

# Graduate Student Training Program for Southeast Asia

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**Xishuangbanna Tropical Botanical Garden**

**Chinese Academy of Sciences**

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## **Introduction**

Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences (hereafter referred to as XTBG) was founded in 1959 by the well-known botanist, Prof. Cai Xitao. It is geographically located at 101° 25' E, 21° 41' N, within Mengla county of Yunnan province. It covers an area of 900 hectares and has a section in Kunming, the capital of Yunnan province.

There are three research centers with focuses on conservation biology, forest ecology, and economic botany. Supporting systems and facilities include laboratory of biogeochemistry, laboratory of plant physio-ecology, laboratory of plant systematics and conservation, laboratory of seed biology, laboratory for molecular biology of plants, herbarium for tropical plants, library, germplasm bank for wild plants etc. as well as two field research stations (Xishuangbanna Tropical Forest Ecosystem Research Station and Ailaoshan Subtropical Forest Ecosystem Research Station).

Within XTBG, there are over 30 specialized living plant collections including palm collection, *ex situ* conservation area for rare and endangered plants, medicinal plant collection, etc. with a total of over 10,000 species of plants mentioned inside the garden.

XTBG has been recruiting postgraduate students since 1986, and offering Ph.D. in ecology, M.Sc. in ecology and botany. Student exchanges and collaborations have been established with foreign universities including Wageningen University (Netherlands), University of Miami (USA), Chiangmai University (Thailand). Long-term research collaboration partners including National Tropical Botanical Garden (USA), Queen Sirikit Botanical Garden (Thailand), National Natural History Museum, Smithsonian Institution (USA), etc.

In order to take the academic advantages of XTBG for human resource development, and promote collaboration and exchanges with Southeast Asian countries, push forward effective biodiversity conservation and the sustainable socio-economic development in the region, XTBG offers opportunities for postgraduate studies (Ph.D. and M.Sc.) to Southeast Asian countries. A maximum of 15 students will be recruited in 2004, 2007 and 2010 respectively. Scholarships will be awarded to qualified applicants.

## **Research Fields and Focuses**

### **Ph.D. and M.Sc. in Ecology**

The ecological research at XTBG mainly focuses on the structure, functionality and dynamics of tropical and subtropical forest ecosystems. Major aspects of research include species diversity and its maintenance mechanisms, succession and regeneration of forest communities, restoration techniques of disturbed ecosystems, the ecological processes and molecular mechanisms in the

Table 1. Directions and research focus of ecological studies at XTBG

| <b>Directions</b>                     | <b>Research Focus</b>  |
|---------------------------------------|--|
| <b>01 Forest Ecology</b>              | structure and function of tropical and subtropical forests; long-term monitoring on the dynamics of forests; patterns of species diversity and mechanisms maintaining the ecosystem process; human disturbance and vegetation restoration  |
| <b>02 Plant Physiological Ecology</b> | physiological mechanisms of ecological processes in tropical and subtropical forest ecosystems and man-made ecosystems; plant responses to stress environments   |
| <b>03 Evolutionary Ecology</b>        | plant-animal interaction; coevolution; ecological consequences and chemical ecological basis of seed dispersal and pollination   |
| <b>04 Restoration Ecology</b>         | cause and processes of ecosystem degradations; key technologies for restoration and rehabilitation; biodiversity conservation and sustainable ecosystem management of degraded ecosystems.   |
| <b>05 Ecological Climatology</b>      | affect of climatic element to the spatial distribution pattern of ecosystem; mechanisms in response to environment change on the ecosystem process; regional climate and its response to global change.  |
| <b>06 Landscape Ecology</b>           | ecological and environmental effects of landscape pattern; influences of human disturbances on landscape pattern and process; landscape modeling and scaling; ecological assessment.   |
| <b>07 Reproduction Ecology</b>        | diversity and evolution of plant mating system; plant-animal interaction in the plant reproductive process; mechanism and ecological Effects of co-evolution   |
| <b>08 Soil Ecology</b>                | interactions among soil biota and regulations for transfer of elements and energy through soil systems; soil biodiversity and soil food web structure; regulations of soil biota on biogeochemical processes; influence of human activities on soil biota and soil processes; responses and feedbacks of soil biota to global environmental changes. |
| <b>09 Ethnopharmacology</b>           | bioactivity-guided isolation and identification of compounds from indigenous medicinal plants; mechanisms of the origin and accumulation of active compounds; biotechnology application for quantitative yield of active compounds; scientific standards for traditional medicine and functional foods   |

interactions and co-evolution of important species, and gradually to extend the scale of research from ecosystem level to landscape level, therefore to make further contribution to the ecological environment construction to the tropical and subtropical regions in the world (Table 1).

## M.Sc. in Botany

Tropical botanical researches at XTBG include plant physiology, genetics, taxonomy and the interaction between plants with physical environment, so as to provide solid basis for the introduction and domestication of tropical plants, for forest ecosystem research, biodiversity conservation as well as sustainable use of plant resources.

