGENDA ITEM PROPOSED
BY
DEPARTMENT OF AGRICULTURE RESEARCH AND
EDUCATION**

D.O. No. SECY.(DARE) & DG (ICAR)/2005/

September 28, 2005

The Department of Agricultural Research & Education (DARE) and the ICAR have a rich tradition of exchange of plant genetic resources with several countries. These resources are crucial for enhancing productivity and quality of our crops. No country is self-sufficient in these resources and the future of crop improvement programmes depends on active international cooperation in the area of exchange of genetic resources.

Introduction of exotic germplasm has enriched the Indian agriculture since time immemorial. Many new crops such as soybean, sunflower, sugarbeet, jojoba, guayule, cuphea, kiwi fruit, peanut, hazelnut, low chilling cultivars of apple, peaches, almond, strawberry and also a number of other elite materials have been introduced in India. The Green Revolution, responsible for catapulting India from a food-deficient nation to a food surplus country would have been virtually impossible without the introduction of germplasm of foreign origin responsible for high yielding varieties.

Essentially, the germplasm exchange programme of DARE/ICAR through bilateral MoUs with other countries has been on a *quid pro quo* basis. Nonetheless, India has been a major beneficiary of such a programme. During the period 1999 to 2003, the imported samples constituted over 97% of the total exchanged accessions.

ICAR also conducts a proactive evaluation of germplasm abroad for anticipatory research of interest to Indian conditions. Such evaluation is translated into requests for supply of germplasm through diplomatic channels via MoUs/Work Plans with that country.

We have, in return, been receiving requests from foreign countries for germplasm for utilization in their crop improvement programmes. Before the enactment of the Biological Diversity Act, 2002, DARE had been granting permission to release such material for research purpose. The Act, however,

stipulates reference to the National Biodiversity Authority (NBA) along with a fee of Rs.10,000/- from the indenter.

In my opinion, it is likely to act as a deterrent as the very essence of such germplasm exchange programme is, the absence of any cumbersome procedure so that close links are forged and fostered between the public sector agricultural research organizations utilizing the diplomatic channel.

I would, therefore, request that you may like to provide exemption to germplasm exchange programme of DARE through bilateral MoUs from the provisions of the Biological Diversity Act, 2002 and delegate the authority to DARE under Section 16 of the Act.

Yours sincerely,

(MANGALA RAI)

Prof. S. Kannaiyan

Chairman,

National Biodiversity Authority,

475, 9th South Cross Street,

Kapaleeswarar Nagar, Neelankarai,

CHENNAI – 600 041.

Copy for information to the Joint Secretary, M/o Environment & Forests.

(MANGALA RAI)

D.O. No. : Secy. (DARE) & Secy. (ICAR)/2005/

Date : 28th September, 2005

Dear Dr. Kannaiyan,

The Indian Council of Agricultural Research over the years have developed close links with its counterpart national research organizations in other countries and international research institutes/centres of the CGIAR system. Through these links, ICAR/DARE are implementing a number of collaborative research projects involving the exchange of germplasm material. You may agree that this exchange is vital for ensuring disease free and high yielding varieties on a continuous basis.

The Biological Diversity Act, 2002, under Section 5(1) and 5(3) permits such exchange of biological material for collaborative research projects without making a reference to NBA if the same are approved by the Central Government and which conform to the policy guidelines issued by the Central Government. We have been following the laid down procedure of the Government of India for approving the collaborative research projects and our internal guidelines for exchange of biological material. We have revised our guidelines with reference to Section 5 (3)(a) of the Biodiversity Act, a copy of which is enclosed. I would like to mention that all exchange of biological material is for research purpose only and any commercialization would be subject to provisions of the Biodiversity Act – 2002.

I would appreciate your concurrence with the draft guidelines.

Yours sincerely,

Sd/-

(MANGALA RAI)

Prof. Dr. S. Kannaiyan,

DR K VENKATARAMAN

MEMBER SECRETARY, NATIONAL BIODIVERSITY AUTHORITY, CHENNAI

14.11.2005

**Chairman, National Biodiversity Authority,
475, 9th South Cross Street,
Kapaleeswarar Nagar,
Neelankarai, Chennai – 600 041, (TN).**

Copy : Joint Secretary, Ministry of Environment & Forest

(MANGALA RAI)

Revised on 30.9.05

Guidelines for transfer/exchange of biological resources or information under collaborative research projects involving foreign individuals/agencies

1. The guidelines are applicable to collaborative research projects, which involve transfer or exchange of biological resources, or information relating thereto between institutions, including government sponsored institutions of India, and such institutions in other countries.
2. The provisions of the Sections 3 and 4 of the Biological Diversity Act 2002 (BD Act) shall not apply to the collaborative research projects conforming to these guidelines as per the provisions of the Section 5 (3) (a) and (b) for the transfer of biological resource(s) to foreign nationals/agencies.
3. The transfer of the biological resource(s) would be effected through the concerned repository/bureaus.
4. Extant projects not consistent with the provisions of the BD Act and based on agreement(s) concluded before the commencement of the Act stand rendered void as per the provisions of the Section 5 (2) of the Act.
5. The guidelines cover exchange of plants, animals, fish, microorganisms and other forms of living material comprising biological resources as defined in the BD Act.
6. The collaborative research project, in no way, should jeopardize the stake of claims of national sovereignty on biological resources of India.
7. The aims, objectives, technical plan, output, outcome and impact of the collaborative project should be congruent with the national policies and goals including EXIM policy.
8. To cope with or avert the existing or potential calamity or to meet dire national or regional needs, the concerned department of Central Government of India, may, on its own volition, send through the concerned authorized repository, the biological resource(s) for testing, screening, improvement or otherwise as deemed fit in the national interest in any collaborative mode as considered appropriate.
9. No collaborative research project merely aiming towards exploration and collection should be approved. The exploration and collection of biological resources, if considered a prerequisite of any collaborative research project, should be undertaken by the national repositories/bureaus only. The material so collected should be

deposited in the concerned national repository/bureau and given an indigenous collection accession number. Thus collected and documented resource can, then, be used in the collaborative research project.

