# Indian Bioresource Information Network


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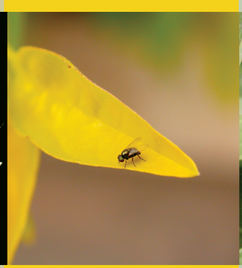



An Initiative of
National Bio-resource Development Board
Department of Biotechnology
Ministry of Science and Technology
Government of India, New Delhi 110003

Department of Biotechnology
Ministry of Science & Technology,
Government of India

# IBIN Portal

## A Distributed Database on Bio-resources

IBIN Portal is visualized as a federally distributed data base network on bio–resources and biodiversity of the country

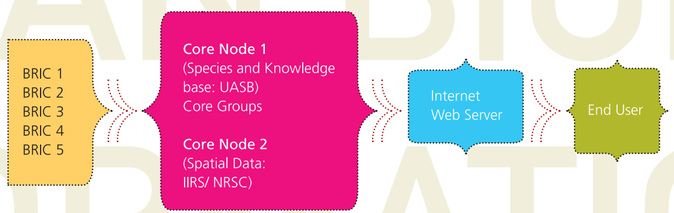
Its core data constitutes
- primary and secondary data sets on bioresources of the country
- Spatial data on biodiversity characterization of the country

Bio-Resource Information Centers (BRICs) situated all over the country collaborate with it as data contributors

Data from all sources is captured on line through IBIN Portal and served to the end users via Internet

End users can also contribute data to IBIN Portal

IBIN plans to expand this programme in to cloud system in future






# B R I C – V

## Animal Parasites and Vectors

Bioinformatics Centre, North-Eastern Hill University, Shillong

## Major Themes

1. Helminth Parasite spectrum of North-East India
2. Medicinally Important Mosquito Vectors of North-East India

A comprehensive information on 121 Helminth parasites of animals of North East India

Species composition, host and locality wise distribution and taxonomic status of the helminth parasites

Parts infested, images, symptoms and biology of the parasites

The database also includes annotated molecular sequences with possible distinct motifs for parasites

> 30 species that include trematodes/cestodes of zoonotic importance and also those of ruminant hosts in the system.

Data being extended to parasites of rodents and piscine hosts

~100MB size is dynamically linked for easy searching through host, part infested, and localities

Database on Mosquitoes of North East India also available

## ORIGIN AND GROWTH OF I B I N

Indian Bio-resource Information Network (IBIN) was launched as the first ever portal for providing diverse range of data sets related to bio-resources and biodiversity of India to a wide section of end users.

The portal (www.ibin.co.in) developed under the auspices of National Bio-resource Development Board, Department of Biotechnology, GoI, was conceived as a single platform where exponentially growing data and information on bio-resources and biodiversity in various sectors could be brought together in a compatible and accessible format

### Growth of IBIN

IBIN was initially established as a network of two nodes viz., Jeeva Sampada and Jeeva Manchitra that were visualized as the nuclei around which the rest of the linkages and datasets be built. The two nodes were presented together as **www.ibin.co.in** (and also in the form of CDs) to the country on 25th July 2006 and since then they are being extensively used by scientists, civil societies, private entrepreneurs, students and several other groups.

### Institutes that contributed to Growth of IBIN

**Core centers**
Plants, Animals and Traditional Knowledge: UASB

**Spatial data Sets**
IIRS, Dehradun

**Sub nodes**
NRSC, Hyderabad
CDRI, Lucknow
IHBT, Palampur
BSI, Kolkatta
ZSI, Kolkatta
IARI, New Delhi
IMTECH, Chandigarh
NBAGR, Karnal
CSB, Bangalore
SMS, Cochi
NBRI, Lucknow
Fisheries College, Mangalore

### IBIN –BRIC Network

In the second phase IBIN was promoted as a distributed database portal where Bio-Resource Information Centers (BRICs) building their own databases in different parts of the country on different themes of biodiversity and bio-resources are networked through common platform. This phase is envisioned to provide opportunity for the end-users also to contribute data to the IBIN Portal (www.ibin.co.in).

