Chapter 4
ACTIONS TO ENSURE IMPLEMENTATION OF SPECIFIC CONSERVATION MEASURES

Legislation and Policy

Assess Adequacy of Conservation Policy-Making and Propose New or Revised Policies

In terms of the use of the country's natural resources, the Chinese Government has adopted the general principle of "overall planning, active protection, scientific management and sustainable utilization." In its environmental protection and natural resources conservation, this general principle has been followed, in combination with a series of policies that address the current conditions and development level in the country. The following are the main policies that are applicable to the implementation of the Biodiversity Conservation Action Plan of China.

Emphasize the policy of "prevention comes first" in environmental protection. Environmental considerations should be taken into account prior to planning and initiating any significant actions undertaken, whether by government or by other parties. An environmental impact assessment should be carried out for large and medium-size projects that can be expected to have environmental impacts, including agriculture, irrigation or other water development projects, forestry, mining, quarrying, road and other transportation construction, wetland reclamation, reservoir building, coastal engineering construction and industrial developments. Environmental protection facilities should be designed, constructed and put into operation together with the principle components of new projects, expansion projects, or major technological renovation projects. Measures necessary to prevent or control damage to biodiversity and to monitor the results should be put into effect, either as part of the projects themselves or separately. According to the Environment Protection Law, it is the responsibility of the implementing agency to carry out the environmental assessments, and the responsibility of NEPA to monitor the process and its follow up.

Enforce the policy of providing greater emphasis on conservation and emphasis on utilization when consistent with conservation. After the severity of the destruction of China's biological resources was recognized in the 1980s, China formulated the policy of "enhancement of resource conservation, active domestication and production, and rational utilization." This policy emphasizing conservation first should now be more strictly pursued by the various relevant agencies.

Enforce the policy that "those who develop are responsible for protecting, those who utilize are responsible for restoration, and those who destroy are responsible for compensating." Because of the impacts of development and industrialization on biodiversity, this policy has relevance to the Biodiversity Conservation Action Plan. In this regard, pollution prevention and control, usually including a fee charged for pollutant discharge, should be more uniformly practiced for both urban and rural industries; land restoration should be strictly enforced for mining and road construction projects; and the system of long-term permits and compensated use should be practiced in land and water body development (both terrestrial and sea water bodies). The relevant line agencies should improve their enforcement of this policy.

Propose other technical policies pertaining to environmental protection and natural resources

conservation. China began nature conservation efforts in the 1950s and pollution control in the 1970s, and a series of policies regarding protection of the environment and natural resources have been formulated over the years. The guidelines, policies and governmental circulars enacted according to the Environment Protection Law and the other laws and regulations for nature conservation have all functioned well to some extent for the different purposes. These policies, however, have all been formulated for addressing some specific urgent problem as it became apparent, usually in a single sector, and therefore they are not well integrated, systematic and coordinated with each other. In this setting, they cannot meet the requirements for full-scale protection of biodiversity, and the following improvements and enhancements are necessary:

- A comprehensive policy with a set of guidelines and a far-reaching and overall directive function, is urgently needed and should be formulated, based on an understanding of the special circumstances in China and the key points in biodiversity conservation. This policy should be useful in guiding or coordinating subsequent policies and for providing a sound consideration for the relationship between specific problems, as well as their relationship to the general goals of biodiversity conservation as a whole. The SEPC under the State Council should orchestrate the formulation of such a policy and the implementation of such policy should then be monitored by NEPA.
- In addition, special attention should be given to developing policies to encourage qualified staff to enter the biodiversity conservation profession, and to encourage and reward outstanding accomplishments and efforts in biodiversity conservation. Such policies should include consideration of systems of rewards and incentives for outstanding performance and conscientious behavior, improvement of conditions of work (including salaries), encouraging scientific researchers who work on investigations and research in the field, and recognizing that those who work under hard conditions at remote reserves should have preferential treatment and improved conditions for work and livelihood.
- In drafting the policies, administrators and experts from all relevant departments and specialties, and related departments and specialties should be invited to participate. To the extent possible, policies should be formulated based on scientific investigation and research and comprehensive analysis of all relevant factors. Public participation also should be emphasized and access to participation should be improved. Where appropriate, such participation should be facilitated by the governmental institutions involved. Moreover, policies should specify who has the responsibility and authority for implementing them, and as appropriate, the methods for such implementation should be clearly specified.

Assess and Improve Implementation and Enforcement of Conservation Laws

As discussed above, China has made many laws and regulations related to environmental protection and natural resource conservation. However, while these laws have played a role in promoting rational utilization and conservation of biodiversity and natural resources, they still are not complete or sufficient for achieving the overall goal of the BAP. Some laws and regulations are still missing, such as special regulations regarding plant conservation and comprehensive biodiversity conservation. Other laws or regulations need to be revised to reflect the current understanding of biodiversity conservation. The enforcement systems need to be improved to make sure that whatever laws and regulations are developed, will be enforced. Failure to enforce existing laws is a major problem at present. The following actions therefore are proposed regarding legislation and enforcement of laws and regulations on biodiversity conservation.

Improve cooperation between ministries and other agencies involved in biodiversity conservation. Biodiversity conservation requires a nationwide campaign of intersectoral and inter-disciplin-

ary scale, with broad linkage between different governmental departments. Improvement of different laws and regulations requires combination and coordination between comprehensive management and sectoral specialized management and requires broad participation by the public. In these efforts, the functions and responsibilities of different agencies at different levels should be clearly defined, to make the relevant laws and regulations more consistent and operational. The SEPC should initiate a comprehensive review to define the functions and responsibilities of different agencies at different levels and to identify areas where better coordination is required and where additional laws or regulations are required. It would then develop a process to monitor the implementation of the recommendations of that study.

Base biodiversity conservation plans on scientific findings. Biodiversity conservation is a scientific campaign, so preparation of new laws and regulations and improvement of existing laws and regulations should be carried out on the basis of results obtained from relevant research, not only of natural sciences focussing on the biodiversity itself, but also of social and economic sciences focussing on the social and economic factors involved. Laws and regulations should take into consideration not only the direct and tangible impacts caused by human activities on biological diversity, but should consider also other potential and intangible impacts and most important, the underlying factors involved.

Coordinate biodiversity conservation with economic development goals. Biodiversity conservation is a campaign of public interest that can provide both short and long term benefits. Under the socialistic market economy, preparation and improvement of relevant laws and regulations should take into account economic factors and economic leverages should be used to enhance biodiversity conservation work and to limit the activities damaging to biodiversity.

Strengthen management and enforcement institutions. In parallel with the preparation and improvement of relevant laws and regulations, particular attention should be paid to law enforcement so that law-enforcing institutions can be strengthened, an institutional network established, and biodiversity conservation management and law enforcement improved. One aspect of this work is assuring that law enforcement personnel are aware of and familiar with biodiversity and its values to the nation, as well as the laws protecting it. Consideration should be given to providing rewards and incentives to law enforcement efforts on behalf of biodiversity conservation. A related need is to assure that the courts and the judicial personnel appreciate the importance of biodiversity so that they will support the enforcement efforts.

Make new laws and regulations for biodiversity conservation goals. Some comprehensive and special laws and regulations should be prepared and promulgated in line with the overall goals and general tasks of biodiversity conservation, and particularly in line with the requirements and demands of the Biodiversity Convention. Those laws and regulations include regulations on nature reserve management, laws on plant resources, conservation regulations on protection and conservation of fragile or sensitive areas in the environment or ecosystems, comprehensive regulations on biodiversity conservation, and regulations on international cooperation in biodiversity conservation. Among these, the most urgent for China are the comprehensive biodiversity conservation law, the plant protection law, and the regulations regarding management of nature reserves.

Biodiversity has only relatively recently become recognized as a subject for protective legislation. However, many pre-existing laws, formulated to achieve specific goals in other sectors, also affect biodiversity. There are also gaps in the legislative coverage and there may be areas where there is overlap or conflict between existing laws. Consequently, as a first

step, the SEPC should initiate a comprehensive review of the nation's legislation as it affects biodiversity conservation. The review should identify where new laws are needed and where existing laws need to be canceled or amended. These legal reforms should then be implemented. The possibility of developing a comprehensive, umbrella biodiversity conservation legislation should be considered (as described above).

Participate in Relevant International Conventions

All international conventions on biodiversity, either comprehensive or specific, will deal with different ecological systems and various kinds of natural resources. In order to fulfill all commitments and obligations, the following improvements should be made in the domain of policies, laws and regulations pertaining to international conventions.

Improve participation in conventions. Improve the comprehensive coordination mechanism of convention participation affecting and relating to multiple sectors, disciplines and departments. On the basis of well-arranged coordination, the role of relevant sectors and developments should be fully developed. Primary responsibility for coordinating the Biodiversity Convention and other conventions in China lies with NEPA, jointly with other relevant agencies.

Increase studies on policy and law. Increase studies on policy and law issues pertaining to international conventions so that the important concepts and principles in conventions can be considered and included in relevant domestic laws and regulations, and reflected in the required actions or measures. Such studies could initiated by NEPA in concert with other relevant agencies.

Establish and enhance the information network. Establish and enhance the information network for participation in international conventions and fulfillment of convention requirements and obligations, promoting information exchange and information sharing between all relevant departments, units and nongovernmental organizations. SEPC should designate a lead agency to carry out such an action.

Institutional Measures

To execute the BAP of China, the relevant government departments at different levels should be improved and their management enhanced in the following ways.

Strengthen Institutional Arrangements Needed to Implement Action Plan

Strengthen institutions at the State level. China's Biodiversity Conservation Action Plan is a document of enormous importance. The difficulties encountered in its preparation, particularly in cooperation between the various agencies involved, are a warning that effective implementation of the BAP will be difficult unless changes are made in the way that the agencies can work better together. There is emphasis in the action plan on the requirement for integrated assessments of needs for biodiversity conservation, requiring compiling and analysis of data from different agencies. Impartial cooperation will be needed for provision of data, assessments of needs, and joint decisions on priorities for action. It is important that interagency competition for funds or influence do not constrain the overall aim of conservation of China's biodiversity. Some way must be found to encourage and achieve genuine cooperation between agencies so that progress can be made on the most urgent actions proposed in the BAP. The collaborative spirit developed through the preparation of the action plan provides a good solid basis for strengthening cooperation in the future.

