

China/Global Environment Facility Project
Project Number: QT2014-30

**Landscape Approach to Wildlife
Conservation in Northeast China Project**

**Environmental and Social Impact
Assessment Report**

Heilongjiang Province · Jilin Province · China
Executive Office of Siberian Tiger Habitat Protection Project in Jilin Province
Executive Office of Siberian Tiger Habitat Protection Project in Heilongjiang Province
Executive Office of Siberian Tiger Protection Project of the General Bureau of Heilongjiang
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01 List of Animals and Plants in the Project Area

Attachment:

1 Sample Questionnaire of Forest Farm Staffs (Staff from Nuanquanhe Forest Farm of Suiyang Forest Bureau)

2 Sample Questionnaire of Villagers (Villager from Lishugou Village, Chunhua Town, Hunchun City)

3 Sample Questionnaire of Administrative Village (Songlin Administrative Village, Yangpao Town, Hunchun City)

4 Sample Questionnaire of Ethnic Minorities (Villager of Korean Nationality in Lishugou Village, Chunhua Town, Hunchun City)

5 Sample Questionnaire of Experts (Reply by Electronic Documents)

6 Sample Questionnaire of Non-government Organization (Reply by Electronic Documents)

Attached Tables:

01 Information Table of Forest Sub-compartments of Tiger-Friendly Tending Forest Lands

02 Information Table of Sub-compartments of Vegetation Restoration Forest Lands

Attached Figures:

01 The Project Location Map

02 The Satellite Image Map

03 The Topographic Map

04 The Project Layout Map

05 The Scope Map of Assessment

06 Detail Expansion Map of the Niaoqingshan Nature Reserve

07 Detail Construction Map of the Tianqiaoling Nature Reserve

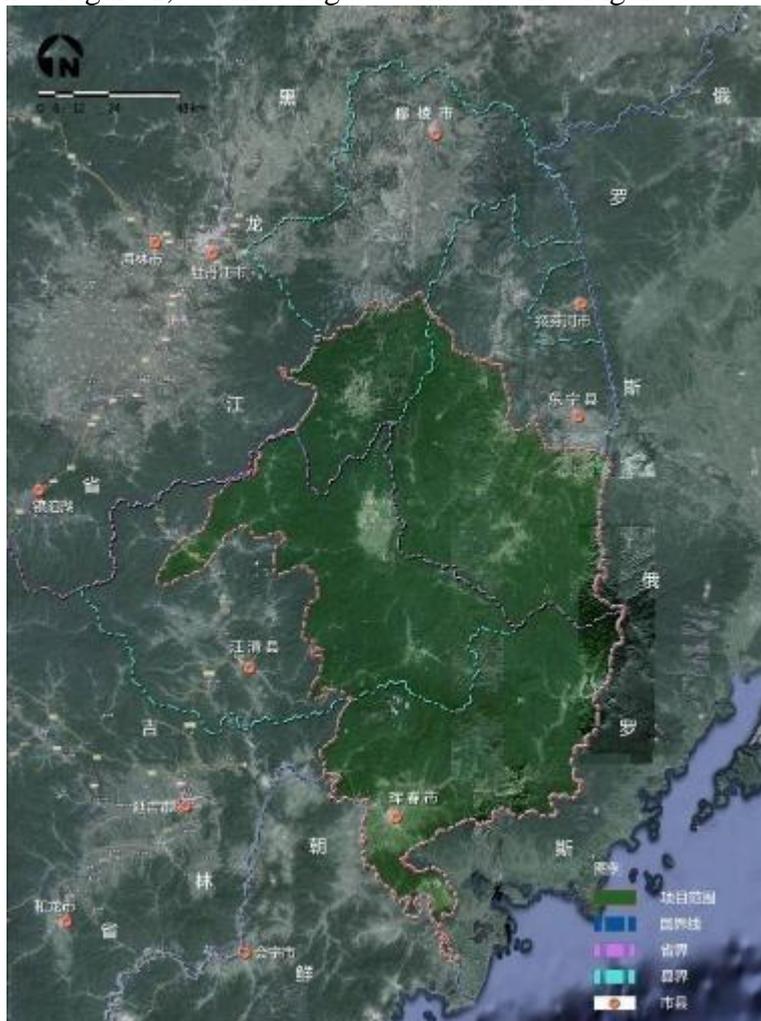
08 Detail Construction Map of the Lanjia Protected Areas

1 Overview

1.1 Project Background

1.1.1 Geographical Location of the Project

This project is located in Jilin Province and the east part of Heilongjiang Province in Northeast China, mainly including Hunchun City, Wangqing County of Jilin Province, and Dongning County, Muling City of Heilongjiang Province. The east part of the project area is contiguous to Primorsky Region of Russia; the west part is contiguous to Tumen City and Mudanjiang City; the southwest part is contiguous to Qingxing County and Xiongji County of North Korea across the Tumen River; and the north part is contiguous to Jixi City in Heilongjiang Province. The project covers 4 existing reserves (Hunchun Nature Reserve, Wangqing Nature Reserve, Laoyeling Nature Reserve, and Muling Nature Reserve), 3 projected reserves and reserve communities (Tianqiaoling Nature Reserve, Lanjia protected areas, and Niaoqingshan Reserve), and working circles in subordinate forest farms of Hunchun Forestry Bureau, Hunchun City Forestry Bureau, Wangqing Forestry Bureau, Wangqing County Forestry Bureau, Tianqiaoling Forestry Bureau, Dongning County Forestry Bureau, Suiyang Forestry Bureau, and Muling Forestry Bureau, etc. The total area is about 15337.08 square kilometers. Detailed information is shown in Figure 1.1-1, attached Figure 1, attached Figure 3 and attached Figure 4.



Legend
■ project area

-  country boundary
-  provincial boundary
-  county boundary
-  Cities and counties

1.1.2 Project Content

In order to promote the protection and management of the Siberian tiger (*Panthera tigris altaica*), also known as Amur tiger, and its habitat, the State Forestry Administration and World Bank jointly applied for the GEF “Landscape Approach to Wildlife Conservation in Northeast China Project”, and got approval in principle on Feb 29th, 2012. This project is implemented in Northeast China, at the junction area of Heilongjiang Province and Jilin Province, close to the Primorsky Region of Russia and Hamgyong Province of North Korea. It involves Hunchun City, Wangqing County, Dongning County, and Muling County, with a total area of 15337.08 square kilometers. The aggregate amount of the project is 18 million US dollars. The undertaking units of the project include Jilin Forestry Department, Heilongjiang Forestry Department and the General Bureau of Heilongjiang Forest Industry.

The project consists of the following subprojects: to mainstream the wildlife protection through coordination and cooperation among various departments; to improve the protection effectiveness of habitats in Northeast ecological areas through ecosystem protection methods in priority areas; to reduce human-animal conflicts in the ecological areas (capacity building, law enforcement strengthening, environmental education, and incentive mechanism to promote community participation in protection); and project management.

1.1.3 Project Objective

The general objective of this project is to recover the threatened biological diversity in prior reserves of northeast China through improving the regional ecological environment, taking the Siberian tiger as the indicative species. This project aims to support policies and planning frameworks in biodiversity-friendly areas by taking coordinative planning measures in target areas; to raise the management effectiveness of the reserves or the protection network, to improve the carrying capacity of wild animals through the recovery, expansion, and connection of important habitats, and to increase biodiversity-friendly areas which are adjacent to the reserves; to take effective law enforcement and regulatory measures in the reserves or greater regions to reduce the mortality of some key species; to buffer human-animal conflicts through increasing the income of local people and providing subsidies in wildlife protection process.

The specific objectives of the project include:

(1) The current separated island distributional areas of Siberian tiger will connect with each other, extend and expand in stretches to the deep forest of China.

(2) The Siberian tiger habitat quality within the project area will be significantly recovered and improved, and resources allocation structure of the habitat will be further optimized. There will be a significant rebound in the population of main prey (wild boar, red deer, roe deer, and sika deer).

(3) Tiger ecological corridor construction modes, tiger-friendly forest operation modes, and habitat recovery demonstration areas of different scales and types will be established.

(4) Environmental protection awareness of the public will be further improved. Residents within the tiger distributional areas and relevant stakeholders will get along

with the Siberian tiger in harmony. National and local enterprises and institutions will further improve environmental protection capacity and level, and boost China's functions and influences in the field of global biodiversity conservation.

1.1.4 Environmental Meaning of Project Implementation

Through the implementation of this project, the Siberian tiger habitat quality in the project area will be significantly recovered and improved, and resources allocation structure of the habitat will be further optimized. Suitable habitats for Siberian tiger and its prey will be increased. The carrying capacity of wildlife will be raised through habitats connection. The population of main prey (wild boar, red deer, roe deer, and sika deer) will rebound significantly. With increasing appearance frequency of large carnivores like tiger and leopard and spawning colony, the threatened biodiversity will be recovered. This project is of great significance in saving global endangered species, improving the quality of forest ecological system and guaranteeing the quality of future settlement environment.

1.1.5 Organization Structure of the Project

The Planning and Design Institute of Forest Products Industry of the State Forestry Administration is the specific environmental assessment implementation unit of this project. This institute has wide experiences in formulating ecological EA reports. In recent years, this institute has undertaken nearly 10 forestry ecological environmental impact assessment projects in Fujian, Hubei, Sichuan, Xinjiang Province, etc.

The EIA team is composed by staff who have relative knowledge of forestry ecology, wildlife protection and environmental assessment experience. The basic staff information is shown in Table 1.1-1.

Table 1.1-1 Information of Environmental Impact Assessment Staffs

Serial Number	Name	Professional Title	Profession Background	Professional Qualification	Roles
1	Fu Guanghua	professor-level senior engineer, Registered consulting engineers	Forestry Ecology	vice chief engineer of the Planning and Design Institute of Forestry Industry, SFA; invited expert of the Ministry of Environment Protection; experts of the National Development and Reform Commission	chief principal of the project
2	Wu Zhuan	senior Engineer, Registered EIA Engineer	Wildlife	director of the forestry ecological engineering consulting department of the Planning and Design Institute of Forestry Industry, SFA; professional of ecological environmental impact assessment	team member of the project
3	Xu Chang	PHD, engineer	Wildlife	consultant of the Planning and Design Institute of Forestry Industry, SFA	team member of the project
4	Zhang Minghai	professor, doctoral supervisor	Wildlife	Vice Director of the Therology Society; director of Environmental Science Society; executive leader of WWF China Siberian Tiger Expert Group, executive director of the Animal Society in Heilongjiang Province	team member of the project
5	Wu Zhigang	Researcher	Wildlife	Guidance committee member of the second national survey of terrestrial wildlife resources of SFA; academic committee member of cats animals research of SFA; consultant of Siberian	team member of the project

Serial Number	Name	Professional Title	Profession Background	Professional Qualification	Roles
				tiger and anti-poaching project of WWF Northeast project office	
6	Jiang Guangshun	professor, doctoral supervisor	Felidae	Vice director of the Felidae Research Center of SFA; executive member of the Therology Society; and Felidae experts group member of the Therology Society; member of the Animal Association of Heilongjiang Province; consultant expert of the WWF Felidae Protection Project	team member of the project
7	Guo Qingjun	senior engineer, PHD of Economics(EMBA)	Forestry, Soil Ecosystem	Dean of the Planning and Design Institute of Forestry Industry, SFA; member of the Nature Reserve and Wildlife Protection Expert Committee, SFA	team member of the project
8	Guo Baoxiang	professor-level senior engineer, national registered consulting engineer, certified public valuer	forest ecology	Head of the Ecological Consulting Institute of the Planning and Design Institute of Forestry Industry, SFA, expert of Nature Reserve Consulting, SFA	team member of the project
9	Liu Xihong	Senior Engineer	ecological environment	director of the Planning and Design Institute of Forestry Industry, SFA; member of the Nature Reserve and Wildlife Protection Expert Committee, SFA	team member of the project
10	Li Shuangjun	assistant engineer	ecological environment	consultant of the Planning and Design Institute of Forestry Industry, SFA	team member of the project
11	Gao Ziyang	assistant engineer	ecological environment	consultant of the Planning and Design Institute of Forestry Industry, SFA	team member of the project

Based on features of ecological environmental impact assessment projects, the following units will also participate in the project to various degree besides the EA unit. They are: owner units (the Siberian Tiger Habitat Protection Project Executive Offices of Jilin Province, Heilongjiang Province, and Heilongjiang Forest Industry Bureau); competent government departments (the State Forestry Administration, Forestry Department of Heilongjiang and of Jilin Province, environmental protection bureaus in project area); related government departments (local governments and relevant functional departments); experts in this field; representatives of related communities, schools, hospitals in project area; and representatives of units related to cultural relics, forest industry, etc.

1.2 Preparation of Environment Assessment Report

1.2.1 Objectives and Principles of Environment Assessment

Based on current status investigation and analysis of ecological environment in the project area, through analysis of each project's scale, layout and relevant activities, the environment assessment predicts impacts of the project construction on ecological and social environment, puts forward environment protection and mitigation measures and environment management and monitoring plan. Thus it will minimize the degree of being effected of resources and environment in the assessed area, effectively protect sensitive targets and make the project construction plan environmentally reasonable and feasible.

1.2.2 Environmental Assessment Category and Assessment Level

According to the WB operation policy OP4.01 Environmental Evaluation and environmental impact factor screening results, this project is classified as category B environment assessment. According to the Environmental Impact Assessment Law of the People's Republic of China, it is an ecological construction project, with a construction area over 20 square kilometers. The ecological sensitivity of affected area is at general level. According to the Technical Guidance for EA-Ecological Impact (HJ19-2011), the ecological environmental impact assessment is at second level.

1.2.3 Preparation of Environmental Impact Assessment Report

The project executive office prepared the Terms of Reference (TOR) for the Project environmental impact assessment after materials collection and preliminary site investigation at the early stage. Based on the TOR and detailed site investigation, analysis and prediction, the final Project environmental impact assessment Report was made hereby.

1.3 Assessment Process

This Siberian tiger protection project belongs to ecological public welfare projects. However, during the implementation process, the projects involves some civil engineering projects like construction of new protection stations and transitional supplementary feeding stations, forestry engineering projects like forest reform, forest tending, pest control, and livelihood adjustment of local people due to the expansion of reserve. Meanwhile, the growth of tiger population and expansion of their activity area will surely result in social problems like human and livestock security in and close to the project area. Therefore, on the whole this assessment is to sort out, evaluate and analyze various influences of the project from the perspective of environmental protection, and put forward mitigation and alternative measures, so as to maximize the positive results of this project.

As an ecological environment-friendly project, this project will not bring new negative ecological environment problems. However, the adjustment of reserve area and the population growth of Siberian tiger will bring about some impacts, for example:

——Social environment impact: effects brought by the adjustment of people's production methods and life style in project area, human-animal damage risks.

——Ecological environment impact: effects brought by other rare animals on the food chain of the tiger, effects brought by supplementary feeding and artificial prey adjustment.

Thus the focus of the environmental impact assessment are:

1. Form the main report of environmental impact assessment from key contents assessed in the project.

Carry out key assessment on ecological and social environment impacts caused by the adjustment of reserve area, and form the main report of environmental impact assessment. Following points should be focused in the main report:

——to analyze the impacts of human activity on tiger, impact degree, countermeasures; the present and future impacts of human activity on the project, countermeasures and advice;

——through experts interviews, to know professionals' attitudes, opinions and advice from professional perspective; to strengthen the relationship with Wildlife Conservation Society (WCS) and World Wildlife Fund (WWF), which are active non-governmental organizations in the area, listen to their opinions and suggestions, and adopt the constructive suggestions in the report;

——to know demands of the public and relative stakeholders, problems they care about and suggestions through investigation; to analyze the coadaptation of human activities and proposed projects based on relevant laws and policies;

——to analyze and evaluate the relevant nature reserves according to the requirements of OP/BP 4.04, Natural Habitat;

——to analyze and evaluate the indigenous peoples involved in this project, and put forward countermeasures according to the requirements of OP/BP 4.10, Indigenous Peoples;

——to analyze whether there is involuntary resettlement problem in this project; if yes, analysis and evaluation are needed according to OP/ BP 4.12, Involuntary Resettlement;

——to analyze alternative solutions, including site selection of expanded reserve and protection stations, etc.

2 Categorize relative but indecisive environmental impacts of this project, and form several special reports.

——to standardize the ecological and environmental protection activities related to pest control in forest alteration and maintenance, and set our PMP (Management Plan) according to the OP/BP 4.09, Pest Management;

——to standardize the ecological and environmental protection activities involved in forest alteration, and set out Environmental Protection Guideline for Plantation according to the OP/BP 4.36, Forestry;

——to standardize environmental protection activities in protection station construction, and set out ECOP of small civil engineering projects of the Siberian tiger protection project.

1.4 Assessment Scope, Period and Protection Objectives

1.4.1 Environmental Assessment Scope

This environmental impact assessment report mainly focus on eco-environment impacts assessment in the areas where forest alteration is carried out, and potential social environment impacts of the whole project construction.

Table 1.4-1 Scope of Environmental Assessment

Serial No	Assessment Factors	Assessment Scope
1	Ecological Environment	ecological impacts caused by reserve expansion, including impacts on residents and wild animals, and impacts of ecological environment on prey species
		reasonability of the newly constructed protection sites selection, ecological impacts in areas related to forest alteration and pest management
2	Social Environment	residential districts in the project area, and scope related to their life and production. Assessment focus: impacts of human activity on tigers, impact degree, countermeasures, advice that will be adopted through expert interviews, etc.; the present and future impacts of human activity on the project, countermeasures and advice; to know people's needs, problems they care about through public investigation and advice.
3	Atmosphere, Water, Solid Waste and Noise	small civil engineering projects

According to the requirements of the World Bank OP/BP4.01 and its Attachment (Environment Assessment) and Technical Guidance for EA-Ecological Impact (HJ19-2011) of China, the project assessment scope include areas of forest alteration, protection stations and feeding sites construction, reserve expansion construction (new construction and expansion), and the extended area which is within 5km outside of the reserve. The total area is 1054 square kilometers. Detailed information is shown in Table 1.4-2 and Attached Map 5.

Table 1.4-2 Assessment Scope Statistical Table

Project Area	Evaluation Scope	Description
Total	1 054	
Muling City	33	including forest tending areas, such as Shuangning, Huashuhe, Yangmuqiao, Dongxing forest farms
Dongning County	281	mainly including the expanded Niaoqingshan nature reserve related areas; forest tending areas of Suiyang Forestry Bureau, such as Huangsong, Huichuan, Liuqiaogou, Qingshan, Sanjielazi, Shuangyazi, Taipingchuan, Wanbaowan, Yuanshan, Zhongguliu , etc; forest farms for forest tending and vegetation recovery of Dongning Forestry Bureau, such as Chaoyanggou, Shimenzi.
Wangqing County	542	mainly including newly constructed Tianqiaoling nature reserve related areas, and forest tending areas of Wangqing Forestry Bureau, such as Dahuanggou, Duhuangzi, Xinancha, Liudao, Jincang, and Langxi, ect.
Hunchun City	198	mainly including areas related to Lanjia protected areas which are newly established

1.4.2 Environment Assessment Period

The environmental impact assessment of this project mainly analyzes and evaluates the project implementation and operation periods.

1.4.3 Environment Protection Objective

1 To maintain the regional ecosystem stability

The tiger-friendly forest management activity will eliminate existing negative effects of the ecosystem in the project area, which will do good to maintain the ecosystem stability.

2 To protect the biodiversity in the project area

The brush cutting in the tiger-friendly forest management activity will reduce the biodiversity in the project area to some extent. To maintain biodiversity in the project area is an important objective of ecological environment protection.

3 To prevent and reduce newly-increased water and soil loss in the project area

If improper measures are taken during ecological thinning and shrub cutting in managing the tiger-friendly forest, it would bring about local water and soil loss. The objective of ecological environment protection is to prevent water and soil loss in large areas and control soil and water loss within allowable range.

4 To protect natural vegetation

Protecting forest edge vegetation and recovering undergrowth vegetation is of great importance in maintaining bio-system stability, biodiversity, and preventing soil and water loss.

5 To prevent and reduce non-point source pollution

Pesticide utilization in pest control may cause non-point source pollution. To effectively avoid non-point source pollution through proper measures is one objective of ecological environment protection.

6 To protect ecological sensitive areas

The ecologically sensitive areas of this project mainly include nature reserves and natural concentrated distributional areas of rare and endangered wild fauna and flora. Rare and endangered wild fauna and flora mainly exist in the nature reserves.

1.5 Environmental Impact Factors Identification and Assessment

1.5.1 Environmental Impact Factors Identification

Environmental impact factors identification and impact degree analysis is shown in Table 1.5-1 and Table 1.5-2.

Table 1.5-1 Table of Environmental Impact Factors Identification

Project	Activity	Impact Objects	Impact Contents
Newly-built or expanded nature reserve	Habitat protection	Animals, plants, biodiversity, ecological carrying capacity, residents livelihood, human-animal safety, ethnic minority	It's conducive to the protection of animals, especially key species. Prohibition of felling trees, graze, hunting, herb gathering, reclamation, and moorburn will affect the residents' livelihood. Protection management department should supply job opportunities and damage compensation. Prohibition of mine exploration, quarrying, dredging will affect the local economy development.
	Publicity, education and training	Residents livelihood, public awareness, indigenous peoples	It can improve residents' life skills, alter their livelihoods, and improve their protection awareness.
tiger-friendly forest management activity	Forest tending	Biodiversity	The surface vegetation will be changed from bush to forest after the plantation and land cleaning.
	Vegetarian recovery	The vegetarian and biodiversity	It is conducive to form cascade closed canopy after the forest cutting and will improve the forest environment.
Small civil engineering projects	Construction of protection stations	Surface water environment, atmospheric environment, sound environment	It may involve excavation and filling, noise, exhaust and dust of construction machines and vehicles, waste water of construction personnel. It may also bring noise and dust in decoration process.
	Construction of supplementary feeding stations	Animals and the vegetarian	It may remove the ground vegetation in supplementary feeding stations and supply supplemental food for herbivorous ungulates in food-lacking seasons.

Table1.5-2 Environmental Impact Degree Analysis Matrix

Activity	Ecological Environment				Social Environment				Surface water Environment	Atmospheric Environment	Acoustic Environment
	Animal (the Siberian tiger and its prey)	Biodiversity	Vegetation	Ecological carrying capacity	Residents livelihood	Human and livestock safety	Public awareness	Ethnic minority			
Habitat protection	+	+		+	+/-	-	+	+/-			
Publicity and education training					+		+	+			
Forest tending	+	-	-								
Vegetarian recovery	+	-	+/-								
Construction of Protection stations		-	-						-	-	-
Construction of supplementary feeding stations	+		-								

Note: the sign “+” represents positive impact, “-” represents negative impact, “+/-” represents both positive and negative impacts.

1.5.2 Assessment Factors

According to the environmental impact factors recognition results, it's determined that there are two major evaluation factors of this project. One is ecological environment (including wildlife, vegetation and biodiversity), and the other is social environment (including residents' livelihood, human-animal safety, and indigenous peoples).

2 Analysis of Applicable Laws and Regulations

2.1 Policy Planning

2.1.1 Laws and Regulations

- (1) Convention on Biological Diversity(Jun, 1st , 1992);
- (2) Wildlife Protection Law of the People's Republic of China (Aug, 28th, 2004);
- (3) Environmental Protection Law of the People's Republic of China (Dec, 26th , 1989);
- (4) The Environmental Impact Assessment Law of the People's Republic of China (Oct, 28th , 2002);
- (5) The Law of the People's Republic of China on Wild Plants Protection Regulation(Sept, 30th ,1996);
- (6) Regulations of the People's Republic of China on Nature Reserves (Oct, 9th , 1994);
- (7) Regulations on the Administration of Construction Project Environmental Protection (Nov, 29th , 1998) ;
- (8) The List of Classified Management of the Construction Project Environmental Impact Assessment(State Environmental Protection Administration Oct, 2008);
- (9) On Strengthening Environmental Impact Assessment Management to Prevent the Environmental Risk (Environment and Development [2005] No.152);
- (10) Interim Measures for Public Participation in EIA (Environment and Development 2006 [No.28]).

2.1.2 Local Policy and Planning

- (1) Jilin Provincial People's Congress Standing Committee on the Decision of Prohibiting the Wild Animals Hunting (2000);
- (2) Division of Ecological Function Areas in Heilongjiang Province (2005);
- (3) Ordinance on Wildlife Protection in Heilongjiang Province (1996);
- (4) Ordinance on Nature Reserve Protection in Heilongjiang Province (1996);
- (5) Action Plan of Wild Siberian Tiger Protection in Heilongjiang Province (Sept, 2011);
- (6) Action Plan of Wild Siberian Tiger Protection in Jilin Province (May, 2010);
- (7) Action Plan of Siberian Tiger Protection in Heilongjiang Forest Industry Area (Sept, 2011);
- (8) Current Situation, Protection and Management Measures and Future Vision of Wild Siberian Tiger of Heilongjiang Forest Industry Area (May, 2010);
- (9) Current Situation and Plan Framework of Siberian Tiger Protection in Heilongjiang Province (May, 2010).

2.1.3 Specification and Standard

- (1) Environmental Impact Assessment Technical Guideline, Master Plan HJ/T2.1-93;
- (2) Environmental Impact Assessment Technical Guideline, Ecological Impact HJ19-2011;
- (3) Environmental Impact Assessment Technical Guideline, Atmospheric Environment HJ/T2.2-2008;
- (4) Environmental Impact Assessment Technical Guideline, Surface Water Quality HJ/T2.3-93;

(5) Environmental Impact Assessment Technical Guideline, Surface Water Quality HJ/T2.4-2009;

(6) Environmental Risk Assessment Technical Guideline for Construction Projects HJ/T169-2004;

(7) Environmental Quality Standards for Surface Water GB3838-2002;

(8) Ambient Air Quality Standard GB3095-2012;

(9) Environmental Quality Standard for Noise GB3096-2008.

2.1.4 Security Policies of the World Bank

There are 10 security policies about society and environment of the World Bank. According to the construction nature, engineering layout, assessment scope determined in this environment assessment and site investigation, screening is carried out about whether the project is related to these 10 policies. The results are shown in Table 2.1-1.

Table 2.1-1 Whether the Project is Involved in the WB Security Policies

Policy Number	Policy Name	Involved or Not	Screening Reason
OP 4.01	Environmental Assessment	Yes	The environment screening is carried out according to the type, sensitivity, scope of the project, and the features and size of potential environmental impact. This project is class B project, so the EA report and environment management plan are needed.
OP 4.04	Natural Habitats	Yes	This project is related to protection of nature reserves, natural habitats, and key species.
OP 4.09	Pest Management	Yes	As a forestry project related to species conservation, this project will involve pest control. The project will only recommend use of the WHO III and U types of pesticides.
OP 4.10	Indigenous Peoples	Yes	There are many ethnic minorities in the project area. The implementation of this project will have some impacts on local minorities.
OP 4.11	Physical Cultural Resources	No	It is mainly natural wild environment in the project area, with little human activity traces of cultural relics, etc. This policy is not applicable.
OP 4.12	Involuntary Resettlement	Yes	This project does not involve immigration and relocation, but will affect residents' livelihood.
OP 4.36	Forestry	Yes	This project involves forest protection and cultivation demonstration, thus the forest protection guideline is needed.
OP 4.37	Safety of Dams	No	This project does not involve safety of dams.
OP 7.50	Projects on International Waterways	No	No single sub-project is known to be located at international waterways.
OP 7.60	Projects on Dissident Region	No	No single sub-project is known to be located in areas with territorial disputes.

2.1.5 Other Relevant Documents

(1) OP 4.01—Environmental Assessment

(2) OP 4.04—Natural Habitats

(3) OP 4.09—Pest Management

(4) OP 4.10—Indigenous Peoples

(5) OP 4.12—Involuntary Resettlement

(6) OP 4.36—Forestry

- (7) Environmental Assessment Terms of Reference (TOR) of Landscape Approach to Wildlife Conservation in Northeast China Project;
- (8) Social Assessment Report of Landscape Approach to Wildlife Conservation in Northeast China Project;
- (9) The State Forestry Administration: Notice on Implementing Pilot Work of Completely Stopping Commercial Deforestation;
- (10) Planning Scheme of the Tianqiaoling Siberian Tiger Reserve;
- (11) Feasibility Study Report of Jilin Wangqing National Nature Reserve Construction Project;
- (12) Feasibility Study Report of Jilin Hunchun Siberian Tiger National Nature Reserve Construction Project in the Second Phase;
- (13) Proposal for the Siberian Tiger Ecological Corridor Protection and Monitoring Project;
- (14) Plantation and Forest Tending Planning of Chaoyanggou in Dongning County;
- (15) Wangqing Forestry Bureau 2015-2017 Annual Central Fiscal Forest Tending Subsidies Pilot Implementation Plan.

2.2 Conformity Analysis of Policies and Plans

2.2.1 International Level

The sustainable management and biodiversity protection in the Landscape Approach to Wildlife Protection in Northeast China Project is in accordance with all relevant international conventions. China joined in the UN Convention on Biological Diversity in 1993, joined in the UN Convention to Combat Desertification and the International Ramsar Convention in 1994, and established land degradation control strategic partnership with the GEF in 2002. Thus it is qualified to apply for the GEF fund support.