### BRICs Collaborating with IBIN

Ashoka Trust for Research in Ecology and the Environment, (ATREE), Bangalore
Institute for Himalayan Bio-resource Technology (IHBT), Palampur
I-AIM (FRLHT), Bangalore
Calcutta University, Kolkatta
North Eastern Hill University, Shillong

# *Jeeva Sampada*

A Database on Bioresources of India

The largest database on the bioresources of India (~15 GB)

Provides data on 39,000 species of plants, animals, marine organisms and microbes

Comprises more than 54,00,000 records

Offers images, distribution maps and uses in an interactive data retrieval service

## Jeeva Sampada currently offers information in different modules

1. Plant resources (Sasya Sampada)
   - Medicinal Plants
   - Bio-pesticides
   - Gums and Resins
   - Sugars and Starches
   - Traditional Beverages
   - Pulp, Fiber, Fuelwood and Biomass
   - Spices and Condiments
   - Less-utilized Food and Fodder

2. Animal resources (Prani Sampada)
   - Amphibia, Reptiles and Mammals
   - Birds
   - Crop pests, Natural Enemies and Pollinators
   - Fresh water Fishes and Shells
   - Domestic animals
   - Laboratory animals

3. Marine resources

4. Microbial resources

### Strength of the data

- About 2700 medicinal and economically important plants
- About 9000 species of animals (Animal Resources)
- About 17000 microbe species (Microbial Resources)
- About 7000 marine organisms (Marine Resources)

### Key Features

- Provides information on all species in a common format
- Indigenously developed platform that integrates information from diverse sources
- Compiles information from 400 scientists and from over 150 centers
- Retrieval of data facilitated through all possible links

# B R I C – IV

## Medicinal Plant Data

INSTITUTE OF AYURVEDA AND INTEGRATIVE MEDICINE
(FOUNDATION FOR REVITALISATION OF LOCAL HEALTH TRADITIONS), BANGALORE

Major Theme

Database on Traditional knowledge of Medicinal Plants

A Database on Dravyaguna- The Materia Medica of Ayurveda

Information on 350 plant species

Information from classical lexicons, literatures dating from Caraka period till now

### Salient features are

- Botanical names correlated to vernacular names
- Ayurvedic Properties, Precautions & Action and formulation for specific health conditions
- External identification features
- Geographical distribution
- Modern pharmacology and Slokas (verses) with references
- Plant Images and authentic and referenced information
- User friendly Interface, text /string search or search by Botanical name or Vernacular names

# B R I C – III

## Digitized Database For Plant Chromosomes

Department of Botany, Calcutta University, Kolkatta



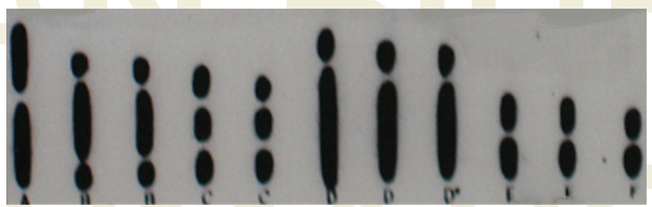
Major Theme

Database on Plant Chromosomes

Chromosome data on 3500 populations of higher and lower plants compiled

Data and Karyotype images collated from different Indian laboratories

Data on DNA content, Ploidy level, Mitotic and meiotic chromosome details of different populations of plant species and locations available



## *Sasya Sampada*

Largest digitized inventory of medicinal and economically important plants of the country

**It offers information on**

- 700 medicinally important and 2200 economically important plants
- On taxonomy, synonyms, common names, biology, reproduction, phenology, and propagation techniques
- Distribution in maps and text
- Biochemical composition, ethno-botany, economic uses and economic potential
- It also is also in a multilingual formats.

| Major use Categories | Species |
|---|---|
| Fuel Wood and Biomass | 237 |
| Under utilized Food and Fodder Species | 89 |
| Industrial Sugars Starches Oils and Waxes | 78 |
| Under utilized Potential Ornamental Plants | 300 |
| Botanical Pesticides | 165 |
| Spices and Condiments | 33 |
| Fiber and Pulp Yielding plants | 118 |
| Traditional Under utilized Beverage Plants | 243 |
| Gums, resigns and dyes | 72 |

## *Prani Sampada*

First attempt to provide digitized inventory on animals.

Provides information in different modules like fishes, amphibians, mammals, birds to crop pests, pollinators, silk worms, domesticated, and laboratory test animals.