Strengthen institutions at the local levels. Under provincial governments, the provincial environmental protection commissions and relevant agencies should set up organizational structures for biodiversity conservation parallel to their ministries. Under the local governments below the pro-

vincial level, similar organizational structures should be established, depending to the intensity and scope of biodiversity conservation activities in the regions. The environmental protection commissions at the county level should set up the biodiversity conservation consultation groups with participation by environmental protection experts and public representatives.

Clarify Roles, Authorities and Responsibilities for Institutions Implementing Biodiversity Conservation Action Plan

Clarify authorities and responsibilities of the State-level agencies.

- The SEPC under the State Council acts on its behalf to coordinate all ministries, State commissions, and local governments in solving important environmental issues. In this regard, SEPC should have overall responsibility for the BAP and have the lead for initiating the review and approval of relevant policies and guiding principles, and the preparation of laws and regulations regarding biodiversity conservation. The SEPC also should have overall responsibility for monitoring the implementation of the BAP and specifically for monitoring the performance of the bodies discussed below. It is proposed that the SEPC report to the State Council on the results of this monitoring on an annual basis. The SEPC may delegate this monitoring and reporting function to NEPA in its role as the leading agency for biodiversity conservation.
- NEPA should take the lead coordinating the more detailed preparation of various biodiversity conservation proposals with relevant ministries and agencies. NEPA should prepare options for fund raising and allocate resources for different projects to relevant agencies to implement the proposals and supervise their implementation. It should also be responsible for drafting relevant policies, laws and regulations on biodiversity conservation for review and approval by SEPC, and should supervise the enforcement or policies, laws, and regulations.
- The SPC should be in charge of comprehensive coordination of all project plans for biodiversity conservation with State annual and long-term plans, of approving large-scale projects and allocating funds.
- All the relevant functional ministries should be in charge of implementing biodiversity conservation actions identified in the BAP in their own jurisdictions, incorporating the management, monitoring, research, training and nature conservation projects into their ministerial work plans, and in organizing their implementation and supervision.
- The SSTC should take responsibility for reviewing and approving all scientific research and technical extension projects set up in the BAP, including them in execution plans and allocating needed funds.
- Research units, universities and colleges should take responsibility for carrying out scientific research, technical guidance, and personnel training for biodiversity conservation, with the general goal of improving and upgrading the quality and level of biodiversity conservation.
- Local governments should assure that all relevant local agencies actively support biodiversity conservation within and adjacent to each nature reserve, and the nature reserve management authority should coordinate the local agencies in achieving conservation goals.
- The administrative agencies of public security, procurorate, and the courts of justice should be in charge of setting up the public order in connection with biodiversity conservation, of preparing laws and regulations on public security, and of enhancing law and regulation enforcement, with strong measures for criminal offenses in destroying biodiversity. The commercial and customs agencies should pay attention to natural resource conservation, prohibiting illegal trade of endangered species and their ready-made products.

Clarify the authorities and responsibilities of the local level agencies. The division of authority and responsibility is similar to the ones at the State level. Biodiversity conservation should be administered consistently from top to bottom.

Establish Effective Coordination between Different Departments

In China, with the vast area, extensive and complex sets of governmental and other institutional layers, the problem of institutional fragmentation is immense. Overcoming this obstacle requires authority from the highest level, and equally important, the willingness to exert that authority. To accomplish this, the State Council should clearly define and designate the functions and responsibilities for biodiversity conservation for all functional sectors, so that the full power of their coordinated activities can be developed. The principle of full consultation will be practiced, however, in project planning and fund raising and allocation. It is recommended that the State Council establish a formal procedure whereby biodiversity coordination issues which cannot be resolved by NEPA will be brought to the SEPC for discussion and arbitration, with the final decision making authority resting with the State Council itself.

The coordination among local agencies follows the format of the State-level agencies, with functions and responsibility clearly divided. All agencies work according to the responsibility division. Major issues will be resolved through a consultation process among the local leading groups. Local agencies should report to their corresponding departments at the State level, so that the professional connection between those in the field and central administration can be strengthened.

Clarify Functions of Nongovernmental Organizations

Enlist the help of academic and research groups. The academic bodies such as different societies, associations and research groups should take active part, under the arrangement of different governmental agencies, in planning projects, scientific and technical consultation, appraisal of research results, and publicity of knowledge on biodiversity conservation. Maximum use should be made of these groups' potential for facilitating public information and awareness about biodiversity conservation.

Mobilize public groups. Many other organizations at different levels under the national youth, women and children federations, villagers' committees in rural regions, and other social bodies can mobilize the broad public and communities at grass roots level to be concerned about and support biodiversity conservation.

Define and Establish Institutional Arrangements for Ongoing National Biodiversity Evaluation and Information Exchange

Several institutional arrangements have been identified in previous sections. These include the arrangements for coordination between units of government and institutional arrangements for monitoring of compliance.

In order to ensure a continuous and fruitful implementation of this action plan, the SEPC should sponsor and organize special meetings on biodiversity conservation periodically, setting up supervisory and management regulations, and organizing regular monitoring campaigns so that issues can be discovered and resolved. In the meantime, the existing supervisory and assessment mechanisms for biodiversity conservation in all relevant governmental agencies need to be strengthened, with databases to be set up for information collection, assimilation and publication.

At present, failure to exchange information between institutions and ministries is a major problem. To facilitate the timely exchange of relevant information and to assure that the needed information is collected and available for implementing the BAP, a comprehensive National Biodiversity Conservation Information Network (NBCIN) should be established for collecting and coordinating selected information from all the relevant sectors. This system would make use of the information systems of all the individual institutions involved in biodiversity, especially those at the national level, and each agency would remain responsible for its own in-

formation system, but the information should be in a form compatible with all the others and the information transfer and compilation would be facilitated. SEPC could designate a lead agency to coordinate the network, among other functions, providing standardized software to all participating agencies to make their information from different sources compatible, issuing guidelines, and providing feedback of information both through periodic reports and on an as needed basis.

Finally, the BAP should be a living process, not a one-time effort. There is a need to continually monitor the status of the nation's biodiversity and its efforts to conserve it, and to adjust the policies, laws, regulations and management in response to changing conditions. Therefore it is recommended that SEPC designate NEPA to set up a participatory means to continue the BAP process, using the monitoring and information networks discussed above, and preparing periodic reports on the status and trends of the nation's biodiversity and its conservation for government and the public.

Scientific Research

There is a tendency among research institutions to pursue their own research interests independently, often without reference to others in the same field or in the spirit of competition with them. However, the needs for scientific information for biodiversity conservation are urgent and the resources available are limited. Consequently, the research efforts discussed below should be conducted in the most efficient way possible, and maximum use should be made of existing data and facilities.

Define Basic Research Needed for Biodiversity Conservation

Conduct biodiversity surveys and inventories. It is suggested that surveys and inventories of ecosystems, species and genetic resources in all the relevant sectors, be continued. The following actions should be included:

- Complete an inventory and catalogue of different ecosystems, with a full territory coverage of the country, through multi-disciplinary comprehensive investigations carried out jointly by several sectors, or by a specific sector.
- Discover and record new species and new genetic resources, and collect and conserve all necessary data on species resources.
- Revise lists of plants and animals for Red Data books.
- Establish the databases on different types of species, biota and genetic resources.
- Establish a system of biogeographical zoning and biodiversity conservation zoning.

Enhance basic ecological research for different types of ecosystems. The ecological research of ecosystems in China have comparatively weak base. In order to catch up with the advanced international level, in addition to bringing in new knowledge and theory, the following basic research is urgently needed:

- Basic research on the theoretical principles and indexes for assessment of ecological values of different ecosystems and the extent to which they are threatened.
- Basic research for establishing theoretical principles, index system and minimum required protection area for key ecosystems under conservation.
- Basic research on the methodologies for monitoring, assessment and forecast of the impacts on different types of ecosystems caused by human activities, such as chemical pollution, acid rain, global warming, and other physical changes in the environment.
- Basic ecological research on restoration of damaged ecosystems and the feasibility of diversification or improvement of agricultural, forest, steppe and marine ecosystems.
- Basic ecological research on energy and material flows, and the balance of forest land, plantation and farmland ecosystems, the biological structural dynamics of their underground systems, and the linkage between them and the freshwater body ecosystems.
- Research on landscape ecological functions of different types of ecological systems.

Enhance basic research to enhance species biology and ecology. This research includes the following:

- Research on establishing fundamental principles, index system and assessment methodology to determine the extent to which the species are threatened and to determine the key species for conservation.
- Biological and ecological research for rare and endangered species.
- Biological and ecological research for China's endemic and regionally endemic species.
- Biological and ecological research for domestication of wild species and their return to nature.
- Biological and ecological research to determine the impacts of human activity on species.
- Basic research on physiological, biochemical, behavioral and propagational features.

Enhance basic research on genetic diversity of living organisms. This research will have the following focus:

- Research on identification indices and methodologies for genetic biodiversity of living organisms.
- Research on basic principles and index system to determine the enrichment centers of genetic diversity of living organisms.
- Research on establishing basic principles and index system to determine the extent to which the genetic diversity of living things are threatened.
- Basic biological and ecological research on artificial conservation of biotic genetic resources.

Enhance basic research on social sciences for biodiversity conservation. This research will have the following focus:

- Research on the impacts on biodiversity from socio-economic development and the coordination of development and biodiversity conservation.
- Research on laws, regulations and organizational mechanisms for coordinating the multiple sectors, multiple disciplines and the general public for their participation in biodiversity conservation.
- Research on the role of ethics, culture, religion and customs on biodiversity conservation.