10. Any new taxon discovered through the project shall be notified to the authorized repositories/bureaus, and the voucher specimen be deposited with them.
11. The approval of the collaborative research projects involving persons/body as stated under section 3 (2) (a), (b) and (c) of the BD Act shall also be cleared from the security and sensitivity angle and be congruent with the guidelines laid-down by the Cabinet Secretariat/Ministry of Finance (Department of Economic Affairs) (vide F.No.1/30/200-PMU) and Department of Agricultural Research & Education (vide.F.No.7-11/2004 IC.IV) and as revised from time to time.
12. Approval to the collaborative research project must have been accorded by at least one Department of Central Government of India as stated in section 5 (3) (b) of the BD Act.
13. The transfer of biological resources shall be for research purpose only.
14. The quantity of material to be transferred shall be limited to the needed experimental quantity of the biological resource(s).
15. The transfer of material shall be under the Material Transfer Agreement (MTA), as approved by the concerned department of Central Government of India.
16. The institutions designated as repositories by the Central Government under the provision of Section 39 of the BD Act shall function as the nodes for transfer of biological resource(s) under the collaborative research project. Import of biological resource(s) shall be done through the authorized repositories only. In case of agro-biodiversity, the following bureaus under the auspices of Indian Council of Agricultural Research (ICAR)/ Department of Agricultural Research and Education (DARE), Ministry of Agriculture (MOA) shall be the nodal repository agencies, besides others as may be designated by the Central Government in consultation with the National Biodiversity Authority (NBA) as per the provision of the Section 39(1) of the BD Act.
 - National Bureau of Plant Genetic Resources (NBPGR), New Delhi
 - National Bureau of Animal Genetic Resources (NBAGR), Karnal
 - National Bureau of Fish Genetic Resources (NBFGR), Lucknow
 - National Bureau of Agriculturally Important Microorganisms, (NBAIM), Mau Nath Bhanjan, UP.

Extant provisions of genetic resources being routed through respective ICAR institutes by the NBPGR (ICAR) in case of specific crops shall continue to be followed as per the Plant Quarantine Order, 2003.

17. The authorized repositories of biological resource(s) will issue import permit and will carry out quarantine processing prior to the release of the material in India. Biological resource(s) transferred for research should be free from pests/pathogens of quarantine importance. While effecting the transfer/exchange of the biological resource, the necessary sanitation and phyto-sanitation measures and quarantine procedures as prescribed shall be strictly adhered to. These may include reports on case history of the biological resource(s) and risk analysis based on the recognized scientific principles. Whereas for the quarantine of fish and animal biological resources the Department of Agriculture and Cooperation (DAC) and Department of Animal Husbandry and Fisheries (DAHDF) of MOA are the nodal departments, the responsibility of quarantine of plants exchanged for the research purpose rests delegated to the NBPGR. The provisions of the Plant Quarantine Order (2003), as applicable, shall be followed.
18. Collaborative projects involving threatened species listed or protected under any act or involving collection from prohibited areas such as National Heritage sites, sanctuaries, reserved forests, biodiversity reserves, island ecosystems and fragile ecosystems or other restricted activity areas of similar kind should not be approved. Projects aiming at conservation and restoration of habitat should be thoroughly reviewed and appraisal be made in regard to environmental concerns and respect to and protection of indigenous knowledge. Thereafter, such projects be permitted only with the inclusion of built-in appropriate precautions in the project as per the provisions of Section 36 (4) of the BD Act. The provisions of the Plant Quarantine Order (2003), as applicable, shall be followed.
19. The knowledge associated with any biological resource intended to be transferred or the knowledge generated during the execution of the project shall not be commercially utilized without the prior approval of the NBA/State Biodiversity Board as per the provisions of the Section 6 and 7 and corresponding Section 19 of the BD Act or without the prior approval of any authority to whom the power has been delegated by the NBA under Section 16 of BD Act.
20. The indigenous biological resource(s) *per se* should not be allowed for grant of any form of intellectual property rights.
21. Access to unique indigenous genetic resources that have any unique trait of commercial value or have substantial economic value in production, product quality, fitness, disease resistance etc. could be selectively restricted by the concerned department of the Central Government on case-by-case basis as per the comments of the concerned repository/bureau.

22. Plant varieties developed under the collaborative projects may be protected under any law enacted by Parliament as per the provisions of Section 6 (3) of the BD Act.
23. Local/traditional knowledge in oral or any other form collected and documented in the collaborative project shall be intimated to the NBA/SBB as per Section 36 (5) of BD Act for facilitating registration of such knowledge at the local, state and national level.
24. The research papers, books, bulletins, registered accessions, patents and outputs in other IP-forms shall be appropriately shared between the collaborators. The mechanism of sharing and protecting/patenting the outputs should be explicitly spelt out in the project and approved by the competent authority.
25. A list of biological resource(s) transferred under the project shall be sent to the National Biodiversity Authority for information.
26. Benefits eventually accruing from the use of biological resource(s) transferred under the collaborative research projects would be assessed and the benefit sharing would be determined by the NBA as per provisions of the Section 21 of the BD Act.
27. Transfer/exchange of transgenic material would be governed by the provisions of Environmental Protection Act 1986 and its subordinate legislation, operative guidelines and extant provisions set by the nodal ministry/department i.e. Department of Biotechnology (DBT), Ministry of Science and Technology, and Ministry of Environment and Forestry (MOEF).
28. In case of plants, projects involving plant genetic resources should be referred to the NBPGR (ICAR) for technical comments. The exchange of plant genetic resources would be effected after considering the technical comments of the NBPGR (ICAR). Any import of plants/planting material, in any form, prohibited under any other act/rules/regulations will not be permitted in collaborative project.
29. In case of fish genetic resources the following may be additionally noted:-
 - 29.1 In case of agro-biodiversity, projects involving fish genetic resources should be referred to the NBFGR (ICAR) for technical comments. The exchange of fish genetic resources would be effected after considering the technical comments of the NBFGR (ICAR).
 - 29.2 Import of fish genetic resource would be permitted only if the consignment is accompanied by Zoo sanitary/Quarantine certificate showing freedom from *Office of International des Epizooties* (OIE)-listed and National Animal Control Association (NACA)-listed diseases that are considered to have significant adverse ecological and socioeconomic impacts and all other relevant documents.
 - 29.3 The import of fish genetic resource into India for collaborative research shall be made through ports of entry where the quarantine and

certification service stations are located. The consignments shall be got cleared from the quarantine/certification authorities at the entry ports before effecting their supply to the research laboratory/agency concerned.

29.4 Transfer of live fish genetic resource(s) will be restricted only to the species that are propagated in captivity.

30. In case of animal genetic resources the following may be additionally noted:-

30.1 In case of agro-biodiversity, projects involving animal genetic resources should be referred to the NBAGR (ICAR) for technical comments. The exchange of animal genetic resources would be effected after considering the technical comments of the NBAGR (ICAR).

30.2 The import of animal genetic resource into India for collaborative research shall be made through ports of entry where the quarantine and certification service stations are located. The consignments shall be got cleared from the quarantine/certification authorities at the entry ports before effecting their supply to the research laboratory/agency concerned.

31. In case of microbial genetic resources the following may be additionally noted:-

31.1 In case of agro-biodiversity, projects involving microorganisms should be referred to the NBAIM for technical comments. The exchange of microbial genetic resources would be effected after considering the technical comments of the NBAIM (ICAR).

31.2 The micro-organisms, which could be used for biological warfare, shall not be exported or imported.

31.3 All requests made for the permission to exchange/export/import microbial germplasm samples must be accompanied with the detailed information on aspects such as scientific name, markers, identification and detection techniques, distribution and habitat, genetic stability and related aspects.

