

Working Group on Biodiversity
Report to the China Council for International Cooperation
on Environment and Development

July 2000

1. Introduction

During 1999-2000, the Biodiversity Working Group (BWG) of CCICED continued its strong tradition of sectoral workshops with a regional focus. In addition, the BWG continued fundraising for an implementation of priority projects including awareness building and case studies, such as publication of the "Field Guide to the Birds of China". improvement of the China Species Information System, development of endangered species Red List in China, Upper Yangtze integrated conservation and development, and invasive species studies.

2. Summary of SWG Activities in 1999 and 2000

Following the order of activities presented in the BWG work plan, the following progress was made during the current reporting year.

2.1 Biodiversity Working Group meeting

The BWG held one official meeting during the past year in Dujiangyan, Chengdu Sichuan province. The meeting involved site visits to nearby areas of conservation interest, followed by a sectoral meeting on Biodiversity Conservation in Sichuan. A summary of this meeting, including recommendations made to the Sichuan authorities on in-situ and ex-situ protection related to biodiversity conservation. In addition, the BWG finalized this annual report for CCICED for 2000, formulated recommendations to the State Council for the Restoration of Forests and Grassland from farms, and laid out plans for group activities for the year 2000/2001.

2.2 Targeted sectoral meeting

Sichuan province has extensive topographic variation, with a concomitant rich biodiversity and large number of endemic species, as well as a large human population. The BWG of the CCICED held a Workshop on Biodiversity Conservation in Sichuan province from 23-28 July 2000. Participants in the meeting were divided into two groups for the field trips.

The first group was especially focused on forest restoration. Since the floods in 1998 caused great losses to China's economy, the Chinese government decided to control soil erosion at the origin of the main rivers in China. This ambitious work included a total logging ban that took effect in 1998 and a forest restoration program in the Upper Yangtze River that began last fall. During the last Council meeting of CCICED, Council members felt that a technical group should look at the issue of forest restoration and ensure that biodiversity conservation was taken into consideration. Through field trips and the workshop in Sichuan, the BWG briefly surveyed the ongoing Forest Restoration Program. The group visited the Forest Restoration Testing Area in Beichuan and Mianzhu counties in Sichuan, held discussions with local government officials,

provincial bureau of forestry representatives, scientists involved in designing the restoration methodology and local residents who are involved in the Forest Restoration Program. The group reviewed the progress so far and the enthusiasm of local residents and governments to restore the forests. At the conclusion of these activities, the group evaluated the situation of the program, and prepared recommendations and guidelines to help forest restoration.

The second group of BWG representatives was privileged to visit two nature reserves: Wolong Nature Reserve (including the Giant Panda Breeding Centre) and Dujiangyan Longxi-Hongkou Forest Reserve, as well as breeding facilities for musk deer, sika deer and bears (Sichuan Musk Deer Institute, Deer Farm of Sichuan Chinese Medicine Company). The group evaluated these facilities and made specific recommendations for their management with regard to Sichuan's biodiversity.

The Workshop on Biodiversity Conservation in Sichuan province was held after the field trips. One vice governor and one deputy secretary general of Sichuan province as well as other provincial officials from concerned departments attended the workshop. Among participants were also representatives from CCICED Secretariat. Local experts from the Chengdu Institute of Biology, CAS, Sichuan Normal College, Sichuan Wildlife Conservation Association, Sichuan Forestry Academy, Institute of Botany, also attended. Representatives from Chengdu Zoo, Chengdu Giant Panda Breeding Research Centre, Sichuan Musk Deer Breeding Institute, Deer Farm of Sichuan Chinese Medicine Company and Sichuan Tourism Department actively expressed their thoughts about biodiversity conservation related to their work. There were representatives from the British Embassy and Norwegian Embassy. International and national NGO's attending the meeting included the Kadoorie Farm & Botanic Garden in Hong Kong, TRAFFIC East Asia (Hong Kong), Fauna & Flora International (Hong Kong), Green Voice environmental Solutions, American Zoo Association, Upper Yangtze Conservation and Development Organization, and the US-China Environmental Fund.