Define Technological Research for Biodiversity Conservation

The technological research for biodiversity conservation will have the following focus:

- Research on in-situ conservation of rare and endangered species.
- Research on ex-situ conservation of rare and endangered species.
- Research on artificial reproduction and returning back to nature rare and endangered species, and species (or varieties) with economic or ornamental value.
- Research on technologies for the long-term storage (in-vitro and at ultra-low temperature) of germplasm of different plants and animals.
- Research on technological measures to avoid adverse impacts on ecosystems from human activities.
- Research on identification methodologies and storage techniques of biodiversity at the individual, cell and molecular levels.
- Research on conservation and storage methodologies of traditional species and varieties resources in cultivation and breeding businesses.

Define Technological Research for Sustainable Utilization of Biological Resources

This technological research will have the following focus:

- Research on monitoring techniques of wildlife populations and their changes under influence of human activities.
- Research on determining the thresholds for the wildlife sustainable utilization and their optional economic utilization based on the market demands and wildlife population dynamics of some particular species.
- Research on trade management and coordination mechanism for rare and endangered species.

- Research on sustainable utilization techniques of biological resources in fragile and sensitive regions.
- Research on high efficiency utilization techniques of biological material and production techniques of their substitutes.
- Research on artificial reproduction and utilization of wildlife and extraction techniques of living bodies of utilizable biological substances.
- Research on biological engineering techniques aimed on improving and enhancing utilization benefits of biological resources.
- Research on production techniques for agriculture, forestry, husbandry and fishery for their sustainable development.
- Research on techniques of oceanic farming and plantation.

Define Technological Research for Biodiversity Management

The key topics are as follows:

- Research on effective structure and operational mechanisms of management system for biodiversity conservation.
- Research on functional zoning and type-related management methodologies of different types of ecosystems.
- Research on classification methodologies and type-related management methodologies of nature reserves.
- Research on establishment norms and management methodologies of species reproduction centers.

Develop Ways to Communicate Results of Research to Management

To date, the research organizations and personnel are available under all relevant governmental agencies and sectors at different levels. Those agencies and sectors have also established information systems and exchange means of their own in the form of professional newspapers, magazines, technical extensions and training facilities. While there are no substantial legal or physical impediments for research institutions and scientific researchers to exchange their research results, it is notable that little such exchange occurs in China. But beyond the exchange between researchers, there is a critical need to disseminate relevant research results to management to accomplish the biodiversity conservation efforts proposed by the BAP. To help achieve this the following intermediate links and linkage means should be improved:

Enhance the role of the panel of consultants. Expert panels for biodiversity conservation should be set up in governmental agencies at the central, ministerial, provincial and municipal levels to assist the corresponding leading groups in their work. The opinions of panels of experts should be listened to and taken into consideration when the leading groups are working on preparing and implementing laws, regulations and plans of biodiversity conservation.

The expert panels should do their best to apply results of the new research in implementing the BAP and in improving implementation management. All relevant sectoral agencies and departments should also make full consultation of the opinions of the expert panels during the process of preparing socio-economic comprehensive development plan and setting up guiding principles, policies and practical measures in connection with the biodiversity conservation so that these plans are well coordinated.

Improve management mechanisms for scientific and technical work. There is need to accelerate the reform of mechanisms for scientific and technical management institutions which is going in this direction, to strengthen the transfer of research results to applications, to increase the financial investment to this transfer, and to establish policies and measures favorable for this transfer.

Enhance the professional knowledge of decision-makers and management personnel in biodiversity conservation. To improve the recognition of biodiversity conservation by policy-makers, administrators at all levels, and ordinary

citizens, publicity and education efforts will become necessary. The intent is to permeate all areas of life with the results from research on biodiversity conservation.

Enhance technical extension efforts for disseminating and extending useful research results. The dissemination of research results have been slow, particularly results that do not bring immediate economic profit. Greater effort should be made to improve linkage between research and application and, particularly, widespread popularization of research results by making it mandatory. Research results should also be translated into simple and easily understood format, and the media should be used to disseminate the information.

Clarify Responsibility Allocation and Financial Budgeting

Assign division of labor. The division of responsibility for scientific research is fairly clear in China. The 24 basic research studies identified above would be carried out by the Chinese Academy of Sciences and the scientific research institutes under different ministries and sectoral departments, and universities. Social sciences studies would be carried out by the Chinese Academy of Social Sciences.

The 20 or so technical and methodological research studies proposed for implementation would be carried out by the research institutes under NEPA, MFO, MOA, SOA, MOC, and other governmental agencies. Some studies would be conducted jointly with the Chinese Academy of Sciences and research institutes at the provincial and municipal levels.

Set up implementing steps. The 44 studies listed above have all significant scope and contents. Their implementation cannot be completed within a short time, since the sciences and technologies are still progressing. So, their implementation should be arranged annually to facilitate the continuous development of these key aspects of the sciences and technologies with the purpose of serving the achievement of the general goal of the action plan.

Technical Extension and Demonstration

Set Up Demonstration Sites

Demonstrate and extend Man and Biosphere nature reserves and World Heritage nature reserves. Altogether nine State-level nature reserves are included in the Man and Biosphere and World Heritage programs. The operation and management of these nine nature reserves have been sufficiently successful that they have drawn attention from the international community. Their successful experience should be summed up and extended nationwide to all nature reserves and protected areas.

Demonstrate and extend well-operated nature reserves under different ministries and governmental agencies. China's nature reserves are managed by a variety of ministries and agencies (*see* Chapter 2). Among these reserves, some are being managed better than other. It would be useful to identify those reserves for demonstration and dissemination to other reserves.

Demonstrate and extend the successful experience in biodiversity conservation achieved and accumulated by different ministries and governmental agencies. Since many ministries and agencies have involved in some form of biodiversity conservation and management for a number of years, it would be useful to compile successful experiences of these agencies and exchange those experiences at regular workshops and meetings (*see* above). Exemplary models could be chosen from the examples for more widespread demonstration and extension.

Develop Conservation Technology Extension

Extend in-situ conservation techniques for rare and endangered species. These in-situ technologies include construction of artificial nests and artificial feeding, nutrient sources production and conservation techniques, man-added repro-

duction techniques, control of natural hazards, post-hazard rescues and others. Relevant experience and techniques need to be summed up and documented for technical extension.

Extend techniques of artificial reproduction, developed by the zoological parks and botanical gardens. A large amount of experience has been accumulated by some 110 botanical gardens and 170 zoological parks in artificial reproduction techniques. All these experience and techniques need to be summed up and documented for technological extension.

Extend management and planning techniques for nature reserve establishment and operation. A large amount of experience has been achieved and accumulated in establishment, operation and management of many nature reserves, including their core zones, buffer zones and peripheral zones. This zoned management is essential for core zone conservation. All of this kind of experience needs to be summed up and documented for technological extension.

Extend pollution control techniques. In the past 20 years or more, techniques have been developed in the handling and treating of industrial and urban wastes and agricultural pesticides to prevent and control environmental pollution. In so far as these apply to biodiversity conservation, they should be developed further and documented for technological extension.

Extend comprehensive land development techniques. Successful experience and techniques have been achieved and developed in the country in reconstruction of large-scale ecological environment, comprehensive development of river basins, farm land restoration as well as conservation and development of forest lands, grassland, wetlands and freshwater bodies, which have significance to biodiversity conservation. All of these experience and techniques need to be summed up and documented for the technological extension.

Extend environmental protection techniques. A large amount of applied techniques have been developed in the country for environment monitoring, evaluation, restoration and comprehensive planning. The relevant experience and techniques need to be summed up and documented for technological extension.

Extend techniques in comprehensive energy development and construction in rural areas. A large amount of successful experience and applied technique have been achieved and developed in the country concerning energy comprehensive development in rural areas, including energy-saving stoves, biomass gas utilization, fire wood forest planting, solar energy and other renewable energy sources (including wind, geothermal tidal and hydropower energy) utilization. These experiences and techniques can assist biodiversity conservation through reducing demand for fuel wood and reducing pollution, and they should be summed up and documented for technological extension.

Extend techniques for collecting, conserving, assessing and protecting biological genetic resources. China has accumulated considerable experience in germplasm collection, assessment, and storage through the establishment of a long-term and several mid-term crop germplasm banks and nurseries. These techniques should be more widely disseminated not only in China but also abroad.

Extend Techniques for Rational Resources Utilization

Improve techniques in artificial reproduction of wild species and release back to nature. A great deal of work has been done by the research institutes of the Ministry of Agriculture, nature reserves, zoological parks and botanical gardens for the artificial reproduction of wild species and releasing them back to the nature. Some of these efforts have contributed positively to protect wild species and to increase biological resources. Yet others might have had adverse ecological impacts. Therefore, careful differentiation should be made between these studies and only the technologies which actually benefit biodiversity conservation should be disseminated.

Improve production techniques for the sustainable development of agriculture, forestry, husbandry and fishery. A great deal of experimental work has been completed in the ecological agriculture, husbandry and fishery in China in the past years. Many useful technologies have been developed in regard with comprehensive planning, ecological engineering, conservation cultivation, land erosion control, rational rotation and intercrop-ping, diversified economy, recycling of rural resources and wastes, as well as integrated pest management (IPM). Where these technologies have had beneficial impacts on biodiversity conservation they should be summed up and documented for dissemination.

Publicize Biodiversity Management Experience

Publicize biodiversity management experience at grassroots level. The nature reserves and relevant management units in county, district and village level are the grass roots units which handle directly biodiversity conservation work, facing the broad public in their enforcement of different laws and regulations and implementation of different measures stipulated by the action plan. They deal directly with concrete problems of conserving species, habitats and genetic resources. By doing all this, they have accumulated a large amount of experience which is worth summing up and dissemination. In this respect, the experience exchange and extension means should be improved to promote the experience popularization and extension.

Publicize management experience between ministries. The comprehensive planning and management experience of all management agencies at the ministerial, provincial and State level should be summed up regularly and provided for technological extension.

Clarify Responsibility Allocations and Implementing Steps

Identify means for improving technologies. All of the relevant ministries should put the extension of techniques into their own science and technology work plans, with enhanced organization and management to promote extension efforts. Some important items should be listed in the State science and technology development plan by SSTC, as organized key extension projects.

