

# Jitendra Gaikwad

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## EDUCATION

- 2007-Present** **Ph.D.**, Macquarie University (MQ), Sydney, Australia (Expected to finish in the year 2010)  
**Thesis title:** Analysis of customary medicinal plant knowledge using biodiversity informatics approach.  
**Supervisors:** Prof Shoba Ranganathan (MQ), A./Prof Joanne Jamie (MQ) and Dr Karen Wilson (Royal Botanic Gardens, Sydney, Australia)  
**Brief synopsis of the project:**  
My research focus is to study how development of biodiversity data management systems and ecological modeling can provide important insights into a range of issues related to biodiversity and conservation of Australian Aboriginal traditional knowledge. The research highlight includes development of a knowledgebase, data curation and validation, integration of multi-disciplinary datasets, mapping species distribution, predicting potential distribution and impact of climate change.
- 2000-2002** **M.Sc. (Botany)**, University of Mumbai, India.  
**1997-2000** **B. Sc. (Botany)**, University of Mumbai, India.

## RESEARCH EXPERIENCE

- 2006** **Project Coordinator**, Macquarie University, Department of Chemistry & Biomolecular Sciences, NSW, Australia.
- 2003-2006** **Project Assistant**, Information Division, National Chemical Laboratory, Pune, India.

## RESEARCH SKILLS

- Competency in biological **data management** using relational database management systems.
- Taxonomic, ecosystems and indigenous traditional knowledge specific database **designing and development**.
- **Networking with institutions and individuals** for biodiversity and ethnobotanical information collation.
- **Ecological modeling** using DIVA, GARP and Maxent along with GIS based mapping using Mapserver, ArcGIS 9.
- **Collation, curation and validation** of biodiversity, biogeographical, ethnobotanical and phytochemical data.
- Strong ability to **understand, integrate** and **analyse** complex and varied biodiversity data.

## RESEARCH OUTPUTS

- 2006- 2010** **Macquarie University, Sydney, Australia.**
- ❖ **CMKb (Customary Medicinal Knowledgebase)** <http://biolinfo.org/cmkb>
  - Designed and developed the multi-disciplinary database integrating first-hand and secondary data, spanning from taxonomy to biogeography, medicinal use, phytochemical and biological activity.
  - Co-ordinated and conducted interviews with Aboriginal elders for data collection.
  - Collated data for more than 500 traditionally used medicinal plants, by doing literature surveys, visiting natural history museums and herbariums.
  - Scrutinising and validating data for taxonomic accuracies using varied biodiversity resources such as Australian Plant Name Index, International Plant Name Index, Flora Online, and Angiosperm Phylogeny Website.
  - The database complies to international standards such as Darwin Core and Dublin Core enabling easy integration with national and international initiatives.

**2003-2006 National Chemical Laboratory, Pune, India.**

#### **Specialised Biodiversity Databases-**

- ❖ **IndFauna (Electronic Catalogue of Known Indian Fauna) <http://www.ncbi.org.in>**
  - Fine tuned the database structure and the design of the web application.
  - Collated baseline information such as valid scientific names with authority and year of publication, systematics of the species from Kingdom to forma level, synonyms with authority and year of publication, common names, vernacular names, occurrence data, multimedia and bibliographical details.
  - The database contains data on more than 94500 known Indian faunal species.
  - Scrutinised data for taxonomic accuracies and systematics for the Orders- Coleoptera, Lepidoptera and Hymenoptera. Through this exercise, 30% of the IndFauna data was validated and curated.
  - Resolved taxonomic discrepancies by using data resources such as NCBI Taxonomy, Integrated Taxonomic Information System (ITIS), Zoological Records, Species2000, ZooBank, PubMed and uBIO.
- ❖ **SaGrIS (Sacred Groves Information System)**
  - Facilitated database design and development.
  - Collated information for species belonging to sacred groves from different Indian states such as Maharashtra, Karnataka and Arunachal Pradesh.
- ❖ **IndOBIS (Indian Ocean Biodiversity Information System- OBIS India Node)**
  - Facilitated the development and design of IndOBIS information management infrastructure during its initial stages.
  - Conducted training workshops for doing efficient information management and validation of IndOBIS data.
- ❖ **ABCDIO (Access to biological collections of Indian origin)**
  - Designed and created first database, for collating information related to species of Indian origin housed in different natural history museums across the world.
  - Data on more than 30,000 specimens from 15 museums and collection facilities was collated and validated for taxonomic accuracies.