Two and one half days of meetings with national, international and regional experts and authorities included many valuable presentations and resulted in lively and frank discussions. The BWG was impressed by the work that has been undertaken by the Sichuan provincial authorities in the field of biodiversity conservation, and their ambitious plans for further strengthening the protected area system and measures to control the trade and use of wildlife. A full report was prepared and submitted to the provincial authorities.

2.3 Illustrated guidelines for biodiversity conservation in economic development

The first draft of the long time delayed illustrated booklet highlighting guidelines for biodiversity conservation within the context of economic development was presented for review. The guidelines were presented as a series of planning principles illustrated with drawings to highlight the important considerations followed by a short explanatory text below. Comments received from the group members will now be incorporated into the document.

- Combine some of the principles / pictures which express similar ideas;

- Improve the quality of some of the pictures and related explanations in terms of comments and suggestions proposed at the workshop;
- Add illustrations for some issues which are closely related to biodiversity conservation but not yet included in the draft.
- Draft an introduction to illustrate the project concept, the value of biodiversity, and to highlight the main factors threatening biodiversity in China.

To ensure the quality of the booklet, Dr. John MacKinnon together with other related BWG members will carefully review the text and drawings. It is hoped that the guidelines will be ready for publication before the end of 2000.

2.4 China Species Information System (CSIS)

Extensive updating of the China Species Information System occurred this year, supported by funding from the British Government Environment Project Fund. In addition to intensive data entry, a process was initiated to carefully review and check existing data in CSIS, as follows:

Mammals -- BWG Co-Chair Professor Wang Sung;

Birds -- Professor He Fenqi, Institute of Zoology, CAS; and

Reptiles and amphibians -- Professor Zhao Ermi, Chengdu Institute of Biology, CAS

It is anticipated that the data checking process will be completed by the end of March 2001. In addition, the BWG, with assistance from computer programming specialists, will produce a web-site program based on the information and structure of CSIS. By the end of next March, information on the four vertebrate taxa mentioned above will be available and searchable through the BWG website (<http://monkey.ioz.ac.cn/bwg-cciced/index.htm>). The information available will include taxonomy, distribution, endangered categories including (Red list classification, CITES appendix, Red Data Book and State Protected List), threats, suggestions, bibliography, and nature reserves.

2.5 Invasive Species Study

China is a vast country with rich biodiversity and a long history of introduction of non-native species, especially those with beneficial impacts. Rapid economic development, including an explosive growth in international trade and transportation, has increased the potential for new introductions. The invaders represent major taxonomic groups; and are introduced unintentionally as well as intentionally for cultivation. Currently, alien species are widespread in the country and occur in many ecosystems.

The BWG has conducted a preliminary research project on invasive species in China. The project report lists various case reports of invasive species, in particular two industries (fresh water fisheries and grasses), that have brought or tend to bring in many invasive species and hence have caused or will cause changes and loss of biodiversity in local ecosystems. BWG representatives also took field trips to Xiamen and Fuzhou in Fujian, and Guilin in Guangxi. During these field trips many cases of invasive species, especially on Gulangyu Island, were noted. There are several crazy invaders, including common cat's claw vine (*Macfadyena unguis-cati*), *Coccinia cordifolia*, palmate-leafed morning glory (*Ipomoea cairica*) and *Bougainvillea spectabilis* found on the Gulangyu Island. They have occupied large areas, are expanding their territories, replacing native species, and have largely reduced biological diversity.

Many big trees including over 100 year-old banyan were killed. The BWG has decided to continue with further studies on invasive species, as indicated in the following work plan for the coming year;

- Review available literature on invasive species;
- Establish a preliminary list of invasive species in China;
- Collect taxonomic information, pictures, native habitats, current distribution range, distribution maps, time of invasion, reasons and approaches, developing trends, natural enemies, destructive mechanisms and extent, potential harm, means of prevention, control measures, etc.;
- Establish an invasive information system;
- Develop close cooperation with local specialists to provide information for the information system;
- Select key sites and species according to the information and data collected; and
- Publish booklets highlighting the ecological problem of invasive species in China (both in Chinese and in English).