2.2.2 National Level

The sustainable management and biodiversity protection project in the Landscape Approach to Wildlife Protection in Northeast China Project is in accordance with national laws and regulations. The State Council of China approved the *National Ecological Environment Construction Plan* in 1998, formed the *National Ecological Environment Protection Program* in 2000, and the Ministry of Environmental Protection and the Chinese Academy of Sciences formed and announced the *National Ecological Function Regionalization Outline* in 2009. It's clearly demonstrated in the Outline that we need to build national, provincial, local (city) level ecological functional protection areas, protect and construct ecological environment, change traditional development patterns, achieve higher economic development speed with lower resource cost and environment cost, so as to further achieve the unification of economic, social, and environmental benefits.

It's put forward in the *National Resources City Sustainable Development Planning* (2013-2020) that the forestry management and protection of key forest regions needs to be strengthened. Natural forest felling of the Great Khinggan Mountains, the Lesser Khinggan Mountains, Changbaishan forest region will be totally banned from 2015. According to the *Notice on Implementing Pilot Work of Completely Stopping Commercial Deforestation* of State Forestry Administration (Forest [2014] No.3 File), Heilongjiang province has comprehensively banned deforestation since 2014. All the construction plans and relevant countermeasures of this project meet the national requirements.

2.2.3 Local Level

The sustainable management and biodiversity protection project in the Landscape Approach for Northeast China Wildlife Protection Project is in accordance with national economic and social development plans and the objective to prevent and control land degradation and protect the biodiversity of Jilin and Heilongjiang Province. Some local development strategies and policies like *Wild Siberian Tiger Protection Action Plan of Heilongjiang Province*, *Wild Siberian Tiger Protection Action Plan of Jilin Province*, *Current Situation, Protection Measures and Future Plans of Wild Siberian Tiger in Heilongjiang Forestry Industry Area*, *Current Situation and Plan Framework of Siberian Tiger Protection in Heilongjiang Province*, and *Project Proposal for Siberian Tiger Ecological Corridor Protection and Supervision*, all take the project implementation area as the key protection area of Siberian tiger and biodiversity protection.

In documents like *Action Plan of Wild Siberian Tiger Protection in Heilongjiang Province* and *Action Plan of Wild Siberian Tiger Protection in Jilin Province*, it is mentioned respectively that after 50 years or longer time, the forest quality in the protection area will be improved significantly, forestry ecology system will go stable, habitat environment of Siberian tiger in the protection area will be recovered and improved significantly, a stable wild population of Siberian tiger will come into being, and the population of adult Siberian tigress will be more than 50; suitable habitat area of Siberian tiger will be more than 20 thousand square kilometers, and hoofed animals resources will approach the environment capacity.

In the *Current Situation, Protection and Management Measures and Future Plans of Wild Siberian Tiger in Heilongjiang Forest Industry Area*, it is put forward that through active publicity education activities, protection and management institution construction will be strengthened, examination of law enforcement and anti-poaching activities will be carried out, logging of natural forest will be decreased. Through such measures as wide cooperation with research and teaching units and international organizations, wild Siberian tiger, its prey and habitats will be protected and recovered gradually.

In *Current Situation and Plan Framework of Siberian Tiger Protection in Heilongjiang Province*, the construction plan of Siberian tiger protection program is put forward. By setting priority regions of Siberian tiger protection and forming a regional network of Siberian tiger protection, carrying out long-term investigation and monitoring of wild Siberian tiger species, and strengthening the breeding management of Siberian tiger, etc., the plan aims to strengthen international cooperation and capacity building of the protection area, and build an ecological corridor for Siberian tiger migration.

In the *Project Proposal for Siberian Tiger Ecological Corridor Protection and Supervision*, it is planned to set up several nature reserves or protection communities which take the Siberian tiger and its prey as main protection target, connect the ecological corridors for Siberian tiger migration in Russia and those scattered distributional areas in China, and establish tiger-friendly forest management modes of different scales. Residents within the tiger distributional areas and the relevant stakeholders will get along with the Siberian tiger in harmony. A healthy forest ecology system with Siberian tiger as a sign will protect the ecology safety in Northeast China.

This project involves Hunchun City, Wangqing County, Dongning County, and Muling City. The east part of the implementation area is contiguous to Russia. The geographical position is very important. This project will significantly boost

biodiversity protection in involving counties (cities) after its implementation. It is in accordance with social and economic development needs of involving counties (cities), Jilin and Heilongjiang Province, and conforms to national development strategy like rejuvenating the old industrial base in northeastern China, in which the ecology goes before economy development. Protection of wildlife including the Siberian tiger in the project area is also listed as key work in local documents including *Plantation and Forest Tending Planning of Chaoyanggou in Dongning County*; *Supplementary Feeding Scheme of Hunchun Forestry Administration*; *Planning Scheme of the Tianqiaoling Mountain Siberian Tiger Reserve*; *Wangqing Forestry Bureau 2015-2017 Annual Central Fiscal Forest Tending Subsidies Pilot Implementation Plan*; *the 12th Five-Year Plan of Forestry in Wangqing County*; *Overall Plan of Wangqing Reserve*; *Jilin Wangqing National Nature Reserve Construction Project Feasibility Study Report*; and the *Second Phase Construction of Jilin Hunchun Siberian Tiger National Nature Reserve*.

Therefore, the sustainable land management and biodiversity protection project is in accordance with the ecological environment protection policy and of actual situation of Jilin Province, Heilongjiang Province, Hunchun City, Wangqing County, Dongning County, and Muling City, at home and abroad. It's also very necessary.

3 Project Description

3.1 Construction Objective and Content

3.1.1 Project Objective

The general objective of this project is: taking the Siberian tiger as the indicative specie, to recover the threatened biological diversity in priority reserves of Northeast through improving the regional ecological environment. This project aims to support policies and planning frameworks in biodiversity-friendly areas by taking coordinative planning measures in target areas; to raise the management effectiveness of the reserves and the protection network, to improve the carrying capacity of wild animals through the recovery, expansion, and connection of important habitats, and to increase biodiversity-friendly areas which are adjacent to the reserves; to take effective law enforcement and regulatory measures in the reserves or greater regions to reduce the mortality of some key species; to defuse human-animal conflicts through increasing the income of local people and providing subsidies in wildlife protection process.

3.1.2 Project Content

The project consists of the following subprojects: to mainstream the wildlife protection through coordination and cooperation among various departments; to improve the habitat protection effectiveness in Northeast ecological areas through ecosystem protection methods in priority areas; to reduce human-animal conflicts in the ecological areas (capacity building, law enforcement strengthening, environmental education, and incentive mechanism to promote community participation in protection); and project management. Contents of each subproject are listed in the Table 3.1-1.

Table 3.1-1 Table of Project Contents

Project Name	Subproject Name	Project Contents
Mainstream the wildlife protection through coordination and cooperation among various departments.	Strengthen the enforcement and management of policy framework in priority ecological regions, so as to better protect tiger habitats in forest regions of the General Bureau of Heilongjiang Forest Industry.	Recommend priority regions of tiger habitats conservation
		Strengthen legal norms of nature reserves
		Update protection and restoration plans of Jilin province; draw up protection and restoration plans in forest regions of the General Bureau of Heilongjiang Forest Industry
		Set up the Siberian tiger regional conservation consultative committee
		Discuss how to make tiger habitats conservation part of economic activities/engineering construction
		Establish/update policies to reduce human-tiger conflicts (eg: compensation mechanism)
		Establish China-Russia trans-boundary conservation coordination mechanism
Improve the habitat protection effectiveness in Northeast ecological areas through ecosystem protection methods in	Improve the management effectiveness of five current reserves	Legislate/update rules/plans of each nature reserve
		Strengthen the capability construction of 47 conservation stations
	Expand reserve area	Expand the two existing reserves; specify the legal status and implementation arrangements; legislate rules/plans of each region; build 3 new conservation stations
		Conduct staff training of nature reserve and

Project Name	Subproject Name	Project Contents
priority areas.	local forestry bureaus	
	Increase prey population and improve tiger habitats	Set up supplementary feeding stations, release domesticated spotted deer, red deer, wild boar to nature; increase prey population quantity
	Restore vegetation to improve tiger habitats	Restore vegetation, improve habitat quality
	Patrol up mountains and clear up the hunting tools (measurable indicators are demanded)	Conduct mountain patrol activities, take over hunting sets, fight against poaching activities, set up trial reward system
Reduce human-animal conflicts in the ecological areas (capacity building, law enforcement strengthening, environmental education, and incentive mechanism to promote community participation in protection).	Strengthen monitoring and law enforcement efforts outside reserves	Build 28 new conservation stations
		Improve the capability construction of 14 conservation stations
		Conduct training for staff and leader (include staff leaders of each station) in conservative stations
	Enhance publicity and education in community	Conduct publicity through television, broadcast, journal, slogan, leaflet to improve people's awareness of the Siberian tiger protection
	Conduct trials on updating dissipation compensation method	Compensate the loss caused by the Siberian tiger and its prey to buffer human tiger conflict
	Conduct environmental friendly practice on improving tiger habitats and farmers livelihood	Conduct tiger-friendly activities to create good habitats for the Siberian tiger meanwhile guarantee workers' livelihood
Project monitoring evaluation	Monitor project progress and periodical results according to project monitoring objectives	
Project management.	Monitor and control tiger and prey population quantity	Conduct surveys on the Siberian tiger and prey population quantity, master their distribution and number, which provides scientific evidence for conservation management and project implementation effectiveness evaluation
	Establish effective coordination mechanism between the country and different provinces	Set up project office in the General Bureau of Heilongjiang Forest Industry, Heilongjiang Forestry Department, Jilin Forestry Department to coordinate the project implementation
	Effective implementation	Put the project into practice through establishing institutions, staff training and effective management

Detailed contents of this project are as follow:

1. Protection Scheme of Tigers' Habitats

Plans about tiger protection will be made and implemented in the project area according to actual conditions of each unit, research and draw up wildlife protection and management regulations or measures, formulate wildlife protection and management regulations in related project areas, and strengthen the management and law enforcement in the project area. By means of research and data collection, to draw up the conservation construction project of the Siberian tiger and its habitats, work out

documents like *Planning of the Siberian Tiger and its Habitat Conservation and Restoration Project in Changbai Mountain of Jilin Province*, and submit them to the provincial development and reform commission after amendment and perfection. Concerned experts will be invited to set up related documents of consultative committee, including organizations, duties and regular meeting systems, and offer consultative suggestions and technical support on tiger conservation. Expert appraisal on economic activities and project construction in tiger habitats will be conducted to reduce interference of tiger habitats and make tiger habitats conservation part of economic activities/project construction. A coordination committee and scientific committee with Russia will be set up to conduct cooperation and communication on the Siberian tiger conservation, realize Sino-Russian trans-boundary conservation, sign related agreements of Sino-Russian local government departments, annual working plans and inspect Sino-Russian the Siberian tiger protection. These measures will promote the normalization and scientificity of the Siberian tiger protection, and offer technical and theoretical support for the implementation of other activities.

2. Enhance the capability construction of 47 conservation stations

The capability construction of current conservation stations shall be enhanced, mainly including the existing conservation stations in Wangqing Reserve, Hunchun Reserve, Laoyeling Reserve, Muling Reserve, etc. The major project includes facilities improvement, equipments update, basic construction of administration infrastructure, patrolling vehicles and instruments; reserve and station renovation, and equipment procurement. Equipments need to be purchased include: camera, infrared cam, solar power supply system, digital video recorder, lightning protection system, anti-theft alarm system, network access, vehicles, etc. Strengthening the capability construction of conservation stations will improve the management ability in reserves, promote the implementation of the project and provide better protection for rare and endangered wild animals like the Siberian tiger.

3. Enlarge the current reserves and build new conservation stations

According to the project contents, three reserves and protected areas will be established and expanded, including newly-built Tianqiaoling Reserve, Lanjia protected areas, and expanded Niaoqingshan Reserve. Related plans would be drawn up for newly-built/expanded reserves according to actual conditions. The involved areas do not include local residential houses, rural residential bases or basic farmlands. These projects do not involve immigration, demolition or farmland occupation. New conservation management stations in newly-built/expanded reserves and outside areas of original reserves in the project area are built mainly through renovating existing state-owned forest farms and its buildings, without interfering new land requisition. The newly-built and expanded reserves can effectively enlarge the conservation area of the Siberian tiger and conservation level of related areas. The newly-built conservation stations can make the distribution of conservation stations more scientific and reasonable, and promote the effective implementation of the Siberian tiger conservation in the entire project area.

4. Conduct training for the protection and management teams of each reserve and local forestry bureau

During the project, relevant trainings will be offered to staffs of nature reserves, and local managerial staffs of wildlife conservation, such as staffs of newly-built stations. The training will be conducted stage by stage and group after group. Training reports of management teams from each reserve and local government shall be completed according to the training situation of each unit. The training will help to enhance the managerial staffs' quality and technical level on the Siberian tiger

conservation, improve profession skills of conservation managerial team of each institute, and strengthen the monitoring and law enforcement efforts of conservation operations, so as to boost a smoother completion of the project-related activities.

5. Set up supplementary feeding stations, release domesticated hoofed animals like red deer and spotted deer to nature

In the project, 27 supplementary feeding stations will be set up (10 in the project area of Jilin Forestry Department, 12 in the project area of the General Bureau of Heilongjiang Forest Industry, 5 in the project area of Heilongjiang Forestry Department). Supplementary feeding stations are snow-resistant canopies made of simple wooden materials with customized unified troughs. They are located in the forest where wild animals haunt. Meanwhile they must be next to roads for the convenience of forage transportation and placement. These supplementary feeding stations will offer certain food supplementation for hoofed animals like red deer, spotted deer and roe deer when there is food shortages in winter. It helps to maintain the population quantity, promote the stability and development of ecosystem of the Siberian tiger habitats and guarantee integrity of the food chain of Siberian tigers. The project of releasing domesticated spotted deer, red deer and wild boar will be carried out by each unit and the WWF jointly. Meanwhile, according to advice of the WCS on increasing prey population, we should cautiously select test sites for the project of increasing domesticated prey population, and strictly strength the management. At the same time, preliminary investigation and argumentation work of the test areas should be done before deciding to increase the prey population.

6. Stop logging, restore vegetation and improve habitat quality

According to the Natural Forest Protective Project as well as the requirements in the *Notice on Implementing Pilot Work of Completely Stopping Commercial Deforestation* of the State Forestry Administration, commercial deforestation of natural forests will come to a full stop from April 1st, 2014 in Heilongjiang Province and April 1st, 2015 in Jilin province. This project not only assures the sustainable development of state-owned forest region, but also contributes to safeguarding the national ecological security. Besides the prohibition of deforestation, vegetation restoration activities will be conducted by each unit in the project area. Plantation project conducted inside project areas (eg: Dongning County Forestry Bureau will conduct forest planting of 500 hectares), will significantly improve the vegetation and forest quality of state-owned forests in the project area, and promote the quality of Siberian tigers' habitats.

7. Conduct mountain patrol activities, eliminate hunting tools, fight against poaching activities and set up trial reward system

During the implementation process of the project, each unit will organize outdoor patrol teams, carry out daily patrol by professional teams and volunteers; organize hunting tools clearance activities in winter; set up objectives of hunting equipment clearance in key areas and design reward systems in trail areas to offer corresponding rewards. They will summarize the work of hunting tools clearance and finis the analysis report of poaching trend after these activities are completed. Mountain patrolling, hunting tools clearance and anti-poaching activities can secure the population quantity of wildlife and life security of individual animal in the project area, as well as avoid circumstances where the Siberian tigers get injured accidentally by hunting tools.

8. Improve capability construction of conservation stations

Mainly aiming at the newly-built conservation stations outside the reserves, the conservation management capability will be improved through purchasing and

updating the facilities and equipment, as well as conducting professional technical training for staffs.

9. Alleviate human-tiger conflicts

In the project area in Heilongjiang Province, to develop economic compensation methods for wild animals' damage to people, livestock and crops, and establish a compensation mechanism. Meanwhile, to conduct researches on human-tiger conflicts in the project area and work out compensation methods for economic loss caused by wild animals. In the project area in Jilin province, to continue to implement the ongoing compensation mechanism of wildlife accidents. By making propaganda films, broadcast, slogans and leaflets, to organize and launch publicity and education activities, print and provide publicity materials about the Siberian tiger and habitats conservation. To organize volunteers to participate in tiger conservation, enhance publicity and education in community, and improve people's awareness of the Siberian tiger conservation.

10. Conduct tiger-friendly management activities

By offering technical training, materials and expert guidance, to guide residents in the forest region to develop planting, cultivating and collecting, conduct trials on tiger-friendly forest operation, and strengthen management of non-forest products and improve wildlife living environment. To develop alternative livelihood for surrounding communities, such as edible fungus, hill potherb, bee-keeping, etc. At the same time to conduct tiger-friendly forest management activities, carry out forest tending, pruning and shrub cutting in young and half-mature forests, and adopt biological engineering technical measures to increase tigers' prey (the area of forest tending is about 4000 hectares in the project area of Jilin Forestry Department, 3000 hectares in the project area of Heilongjiang Forestry Department, and 3600 hectares in the project area of the General Bureau of Heilongjiang Forest Industry). To conduct trials on environment-friendly operation practices that contributes to improving tigers' habitats and farmer's livelihood, and create a good habitat environment for the Siberian tiger while securing workers' livelihood.

11. Conduct investigation on population quantity of the Siberian tiger and its prey

To work out unified operation plans of monitoring system to standardize technical monitoring specifications of the Siberian tiger and other wild animals. Through monitoring methods like infrared camera layout and wild sample collection, to carry out outdoor patrol, monitoring and investigation to provide scientific bases for the effectiveness evaluation of conservation management and project implementation. To carry out long-term monitoring on the Siberian tiger during the project, evaluate its number and distributional variations, and conduct at least two investigations (once at the beginning and the other at the end of the project) of Siberian tigers' prey such as hoofed animals, and evaluate the population quantity variation. To complete snowfield investigation and report of the Siberian tiger and its prey, monitoring of tigers and leopards by red infrared cameras, and submit relevant monitoring annual reports. To establish unified Sino-Russian tiger data base and form a transnational monitoring network of tigers and leopards.

3.2 Construction Scheme

3.2.1 Project Construction Contents

The major engineering construction projects include construction of conservation stations, construction or expansion of nature reserves, tiger-friendly forest

management activities and construction of supplementary feeding stations. See table 3.2-1.

Table 3.2-1 Table of Construction Contents Involved in the Project

Project Category	Project Name	Construction Unit	Location	Construction Content and Scale
Construction Project of Conservation Stations	Construction Project of Conservation Stations	Project Executive Office of the General Bureau of Heilongjiang Forest Industry.	Muling City	To maintain and renovate 13 conservation stations, with a total area of 1,615m ²
		Project Executive Office of the General Bureau of Heilongjiang Forest Industry	Dongning County	To maintain and renovate 7 conservation stations, with a total area of 485m ²
		Project Executive Office of Heilongjiang Province	Dongning County	To build 3 new conservation stations with a total area of 320m ² ; maintain and renovate 2 conservation stations with a total area of 360m ²
		Project Executive Office of Jilin Province	Wangqing County	To maintain and renovate 15 conservation stations with a total area of 4,030m ²
		Project Executive Office of Jilin Province	Hunchun City	To maintain and renovate 10 conservation stations with a total area of 3,874m ²
		Subtotal		To build 3 new conservation stations with a total area of 320m ² ; maintain and renovate 47 conservation stations with a total area of 10,364m ²
	House Construction Project in the Wangqing Reserve Administration	Project Executive Office of Jilin Province	Wangqing County	1,350m ²
Construction of the Siberian tiger Remote Monitoring Station in Hunchun Reserve	Project Executive Office of Jilin Province	Hunchun City	700m ²	
Construction or Expansion of Nature Reserves	Expansion Project of Niaoqingshan Nature Reserve	Project Executive Office of Heilongjiang Province	Dongning County	17,856 hectares
	Construction of Wangqing Tianqiaoling Nature Reserve	Project Executive Office of Jilin Province	Wangqing County	50,055 hectares

Project Category	Project Name	Construction Unit	Location	Construction Content and Scale
	Community			
	Construction Project of Hunchun Lanjia protected areas	Project Executive Office of Jilin Province	Hunchun City	19,800 hectares
Tiger-friendly Forest Management Activities	Forest Tending Project	Project Executive Office of the General Bureau of Heilongjiang Forest Industry	Muling County	3,260 hectares
		Project Executive Office of the General Bureau of Heilongjiang Forest Industry	Dongning County	6,711 hectares
		Project Executive Office of Heilongjiang Province	Dongning County	3,000 hectares
		Project Executive Office of Jilin Province	Wangqing County	4,132 hectares
		Subtotal		17,103 hectares
	Vegetation Restoration (Plantation)	Project Executive Office of Heilongjiang Province	Dongning County	500 hectares
Construction Project of Supplementary Feeding Stations	Construction Project of Supplementary Feeding Stations	Project Executive Office of the General Bureau of Heilongjiang Forest Industry	Muling County	To build 6 new supplementary feeding stations
		Project Executive Office of the General Bureau of Heilongjiang Forest Industry	Dongning County	To build 6 new supplementary feeding stations
		Project Executive Office of Heilongjiang Province	Dongning County	To build 5 new supplementary feeding stations
		Project Executive Office of Jilin Province	Hunchun City	To build 10 new supplementary feeding stations
		Project Executive Office of Jilin Province	Wangqing County	To build 1 transitional enclosure
		Subtotal		To build 27 new supplementary feeding stations, captivate one transitional field

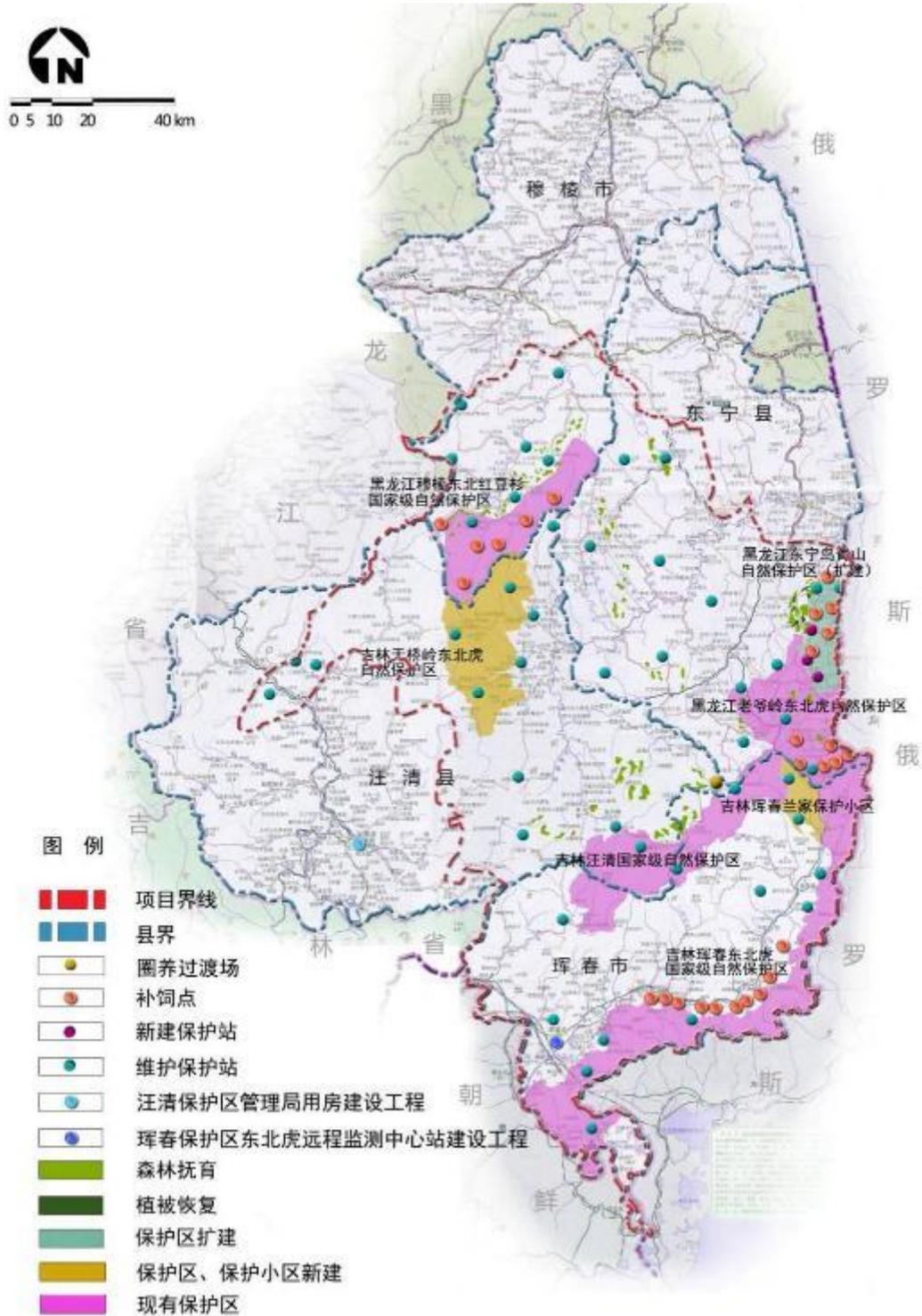


Fig.3.2-1 Layout of Involved Project Construction

Legend:

- project boundary
- county boundary
- transitional enclosure
- supplementary feeding station
- newly-built protection station
- maintained protection station
- building construction of Wangqing Reserve Authority

-  Hunchun Reserve the Siberian Tiger Remote Monitoring Station
- Construction
-  forest tending
-  vegetation recovery
-  reserve expansion
-  new construction of reserve and reserve community
-  existing reserve

3.2.2 Scope of Engineering Construction

The basic information of engineering construction involved in this project is shown in Table 3.2-1. These engineering construction projects cover an area of 105,315.34 hectares. Only buildings of Wangqing Reserve Administration and land of the Siberian Tiger Remote Monitoring Station in Hunchun Reserve are construction lands. All the other lands are state-owned forest lands with clear ownership. No land requisition is involved. See the table below.

Table 3.2-1 Statistics of Land Occupation

Project Name	County(City) Involved	Area (Hectare)	Land Status
Total		105315.34	
Construction of New Conservation Stations	Dongning County	0.03	Forest land
Maintenance and Renovation of Conservation Stations	Muling City, Dongning County, Wangqing County and Hunchun County	1.04	Forest land
Construction of the Wangqing Reserve Administration	Wangqing County	0.14	Construction land
Construction of the Siberian Tiger Remote Monitoring Station in Hunchun Reserve	Hunchun City	0.07	Construction land
Construction or Expansion of Nature Reserves	Dongning County, Wangqing County and Hunchun City	87711.00	Forest land
Forest Tending	Muling City, Dongning County and Wangqing County	17103.00	Forest land
Vegetation Restoration (Plantation)	Dongning County	500.00	Forest land
Construction of Supplementary Feeding Stations	Muling City, Dongning County, Wangqing County and Hunchun City	0.06	Forest land

The small engineering construction projects mainly include construction, maintenance and renovation of conservation stations, construction of the Wangqing Reserve Administration, the Siberian tiger remote monitoring station in Hunchun Reserve, supplementary feeding stations, etc. The on-site construction conditions are shown in the following pictures.



Fig.3.2-1 Site Photos of Renovated Conservation Station——Qianying Conservation Station



Fig.3.2-2 Site Photos of Renovated Conservation Station——Huichuan Conservation Station



Fig.3.2-3 Site Photos of Supplementary Feeding Stations——Xujundadi, Ganhezi



Fig.3.2-4 Site Photos of Supplementary Feeding Stations——Yindongzi(Already Built), Guosonggou



Fig.3.2-5 Site Photos of Supplementary Feeding Stations——Liangzichuan, Erheidingzi



Fig.3.2-6 Site Photos of Supplementary Feeding Stations——Sidaogou

3.2.3 Major Project Technical Scheme

To conduct tiger-friendly forest management activities, carry out forest tending, pruning and shrub cutting in young and half-mature forests, and adopt biological engineering technical measures to increase tigers' prey. The major technical schemes of the project include forest tending and vegetation restoration (plantation).

1. Technical Scheme of Forest Tending

Forest tending mainly includes light-transmitting tending, ecological thinning, pruning, bushes cutting, etc.

(1) Light-transmitting Tending

Targets of light-transmitting tending: the canopy density of young forest ≥ 0.8 ; trees are evenly distributed. As for forest lands where the undergrowth vegetation is sparsely distributed, measures like light-transmitting tending and felling of rotten, diseased, non-target and over dense trees will be taken.

Technical requirements: the plant intensity is (15-30) %; the accumulation intensity is (10-20) %; the canopy density should be kept at 0.6-0.7 after felling. For pure forests, we should prune dense trees to make it even, cut down trees of low quality, trees with no cultivating meaning, and auxiliary trees that are too dense, and clear miscellaneous bushes that prevent forest growing. For mixed forests, we should adjust the forest stand and cut down trees that are in poor growing condition and prevent the target trees.

(2) Ecological Thinning

Targets of ecological thinning: the canopy density of half-mature forest ≥ 0.7 , slope $< 25^\circ$. As for trees in areas with deep soil and good site conditions, we shall adopt ecological thinning. To make the crown canopy form a stepped closure, and trees in main storey and sub storey can both receive straight sunlight, we shall classify trees into superior trees, useful trees and harmful trees, cut down harmful trees, and maintain superior trees, useful trees and a balanced amount of grass, bushes and vines.

Technical requirements: strains intensity and accumulation intensity in ecological thinning $\leq 20\%$, canopy density should remain ≥ 0.6 after felling.

(3) Pruning

Targets of pruning: half-mature and young forests in which trees need to be pruned account for more than 60% of the total.