Table 2. Directions and research focus of botanical studies at XTBG

| <b>Directions</b>  | <b>Research Focus</b>  |
|--|--|
| <i>01 Conservation and Sustainable Use of Biodiversity</i> | indigenous knowledge; agroforestry ecosystem; shift cultivation system   |
| <i>02 Plant Geography</i>                                  | historical and present geographical patterns of plants; biodiversity composition; origin and evolution of the vegetation and flora of Yunnan and SE Asia   |
| <i>03 Horticulture</i>                                     | Biological and ecological characteristics of tropical horticultural plants; plant breeding; landscape designing; digital botanical garden system construction and management   |
| <i>04 Plant Phylogenetics &amp; Conservation Biology</i>   | plant taxonomy & phylogenetics on the basis of molecular sequences and the combined data from various sources (e.g. molecular, morphology, embryology, cytology and so on); conservation genetics of rare, endangered species by means of molecular markers( RFLP, RAPD, SSR and AFLP) |
| <i>05 Seed Biology</i>                                     | developmental model, induction and molecular mechanism of seed desiccation tolerance; mechanism of seed recalcitrance and their long-term storage; cryo-conservation of plant germplasm resources  |
| <i>06 Plant Molecular Biology</i>                          | molecular analysis of plant gene function; signal transduction and molecular biology in plant stress-resistance  |

## **Procedure for application/Q & A**

### ***Q: What are the qualifications for entry?***

Citizens other than Chinese who are physically healthy and with good moral characters, agree to abide to the laws and stipulations of China, respect the Chinese traditions and customs, and come up with the following qualifications should apply directly to XTBG. Age limitation and academic requirements are:

- For M.Sc. students: under the age of 40 and holding a Bachelor's degree from China or degree equivalent to bachelor's degree of China;
- For Ph.D. students: under the age of 45 and holding a Master degree from China or degree equivalent to Master degree of China.

### ***Q: What information should be provided?***

Applicants should provide the following documents:

- a) APPLICATION FOR ADMISSION FOR FOREIGN STUDENTS (downloadable from <http://www.gscas.ac.cn/gscasenglish/index.aspx>). A copy of passport photo should be attached to this form;
- b) Certificate or invoice to proof of application fee;
- c) Degree certificate of the most advanced studies (notarized photocopy);;
- d) Transcripts of undergraduate or graduate study (original or notarized photocopy / photocopies);
- e) Two letters of recommendation from your instructor at least at associate professor level or other person familiar with your activities with equivalent academic achievement (original) ;
- f) Curriculum vitae;
- g) A financial support statement by sponsor along with bank statements (original or notarized photocopy / photocopies).
- h) APPLICATION FORM FOR GSCAS SCHOLARSHIP (downloadable from <http://www.gscas.ac.cn/gscasenglish/index.aspx>)

### ***Q: How to transfer application fee and tuition fee?***

For those outside China should send application fee in US dollar (bank draft or traveler's cheque) together with application form to XTBG; For those already in China, application fee (RMB yuan) should be sent to the account below:

Account name: Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences

Account number: 093201040000897

Bank address: Agricultural Bank of China, Menglun office, Mengla county, Yunnan province

### ***Q: How much is the application fee?***

The application fee for Ph.D. or M.Sc. is the same: RMB 300 yuan or 30 US dollar per application.

***Q: How much is the tuition fee?***

For M.Sc. students: US \$2500 per academic year per person;

For Ph.D. students: US \$ 3000 per academic year per person.

***Q: What is the deadline for application?***

The deadline for application is June 15th of the year for recruitment.

***Q: Should applicants take any admission examination?***

From 2004, no special admission examination is arranged. Applicants will be evaluated through telephone or electronic mails.

***Q: What are language requirements?***

Chinese or English will be the working language.

***Q: How the applicants are notified?***

Within one month of evaluation (through telephone or emails), XTBG will officially send a “NOTIFICATION of ADMISSION to the Graduate School of the Chinese Academy of Sciences” and “VISA APPLICATION FORM for Foreign Students (FORM JW202)” to the qualified applicants.

***Q: How to deal with other expenses during study?***

Living expenses (board and lodging), books and stationeries etc. will be covered by students themselves. Students should also be able to cover the costs for extra experiments and field activities beyond the degree training. The designated supervisor(s) will cover necessary expenses related to degree study.

***Q: How long is the duration of study?***

The duration of the study for the degrees will be three academic years. According to the progresses of the study, students can graduate 6 month earlier or later. There are two terms per academic year. The first term starts on March 1<sup>st</sup> and ends on July 15<sup>th</sup>; the second term starts on September 1<sup>st</sup> and ends in January 15 next year.

***Q: Are there any vacations during study?***

There will be one month vacation each year, the time for vacation can be flexible based on the arrangement between student and supervisor.

***Q: What are the basic requirements for a degree?***

On completion of study, candidates should fulfill 1) required courses with expected scores (10 for M.Sc., and 15 for Ph.D.); 2) a defendable dissertation; 3) a M.Sc. candidate should have one paper published on scientific journals (peer-reviewed); 4) a Ph.D. candidate should have published two papers on peer-reviewed scientific journals, of which one (at least) of them should appear on international peer-reviewed journals

***Q: Can students go back to their own country during degree study?***

It can be arranged on case by case term.

***Q: How to contact us?***

The contact address of XTBG:

Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences  
Menglun Township, Mengla county, Yunnan province 666303, China

Telephone: +86 691 8715454

Facsimile +86 691 8715070

URL: <http://www.xtbg.ac.cn>

Or:

Foreign Affairs and International Students Office,  
Graduate School of the Chinese Academy of Sciences  
Yuquan Road 19A, Beijing 100039, China

Telephone: +86 10 88258072

Facsimile +86 10 88258052

URL: <http://www.gscas.ac.cn>