32. The guidelines should not be construed to be in contradiction with the provisions of national and international regulatory mechanism such as CBD, ITPGRFA, PPV&FR Act etc. The collaborative research projects should rather facilitate harmonizing the provisions of these regulatory mechanisms.

[These guidelines would become effective for exchange of biological resources under collaborative research projects as and when approved by Central Government of India as per the provisions of Section 5(3)(a) and (b) of the BD Act.]

.....

Model Material Transfer Agreement
Indian Council of Agricultural Research
Krishi Bhawan, New Delhi – 110001. INDIA.
Material Transfer Agreement (MTA)

Agreed between1

4. National Bureau of Plant Genetic Resources (NBPGR), New Delhi
5. National Bureau of Animal Genetic Resources (NBAGR), Karnal
6. National Bureau of Fish Genetic Resources (NBFGR), Lucknow
7. National Bureau of Agriculturally Important Microorganisms (NBAIM), Mau of the Indian Council of Agricultural Research, Krishi Bhawan, New Delhi – 110001, the apex agricultural research organization of India, being the First Party (Provider of the Material)

And2

being the Second Party (Recipient of the Material)
for the Supply/Exchange/Transfer of Genetic Resources for Food & Agriculture/
Germplasm/ Genetic Material/ Genetic Components for Research3

8. Within India, not covering persons as described in Sec.3(2) of the Biological Diversity Act, 2002 (18 of 2003) (BDA).
9. Within India, wholly or partly covering persons as described in Sec.3(2) of BDA.
10. Outside India, with Members of the International Treaty for Food and Agriculture (ITPGRFA), and wholly or partly covering persons as described in Sec.3(2) of BDA.
11. Outside India, with Non-Members of ITPGRFA, and wholly or partly covering persons as described in Sec.3(2) of BDA.

As follows:

Recipient Name	
Recipient Institution/ Organization/ Agency/ Centre	
Recipient Full Address with PIN Code	
Phone Number	

- 1 Tick mark the appropriate box
- 2 Mention Name and address of the Second Party
- 3 Tick mark the appropriate box

DR K VENKATARAMAN
MEMBER SECRETARY, NATIONAL BIODIVERSITY AUTHORITY, CHENNAI
14.11.2005

FAX	
Email	
Nature of Activities	
Germplasm material 12. (Specify) ⁴	13. Plants 14. Animals 15. Fish Microorganisms
Supply made through	16. NBPGR 17. NBAGR 18. NBFGR 19. NBAIM 20. Other (Specify)
For Official Use of Supplier	4 Germplasm Identity (Species name, common name, etc.) 5 Accession Number 6 Short Description of the Material 7 Passport Data _____ _____

I/we agree to abide by the following terms of the MTA and certify that:

- i) The germplasm MATERIAL(S) transferred herein as above shall be used only for the purpose of research under my/our direct/close supervision and will not be used for commercial purposes or profit making whatsoever, without prior written approval of the NBA/MoEF/DARE/ICAR, Government of India as the case may be. The importer/ recipient (Second party) agrees to provide a concept note of research project in which the MATERIAL(S) will be used, including the manner in which to be used. The importer/ recipient (Second party) agrees to cease any use of the material in case of suspension of research project at the instance of either party or due to factors beyond the control of either party. Upon such suspension of further research work, both parties will mutually agree for adopting a suitable provision for their preservation. In case of failure of the parties to arrive at an agreement, the materials including derivatives will be destroyed upon 90 days notice from NB_____.
- ii) All information and material supplied by NB_____ shall be deemed to have been disclosed or provided to the recipient in confidence. The recipient agrees to preserve the confidential status of the material and information.
- iii) The germplasm MATERIAL(S) or its(their) part(s), components or derivatives (including live or dead tissue/ DNA) that can be used to retrieve whole DNA/fragment or sequence or any other genetic information shall not be distributed or transferred to any third country/party, except those directly engaged in research under direct supervision of the recipient (second party), without prior

4 Specify the type of material involved for supply/transfer e.g. seed, tissue culture, semen, DNA, etc.

- written approval of the NBA/MoEF/ ICAR/DARE, Government of India as the case may be.
- iv) Any development of commercial product based on research on gene manipulation/selective breeding programme for genetic improvement shall not be undertaken without written consent of NBA/MoEF/ICAR/DARE, Government of India as the case may be. Modalities of undertaking any such work will be worked out before its conduct.
 - v) If any third country/party is to be associated with any commercial development arising out of the germplasm accessed, permission from NBA shall be sought.
 - vi) The recipient agrees to acknowledge explicitly the name, original identity and source of the material, if used directly or indirectly, in all research publication(s) or other publications, such as, monographs, bulletins, books, etc. and shall send a copy of each of the publications to the NB_____.
 - vii) The recipient agrees to supply the feed back information on the performance/ utilization/ research outcome of the material(s) to the NB_____.
 - viii) The recipient agrees not to claim any intellectual property right over the MATERIAL(S) received including its related information and knowledge without prior written approval of the NBA/ MoEF/ ICAR/DARE, Government of India as the case may be.
 - ix) The intellectual property protection or benefit sharing in respect of derivatives of the material(s) received/accessed, where applicable, shall be as per the Indian IPR/Biodiversity laws.
 - x) The recipient agrees to hold the entire responsibility for the quarantine/SPS clearance of the material accessed as specified herein above. The recipient shall abide by the biosafety guidelines of (name of the importing country/organization) and shall not hold NB_____/ICAR/DARE, Government of India responsible for any identity/ quality/ viability/ purity/ quarantine/ biosafety related or any other related matter/ hazard that may be attributable to the release of genetic material/ resource accessed as specified in this Agreement. The recipient agrees to hold entire responsibility for the Importer/indenting country's bio-safety and any other related hazards due to release of genetic material. The recipient agrees to waive all claims against NB_____/ICAR/DARE, Government of India and to defend and indemnify them from all claims and damages/recoveries arising from the use, storage or handling of the material.
 - xi) The recipient also agrees that the material is for experimental use and is being supplied without any warranties, whatsoever.
 - xii) The MTA is non-assignable. The recipient agrees to abide by any other conditions that may be set in and conveyed to them from NB___ in respect of this germplasm access/exchange or any Law, Rules, Regulations, etc. enacted by Government of India from time to time.
 - xiii) In case of any dispute between the parties to this MTA, the dispute shall be referred to the Sole Arbitrator to be appointed by the Secretary, Department of Agricultural Research and Education (DARE), Government of India. The Decision of the Sole Arbitrator shall be final and binding on the Parties. The Arbitration proceedings shall be governed by the Arbitration and Conciliation Act, 1996. The Arbitration proceedings shall be in New Delhi.