2.6 Alpine Grassland Demonstration Project

Progress has continued on BWG's Alpine Grassland Demonstration Project. One activity addressed the ecological effects of the cumulative poisoning of small mammals over 200,000 km² on the Qinghai-Tibet Plateau. A scientific review paper was published identifying one of the targets of this control, the plateau pika (*Ochotona curzoniae*), as a keystone species for biodiversity on the alpine grasslands. In addition, a research project designed to investigate directly the effect of pika control on biodiversity was initiated.

BWG in coordination with the Upper Yangtze Organization on a sustainable development demonstration project in the Suojia Township in southern Qinghai continued. The Suojia Environment Bureau was established, and four environmental stations were staffed and equipped. Four nature reserves, three no-hunting zones, a demonstration area, and a grassland/desert research area were designated. Several environmental education programs have been initiated. Initial discussions with Fauna and Flora International, who are also conducting a project in this area, have begun to ensure coordination of efforts in this region.

2.7 Forest restoration/Return farm to forest or grassland

During the annual meeting, BWG conducted field trips to Beichuan and Mianzhu Counties in Sichuan province where a forest restoration project was initiated in fall 1999. The BWG also visited the Sichuan Academy of Forestry and met with local experts who have been involved in technical studies on forest restoration. Based on previous work BWG has conducted in forest restoration, BWG compiled the "Position Paper on the use of Forests to Improve Environment in China". BWG intends to extend the paper to "Towards a Comprehensive Restoration of China's Hydrology: Recommendations to CCICED on the national programme for reforestation of the upper catchments of major rivers" by further studies. The specific guidelines on technical matters will be strengthened during the next stage of BWG's project.

2.8 Field Guide to the Birds of China

The English version of the Field Guide to the Birds of China, authored by BWG members John MacKinnon, was published by Oxford University Press in April 2000. BWG organized to translate and the Hunan Education Publishing House published the Chinese version in July 2000. With funds from the World Bank (through IUCN's Regional Biodiversity Programme for South and Southeast Asia) and WWF-China, the Chinese version is able to be sold at an subsidized price in China. To improve the awareness of biodiversity conservation by the staff in nature reserves in China, BWG feels that it would be very useful for nature reserves to have copies of this book and plans have been made to mail approximately 1000 free copies to China's reserves.

2.9 Field Guide to the Mammals of China

Two complementary books are in the planning stage that will result in products designed for both specialists and the general public. The first, tentatively titled "The Mammals of China" will be a complete treatment of the more than 500 species of mammals known to occur in China. Information on life histories, ecology, behaviour, conservation status, economic significance, and on how to identify each species will be included. A second volume, the "Field Guide to the Mammals of China", based on the first, will be less comprehensive, but will permit non-technical identification of most of the types of mammals in the Chinese fauna on the basis of external appearance. In addition to many colour plates, the Field Guide will include detailed distribution maps and short notes on habitat and behaviour.

A proposal has been submitted to Princeton University Press, and we hope for a favourable response in the near future. The text will be supplied by specialists in the various mammal groups, under the supervision of editors from the BWG. It will take several years to complete this project.

2.10 Endangered Species Red Listing in China

BWG organized and hosted an IUCN Species Survival Commission (SSC) Red List Workshop from 30 July - 2 August 2000 in Dujiangyan, Sichuan. Participants included SSC staff and volunteer members, BWG members, and more than 40 selected species specialists from across China, collectively representing a wide variety of taxa. The workshop had several objectives. The first was to introduce the philosophy and technicalities of the new IUCN/SSC Red List Categories and Criteria used for classifying species level of threat of extinction. Secondly, draft guidelines for using these global criteria at the regional and national levels were introduced. Finally, the participants viewed a demonstration of the RAMAS Red List software that, in the future, will be used as the platform for entering data and determining threatened species classifications.

The workshop was designed to be open and participatory -- with the SSC showing the products that have been developed previously through broad consultation throughout the SSC and with Chinese specialists commenting and suggesting adjustments based on the situation in China. These comments were particularly important in the case of evaluating the draft regional /national guidelines.