**Laboratory animals**

- Data on 173 strains of different laboratory animals
- Uses, origin, colour, genetic profiles, common name, images, list of laboratories that supply or maintain the strains
- Ethical rules and regulations to be followed while using them

**Domestic Animal Resources**

- Data on 131 domestic animals
- Distribution, performance and features such as color, visible characteristics, synonyms
- Animal supply farms, patent processes, and production protocols and market details

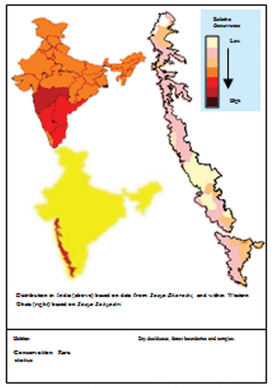
**Silkworms**

- A comprehensive data base on wild and domesticated silkworms
- Video clippings on virtually every aspect of sericulture ranging from silk reeling, yarning and processing and strains

*Aegle marmelos (L.) Corrêa*

Stone apple

**Distribution**



## Field guide for Western Ghats Plants

Designed to help the field workers in identifying plant species of Western Ghats

The first edition of field guide contains 1000 species in two volumes.

Each flier provides

- Taxonomy, synonyms and common names
- Distribution in India and in Western Ghats as thematic maps
- Key features with corresponding image
- Uses and Conservation status

## Image based Identification Kits

IBIN has designed computer based–image driven guides for identification of important taxa

These modules are aimed at special groups and for specific locations:

- Butterfly Identification Kit (for ~100 species of Butterflies of Bangalore)
- *Phyllanthus* Identification Kit (for *Phyllanthus* species of south India)
- Rattan Identification Kit (for Rattans of India)

The programmes available for palm-tops, lap tops and also on the web.

## Identification Kits for Butterflies, Rattans and Phyllanthus groups

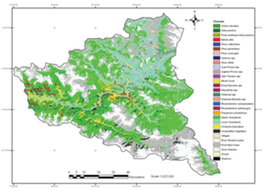
Image-based, interactive kits, free from technical jargons

Searching can be done using any keys readily available
Details on habitat, nomenclature, distribution, phenology, common name, description, uses, genetic sequences and images

# B R I C – II

## Floral Resources of Western Himalaya

CSIR-INSTITUTE OF HIMALAYAN BIORESOURCE TECHNOLOGY, PALAMAPUR



Major Theme

Floral Resources of Himachal Pradesh, Western Himalaya

~1000 plant species in database

Information collected through primary field surveys

Information on taxonomy, distribution and uses of plants

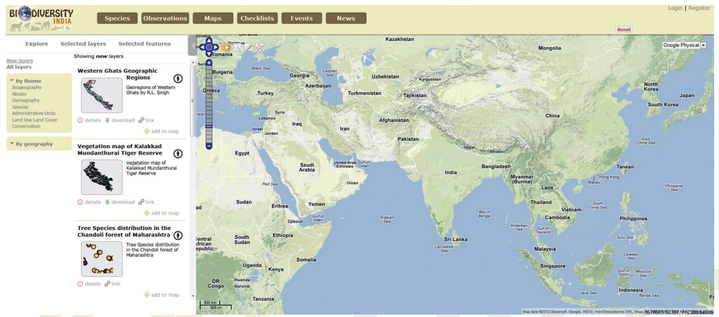
Spatial maps along with images of plants

Utility: conservation planning and bio-prospection

# B R I C – I

## India Biodiversity Portal

ATREE, BANGALORE



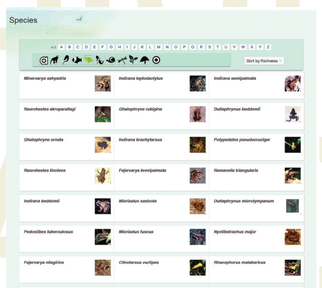

Major Theme

Database on Biodiversity maps and Species

The India Biodiversity Portal is a collaborative effort by a consortium of partners to build an on-line open-access repository for biodiversity information on the Indian subcontinent.

IBP offers a collection of maps, species pages, checklists and observations on a platform that encourages collaborations and public participation.

| Category | Number of observations |
|---|---|
| Mammals | 48 |
| Birds | 181 |
| Fish | 2 |
| Amphibians | 20 |
| Reptiles | 39 |
| Arthropods | 139 |
| Plants | 281 |
| Fungi | 11 |
| Total | 728 |




# Datasets from the past and present

## *Vrikshayurveda*

A compilation of information from five ancient Vrikshayurveda texts:

- Brihat samhita (6th century CE, by Varahamihira): Veterinary Science
- Krishi Parashara (11th century, by Parashara): Agricultural Sciences
- Lokopakaram (11th century by Chavundaraya): Toxicology, medicine, veterinary techniques
- Surapala Vrikshayurveda (10th century, by Surapala): Trees plant protection, gardening
- Upavanavinoda (13th century by Sharnagdhara): Horticulture, Gardening, Seed treatments

Extracted from over 600 verses in Sanskrit and Kannada

Data base provides linkages of plants with human diseases, Agriculture and Veterinary practices etc.