Technical requirements: according to the principle of pruning “slight pruning branches, retaining big crowns, controlling the competition and utilizing auxiliary trees”, the notch should be smooth and the bark should not be teared. We should prune branches closely from the stem base, and the section and trunk should be leveling without stubbles. Branch pruning should be done before the trees begin to bud. Cut off the dead arms or one of the twinning branches. The pruning height cannot exceed the longest green level branches. Generally, for young forests, the pruning height should not exceed 1/3 of the height of the tree; for half-mature forests, it should not exceed 1/2 of the height of the tree. After the pruning, preservatives should be put applied the cutting end.

(4) Bushes cutting

Targets of bushes cutting: bushes that prevent trees from growing.

Technical requirements: First, bushes that do not compete for nutritions with target tress should be protected to preserve the biodiversity. Second, plants, endangered species, beneficial fungus and their hosts which have high economic values and important ecological status should be protected. Bushes in glade space, water wetlands and ponds should be well protected. Third, the height of cut bushes should be under 10cm.

(5) Residuum disposal

Technical requirements: Residuum like harmful trees and dead trees should be disposed as the operation is conducted. Useful things in light-transmitting tending, ecological thinning and bushes cutting process should be utilized. Pruned branches should be removed or stacked together.



Fig.3.2-7 One of Residuum Disposal Methods: Centralized Stack of Pruned Branches

2. Technical Scheme of Vegetation Restoration (plantation)

(1) Selection of plantation sites

Forest lands with canopy density under 0.4.

(2) Nursery plants

Nursery plants are Korean pines. The nursery plant type is bare-rooted seeding.

(3) Plantation density

Plantation density is 55 plants/mu. The planting space is 3m*4m.

(4) Land preparation

Land is prepared in the middle of April in cave shape. The cave size is 50cm*25cm.

(5) Transplanting requirements

The survival rate of nursery plant should be more than 90% in the same year.

(6) Young forest tending

The young forest tending type is half-tending, with a frequency of 7 times in 5 years.

The detailed information of plantation technical scheme is shown in *Special Report on Environmental Protection Guidelines for Plantation*.

3.3 Project Analysis

3.3.1 Rationality Analysis of Layout

At the initial implementation stage of the project (2010), the project used to cover most areas in Heilongjiang province and the eastern part of Jilin province (see Fig.3.3-1), which are major distribution areas of the Siberian tiger in China.

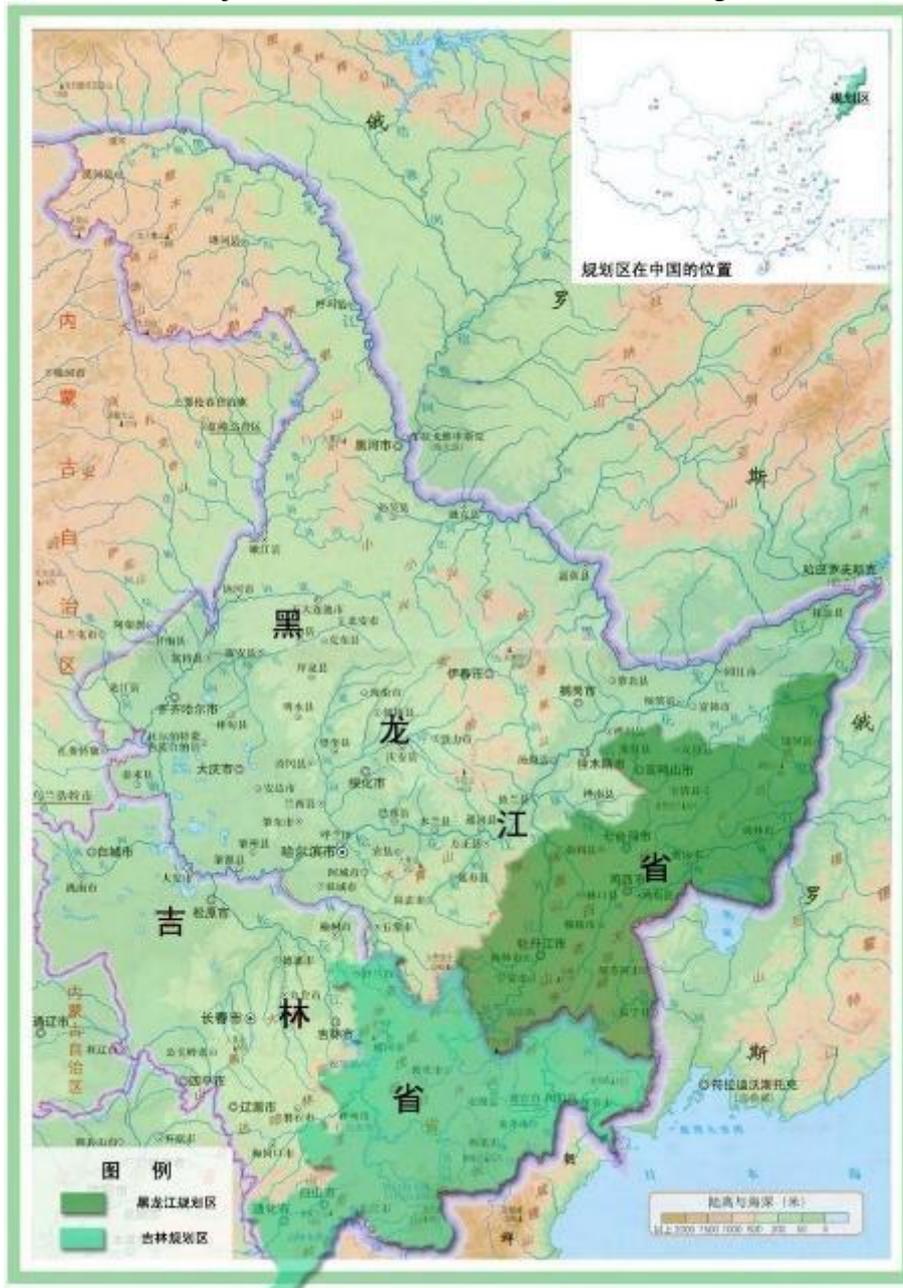


Fig.3.3-1 Action Planning Area of the Siberian Tiger Conservation

Legend:

■ Planning Area in Heilongjiang Province

Planning Area in Jilin Province

As the project is advanced (2011 to 2013), after serious argumentations and investigation by experts from the State Forestry Administration and local responsible units, the project implementation area is mainly centralized in three places (see Fig.3.3-2). There are 16 existing national and provincial nature reserves in the project area, i.e., Jilin Hunchun Siberian Tiger Nature Reserve, Jilin Changbai Mountain Nature Reserve, Jilin Wangqing Taxus Nature Reserve, Jilin Tianfozhi Mountain Nature Reserve, Jilin Huangheni Nature Reserve, Jilin White Mountain Moschus Nature Reserve, Jilin Dunhua Yanminghu Nature Reserve, Jilin Songhua River Sanhu Nature Reserve, Heilongjiang Dongning Niaoqingshan Nature Reserve, Heilongjiang Muling Taxus Nature Reserve, Heilongjiang Jidong Lantau Peak Nature Reserve, Heilongjiang Hulin Island Wetland Nature Reserve, Heilongjiang East Wetland Nature Reserve, Heilongjiang Rao River Heifeng Nature Reserve, and Heilongjiang Ningan North Lake Nature Reserve.

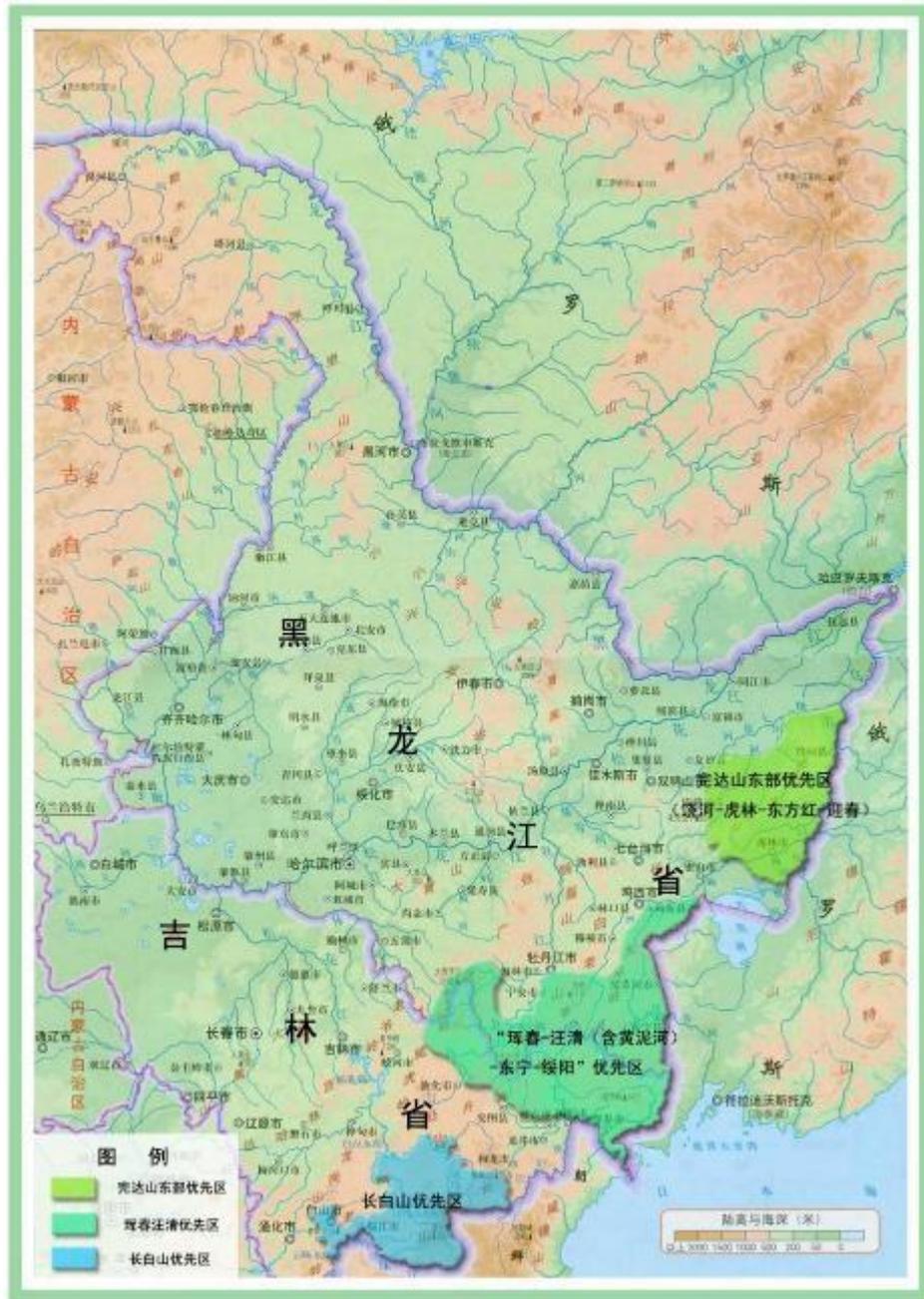


Fig.3.3-2 Project Area Scope (2011)

Legend:

- Priority Area in East Wanda Mountain
- Priority Area in Hunchun and Wangqing
- Priority Area in Changbai Mountain

In September 2013, due to the fund change (from the initial 15 million US dollars to 3 million US dollars), and after the discussion of experts from the State Forestry Administration and the World Bank, the project implementation areas were reduced to one major area, that is, the area in Jilin Province and the Eastern part of Heilongjiang Province which only involves Wangqing, Chunhui, Dongning and Muling County (City). This helps to make a more centralized fund utilization and achieve significant protective results. The preliminary project area and an implementation scheme are formed then. (See Fig.3.3-3)

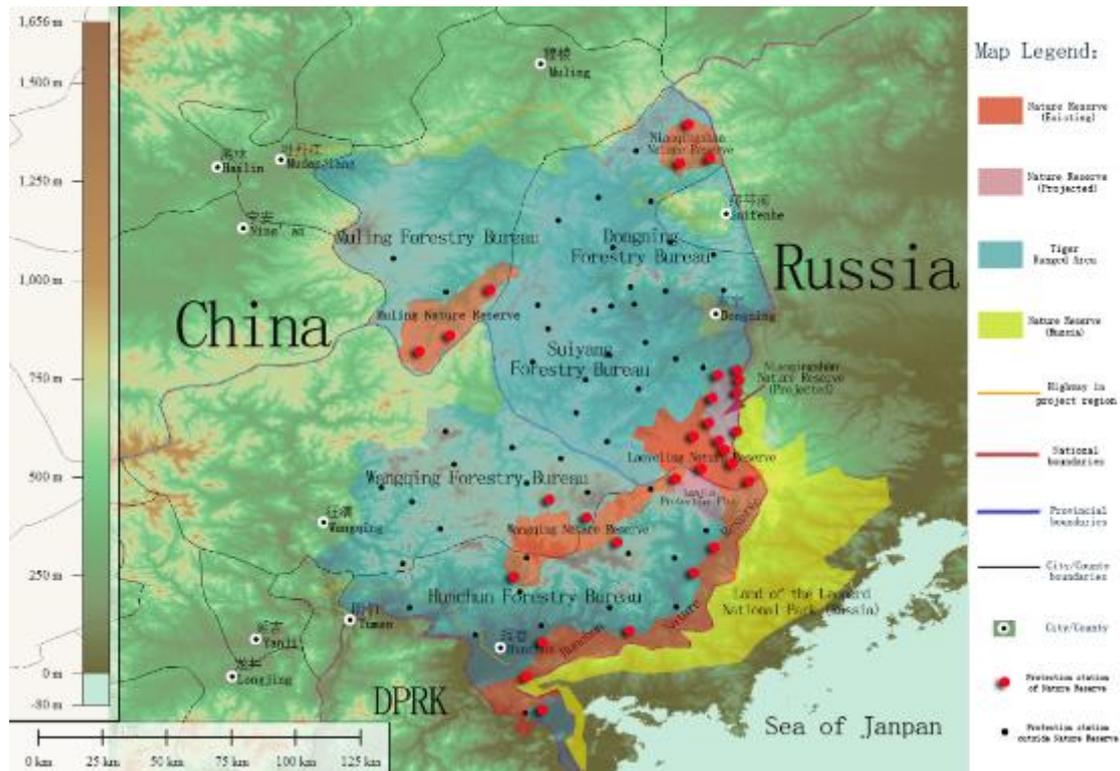


Fig.3.3-3 Project Area Scope (September, 2013)

From October, 2013 to March, 2014, after the project area is confirmed, the State Forestry Administration and local project implementation units conducted investigation on the boundary division of the project area. Meanwhile, based on actual conditions of the Siberian conservation and the operability of this project, project activities and planned areas are practically arranged. After several modifications and perfection (see Fig.3.3-4), the current project implementation area scope was confirmed in April 2014. (See Fig.3.3-5)



Fig.3.3-4 Project Area Scope (December, 2013)

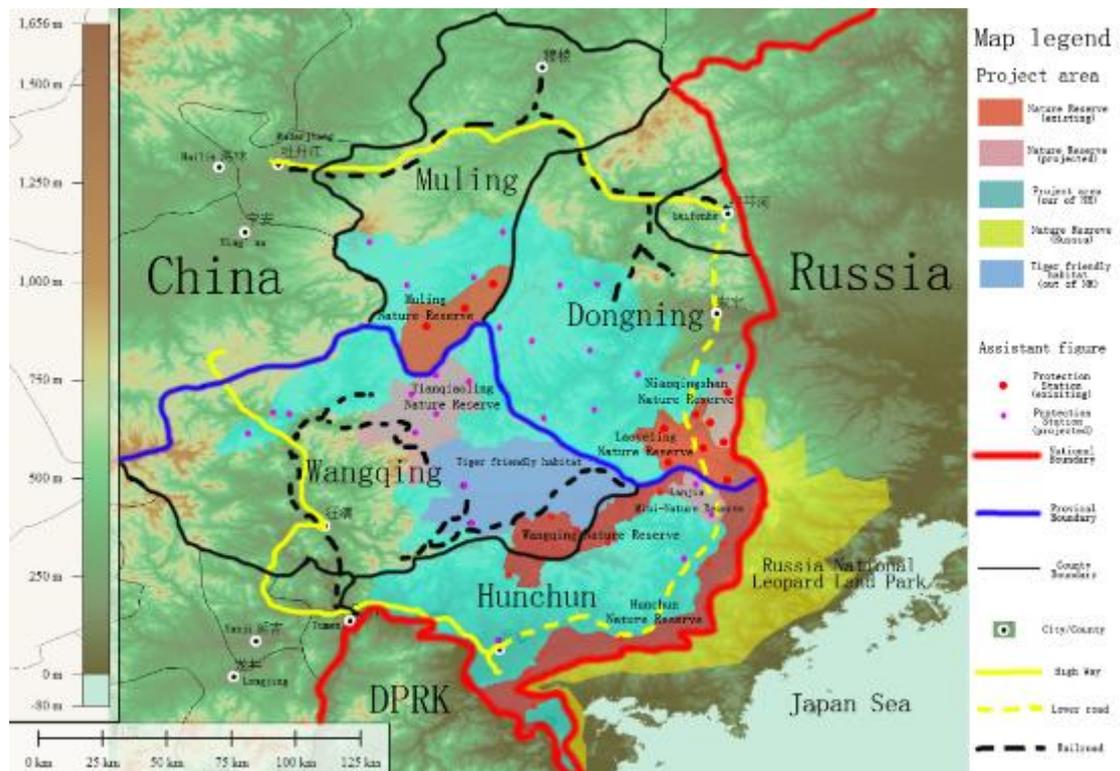


Fig.3.3-5 Project Area Scope (April, 2014)

After the implementation scope of the entire project is confirmed, according to the social and environmental requirements of the World Bank, the State Forestry Administration instructed local project implementation units to conduct boundary delimitation according to the activity content of each unit. For example, in the

expansion of the Niaoqingshan Reserve, the original implementation scope was about 20,000 hectares. Later it was reduced to about 16,000 hectares to avoid some social environment problems like involuntary resettlement and demolition. After further field investigation, it was reduced to 15,000 hectares in order to solve problems of the alternative livelihood and influences on stakeholders. The boundary of expanded reserves was also adjusted to reduce the influences on ecological environment and social security.

3.3.2 Rationality Analysis of Land Occupation

The land used for construction or expand nature reserves, conducting tiger-friendly forest management activities and building supplementary feeding stations are all forest lands. No cultivated land and farmland is occupied. These lands will remain forest lands after the project is implemented. The land type will not be changed.

Construction of protection stations, Wangqing Reserve Administration, and the Siberian Tiger Remote Monitoring Station in Hunchun Reserve are all based on current buildings, without involving land occupation or change of land type.

The current lands used for construction of new conservation stations are forest lands, the land type of which will remain the same after the conservation stations are constructed. They belong to the forest land of auxiliary production (remark: according to *Major Technical Regulations of Forest Resources Planning and Design Survey* of the State Forestry Administration, the land used for wildlife conservation, forest protection, pest control and prevention, forest fire prevention, timber quarantine facilities, all belong to forest land of auxiliary production).

3.4 Project Implementation Progress and Investment

The total investment in this project is 18 million US dollars, including 3 million US dollars from the GEF fund and 15 million US dollars of counterpart fund. The implementation period is from 2015 to 2018.

4. Current Situation of the Environment in Project Areas

4.1 Natural Environment

4.1.1 Geographical Location

This project is located in Jilin Province and the eastern part of Heilongjiang Province in Northeast China. The project-involving cities and counties mainly include Hunchun City, Wangqing County of Jilin Province, and Dongning County, Muling City of Heilongjiang Province. The east part of the project area is contiguous to primorsky region of Russia; the west part is contiguous to Tumen City and Mudanjiang City; the southwest part is contiguous to Qingxing County and Xiongji County of North Korea across the Tumen River; and the north part is contiguous to Jixi City of Heilongjiang Province. The project covers 4 existing reserves (Huichun Nature Reserve, Wangqing Nature Reserve, Laoyeling Nature Reserve, and Muling Nature Reserve), 3 projected reserves and communities (Tianqiaoling Nature Reserve, Lanjia protected areas, and Niaoqingshan Reserve), and the working circles in subordinate forest farms of Hunchun Forestry Bureau, Hunchun City Forestry Bureau, Wangqing Forestry Bureau, Wangqing County Forestry Bureau, Tianqiaoling Forestry Bureau, Dongning County Forestry Bureau, Suiyang Forestry Bureau, and Muling Forestry Bureau, etc. The total area is about 15337.08 square kilometers.

4.1.2 Geological Geomorphology

The project is mainly located in Laoyeling Mountain of Changbai Mountain system. The north part belongs to Wanda Mountain, featuring low hills. It belongs to the Paleozoic and the Mesozoic geosynclinal area, the fold belt of Taipingling and Ussuri. The project area is a part of the Bamiantong convex of the northeast platform formed in early Paleozoic era because of the Caledonian movement. In terms of geotectonic element, it is the geosynclinal anticlinorium of Taipingling fold belt. The whole terrain is high in west and low in east. Laoyeling Mountain in the west, 1477 meters high, is the highest point in this area. The lowest point is Jingxin Wetland, which is 5 meters only above the sea level. The various geomorphic types in this area, such as hill, platform, terrace, basin, river valley, lake, river, are in line with echelon distribution. Influenced by the geological structure, mountains rise one after another in this area, quite suitable for Siberian tigers and leopards to inhabit.

4.1.3 Climate

In the southern part of the project area in Jilin Province, (Wangqing County, Hunchun City), it belongs to the temperate oceanic monsoon climate zone. Compared with regions at the same latitude, it is warmer in winter and cooler in summer. The annual average temperature in this area is 5.65 °C. The average temperature is -17.4 °C in January, 25.9 °C in August, and the annual average accumulated temperature is 2584.4 °C. Besides, the annual average rainfall in this area is 618.1 mm. Its frost-free period ranges from 120 to 126 days. The average wind speed is 21 m/s, and the strongest wind can reach level 9.

The climate in the north part of the project area in Heilongjiang Province (Muling City, Dongning County), is temperate continental monsoon climate. Influenced by the

high air pressure on the inland and the low air pressure on the sea, as well as the alternant monsoon, there is a remarkable temperature difference all the year round. It is windy, dry and sunny in spring; short, cool and rainy in summer. The temperature changes rapidly and it frosts early in autumn. The winter is long and cold. The climate is characterized by less heat resources and more water resources. The frost-free period usually ranges from 90 to 140 days. The annual rainfall ranges from 440 mm to 600 mm. The annual average temperature ranges from -2°C to 5.5°C . The annual accumulated temperature above 10°C ranges from 1700°C to 3000°C .

4.1.4 Hydrology and Water System

Most rivers in the project area in Jilin Province belong to the Tumen River water system. Only the northern side of Tutou ridge, which belongs to Dalongling Mountain system in Wangqing, is the home of Suifen River. There is many rivers in this area, with clear and rich water resources. Affected by monsoon, the rivers have a short flood season, a long ice period and a low sediment concentration. They are important watering places for the hoofed animals, such as tigers and leopards. Most water systems in Heilongjiang Province belong to Suifen River water system, while some rivers (like Muling River) belong to Ussuri River water system.

4.2 The Ecological Environment

4.2.1 Vegetation Type

The forest coverage rate in the project area ranges from 80% to 90%, indicating a good ecological environment. There are mainly arbor forests in this area, together with some marshlands, appropriate forest lands and immature forest lands, etc. The forest lands are mainly protection forests and forests for special use, etc.

Influenced by the geomorphology, geographical location and climate in the project area, plant species mainly belong to Changbai flora, together with plants from Xing'an flora and North China flora. It belongs to Laoyeling subregion, Xiaoxing'an Mountain - Laoyeling flora. The zonal vegetation of this area is Korean pines and broad-leaved mixed forest of *Abies holohylla*, in Laoyeling and Taipingling Mountain only. The main characteristic is associated with warm conifer-*Abies holohylla*, and warm-temperate yews, and Changbai *Platycladus orientalis*, etc. It is also associated with much more broad-leaf tree species, such as a typical warm-temperate tree species called *Carpinus cordata*, etc. The vines in this forest grow well, such as kiwi fruit, red Tengzi, Armand clematis, etc., which add more beautiful subtropical scenery to the precious broad-leaf mixed forest. At present, in the project area, many forest types have derived, such as secondary broad-leaved mixed forest, oak forest, aspen forest, etc. There are 5 main vegetation types, including forests, thickets, meadows, marshes, and aquatic. There are 575 kinds of higher wild plants, of which 37 species are fern and 486 species are angiosperms. Most plants are distributed in understory, meadows, marshes, river banks, etc. There are the National Level- I key protected plants like *Taxus cuspidata* as well as the National Level II key protected plants such as *Pinus takahasii*, *Arbutifolia*, *Fraxinus mandshurica* and *Glycine soja*, etc.

According to the type, the main vegetation groups in the project area include:

(1) Forest vegetation. It is the dominant zonal vegetation throughout this area. Korean pine broad-leaved forest should be the zonal vegetation in this area. However, due to the predatory logging and repeated damage of forest fire, the native vegetation has disappeared and been replaced by the secondary forest, mainly including birch forest, poplar forest, birch-poplar mixed forest, oak forest.

(2) Shrub vegetation. It is mainly distributed in both sides of various canals, water wetland or marsh edges and forest edge. It includes willow shrub and hazelnut shrub.

(3) Meadow vegetation. The meadow vegetation in this area is weedy meadow-based with the zonal distribution. Its width ranges from several to more than ten meters, and the height of the community is about 100 cm. But the species composition is rich. In general, it can be divided into three sub-layers: The first sub-layer are grasses which are more than 90 cm tall, such as *Calamagrostis angustifolia*, *Sanguisorba officinalis*, *Sanguisorba parviflora*, *Filipendula*, procumbent speedwell, lovage, reed, *Calamagrostis epigeios*, etc. The second sub-layer are grasses with the height from 60 cm to 90 cm, such as *Carex schmidtii* Meinsh, *Carex limosa*, *Lathyrus quinquenervius*, *Valeriana amurensis*, *Stachys baicalensis*, *Patrinia scaniosaefolia*, willow herb, *Trifolium lupinaster*, cuckoo-bud, etc. The third sub-layer are grasses which are no more than 60 cm, composed by skirret, *Stachys baicalensis*, *Catha palustris*, chickweed, rush, etc.

(4) Marsh vegetation. Marsh is a kind of wet mesophyte vegetation, including *Sphagnum*, *Equisetaceae*, *Nutgrassflatsedge*, *Poaceae*, *Ranunculaceae*, *Ericaceae*, *Rush*, *Scrophulariaceae*, *Rosaceae*, *Asteraceae*, etc. Marshlands are distributed in the flood plain, diluvial upland in front of mountains, valleys, flat watershed, and the zonal forest-free zone along rivers. And most of them scattered as islands in this area, inlaying themselves into zonal vegetation and azonal vegetation. In terms of forming edificatory, marshes in this area can be divided into the following types: *Sanguisorba parviflora*, *Calamagrostis angustifolia*, *Carex schmidtii* Meinsh marsh, *Calamagrostis angustifolia*, *Reed* marsh and *Carex lasiocarpa* marsh.

(5) Aquatic vegetation. There are Suifen River, Muling River, and many other rivers in the project area. Bubble bogs, ditch ponds are formed in local districts. Thus there is no lack of aquatic vegetation. Common vegetation include rhizoma scirpi, pondweed and duckweed. The vegetation consist of the following three types: submerged vegetation, floating vegetation, emerged vegetation.

4.2.2 Flora

According to the species of vegetation, the following shows the main plant species in the project areas.

(1) Bryophytes

There are 25 families and 52 kinds of bryophytes in total, mainly including *Scapania paludosa*, *Porella chinensis*, *Sphagnum imbricatum*, *Polytrichum longisetum*, etc.

(2) Ferns

There are 16 families and 37 kinds of ferns in total, mainly including *Selaginella tamariacina*, *Conocormus minutus*, *Camptosorus sibiricus*, *Azolla filicoides*, etc.

(3) Gymnosperms

There are 3 families and 9 kinds of gymnosperms in total, mainly including *Abies nephrolepis*, *Larix olgensis*, *Picea jezoensis*, *Pinus koraiensis*, *Pinus densiflora*, *Pinus takahasii*, *Taxus cuspidata*, *Juniperus rigida*, *Thuia koraiensis*, etc.

(4) Angiosperms

There are 85 families and 477 kinds of angiosperms in total, mainly including *Populus davidiana*, *Salix matsudana*, *Brtula platyphylla*, *Quercus mongolica*, *Prin sepiasinensis*, *Glycine soja*, etc.