Overall, the goal of the BWG China Red List Program is to ensure that as many species as possible are evaluated by using the IUCN criteria, including small economically unimportant species, plants, invertebrates, etc. Many of these taxa have not played a prominent role -- in spite of their threatened status -- in most prior lists of endangered flora and fauna in China. The evaluation of these species is important not only within China, but also to the international conservation community, because of the high species diversity and endemism within China.

2.11 Biodiversity Conservation Website

The BWG has a new website (<http://monkey.ioz.ac.cn/bwg-cciced/index.htm>) to highlight its activities and biodiversity conservation in China. Activities, annual reports to CCICED and technical reports conducted or prepared by BWG are available on the site -- in both English and Chinese. The website is designed to publish postings on problems and actions related to biodiversity conservation in China as well as to provide contact information for nature reserves, biodiversity experts and the public. By the end of March 2001, the information and programs contained in CSIS will be integrated into the website, and the entire website will be redesigned. Links to other international and national biodiversity conservation websites will be established, information in the directories will become searchable, and a discussion section will be available to allow people to provide input to the website.

3. Work Plan of BWG for 2000 - 2001

The following activities are funded for the coming year.

- Continue development of CSIS and publish it on the BWG webpage;
- Hold at least one regional Red List workshop and apply new Red List Criteria to Chinese animals and plants;
- Continue assessment of invasive species in China and their impact on Biodiversity conservation;
- Distribute "Field guide to the Birds of China" to nature reserves;
- continue with development of the mammal guides;
- Continue Alpine Grassland Demonstration Project;
- Continue website development;
- Analyse and advise on reforestation programs and liaise with the Task Force on Grasslands and Forest;
- Analyse and advise on the biodiversity component of the Western Development Program; and
- Hold at least one BWG meeting in conjunction with a sectoral meeting (tentatively set for Qinghai province in August 2001)

If funding becomes available, the BWG will also begin preparation of a demonstration provincial -level Biodiversity Strategy and Action Plan.

4. Publications of BWG (1999-2000)

MacKinnon, J., and K. Phillipps, 2000. *Field Guide to the Birds of China*. Oxford University Press, Oxford, UK

MacKinnon, J., K. Phillipps, He Fenqi, 2000. *Field Guide to the Birds of China*. Hunan Education Publishing House, Hunan, China. (in Chinese)

Smith, A. T. and J. M. Foggin, 1999. The plateau pika (*Ochotona curzoniae*) is a keystone species for biodiversity on the Tibetan Plateau. *Animal Conservation* 2:235-240.

Wang, S. (ed.) et al. IUCN Chinese Newsletter (issue 10-13) (in Chinese)

Xie, Yan, Li Zhenyu, William P. Gregg, Li Dianmo, 2000. Invasive Species in China -- An Overview. (Accepted by *Biodiversity and Conservation*)

5. Funding of BWG Activities

For 2000-2001, the BWG has received financial support from the Norwegian government to cover general operation costs, sectoral and annual meetings, and implementation of some projects. This has improved our financial situation considerably, and we can now implement many projects that have been awaiting support. In addition we have received a grant from the British Government Environment Project Fund for development and publicising the CSIS on the Internet. The Kadoorie Charitable Foundation provided a small grant to investigate the effect of pika control on biodiversity, and the World Bank (through the IUCN Regional Biodiversity Programme for South and Southeast Asia) and the WWF China Programme supported publication of the "Field Guide to the Birds of China" in Chinese.

BWG activities have also received assistance from CCICED, SEPA, SFA, WWF and IUCN. As shadow ministers of BWG, Council members of CCICED, Claude Martin, and Maritta R. von Bieberstein Koch Weser, have provided assistance to the work of BWG. We sincerely appreciate the assistance of these sources of support, and we are especially thankful to the Norwegian government for their major grant.

6. National Level Recommendations of BWG

Major Recommendations for Consideration by CCICED

Recommendation 1:

Incorporate Biodiversity Conservation Concerns in the Western Development Programme

The government of China is focusing major new development efforts in its less well-developed western provinces through the Western Development Programme. If these investments are to provide long-term sustainable benefits, they must take into consideration possible environmental impacts, including effects on biodiversity. Biodiversity plays a fundamental role in providing goods and services for sustainable development and for maintaining the good functioning of the ecosystem.