<p>AGREED RECIPIENT Authorized Officer's Name _____ Designation _____ Organization/Institute/ University Address: _____ _____ _____ Signature _____ Date _____</p> <p>Recipient Scientist/Person's Name _____ Designation _____ Organization/Institute/ University Address: _____ _____ _____ Signature _____ Date _____</p>	<p>PROVIDER Authorized Officer's Name _____ Designation _____ Organization/Institute/ University Address: _____ _____ _____ Signature _____ Date _____</p> <p>Provider Scientist/Person's Name _____ Designation _____ Organization/Institute/ University Address: _____ _____ _____ Signature _____ Date _____</p>
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DEFINITIONS

Extract from Section 3(2) of BDA- 2002 –

- 1.1.1.1 a person who is not a citizen of India ;
- 1.1.1.2 a citizen of India, who is a non-resident as defined in clause (30) of Section 2 of the Income-Tax Act, 1961 ;
- 1.1.1.3 a body corporate, association or organization –
 - (i) not incorporate or registered in India ;or
 - (ii) incorporate or registered in India under any law for the time being in force which has any non-Indian participation in its share capital or management.

The Authority is requested to consider

The authority after detailed discussion and decided that the entrusted and delegated the powers to the Chairman for the approval of application for transfer of material under bilateral collaborative programmes for exchange of germ plasm collection till the policy guidelines are approved by the Govt. of India and the same may be place before the authority meeting for final approval.

ACTION CHAIRMAN

7. GLOBAL ENVIRONMENTAL FACILITY PROJECT PROPOSAL BY PROF MADHAV GADGIL, IISC, BANGALORE



PROJECT DEVELOPMENT FACILITY
REQUEST FOR PDF BLOCK A FOR MSP

UNDP PROJECT INITIATION DOCUMENT



AGENCY'S PROJECT ID: PIMS 3491

GEFSEC PROJECT ID:

COUNTRY: INDIA

COUNTRY ELIGIBILITY: The Government of India became a signatory to the Convention on Biological Diversity in June 1992

PROJECT TITLE: Capacity Development of Biodiversity Management Committees for implementation of India's Biological Diversity Act in Western Ghats, India

GEF AGENCY: UNDP

OTHER EXECUTING AGENCY(IES): National Biodiversity Authority, Ministry of Environment & Forests, Government of India

DURATION: 6 months

GEF FOCAL AREA(S): Biodiversity: OP 3 – Forest ecosystems; OP 4 – Mountain ecosystems; OP 13 – Conservation and sustainable use of biological diversity important to agriculture.

GEF STRATEGIC PRIORITY(IES): BD 2 - Mainstreaming biodiversity in production landscapes

ESTIMATED STARTING DATE: 01 October 2005

FINANCING PLAN (US\$)	
GEF PROJECT	
PDF A	25,000
Sub-Total GEF	25,000
<i>CO-FINANCING</i>	
GEF Agency	
National Contribution	
In Cash	
In Kind	
Others	5,000
Sub-Total Co-financing:	5,000
Total PDF Financing:	30,000

RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT:

Mr. Sudhir Mital

Date: (Month, day, year)

GEF Operational Focal Point

Director (SD), Ministry of Environment & Forests

Government of India

This proposal has been prepared in accordance with GEF policies and procedures and meets the standards of the GEF Project Review Criteria for PDF Block A approval.

Yannick Glemarec
Deputy Executive Coordinator
Global Environment Facility

Sultana Bashir
Regional Coordinator for Biodiversity, Southern
Asia & the Pacific, UNDP-GEF Regional
Coordination Unit, Bangkok, Thailand
Tel: Email: sultana.bashir@undp.org

Date: (Month, Day, Year)

DR K VENKATARAMAN
MEMBER SECRETARY, NATIONAL BIODIVERSITY AUTHORITY, CHENNAI
14.11.2005

The Authority is requested to approve

The authority in its meeting discussed the above project and decided that the project such as knowledge based output may be taken up for consideration. In this connection NBA will technically act as a Monitoring and reviewing the progress of the proposed project periodically.

Action: Member Secretary

8. REGIONAL BIODIVERSITY AND BIORESOURCES CONSERVATION CENTRES (RBBC)

Operation of Biodiversity Management and Conservation is difficult in the entire country in terms of monitoring and implementation of Biodiversity Act, 2002. For better and effective implementation the entire country is divided into four regions by forming a strong network with National Biodiversity Act would be viable for implementation of this Act. Therefore the regional approach is by forming a regional centre will be technically appropriate in terms of establishing BMC as well as the formation of Peoples Biodiversity Register.

The authority in its meeting discussed the establishment of Regional Biodiversity and Bioresources Centre in detail as per the sub item 15 Regional Biodiversity and Bioresources Centre (RBBC) of Agenda 8 of Administrative matters of NBA in the 3rd Authority meeting. The members suggested that establishment of the RBBC may be taken up by the authority at a later date. Hence this was taken up in the present meeting.

The Authority is requested to approve

The Authority in its meeting discussed in detail about the formation of BMC and PBR in all the States and Union Territories. It was felt that monitoring and implementation of the Biodiversity Act, 2002 in the entire country will be a difficult process for National Biodiversity Authority. Therefore formation of four Regional Biodiversity Bioresource Conservation Centres (RBBC) will be able to facilitate the implementation process in different States of India. The existing facilities available in the four regions will be identified through a small committee and minimum scientific staff like taxonomists will be placed to coordinate the SBB activities in context of formation of BMC and PBR and also creating awareness of the programme. The RBBC would also address issues on Bioresource conservation and protection of that region. Also RBBC would facilitate the identification and formation of Heritage Sites in different areas within their jurisdiction. The proposed committee for identification of RBBC will identify and fix the RBBC in North, South, Central and Eastern regions.

ACTION: MEMBER SECRETARY

**9. TAXONOMY RESEARCH: HUMAN RESOURCE
DEVELOPMENT AT NATIONAL AND INTERNATIONAL
LEVEL FOR STRENGTHENING BMCs**

Biodiversity Management Committees is a key component for implementation of Biodiversity Act, 2002 at local level. However the members of Biodiversity Management Committee may not be familiar and knowledgeable to deal with scientific identification and cataloguing the local flora and fauna. Therefore the involvement of Taxonomists is vital for the identification of flora and fauna so as to develop the PBR in a more scientific manner. In such situation it is important to train the flora taxonomists to act as a technical support group for BMC. Human resource development is taxonomy to the middle level scientists would be available for Biodiversity Management and Conservation in a vast country like India.

The Authority is requested to approve

The PBR is an important document with local flora and fauna in a more scientific way of cataloguing the flora and fauna by indicating the scientific Latin names which will be a valid document for IPR protection. Therefore Taxonomists role is very critical for developing a viable PBR. In view of the importance of taxonomical studies in Biodiversity selected middle level scientists involved in taxonomy can be trained at National and International level to coup the needs and requirements of bioreresources conservation in India.

ACTION: MEMBER SECRETARY

10. ADVISORY COMMITTEE

1. Formation of International Advisory Committee.
2. Formation of National Advisory committee

The Authority is requested to approve

Action Member Secretary:

As per the approval given in the meeting the following committee is proposed to be formed by the National Biodiversity Authority.