- Different extension means should be adopted according to the difference in direct economic benefits.

  Many biodiversity conservation technologies and experience do not provide direct economic benefits. For these kinds of technologies, relevant governmental agencies should allocate the required budget to the technology developers, promoters and receivers-users for their dissemination.

  Some biodiversity conservation technologies and experience provide a certain amount of economic benefits. For these kinds of technologies, the governmental agencies should provide some financial support to their developers and promoters and some subsidies or preferential policies to their receivers-users.

  Some biodiversity conservation technologies and experience provide significant economic benefits. For these kinds of technologies, governmental agencies should organize technical market for these technologies and provide some preferential policies for their promotion.
- Ordinary biodiversity conservation technologies that provide positive results should be disseminated through different training sources.
- Specific biodiversity conservation technologies that have either direct economic benefits or close relationship with economic development can be disseminated through the existing technical extension systems in the relevant governmental agencies. The biodiversity management staff should cooperate with the production management staff to promote adoption of these biodiversity conservation techniques by production departments.
- Working meetings on biodiversity conservation at different levels can be used to summarize and to disseminate useful experience. These working meetings on biodiversity con-

servation can be held once every year at the grassroots level, once every one to two years at the provincial, municipal and ministerial levels, and once every three years at the central government level to exchange experience and to reward units and personnel with good performance and distinguished achievement.

Define implementing steps. Some 15 technological extension and experience popularization projects are listed above, all having broad coverage and wide contents. Since all technologies are in continuous development and their extension cannot be completed by one-time efforts, their extension should be included in annual working plans, and will require many years of effort for completion.

Publicity and Education

In general, people want government policies that do not require them to change their lifestyles, provide material benefits and development, and provide benefits today that will be paid for later. Politics to conserve biodiversity would be the opposite, requiring fundamental changes in people's relationship with the environment, restricting access to resources, foregoing material benefits, and paying today for abstract future benefits. Unless the public is convinced of the value of conserving biodiversity, and the government changes its policies accordingly, the chances of saving biodiversity are small. Conservation education has to be started in school with young children, and this will require training programs now for primary and secondary school teachers, incorporation of nature conservation and environmental protection into the provincial and national school curriculum, and production of suitable teaching materials. The importance of this cannot be underestimated, and it should lead to a wide range of activities making use of all possible means of communication.

Develop Publicity Program

Biodiversity conservation is a new technical term for many citizens in China. At present, many people are eager to develop and utilize natural resources and do not have enough understanding in the importance of biodiversity conservation. They have very limited knowledge of the laws and regulations issued by the government for biodiversity conservation purpose. Therefore, regular and common efforts are needed to raise the awareness of the society on the importance of biodiversity conservation and to enhance their participation in the implementation of the BAP.

For the purpose of enhancing public awareness of biodiversity conservation, various means including radio broadcast, television programs, movies, newspapers, magazines, art and cultural performance, knowledge competitions as well as youth and students' summer camps can be used for publicity of biodiversity conservation.

Strengthen the mass media. Mass media is probably the most effective and efficient means to publicize the importance of biodiversity conservation to the general public. To more fully utilize the mass media, the following should be considered:

- Provide experience and training to television producers and cameramen in films and filming about wildlife and biodiversity conservation. Work to change the presentation of wildlife films so that the commentaries are more substantial, providing solid information and debates for the conservation of biodiversity, and are followed perhaps by filmed panel discussions on the contents and the issues raised.
- Provide overseas study tours for selected teachers, trainers of teachers and TV cameraman, scriptwriters and producers.
- Establish mobile biodiversity conservation units able to show films in villages.
- Produce films on alternative rural economic development projects that are helping to reduce the impact of human activities on biodiversity and show them in the villages as well as on television.
- Work with local theater groups to write and perform plays with a biodiversity message.

- Train museum curators in new approaches to displaying biological specimens and information about biodiversity.
- Fund redesign of municipal and other institutional museums.
- Introduce the importance of biodiversity conservation into signs and leaflets available in zoos and botanic gardens.
- Publish leaflets and articles in newspapers and magazines.
- Continue existing public awareness programs, e.g., Bird Loving Week, and enlarge the program of summer camps for school children in nature reserves.

Develop program for publicity on specific occasions. Some important commemoration days including the "World Environment Day," the "World Earth Day," and other important commemoration days on environment protection, and occasions before and after important meetings can be used to launch public programs of biodiversity conservation.

Provide public information at special sites. Special publicity plates, posters and placards on biodiversity conservation should be installed on specific sites including main road crossings leading to nature reserves, zoological parks, botanical gardens, public parks, nature museums and scenic spots. These plates, posters and placards can be used to introduce the basic knowledge on protected species, habitats, main laws and regulations of biodiversity conservation and others. These special sites can be used as in-situ classrooms for students in primary and secondary schools to present knowledge of biodiversity conservation to them.

Develop program for lectures and consultation by experts. During preparation of programs of mass media and art and cultural performance, experts of biodiversity conservation can be invited to provide technical guidance and consultation to improve the quality of the programs.

For some economic issues and economic planning, experts of biodiversity conservation can be invite to join such events to make technical presentations or consultations so that the biodiversity conservation contents can be incorporated and included in those programs and projects.

Develop Education Program

Extend programs in higher education. In universities and colleges of higher education for environment protection, forestry, agriculture oceanic administration and urban-rural construction, the teaching material should be prepared and curricula should be arranged in accordance with the action plan. In two or three universities or colleges with good conditions curricula for master degree and doctorate degree studies should be organized and provide for young students. Graduate students and visiting scholars should be sent out for advanced studies in the biodiversity conservation domain.

Extend programs for technical schools. In technical schools for environment protection, forestry, agriculture, oceanic administration and urban-rural construction, basic courses and progressional curricula should be made available for biodiversity conservation and teaching material should be prepared in line with the requirements set by the action plan.

Extend programs for secondary and primary schools. In teaching material on natural knowledge and biology of all secondary and primary schools the basic knowledge on biodiversity conservation should be included for young students. The field teaching and studies will be carried out, taking advantage of nature reserves, conservation spots and all the biodiversity conservation–related places.

Extend programs to teacher training. The awareness and acknowledgement of biodiversity conservation by teachers is the first important step for biodiversity education program. Unfortunately, most teachers at school are not familiar with this new concept. The priority is to develop appropriate short courses and introduce these courses to teachers particularly in primary and secondary schools.

Expand Professional Training Programs

Assess needs at various levels.

- Professional training of working staff engaged in biodiversity conservation. Starting from the early 1950s there have been some nature conservation programs carried out by the Ministry of Forestry and the Chinese Academy of Sciences and a large contingent of experienced working staff have been built up. Yet other ministries and governmental agencies started their biodiversity conservation activities only late in 1970. Since the working institutions were organized in rush and a large percent of employed personnel could not get chance for training, many of them lack the required professional knowledge and skills.

  Many relevant ministries and government agencies started their environment protection activities in the 1970s and established their environment protection training centers for their own managerial and professional staff. Yet all teaching facilities and teachers are not biodiversity conservation-oriented, and hence should be strengthened for these purposes.
- Professional training of managerial and non-professional staff. Among decision-making and ordinary non-professional staff only few of them received training on the biodiversity conservation which causes a gap between the economic development and the biodiversity conservation. In many cases the Customs staff, public security police, mass media and education staff have very limited knowledge of biodiversity conservation. Except for the professional staff engaged in the work in nature reserves, all managerial staff in governmental agencies and institutions at and below the provincial level lack specific knowledge on biodiversity conservation.

Develop training programs and facilities.

- Training of managerial staff at high levels. A biodiversity conservation training center for decision-making managerial staff at the ministerial and department levels should be established under the direction of NEPA. The training program should be based on the BAP. It is expected that all relevant staff could trained at least once within three year time period.
- Training of economy-related managerial staff at medium and grassroots levels. A large-scale training campaign should be launched for all managerial staff of economic management in all governmental agencies at the ministerial, provincial, municipal and county levels, using the environment protection training centers existing under different ministries and government agencies in accordance with the materials set up by the action plan. It is expected that all relevant managerial staff can be trained at least once within five years. The public security police, mass media staff and the Customs staff working in biodiversity conservation-related fields should be trained by the existing training courses provided by different environment protection governmental agencies while other managerial staff in other governmental agencies should be trained by the training courses under the corresponding ministries and departments of their own.
- Training of biodiversity conservation professional staff of different ministries and governmental departments. For this purpose the following measures should be adopted: (i) strengthen the training facilities in technical training centers under different environment protection departments so that these training centers can better meet the training requirement on biodiversity conservation; (ii) strengthen the teaching staff in different types of technical training under different environment protection departments so that these training centers can be effective to raise the working level of the biodiversity conservation professional staff. In this, experienced experts in biodiversity conservation should be invited to give lectures at training courses as teachers and to prepare teaching material in line with the requirements included in the BAP; (iii) use the technical training centers of relevant environmental protection departments under different ministerial and provincial agencies to provide first round technical training to all their professional staff

working on biodiversity conservation within five years; and (iv) include the examination scores and records of all trainees in their personnel files and performance and achievements afterwards can be tracked.

Set Up Implementing Steps

In the above 3 sections there are altogether 10 programs, including 4 programs in public information, 3 education and 3 programs in training. All these programs cover different agencies and departments at both central and local levels. Education and publicity is an ongoing work that cannot be finished within a designated time, and needs to be planned annually.

Identify Sources of Finance

Implementation of the Biodiversity Conservation Action Plan of China will require a large source of funding. It will need to be sought form all possible financing channels.

Determine Central Government Investment

- Implementation of the Biodiversity Conservation Action Plan of China should be included in the long-term prospective planning, five-year planning and all annual plans of the nation's economic and social development so as to secure the financing for its key items for implementation.
- The implementation of both basic research and technical research should be included in the nation's both long-term and short-term scientific research programs and given full financial support.
- All relevant ministries and governmental agencies should include the biodiversity conservation projects in their administration plans and allocated the required funds for management of nature reserves and enforcement of relevant laws and regulations.