Figure 4.2-1 On-Site Photos of Forest Tending in Proposed Tiger-Friendly Woodland - Shajingou Forest Farm



Figure 4.2-2 On-Site Photos of Forest Tending in Proposed Tiger-Friendly Woodland - Chaoyanggou Forest Farm

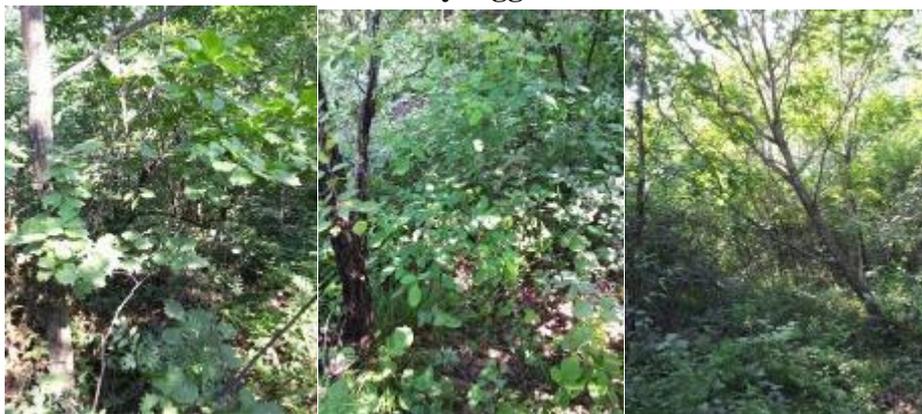


Figure 4.2-3 On-Site Photos of Forest Tending in Proposed Tiger-Friendly Woodland - Shimenzigou Forest Farm



Figure 4.2-4 On-Site Photos of Forest Tending in Proposed Tiger-Friendly Woodland - Huichuan Forest Farm



Figure 4.2-5 On-Site Photos of Forest Tending in Proposed Tiger-Friendly Woodland - Huashuhe Forest Farm



Figure 4.2-6 On-Site Photos of Forest Tending in Proposed Tiger-Friendly Woodland - Shimenzi Forest Farm

4.2.3 Fauna

The project area is an important habitat for Siberian tigers, *Panthera pardus* and many other rare wild animals. It is of great significances in conservation and research. Zoogeographical regions in the project area includes Palaeartic realm, Northeast region and Changbai Mountain sub-region. Animal species here are mainly temperate habitat class-based. There are 5 kinds of the National Level- I key protected animals, 10 kinds of Level- II protected animals, 4 kinds of the National Level- I key protected birds and 47 Level- II protected birds.

(1) Fish

The project area is in temperate and cold zone of Asia. There are many low hills in the watershed, and a high forest cover rate. It is particularly suitable for cold-water fish

to grow because of its temperature, humidity, the accumulated snow of whole four months and the sediment gravel in rivers. There are seven orders, twelve families, fifty-four kinds of fish in this area. The precious fishes include *Tribolodon brandti*, *Oncorhynchus keta*, *Brachymystax lenok*, *Hucho taimen*, etc. Among them, cyprinid has the largest population and then it is Salmonidae fish.

(2) Amphibians

There are two orders, four families and nine kinds of amphibians in the project area, such as *Bufo raddei*, *Rana dybowskii*, *Rana amurensis*, etc.

(3) Reptiles

There are two orders, four families and ten kinds of reptiles in the project area, such as *Takydromus amurensis*, *Takydromus wolteri*, *Eremia argus*, *Coluber spinalis*, *Elaphe dione*, *Elaphe rufoldorsata*, *Elaphe schrenckii*, *Rhabdophis tigrina*, *Gloydus ussuriensis*, etc.

(4) Birds

The project area is located in the eastern route of Chinese migratory route for birds. It is rich in bird resources. There are 306 kinds of birds in total, and they belong to 18 orders and 54 families. Fringillidae accounts for the most, followed by ducks and snipe. There are the National Level- I protected birds like *Aquila chrysaetos*, etc. and 23 kinds of the National Level- II protected birds, such as *Podiceps Grisegena*, *Cygnus*, *Milvus migrans*, *Accipiter gentilis*, *Accipiter nisus*, *Accipiter virgatus*, *Buteo hemi lasius*, *Buteo buteo*, *Buteo lagopus*, *Circus cyaneus*, *Circus spilonotu*, *Falco subbuto*, *Falco vespertinus*, *Tetrastes bonasia*, *Otus bakkamoena*, *Bubo bubo*, *Ninox scutulata*, *Asio otus*, *Asio flammeus*, etc.

(5)Mammals

There are 6 orders, 20 families and 75 kinds of mammals in total in the project area. Rodents have an advantage over others in terms of species quantity and distribution, followed by carnivores. There are many precious animal resources, including the National Level- I protected animals such as *Panthera tigris*, *Panthera pardus*, etc., as well as the Level- II protected animals such as *Lutra lutra*, *Lynx lynx*, *Cervus elaphus*, etc.

4.2.4 Prey Resources of the Siberian Tiger

Prey of the Siberian tiger include red deer (*Cervus elaphus*), roe deer (*Capreolus pygargus*), sika deer (*Cervus nippon*) and wild boar (*Sus scrofa*) in the project area. Taking Jilin Hunchun Nature Reserve as an example, according to the research results of Survey on Prey Resources of the Siberian Tiger in Jilin Hunchun Nature Reserve, the relative density (based on the occurrence frequency of fresh footprints) of red deer is 0.09 per kilometer; 0.43 as for roe deer, 0.12 as for sika deer and 0.03 for wild boar. The substantiality density is 0.11 head per square kilometers as for red deer; 0.76 head as for roe deer, 0.07 head as for sika deer and 0.01 head for wild boar, which is lower than the prey density in far-east area of Russia.

4.2.5 Quality Assessment of Eco-environment

According to the *Eco-environmental Quality Assessment Research of China*, four counties or cities involved in this project rank highly in Jilin Province and Heilongjiang Province in terms of eco-environmental quality. Hunchun City in Jilin Province has excellent eco-environmental quality. Its EQI (Environmental Quality

Index) is 76.93, ranking the first among 49 counties and cities in Jilin Province. Wangqing county, whose EQI is 73.33(the same as that of Linjiang City, ranking the second), has good eco-environmental quality, ranking the third among all counties and cities in Jilin Province. Dongning County has good eco-environmental quality, with EQI of 65.47, ranking the third among 80 counties (cities) and districts in Heilongjiang Province. The eco-environmental quality of Muling City is also good. Its EQI is 61.36, ranking the fourth among all counties and cities in Heilongjiang Province. The project area, whose general eco-environmental quality is excellent and basically stable, is the area with the most excellent eco-environmental quality in Jinlin and Heilongjiang Province of northeast China, as well as an important habitat for rare and endangered species like Siberian tigers and *Panthera leopards*.

4.2.6 Identification of Ecologically Sensitive Targets

The ecologically sensitive areas of this project mainly include nature reserves and concentrated distributional areas of rare and endangered wild fauna and flora. Rare and endangered wild fauna and flora mainly exist in the nature reserves. The project area involves many national nature reserves such as Hunchun Sibeiran Tiger Nature Reserve and Wangqing Siberian Tiger Nature Reserve in Jilin Province, Laoyeling Siberian Tiger Nature Reserve and Muling Northeast Taxus Chinensis Nature Reserve in Heilongjiang Province. It's a key area of eco-environment protection. See Table 4.2-1 for basic information of these nature reserves and see the attached maps for their distribution.

Table 4.2-1 Basic Information of Nature Reserves Involved in the Project

No.	Name	Level	Administrative Region	Area (Hectare)	Type	Major Protected Objects	Activities
1	Jilin Wangqing National Nature Reserve	National	Wangqing County and Hunchun City	67,434	Forest Ecosystem	Wildlife like <i>Taxus cuspidate</i> , Siberian tigers, <i>Panthera leopards</i> and their habitats	To maintain and renovate conservation stations
2	Jilin Hunchun Siberian Tiger National Nature Reserve	National	Hunchun City	108,700	Wildlife	Siberian tigers, <i>Panthera leopards</i> and their habitats	To maintain and renovate conservation stations
3	Heilongjiang Laoyeling Siberian Tiger National Nature Reserve	Provincial	Dongning County	71,278	Wildlife	Siberian tigers, <i>Panthera leopards</i> and their habitats	To maintain and renovate conservation stations and supplementary feeding stations; forest tending
4	Heilongjiang Muling Taxus	National	Muling City	35,648	Wildlife	<i>Taxus cuspidate</i> and	To maintain and renovate

No.	Name	Level	Administrative Region	Area (Hectare)	Type	Major Protected Objects	Activities
	cuspidate National Nature Reserve					the living environment	conservation stations and supplementary feeding stations
5	Niaoqingshan Nature Reserve	expanded	Dongning County	17856	Wildlife	Siberian tigers, <i>Panthera leopards</i> and their habitats	To build new conservation stations and supplementary feeding stations
6	Tianqiaoling Nature Reserve	Newly-built	Wangqing County	50055	Wildlife	Siberian tigers, <i>Panthera leopards</i> and their habitats	To maintain and renovate conservation stations
7	Lanjia Conservation Community	Newly-built	Hunchun City	19800	Wildlife	Siberian tigers, <i>Panthera leopards</i> and their habitats	To maintain and renovate conservation stations

Jilin Hunchun Siberian Tiger National Nature Reserve (hereinafter referred to as the Reserve) is situated in southeast Hunchun City, Korean Autonomous Prefecture of Yanbian in Jilin Province. It covers an area of 108,700 hectares, with a peripheral protective zone of 41,778 hectares. Its core zone covers an area of 30,056 hectares, buffer zone 17923 hectares and experimental zone 19455 hectares. It is the first nature reserve in China which takes endangered species and national key protected wild animals like Siberian tigers, *Panthera leopards* and their habitats as the main protected objects. The Reserve, where the borders of China, Russia and North Korea meet, covers an area of 10,8700 hectares, is one of the 2 existing habitats for wild Siberian tigers and *Panthera leopards* (in Heilongjiang and Jilin Province), with the largest quantity and density of Siberian tigers in China. The Reserve covers six townships, i.e., Chunhua Town, Madida Village, Yangpao Village, Machuanzi Village, Banshi Town and part of Jingxin Town. There are 21 natural villages in the Reserve, with a population of 10,794. There are 924 people in Yangpao Village, 1,108 in Machuanzi Village, 2,616 in Banshi Town and 6,146 in Jingxin Town. According to its functions, the Reserve can be divided into several zones. There are 4,648 people in the buffer zone, 6,146 people in the experimental zone, who are mainly in the downstream of Hunchun River and Jingxing Basin in the experimental zone. The average population density in the Reserve is 11 people / km². Most people belong to Korean and Han nationalities, and there are still a certain number of Man and Hui nationalities. Among the 10,794 people, 7,103 belong to Korean nationality, accounting for 65.8% of the total population; 2,914 belong to the Han nationality, accounting for 27.0% of the total; 774 are Manchus, accounting for 7.2% of the total; 3 belong to the Hui nationality. The national economy in this reserve is dominated by agriculture and husbandry, which amount for 92% of the total production value in this

region, followed by diversified forestry and fishery, accounting for 6% of the total production value.

Wangqing Nature Reserve is situated in Wangqing County and Hunchun City of Korean Autonomous Prefecture of Yanbian in east Jilin Province. It covers an area of 67,434 hectares, including parts of Lanjia Forest Farm, Xi'nancha Forest Farm, Duhuangzi Forest Farm, Dahuanggou Forest Farm and Jincang Forest Farm respectively. The major protected targets in the reserve are endangered wildlife species like *Taxus cuspidate*, Siberian tigers, *Panthera leopards* and their habitats. In December 2002, people's government of Jilin Province approved the establishment of Wangqing Provincial Nature Reserve in Jilin Government Document No. 133 [2002]. The reserve was approved as a national nature reserve by the State Council on June 2013. Its core zone covers an area of 30,056 hectares, buffer zone 17923 hectares and experimental zone 19455 hectares. Though the reserve covers 5 forest farms, the administration stations of Dahuanggou, Xi'nancha, Duhuangzi and Jincang forest farms are excluded from the reserve. Since 2007, Wangqing Forestry Bureau has gradually implemented the management system of central forest farms, in which small forest farms are removed or merged step by step. By the end of 2009, there is only one residential area—Lanjia Forest Farm in the buffer zone of the reserve, and no residents in the core zone and experimental zone. In general, the population density is low in the reserve and surrounding area. Residents mainly belong to the Han nationality, which amounts for 86.3% of the total population. The Korean nationality accounts for 12.7% and other minorities 1%. The major industry in the reserve is forestry, followed by farming and breeding industry. See the table below for all the industrial output in the reserve. Forestry is the pillar industry in the reserve, accounting for 55.8% of the general output. Farming industry are mainly distributed in the experimental zone, with small cultivated areas and low output value. The major crops are grain crops like beans and corns, as well as vegetables and fungus. Breeding industry is dominated by cattle husbandry and frog breeding, followed by pig breeding. Gathering industry mainly concentrates on mushrooms, wild vegetables and pine nuts.

Heilongjiang Laoyeling Siberian Tiger Nature Reserve is situated in the working circle of Suiyang Forestry Bureau in the east mountainous area of southeast Heilongjiang Province. It covers all the working circles of the original Sanchahe Forest Farm and Nuanquanhe Forest Farm, and part of the working circles of Yuanshan Forest Farm, Sanjielazi Forest Farm, Zhongguli Forest Farm, and Taipingchuan Community respectively. The Nature Reserve covers a total area of 71278 hectares. The core zone covers 27193 hectares, accounting for 38.15% of the total; the buffer zone covers 18696 hectares, 26.23% of the total; the experimental zone 25389 hectares, 35.62% of the total. The proportion of these three zones are appropriate. The reserve can meet the need of conservation. It ensures the integrity and continuity of the reserve and meet the biological needs of biological resources in the reserve. According to the statistics in 2011, the total population employed in forestry in Suiyang Forestry Bureau working circle is 28,470. No permanent residents live in the core region or the buffer zone. There are four residential areas in the experimental zone with a population of 758, mainly belonging to the Han nationality. The population of minorities is relatively small. The population of Man nationality is larger than other minorities.

Heilongjiang Muling *Taxus Cuspidata* Nature Reserve is located in the working circle of Heping Forest Farm, Gonghe Operation Community and Longzhaogou Forest Farm, which are subordinated to Heilongjiang Muling Forestry Bureau in

Muling City. The reserve borders on Jilin Wangqing Forestry Bureau in the south and west, adjoins Heilongjiang Suiyang Forestry Bureau and Jilin Tianqiaoling Forestry Bureau in the east and southeast respectively. Its total area is 35,648 hectares. At the beginning of 2003, Muling Forestry Bureau merged mixed broadleaf-conifer forests which cover an area of 35,648 hectares in Heping Forest Farm, Gonghe Operation Community and Longzhaogou Forest Farm into the *Taxus Cuspidata* Nature Reserve according to the Nature Reserve Construction Standard of China. The land usage right belongs to Heilongjiang Muling Forestry Bureau. There are now 1,003 people in the reserve and 301 households in forest farms, including 9 managerial staffs and 11 professionals. The staff and residents mainly belong to the Han nationality and Korean nationality. The Han people account for over 90% of the total population, followed by the Korean nationality.

Jilin Hunchun Lanjia protected areas (proposed to expand), situated in Chunhua Town, Hunchun City, borders on Wangqing Nature Reserve in the west with Liuguisong Ditch as the boundary. It adjoins Suiyang Nature Reserve in the north with the borderline between Jilin and Heilongjiang Province as the boundary. It is contiguous to Hunchun Nature Reserve in the east with the highway from Chunhua City to Dafangzi as the boundary. It borders on Lanjia Operation Community and Jinquangang Operation Community in the south. The total area of the reserve is 200km². Its major protected targets are Siberian tigers, leopards and their habitats. Two check stations are set up in Lanjia Village and Dafangzi by Jilin Hunchun Forestry Bureau. As it is situated at the border region of Jilin and Heilongjiang Province and connected with Heilongjiang Suiyang Nature Reserve and Wangqing Nature Reserve. It is frequented by Siberian tigers and leopards according to the monitoring results of Hunchun Nature Reserve Bureau in recent years. Therefore, the reserve is likely to be an ecological corridor for Siberian tigers and leopards to spread to Wangqing region through Hunchun Nature Reserve.

Heilongjiang Niaoqingshan Nature Reserve is located in Dongning County with an area of 25,746hectares. Officially approved by Heilongjiang Provincial Government in 2007, it consists of Erduan Forest Farm and Nuanquanzi Forest Farm. There are 577 higher plant species, accounting for 26% of the total plant species in Heilongjiang Province. Among them, 32 are bryophyte, 37 are pteridophyte, and 508 are angiosperm. Most animals in the reserve are those that live in temperate habitats, including 261 kinds of vertebrates, accounting for 44.92% of the total vertebrate species in Heilongjiang Province; 25 kinds of fish, accounting for 23.81%; 10 kinds of batrachians, accounting for 83.33%; 12 kinds of reptiles, accounting for 75%; and 44 kinds of mammals, accounting for 50.57%. Located at the border region of China and Russia and bordering on land routes in Russia, the reserve is an important ecological corridor for wild Siberian tigers.

Jilin Tianqiaoling Siberian Tiger Provincial Nature Reserve (proposed to build), is located in the jurisdiction of Tianqiaoling Forestry Bureau, covering an area of 500.55 square kilometers. The key protected targets are Siberian tigers, *Panthera leopards* and their prey, as well as forest ecosystem. The reserve faces Wangqing Nature Reserve, Hunchun Siberian Tiger Nature Reserve and Heilongjiang Laoyeling Nature Reserve, and it joins Heilongjiang Muling Nature Reserve. It is planned to build a Forestry Bureau for protection and compensation administration, and seven protection stations, i.e., Xidahe Forest Farm, Xiangyang Forest Farm, Shanghe Forest Farm, Neihe Forest Farm, Huapi Forest Farm, Xinkai Forest Farm and Putaogou Forest Farm.

4.3 Social Environment

4.3.1 Administrative Division

The project is located in the northeast region of the People's Republic of China, at the junction area of Heilongjiang and Jilin Province, and close to the Primorsky region of Russian Federation and North Hamgyong Province of the Democratic People's Republic of North Korea. It involves Hunchun City, Wangqing County, Dongning County and Muling County, covering a total area of about 15337.08 square kilometers.

Hunchun City is located in the lower reaches of Tumen River, in the east part of Jilin Province. It belongs to Korean Autonomous Prefecture of Yanbian, governing four streets, four towns, three townships, two ethnic towns, and one national economic development zone, i.e. Hunchun Border Economic Cooperation Zone (including the export processing zone and the Sino-Russian frontier trade zone).

Wangqing County is located in the northeast of Korean Autonomous Prefecture of Yanbian, Jilin Province. It governs eight towns and one township, that is, Wangqing Town, Daxinggou Town, Tianqiaoling Town, Luozigou Town, Baicaogou Town, Chunyang Town, Fuxing Town, Dongguang Town, Cockscomb Township and the People's Government in Wangqing Town. Besides, there is Wangqing Forestry Bureau, Tianqiaoling Forestry Bureau and Daxinggou Forestry Bureau in this region.

Muling is a county-level city affiliated to Mudanjiang City. It is located in the southeast of Heilongjiang Province. The governments of Muling City is located in Bamiantong Town. Its subordinate towns include Bamiantong Town, Xiachengzi Town, Maqiaohe Town, Muling Town, Xingyuan Town, Hexi Town, Fulu Township, and Gonghe Township.

Dongning County is a county affiliated to Mudanjiang City. It is located in the southeast of Heilongjiang Province. It governs six towns, including five towns, that is, Dongning County, Suiyang County, Laoheishan County, Daduchuan County and Daohe County, one ethnic town, i.e. Sanchakou Town of the Korean nationality, and 102 administrative villages.

Forestry bureaus involved in this project mainly include Wangqing Forestry Bureau, Wangqing County Forestry Bureau, Tianqiaoling Forestry Bureau, Hunchun Forestry Bureau and Hunchun City Forestry Bureau in Jilin Province, Dongning County Forestry Bureau in Heilongjiang Province, Suiyang Forestry Bureau and Muling Forestry Bureau of the General Bureau of Heilongjiang Forest Industry. Reserves involved in the project area mainly include Wangqing Reserve and Hunchun Reserve in Jilin Province, Laoyeling Reserve, and Muling reserve in Heilongjiang Province.

4.3.2 Population

The total population of Hunchun City, Wangqing County, Dongning County, and Muling County has reached 1.0752 million by 2011. The agricultural population is 520500, accounting for 18.4% of the total population in the project counties/cities. The total population of ethnic minorities in the project counties/cities is 344700, accounting for 32.6% of the total. Here below is the table of population situation of the project counties/cities.

**Table 4.3-1 Population Situation in the Project-located Counties (Cities, Districts)
(2011)**

Project-located Provinces	Project-located Counties (Cities/Districts)	Total Population (10 thousand)	Agricultural Population (10 thousand)	Proportion of the Agricultural Population (%)	Ethnic Minority Population (10 thousand)	Proportion of the Ethnic Minority Population (%)
Jilin Province	Hunchun City	26	10	38.46	10.45	40.2
	Wangqing County	23.6	11.71	49.7	7.62	32.3
Heilongjiang Province	Muling City	32.12	18.14	26.48	15.1	47
	Dongning County	25.8	12.2	47.28	1.3	5.1

4.3.3 The Economic Development Situation

The industry of Hunchun City develops rapidly and four pillar industries have initially formed, that is, energy and hydropower, forest products processing, clothing textile, and electronic information. There are nine main industries, that is, energy and hydropower, wood products processing, clothing textile, electronic information, medicine and health care, non-ferrous metal, building material, agricultural and sideline seafood and general processing industry. Among them, energy and hydropower, wood products processing, clothing textile and electronic information develop rapidly and play a significant promotion role. They account for half of the industries in the city. Status of industry continuously goes up in the national economy of the city. The contribution rate of industry to GDP growth is about 50% generally. In 2007, the tax revenue of industry accounted for about 70% of the fiscal revenue in Hunchun City. The four pillar industries play an especially important role and have become the main motivation to propel the industrialization process of Hunchun City. With Hunchun Border Economic Cooperation Zone as the leading area, the industrial economy develops fast, and there are 257 domestic and foreign enterprises including these of South Korea, Japan, etc. Many key enterprises develop healthily, such as South Korea Special Joint-stock Company, Japan Island Cloth Co., Ltd., China Polly Communication Company, Shenzhen Shenlinwang Forest Industry Company, etc.

The GDP of Wangqing County totaled 4.03 billion yuan in 2010, 140.7% higher than the 1.674 billion yuan in 2006, with a year-on-year growth of 19.9%. The fixed asset investment of the whole society has reached 9.3 billion yuan, 319.9% higher than the 2.215 billion yuan in 2006, with a year-on-year growth of 39.4%. The diameter revenue has reached 360 million yuan, 183.5% higher than the 127 million yuan in 2006, with a year-on-year growth of 37%. The total retail sales of social consumer goods has achieved 1.18 billion yuan, 122.6% higher than the 530 million yuan in 2006, with a year-on-year growth of 20.4%. The urban per capita disposable income has reached 12960 yuan, 64.1% higher than the 7900 yuan in 2006, with a year-on-year growth of 20%. Characteristic industrial bases expand gradually. The output of agaric

in this county reaches 300 million bags, and the value is more than 480 million yuan. The retained area for Chinese herbal medicine such as Schisandra and ginseng reaches 2567 hectares, and the output value is more than 480 million yuan. The population of economic animals such as cattle, fox and raccoon dogs reaches 774000. The planting area of tobaccos, sunflowers and other economic crops is 8000 hectares. There are 45 industrial enterprises above designated size across the county which achieve an output value of 2.55 billion yuan, with a year-on-year growth of 40.6%. The structure of service industry is optimized gradually. The finance insurance industry, transportation, postal service, tourism and real estate industry develop rapidly. The traditional service industries advance steadily, such as commercial trade and catering industry, etc. The tertiary industries develop fast, mainly including new industries such as modern logistics, chain operation and information service, etc. The export-oriented degree gets higher and the total import-export volume of the whole county reaches \$18.6 million, with a year-on-year growth of 24%.

The GDP of Muling City totaled 10.02 billion yuan in 2010. Calculated by the comparable price, it increased 27.0% than last year. The added value of the first industry is 1.72 billion yuan, increasing by 17.2%. The added value of the second industry is 5.76 billion yuan, increasing by 31.3%. The added value of the tertiary industry is 2.54 billion yuan, increasing by 23.5%. The three industrial structure is 17.2 : 57.5 : 25.3. The regional GDP per capita reaches 33943 yuan, increasing by 26.9%. There are 25000 jobholders in the city at the end of 2010, 445 people less than last year. There are 23000 on-the-job workers, 96 people less than last year. There are 4936 new job opportunities, and the urban registered unemployment rate is controlled at 2.1%.

There are more than 100 foreign trade enterprises of a certain scale in Dongning County, 8 of which are key trade enterprises from other provinces. It has the largest import volume of silicon steel sheets, pine nuts and mechanical and electronic products across the country. The import-export volume of seafood and meat, timber import processing and timber re-export rank the first in Heilongjiang Province and it is awarded as the advanced county of foreign trade in Heilongjiang Province. It has founded 2 industrial parks and 24 economic entities in Russia. The Kangji Economic and Trade Cooperation Zone has become one of the eight "Going Out" industrial parks, which get key support from the nation. The port has achieved 12-hour customs clearance, opened direct visas service for foreigners, and has been awarded as the civilized and efficient port in Heilongjiang Province. It has completed the construction of frontier trade zone. The total output of black fungus reaches 350 million bags, up to 14 million kilograms, accounting for 20% of the output in the whole nation. The establishment and utilization of Dongning Edible Fungus Research Institute and the Primary Bacteria Industry make it become a demonstration county of bacteria production and the largest black fungus producing county in the county. The annual export volume of fruit and vegetable reaches 45000 tons, and it is awarded by the Ministry of Agriculture as a demonstration base of the national pollution-free agricultural products. Dongning Economic Development Zone covers an area of 408.5 hectares, and becomes one of the five biggest Russia-oriented export processing bases in Heilongjiang Province.

5 Analysis of Zero Plan

According to the characteristics of the project and its main construction contents, two comparative plans are formed: Plan I--the plan with the Landscape Approach to Wildlife Conservation in Northeast China Project; Plan II--the plan without the Landscape Approach to Wildlife Conservation in Northeast China Project.

Plan I: Plan with the Landscape Approach to Wildlife Conservation in Northeast China Project

Positive impacts:

1. It will promote regional biodiversity conservation and the social environment. Taking the conversation of wild Siberian tigers as a leader, the project will comprehensively improve the ecological environment in the project area, as well as the management ability of wildlife conservation. In this way, the endangered rare species and special species will get effective protection in the project area in Heilongjiang Province and Jilin Province. All these will contribute to the global biodiversity conservation in a broader sense.

2. By constructing new reserves and expanding existing ones, more suitable habitats for Siberian tigers will be included in those reserves, which can also improve the protection grade of corresponding areas. If we strengthen our management efforts to protect wild animals and plants within these areas, wild animals like the Siberian tiger can be protected more effectively. This will also play an active role in preserving a stable number of rare wild animals like the Siberian tiger as well as the ecosystem health.

3. Currently, there are four nature reserves in the project area, namely Hunchun Nature Reserve, Wangqing Nature Reserve, Laoyeling Nature Reserve and Muling Nature Reserve. The Panther National Park in Russia is to the east of the project area. Among those newly constructed and expanded reserves, Lanjia protected areas is located between Wangqing Nature Reserve and Hunchun Nature Reserve, and connects them together; the expansion of Niaoqingshan Nature Reserve can effectively expand the habitat of the Siberian tiger which is in the north of the Laoyeling Nature Reserve, and meanwhile can directly connect the north side of the existing reserve group with the Panther National Park in Russia; the construction of Tianqiaoling Nature Reserve can connect it with Muling Nature Reserve, which helps to expand the reserve range in this area, and meanwhile can form a second stage reserve group through which Siberian tigers can be relocated to inland China on the periphery of the first reserve on the China-Russian border. Therefore, the construction and expansion of reserves will greatly improve the integrity in terms of the protection of Siberian tigers, and eventually form a large-scale and integral reserve group. Besides, it is of great significance to form a transnational protective network through connecting with the National Park in Russia.

4. Through constructing and extending reserves within the project implementation period, the management structure of the existing forest farms among these reserves can be adjusted and the production can also be transformed, which will better protect forest resources. Meanwhile, through technical training and other measures, lumbermen working at forest farms where deforestation and exploitation are prohibited will transform to patrols and protectors. New modes of the living and

production will be developed as the job functions of forest farm workers are changed. It will have far-reaching influences on the transformation and upgrade of the existing forest farms in northeast China.

5. Tiger-friendly forest management activities will be carried out. To mainly conduct forest tending in the project area, including light-transmitting tending, ecological thinning, pruning, shrub cutting, replanting and plantation, as well as young growth tending. All these activities will effectively improve the structure of forest vegetation, enrich forest species, and optimize the under-forest space for animals. Besides, the Siberian tiger and its prey will enjoy favorable habitats. The population quantity of wild animals will be increased and their living conditions will be improved. Through prohibition of deforestation, forest tending, plantation, and other measures, the forest resources in important habitats of the Siberian tiger will be steadily recovered. Thus the ecological environment conditions in the area will be improved as well.

6. This project will promote the patrolling, clearance of hunting equipment, and community coordination in project area. Meanwhile, the environmental protection consciousness of the public will be enhanced. Therefore, the conservation of forest, wetland, grass and other natural resources will be strengthened.

7. It will directly promote the structural adjustment of biodiversity conservation, alternative livelihood, ecological tourism, green agriculture, and the harmonious development between agriculture and forestry. The living standard of local people (including ethnic minorities) will be improved.

8. The conservation of biological diversity and its survival environment can make people recognize and utilize the economic development resources directly in the project area in Jilin and Heilongjiang Province.

9. The project area is located in both China-Russia and the China-North Korea border regions, with many frontier ports. This project can create a suitable environment and favorable conditions for the development of border trade. Meanwhile the conservation level of border wildlife will be strengthened, and the international cooperation of wildlife conservation will be promoted.

10. Great benefits in ecology, society and economy will be produced by the effective implementation of this project directly or indirectly. And the operation experience and influence of this project will be expanded to other important rare wildlife reserves in Jilin, Heilongjiang and even the whole country. Thus a good chain reaction will be produced.

11. The action consciousness and ability of participating in biodiversity conservation will be improved among the ethnic minorities like the Korean nationality in surrounding project areas. The sectoral cooperation of the local governments at all levels in the practices of biodiversity conservation as well as social and economic development will be enhanced. Fund raising from various channels and project coordination ability will be promoted.