Formation of International Advisory committee

Chairman: Prof. M.S. Swaminathan;

Co Chairman: Prof. E C Cooking

Members:

1. Dr Peter Dart
2. Dr. RonniCeoffman
3. Dr. Paul Marcotte
4. Dr. William Broughton

5. Dr. James Hill
6. Dr. Darrell Fleichman
7. Dr. Clive Wilkinson,
8. Dr Sandra Baur
9. Dr. Clem Tisdell

Formation of National Advisory committee

Chairman: Dr Kirti Singh;

Co Chairman: Dr E A Siddique

Members:

1. Prof. T N Ananthakrishnan
2. Prof. Madhav Gadgil
3. Dr S. P. Tiwari
4. Dr. S N Puri
5. Dr. R P Singh
6. Dr. Pradhan
7. Dr. Puspangadhan
8. Dr. K V Raman
9. Dr. C Prasad
10. Dr. OP Gautam
11. Dr. B R Subramaniam
12. Dr. K. Veeresh
13. Dr. A N Mukapadhyay
14. Dr. Kamal
15. Dr Gopakumar
16. Dr N N Prasad
17. Dr Kumaravelu

<h2>11. SCIENTIFIC PANELS</h2>

1. Plant Genetic Resources
2. Animal Genetic Resources
3. Marine and Freshwater Resources
4. Biotechnology and Biosafety
5. Traditional and Tribal Knowledge
6. Medicinal Plants
7. Soil and Microbial Resources.
8. Intellectual Property Rights

The Authority is requested to approve

Action Member Secretary:

The formation of above scientific panels was discussed with the members of the authority and it was agreed to form different scientific panels with a Chairman and six to ten members. As per the approval given in the meeting the following committee is proposed to be formed by the National Biodiversity Authority.

1. Plant Genetic Resources

Chairman : **Dr O P Gautam;**

Co Chairman: **Dr Nerker**

Members:

- 1. Dr. Usha Zehr**
- 2. Dr Anushetty Murthy**
- 3. Dr Dhillon**
- 4. Dr Kulkarni**
- 5. Dr. VA Parthasarathy**
- 6. Dr. Kharikaloo**
- 7. Dr. T S Ravindran**
- 8. Dr. Jamble**
- 9. Dr. M Subramanian**
- 10. Dr. Lavandale**
- 11. Dr. Hegde**
- 12. Dr. Mishra,**
- 13. Dr Seetharaman**
- 14. Dr. Masood Ali**
- 15. Dr. Sanjappa**
- 16. Dr. Nayar**

2. Animal Genetic Resources

Chairman : **Dr Pradhan;**

Co Chairman: **Dr MP Yadav**

Members:

- 1. Dr Bhatia**
- 2. Dr Jagannatham Chella**
- 3. Dr R B Rai**
- 4. Dr Ahalawat**
- 5. Dr Thaplyal**
- 6. Dr V Sundararaju**
- 7. Dr Hiran Singh**
- 8. Dr. Kumar**
- 9. Dr. Sharma**
- 10. Dr. V K Singh**
- 11. Dr. K.M. Barua**

3. Marine and Freshwater Resources

Chairman : **Dr Kamal;**

Co Chairman: **Dr Gopakumar**

Members:

1. **Dr. BR Subramaniam**
2. **Dr. Sakthivel**
3. **Dr. V S Somvanshi**
4. **Dr. Dom Roy,**
5. **Dr. Devendran**
6. **Dr. Kannan**
7. **Dr. Santhanam**
8. **Dr. JRB Alfred**
9. **Dr. Achthankutty**
10. **Dr T Balasubramaniam**
11. **Dr Ashih Ghosh**
12. **Dr Kasim**
13. **Dr. W S. Lakara**

4. Biotechnology and Bio-safety

Chairman : **Dr Dr S L Mehta;**

Co Chairman: **Dr S S. Kadam**

Members:

1. **Dr Garg**
2. **Dr A Manickam**
3. **Dr. Anandhakumar**
4. **Dr. G A Ravishankar**
5. **Dr. Ahlawat**
6. **Dr. Thulasi**
7. **Dr. Kaundal**
8. **Dr. T K S Gowda**
9. **Dr. Kulkarni**
10. **Dr. Kruvanchety**
11. **Dr. Dadarwal**
12. **Dr. S K Apte**
13. **Dr. Natesh**
14. **Dr. M. Balasubramaniam**

5. Traditional and Tribal Knowledge

Chairman : **Dr C Prasad;**

Co Chairman: **Prof Madhav Gadgil**

Members:

1. **Dr. Samanta**
2. **Dr. Ratore**
3. **Dr. K A Ponnusamy**
4. **Dr. V Perumal**

5. Dr. Veerabadhraiah
6. Dr. Anila Dhoshi
7. Dr. Arivudai Nambi
8. Dr K Mathan
9. Dr. V P Gupta
10. Dr. Anand and Anand
11. Dr. D K Marothia
12. Dr Sharma AYUSH
13. Dr KM Baruah
14. Dr N K Mohan
15. Dr Rajkhowa
16. Dr Hema Pandey
17. Dr S N Saha
18. Dr A M Thakur

6. Medicinal Plants

Chairman : Dr S P Ghosh;

Co Chairman: Dr M L. Chowdhri

Members:

1. Dr Parthasarathy
2. Dr Maiti
3. Dr Sambandamoorthy
4. Dr Dharshan Shankar
5. Dr K C Nair
6. Dr Mathura Rai
7. Dr Khanuja
8. Dr A Farooqui
9. Dr.P Das
10. Dr Tamilselvan
11. Dr Krishnan
12. Dr UpendraDhar

7. Soil and Microbial Resources.

Chairman : Dr Krishnappa;

Co Chairman: Dr NN Prasad

Members:

1. Dr D J Bagyaraj
2. Dr SK Goyal
3. Dr R P Gupta
4. Dr Y D Gaur
5. Dr S P Palaniappan
6. Dr K Natarajan
7. Dr Narayanasamy
8. Dr Balaguru

9. Dr Rajagopal
10. Dr Chandra Mohan
11. Dr MD Sundaram
12. Dr K Kumar
13. Dr K Balaraman
14. Dr Anita Pandey.

8. Intellectual Property Rights

Chairman: Dr Bisliah;

Co Chairman: Dr R P Singh

Member:

1. Dr Sachin
2. Mr Muthu Kumar
3. Dr Arivudai Nambi
4. Dr Das Gupta
5. Dr JP Mishra
6. Dr Balaraman
7. Dr S R Subramaniam
8. Dr S Krishnamoorthy
9. Dr Malathy Krishnaswamy
10. Dr Kalpana Sasthry
11. Dr Soam
12. Dr Chinnadurai
13. Dr Selvaraj

Any other item with the permission of the Chair

1. Application of Dr. Kartik Shanker for the position of Expert Consultant on the Theme of “Endangered, Endemic and Threatened Species” for the National Biodiversity Authority.