Determine Local Government Investment

All biodiversity conservation projects of local and regional origination and operation of local nature reserves should be included in the both long-term and short-term plans of socio-economic development of the relevant local governmental agencies and departments so that the required financing for their implementation be secured appropriately.

Determine Social Contributions

- A part of all the income from the rational utilization of resources in nature reserves should be set aside for biodiversity conservation.
- All the income from fines collected for biodiversity damage should be devoted to biodiversity conservation.
- Donations from social organizations, enterprises and individuals should be devoted to the biodiversity conservation fund.

Determine International Assistance

- With the assistance of international institutions and conventions, financial assistance should be obtained from all possible international sources to support the biodiversity conservation projects.
- After the completion of the BAP and finalization of its priority projects of international significance, all relevant international organizations societies and communities can be invited to join some fund raising meetings so that the main contents of the action plan can be presented to them and some supportive funds can be pledged.

Determine Required Investments

Because of China's immense size and the magnitude of the needs to conserve its biodiversity, the projects that are needed to implement the BAP are numerous and require considerable investment. Among the priority projects listed and described in Annex 3, there are a number of projects for protection of ecosystems, species and genetic resources which require one-time investment in immediately. Other types of projects include publicity, education, training, scientific research, technical extension, international cooperation and management, which require longer-term but continued annual finan-

cial allocations. It is anticipated that these annual requirements will gradually increase along with the development of the national economy. The individual components of the overall budget should be developed by the relevant sector agencies and should be part of the process of launching the BAP.

Increase International Cooperation

Improve Multilateral Cooperation

Cooperate with United Nation organizations and other international organizations.

- For implementation of the long-term international cooperation, relationships should be maintained with organizations such as UNDP, UNEP, and the World Bank (that provided support, under the GEF, to the Chinese Government for preparing the action plan). On the Chinese side, NEPA, jointly with other relevant agencies, will coordinate technical issues with international organizations; and Ministry of Finance will be responsible for the financial issues of policy and project-related follow-up actions.
- In arranging the economic and technical cooperation with the World Bank, the Asian Development Bank and other countries, the Chinese Government will cooperate actively with them on the environment impact assessment and elaboration of protective and preventive measures for biodiversity conservation.
- In the economic and technical cooperations with FAO, the United Nations Education, Science and Cultural Organization (UNESCO), the International Marine Organization (IMO), and other organizations, relevant State and ministerial agencies should actively cooperate with the above international organizations on all issues in connection with the biodiversity conservation, on the basis of the BAP.
- All relevant State and ministerial agencies should create favorable conditions to establish and conduct technical cooperations with international biodiversity conservation organizations such as the IUCN, WWF, the International Biodiversity Program of Genetic Resources (IBPGR), the International Crane Foundation (ICF), and others.

Participate in relevant international conventions and fulfill stipulated obligations. The Chinese Government has participated in the International Convention on Biodiversity Conservation, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the Convention on Wetlands with International Importance especially as Waterfowl Habitats, and others, and will fulfill actively all obligations stipulated by these conventions.

Improve Bilateral Cooperation

- The Chinese Government will seek actively the governments of developed countries to provide economic and technical assistance for implementing relevant projects in the Biodiversity Conservation Action Plan and receive technical transfer with favorable conditions.
- The Chinese Government will sign agreements of bilateral and multilateral cooperation on protection of migratory fish, birds and terrestrial animals with its neighboring countries and relevant countries, and conduct active cooperations with them. It will carry out active technical cooperation with friendly countries and regions on reintroduction and exportation of plant ad animals species on the basis of completed feasibility studies and in accordance with relevant international regulations.

Improve Nongovernmental Cooperation

The Chinese Government will carry out different types of technical cooperation and exchange programs on biodiversity conservation with all friendly nongovernmental organizations, academic institutions, scientific foundations, and individuals.

Set Up Implementing Steps

International cooperation will be carried out on a long-term basis, with financial budgetary arrangements for its yearly implementation.

Annex 1
PRIORITY ECOSYSTEMS IN CHINA

This Annex contains lists of Chinese ecosystems that have biodiversity significance and that require priority conservation attention. The lists were developed at the Biodiversity Conservation Action Plan Workshop in November 1992.

Priority Forest Ecosystem Protection Regions and Nature Reserves

Tropical Areas (4)

- Southern Tibet: Zhumulangma Peak Reserve, Motuo Reserve (2 reserves). The area represents the northernmost border of the tropical zone with distinct distribution from tropical forests up to the snowline and rich in endemic species.
- Xishuangbanna: Mengla, Menglun, Mengyang, and Naban Reserves (4 reserves). The only region with wild elephants, high in species diversity, some of which are endemic.
- Southwest Guangxi Zhuang Autonomous Region: Nonggang Reserve (1 reserve). The core region of the Indo-Malayan and Sino-Vietnamese flora zone with plentiful calcareous stone mountains and endemic species, especially white and black leaf monkeys (Prebytis spp.).
- Southern part of Hainan Island: Jianfengling Reserve, Bawanglin Reserve, Diaoluoshan Reserve, and Wuzhishan (Five Fingers) Mountain Reserve (4 reserves). The flora are characterized by Indo-Malayan components with rich species and endemic species especially the gibbons (Hylobates spp.).

Summary: There are altogether 11 nature reserves in 4 regions in the tropic area.

Subtropical Areas (13)

- Southern section of the Hengduanshan Mountain: Gaoligongshan Reserve, Nujiang Reserve, Yaoshan Reserve, Baimaxueshan Reserve, and Ailaoshan Reserve in Yunnan province (5 reserves). The transitional region for the paleophytes of the North Pole and the tropics, with high species diversity and endemism. Well-known as the center of origin and evoluation for mammals, and wide altitudinal differences from subtropical to alpine. Yunnan golden monkey (Rhinopithecus spp.) is concentrated here.
- Northern section of the Hengduanshan Mountain: Wolong reserve, Baishuijiang reserve, Tangjiahe reserve, Baihe reserve, Wanglang reserve, Jiuzhaiguo reserve, Xiazhaizhigou reserve, Huanglongshi reserve, Mingbaogou reserve, Labahe reserve, Fengyongzhai reserve, Mabian-Dafengding reserve, and Meigu-Dafengding reserve in Sichuan and Gansu provinces (13 reserves). The habitats of giant panda and red panda characterized by species diversity and endemism from subtropical to permafrost with scrub forests in the valleys.
- Wulingshan mountain regions: Fanjingshan Reserve and Dashahe Reserve in Guizhou province; Badagongshan Reserve in Hunan province; Jinfoushan Reserve in Sichuan province; and Shennongjia Reserve in Hubei province (5 reserves). The core region of central China flora of the East Asian flora with high species diversity, endemism, and relic species.
- Nanling Mountains: Mangshan Reserve and Qianjiadong Reserve in Hunan province; Huaping Reserve in Guangxi Zhuang autono-

mous region; Jiulianshan Reserve in Jiangxi province; Babaoshan Reserve in Guangdong province; and Meihuashan Reserve in Fujian province (6 reserves). The juncture region of Central China, East China, and South China floras of the East Asian flora with high species diversity and endemism.

- Jiangxi-Fujian mountain region: Wuyishan Reserve (Fujian), Wuyishan Reserve (Jiangxi) (2 reserves). Center of East China flora of the East Asian flora rich in species diversity and endemism.
- Zhejiang mountain region: Western Jianmushan reserve, Longtanshan reserve, Qinliangfeng reserve, and Baishanzu-Fengyangshan reserve (4 reserves). One of the distribution centers of the East China flora and Japanese flora in the East Asian floristic region with rich wild species, especially endemic species.
- Miaoling Mountains: Leigongshan Reserve (1 reserve). Concentrated distribution region of Flous Taiwania, with many other species, some which are endemic.
- Jiuwandashan Mountains: Maolan Reserve in Guizhou province and Jiuwandashan Reserve in Guangxi autonomous region (2 reserves). Maolan reserve is the best preserved subtropical forest in the calcareous stone regions containing many endemic species. Jiuwandashan reserve also contains well-preserved subtropical forests with Yuanbaoshan fir.
- Jiangnan hilly area: Guaniujiang Reserve in Anhui province (1 reserve). Contains high species diversity and endemism
- South China hilly area: Damingshan Reserve and Dayaoshan Reserve in Guangxi autonomous region and Dinghushan reserve and Heishiding reserve in Guangdong province (4 reserves). The transition zone between tropical and subtropical regions with the best protected species around the Tropic of Cancer.
- Qinling and Baoshan Mountains: Taibaishan Reserve, Foping Reserve, and Yangxian County (crested ibis) Reserve in Shaanxi province (3 reserves). The transition region between subtropical and temperate zones with high species diversity and endemism, e.g., pands, golden monkeys, and crested ibises.
- Funiushan Mountains: Baotianman Reserve (Neixian county), Baotianman Reserve (Nanzhao county), and Laojieling Reserve, Longchiman Reserve, Laojunshan Reserve and Shirenshan Reserve in Henan Province (6 reserves). North tropical zone with high species diversity and endemism and various varieties of Yangtao.
- Dabieshan mountains: Mazongling Reserve in Anhui province, Jigongshan Reserve and Dongzhai Reserve in Henan province (3 reserves). Located in the north tropic zone with high species diversity and endemism.

Summary: There are altogether 35 nature reserves in 13 regions in the sub-tropical area.

Temperate Areas (10)

- Changbaishan Mountains: Changbaishan Reserve in Jilin province (1 reserve). The largest temperate forest in China and the center of Changbaishan flora in the East Asian flora with rich species and migratory route of the northeast tiger and sika deer.
- Daxinanling Mountains: Huzhong Reserve in Heilongjiang province; Hanma Reserve and Nuomin Reserve in Inner Mongolia (3 reserves). Located in the northeast, rich in cold temperate forests
- Luliangshan Mountains: Pangquangou Reserve in Shanxi province (1 reserve). The main distribution region for brown-eared pheasant with well-preserved temperate forests and distinct vertical zoning of vegetation.
- Taihangshan Mountains: Zhongtiaoshan Reserve and Jiyuan Reserve in Shanxi province (2 reserves). With well-preserved tem-perate forests mingled with some tropical plant species.
- Yanshan Mountains: Heibi Wulingshan Reserve and Beijing Wulingshan Reserve (2 reserves). Well-preserved forests near the Beijing area.
- Helanshan mountain region: Helanshan Reserve in Inner Mongolia and Helanshan Reserve in

Ningxia Hui Autonomous Region (2 reserves). Mixed forestry and meadow ecosystem with many rare species.