Negative impacts:

1. During the project, some engineering construction, if handled inappropriately, will disturb the ecological environment.

2. During the process of pest management, people should pay great attention while dealing with the drug wastes and residues produced in field operation.

Meanwhile biological control should be given priority when there is an outburst of pest disaster.

3. The growth, proliferation and settlement of wild Siberian tiger's population and their prey, especially the growth of wild boar population, will lead to safety problems of human and livestock. The compensation measures of wildlife damage should be made to ease and reduce the conflicts between human and tigers so as to ensure the smooth implementation of the project.

4. The vegetation restoration and plant adjustment may produce risks of biological invasion.

5. In the process of constructing and expanding reserves, attention should be paid to regional division in the scope planning. The land-use right and the land ownership should be handled properly. Meanwhile, due to higher protection level of resources, the surrounding villagers' interests should be guaranteed while reserves are constructed and expanded. In addition, social security evaluation should be conducted well and corresponding measures should be taken to deal with potential social problems.

As for the potential negative impacts of the project, such as handling social problems, local units all give full consideration to relevant issues and impacts in designing project contents and planning conservation areas. Taking the newly-built Tianqiaoling Nature Reserve of the Siberian Tiger as an example, the boundary has been modified and adjusted for five times according to the distribution of the Siberian tiger and surrounding residents. This ensures that no natural village is involved in the project area which is located within state-owned forest farms, and the interests of surrounding villages will not be affected. (See Fig.5.1). Thus, some negative impacts of the Scheme I can be avoided effectively during the project.

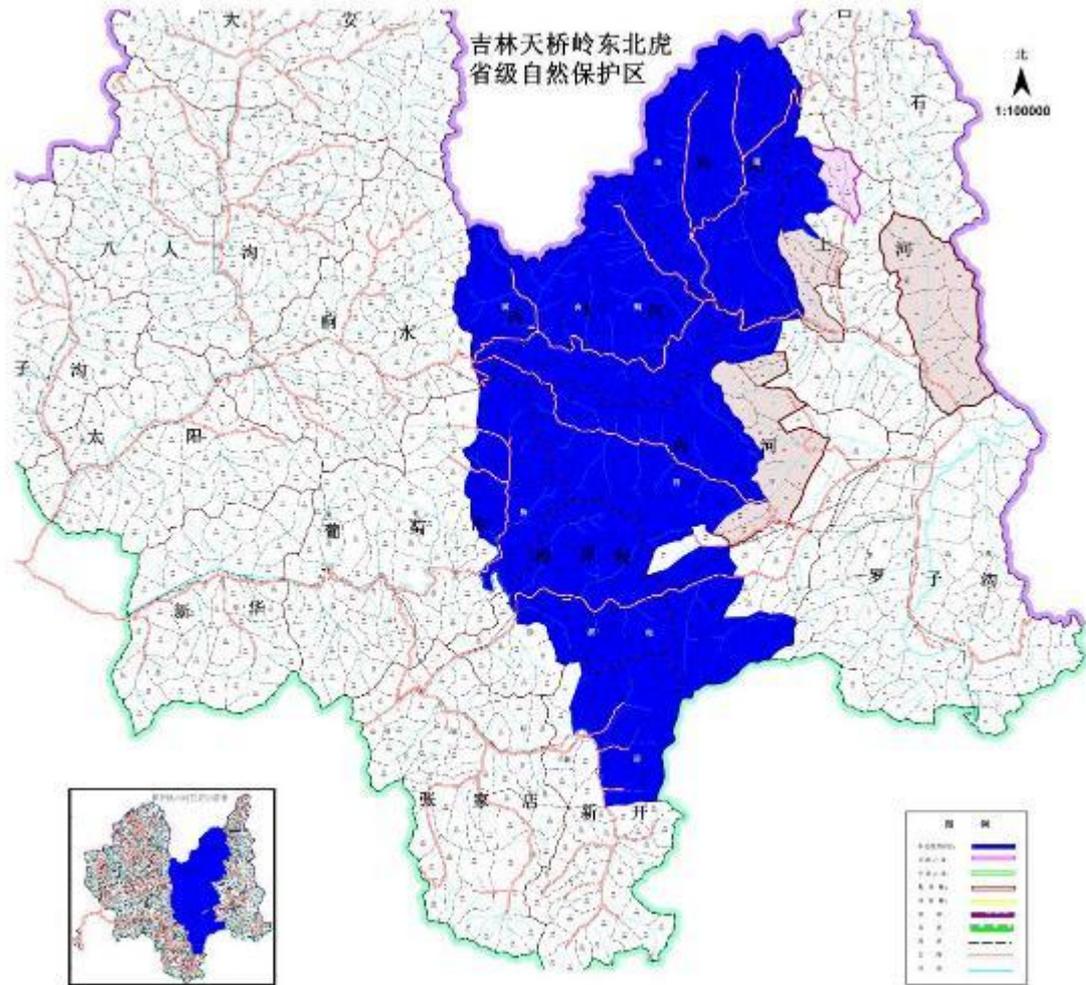


Fig. 5.1 Scope of Newly-built Tianqiaoling Siberian Tiger Nature Reserve
Legend:

- the Siberian Tiger Conservation Area
- Highway Area
- Military Area
- Collectively Owned Forest
- State-owned Forest
- Provincial Boundary
- Bureau Boundary
- Farm Boundary
- Highway
- River

Scheme II: “reserves will not be constructed or expanded in the project area”

Positive impacts:

It will maintain the current status of the ecological environment and conservation work in the project area, avoiding some of environmental problems that the Plan I may face.

Negative impacts:

1. With population increasing in Northeast China in recent years, people's dependence on natural resources gradually intensifies, leading to the fragmentation of habitats for Siberian tigers and the shortage of hoofed prey resources, various interferences of human economic activities and the fertility decline of the isolated small population. All these lead to the drastic shrink of wild Siberian tigers' distributional areas in China, and the population of Siberian tigers decrease rapidly. They are now extremely endangered. If the project activity of Siberian tigers' conservation is not carried out in time, the environment of the Siberian tigers' survival habitats will continue to be destroyed, and their living conditions will deteriorate further. Before the implementation of the Natural Forest Protection Project, forestry resources of Northeast China was destroyed on a large scale because of the extensive commercial logging. If the conservation of wildlife represented by Siberian tigers is not taken seriously and if the protection and tending of forest resources in the project area are neglected, the important natural resources like forest in this area will be destroyed in the future. It will lead to severe ecological problems such as soil erosion. The destruction of the forestry resources will make the ecological environment further deteriorate, which in turn produces the adverse influence on economic development and social stability in the project area.

2. Without carrying out this project, without constructing or expanding reserves, the original protection level will not be improved. Currently they are ideal habitats for Siberian tigers. However, with the development of social economic production, forest resources and ecological environment will be more vulnerable without higher protection level and protection measures, and they are hard to be remediated once damaged. This will lead to a further degeneration and fragmentation of Siberian tigers' habitats, which will hinder the protection for wild animals like Siberian tigers. Currently, there are some interspace among those existing reserves in the project area. An integral protective network has not been built. And the ecological corridor of Siberian tigers' habitats between China and Russia and among reserves in China is not unimpeded enough. These problems will affect Siberian tigers' individual migration and group proliferation, and will hinder the protection of Siberian tigers.

3. The project area is located in the important border areas of Northeast China. It has a long China-North Korea borderline and China-Russia borderline. If the corresponding activities such as the Siberian Tiger Conservation Project are not carried out, the multinational wildlife conservation and cooperation in border area won't be promoted. On the conservation practice of wildlife, every country will be in a state of isolation, without forming an effective entirety. The wild lives such as Siberian tigers and leopards have wide activity areas with a wide range of migration. Dissevering and fragmenting wildlife habitats artificially are extremely bad for the conservation of the endangered and rare huge wildlife like Siberian tigers.

4. At present, there are too many human activities around the project area, and the forestry resources have the trend of degradation at the same time. If the regional coordination is not opened and the conflicts between human and tigers are not reduced by the related projects, the activity conflicts between human and tigers will lead to contradictions such as conflicts among the wildlife conservation, human activities and economic development, etc. All these can affect the general situation of wildlife conservation as well as social and economic development. Besides, if the corresponding measures of forestry resources are not taken, a lot of Siberian tigers'

potential habitats can't play their roles at present. Thus the Siberian tiger population will decline and the expansion of their distribution will be affected. Currently, the technical level and professional ability on wildlife protection of original staff, such as rangers and patrols of local forest farms, remain to be improved. Without constructing or expanding reserves, there will be no platform where forest farm workers in the related area can accept skill training, and the technical level will not be improved. This will possibly result in a technological shortcoming in terms of capability construction of the Siberian tiger conservation.

5. Without this project, without tiger-friendly forest management activities, there will be no regular tending, pruning or cutting. Thus every kind of plants in the forest will be too luxuriant. The over-dense vegetation will impede the activities of wild animals (especially large and medium-sized animals), and decrease the available habitat scope. This will cause negative impacts on the habitats of the Siberian tiger and its prey. Meanwhile, this will increase the human-tiger conflicts and affect the protection of wildlife.

From the contrast between Plan I and Plan II in terms of project implementation, social impacts, environmental impacts and financial affairs, it shows that Plan I, that is, the Plan with Landscape Approach to Wildlife Conservation in Northeast China Project, can produce more significant social, economic and environmental benefits than Plan II. Plan I has great advantages from the perspective of project implementation, social impacts, environmental impacts and financial affairs. It can bring great positive influence to the project area. Besides, Plan I has less influence on the environment, which also can be effectively controlled through corresponding technical measures. Thus, in the comparison of whether or not we should adopt the Landscape Approach to Wildlife Conservation in Northeast China Project, we would choose Plan I, that is, Plan with Landscape Approach to Wildlife Conservation in Northeast China Project. Detailed information is shown in the below table.

Table 5-1 Contrast Analysis between Plans with or without the Landscape Approach to Wildlife Conservation in Northeast China Project

Contrast Factors		Plan I - Plan with Landscape Approach to Wildlife Conservation in Northeast China Project	Plan II - Plan without Landscape Approach to Wildlife Conservation in Northeast China Project	Advantages & Disadvantages
project implementation	difficulty	Maintain the original planning scope; no difficulty exists.	Related planning, investigation in the planning range, administrative examination and approval are needed. Relevant activities are needed to adopt.	There will be low difficulty degree in Plan II, but it has no other positive effects, either. Plan II has more advantages.
	risk	No risk will be caused by maintaining the current situation.	Certain risk may exist because the project may involve conflicts of interest	There will be fewer risks in Plan II, but it has no other positive

Contrast Factors		Plan I - Plan with Landscape Approach to Wildlife Conservation in Northeast China Project	Plan II - Plan without Landscape Approach to Wildlife Conservation in Northeast China Project	Advantages & Disadvantages
			with surrounding communities and villagers. Thus overall consideration is needed.	effects, either. Plan II has more advantages.
	adjustment extent of forest operation range	No adjustment will be involved by maintaining the current situation.	More strict protection measures will be taken during the project. Meanwhile, the main work is forest tending since large-scale commercial deforestation is prohibited. No adjustment of forest operation scope will be involved in specific areas.	There is no obvious difference between maintaining the current situation and expanding existing reserves in terms of forest operation scope adjustment. Plan I and Plan II have similar advantages.
	degree of positive effects	No positive effects will be generated by maintaining the current situation.	More strict protection measures will be taken during the project. The eco-environment quality and the habitat conditions for wild animals like tigers and leopards will be improved. This will be conducive to the stability and improvement of the eco-environment and biodiversity.	Positive effects on eco-environment and biodiversity will be generated in Plan I. Plan I has more advantages.
	objects of negative effects and their acceptance level	No negative effects will be generated on surrounding villagers by maintaining the current situation. But with increasing human activities, human disturbance to the eco-environment will be intensified and natural resources will be seriously degenerated and	No negative effects will be generated on eco-protection, etc. Due to the establishment of new reserves and stricter inner management, residents' activities in surrounding communities or villages are restricted and they can't act arbitrarily like before. However, this kind of restriction is based on eco-environmental protection. Therefore it won't	Generally, fewer negative effects will be generated in Plan I. It will help to protect the eco-environment to some extent, and it is more likely to be accepted by surrounding villagers at the same time. Plan I has more advantages.

Contrast Factors		Plan I - Plan with Landscape Approach to Wildlife Conservation in Northeast China Project	Plan II - Plan without Landscape Approach to Wildlife Conservation in Northeast China Project	Advantages & Disadvantages
		damaged. Eventually, the survival and reproduction of wild animals will be impeded. Serious negative effects on environment will arise in the future.	affect the actual benefits of surrounding villages. Meanwhile, more practical benefits will be brought for the economic development through new rural construction and introduction of new techniques.	
social influences	living environment	Maintaining the current situation and the interference of human activities will lead to eco-environment degeneration and a worse living environment.	Land ownership or interest disputes will not be involved in the project by adopting scientific and reasonable measure planning the project scope. The improvement of the environment will also improve and the living condition of people.	By implementing the project, the living environment will be improved. Plan I has more advantages.
	human and livestock security, the conflict between human and tigers	The current situation remains. Human-caused destruction will decrease the habitat area for wild animals, and decline the ecological carrying capacity. Meanwhile, due to the habitat fragmentation, wild animals especially large predators like Siberian tigers, will intrude into surrounding human activity area to hunt for food. This will aggravate the conflicts between human and	Strict management measures will be taken in the project to improve the habitat quality. This will effectively increase the ecological capacity of the habitat and the number of Siberian tigers' prey. Sufficient food sources will be guaranteed for predators like Siberian tigers. Thus conflicts between human and tigers will be effectively reduced. And human and livestock security will be guaranteed. Meanwhile, by safety publicity in surrounding reserves, people's protection and safety awareness will be improved to prevent damages	The project is of great significance to guarantee human and livestock security, and resolve the conflicts between human and tigers. Plan I has more advantages.

Contrast Factors		Plan I - Plan with Landscape Approach to Wildlife Conservation in Northeast China Project	Plan II - Plan without Landscape Approach to Wildlife Conservation in Northeast China Project	Advantages & Disadvantages
		tigers, and seriously threat human and livestock security.	caused by Siberian tigers to human and the livestock.	
	influences on ethnic minorities	No influence will be caused on minorities by maintaining the current situation.	The project mainly aims at the protection of the Siberian tiger, other wild animals and the nature environment. The implementation areas are mainly located in state-owned forest farms. Impacts on nearby villages will be decreased as much as possible during the implementation stage. And to take measures to mitigate human-tiger conflicts and ensure the social security. This will have little impacts on the current condition of ethnic minorities. And positive impacts such as environment improvement will be generated. All these measures will promote the development of ethnic minorities. The advantages outweigh the disadvantages on the whole.	These two plans have similar impacts on ethnic minorities. But for the long term, Plan I can offer more convenience for the development of ethnic minorities by decreasing human-tiger conflicts, providing alternative livelihood schemes and developing cooperated management and building with nearby communities. Thus, Plan I has more advantages.
	influences on vulnerable groups	No influence will be caused on vulnerable groups by maintaining the current situation.	The project mainly aims at the protection of the Siberian tiger, other wild animals and the nature environment. The implementation areas are mainly located in state-owned forest farms. Impacts on nearby villages will be decreased as much as possible during the	These two plans have similar impacts on ethnic minorities. But for the long term, Plan I can offer more opportunities of development, training and employment for vulnerable groups by decreasing

Contrast Factors		Plan I - Plan with Landscape Approach to Wildlife Conservation in Northeast China Project	Plan II - Plan without Landscape Approach to Wildlife Conservation in Northeast China Project	Advantages & Disadvantages
			implementation stage. And to take measures to mitigate human-tiger conflicts and ensure the social security. This will have little impacts on the current condition of vulnerable groups. And positive impacts such as environment improvement will be generated, which will promote the development of vulnerable groups. The advantages outweigh the disadvantages on the whole.	human-tiger conflicts, providing alternative livelihood schemes and developing cooperated management and building with nearby communities. Thus, Plan I has more advantages. Plan I has more advantages.
	influences on cultural relics	No influence will be caused on cultural relics by maintaining the current situation.	No cultural relics or historical sites are involved in the project scope.	Neither of the two plans will involve influences on cultural relics. Plan I and Plan II have similar advantages.
environmental influences	water and soil loss	If we maintain the current situation, human activities may destroy the vegetation and accelerate water and soil loss.	Strict management measures will be taken during the project to protect the vegetation, which will play an active role in water and soil conservation.	The project will promote water and soil conservation. Plan I has more advantages.
	risk of pests and diseases	If we maintain the current situation, human activities will lower the ecological immunity. The alien species or diseased pests will cause diseases and pests infection, and increase the risk of disasters.	Strict protective management measures will be taken during the project. Through forest tending and patrolling, the ecological immunity of vegetation will be improved, the interference of human activities and risks of diseases and pests will be lowered.	The project will effectively lower risks of pests and diseases. Plan I has more advantages.
	influences on other	Maintaining the	Through the project, wild animals will be effectively	The project will have positive influences on

Contrast Factors		Plan I - Plan with Landscape Approach to Wildlife Conservation in Northeast China Project	Plan II - Plan without Landscape Approach to Wildlife Conservation in Northeast China Project	Advantages & Disadvantages
	rare animals	current situation will put ecological environment in higher risk of being destroyed by human activities. If the quality of habitats is lowered, other rare animals will be greatly influenced.	protected in this area. The ecological environment quality will be improved. The integrity of ecological system and the variety of food chain will be guaranteed. All these will ensure the survival and reproduction of various rare wild animals.	other rare wild animals. Plan I has more advantages.
finance	project cost	By maintaining the current situation and undertaking no related construction, there will be no huge project cost.	A certain amount of project cost is needed due to the project planning and construction.	A certain amount of project cost is needed in the project, but it will bring about huge ecological and social benefits in the future. Plan I has more advantages.
	social cost	By maintaining the current situation, there will be no high social cost. But some social problems may arise as a result of the quality decline of surrounding eco-environment.	Lands occupied in the project all belong to state-owned forest lands, without involving natural villages or collective lands. Thus the social cost won't be high.	There is no big difference between the two schemes in terms of social cost. However, the project will bring about huge social benefits and effectively reduce social problems in the future. Plan I has more advantages.

6 Positive Impact Assessment of the Project

6.1 Ecological Benefits

1. Current Status and Changes of Siberian Tigers' Distribution and Habitat.

China's wild Siberian tigers have six isolated distributional areas, and the project area involves two of them. They are as follow:

(1) The distributional area of Hunchun and Wangqing, in Dalongling Mountain, is located at the border area of Russia, China and North Korea. The forest region at China-Russia borderline is an area where Siberian tigers frequently appear. More Siberian tigers' activity traces are found in recent years, and there is a tendency to extend towards the western Wangqing Forestry Bureau. This area is one of the main distributional areas for Siberian tigers in our country, and the number of them is about 7 according to the latest monitoring.

(2) The distributional area of Dongning, Suiyang and Muling is in the south of Laoyeling Mountain. The eastern part adjoins Russia, and the southern part borders Hunchun of Jilin Province and Wangqing. This area is the main distributional area of Siberian tigers in history. The traces of Siberian tigers are frequently found in recent years. Siberian tigers appear most frequently in China-Russia border area. The number is 3 or 4 in the latest monitoring.

The protection of Siberian tigers' habitat in established nature reserves is managed by the nature reserves. Conservation station are set up in the reserves, and the system of conservation, management and monitoring are sound. In particular, all aspects of the national-level nature reserve are relatively perfect, such as the institutional settings, site distribution, personnel quality and ability of conservation & monitoring. The Siberian tigers' habitats in areas which have not set up nature reserves are protected and managed by the department of forestry which is in charge of wildlife resources. Both local government and the state-owned forest region of the General Bureau of Heilongjiang Forest Industry, have established a top-down organized institution & system of wildlife conservation and management. They play an extremely important role in the conservation and management of wildlife habitat.

The following are the distributional areas of the Siberian tiger around the project area.

(1)The distributional area of Jidong and Muling, in the north of Laoyeling Mountain, is an important area of the Siberian tiger's distribution in history. This area is next to Siberian tigers' distributional area of Russia, and it has about one hundred-kilometer borderline. The Siberian tigers' activity traces are found frequently in recent years. It is estimated that there are 3 or 4 Siberian tigers.

(2)The distributional area of Raohe, Hulin, Dongfanghong and Yingchun, in the Wanda Mountain, is one of important Siberian tigers' habitats. This area, as a part of east Wanda Mountain, is contiguous to Russia across Ussuri River. So Siberian tigers can migrate in China-Russia border area through Ussuri River. The forest vegetation condition of this area is good, and Siberian tigers' activity entities and traces are found frequently in recent years. It is one of the concentrated distributional areas of Siberian

tigers and it is found that the tigers have a tendency to move to the southwest according to the monitoring in recent years. It can be inferred that there is a family population of Siberian tigers with a long-term residence in this area because young Siberian tigers have been found here. It is the region with the highest potential for growth of wild Siberian tigers' population in China. It is estimated that there are 4 or 6 Siberian tigers in this area by monitoring.

(3) The distributional area of Dunhua, in Ha'erba Mountain, is contiguous to Dongjing and Muling Forestry Bureau, Heilongjiang Province. This area is the main Siberian tigers' distributional area in history. However, the number of Siberian tigers has a dramatic decline in recent 30 years. It is very hard to find their activity traces. There is only one wandering Siberian tiger in Jilin Province by monitoring.

(4) The distributional area of Huangni River, in Zhangguangcai Mountain, is contiguous to Dahailin Forestry Bureau and Dongjing City Forestry Bureau, Heilongjiang Province. The southern part of Zhangguangcai Mountain has a large area of forest, used to be one of the important Siberian tigers' habitats. The activity traces were found frequently in Dahailin Forestry Bureau and Dongjing City Forestry Bureau before 2003. But recently no signs of the Siberian tigers' activities have been found here in monitoring. Traces of the Siberian tiger are found in Huangni River Forestry Bureau in recent years, and the estimated number is one or two.

2. Factors Restraining the Natural Recovery of Siberian Tiger Population

The project area used to be the distributional area of Chinese wild Siberian tiger in history. However, as a result of human activities, especially after it is regarded as the nation's timber production base in the middle of twentieth century, the primitive forest in this region was almost destroyed after 30 years of large-scale logging. The Siberian tiger's distributional area shrinks gradually and its habitat was fragmented. The number of the Siberian tiger declines continuously. With the efforts to develop the ecological environment in recent years, the Siberian tiger's habitat environment is improved and gets recovery, and negative factors influencing the survival of the tiger is changed. There are more and more reports about finding the tiger. Therefore, the reserves with patch-shaped distribution in the project area, which can provide good environment of habitat for tigers, should be expanded and linked up into a large stretch to form a tiger habitat channel, which definitely has a positive significance upon the natural recovery of the Siberian tiger in Northeast China as soon as possible. However, it must be emphasized that due to the increasing ability of human activity and human's strengthened means of damage, the retardation of the natural recovery should not be ignored.

Prey of the Siberian tiger include red deer (*Cervus elaphus*), roe deer (*Capreolus pygargus*), sika deer (*Cervus nippon*) and wild boar (*Sus scrofa*) in the project area. Taking Jilin Hunchun Nature Reserve as an example, according to the research results of Survey on Prey Resources of the Siberian Tiger in Jilin Hunchun Nature Reserve, the relative density (based on the occurrence frequency of fresh footprints) of red deer is 0.09 per kilometer; 0.43 as for roe deer, 0.12 as for sika deer and 0.03 for wild boar. The substantiality density is 0.11 head per square kilometers as for red deer; 0.76 head as for roe deer, 0.07 head as for sika deer and 0.01 head for wild boar, which is lower than the prey density in far-east area of Russia.

3. Ecological Benefits of the Project

Through tiger-friendly forest tending activities, the habitat quality of the Siberian tiger in the project area will be significantly recovered and improved. The resources allocation structure of the habitat will be further optimized as well. Supplementary feeding stations are built to provide food for the Siberian tiger's prey in food-lacking seasons, which will accelerate the stable population increase of the Siberian tiger's prey. The population of main prey (wild boar, red deer, roe deer and sika deer) will rebound significantly. The increasing appearance frequency of large carnivores like tigers and leopards and spawning colonies will promote the settlement, breeding, and increase of the Siberian tiger.

In this project, key habitats will be recovered and expanded, and the establishment of new nature reserves will increase the reserve area. All these will increase the suitable habitat areas of the Siberian tiger and its prey. Thus the current separated island distributional areas of the Siberian tiger will connect with each other, extend and expand in stretches to the deep forest of China.

In this project, tiger ecological corridor construction modes, tiger-friendly forest management modes, and habitat recovery demonstration areas of different scales and types will be established to increase tiger-friendly areas near the reserves. The carrying capacity of wildlife will be raised through habitats connection.

The effective law enforcement and regulatory measures in the reserves or greater regions, strengthened law enforcement capacity and continuous anti-poaching activities will accelerate the protection of key wild species especially the Siberian tiger and reduce the mortality of some key species.

The forbidding of chopping down trees, grazing, hunting, herb gathering, assart and moorburn in the newly-built nature reserves would guarantee that the wild tigers' habitat quality would not be affected. This will effectively protect the forest (including natural forest) vegetation, and bring its ecological functions into full play, including water conservation, soil conservation, carbon fixation and oxygen release, and providing inhabitations and shelters for animals.

Most land in the project area is covered with vegetation. The vegetation recovery project involves plantation. These areas will become forest lands after the project is carried out. Forest lands in the project area will increase by about 500 hectares, so will the forest coverage rate.

Besides, this project, together with other environmental public welfare projects of multiple channels, will bring about more remarkable environmental benefits.

6.2 Social Benefits

A protective network will be established through conservation capability construction, protective and patrolling equipment procurement, and staff training of nature reserves and local forestry bureaus. It will improve the management effectiveness of the 5 existing reserves and each forestry bureau, and enhance the protective and patrolling capability of the habitats.

Aiming at impacts of the project on the living and production of forest farm workers, and based on the current policy of comprehensive prohibition of felling, an alternative livelihood, that is, tiger-friendly forest management activity, is put forward in this project to guide and attract forest farm workers to be the main participants in protecting activities of this project. It will provide more job opportunities and increase their income, thus livelihood of forest farm workers will not be affected. Villagers and forest farm workers in the new reserves and conservation stations will participate in different work after the project is implemented, including plantation and tending,

animal feeding, patrolling and clearance of hunting tools. This will increase their livelihood sources as well as their income.

Environmental education will improve the public's awareness and capability in participating in biodiversity protection and environment protection, and promote the harmonious relationship between relevant stakeholders in the tiger distributional areas, and the Siberian tiger. The public's participating in protecting the Siberian tiger and its inhabiting environment will promote the communication and mutual trust, and promote the traditional ethnic culture of the Korean people about wildlife protection. Subsidies will be provided in wildlife protection process to increase the income of local people and buffer human-animal conflicts.

The project will promote cooperation between different government departments in biodiversity conservation and social and economic development, further improve environmental protection capacity and level, and boost China's functions and influences in the field of global biodiversity conservation.

7 Negative Impacts Assessment of the Project on the Environment and Mitigation Measures

7.1 Impacts of Project on Residents' Livelihoods and Related

Mitigation Measures

7.1.1 Impact Analysis

Due to various reasons, there are still a number of communities and villages in the existing nature reserves. According to *Regulations of the People's Republic of China on Nature Reserves*, timber cutting, grazing, hunting, herb gathering, cultivation, moor-burning and other relative activities are prohibited in the nature reserve. Economic incomes obtained from grazing and gathering by residents living in or around the nature reserves will be reduced. Monitoring the stealing behavior will be one of the main administrative work in the reserve, to avoid over gathering of forest products which will reduce the food source of Siberian tigers' prey. In fact, due to the large range of the reserve, comprehensive monitoring is very difficult. Villagers often trespass to the forest to gather fungus like *Tricholoma matsutake* and other forest products. Therefore, there exist some conflicts of interest in resource utilization and protection between the nature reserves and villagers.

Though no village or community is included in the project area, some activities are forbidden in the newly-established nature reserves, such as logging, grazing, hunting, herb gathering, farmland reclaiming and grass burning. Thus, residents of nearby villages are restricted in entering the reserve. These will decrease their income from the grazing and picking in the nature reserve. For instance, before the establishment of the reserve, villagers nearby usually picked fungus like *Tricholoma matsutake* and other forest products in forest farms, which was actually illegal but acquiescent because the forest farms are too vast to be fully patrolled and protected. Once the reserve is set up, such behavior will be deemed illegal. At the same time, the reserve will be patrolled to prevent villagers from picking products furtively, and the area where they are allowed to gather forest products will also be restricted. Therefore, since the project is implemented, there will be conflicts of resource utilization between villagers and the reserves in a long term. The Ban on under-forest operation would restrict forest resources collecting of forest farm staffs and nearby villagers. Their income will be decreased. 87711 hectares of state-owned forest farms will be turned to newly-built and expanded reserves, which involves 14 state-owned forest farms and 15 villages based on the investigation.