This application was placed before the authority for approval and the members after detailed discussion approved this applicant to work as Expert consultant for the Expert Committee mentioned above.

Action: Member Secretary:

2. Venue of the next meeting:

The chairman proposed to have the fifth meeting on January 20th 2006 at Indian Institute of Spices Research (IISR), Marikannu Post, Calicut - 673 012, Kerala.

Action: Member Secretary ;

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Appendix 1 Summary of the Agenda Items to be discussed in the fourth Meeting

Major Activities of NBA

**MEETINGS CONDUCTED
BY
NATIONAL BIODIVERSITY AUTHORITY**

“DISCUSSION MEETING ON THE FINALISATION OF AGREEMENTS”

Organized by National Biodiversity Authority, Chennai

Date: 23-07-2005,

Venue: NBA Conference Hall, Chennai.

“WORKSHOP ON BIODIVERSITY ACT, 2002 AND FORMATION OF PONDICHERRY COUNCIL”

Organized by Department of Forests and Wildlife and National Biodiversity Authority

Date: 05-08-2005;

Venue: Hotel Annamalai, Pondicherry.

“INTERACTIVE DISCUSSION MEETING ON “INTELLECTUAL PROPERTY RIGHTS AND BIODIVERSITY ACT 2002”

Organized by National Biodiversity Authority,

Date: 06-09-2005;

Venue: Conference Hall, National Biodiversity Authority, Chennai.

“FACILITATING FORMATION OF STATE BIODIVERSITY BOARDS & BIODIVERSITY MANAGEMENT COMMITTEES IN INDIAN HIMALAYAN REGION”

Organizers: National Biodiversity Authority, Chennai & G.B. Pant Institute of Himalayan Environment & Development, Kosi-Katarmal, Almora

Dates: September 11-12, 2005

Venue: GBPIHED, Kosi-Katarmal, Almora, 263643 Uttaranchal.

“REVIEW MEETING ON STATE BIODIVERSITY BOARDS”

Organised by National Biodiversity Authority, Chennai

Dates: September 16th 2005

Venue: Conference Hall, National Biodiversity Authority, Chennai.

“NATIONAL WORKSHOP ON INVOLVEMENT OF TAXONOMISTS IN BIODIVERSITY AND BIO-RESOURCES CONSERVATION AND FORMATION OF PEOPLES BIODIVERSITY REGISTERS”

Organized by National Biodiversity Authority, Chennai

Date: 19.09.2005;

VENUE: NBA Conference Hall, Chennai.

“PLANNING MEETING FOR ORGANIZING “NATIONAL CONFERENCE ON AGRO BIODIVERSITY”

Organized by National Biodiversity Authority

Date: 20-09-2005

Venue: NBA Conference Hall, Chennai.

“CAPACITY BUILDING FOR BIODIVERSITY MANAGEMENT COMMITTEES WITH TAXONOMISTS EXPERTISE”

Organized by National Biodiversity Authority, Chennai

Date: 23.09.2005

Venue: Conference Hall, National Biodiversity Authority, Chennai

“NATIONAL CONFERENCE ON SAFE ENVIRONMENT FOR THE FUTURE GENERATIONS”

Organized by National Biodiversity Authority and Department of Zoology,
September 1-2, 2005.

Venue: Auxilium College, Gandhinagar, Vellore, Tamilnadu, India

<p style="text-align: center;">MEETINGS ATTENDED BY NATIONAL BIODIVERSITY AUTHORITY</p>
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“BRAIN STORMING SESSION ON STRATEGY FOR SAFEGUARDING THE BIODIVERSITY IN A SCIENTIFIC MANNER THROUGH TAXONOMIC EXPERTISE”

Held on 2nd August 2005

Under the Chairmanship of **Secretary** Ministry of Environment and Forest, New Delhi.

Attended by the **Chairman**, NBA and the **Secretary**, NBA.

“BRAINSTORMING SESSION FOR OPTIMISING THE EFFECTIVENESS OF NATIONAL BIODIVERSITY AUTHORITY, STATE BIODIVERSITY BOARDS AND BIODIVERSITY MANAGEMENT COMMITTEES”

Held on 2nd August 2005

Under the Chairmanship of **Secretary**, Ministry of Environment and Forests, New Delhi.

Attended by the **Chairman**, NBA and the **Secretary**, NBA.

Review Meeting to discuss the **“PROGRESS OF NATIONAL BIODIVERSITY AUTHORITY”**

Held on 26th September 2005

Under the Chairmanship of **Special Secretary**, Ministry of Environment and Forests,
New Delhi.

Attended by the **Secretary**, NBA.

**“REGIONAL CONFERENCE ON THE AGENDA OF WTO HONGKONG
MINISTWIERIAL; CHALLENGES FOR SOUTH ASIA”**

Organized by Research and Information System for Developing countries and IUCN Asia
and Federation of Indian Chambers of Commerce and Industry.

Date 11-12 August 2005

Venue: FICCI Conference Hall, New Delhi.

**“RESEARCH PROPOSAL ENTITLED ESTABLISHMENT OF MARINE
BIODIVERSITY MUSEUM BY GEER FOUNDATION BY DR CN PANDAY,
GER FOUNDATION, INDRODA NATURE PARK GUJARAT, RESEARCH
PROPOSAL ENTITLED SEA TURTLE RESEARCH AND CONSERVATION
PROGRAMME IN GUJARAT BY GUJARAT STATE FOREST DEPARTMENT
AND GEER FOUNDATION, GUJARAT”**

Review meeting on 24-26th September 2005

Attended by Dr K. Venkataraman, Secretary, NBA, Chennai.

BIODIVERSITY AREAS VISITED

The Chairman and the Secretary NBA Visited the “**Tsunami affected areas of
Vedharanyam**” and held discussions with the Wildlife Warden and the range officers for
the improvement of **Kodiyakarai wildlife sanctuary** on 3rd September 2005

**PUBLICATIONS
BY
NATIONAL BIODIVERSITY AUTHORITY**

1. Prof. Dr S. Kannaiyan, Chairman, NBA, Chennai.

1. **Kannaiyan, S.2005.** Biodiversity and Bioresources Conservation. In: *Facilitating formation of State Biodiversity Boards and Biodiversity Management Committees in Indian Himalayan Region.* Workshop organized by G.B. Pant Institute of Himalayan Environment and Development and National Biodiversity Authority, GB Pant Inst. Himalayan Environment and Development, Kosi-Katarmal, Almora, Uttaranchal. P 5-11.
2. **Kannaiyan, S. 2005.** Biodiversity. Paper presented in the National Seminar on Biodiversity and Conservation Organised by CENDECT at Kamatchipuram, Theni, Tamilnadu.
3. **Kannaiyan, S. 2005.** Biodiversity and Marine Bioresources. In: Interactive workshop on Marine Biodiversity, CAS, Marine Biology, Parangipettai, Annamalai University, Annamalainagar.