- Qilianshan mountain region: Qilianshan Reserve in Gansu Province (1 reserve). The area provides green cover to regulate water supply for Hexi Corridor with many endemic species of which 39 species are listed for State-level protection.
- Altai mountain region: Hanesi Reserve in Xinjiang Uighur Autonomous Region (1 reserve). Represents landscape of desert, mountain, lake, steppe and forest with many valuable species.
- Tianshan mountain region: Tianchi Reserve in Xinjiang Uighur Autonomous Region (1 reserve). A sample of mixed forest-meadow ecosystem around a high mountainous lake with many valuable species.
- Qinghai-Tibet High Plateau region: Tashikurgan Reserve in Xinjiang Uighur Autonomous Region and Qiangtang Reserve in Tibet Autonomous Region (2 reserves). The area has the broadest and highest meadow in the country providing habitats for many rare and endangered species, representing a natural genebank for high, cold, dry biota.

Summary: There are altogether 14 reserves in 10 regions in the temperate area.

All proposed nature reserves for forest ecosystem are summarized in Table A.1 below.

Priority Grassland and Desert Ecosystem and Nature Reserves

Category I (of International Significance) (6)

- Xilingulei Grassland Reserve, Xilingulei Prefecture, Inner Mongolia
- Arjin-Kokoxili grassland and desert ecosystem nature reserve covering the southern part of Xinjiang, the northern part of Tibet and southwestern part of Qinghai
- Anxi arid desert nature reserve, Anxi county, Gansu Province
- Yili Western Tianshan nature reserve covering Yili, Xinyuan, Hecheng and Gangliu counties, Xinjiang Uighur Autonomous Region
- Eastern Qilianshan Mountain nature reserve covering Wuwei county in Gansu Province and Mengyuan county in Qinghai Province
- Zhuozishan nature reserve, western part of Otoke county, Inner Mongolia

Category II (of National Significance) (9)

- Eastern Tianshan nature reserve, covering Hamiand, Barikun counties in Xinjiang-Uighur Autonomous Region
- Altaishan nature reserve covering Altai and Burjin counties in Xinjiang-Uighur Autonomous Region
- Ganjiahu *Halaxyton ainmodendron* nature reserve covering Kuitun and Jinhe counties in Xinjiang Uighur Autonomous Region
- Dalei Lake nature reserve in New Barhu county, Inner Mongolia
- Mid-Tarim Basin *Populus euphratica* nature reserve covering the area between Weili and Lentai counties
- Korxin sand dune nature reserve in Zhelimu Prefecture, Inner Mongolia
- Tashikurgan nature reserve in Kashi Prefecture, Xinjiang Uighur Autonomous Region
- Arshan-Shitanglin nature reserve in Xin'an Prefecture, Inner Mongolia
- *Stipa baicalensis* and *Pinus sylvestris* var. *monzolica* nature reserve in Hulenber Prefecture, Inner Mongolia

Table A.1: Summary of Proposed Nature Reserves for Forest Ecosystem

Area	Region	Nature reserves
Tropic	4	11
Subtropic	13	55
Temperate	10	14
TOTAL	27	80

Category III (of national significance) (9)

- Bachu *Populus prainosa* nature reserve in Bachu county, Xinjiang Uighur Autonomous Region
- Karameili Ungulas nature reserve in Qitai County, Xinjiang Uighur Autonomous Region
- Ebinai-Qidaoqiao *Populus euphratica* nature reserve, Inner Mongolia
- Ucha ammopiptanthus ana nature reserve, Ucha county, Xinjiang Uigher Autonomous Region
- Gancha grassland nature reserve covering the southern part of Gansu Province and the eastern part of Qinghai Province
- Zhunger Aguiguo-Xinmiao sand dune nature reserve, Yikezhao Prefecture, Inner Mongolia
- Songpan grassland nature reserve, Sichuan Province
- Yanchi sheep nature reserve, Yanchi county, Ningxia Hui Autonomous Region
- Yaxian wild rice reserve, Yaxian County, Hainan Province

Priority Wetland Areas and Nature Reserves

Category A—I (International Importance, Grade I)[1] (5)

- Honghe River nature reserve, Heilongjiang Province
- Bird Island nature reserve in Qinghai Lake, Qinghai Province
- Poyang Lake nature reserve, Jiangxi Province
- Zhalong nature reserve, Heilongjiang Province
- Yancheng nature reserve, Jiangsu Province

Category A—II (International Importance, Grade II) (8)

- Shuangtaizhi estuary nature reserve, Liaoning Province
- Chongmindao Island nature reserve, Shanghai Municipality
- Yangtze River crocodile nature reserve
- Dongting Lake nature reserve, Hunan Province
- Norgai nature reserve, Sichuan Province
- Dalei Lake nature reserve, Inner Mongolia
- Xianghai Lake nature reserve, Jilin Province
- Xinkai Lake nature resreve, Heilongjiang Province

Category A—III (International Importance, Grade III) (3)

- Yanxiang nature reserve, Shaanxi Province
- Yellow River Estuary Delta, Shandong Province
- Shenzha nature reserve, Tibet

Category B—I (National Importance, Grade I) (3)

- Dongchaigang nature reserve, Hainan Province
- Caohai Lake nature reserve, Guizhou Province
- Bainbruk nature reserve, Xinjiang Uighur Autonomous Region

Category B—II (National Importance, Grade II) (6)

- Shenjin Lake nature reserve, Anhui Province
- Nansi Lake nature reserve, Shandong Province
- Momoge nature reserve, Jilin Province
- Lugu Lake nature reserve, Sichuan Province
- Burgan nature reserve, Xinjiang Uighur Autonomous Region
- Longbaotan nature reserve, Qinghai Province

Category B—III (National Importance, Grade III) (4)

- Futian nature reserve, Guangdong Province
- Zhenghu nature reserve, Hubei Province
- Yangtze crocodile nature reserve, Anhui Province
- Tuanbowao nature reserve, Tianjin Municipality

1. Category A means sites of international sigificance; category B, sites of national significance. Grades I, II, and III indicate decreasing order of significance within a category.

Priority Coastal and Marine Ecosystems and Nature Reserves

Island Ecosystems (8)

- Nanji Island nature reserve, Zhejiang Province
- Miaodao Archipelago nature reserve, Shandong Province
- Xisha Archipelago nature reserve, South China Sea
- Weizhou Island nature reserve, Guangxi Zhuang Autonomous Region
- Nan'ao island nature reserve, Guangdong Province
- Dazhou Island nature reserve, Hainan Province
- Zhoushan Archipelago nature reserve, Zhejiang Province
- Laotieshan Snake Island nature reserve, Liaoning Province

Coral Reef Ecosystems (4)

- Sanya nature reserve, Hainan Province
- Donshan nature reserve, Fujian Province
- East Island of the Xisha Archipelago
- Yushu Reef nature reserve, Nansha Archipelago

Esturarian Wetland Ecosystems (7)

- Shuantaizhi (Liaohe estuary) nature reserve, Liaoning Province
- Yancheng nature reserve, Jiangsu Province
- Quanzhou Bay intertidal flats nature reserve, Fujian Province
- Zhongmin Island nature reserve, Shanghai Municipality
- Jiaozhou Bay intertidal flats nature reserve, Shandong Province
- Yellow River Delta nature reserve, Shandong Province
- Western Bohai Bay wetland nature reserve, Liaoning Province

Mangrove Ecosystems (5)

- Shankou nature reserve, Guangxi Zhuang Autonomous Region
- Zhangjiang Estuarian nature reserve, Fujian Province
- Dongzhaigang nature reserve, Hainan Province
- Baichonghe Esturary nature reserve, Guangxi Zhang Autonomous Region
- Qinzhou Bay nature reserve, Guangxi Zhuang Autonomous Region

Annex 2
PRIORITY SPECIES IN CHINA

This Annex contains lists of Chinese species that have biodiversity significance and require priority conservation attention. The lists were developed at the Biodiversity Conservation Action Plan Workshop in November 1992.

Priority Mammal Species

Species[a]	Threat[b]	Significance[c]	Comments
Primates			
N Nycticebus spp.	3	3	common elsewhere
H Rhinopithecus brelichi	1	1	400 stable
H Rhinopithecus bieti	1	1	<2000 decreasing
H Rhinopithecus roxellanae	3	1	>1000 increasing
H Presbytis francoisi	1	1	>600 Guizhou only (other provinces?);
H Presbytis leucocephalus	1	1	decreasing
H Presbytis (all others)	1	3	
H Hylobates hoolock	1	2	also occurs in Burma and India
H Hylobates leucogenys	1	2	also occurs in Laos and Viet Nam
H Hylobates concolor	1	1	<1000(?); now endemic to China, as extinct in Viet Nam
H Hylobates lar	1	3	common in Thailand
Carnivores			
H Canis lupus	2	2	<10,000 in China
H Cuon alpinus	3	2	population highly fragmented
N Ursus atctos	3	3	
H Ursus (arctos) pruinosus	2	1	very distinctive subspecies; probably separate species
H Selenarctos thibetanus	3	3	still widespread but heavily hunted (up to 10,000 wild caught specimens held in captivity)
N Helaretos malayanus	2	3	
H Ailuropoda melanoleuca	1	1	
H Ailurus fulgens	2	2	few thousands
H Martes zibellina	2	3	biodiversity significance because Chinese populations autochtonus and not hybridized as result of restock ing (as in Russia)

a. H indicates species of international conservation importance; N indicates species of national conservation importance.
b. Ratings of threat indicate: 1 critically threatened; 2 highly threatened; and 3 threatened. In the case of H rating, level of threat reflects the global situation. In the case of N, level of threat reflects the situation in China only (i.e., the taxon may be threatened in China, but safe elsewhere).
c. Ratings of biodiversity significance indicate: 1 extremely high; 2 very high; and 3 high.