Currently too little is known of the ecosystems and biodiversity of the west. The construction of roads, establishment of hydro-electric plants, and drilling for natural gas are activities conducted without guidance of the necessary knowledge with regard to their impact on these fragile natural environments. The Western Development Programme will implement activities in the major catchment areas of the Yangtze and Yellow rivers and will therefore have far-reaching effects across all of China. In

addition, not enough is being done to ensure that the unique cultures of the region will be preserved in the face of such rapid modernization. As many of these cultures have lived sustainably on these marginal lands for centuries, this cultural knowledge is essential and should be applied to the development process.

Therefore, the BWG recommends:

- That all new infrastructure projects in western China incorporate environmental considerations at the very earliest planning stages, that all relevant scientific expertise be involved at all steps in the process, and that biodiversity considerations be made a central feature in all such work.
- That more studies should be conducted to better understand the functioning of ecosystems and cultural aspects of nature management in these regions so that preservation of culture and cultural knowledge can be included into the development process. This is also in accordance with Article 8j of the CBD.

Recommendation 2:

Increase Support to the Protection of Watershed Forests in Western China

With regard to the government's major programme to restore forest cover and hydrological functions of the upper catchments of major rivers, the BWG recommends:

- That a permanent source of funds must be established to continue the programme of forest protection and the withdrawal of agriculture from steep areas.
- The levels of compensation for farmers to reforest their fields should be more realistic in scale and duration than those currently established.
- The emphasis should be on 'ecological' forestry rather than planting economic crops, and forests should be designed to be balanced, functional ecosystems, complete with local wildlife, that can sustain themselves naturally without constant human inputs.
- Only native species that would occur naturally in the area of reforestation should be planted.
- Ecologists should be integrated into the planning and implementation of the scheme.
- The logging ban also provides a unique opportunity to review the status of forests now protected from logging. In addition, corridors should be planned between existing forests. A goal should be established to achieve a more complete representation of protected forest types combining strengthening of the biodiversity conservation and hydrological protection.

Recommendation 3:

Control the Problem of Alien Invasive Species

Although China has benefited economically by the introduction of new species from outside the country, many introduced species are extremely damaging to human health, environment, and the economy. In India and the USA, introduced species have been estimated to cost more than US\$100 billion per year in damage to crops, natural resources and human health. Other countries such as Australia totally ban the introduction of any non-native species into their country. Known as "Alien invasive

species," they are being addressed under the Convention on Biological Diversity (Article 8h), the Convention on the Law of the Sea (Article 196), the International Plant Protection Convention, and the Agreement on the Application of Sanitary and Phytosanitary Measure under the World Trade Organization. Such species pose a significant threat to China's economic welfare, with weeds, marine invertebrates, and new diseases causing damage amounting to billions of dollars per year. During the period July 1994-1999, Oregon grass seed exports to China have grown from 39,000 kg to 3 million kg of seed annually. Part of the rationale for the import of the grass seed is that seeding expansive regions of Western China will reduce the severity of erosion and eliminate the dust storms that plague Beijing. Erosion control trials by using Oregon species to prevent erosion were also established in Yichang at the site of the Three Gorges Dam. Such massive importation of alien grass seed will definitely cause irreversible impact and damage to China's endemic biodiversity. In response to this problem, the BWG recommends that China:

- Assign a high-level focal-point to address the issue of alien invasive species and in particular the licensing of deliberate introduction of non-native plants, with the jurisdiction to bring together national experts on agricultural pests, human health, fisheries, forestry, tourism, transport, trade and others.
- Review national legislation to ensure that it is compliant with all relevant international conventions and programmes, such as enacting legislation to ban planting of alien species in or adjacent to nature reserves; also prohibiting deliberate introductions unless they can be proved to be safe to health and the environment and where it can be demonstrated that domestic species cannot perform the same functions.
- Develop an approach for erosion control that emphasizes use of endemic species and use native species instead of imported alien species in all replanting schemes.
- Design a new programme, perhaps in cooperation with the Global Invasive Species Programme (GISP), to develop national and provincial capacity to deal with this problem, including public education, effective phytosanitary controls, monitoring of ecosystems, and risk assessment.