4. **Kannaiyan, S. 2005.** Biodiversity Act-Provisions and Implementation of PBR and BMC. Interactive Work shop organized by National Biodiversity Authority on PBR Methodology and Implementation Process held at NBA, Chennai, during Aug, 2005.
5. **Kannaiyan, S. 2005.** Biodiversity Act and IPR. Background paper presented in the Interactive Workshop on Intellectual Property Rights, held during Aug, 2005 at National Biodiversity Authority, Chennai.
6. **Kannaiyan, S. 2005.** Geographic indications and IPR Background Paper presented in the Interactive Workshop on Intellectual Property Rights held during Aug, 2005 at National Biodiversity Authority, Chennai. p 1-14.
7. **Kannaiyan, S. and K.Venkataraman.2005** Biodiversity and Bioresources Conservation. In: *National conference on safe environment for the future generations*, Gandhinagar, Vellore, Tamilnadu.pp.22-27.

**INAUGURAL ADDRESS by Dr S. Kanaiyan, Chairman, NBA,
Chennai.**

1. Delivered Inaugural Address to the participants of Marine Biodiversity workshop held at the Centre for Marine Biology Annamalai University, Annamalainagar, Tamilnadu during June, 2005.
2. Delivered Inaugural Address to the participants of National Seminar on Biodiversity and Conservation held at CENDECT, Kamachipuram, Theni, Tamilnadu during August, 2005.
3. Delivered Inaugural Address to the participants of workshop on “Facilitating the formation of State Biodiversity Boards and Biodiversity Management Committees held at GB Pant Institute of Himalayan Environment and Development and National Biodiversity Authority, Kasi Katarmal, Almora, Uttranchal during September, 2005.
4. Delivered Inaugural Address to the B.Tech. (Biotech) and M.Tech Biotech and Ph.D scholars on “Nature Club” held at the Bharat Inst. of Engineering, Selaiyur, Chennai during September, 2005.
5. Delivered Presidential Address to the participants of the “Awareness and Implementation Process” in Pondicherry Union Territory organized by Pondicherry Environment Department and National Biodiversity Authority, Pondicherry.

**LECTURES DELIVERED by Dr S. Kanaiyan, Chairman, NBA,
Chennai**

1. **Kannaiyan, S.2005.** Biodiversity Act, 2002. Salient features and provisions of the Act-to the participants of the National Seminar on Biodiversity and Conservation organized by the CENDECT, Kamachipuram, Theni, Tamilnadu.

2. **Kannaiyan, S. 2005.** Biodiversity Act 2002 to the participants of the workshop on the Facilitating formation of the State Biodiversity Boards and Biodiversity Management Committees in Indian Himalayan Region organized by GB Pant Institute of Himalayan Environment and Development and National Biodiversity Authority, Kasi Katarmal, Almora, Uttranchal.
3. **Kannaiyan, S. 2005.** Biodiversity Act, 2002. Awareness and Implementation Process in Pondicherry Union Territory to the participants of UT officials, College Teachers and NGOs- organized by Pondicherry Environment Department and National Biodiversity Authority, Pondicherry.
4. **Kannaiyan, S. 2005.** Biodiversity of India and the Environmental scenario on the Nature inauguration of club–organised by Biovision Society in the Dept. of Biotechnology, Bharat Inst. of Technology, Selaiyur, Chennai.

2. K. VENKATARAMAN, Secretary, NBA, Chennai.

8. **Venkataraman, K. 2005.** Biodiversity of India and Access to Bioresources. (In) *Facilitating formation of State Biodiversity Boards and Biodiversity Management Committees in Indian Himalayan Region*, 11-12th September, 2005 G. B. Pant Institute of Himalayan Environment and Development and National Biodiversity Authority, GB Pant Inst. Himalayan Environment and Development, Kosi-Katarmal, Almora, Uttaranchal. p. 13-38.
9. Kannaiyan, S. and **K. Venkataraman. 2005.** Biodiversity and Bioresource Conservation. (In) *National conference on safe environment for the future generations*, September 1-2, 2005 Dept. of Zoology, Auxilium College, Gandhinagar, Vellore, Tamilnadu. p. 22-27.
10. **Venkataraman, K. 2005.** Biodiversity of India and Access to Biodiversity, *Awareness and Implementation Process in Pondicherry Union Territory*, 5th August, 2005. Department of Environment, Pondicherry and National Biodiversity Authority, Pondicherry.
11. **Venkataraman, K. 2005.** Biodiversity Act 2002 and Access to Biodiversity. (In) *Peoples Biodiversity Register Methodology and Implementation Process*, August 2005, Paper presented Interactive Work shop organized by National Biodiversity Authority, Chennai.
12. **Venkataraman, K. 2005.** Intellectual Property Rights and Biodiversity of India. (In) *Interactive Workshop on Intellectual Property Rights*, August 2005, National Biodiversity Authority, Chennai.

13. Venkataraman, K. 2005. Biodiversity and its conservation. (In) *Proc. State Level Seminar on Biodiversity and its conservation*, 28-29 July 2005 Key note address delivered at Dept. of Life Sci., KLE Society's Gudleppa Hallikeri College, Haveri p. i-xii.
 14. Venkataraman, K. 2005. Marine Biological Resources of India: An over view (In) *Interactive workshop on Conservation and Sustainable utilization of Marine Bioresource*, 14th June 2005 at Centre for Advanced Study in Marine Biology, Parangipettai, Annamalai University, Annamalainagar p.1-3.
4. **Confirmation of Minutes of 3rd Meeting of NBA**
 5. **Action taken on the Minutes of the 3rd Meeting**
 6. **Administrative Matters for discussion**

1. APPOINTMENT OF LEGAL CONSULTANT

As advertised in the NBA website for the post of "Legal Consultant" with the Terms of reference (TOR) and Eligibility, keeping in mind the specific and peculiar nature of job in connection with the legal aspects of Biodiversity Act, 2002 and its related issues such as IPR's, knowledge of Access and Benefit sharing. National Biodiversity Authority has so far received only one application for the post of "Legal Consultant".

2. APPOINTMENT OF EXPERT CONSULTANT FOR THE EXPERT COMMITTEES FORMED

It has been advertised in the NBA website for the post of "Expert Consultant". Terms of reference (TOR) and Eligibility requirements have been made available in the website. TOR and Eligibility have been framed keeping in mind the specific and peculiar nature of job that has to be performed in connection with the Biodiversity Act and its related issues.

3 APPOINTMENTS OF ADMINISTRATIVE OFFICER ON DEPUTATION BASIS

Mr R. Naryanan, Assistant Commandant of II-India Reserve Battalion, Arunachal Pradesh has applied for consideration as "Administrative Officer" on deputation. He has wide experience in working central government organization such as Anti-Corruption Inspector, CBI and also as Vigilance Inspector in Arunachal Pradesh Secretariat. Since National Biodiversity Authority is in urgent need of "Administrative Officer" to conduct its day today administrative activities, the Authority may kindly consider the proposal.