In January, 2014, the State Forestry Administration introduced *Notice on Implementing Pilot Work of Completely Stopping Commercial Deforestation*. Logging in the state-owned forest farms in Heilongjiang and Jilin Provinces has been gradually banned, which has made state-owned forest farms to consider function transformation. Before that, the natural forest protection project has prompted the transformation of state-owned forest farms. Forestry economy, including agaric planting and bee-keeping, has gradually become the major business of state-owned forest farms. (Note: forests used for developing forestry economy are mainly commercial forests belonging to collectively owned forests and state-owned forests, which are far from the public welfare forests in the reserve.) The General Bureau of Heilongjiang Forest Industry and its subordinate forest farms have developed forestry sidelines, planting

and breeding industry. At present, more than 300 types in 13 categories of products have been developed, including nut series, edible mushroom series, honey series, wild vegetable series, health care products series, beverage series, etc. In 2013, the sales volume of black fungus reaches more than 4 billion RMB. Therefore, forest farm staffs in the project area and the surrounding residents can adapt to the implementation of the project. Leftover wood is the essential raw material to plant bagged fungus (*Auricularia auricular*), and the prohibition of logging in the project area may contribute to the shortage of wood leftover wood. For example, the leftover of forest tending can only cover the saw powder materials for 510 million bags of fungus among the 1.75 billion bags produced in forest lands of Heilongjiang Forest Industry Co., Ltd, while the other 70% will be short of raw materials. And the lack of raw materials in cultivating fungus will influence the income of staffs in the forest farms and villagers living around the reserve, which, in turn, may force them to obtain resources in the reserve to earn a living.

7.1.2 Mitigation Measures

(1) Based on the current local policy of the overall prohibition of logging, an alternative livelihood for staffs in the forest farm, that is, tiger-friendly forest management, is put forward to mitigate the impacts that the project brings to their work and life. Besides, in the project to provide training on wildlife protection and management and create relevant jobs for forest farm staffs, and encourage them to actively participate in the protection activities; and provide training on crop cultivation and poultry raising for forest farm workers, thus to improve their livelihood.

(2) The villagers nearby will be trained on wildlife protection and management. The residents in the peripheral communities of the project area will be encouraged and employed to participate in nature reserve management, like patrolling, monitoring and other protection activities so as to increase their sources of income and enhance their initiative to involve themselves in the project.

(3) During the implementation of the project, special attention should be paid to solve the conflicts of forest resources utilization. It is necessary to establish a mechanism to co-manage the peripheral communities and the reserves, and set up a benefit-sharing mechanism of the nearby communities and villagers based on the co-management mechanism. More plans will be made to increase the sources of income and pilot alternative modes of livelihood will be developed. Furthermore, the residents in the peripheral communities of the project area will be trained on some professional skills including planting bagged fungus, flue-curing tobacco and beekeeping. This will provide more jobs and sources of income for them, especially for the impoverished, as well as make them less dependent on grazing and picking.

(4) The impoverished people in the project area include some forest farmers and villagers nearby. The mitigation measures include: to conduct training on wildlife protection and management and create relevant jobs for them; to provide training on forest tending and create relevant jobs; and to provide training on crop cultivation and poultry raising in order to improve their livelihood.

(5) In terms of the shortage of leftover wood caused by the prohibition of logging, in addition to the raw materials obtained from forest tending every year, some can be imported from Russia and other provinces in China. The main ports through which China imports timber from Russia are Suifenhe Port where the Mudanjiang River borders Russia, and the Manchuria Port which is located in the west. The total import volume of logs from Russia exceeds 10 million m³, of which about 2 million m³ are imported through Suifenhe Port

(<http://www.chinaru.info/zhongejmyw/jingmaotegao/27573.shtml>). A mass of timber is processed in the processing parks near the ports. And plentiful sawdust is produced, which can be used to substitute those from the timber banned to be cut. Besides, the techniques adopted by the Mudanjiang Fungus Association in Heilongjiang Province can be introduced, that is, to plant fungus with leaves, corncobs and bean straws as raw materials. Meanwhile, active efforts should be made to seek and develop other low-cost and efficient techniques.

(6) To decrease the negative impacts of poaching on this project, we can trace and monitor the units that sell hunting tools like sticky nets and traps and as well as their sales status; we can co-manage the reserve with the nearby communities and employ the residents to clear away the hunting tools; besides, a pressure mechanism in the nearby communities can be established to give financial incentives to communities in the reserve with less hunting tools and provide them with relevant training on understory planting techniques.

For detailed information, see the *Involuntary Resettlement Plan*.

7.2 Impacts of the Project Implementation on Human and Livestock

Security and the Related Mitigation Measures

7.2.1 Impact Analysis

The project area is one of the important distributional areas of wild Siberian tigers in China. People, livestock and crops are harmed by Siberian tigers and their prey from time to time, which has threatened local people's livelihood and the safety of human and livestock. Therefore, Jilin Province unveiled the *Compensation Methods for Personal Injury and Property Damage Caused by Specially Protected Terrestrial Wildlife in Jilin Province*, and the *Implementation Regulations of Compensation Methods for the Personal Injury and Property Damage Caused by Specially Protected Terrestrial Wildlife in Jilin Province* in October, 2006 and January, 2007 respectively. Financial compensation was set up in 2007 and 4 million yuan was allocated to establish a compensation mechanism. In 2001, farmers in Hunchun City, Jilin Province were compensated for the livestock and crops damages caused by wildlife. 116 families got nearly 680 000 RMB for compensation in total. There is no official measures to compensate for accidents caused by wild animals in Heilongjiang Province.

In recent years, the Planning and Design Institute of Forest Products Industry of the State Forestry Administration undertaken the work of inspection the compensation of wildlife accidents. The work includes organizing, implementing and managing the compensation for wildlife accidents, spot check and examination. The institute has also collected, sorted out, summarized and reported all the information and files, then formulated a state financial subsidies plan and submitted it to the Animal and Plant Administration. Besides, the institute has provided technical support for the spot check, popularized advanced management experience, compensation modes, and staff training methods, in order to standardize and systemize wildlife compensation work gradually.

According to the inspection results of compensation for wildlife accidents, among the 2,085 cases reported by Jilin Province in 2007, 61 cases are accidents related to national key protected wildlife, accounting for 2.93% of the total cases. Animals involved in accidents include tigers, bears, leopards, owls, wild geese (only *Branta ruficollis* and *Anser albifrons* are considered). There is one case in which a person got hurt by the Siberian tiger. On May 19, 2007, Che Jinxia, a resident in

Wudaogou Village, Chunhua Town of Hunchun City, was bitten by a tiger. He got six fractures, and both of his arms were hurt. He was compensated 82,567 yuan according to relative compensation rules in Jilin Province. Among the 2,085 cases, 52 cases are livestock injury caused by Siberian tigers, and over 210,000 yuan was compensated; 130 cases are crop damage caused by wild boars, animals on the food chain of Siberian tigers, and over 280,000 yuan was compensated. In 2008, over 600,000 yuan was compensated due to accidents caused by Siberian tigers and wild boars.

According to the telephone survey results (see Table 7.2-1) about the public's feedback of Jilin wildlife accidents compensation work in 2008, accidents caused by Siberian tigers mainly happen in Hunchun City, Jilin Province. There are 52 cases in total known through telephone interviews. In 40 cases, damage occurred, compensation was received and the compensation received coincides with compensation that was distributed. Such cases account for 76.9% of the total. This demonstrates that the accidents that happen to respondents who have received the compensation highly correspond with statistics reported to the State Forestry Administration by Jilin Province. Major feedbacks are as below: the compensation work and national policy are highly evaluated and accepted; the respondents complain about the local agricultural insurance. They think compensation standard should be consistent; compensation is allocated too slowly, and the efficiency should be raised. Besides, the management and monitoring in the compensation should be enhanced. The above results show that the compensation work is highly recognized by the public in Jilin Province, which has played a positive role in reducing human-tiger conflicts and social impacts.

Table 7.2-1 Feedbacks on Wildlife Accidents Compensation

No.	Compensation Situation	Cases	Ratio
1	Damage occurred; compensation received; compensation received tally with compensation distributed.	40	76.9%
2	Damage occurred; compensation not received; but documents show the compensation has been distributed.	1	1.9%
3	Damage occurred; compensation received; compensation received lower than compensation distributed.	6	11.5%
4	Damage occurred; compensation received; compensation received higher than compensation distributed.	3	5.8%
5	Documents show no damage occur, while compensation was received.	2	3.8%
Total		52	

According to results of the public questionnaire survey in the project, 34.7% of the respondents have suffered losses from accidents caused by wildlife like tigers and boar, which indicates that such cases happen more frequently in the project area. Impacts of the project on human and livestock security mainly lie in the following aspects: in the short term, to increase the prey population will lead to a sharp increase of the number of prey in the area, and cases like crops being destroyed by boars may occur more frequently due to the competition for food and the low ecological carrying

capacity, thereby causing property loss of residents nearby. In the long run, as the prey population of Siberian tiger increases after the project is carried out, large predators like tigers and leopards will appear, and the probability of their hurting human and livestock will increase as well.

7.2.2 Mitigation Measures

(1) This project has included a subproject of strengthening publicity of security and warning. Various precautionary measures should be adopted, including putting up slogans and warning signs, distributing leaflets, and installing protective fences. This area is a traditional habitat of Siberian tigers, where people knew various ways to prevent tigers from hurting human in the past. And it is a typical region in the history where human could live in harmony with tigers. In recent decades, however, tigers have gradually disappeared as the environment is destroyed, and therefore the traditional methods are abandoned. Therefore, as long as we strengthen publicity and training and revive the tradition, a harmonious relationship will be established between human and tigers.



Figure 7.2-1 Setting Warning Signs

(2) Pilot dry-lot feeding and captive breeding should be developed to advocate and guide residents in the peripheral communities of the project area to raise livestock in pens, gradually replace their traditional mode of production by raising free-range livestock, and prevent the Siberian tiger from hurting the livestock.

(3) Laws about compensating for animal-caused loss shall be started; and a special fund for compensation shall be set. Active efforts should be made to facilitate the issue of related regulations and policies in Heilongjiang Province by reference to *Compensation Methods for the Personal Injury and Property Damage Caused by Specially Protected Terrestrial Wildlife in Jilin Province* and the *Implementation Regulations of Compensation Methods for the Personal Injury and Property Damage Caused by Specially Protected Terrestrial Wildlife in Jilin Province*. Besides, it is necessary to develop pilot projects to compensate for damages caused by wildlife, establish a mechanism for appealing against the wildlife accidents, and found an appeal committee of the wildlife-caused accidents to properly solve the problems in compensating for the damages that wildlife like boars cause to human and livestock.

7.3 Impacts of Prey Reintroduction on the Environment and

Corresponding Mitigation Measures

7.3.1 Impact Analysis

In this project, we will increase the prey population in order to cope with some extreme cases of prey shortage. To increase the prey population prey will increase the number of prey population and density of distribution in a short time. Due to the

limited regional ecological carrying capacity, the competition for food, habitats and territory between the introduced prey and the indigenous population will intensify. And to increase the prey population may even transmit pathogens and epidemic diseases to the indigenous ones. In addition, to increase the prey population will increase the risk of poaching. Impacts of increasing the prey population on the national key protected wildlife can be divided into the following two respects. On one hand, to increase the prey population will occupy the living space of native species of national key protected animals such as sika deer and Siberian musk deer. On the other hand, the increase of prey species will make it less likely for tigers and leopards to hunt the native species. Therefore, the prey reintroduction indirectly protect the national key protected animals including sika deer and Siberian musk deer which are in the food chain of Siberian tigers.

7.3.2 Mitigation Measures

(1) It is necessary to improve law enforcement capacity, carry out unremitting anti-poaching. For example, we can trace and monitor the units that sell hunting tools like sticky nets and traps and as well as their sales status; we can co-manage the reserve with the nearby communities and employ the residents to clear away the hunting tools; besides, a pressure mechanism in the nearby communities can be established to give financial incentives to communities in the reserve with less hunting tools and provide them with relevant training on understory planting techniques.

(2) Project executive office of Jilin Province shall adopt experts' advice in the process of prey introduction, strictly control the intensity of prey introduction and strengthen the supervision of tigers and their prey. One investigation and monitoring area of 10km² (5km long and 2km wide) shall be set up in Hunchun City. When investigating, we shall start from one side of the investigation and monitoring area, select one transect line every other 500m within the width of 2km, and select 5 transect lines in total to investigate the number of Siberian tigers (monitoring of the Siberian tiger and its prey is included in Table 9.3-1 Table of Monitoring Items Information). During the implementation period, prey will be supplemented in the reserve once only when the rate of prey shortage exceeds 40%.

(3) Quarantine inspection of the animals which are proposed to be reintroduced is one of the most important steps before Captive animals are released into the wild. Infectious disease pathogens and parasites are likely to be released to the wild environment with captive animals. This will not only affect the survival of introduced animals, but will bring diseases to nature environment and infect other wild animals, and cause the breakout of infectious diseases. Thus, the individual prey need to be quarantined in case that the pathogens and epidemic diseases are brought and transmitted with them.

(4) Proactive actions should be taken to revive their species, protect and improve the habitats of Ungulata, monitor the national key protected animal species like Ungulata, sika deer and Siberian musk deer, and guarantee the food sources of increased prey through proper measures such as supplementary feeding.

7.4 Impacts of the Project Implementation on the Vegetation and

Biodiversity

7.4.1 Impact Analysis

Based on data collection and site investigation, it is found that the vast majority of land in the project area is covered with vegetation. The main forest types including

coniferous forest, such as larch forest and Korean pine forest; mixed broadleaf-conifer forest, such as Korean pine-white birch-acer mono and larch-black birch, etc. Arbors mainly include the Korean pine, larch, white birch, black birch, acer mono, oak, spruce, Mongolian Scotch pine, linden trees, etc. Understory shrub and grass mainly include *Acanthopanax root*, *Malus pallasiana*, burr poplar, *Salix Matsudana*, *Maackia amurensis*, *Ostryopsis davidiana*, *Prunus padus* and so on.

The project area used to be distributional area of the Siberian tiger. In this project forest tending activities will be conducted, including light-transmitting tending, ecological thinning, pruning, clearing miscellaneous bushes and residuum disposal, etc. By cutting down trees of low quality, trees with no cultivating meaning, and over-dense auxiliary trees, and clearing miscellaneous bushes that prevent forest growing, suitable habitats of the Siberian tiger will be recovered. After the forest tending activities, the total area and rate of vegetation coverage basically remain the same. The vegetation diversity, the diversity index of shrub layer, and the vegetative biomass will be decrease slightly. This will promote the growth of trees, step closure formation of crown canopy, and improve the forest environment.

Some activities in this project, such as soil preparation, planting, tending of young forest and cleanup of supplementary feeding sites will remove local vegetation, so the total area of vegetation and vegetation coverage rate will be reduced in the short term. As the trees grow, the total area of vegetation and vegetation coverage will be gradually recovered; the glades will become forest lands; vegetation biomass and forest canopy density will increase significantly; and the adjacent scattered forest lands will connect with each other.

The plantation project will also have some impacts on the soil environment: the unreasonable land preparation methods are prone to cause soil erosion, thus changing the physical properties of the soil, increasing soil bulk density, decreasing the porosity, reducing the water retention and permeability of the soil, affecting trees' absorption and utilization of nutrients and water from forest lands, and leading to soil degradation; mechanical rolling during light-transmitting tending and ecological thinning operations will reduce the porosity of the soil, resulting in soil compaction. Application of base fertilizer and topdressing in young forest tending will change the environment and soil fertility in forest lands. Unreasonable fertilizer and spraying ways may cause soil nonpoint source pollution.

7.4.2 Mitigation Measures

(1) We should to carry out environmental education for participants in the project, especially forest tending and plantation workers, raise their awareness and quality, and strictly prohibit hunting, transacting of wild animals and randomly picking wild plants. Once the protected wild animal or plant is found, we should make a record and field marks, take measures to protect the site and set aside enough surrounding space for them to grow.

(2) Cave-shaped soil preparation can be helpful to reduce disturbance of natural vegetation; we should protect the miscellaneous shrubs under the gullies and ridges during soil preparations and plantation, and try to maintain the under forest vegetation and vegetation on forest edge during the operation.

(3) To adopt the mixed plantation method in plantation process. The varieties of trees include spruce, larch, pinus sylvestris, pinus koraiensis, etc.

(4) During the operation process of light-transmitting tending, ecological thinning, pruning and miscellaneous bushes clearing, equipment with low noise should be utilized. Operation hours in the same area should be relatively centralized so as to reduce disturbance brought to surrounding wildlife.

See the 2nd attachment of the *Environmental Management Plan -- Environmental Protection Guidelines for Plantation* for detailed information.

7.5 Impacts of Pest Management on Environment and Mitigation

Measures

The *Pest Management Plan* is specially formulated and will be conducted in the implementation of the project. For detailed impacts of pest management on the environment and its mitigation measures, see the Special Report II- *Pest Management Plan*. See the 1st attachment of the *Environmental Management Plan -- Pest Management Plan* for detailed information.

7.6 Impacts of Project Implementation on the Development of Ethnic

Minorities

The project is located in Korean Autonomous Prefecture of Yanbian, an area inhabited by the Korean people. The project aims at protecting the Siberian tiger and its inhabiting environment, which fits well into the Korean traditional culture of protecting wildlife, thus there is no conflicts between the project contents and interests and cultures of minorities. Publicity work should be strengthened in project implementation in order to get minorities involved in protecting the Siberian tiger and its inhabiting environment, and promote communication and mutual trust.

In Jilin Hunchun Siberian Tiger National Nature Reserve, Jilin Wangqing National Nature Reserve, Heilongjiang Laoyeling Siberian Tiger National Nature Reserve and Heilongjiang Muilng Northeast Taxus National Nature Reserve, conservation stations and supplementary feeding stations are maintained and constructed in state-owned forest farms. Heilongjiang Niaoqingshan Nature Reserve, Jilin Tianqiaoling Siberian Tiger Nature Reserve, Jilin Hunchun Lanjia Conservation Community are newly built or expanded. And all of them are located at state-owned forest farms, without interfering residential areas.

Though the Jilin Hunchun Lanjia protected areas are not within the project area, it's adjacent to other reserves. With the strengthened construction, the possibility of animal-caused accidents in northeast areas of Jilin Province which are adjacent to Heilongjiang Province, Russia and Democratic People's Republic of Korea will further increase, involving a large range. Peasants' crops and livestock in surrounding areas of these reserves will be affected. In 2006, the *Compensation Methods for Personal Injury and Property Damage Caused by Specially Protected Terrestrial Wildlife in Jilin Province* was unveiled. Thus once accidents happen, relevant compensation would be offered. Besides, the construction of these reserves will affect logging and the sources of raw materials to plant agaric, and bring negative impacts on peasants' income. The scope of peasants' collecting forest products would be restricted as well. Thus we can encourage and attract them to participate in forest tending, wildlife monitoring and agritainment business to promote pooling of benefits.

These people involved concentrate in Jilin Hunchun Lanjia protected areas, Jilin Hunchun Siberian Tiger National Nature Reserve and Wangqing National Nature Reserve. Detailed information is shown in Table 7-1. There are 513 households, 1494 people of ethnic minorities involved, accounting for 30.87% of the total in the community.

Table 7-1: Ethnic Groups Involved in the Project

Reserve	Town	Village	Ethnic minorities				Households engaged in agaric planting	Households engaged in collecting under-forest resources
			Ethnic group	Household	People	Percent of the total population of rural community		
Jilin Hunchun Lanjia protected areas, Jilin Hunchun Siberian Tiger National Nature Reserve	Chunhua	Lanjia	Korean	26	75	39.47%	16	12
		Guandaogou	Korean	26	63	28.38%	3	6
		Xiacao mao	Korean	16	57	21.27%	1	6
		Shangcaoma	Korean	12	35	20.71%	2	8
		Fenshuiling	Korean	16	50	33.33%	2	10
		Lishugou	Korean	68	203	63.64%	8	13
	Yanpao	Yantong Lazi	Korean	39	100	100.00%	0	5
		Songlin	Man	48	136	21.28%	2	4
			Korean	76	215	33.65%		0
		Dong'ala	Korean	179	544	60.38%	9	15
Wangqing National Nature Reserve	Fuxing	Duhuan gzi	Korean	6	12	4.03%	0	1
			Hui	1	1	0.34%	0	0
			Man	1	3	1.01%	0	0
In Total				513	1494	30.87%	43	80

There are 513 households of Korean (483 households), Hui (1 household) and Man (49 households) ethnic minorities involved, 1494 people in total, accounting for 30.87% of the total population of in the community. Among them, 43 households are engaged in agaric planting, accounting for 8.38% of these ethnic minorities; 80 households are engaged in collecting under-forest products, accounting for 15.59% of the total. The remaining households are affected by animal-caused accidents in terms of crop planting.

Based on this, the Korean residents in Jilin Province who used to depend on logging in state-owned forest farms mainly have demands for compensation for animal-caused accidents, alternative techniques of agaric planting and other livelihood methods.

For detailed information, see the *Ethnic Minority Development Plan*.

7.7 Impacts of Small Civil Engineering Construction on Environment and the Mitigation Measures

The impacts of small civil engineering construction on environment and the mitigation measures is explained in the 3rd attachment of the *Environmental Management Plan -- Environmental Codes of Practice of Small Civil Engineering Projects*.

8 Public Participation and Information Disclosure

8.1 Identification and Analysis of the Stakeholders

According to data collection and field investigation, stakeholders involved in the projects are as follow.

(1) Forest workers

Forest workers include staffs in the forest farms and the reserves, as well as villagers engaged in part-time forestry jobs. According to the survey, workers from forest farms which are subordinated to various forestry bureaus in the project area, have a relatively low living standard. The salary of workers from ordinary forest farms subordinated to Jilin Forestry Department is about 1,000 yuan; about 600 to 800 yuan for these of Heilongjiang Forestry Department; and 2,000 yuan for these of Heilongjiang Forestry Industry Group.

Forest staffs are the major participants in the project. Villagers and forest workers in the new reserves and stations can be encouraged to participate in plantation and tending, animal feeding, patrolling and equipment clearing work. Their income will be increased due to these job opportunities.

(2) Villagers

Villagers mainly refer to residents in the existing and newly-built reserves, and those living within 5 miles of the reserves, including the disadvantaged groups. According to the questionnaire result, annual household income of investigated villagers falls into two categories. One is between 5,000 yuan and 20,000 yuan, the other is above 20,000 yuan, accounting for 46.2% and 45.4% respectively. Their income mainly comes from farming (mainly the villagers) and salary (mainly the forest staff). Household expenses are approximately between 5,000 yuan and 20,000 yuan, accounting for 57.8% of the total respondents. The household expenses mainly include living expense, then education expense, production expense and medical expense. 83.5% of the respondents believe that their living standard remains at the subsistence level. 42.2% of the respondents are basically satisfied with their economic status. As for some villagers which are relatively rich, the net annual income can be about 30,000 yuan per capita. The major means of livelihood are cultivating economic plants like black fungus and flue-cured tobacco, and going out as migrant workers.



Figure 8.1-1 Agaric Cultivating and Bee keeping

According to the survey, human and livestock safety, compensation policy, residents' livelihood and alternative plan are major concerns of the villagers. Though the villages and communities are not involved in the project area, some activities are forbidden in the newly-established nature reserve, such as logging, grazing, hunting,

gathering herbs, reclaiming farmland and burning grass. Besides, residents of nearby villages might have limited access to the reserve. These will decrease the income of residents nearby from the grazing and picking in the nature reserve. Therefore, after the project is implemented, there will be conflicts of resource utilization between villagers and the reserves in a long term.

(3) Ethnic minorities

Situated in the Korean Autonomous Prefecture of Yanbian, the project area is mainly populated by the Korean nationality, followed by the Manchus. The project is designed to protect Siberian tigers and their habitats, which well conforms to the traditional culture of the Korean and Man nationalities. The project has no conflicts of interests and culture with the minorities. More publicity is needed during the implementation of the project, to promote the participation of ethnic minorities in protecting Siberian tigers and their habitats, as well as enhance communication and mutual trust.

According to the special investigation of ethnic minorities, it is believed that the project will bring benefits to local residents, like improvement of forest resource quality and the relationship between humans and animals, increase in economic income and job opportunities. 69.8% of the respondents believe the project will not have negative influences on local ethnic minorities. Only two people are affirmative that there will be negative influences, including the threatening of human and livestock safety, decrease in forestry income and impediment in getting rid of poverty.

(4) Experts

Experts are people participating in research projects of Siberian tigers and relevant researches. They come from various universities and research institutes such as the Feline Research Center of the State Forestry Administration, Northeast Forestry University, Heilongjiang Wildlife Research Institute and Jilin Academy of Forestry.

In forums and interviews, these experts put forward the following issues: tiger-friendly forest management should focus on the natural recovery of forestry ecological system and system control of pests, and biological prevention and control should be the leading measure when there is pest plague; the project involves border areas of China, Russia and North Korea, thus the undertaking units should communicate with related border area management departments to gain understanding and cooperation from them and frontier forces. Interview results of experts in this program show that the experts hold supportive attitude toward this project and will offer sufficient technical support.

(5) Non-governmental organization

Active international non-governmental organizations in the project areas include the WWF and WCS. In recent years, with the active cooperation of Heilongjiang Forestry Department, Jilin Forestry Department, the General Bureau of Heilongjiang Forestry Industry and its subordinate forestry bureaus and nature reserves, WWF and WCS have launched many projects, such as Field Patrol in Siberian Tiger Nature Reserve, Passive Monitoring of Wild Siberian Tigers in Hunchun Nature Reserve, Hunting Tools Clearing by Siberian Tiger Protection Volunteers, Research on Prey Resource of Siberian Tigers, Compensation of Accidents Caused by Wildlife such as Siberian Tigers, Demonstration and Popularization of Cattle Barn Raising, Recognition Technology of Potential Habitats of Siberian Tigers in China's Changbai Mountain Ecosystem, Proposal on China's Siberian Tiger Protection Activities, Investigation on Border Habitats of Siberian Tigers, Publicity and Education on Siberian Tiger Protection, etc. All these programs, which have laid foundation for this project, are important factors that ensure the successful implementation and expected

effects of the project. They also provide financial support in the fields which are not able to be involved in the project.

Though the non-governmental organizations are launching or have launched projects related to Siberian tiger protection, the projects are not systematic enough for the protection and recovery of the whole Siberian tiger habitats due to lack of fund and limited scope of implementation. This project is in accordance with the above projects in terms of the starting point and objective, and they supplement each other in terms of the content and overall arrangement. This project helps to coordinate with the non-governmental protection organizations and integrate fund from various channels. Non-governmental organizations can fully play their roles. The protection project of Siberian tigers' habitat will be launched with the joint efforts from all parties.

8.2 Public Participation Methods

Based on the Interim Measures for Public Participation in EIA and to ensure the effectiveness, public participation methods of this assessment are the following:

1. Environmental Assessment Information Announcement

Environmental assessment information was announced from June 10th to 23, 2014, through website announcement and notice posting.

2. Forum and Interview

Public forum about environmental impact assessment was held from June 20th to 23, 2014, as well as special interviews with experts, villagers and village cadres.

3. Questionnaire survey

From June 20th to July 10th, 2014, the united association of construction units and environmental assessment units investigated public opinions in the project area. Meanwhile, the general situation of planned projects, environmental impact sphere and degree of project implementation, main negative and positive impacts were introduced to the public, and *Questionnaire of Public Participation* was released.

8.3 Status of Environmental Assessment Information Announcement

1. Website Announcement.

According to the *Interim Measures for Public Participation in Environmental Impact Assessment*, within 7 days after the project executive office entrusted us with the EIA, the information is announced on websites of Heilongjiang Forestry Department and Suiyang Forestry Bureau of the General Bureau of Heilongjiang Forest Industry. The detailed information is as follows:



中国东北野生动物保护景观方法项目”环境影响评价公示

【推荐】 【打印本页】 【关闭窗口】

根据《中华人民共和国环境保护法》、《环境影响评价公众参与暂行办法》、《世界银行OP/BN4.01 及其附件（环境评价）》的相关规定，将建设“中国东北野生动物保护景观方法项目”所有相关事宜公告如下：

一、项目概况

东北虎是世界现在生存的5个虎亚种之一，仅分布于中国东北部、俄罗斯远东和朝鲜北部山地林区。为促进东北虎及其栖息地保护管理工作，国家林业局与世界银行联合申请了全球环境基金“中国东北野生动物保护景观方法”项目，并于2012年2月29日获得原则批准。本项目实施范围位于中国黑龙江省与吉林省交界处，涉及珲春市、汪清县、东宁县、穆稜县，总面积约13879.26平方公里。项目承担单位为吉林省林业厅、黑龙江省林业厅及黑龙江森林工业总局。

本项目内容将通过各部门间的协调合作使野生动物保护主流化，优先区域生态系统保护的方法，在东北生态区域加大栖息地保护有效性，减少生态区域人兽冲突。项目管理有四个子项目。项目实施后，将新建1个保护区，1个保护小区，扩建1个保护区，建设虎友好型森林经营活动区域，新建31个保护站，增强现有约13个保护站的能力建设，开展社区建设等，促进虎栖息地环境的改善和生态廊道的构建。

Fig. 8.3-1 Screenshot of Announcement on the Website of Heilongjiang Forestry Department

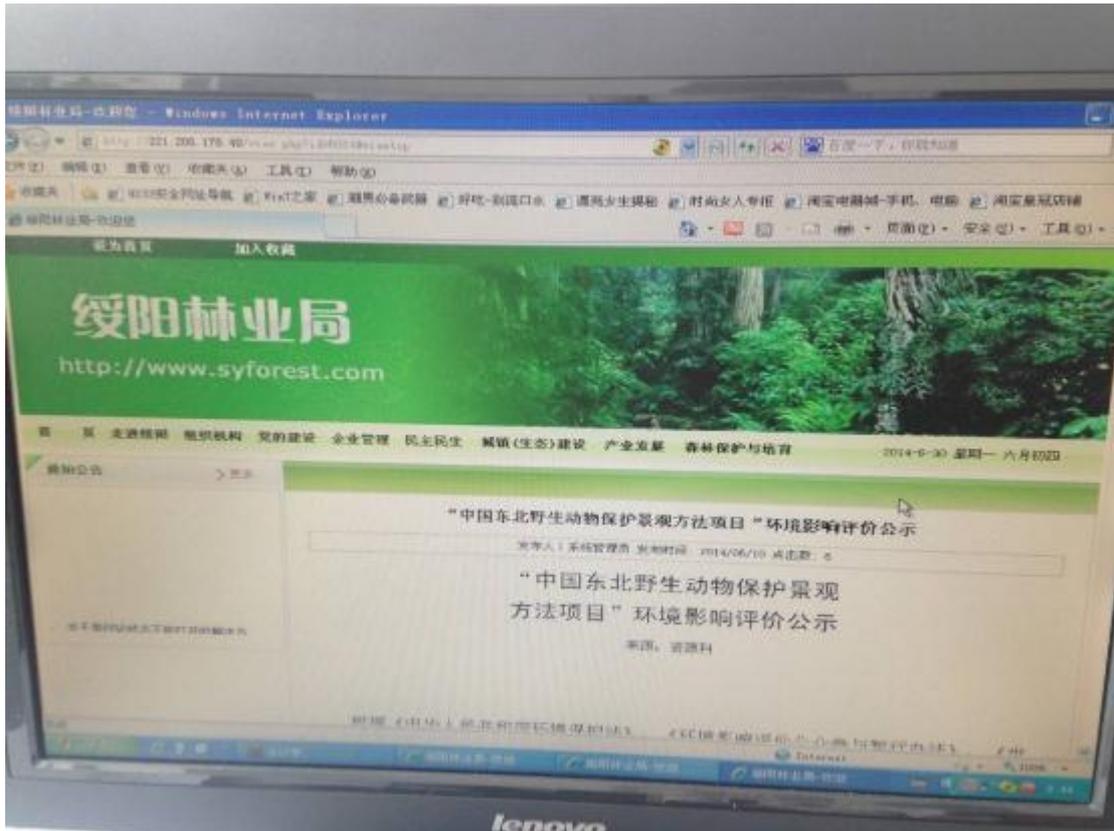


Fig. 8.3-2 Screenshot of Notice on the Suiyang Forestry Bureau Website of the General Bureau of Heilongjiang Forestry Industry

2. Public Notice Posting

Public notices are posted in forest farms in the project area and outside villages from June 10th to 23, 2014. Detailed information can be seen in following pictures.