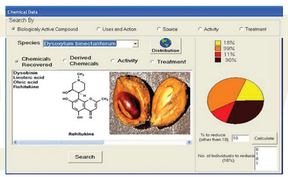
Audio-recording of all the verses, their meaning and links to botanical names referred to

### Chemical Database

A unique database on the active biomolecules of plants, their uses and activities

Data extracted from the most recent scientific work on prospecting and chemical profiling of plants

Data on physical and chemical properties of chemicals, and their derivatives available




| Data Material | Numbers |
|---|---|
| Number of Chemicals Source papers | 150 |
| Number of species covered | 7 |
| Group of chemicals | 5 |
| Source papers | 550 |
| Types of diseases | 4 |

RESOURCE INVENTORIES OF

# BIO-RICH AREAS

## Mapping Bio-resources of the country

Through a national program on inventorying the bioresources of the country, primary databases were built on the plant resources of the following areas:

- Western Ghats
- Eastern Ghats
- Trans Himalayas
- Eastern Himalayas
- Andaman and Nicobar Islands

## Country Level Databases on Plants and Butterflies

Based on the published literature, IBIN has been compiling the data on plants and insects of the country. As a result the following data bases are developed

Sasya Bharathi

Data compiled from over 300 published flora

Offers taxonomy, distribution and images of the plants of India.

Pathanga Bharath

Data compiled from diverse sources, amateur data holders on the butterflies of India

Offers taxonomy, distribution and images of the butterflies of India.

Regional Data sets

Sasya Sahyadri:
Diversity and distribution of plants of Western Ghats

Sahyadri Pathanga
Diversity and distribution of butterflies of Wetern Ghats.

Western Ghats Virtual Museum
This is an interactive, educative programme that offers information on topography, natural biology, culture and ethnic diversity, ecotourist information of Western Ghats

CORE NODE 2

# SAPTIAL DATA NODE

Spatial Data Node is one of the core nodes of IBIN, which provides access to National Spatial Data Services through IBIN portal in a distributed network. The IBIN spatial data node follows Open Geospatial Consortium (OGC) Web Map Services (WMS) standards for interoperability and chaining of the services. In addition to biodiversity services from IIRS (ISRO), additional ISRO WMS services like satellite data and land use/land cover maps from Bhuvan portal are also accessible. The Spatial Data Node allows visualization tool to browse and query these services.


| Spatial Data Layers | Scale | Data Type | OGC WMS Services/Open Layer APIs |
|---|---|---|---|
| Vegetation Type (IIRS-IBIN Spatial Node ) | 1:50,000 | Raster | http://115.113.55.14:8081/geoserver/ vegetation_type_map/wms? service=WMS& version=1.1.0&request=GetMap&layers=vegetation_type_map |
| Fragmentation Type (IIRS-IBIN Spatial Node ) | 1:50,000 | Raster | http://115.113.55.5514:8081/geoserver/ fragmentation/wms?service=WMS&version=1.1.0 &request=GetMap&layers=fragmentation |
| Disturbance Index (IIRS-IBIN Spatial Node ) | 1:50,000 | Raster | http://115.113.55.14:8081/geoserver/ distrubance_index/wms?service=WMS&version=1.1.0 &request=GetMap&layers=distrubance_index |
| Biological Richness (IIRS-IBIN Spatial Node ) | 1:50,000 | Raster | http://115.113.55.14:8081/geoserver/ biologicalrichness/wms?service=WMS&version=1.1.0 &request=GetMap&layers=biologicalrichness |
| Species Sample Plot Grids (IIRS-IBIN Spatial Node) | Aggregated Sampled Grid (5 x 5 km) | Vector | http://115.113.55.14:8081/geoserver/ biologicalrichness/wms?service=WMS&version=1.1.0 &request=GetMap&layers= sampleplots |
| Satellite Data (NRSC-Bhuvan Server) | AWIFS/LISS-III | Raster | http://bhuvan3.nrsc.gov.in/cgi-bin/mapserv.exe?map=/ms4w/apps/mapfiles/bhuvan_sat.map |
| Land use/Land cover (LULC) (NRSC-Bhuvan Server) | 1:250,000 | Raster | http://applications.nrsc.gov.in:8080/cgi-bin/mapserv.exe?map=/ms4w/apps/lulcmaps/Mapfiles/lulc_wms.map&version=1.1.1&service=WMS&request=GetCapabilities&layers=lulc0405& |