Priority Mammal Species (continued)

Species[a]	Threat[b]	Significance[c]	Comments
N Martes foina	2	3	rare in China but common elesewhere
H Mustela strigidorsa	2(?)	3	survey needed
N Gulo gulo	3	3	
N Lutra spp.	2	3	heavy fur trade
N Arctictis binturong	2	2	restricted range in China but common in Southeast Asia
H Chrotogale owstoni	2	3	
H Prionodon pardicolor	3	3	still quite common in Guizhou
N Lynx lynx	2	2	
H Felis bieti	2(?)	2	survey being carried out by Provincial Forest Department
H Felis temmincki	2(?)	2	non-endemic but Chinese subspecies unique among all cats in occurring in five sympatric color morphs
H Panthera pardus spp.	1	2	any reintroduction of Siberian tigers should rest on absolutely confirmed genetic purity of animals
H Panthera pardus orientalis	1	1	one of the world's most threatened cats
H Panthera tigris amoyensis	1	1	extremely threatened; captive breeding needs to continue
H Panathera uncia	2	2	
Ungulates			
H Neofelis nebulosa	2	2	
H Equus hemionus	2	2	increasing
H Equus kiang	3	1	increasing
H Camelus ferus	1	1	field study ongoing (Academia Sinica); threat of hybridization with domestic camels; needs genetic study
N Tragulus javanicus	2	3	
H Moschus moschiferus	1	3	all Moschus species heavily hunted
H Moschus berezovskii	1	1	endemic; declining
H Moschus chrysogaster (incl. sifanicus)	1	2	
H Moschus fuscus	1	2	
H Hydropotes inermis	1	2	sharp decline in recent years (habitat destruction; hunting); extinct in Sichuan
H Muntiacus muntjak nigripes	1	3	distinctive subspecies; Hainan
H Muntiacus reevesi	2	3	still widespread but declining
H Muntiacus crinifrons	1	1	little known; certainly endemic
H Muntiacus gongshanensis	2	2	
H Elaphodus cephalophus	3	1	still many thousands
N Cervus porcinus	1	2	
H Cervus eldi	1	2	100 not clear whether declining or increasing
H Cervus nippon	2	2	very threatened in the wild; many in farms but purity of farm stock unclear
H Cervus albirostris	3	1	>1000 increasing in the wild
H Cervus elphus wallichi	1	3	exact status unknown
H Cervus elaphus yarkandenis	1	3	declining
H Elaphurus davidianus	3	1	
N Alces alces	1	3	
H Bos mutus	3	1	hybridization a problem in some areas
N Bos gaurus	1	3	

Priority Mammal Species (continued)

Species[a]	Threat[b]	Significance[c]	Comments
N Procapra gutturosa	1	3	still common in Mongolia
N Procapra picticaudata	2	2	still thousands but declining
N Procapra przewalskii	1	1	survey urgently needed
H Pantholops hodgsoni	2	1	still numerous but heavy (and increasing) hunting
H Budorcas taxicolor	3	2	two endemic subspecies increasing
N Capricornis sumatraensis	3	3	still quite common
H Naemorhaedus cranbrooki	2	2	still quite common but heavy hunting
H Naemorhaedus goral caudatus	2	3	very low numbers
H Naemorhaedus g. arnouxianus	3(?)	3	endemic subspecies
N Naemorhaedus g. (other subsp.)	3	3	
N Capra ibex	3	3	border case for inclusion, as not very threatened
H Pseudois schaeferi	1	1	probably less than 100; reserve and conservation action urgently needed
H Ovis ammon polii	1	1	
H Ovis ammon hodgsoni	2	2	
N Ovis ammon (other subsp.)	3	2	
N Elaphas maximus	1	3	
Restricted range of rare endemic species among the following orders:			
Lagomorphs			
Insectivora, especially:			
H Hylomys bainovs	?	1	endemic; Hainan
Chiroptera			
Rodentia, especially:			
H Trogopterus xanthipes	?	1	endemic genus
H Aerates malanopterus	?	1	endemic genus
H Petaurista hainanus	?	1	endemic; Hainan
H Petaurista alborufus	?	1	endemic

Priority Bird Species

Grade A-I (43 species)

Nipponia nippon
Ciconia nigra
Merguns squamutus
Grus nigricollus
Grus juponensis
Grus monacha
Grus vipilo
Grus leuncogeranus
Grus antigone
Crossoptilon mentschuricum
Tetrao parvirostris
Tetrastes sewergew
Tetracphasis cbseurus
Arborephila rufilpectus
Arborphila arlens
Tragopan melanocephalus
Tragopan satyra
Tragopan blythii
Tragopan caboeti
Lophophorus impejamus
Lophophorus selateri
Lophophorus thuaysili
Lophura swinhoei
Syrmaticus humiase
Syrmaticus ellioti
Syrmaticus mikado
Polyplectron bicalcaratum
Pavo muticus
Otis tarda
Otis tetrax
Otis undulata
Aquila chrysectos
Aquila helica
Haliaeetus leucoryphus
Haliaeetus albicilla
Haliaeetus pelagicus
Pseudotyps bengalensi

Priority Bird Species (continued)

Gypaetus barbatus
Faloc altaicus
Egretta eulophotes
Larus relictus
Diomedea albatrus
Fregata andreswsi

Grade A-II (15 species)

Tragopan temminckii
Crossoptilon crosscptilon
C. auritum
Lophura leucomelana
Gallus gallus
Syrmaticus reevesil

Chrysolophus amherstiae
C. pictus
Grus grus
G. canadensis
Anthropoides virgo
Threskiomis aethiopica
Platalea minor
Cygnus cygnus
C. olor

Endemic Species in China

Grade A (65 species)

Arborophila crudigularis
Bambusicola thoracica
Melanocorypha maxima
Spizixos semitorques
Pycnonotus sinensis
pycnonotus taivanus
Cissa caerulea
Podoces hendersoni
Podoces biddulphi
Pseudopodoces humilis
Luscinia ruficeps
Luscinia pectardens
Tarsiger johnstoniae
Phoenicurus alaschanicus
Myiophoneus insularis
Turdus kessleri
Turdus feae
Turdus mupinensis
Moupinia poecilotis
Babax waddelli
Babax koslowi
Garrulax maesi
Garrulax davidi
Garrulax maximus
Garrulax poecilorhynchus
Garrulax canorus
Garrulax elliotii
Garrulax henrici
Garrulax formosus
Liocichla streerii
Acdinedura souliei
Alcippe striaticollis
Alcippe ruficapilla
Heterophasia auricularis
Yuhina diademata
Yuhina brunneiceps
Paradoxornis paradoxus
Paradoxornis conspicillatus
Paradoxornis webbianus
Paradoxornis fulvifrons
Paradoxornis heudei
Rhopophilus pekinensis
Acrocephalus sorgnophilus
Regulus goodfellowi
Seicercus intermedius
Seicercus cognitus
Leptopuecile elegans
Rhinomyias brunneata
Niltava davidi
Niltava hainana
Parus holsti
Parus venustulus
Parus sperciliosus
Parus davidi
Aegithalos fuliginosus
Sitta villosa
Montifringilla taczanowskii
Montifingilla ruficollis
Carpodacus eos
Carpodacus trifasciatus
Carpodacus roborowskii
Urocynchramus pylzowi
Emberiza jankowskii
Emberiza koslowi
Latoucheornis siemsseni

Grade B (164 species)

Podiceps auritus
Podiceps grisegena
Pelecanus onocrotalus
Pelecanus philippensis
Sula sula
Sula leucogaster
Phalacrocorax pelagicus
Phalacrocorax niger
Egretta sacra
Gorsachius magnificus
Ixobrychus minutus
Ibis leucocephalus
Plegadis falcinellus
Platelea minor
Brata ruficollis
Anser albirons
Cygnus columbianus
Aix galericulata
Gyps himalayensis
Elanbus caeruleus
Aviceda jerdoni
Aviceda subcristata
Pernis apivorus
Milvus milvus
Haliastur indus
Accipiter gentilis
Accipiter badius
Accipiter soloenis
Accipter trivirgatus
Accipiter nisus
Accipiter virgatus
Buteo rufinus

Endemic Species in China (continued)

Buteo nemilasius
Buteo buteo
Buteo lagopus
Butastur teesa
Butastur indicu
Butastur liventr
Spizaetus nipalensis
Aquila rapax
Aquila clanga
Aquila fasciata
Aquila pennata
Aquila kiencril
Ictinaetus malayensis
Icthyphaga humilis
Sarcogyps calvus
Aegypius monachus
Circus cyaneus
Circus macrourus
Circus pygargus
Circus melanoleucos
Circus aeruginosus
Circus spilonotus
Cincaeltus ferox
Spilornis cheela
Pandion haliaetus
Microhierax caerulescens
Microhiereax melanoleucos
Falco cherrug
Falco gyrfalco
Falco peregrinus
Falco subbuteo
Falco severus
Falco columbarius
Falco vespertinus
Falco naumanni
Falco tinnunculus
Lyrurus tetrix
Lagopus lagopus
Lagopus mutus
Dendrogapus falcipennis
Tetrastes bonasis
Tetraogallus tibetanus
Tetraogallus himalayensis
Ithaginis cruentus
Lophura nycthemera
Pucrasia macrolopha
Crex crex
Porzana parva
Porzana bicolor
Coturnicops noveboracensis
Metopidius indicus
Numenius minutus
Tringa guttifer
Glareola lactea
Larus minutus
Chlidonias nigra
Sterna aurantia
Sterna zimmemanni
Pterocies orientalis
Treron apicauda
Treron sieboidil
Treron formosae
Treron phoenicoptera
Treron curvirostra
Treron pompadora
Treron bicincta
Ptilinopus leclancheri
Ducula aenea
Ducula badia
Columba palumbus
Macropygia ruficeps
Macropygia unchau
Macropygia phasianella
Psittacula krameri
Psittacula alexandra
Psittacula derbiana
Psittacula cyanicephala
Psittacula hinalayana
Psittucula longicauda
Loriculus vernalis
Centropus sinensis
Centropus toulou
Tyto copensis
Phodilus badius
Otus spilocephalus
Otus brucei
Otus rufescens
Otus bakkamoena
Bubo bubo
bubo coromandus
Ketupa biakistoni
Ketupa zeylonensis
Ketupa flavipes
Nyctea scandiaca
Surnia ulula
Glaucidium passerinum
Glaucidium brodiei
Glaucidium cuculoides
Ninox scutulata
Athene noetna
Strix leptogrammica
Strix aluco
Strix uralensis
Strix nebulosa
Also otus
Asio flammeus
Aegolius funereus
Hirundapus cochinchinensis
Hemiprocne longipennis
Harpactes oreskios
Alcedo meninting
Pelargopsis capensis
merops leschenaulti
Merops orientalis
Ptilolaemus tickelli
Aceros nipalensis
Anthracoceros coronatus
Buceros bicornis
Dryocopus javensis
Psarisomus dalhousiae
Serilophus lunatus
Pitta nipalensis
Pitta soror
Pitta cyanea
Pitta brachyura
Pitta moluccensis
Pitta sordida
Pitta oatesi
Pitta phayrei