#### **Specialised Biodiversity Software-**

- ❖ **SAMPADA (Software for digitization of biological collection)**
  - Assisted in designing, testing, and quality control of the software.
  - Organised and conducted training workshops for different institutions and researchers.

#### **PROFESSIONAL APPOINTMENTS**

- Local Organizing Committee Chair for **Joint International Workshop on Biodiversity Informatics**. An Indo-US initiative held in December 2004 at National Chemical Laboratory, Pune, India.
- Coordinated **Pre Symposium E-Conference** as a curtain raiser to the Symposium on National Biodiversity and Ecosystem Information Infrastructure (see below) in December 2005.
- Local Organizing Committee Chair for the **Symposium on National Biodiversity and Ecosystem Information Infrastructure: Challenges and Potentials**. The event was held at National Chemical Laboratory, Pune, India in February 2006.

#### **Consultancy**

- **Biodiversity Informatics advisor** to KOOPrime Pty Ltd, Singapore for developing Biodiversity and Ecosystem Database System for Singapore National Parks.

## COMPUTATIONAL SKILLS

- **Platforms:** Windows and Linux.
- **Software:** ArcGIS 9.2, DIVA-GIS, GARP, Maxent, MSOffice 2000/2003, and Paint Shop Pro 7.
- **Database:** Oracle, MySQL
- **Web Server:** Tomcat & Apache

## RESEARCH PUBLICATIONS

- Jamie J, Vemulpad S, Gaikwad J, Packer J, Harrington D, Ranganathan S: **Medicinal Plants of New South Wales**. In: *Genetic Resources, Chromosome Engineering and Crop Improvement Series: Medicinal Crops*. Edited by Singh RJ. CRC Press, Taylor & Francis Group, USA; *Submitted*.
- Gaikwad J, Wilson K, Kohen J, Vemulpad S, Jamie J, Ranganathan S: **Combining Ethnobotany and Informatics to Discover Knowledge from Data**. In: *Ethnomedicinal Plants: Revitalization of Traditional Knowledge of Herbs*. Edited by Rai M, Acharya D, Rios JL. New Hampshire, USA: Science Publishers; *In Press*.
- Gaikwad J, Khanna V, Vemulpad S, Jamie J, Kohen J, Ranganathan S: **CMKb: a web-based prototype for integrating Australian Aboriginal customary medicinal plant knowledge**. *BMC Bioinformatics* 2008, **9**(Suppl 12):S25.
- J Gaikwad and V Chavan (2005), **Open access and biodiversity conservation: Challenges and potentials for developing world**. *Data Science Journal*, 5: 1-17.
- Watve, A. V., J. Gaikwad, and Vishwas Chavan (2004), **Accessing biological collections data of Indian origin**, *Current Science*, 86: 8.

## SEMINARS AND POSTERS

- **e-Biosphere 09 International conference on Biodiversity Informatics** held at London (UK) from 1-3 June 2009. Presented a poster at this conference titled "*Combating medicinal plant extinction and indigenous culture loss- an Australian model*"
- **Biodiversity Information Standards (TDWG) Annual Conference 2008** held at Fremantle (Perth), Australia from 19<sup>th</sup>-25<sup>th</sup> October 2008. Presented a talk in this conference titled "*CMKB- integrating Australian customary medicinal plant knowledge with the framework of Atlas of Living Australia*"
- **International Conference on Chemoinformatics** held in National Chemical Laboratory, Pune, India from 22<sup>nd</sup> to 24<sup>th</sup> January 2007.
- **National Workshop on Marine biodiversity data management and digitization of museum specimens**, held at National Institute of Oceanography, Goa. India from 15<sup>th</sup> to 16<sup>th</sup> January 2007.
- **GBIF's International Ecological Niche Modeling workshop** held in Bangalore, India from 13<sup>th</sup> to 17<sup>th</sup> November 2006. (Nominated by Australian GBIF Node).
- **ComBio 2006 conference** held at Brisbane Convention Centre, Australia from 24 to 28 September 2006. Presented a poster at this conference titled "*CMKB- an integrated resource for customary medicinal knowledge*".