4. APPOINTMENT OF STAFF ON DEPUTATION BASIS AS PER THE APPROVED RECRUITMENT REGULATION

As decided in the Review meeting with the Special Secretary (Minutes of the meeting is to be received from MKOEF, New Delhi) held on 26-09-2005, it was decided to fill up the essential posts on Deputation basis at the earliest.

The proposal is put up to the NBA for approval.

5. AWARDS TO STATE BIODIVERSITY BOARDS AND BIODIVERSITY MANAGEMENT COMMITTEES

To encourage the competitive spirit of the **State Biodiversity Boards** in terms of Biodiversity and Bioresources management and conservation, a cash Award of Rs 1,00,000/= (Rs One lakh only) and a memento with Awarded Certificate to one SBB and Rs 25,000/= (Rs Twenty five thousands) for four **Biodiversity Management Committees** per year would activate the process of Biodiversity and Bioresources conservation. These award money could be used for State Biodiversity Fund and Local Biodiversity Fund for conservation of Bioresources.

6. AGENDA ITEM PROPOSED BY DEPARTMENT OF AGRICULTURE RESEARCH AND EDUCATION

D.O. No. SECY.(DARE) & DG (ICAR)/2005/

September 28, 2005

The Department of Agricultural Research & Education (DARE) and the ICAR have a rich tradition of exchange of plant genetic resources with several countries. These resources are crucial for enhancing productivity and quality of our crops. No country is self-sufficient in these resources and the future of crop improvement programmes depends on active international cooperation in the area of exchange of genetic resources.

Introduction of exotic germplasm has enriched the Indian agriculture since time immemorial. Many new crops such as soybean, sunflower, sugarbeet, jojoba, guayule, cuphea, kiwi fruit, peanut, hazelnut, low chilling cultivars of apple, peaches, almond, strawberry and also a number of other elite materials have been introduced in India. The Green Revolution, responsible for catapulting India from a food-deficient nation to a food surplus country would

have been virtually impossible without the introduction of germplasm of foreign origin responsible for high yielding varieties.

Essentially, the germplasm exchange programme of DARE/ICAR through bilateral MoUs with other countries has been on a *quid pro quo* basis. Nonetheless, India has been a major beneficiary of such a programme. During the period 1999 to 2003, the imported samples constituted over 97% of the total exchanged accessions.

ICAR also conducts a proactive evaluation of germplasm abroad for anticipatory research of interest to Indian conditions. Such evaluation is translated into requests for supply of germplasm through diplomatic channels via MoUs/Work Plans with that country.

We have, in return, been receiving requests from foreign countries for germplasm for utilization in their crop improvement programmes. Before the enactment of the Biological Diversity Act, 2002, DARE had been granting permission to release such material for research purpose. The Act, however, stipulates reference to the National Biodiversity Authority (NBA) along with a fee of Rs.10,000/- from the indenter.

In my opinion, it is likely to act as a deterrent as the very essence of such germplasm exchange programme is, the absence of any cumbersome procedure so that close links are forged and fostered between the public sector agricultural research organizations utilizing the diplomatic channel.

I would, therefore, request that you may like to provide exemption to germplasm exchange programme of DARE through bilateral MoUs from the provisions of the Biological Diversity Act, 2002 and delegate the authority to DARE under Section 16 of the Act.

Yours sincerely,
(MANGALA RAI)

**7. GLOBAL ENVIRONMENTAL FACILITY PROJECT
PROPOSAL BY PROF. MADHAV GADGIL, IISC,
BANGALORE**

**8. REGIONAL BIODIVERSITY CENTRES TO BE SET UP
IN FOUR REGIONS OF INDIA**

**9. TAXONOMY RESEARCH: HUMAN RESOURCE
DEVELOPMENT AT NATIONAL AND INTERNATIONAL
LEVEL FOR STRENGTHENING BMCs**

10. ADVISORY COMMITTEE

11. SCIENTIFIC PANELS

Appendix 2 ATTENDANCE OF MEMBERS PRESENT

OFFICIAL MEMBERS PRESENT

- 1. Smt. Sushama Nath, AS (D) and Secretary,** Dept of Agri. Res. Edu., Ministry of Agri., Govt of India, New Delhi 110 001.
- 2. Dr J S Mishra, ADG,** Ministry of Agriculture, Deptt. of Agriculture and Cooperation, Krishi Bhavan, Dr. Rajendra Prasad Road, New Delhi – 110001.
(Nominee of **Shri Satish Chandra, Joint Secretary,**
- 3. Dr.B.R.Subramaniam**
Advisor and Project Director, Department of Ocean Development
NIOT campus; Pallikaranai, Chennai 601 302
(Nominee of **Dr. S. P. Seth, Joint Secretary, DOD, New Delhi)**
- 4. Shri A.J.Kurian**
Director, Department of Science and Technology, Technology Bhavan; New
Meherauli Road, New Delhi 110 001
(Nominee of **Dr. Hari Gopal, Advisor (JS Rank) Department of Science and
Technology)**

Leave of absence granted to Official Members

Shri S. Chatterjee, J.S., Ministry of Tribal Affairs

Shri Sudhir Kumar, J.S., Ministry of Science and Technology

Dr. S. Natesh, Advisor, Department of Biotechnology, CGO Complex, Block No. 2,
Lodhi Road, New Delhi 110003, (nominee of **Shri U.N. Behara, Joint Secretary,
DBT).**

Shri R P S Katwal, Additional Director General of Forests (Wild Life),
Ministry of Environment and Forests, New Delhi 110 003

Dr R K Rai, Addl Director, Ministry of Environment and Forests
Paryavaran Bhavan, New Delhi (Nominee of **Shri D D Verma, JS, MoEF, New Dehi**)

Dr M A Kumar, Deputy Advisor – Siddha, Ministry of Health and Family Welfare,
201, Indian Red Cross Building; Parliament Streetl, New Delhi 110 001
(Nominee of **Shri Tara Dutt, J.S., Department of Indian Systems of Medicine and
Homeopathy, New Delhi**)

NON-OFFICIAL MEMBERS PRESENT

Prof. L. Kannan,
Director of Research,
Centre for Advanced Study in Marine Biology,
Parangipettai - 608 502

Leave of absence granted to non official members

Prof. Raghavendra Gadagkar
Centre for Ecological Sciences, Indian Institute of Science, Bangalore 560 012

Dr. P. Pushpangadan
National Botanical Research Institute, Rana Pratap Marg, Lucknow – 226001

Prof Anil Gupta
Indian Institute of Management, Ahmedabad 380 015

Dr A. K. Ghosh,
Director, Centre for Environment and Development,
329, Jodhpur Park, Kolkata -700 068.