Priority Reptile Species

Grade A (6 species)

Thermophis baileyi (seen only near hot springs in Tibet, above 2000 meters elevation)
Trimeresurus mangshanensis (largest serpent identified in 1990 in the Mangshan Mountains)
Pelochelys bibroni
Python molurus bivittatus
Varanus salvafar
Chelonia mydas

Grade B (8 species)

Testudo horsfieldi
Shinisaurus crocodilurus
Alligator sinensis
Agkistrodon shedaoensis
Platysternon megacephalum
Cuora trifasciata
Gekko gecko
Trionyx steindachneri

Priority Amphibian Species

Grade A (3 species)

Echinotriton chinhaiensis
Rana tormota
Bueraeria oxycemhala

Grade B (2 species)

Ranodon sibiricus
Andrias davidianus

Priority Fish Species

Grade A (10 species)

Psephurus gladius (Masbens)
Acipenser sinensis Gray
Acipenser dabryanus
hucho bleekeri Kimura
Brachymystax lenok tsinlingensis
Schizothorax taliensis Regan
Cyprinus pellegrini Tchang
Macrura reevesii (Richardson)
Myxocyprinus asiaticus (Bleeker)
Trachidermus fasciatus Heckel

Grade B (11 species)

Gymnocypris przewalskii
Coilia ectenes
Hippocampus kelloggi
Tanichthys albonubes Lin
Banaba flavolabiata
Fugu rubripes
Epinephelus subsp.
Huso dauricus (Georgi)
Acipenser schrencki (Brandt)
Sinocyclocheilus graham (Regan)
Oncorhynchus subsp.

Grade C (8 species)

Lenocypris yunanensis Nicholo
Siniperce chuatsi
Anabarilius alburnops (Regan)
Plecoglossus altivelis T. et, sch
Raja porsoa
Pagrosomus major
Cyprinus micristius Regan
Other species with economic value

Priority Insect Species

Grade I (2 species)

Galloisiana sinensis
Teinopalpus aureus

Grade II (35 species)

Atlasjapyxatlas
Heliogomphusretroflexus
Ophiogomphus spinicorne
Zorotypus sinensis
Zorotypus medoensis
Carabus (C.) lafossei
Carabus (A.) davidi
Cheirotonus subsp.
Allomyrina davidis
Bhutanitis mansfieldi
B. thaidina
Parnassidae
Bhuatanitis ludlowi
B. lidderdalii
B. pulchristata
Luehdorfia longicaudata
L. puziloi
Parnassius subsp.
Papilionidae
Teinopalpus imperialis
Agehane elwesi

Priority Insect Species (continued)

Agehana meraho
Troides A. eacus
T. T. a. kaguya
T. T. helena
T. T. magellanus
Atrophaneura (A.) horishana
Nymphalidae
Sasakia charonda
S. funebris
Luehdorfia chinensis
Parnassius apollo
Antheraea yamamai
Apis cerana
Cordyceps sinensis (insect herb)

Priority Marine Invertebrate Species

Grade A (2 species)

Lingula subsp.
Balanoglossus subsp.

Grade B (12 species)

Ter. coreanica
Cy. figris
Cassis cornuta
Pin. maxima
Tri. cookiana
Panulirus subsp.
Chlamys farreri
Haliotis discus hannai
Perienis aibuhitensis
Tachypleus tridentatus
Stichopus japonicus
Thelenota ananas

Grade C (2 species)

Bra. beicheri
Ostrea gigas

Priority Plant Species

Ptesidoophytes

Adiantum seniforme var. sinense
Cystoathyrium chinense
Sorolepidium glaciale
Isoetes scinensis
Sinoplenis grevilleoides
Sphaeropteris hainanenis

Gymnospermae

Cycas szechuanenis
Cycas guizhouensis
Cycas hainanensis
Cycas micholitzii
Cephalotaxus oliveri
Cupsessus gigantea
Abies beshanzuensis
Abies fanjingshanensis
Abies yuanbaoshanensis
Cathaya argyrophylla
Keteleeria hainanensis
Larix chinensis
Amentotaxus formosana
Amentotaxus yunanensis
Pseudotaxus chienii
Metasequoia glyptostroboieds
Taiwania flousiana

Angiospermae

Acer yangjuechi
Dipteronia dyerana
Mangifera sylvatica
Panax ginseng
Panax zingiberensis
Sinopodophyllum hexandrum
Betula halophila
Calycanthus chinensis
Heptacodium miconioides
Gymnocarpos przewalskii
Bhesa sinensis
Dipentodon sinicus
Helianthemum soongoricum
Calycopteris floribunda
Lumnitzera littorea
Leucomenis decora
Nouelia insignis
Tugarinovia mongolica
Tetrameles nudiflora
Hopea chinensis
Hopea hainanensis
Parashorea chinensis
Vitica guangxiensis
Vitica xishuangbananaensis
Elaeagnus mollis
Rhododendron protistum var. giganteum
Hydnocarpus hainanensis
Frankenia pulverulenta
Oryza granulata
Oryza officinalis
Oryza rufipogon
Keteleenia hainanensis
Larix chinensis
Amentotaxas formosana
Amentataxus yunanensis
Pseudstaxus chcenii
Metasequoia glyptostsoaoicdss
Taiwania tlousiaxa
Chunia hucklandioides
Disanthus cercidifolius var. longipes
Tetrathyrium subcordatum
Cinnamomum mairei
Phoebe nanmu

Priority Plant Species (continued)

Phoebe zhennan
Ammopiptanthus mongolicus A. nanus
Gleditsia vestita
Ormosia howii
Zenia insignis
Dracaena cambodiana
Dracaena cocchinchinensis
Speirantha gardanii
Echinocodon lobophyllus
Acanthochlamys bracteata
Alcimandra catheardii
Manglietia grandis
Manglietiastrum sinicum
Parakmeria omeiensis
Kmeria septentrionalis
Eleutharrhena macrocarpa
Horsfieldia hainanensis
H. tetratepala
Myristica yunnanensis
Sinia rhodoleuca
Archineottia gaudissartii
Diplandrorchis sinica
Phalaenopsis aphrodite
Tangtsinia nánchuanica
Paphiopedium armeniacum
Paphiopedium micranthum
Paphiopedium dianthum
Paphiopedium malipoensis
Paphiopedium barbigerum
Paphiopedium purpuratum
Paphiopedium godefroyae
Cypripedium corrygatum
Cypripedium plectrochilon
Cypripedium yunnanense
Cypripedium fasciolatum
Cypripedium farreri
Cypripedium wardii
Cypripedium daliense
Cypripedium micranthum
Cypripedium palangshanense
Cypripedium subtropicum
Boschniakia rossica
Cistanche deserticola
Caryota urens
Chuniophoenix hainanensis
Coptis chinensis
Kingdonia uniflora
Paeonia suffruticosa
Amydalus ledebouriana
Malus sieversii
Potainnia mongolica
Mussaenda anomala
Phellodendron amurense
Handeliodendrom bodinieri
Litchi chinensis var. euspontanea
Otophora unilocularis,
Paranephelium hainanensis
Madhuca hainanensis
Neopicrorhiza scrophulariiflora
Sonneratia hainanensis
Firmiana hainanensis
Reevesia rotundifolia
Sinojackia dolichocara
Apterosperma oblata
Camellia chrysantha group
Camellia sinensis var. assamica
Euryodendron excelsum
Aquilaria sinensis
Craigia Kwangsiensis
Ulmus elongata
Changium smyrnioides
Tetraena mongolica
Acidosasa chinensis
Ampelocalumus actiotrichus
Bashania spanostachya
Ferrocalamus strictus
Leptocanna chinensis
Monocladus amplexicaulis
Psathyrostachys huashanica
Dalbergia fusca var. enneandra
Dalbergia odorifear
Erythrophloeum fordii
Ormosia hosiei
Nyssa Yunnanensis
Malania oleifera
Phamnochaics soquilii
Tengia scopulorum
Dayaoshania cotinifolia
Homiboea lungzhouensis
Metabriggsia ovalifolia
Petrocosmea qinlingensie
Primulina tabacum

Priority Domestic Animal Species and Varieties

Species	*Varieties*	*Location*
Ox	Zhoushan black ox	Zhejiang Province
	Hainan high hump ox	Hainan Province
	Yunnan Dulong ox	Yunnan Province
Horse	Miniature horse	Guangxi, Yunnan, Guizhou and Sichuan Provinces
	Hequ horse	Sichuan, Qinghai and Gansu Provinces
Donkey	Guanzhong donkey	Shanxi Province
Camel	Alashan camel	Inner Mongolia
Pig	Wuzhishan pig	Hainan Province
	Taihu pig	Jiangsu and Zhejiang Provinces and Shanghai Municipality