Fig. 8.3-3 Public Notice Posting in Daxing Forest Farm, Wangqing County



Fig. 8.3-4 Public Notice Posting in Shangtun Forest Farm, Wangqing County



Fig. 8.3-5 Public Notice Posting in Tianqiaoling Forestry Bureau, Wangqing County



Fig. 8.3-6 Public Notice Posting in Dahuanggou Forest Farm, Wangqing County



Fig. 8.3-7 Public Notice Posting in Madida Village, Hadamen Town, Hunchun County



Fig. 8.3-8 Public Notice Posting in Laoyeling Nature Reserve, Suiyang, Dongning County

8.4 Status of Forum and Interview

1. Public Forum

In order to solicit opinions, construction units and environment assessment units hold public forums about environmental impact assessment in Heilongjiang and Jilin Province from June 10th to 30th, 2014. Forest farm workers, villagers, representatives and experts of forestry bureaus and relative departments, etc.

Topics of the forum include:

(1) The project construction may bring influences on wild animals in the project area. What strengthening measures will the management departments take and what promises should the construction units make to reduce these influences?

(2) The project construction may bring influences on the biodiversity in the project area. What strengthening measures will management departments take and what promises should construction units make to reduce these influences?

(3) The project construction may bring influences on residents' livelihood in the project area. What strengthening measures will management departments take to reduce these influences and what promises should construction units and the government make to guarantee benefits of forest farm workers and villagers?

(4) The project construction may bring influences on human and livestock security in the project area. What strengthening measures will management departments take and what promises should construction units make to reduce these influences?

(5) Are you content with the environmental protection and risk prevention measures taken by environment assessments? If not, please present your suggestions and requirements.

(6) That supervision and management measures will environmental protection departments take in project construction and operation periods to supervise and urge construction units to implement environmental protection measures.

In the public forum, the environmental assessment unit first introduced general information of this project, therefore representatives of the public could have a direct understanding of project construction and operation status. Representatives agree with the environmental assessment unit on the environmental effects of the project and the ecological protection measures. They agree that through reasonable planning, standard construction and strict management, negative effects on environment can be lowered to an acceptable degree. They highlight that construction units should strengthen monitoring and prevention of fire and pest. The construction units give answers to questions about residents' livelihood, human and livestock security, etc., and point out that they will offer job opportunities of protection, management and supervision to farms workers and villagers in the project area. At the same time, a complain mechanism of wildlife accident will be established. Through the wildlife accident complain committee, compensation of wildlife injury accidents will be made. Representatives confirm the answers given by the construction unit, and advise that the construction unit should strengthen the publication and communication with related personnel.

Through communication in forums, representatives reach consensus that there are good conditions the project area for the project implementation, and the project has great meaning in improving the ecological environment and promoting the wild animal protection. The project is hoped to start as soon as possible.



Fig. 8.4-1 Site Photo of Forums

1. Interview

In order to solicit opinions, the construction unit and the environmental assessment unit specially interviewed key persons such as experts, forest farm workers, villagers, etc.

Questions in interviews with experts include:

- (1) Is this project in accordance with the regional layout in the project area?
- (2) Is there any road, railway or hydraulic engineering project across the project area? If yes, what influence will they have on habitat protection?
- (3) Does this project involve human and livestock safety? If yes, do you have any suggestion on countermeasures?
- (4) From the perspective of experts, do the residents of any town or village have to emigrate?
- (5) Does the construction in project area involve natural habitats? Do you have any suggestion?
- (6) Does this project involve pest management? Do you have any suggestion?
- (7) Does this project involve material culture heritage resources? Do you have any suggestion?
- (8) Does this project involve involuntary resettlement? Do you have any suggestion?
- (9) Does this project involve indigenous peoples? Do you have any suggestion?
- (10) Does this project involve safety of dams? Do you have any suggestion?
- (11) Does this project involve controversial region? Do you have any suggestion?
- (12) Does this project involve sensitive points (areas)? Do you have any suggestion?
- (13) Do you have any suggestion on assessment focus and factors?
- (14) Do you have any suggestion on the protection of rare wild animals in the food chain of the tiger?
- (15) Is it possible to predict effects of setting up new reserves, limiting human disturbance and poaching on protection of the Siberian tiger and its prey?
- (16) What influences will forest culture and management measures such as vegetation recovery and forest tending have on the Siberian tiger and its prey? Is it possible to predict their effects on improving and connecting habitats of the Siberian tiger?
- (17) What is the influence of supplementary feeding and human feeding on the

Siberian tiger and its prey?

(18) In your view, what negative influences will the project have on local residents?

Experts answered each question in the interview and gave important suggestions as follows: tiger-friendly forest management should focus on the natural recovery of forestry ecological system and system control of pests, and biological prevention and control should be the leading measure when there is pest plague; the project involves border areas of China, Russia and North Korea, thus the undertaking units should communicate with related border area management departments to gain understanding and cooperation from them and frontier forces.



Fig. 8.4-2 Figure of the Interview

8.5 The First Questionnaire Survey

During June 20 to July 10, 2014, the united association of construction units and environmental assessment institute randomly released 350 pieces of questionnaire about public participation, with 346 pieces, 98.9% of the total regained. 248 pieces were sent to workers of forest farms and 98 pieces to villagers in outside regions.

1. Basic information of the respondents

According to the questionnaire results, 290 respondents are male, accounting for 83.3% of the total, and 56 female, 16.2% of the total. In terms of age, 16 respondents are 18 to 30 years old, 4.6% of the total; 143 respondents are 31 to 45, 41.3% of the total; 175 respondents are 46 to 60 years old, 50.6% of the total; 12 respondents are above 60 years old, 3.5% of the total. In terms of nationality, most of respondents are of Han nationality, accounting for 92.5% of the total; 4.6% of the respondents belong to Korean nationality, and 2.9% to Man nationality. In terms of education level, most of the respondents graduate from middle schools and high schools, 43.1% and 28.3% respectively, low level of education on the whole. In terms of occupation, there are villagers, village cadres, workers, policeman, staffs, drivers, accountants, forest protectors, fire fighters and the unemployed, covering a quite wide range of occupations. Detailed information can be seen in the following table.

Table 8.5-1 Result of the Public Participation Questionnaire Survey--Basic Information of respondents

Survey content	Options	Number of respondents	Rate
Gender	Male	290	83.8%
	Female	56	16.2%
Age	18-30 years old	16	4.6%

Survey content	Options	Number of respondents	Rate
	31-45 years old	143	41.3%
	46-60 years old	175	50.6%
	Above 61 years old	12	3.5%
Nationality	Han	320	92.5%
	Korean	16	4.6%
	Man	10	2.9%
Education level	illiteracy	1	0.3%
	Primary school	17	4.9%
	Middle school	149	43.1%
	High school	98	28.3%
	Senior College or Vocational College	56	16.2%
	University and above	16	4.6%
	No answer	9	2.6%

2. Respondents' family background

According to the questionnaire survey, there are 161 respondents in whose family there are one or two members having meals together every day, accounting for 46.5% of the total; and 153 respondents in whose family there are three or four family members, 50.0% of the total. Most of the families earn 5,000 yuan to 20,000 yuan, or more than 2,000 yuan every year, accounting for 46.2% and 45.4% respectively. The household income sources are mainly crop farming (of villagers) and wage income (of workers in forest farms). The household expense is from 5,000 to 20,000 in many families, accounting for 57.8% of all the total respondents. Living expenses is the largest part of household expense, then it is education expense, production expense and medical care. 83.5% of the respondents think they are living at a subsistence level, and 42.4% are basically content with their economic status. Detailed information is shown in the table below.

Table 8.5-2 Result of the Public Participation Questionnaire Survey--Respondents' Family Backgrounds

Survey content	Answer	Number of Respondents	Rate
How many family members have meals together every day?	1-2	161	46.5%
	3-4	173	50.0%
	5 or above	10	2.9%

Survey content	Answer	Number of Respondents	Rate
	No reply	2	0.6%
What's the total income of your family?	Less than 5, 000 yuan	27	7.8%
	5000-20,000 yuan	160	46.2%
	More than 20,000 yuan	157	45.4%
	No reply	2	0.6%
What's the main income source of your family? (Multiple choices)	Crop farming	161	46.5%
	Breeding industry	19	5.5%
	Handicraft	3	0.9%
	Small workshop	1	0.3%
	Business	9	2.6%
	Employed by others	28	8.1%
	Salary	192	55.5%
	Others	24	6.9%
What's the total expense of your family last year?	Less than 5,000 yuan	36	10.4%
	5000-20,000 yuan	200	57.8%
	More than 20,000 yuan	99	28.6%
	No reply	11	3.2%
What's the main expense of your family? (Multiple choices)	Living expense	299	86.4%
	Production expense	96	27.7%
	Transport expense	59	17.1%
	Educational expense	130	37.6%
	Medical expense	93	26.9%
	Others	6	1.7%
What do you think is the living level of your family?	Poor	35	10.1%
	At subsistence level	289	83.5%
	Rich	9	2.6%
	No reply	13	3.8%

Survey content	Answer	Number of Respondents	Rate
Are you content with your economic status?	Quite satisfied	11	3.2%
	Basically content	146	42.2%
	Acceptable	100	28.9%
	Not really	55	15.9%
	Absolutely not	22	6.4%
	No reply	12	3.5%

3. Respondents' opinions on this project

The survey shows:

(1) In terms of the project awareness, 60.4% of the respondents have been aware of this project before this survey, indicating a high rate of project awareness. They got to know this project mainly through the media, leaflets, etc.

In terms of wild animal accidents, 34.7% of the respondents' families have suffered loss from wild animal accidents caused by tigers, wild boars, etc., indicating that wild animal accidents happen regularly.

(2) 44.2% of the respondents think this project will bring help or benefits to them. They can earn more money from participation and production mode transformation. However, 9.0% of the respondents don't think this will bring any help. These figures show that the expected outcome of the project is widely accepted by the public.

(3) Most of the respondents (53.8%) don't think the project will bring negative impacts on their families. Only a small number of respondents (7.2%) have the opposite opinion, and the negative impact is that their living habits could be changed. This demonstrates that the negative influences of the project can be accepted by the public.

(4) In terms of the support rate, the rate is up to 85.5%. Only 1.2% of the respondents clearly express that they do not support this project. This shows a very high approval rate of the public to the project.

(5) 85.5% of the respondents are willing to participate in this project, 57.5% of which say they will participate in patrol management, adjusting or change production mode, and joining in forestry organizations for a long time. This indicates that the public have great enthusiasm in participating in this project.

Detailed information can be seen in the table below.

**Table 8.5-3 Result of the Public Participation Questionnaire
Survey--Respondents' Opinions about the Project**

Question	Answer	Person-time	rate

Question	Answer	Person-time	rate
1. Before this survey, did you know the Landscape Approach to Wildlife Conservation in Northeast China Project?	Yes	209	60.4%
	No	128	37.0%
	No reply	9	2.6%
2. If you know about this project, how did you get the information?	File	25	7.2%
	Meeting	40	11.6%
	Media	103	29.8%
	Leaflet	74	21.4%
	Bulletin board	34	9.8%
	Others	12	3.5%
	No reply	58	16.8%
3. Have your family ever suffered loss caused by wild animal accidents of tigers or wild bores?	Yes	120	34.7%
	No	204	59.0%
	No reply	22	6.4%
4. Do you think this project will bring help or benefits to you and your family?	Yes	153	44.2%
	No	31	9.0%
	Not sure	151	43.6%
	No reply	11	3.2%
5. What kind of help or benefits do you think this project can bring to your family? (Multiple choice)	Participation can increase income	168	48.6%
	Changes in the production mode can increase income	106	30.6%
	Others	15	4.3%
6. Do you think this project will have negative impacts on your family?	Yes	25	7.2%
	No	186	53.8%
	Not sure	121	35.0%
	No reply	14	4.0%
7. What negative impacts will be brought about by the	Income decrease caused by restricted production activities	75	21.7%

Question	Answer	Person-time	rate
project? (Multiple choice)	Changes in living habits	156	45.1%
	Others	16	4.6%
8. What's your overall attitude toward this project?	Supportive	296	85.5%
	Against	4	1.2%
	Neutral	31	9.0%
	No reply	15	4.3%
9. Will you participate in this project?	Yes	297	85.8%
	No	6	1.7%
	Neutral	27	7.8%
	No reply	16	4.6%
10. In which form do you prefer to participate in this project? (Multiple choice)	Participation in patrol management	199	57.5%
	Adjusting or switching to other production	53	15.3%
	Taking part in forestry organization	79	22.8%
11. Which employment form do you prefer to if participating in the project?	Long-term participation	199	57.5%
	Contract worker	19	5.5%
	Part-time worker	85	24.6%
	Others	13	3.8%
	No reply	30	8.7%

4. Special survey of ethnic minorities

53 people participate in this special survey. They are mainly Korean and Man. The results show that:

- (1) In terms of the native language, 49.1% of the respondents think many of their people can speak their native language. 58.5% of the respondents think they can speak their native languages. This indicates that in the project area, the usage and popularizing rate of minority languages is at a middle level.
- (2) In terms of the minority customs, 60.4% of the respondents think they have their own customs; 62.3% of them believe that they have their own traditional festivals; 45.3% of them don't think they have their own religious beliefs; and 60.4% of them have their own folk costumes. This demonstrates that the

traditional customs of the ethnic minorities are well protected in the project area.

- (3) In terms of the nationality differences, 69.8% of the respondents don't think they have any big differences from the Han nationality; 62.3% of them don't think there are many people of their ethnic groups who get married with people of the Han nationality or other minorities.
- (4) In terms of opinions about the project, the respondents believe that this project can improve the quality of the forest resources, improve the environment of human and wild animals, increase their income and create jobs. 69.8% of the respondents don't think this project will have negative impacts on local minorities. Only two people clearly express that the project will cause negative influences on local minorities, mainly including the increased threaten on human and livestock safety, reduced forest industry income and affected poverty alleviation.

Detailed information can be seen in the table below.

Table 8.5-4 Result of the Public Participation Questionnaire Survey-Special Survey of Ethnic Minorities

Survey Content	Answer	Number of respondents	Rate
1. Do many people of your nationality speak your native language?	Yes	26	49.1%
	Not many	10	18.9%
	Not sure	15	28.3%
	No reply	2	3.8%
2. Can you speak the language of your ethnic group?	Yes	31	58.5%
	A little	4	7.5%
	No	17	32.1%
	No reply	1	1.9%
3. Does your ethnic group have any custom?	Yes	32	60.4%
	No	6	11.3%
	Not sure	14	26.4%
	No reply	1	1.9%
4. Does your ethnic group have any traditional festival?	Yes	33	62.3%
	No	5	9.4%
	Not sure	14	26.4%
	No reply	1	1.9%

Survey Content	Answer	Number of respondents	Rate
5. Does your ethnic group has any religious belief?	Yes	14	26.4%
	No	24	45.3%
	Not sure	15	28.3%
	No reply	0	0.0%
6. Do you have any costume of your ethnic group at home?	Yes	32	60.4%
	No	19	35.8%
	No reply	2	3.8%
7. Do you think your ethnic group is different from the Han nationality?	Yes	15	28.3%
	No	37	69.8%
	No reply	1	1.9%
8. Are many people in your ethnic group married with the Han people or people from other ethnic groups?	Yes	19	35.8%
	Not many	33	62.3%
	No reply	1	1.9%
9. What benefits do you think the project will bring to the ethnic minorities? (Multiple choice)	Improve forest resources quality	19	35.8%
	improve the environment of human and wild animals	21	39.6%
	Increase people's income	14	26.4%
	Create jobs	11	20.8%
	Promote the development of the ethnic minorities	9	17.0%
	Promote gender equality	7	13.2%
	Others	0	0.0%
10. Do you think this project could bring about negative influences on the local minorities?	Yes	2	3.8%
	No	37	69.8%
	Uncertain	1	1.9%
	Not sure	12	22.6%
	No reply	1	1.9%
11. If you think there exist	Reduce forest industry income	14	26.4%

Survey Content	Answer	Number of respondents	Rate
negative influences, what are they? (Multiple choice)	Impede the development of other industries	3	5.7%
	Hinder the alleviation of poverty	9	17.0%
	Increase threats to human and livestock safety	19	35.8%
	Be unfavorable to female development	1	1.9%
	Accelerate the disappearance of ethnic minorities culture	0	0.0%
	Others	1	1.9%

8.6 The Second Questionnaire Survey

Based on the problems reflected in the questionnaire, from January 26th to 30th, 2015, the construction unit and the EIA unit conducted a return visit survey after the first edition of the environmental impact assessment (EIA) report was completed. The respondents include those involved in the first survey. In the return survey, we got to know their doubts about this project and answered a series of questions they cared about, including human and livestock safety, compensation policies, residents' livelihood and the alternative plans. After further communication and explanation, we got the following feedback suggestions:

(1) The government will strengthen the safety and caution publicity, promote and encourage pen feeding and captive breeding, and make compensations according to the present policies, such as the compensation approach to personal and property damages caused by key protected terrestrial wildlife. The above measure eliminate people's worries about human and livestock safety and wildlife accident compensation.

(2) The government will arrange villagers in communities and villages around the project area to undertake the management, protection and monitoring. The income will be no lower than the current level and will be gradually increased to promote community residents' enthusiasm in participating in the project.

(3) The government will launch alternative livelihood trials and train community residents around the project area with professional skills (such as bagged fungus plantation, tobacco cultivation and apiculture). This can enable community residents, especially the poor households, to gain more job opportunities and income sources, and reduce their reliance on grazing and picking.

This feedback visit survey enables the unsupportive people to have a better understanding of this project. They agree that the project is consistent with the

national policy, of great importance in protecting local ecology, and has less negative impacts on the environment. Thus they are supportive of this project.

300 pieces of questionnaires were released during the second questionnaire survey and 284 pieces were reclaimed. The ratio of questionnaire reclaiming is 94.7%. The survey shows that:

(1) In terms of people's livelihood, only 8.5% of the respondents live on pasturing and collecting forest resources such as fungi; 84.5% of the respondents don't think the establishment of Wangqing Tianqiaoling Nature Reserve, Hunchun Lanjia protected areas and expanded Niaoqingshan Nature Reserve will affect their source of income; only 3.2% of the respondents think the new reserves will have great influences on their livelihood. 65.1% of the respondents used to or planned to plant bagged agaric; 14.1% of the respondents think the prohibition of logging has great influences on their livelihood. Thus it can be seen that the implementation of this project has quite little impacts on residents' livelihood.

(2) As for safety of people and livestock, 18.0% of the respondents suffered damage or loss caused by wild animals such as tigers, leopard and wild boar; 3.2% of the respondents got relevant compensation for animal-caused accidents; 91.5% of the respondents think it's necessary to conduct compensation for animal-caused accidents; 70.8% of the respondents think it's necessary to develop captive herding of livestock to replace the loose herding. It can be seen that it's necessary to conduct compensation for animal-caused accidents and captive livestock herding.

Detailed information is shown in the following table:

Table 8.5-5 Statistic of the Second Questionnaire Survey

Questions	Reply	Number of people who give answers	Ratio
1. Is pasturing or collecting forest products such as fungi your major source of income?	Yes	24	8.5%
	No	260	91.5%
2. Have you ever pastured or collected forest products such as fungi in forest farms or nature reserves?	Yes	211	74.3%
	No	73	25.7%
3. According to the Regulations of the People's Republic of China on Nature Reserves, it's not allowed to graze or gather forest resources in nature reserves. Will the establishment of Wangqing Tianqiaoling Nature Reserve, Hunchun Lanjia protected areas and expanded Niaoqingshan Nature Reserve affect your sources of income?	Yes	10	3.5%
	No	240	84.5%
	Not sure	34	12.0%
4. Do you think the establishment of Wangqing Tianqiaoling Nature Reserve, Hunchun Lanjia protected areas and expanded Niaoqingshan Nature Reserve has huge impacts on your life or not?	Huge	9	3.2%
	Not huge	167	58.8%
	Not sure	108	38.0%
5. Have you ever planted or planned to plant bagged agaric?	Yes	185	65.1%
	No	78	27.5%

Questions	Reply	Number of people who give answers	Ratio
	Not sure	21	7.4%
6. Is there any change in sources of materials to plant agaric since the prohibition of logging?	Yes	78	27.5%
	No	90	31.7%
	Not sure	114	40.1%
	No reply	2	0.7%
7. Does the prohibition of logging affect your agaric planting?	Yes	77	27.1%
	No	103	36.3%
	Not sure	102	35.9%
	No reply	2	0.7%
8. Does the prohibition of logging have huge influences on your life?	Yes	40	14.1%
	No	149	52.5%
	Not sure	93	32.7%
	No reply	2	0.7%
9. Have you ever suffered damage or loss caused by wild animals such as tiger, leopard or wild boar?	Yes	51	18.0%
	No	231	81.3%
	No reply	2	0.7%
10. Have you ever got compensation for animal-caused accidents?	Yes	9	3.2%
	No	271	95.4%
	No reply	4	1.4%
11. Do you think it's necessary to conduct compensations for animal-caused accidents?	Yes	260	91.5%
	No	17	6.0%
	Not sure	6	2.1%
	No reply	1	0.4%
12. Do you think it's necessary to develop captive herding of livestock to replace the loose herding?	Yes	201	70.8%
	No	63	22.2%
	Not sure	19	6.7%
	No reply	1	0.4%

8.7 China-Russia Cooperation Mechanism of Siberian Tiger

Protection

China and Russia signed "Joint Communiqué of the 15th Regular Meeting between Prime Ministers of China and Russia" in 2010. It pointed out the two countries needed to study, establish and strengthen the mechanisms and framework of cooperation in protection of the wild tiger and wild leopard population in border regions. China and Russia agreed to further strengthen cooperation in protecting cross-border nature reserves and biological diversity.

On August 2010, the Forestry Department of Jilin Province, the Supervision Bureau of Hunting in the Primorsky Region of Russia and the Federal Special Protection Bureau of Rare and Endangered Plants and Animals officially signed the cooperation agreement on the "China-Russia Cross-Border Protection of Siberian tiger and Far Eastern Leopard". The two sides decided that experts and staff engaged in wildlife conservation of the two countries would conduct regular joint investigations within protected areas near the border, establish cross-border protection network to share information, and exchange staff to communicate experience and technical training.

On June 22, 2013, the General Bureau of Heilongjiang Forestry Industry and the Wildlife and Hunting Bureau of Primorsky Region of Russia jointly signed a cooperation memorandum of wild Siberian tiger and leopard protection in Harbin. According to the memorandum, the two sides will promote the reserve development along the transnational ecological corridor of wild Siberian tiger to guarantee the safety of wild Siberian tiger in important regions. The two sides shall set up a normalized cooperation mechanisms and a joint working group to provide guarantees for wild Siberian tiger protection in terms of funding and personnel. The sides shall facilitate the visits exchange, transit and protection activities carried out in the border area, make efforts to engage international environmental agencies and research institutions in the protection of wild Siberian tiger, and smooth channels of information exchange and data sharing. In terms of specific field protection, the two sides agreed to strengthen the protection of wild Siberian tiger, leopard and their prey, control poaching in areas of national jurisdiction, and jointly implement field activities to clear the hunting tools. They also agreed to improve united methods of Siberian tiger monitoring and carry out joint investigations of wild Siberian tiger in border areas between Russia and China. Meanwhile, both sides shall strengthen cooperation in the field of environmental publicity and education, carry out large-scale cultural events about the protection of wild Siberian tiger and leopard.

Information about this project was provided to Russia through this mechanism in June, 2014, and views of no objection were received from Russia.

8.8 Summary

Through the information publicity of environmental impact assessment (EIA),

forums and interviews, and questionnaire survey, we have publicized the aim and contents of this project, progress, potential ecological impacts and planned environmental measures to relevant stakeholders, and discussed with them before the project construction. People involved in this project is located in a large scope, and with strong representative characteristics, basically covering the project area and its outside areas.

Statistics show that most people are in favor of this project. They believe it has positive impacts on the local ecological protection, and the environmental influence is within an acceptable range. The typical public opinions mainly lie in alternative livelihood and compensation, and human and livestock safety. But these worries have been wiped out through communication and government pledges, which has further increased the approval rate of the public. Their opinions and suggestions have been adopted by construction units and have yielded good results.

9 Environment Management Plan

9.1 Mitigation Measures of Environmental Impacts

Planned mitigation measures of environmental impacts in this project are shown in the Table 9.1-1.