Additional National Level Recommendations

Recommendation 4:

Building Biodiversity Conservation into all Sectors

Biodiversity conservation is an important concern to all sectors of society. While it is reasonable for lead or coordinating responsibility to be assigned to environmental agencies, other sectors must also be involved if all concerns are to be adequately addressed. Agriculture, forestry, fisheries, industry, tourism, trade, transport, rural development, and even the military all draw on the benefits of biodiversity and can contribute to its conservation and sustainable use. Therefore, the BWG recommends:

- That the planning sections of all ministries include biodiversity concerns in their plans, and draw on the best available scientific expertise in doing so.
- That each sector develop sectoral action plans outlining their role in implementing the CBD.

- That establish a cross-sectoral coordinating body to strengthen communication and complementary activities among the biodiversity management authorities.

Recommendation 5:
Freshwater Biodiversity

As China's economy expands and its population continues to grow, more pressure will be put on its freshwater systems. The government of China is well aware of its hydrological challenges, but biodiversity aspects of this issue are not being adequately addressed. Many rivers are dangerously polluted, killing the fish that are essential elements of many ecosystems and important elements in the diet of many people. The lack of riverine birds that once were common is a worrying indicator of a serious problem that affects human health and economic well being. The BWG therefore recommends that the central relevant provincial governments of China:

- Vigorously enforce water pollution legislation.
- Establish well-managed and well-funded protected areas in wetlands and rivers to maintain healthy breeding stocks of all species of freshwater fish and invertebrates native to China.
- Use only native species in aquaculture.
- Fully involve fisheries experts at the earliest stages of any major development plans affecting rivers and wetlands.

Recommendation 6:
Agriculture and Biodiversity

China is a global hotspot for agricultural biodiversity, serving as the centre of origin for many species of food crops using domestic animals (including fish), medicinal plants, and ornamental plants. With modern biotechnology, the native genetic material becomes even more valuable and useful. In addition, the traditional agricultural systems also support a high biodiversity of wildlife. Such diversity needs to be maintained both on working farms --managed on ecological principles -- and in gene banks. The BWG therefore recommends that:

- In planning for the improvement of agricultural land on shallow slopes, relevant authorities should draw upon the results of experiments on ecological agriculture already undertaken, along with relevant traditional techniques. Improvements should be based on these rather than on techniques dependent on fertilizers and pesticides or biotechnology.
- Gene banks should be established for all species of agricultural importance native to China, covering the full range of local varieties. The wild relatives of all such species should also be included, in the expectation that modern biotechnology will be able to use these genetic materials to make new advances in the future.

Recommendation 7:
Undertake an updated Biodiversity inventory of China

Increasing prosperity has led to increased demand for food, timber, and medicines, both traditional Chinese and western. Hundreds of captive breeding/propagation facilities

have been established across the country to meet this burgeoning market demand. In many cases, captive breeding does not meet demand and the threat to wild population grows. While extensive efforts and investment have been made in ex situ conservation in China, relatively little support has been provided to support in situ conservation of species and habitats on which these resources are based. The result is a fundamental lack of knowledge of the wild 'reserves' of these resources and the relationship and interactions among them.

A basic understanding of the current status of China's in situ biodiversity is crucial to management and sustainable use of these precious resources. A national biodiversity inventory is essential background information for those responsible to develop and implement biodiversity policy and legislation and for those involved in designating protected areas. In addition, this activity is a requirement of China's commitment to implement the CBD, in particular Article 7 (Identification and Monitoring). The BWG therefore recommends that:

- A new national biodiversity inventory should be undertaken across all provinces. This will necessitate the preparation of new identification guides and keys, training of field collectors and taxonomists at provincial level and a revitalization of museum activity and standards. The programme should be coordinated by CAS and may necessitate the establishment of a specialized Biodiversity Institute. Results of this study would help identify which areas/species/aspects, etc., should be of conservation priority.
- An attempt should be made to better understand relationship among key species, functional groups and guilds, as this will provide a scientific basis for the management and restoration of biodiversity and natural ecosystems.