Table 9.1-1 Implementation Plan of Mitigation Measures

Environment Category	Environment Factor	Mitigation Measures	Implementing Unit	Supervision Unit
Nature Environment	Atmospheric Environment	Spray water and clean construction sites in time. Measures of shelter, enclosure or sprinkling should be taken in dust-flying areas of construction sites. Granular materials with fine particles piled in construction sites should be sealed or covered. Sprinkling on the surface of material piles accordingly can effectively reduce the dust amount. Use concrete mixed at sites, which is easy to apply sealing measures. The clearance and transport of construction waste should be conducted in airtight containers. Aloft throwing is prohibited. The construction waste should be stored by categories and disposed in time according to relative regulations for urban garbage classification; a certain amount of water should be sprayed before the transport and disposal. Strengthen the management of transport vehicles, and cover tarps over vehicles that will produce dust easily. Consecutive and enclosed fences should be set up around the construction site.	Construction unit of protection stations	Local environmental protection unit
		Choose construction machines and vehicles in good operating conditions. Fuel construction machines and vehicles must be operated in normal conditions to make sure the exhaust emission is within the standard amount. Utilize equipment properly and strengthen the maintenance and repair of equipment.	Construction unit of protection stations	Local environmental protection unit
	Ground Water Environment	Waste water caused by vehicle washing, construction materials washing, concrete curing, and sandstone materials washing in construction sites should be collected together. Mix and dilute the waste water to lower the PH, then lead it into temporary sedimentation tank, the size of which is at the standard where the waste water can stay for at least 12 hours. The processed waste water will be reused for construction sites cleaning, construction materials washing, concrete curing and sandstone materials washing. Strengthen the construction management and strictly control the running, emitting, dripping and leaking of construction machines; manage well the drainage system of temporary soil piles and take soil conservation measures to prevent the soil erosion from affecting the water environment. Each construction unit must implement every treatment measures regarding construction waste water and domestic sewage, and makes sure that the waste water is properly handled; Strengthen the environment conservation education of constructors and improve their environmental awareness. Constructors cannot litter or dump waste and waste water.	Construction unit of protection stations	Local environmental protection unit

Environment Category	Environment Factor	Mitigation Measures	Implementing Unit	Supervision Unit
	Sound Environment	Select advanced and reliable equipment with low noise. The construction time is from 8:00am to 20:00pm. During 12:00am-14:00pm, construction activity is not allowed. Meanwhile, construction at night is forbidden. For these that must be operated continuously at night, it's demanded to show certificates issued by local construction administrative departments, approved by environmental conservation administrative departments, and announce it to nearby residents. Reasonably arrange the construction time and avoid operations of many large noise-making machines at the same construction site and at the same time. Speed up the construction to reduce the noise affecting time. Try to minimize impacts of the construction noise on constructors; Shock-absorbing and vibration-attenuating support shall be done for machines producing loud noise, and wrap up damping materials.	Construction unit of protection stations	Local environmental protection unit
	Solid Waste	The clearance and transport of construction waste should be conducted in airtight containers. Aloft throwing is prohibited. The construction waste should be stored by categories and disposed in time according to relative regulations for urban garbage classification. Domestic garbage collected in bags from dustbins in construction sites should be transported to and processed in local domestic garbage landfill. Waste soil can be used to level and backfill convex and concaves in water and soil conservation project, and used as padding material for nearby road subgrade on the other as well. No spoil disposal area will be set.	Construction unit	Local environmental protection unit
Ecological Environment	Wildlife	To improve law enforcement capacity and carry out unremitting anti-poaching measures.	Forestry department of each county and city and nature reserves	Local government
		To strictly control the intensity of prey introduction.	Jilin academy of forestry	Project office in Jilin province
		To scientifically set the timing and number of reintroduced prey and the individual prey introduced need to be quarantined in case that the pathogens and epidemic diseases are brought and transmitted with them.	Jilin Academy of Forestry	Project office in Jilin province
		To protect and improve the habitats of Ungulata, monitor the national key protected animal species like Ungulata, sika deer and Siberian musk deer, and properly take measures, such as supplementary feeding, to guarantee the food sources of reintroduced prey.	Forestry department of each county and city and nature reserves	Provincial project office

Environment Category	Environment Factor	Mitigation Measures	Implementing Unit	Supervision Unit
	Vegetation and biodiversity conservation	We should to carry out environmental education for participants in the project, especially forest tending and plantation workers, raise their awareness and quality, and strictly prohibit hunting, transacting of wild animals and randomly picking wild plants.	Construction unit of plantation and forest tending	Forestry department of each county and city
		Cave-shaped soil preparation can be helpful to reduce disturbance of natural vegetation; to protect the miscellaneous shrubs under the gullies and ridges during soil preparations and plantation, and try to maintain the under forest vegetation and vegetation on forest edge during the operation.	Construction unit of plantation	Dongning county forestry department
		To adopt the mixed plantation method in plantation process. The varieties of trees include spruce, larch, pinus sylvestris, pinus koraiensis, etc.	Construction unit of plantation	Dongning county forestry department
		During the operation process of light-transmitting tending, ecological thinning, pruning and miscellaneous bushes clearing, equipment with low noise should be utilized. Operation hours in the same area should be relatively centralized so as to reduce disturbance brought to surrounding wildlife.	Construction unit of forest tending	Forestry department of each county and city
	Pest Management	During plantation, to select nursery stocks which are resistant to pests, and quarantine seeds and stocks.	Construction unit of plantation	Dongning county forestry department
		To promote integrated pest management and strengthen forest protection, take mixed measures of biological and chemical prevention and control, protect the natural enemies, and control pests through the species balance of the nature.	Construction unit of plantation	Dongning county forestry department
		The project will only recommend use of the WHO III and U types of pesticides. Pesticide with high effectiveness, low toxicity and residual should be selected and used. We should improve pesticide efficiency and increase the total amount of pesticide, avoid pesticide abuse and repeated usage of one pesticide in large amount to avoid the pests' resistance to pesticides.	Construction unit of plantation	Dongning county forestry department
		To reasonably arrange the pesticide applying time. To apply pesticides at proper time could improve the efficiency.	Construction unit of plantation	Dongning county forestry department
		To utilize the pesticide according to the regulation, control the pesticide amount and frequency, and do not increase the amount and concentration of pesticide.	Construction unit of plantation	Dongning county forestry department

Environment Category	Environment Factor	Mitigation Measures	Implementing Unit	Supervision Unit
		Package material like the package bags, pesticides bottles will be recycled.	Construction unit of plantation	Dongning county forestry department
Social Environment	Livelihood	To conduct alternative livelihoods for staffs in the forest farms, i.e., tiger-friendly forest management, and attract the forest farm staffs to actively participant in the protection activities of this project. Provide training on wildlife protection and management and create relevant jobs for forest farm staffs; provide training on forest tending and create relevant jobs for forest farm staffs; provide training on farming and breeding industry and improve the livelihood for forest farm staffs; compensate for the prohibition of deforestation to affected forest farms, and this can be implemented through the natural forest protection project. The implementation of this project and the introduction of <i>Notice on Implementing Pilot Work of Completely Stopping Commercial Deforestation</i> in 2014 would have interactive influences on the resettlement of state-owned forest farm workers in Jilin and Heilongjiang Province. Thus the Resettlement Plan is needed to transform their job from logging to management and protection, and to develop under-forest economy.	Forestry department of each county and city and nature reserves	Provincial project office
		To encourage and attract residents in the peripheral communities of the project area to participate in nature reserve management, including patrolling, monitoring and other protection activities so as to increase their sources of income and enhance their initiative to involve themselves in the project. Provide training on wildlife protection and management and create relevant jobs for farmers; provide training on forest tending and create relevant jobs for farmers; provide training on farming and husbandry and improve the livelihood for farmers.	Forestry department of each county and city and nature reserves	Provincial project office
		To develop pilot alternative livelihood, train the residents in the peripheral communities of the project area on some professional skills including planting bagged fungus, flue-curing tobacco and beekeeping, thus providing more jobs and sources of income for them, and making them less dependent on the nature reserve.	Forestry department of each county and city and nature reserves	Provincial project office
		For households in poverty, to provide training on wildlife protection and management, forest tending, planting and breeding, and create relevant jobs to improve their livelihood.	Forestry department of each county and city and nature reserves	Provincial project office

Environment Category	Environment Factor	Mitigation Measures	Implementing Unit	Supervision Unit
		Buy sawdust from wood processing places and introduce the new technique of using leaves, corncob and bean straw to grow black fungus, which is adopted by the black fungus association in Mudanjiang City, Heilongjiang Province. We shall compile the Development Plans of Ethnic Minorities, mainly to solve the problem of ethnic minorities' relying on sawdust when cultivating agaric in Hunchun City.	Forestry department of each county and city and nature reserves	Provincial project office
		Trace and monitor the units that sell hunting tools like sticky nets and traps and as well as their sales status and co-manage the reserve with the nearby communities and employ the residents to clear away the hunting tools. Establish a mechanism to co-manage the peripheral communities and the reserves, and set up a benefit-sharing mechanism of the nearby communities and villagers based on the co-management mechanism. Some peasants would still collect forest products in state-owned forest farms and the experimental areas of the reserves. They will be allowed to still collect forest products in the experimental areas of the reserves after the project is implemented. Establish a pressure mechanism for the nearby communities, to give financial incentives to communities with less hunting tools. Encourage experienced hunters to participate in reserve protection, to transform their job from hunting to protecting.	Forestry department of each county and city and nature reserves	Provincial project office
	Human and livestock safety assurance	To strengthen security publicizing, and install protective fences, etc.	Forestry department of each county and city and nature reserves	Provincial project office
		To develop pilot dry-lot feeding and captive breeding to advocate and guide residents in the peripheral communities of the project area to raise livestock in pens, and gradually replace their traditional mode of production by raising free-range livestock.	Forestry department of each county and city and nature reserves	Provincial project office

Environment Category	Environment Factor	Mitigation Measures	Implementing Unit	Supervision Unit
		Active efforts should be made to facilitate the issue of related regulations and policies in Heilongjiang Province by reference to Jilin Province. Besides, it is necessary to develop pilot projects to compensate for damages caused by wildlife, establish a mechanism for appealing against the wildlife accidents, and found an appeal committee of the wildlife-caused accidents to properly solve the problems in compensating for the damages that wildlife like boars cause to human and livestock. Laws about compensating for animal-caused loss shall be started; and a special fund for compensation shall be set. The State Forestry Administration will include Heilongjiang Province into the special support program of compensation for animal-caused accidents. Set warning signs at places where tigers and leopards regularly appear; warn the risks of under-forest activities to villagers.	Provincial project office	Project office of the central government
Environmental protection units and staff training		Training for managerial staffs of nature reserves and the government staffs.	Provincial project office	Project office of the central government
		Training for staffs of protection stations.	Forestry department of each county and city and nature reserves	Provincial project office

9.2 Environmental Supervision

Supervision work of environmental protection will be conducted during the implementation of this project. See Table 39.2-1 for details of environmental supervision plan at each stage:

Table 9.2-1 Environmental Supervision Plan

Stage	Agency	Monitoring Items	Monitoring Requirements
Construction stage	Provincial project offices	Verify the documents of environmental mitigation measures and monitoring plans of each forestry department and county and each nature reserve.	Ensure the documents of environmental mitigation measures and monitoring plans conform to the requirements of environmental impact assessment report and national laws and regulations.
	Forestry department of each city and county and each nature reserve.	Supervise the implementation of environmental mitigation measures and monitoring tasks.	Ensure the implementation of environmental mitigation measures and monitoring plans conform to the requirements of the documents of environmental mitigation measures and monitoring plans.
Operation stage	Provincial project offices	Verify the environmental monitoring plan	Ensure the environmental monitoring reports meet the requirements of the documents of environmental mitigation measures and monitoring plans.
	Forestry department of each city and county and each nature reserve.	Check the effects of environmental mitigation measures.	Find problems in time and put forward improvement measures and suggestions.

9.3 Environment Monitoring

The monitoring items of this project include monitoring of the Siberian tiger and its prey; and monitoring of pests and diseases. The monitoring contents, methods and frequency are shown in Table 9.3-1.

Table 9.3-1 Table of Monitoring Items Information (unit: 1,000 USD)

Monitoring items	Monitoring contents	Monitoring methods	Monitoring frequency	Monitoring institutions	Monitoring methods	Supervising institutions
Monitoring of the Siberian tiger and its prey	Animal entities (including animal species, quantity, etc.), footprints (including the amount of individuals, moving direction, etc.)	Each forestry department and nature reserve shall set up investigation and monitoring area respectively, and adopt line transect method.	one time in each winter from 2015 to 2018	Each forestry department and nature reserve in the project area	1107.6	The Research Center of Felidae and provincial project offices
Monitoring of pests and diseases	Types of pests, number of plants damaged by pests (rate), average pest intensity of single plant, injury of stand, etc.	Setting up monitoring sites, sample monitoring sites and standard trees	one time in each winter from 2015 to 2018	Each forestry department and nature reserve in the project area	48.0	Provincial stations of forest pest management and quarantine, and provincial project offices
Quarantine inspection of reintroduced animals	Infectious disease pathogens, parasites and health condition of reintroduced animals	Isolated observation and diagnosis in laboratory	once in export place, once before the animals are released	Jilin Forestry Academy	3.2	Project office of Jilin Province

Based on preliminary estimates, the total expense of monitoring in this project is 1,158,800 US dollars. The detailed information is shown in Table 9.3-2.

Table 9.3-2. Table of Monitoring Expense (unit: 1,000 US dollars)

Monitoring Items	Monitoring Fund	Sources of Monitoring Fund					Use Plan of Monitoring Fund			
		The GEF	The WWF	Jilin Forestry Department	Heilongjiang Forestry Department	The General Bureau of Heilongjiang Forest Industry	2015	2016	2017	2018
In total	1158.8	501.5	432.1	173.2	16	36	347.2	247.4	253.3	310.9
Monitoring of the Siberian Tiger and its prey	1107.6	501.5	432.1	154	0	20	332	235.4	241.3	298.9
Monitoring of Pest and Diseases	48	0	0	16	16	16	12	12	12	12
Quarantine inspection of reintroduced animals	3.2	0	0	3.2	0	0	3.2	0	0	0

9.4 Staff Training

Based on preliminary estimates, the total expense of staffing training in this project is 593,000 US dollars. The detailed information is shown in Table 9.4-1.

Table 9.4-1. Table of Training Expense (unit: 1,000 US dollars)

Training Items	Training cost	Sources of Training cost					Use Plan of Training cost			
		The GEF	The WWF	Jilin Forestry Department	Heilongjiang Forestry Department	The General Bureau of Heilongjiang Forest Industry	2015	2016	2017	2018
In total	593	271.5	230.5	35	8	48	141.6	173.6	164	113.8
Training for Managerial Staff of Nature Reserves and Government Staff	352.7	115.2	190.5	27	0	20	70	103.4	111.5	67.8
Training for Protection Stations Staff	216.3	156.3	40	0	0	20	59.6	58.2	52.5	46
Training for forest farm staff and residents nearby	24	0	0	8	8	8	12	12	0	0

9.5 Estimate of Environmental Protection Investment

The budget of the environmental protection investment of the Jilin Forestry Department is 1,409,000 US dollars. As for Heilongjiang Forestry Department, it is 669,000 US dollars. And for the General Bureau of Heilongjiang Forest Industry, it is 696,000 US dollars. The total investment of this project on environmental protection is 2,774,000 US dollars. Detailed information is shown in Table 9.5-1.

Table 9.5-1 Estimate of Environmental Protection Investment (unit: 1,000 US dollars)

Agency	Project evaluation	Office management	Equipment purchase	Environmental monitoring	Staff training	Total
Jilin Forestry Department	48	160	120	904	177	1,409
Heilongjiang Forestry Department	23	165	70	136	275	669
The General Bureau of Heilongjiang Forest Industry	20	180	260	119	117	696
In Total	91	505	450	1,159	569	2,774

9.6 Social Management Plan

9.6.1 Mitigation Plan for Social Impacts

1. To mitigate impacts on forest farm staffs

Due to the reserve construction, forest farm staff will face job alteration. The mitigation measures include:

- to provide training on wildlife protection and management and create relevant jobs for forest farm staffs;
- to provide training on forest tending and create relevant jobs for forest farm staffs;
- to provide training on farming and breeding industry and improve the livelihood for forest farm staffs;
- to compensate for the prohibition of deforestation to affected forest farms, and this can be implemented through the natural forest protection project.

2. To mitigate impacts on farmers in surrounding regions

The project will have impacts on farmers in terms of resources in state-owned forest farms. The mitigation measures include:

- to provide training on wildlife protection and management and create relevant jobs for farmers;
- to provide training on forest tending and create relevant jobs for farmers;
- to provide training on farming and husbandry and improve the livelihood for farmers;

3. To mitigate impacts on poverty-stricken families

Poverty-stricken families in the project area include forest farm staffs and farmers in surrounding regions. The mitigation measures include:

- to provide training on wildlife protection and management and create relevant jobs;
- to provide training on forest tending and create relevant jobs;
- to provide training on farming and husbandry and improve their livelihood.

9.6.2 Risk Mitigation Plan

1. Mitigation measures for wildlife accidents risks

The perfection and expansion of reserves will inevitably increase wildlife accident risks. Jilin Province has promulgated the *Compensation Methods for the Personal Injury and Property Damage Caused by Specially Protected Terrestrial Wildlife in Jilin Province* and the *Implementation Regulations of Compensation Methods for the Personal Injury and Property Damage Caused by Specially Protected Terrestrial Wildlife in Jilin Province*. However, there is still no official measures of such case in Heilongjiang Province. Mitigation measures of wildlife accident risks include:

- to advance legislation on wildlife-caused loss;
- to establish special fund of wildlife accidents in counties and cities involved in the project; the State Forestry Administration will include Heilongjiang Province into the special support program of compensation for animal-caused accidents.
- to recommend that Heilongjiang Province establish mechanisms of recognition compensation for wildlife accidents with reference to these of Jilin Province;
- to set warning signs at places where tigers and leopards regularly appear; warn the risks

of under-forest activities to villagers.

2. Mitigation measures for forestry resources utilization conflicts

Mitigation measures to prevent farmers of the surrounding regions from entering the reserves and gathering forest products include:

--to establish a mechanism to co-manage the peripheral communities and the reserves, and set up a benefit-sharing mechanism of the nearby communities and villagers based on the co-management mechanism. Some peasants would still collect forest products in state-owned forest farms and the experimental areas of the reserves. They will be allowed to still collect forest products in the experimental areas of the reserves after the project is implemented.

--to provide training on farming and breeding techniques in surrounding communities, and reduce their dependence on the reserves by improving their income.

3. Mitigation measures for Poaching

Mitigation measures for adverse impacts of poaching include:

--to trace and monitor shops that sell hunting tools like sticky nets and traps and as well as their sales status;

--to co-manage the reserve with the nearby communities and employ residents in nearby communities to clear away the hunting tools;

--to establish a pressure mechanism for the nearby communities, to give financial incentives to communities with less hunting tools;

--to encourage experienced hunters to participate in reserve protection, to transform their job from hunting to protecting;

--to provide them with relevant training on understory planting techniques.

4. Mitigation measures for material shortage risks of fungus planting

Though the material shortage of fungus planting is due to adjustment of national and provincial forestry policies, mitigation measures are also put forward in this project:

--to provide training on mushroom and herb planting for local farmers;

--to encourage farmers of surrounding communities to participate in reserve construction and management.

5. Mitigation measures for environmental impacts

Main measures of environmental impact include:

--For exhaust gas, noise, dust, polluted water, sludge, and impacts on water and soil conservation and traffic, the construction unit shall decrease the adverse impacts of the project construction on residents of surrounding regions and wildlife on the base of designing requirements and abovementioned risk aversion measures.

--In the implementation period, environmental laws, regulations and industrial technical standards shall be strictly conducted. Household waste in the reserve area shall be reasonably disposed to decrease the adverse environmental impacts.

6. Mitigation measures for impacts on ethnic minorities

We shall compile the *Ethnic Minority Development Plan*, mainly to solve the problem of ethnic minorities' relying on sawdust when cultivating agaric in Hunchun City.

7. Mitigation measures for involuntary resettlement

The implementation of this project and the introduction of *Notice on Implementing Pilot Work of Completely Stopping Commercial Deforestation* in 2014 would have interactive influences on the resettlement of state-owned forest farm workers in Jilin and Heilongjiang Province. Thus the Resettlement Plan is needed to transform their job from logging to management and protection, and to develop under-forest economy.

9.6.3 Benefit Strengthening Plan

The positive impacts of this project include the environmental, economic and social benefits. By related social management measures, the positive impacts shall be enlarged and the objectives of the project could be better achieved.

1. Environmental Management System Construction

In this project, we shall improve the ecological environment and carry out forest management which is friendly to the Siberian tiger and its prey. This will promote the protection and restoration of wildlife resources in Northeast China. Meantime, this project involves some engineering construction, including maintenance and construction of protection stations, tiger-friendly forest management (afforestation, forest tending and livelihood alteration), construction or expansion of Nature Reserves and supplementary feeding stations. All these will have some positive impacts on local community, ecological environment and wildlife species, and meet the requirement of protecting the ecological environment in the project area.

Environmental management system construction include: to strengthen legal norms of Nature Reserves; to update protection and restoration plans of Jilin province; to draw up protection and restoration plans in forest regions of the General Bureau of Heilongjiang Forest Industry; to set up the Siberian tiger regional conservation consultative committee; to establish China-Russia trans-boundary conservation coordination mechanism; to legislate/update rules/plans of each Nature Reserve; to expand the two existing reserves; to specify the legal status and implementation arrangements; to set up supplementary feeding stations, release domesticated wild boar into nature and increase prey population; to conduct publicity through television, broadcast, journal, slogan, leaflet and improve people's awareness of the Siberian tiger protection, etc.

2. Measures to Improve Social Benefits

The project will promote economic development and social stability in peripheral regions. It has obvious social benefits.

To enhance the social benefits, the following measures are put forward in this report:

- Farmers and laid-off workers should be allowed to set up mobile stalls to sell forest specialties and fruits, on the condition that they do not affect normal defensive functions of wildlife protection in Nature Reserves. Meanwhile, management of these mobile stalls should also be standardized and strengthened.

-Contracts can be signed with schools to build teaching and research centers, which can be used to popularize science knowledge and publicity education among students. Meanwhile, they can improve the social influences of these Nature Reserves.

3. Measures to Improve Economic Benefits

The environmental and social benefits of this project, though cannot be measured directly by economic indicators, could generate great economic values from indirect benefits which are immeasurable and much more than the direct economic benefits.

--After the ecotourism is developed, periphery area outside of the nature reserves can be used as ecological landscape for visiting. A co-management mechanism can be established to promote tourism and stimulate development in other industries.

--Develop the livelihood methods of nearby community and the protection of nature reserves by means of co-management. For example, to connect the under-forest products collecting and pasturing with the patrolling and management of nature reserves; give full play to nearby peasants' monitoring and protection towards the nature reserves (such as clearing hunting tools). This will not only decrease the work flow of reserves in terms of monitoring and protection, but also guarantee the income of households that live on forestry products collecting. It's recommended to conduct tests at 2-3 communities and reserves.

--Besides, the training on panting north medicine in forest farms can include nearby peasants. Scale merit can be obtained through develop agricultural orders and fully utilize the local resources.

9.6.4 Participation, Appeal and Complaint Mechanisms for Forest Farm Staffs and Rural Households in Peripheral Areas

During the planning, design, preparation, implementation, monitoring and assessment of the project, it will be favorable to select proper stakeholders to participate in the program, mainly including the participation and appeal mechanisms. The participation mechanism includes participation goals, means, conditions and contents, and participating institutions, personnel, time, place and budget as well. The appeal and complaint mechanism means that stakeholders can complain or appeal to concerned institutions if they still have not got satisfactory solutions after their participation.

1. Means to Collect Discontents and Complaints

(1) To collect and analyze problems existing in complaints of the masses, progress and measures of the work through the reports of the project office.

(2) Coordination problems found in the on-site investigation of construction sites of owner units.

(3) Relevant information reflected by external inspection institutions.

(4) Letters and visits from affected people.

(5) Reflections from agencies of the project executive units.

2. Procedures of Appeal and Complaint

Forest farm works and rural households in peripheral areas are always encouraged to participate in the project. But more or less, problems will still arise in practice. In addition to the ongoing petition and compliant channels at all levels of forestry departments, the project also establishes transparent and effective channels and mechanisms of appeal for affected people to ensure timely and effective resolving of these problems and smooth progress of the project.

3. Principles to Handle Appeals and Complaints

Complaints from the masses must be investigated through field researches, their opinions must be heard and consulted patiently. Objective and justified counter-measures must be put

forward in the light of principles and standards stipulated in national regulations or the project. As for complaints which they are not able to solve, the concerned units must report to upper-level departments and assist the upper-level departments to complete the investigation.

If decision-making institutions at the former stage do not reply to the appeal before the specified date, the applicant has right to continue the appeal.

4. Contents and Means to Reply to Appeals

- (1). Contents of the reply
 - Brief introduction of the complainer’s discontents;
 - Investigation results;
 - Relevant national regulations, principles and standards of the project implementation;
 - Counter-measures and specific base.
- (2). Means of reply
 - For particular individual complaints, replies in written materials can be directly sent to complainers.
 - For frequently reflected complaints, staff meetings or village committee can be hold and documents can be sent to notify the concerned forest farms or communities.

Whichever means of reply is adopted, the reply materials must be sent to forest farms or communities to which the complainers belong.

5. Records and tracking feedbacks of appeals and complaints

In the design and implementation period of the project, the monitoring team should cooperate with respective department in the registration and management of the complaint materials and the handling results, and regularly report to the project management office by means of written materials. The project management office will regularly check the handling and registration of the complaints.

To completely record the complaints handling situation and relevant problems of affected people, the project management office has worked out related registration chart as follows.

Table 9.6-1 Registration Chart for Complaints and Appeals of Landscape Approach to Wildlife Conservation in Northeast China Project

Complaint Receiving Unit		Date		Place	
Name of the Complainer	Contents of the Complain	Required Solution		Proposed Solution	Actual Situation of Handling
Signature of the Complainer				Signature of the Recorder	

Note:

1. The recorder should correctly put down the contents and requirements of the complainer.
2. Any disturbance and obstacle should be avoided in the process of the appeal.
3. The proposed means of solution should be communicated to the complainer within specified time.

In addition, channels relevant to appeals and complaints will be publicly released to affected groups, and will be sent to each affected forest farms and community in the form of publicity materials before the implementation of this project.

See the *Social Impact Assessment Report* for detailed information.

10 Conclusion of the Assessment

The project consists of the following subprojects: to mainstream the wildlife protection through coordination and cooperation among various departments; to improve the habitat protection effectiveness in Northeast ecological areas through ecosystem protection methods in priority areas; to reduce human-animal conflicts in the ecological areas (capacity building, law enforcement strengthening, environmental education, and incentive mechanism to promote community participation in protection); and project management. The major construction projects include conservation stations construction, new nature reserve building or expansion, tiger-friendly forest management activities and supplementary feeding stations construction. The project covers an area about 15337.08 square kilometers, involving Hunchun City, Wangqing County, Dongning County and Muling City. The aggregate amount of the project capital is 18 million US dollars. The implementation period is from 2015 to 2018. The Jilin Forestry Department, the Heilongjiang Forestry Department, and Forest Industry Bureau of Heilongjiang Province undertake this project.

Through the implementation of this project, the Siberian tiger habitat quality in the project implementation area will be significantly recovered and improved, and resources allocation structure of the habitat will be further optimized. Suitable habitats for Siberian tiger and its prey will be increased. The carrying capacity of wildlife will be raised through habitats connection. The population of main prey (wild boar, red deer, roe deer, and sika deer) will rebound significantly. Appearance frequency of large carnivores like tiger and leopard will increase, and spawning colony will appear. Therefore, the threatened biodiversity will be recovered.

The main environmental impacts of this project include: forbidding of chopping down trees, grazing, hunting, herb gathering, assart and moorburn in the newly-built nature reserves would lead to an income cut of forest farm workers and villagers near the project area from grazing and picking based on the natural resources in the nature reserves. Besides, human and livestock safety could be threatened by the population growth, expansion and settlement of the wild Siberian tigers and their prey, especially the wild boars. To counter these impacts, a series of measures have been made in this project, including guiding and attracting forest farm workers to be the main participants in protecting activities of this project, carrying out alternative livelihood trials, advocating and encouraging pen feeding and captive breeding, and providing wild animal damage compensation, etc. These measures will buffer and reduce humans-tiger conflicts so as to guarantee the implementation of the project.

To conclude, the site selection, layout and land use of this project are reasonable on the whole. This project has little impacts on the protected ecologically sensitive targets. The impacts on the environment is acceptable in general. Therefore, the project construction is environmentally feasible

Appendix 1: List of Animals and Plants in the Project Area

Appendix 1.1 List of Beasts

Species	Protection Level
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Species	Protection Level
一、食虫目 INSECTIVORA	
(一) 猬科 Erinaceidae	
1、普通刺猬 <i>Erinaceus europaeus</i>	
(二) 鼯科 Soricidae	
2、缺齿鼯 <i>Mogera robusta</i>	
(三) 鼯鼠科 Soricidae	
3、中鼯鼠 <i>Sorex caecutiens</i>	
4、普通鼯鼠 <i>S. Araneus</i>	
5、栗齿鼯鼠 <i>S.dephenodon</i>	
6、大鼯鼠 <i>S. Mirabilis</i>	
7、小麝鼯 <i>Crocidula suaveolens</i>	
8、大麝鼯 <i>C. lasiura</i>	
二、翼手目 CHIROPTERA	
(四) 蝙蝠科 Vespertilionidae	
9、须鼠耳蝠 <i>Myotis mystacinus</i>	
10、伊氏鼠耳蝠 <i>M. Ikonnikovi</i>	
11、长尾鼠耳蝠 <i>M. frater</i>	
12、纳氏鼠耳蝠 <i>M. nattereri</i>	
13、水鼠耳蝠 <i>M. Daubentonii</i>	
14、普通蝙蝠 <i>Vespertilio murinus</i>	
15、东方蝙蝠 <i>V. superans</i>	
16、北棕蝠 <i>Eptesicus nilssoni</i>	
17、大棕蝠 <i>E. serotinus</i>	
18、东方山蝠 <i>Nyctalus aviator</i>	
19、普通伏翼 <i>Pipistrellus abramus</i>	
20、萨氏伏翼 <i>P. savii</i>	
21、大耳蝠 <i>Plecotus auritus</i>	
22、白腹管鼻蝠 <i>Murina leucogaster</i>	
三、食肉目 CARNIVORA	
(五) 犬科 Canidae	
23、狼 <i>Canis lupus</i>	
24、赤狐 <i>Vulpse vulpse</i>	
25、貉 <i>Nyctereutes procyonoides</i>	
26、豺 <i>Cuon alpinus</i>	II
(六) 熊科 Ursidae	
27、棕熊 <i>Ursus arctos</i>	II
28、黑熊 <i>Ursus thibetanus</i>	II

Species	Protection Level
(七) 鼬科 Mustelidae	
29、紫貂 <i>Martes zibellina</i>	I
30、黄喉貂 <i>M. flavigula</i>	II
31、艾鼬 <i>Mustela eversmanni</i>	
32、小艾鼬 <i>M. amurensis</i>	
33、香鼬 <i>M. altaica</i>	
34、伶鼬 <i>M. nivalis</i>	
35、黄鼬 <i>M. sibirica</i>	
36、水貂 <i>M. vison</i>	
37、狗獾 <i>Meles meles</i>	
38、水獭 <i>Lutra lutra</i>	II
(八) 猫科 Felidae	
39、猞猁 <i>Lynx lynx</i>	II
40、豹猫 <i>Felis bengalensis</i>	
41、豹 <i>Panthera pardus</i>	I
42、虎 <i>P. tigris</i>	I
四、兔形目 LAGOMORPHA	
(九) 兔科 Leporidae	
43、雪兔 <i>Lepus timidus</i>	II
44、东北兔 <i>L. mandschuricus</i>	
45、东北黑兔 <i>L. melainus</i>	
(十) 鼠兔科 Ochotonidae	
46、高山鼠兔 <i>Ochotona alpina</i>	
五、啮齿目 RODENTIA	
(十一) 松鼠科 Sciuridae	
47、松鼠 <i>Sciurus vulgaris</i>	
48、花鼠 <i>Eutamias sibiricus</i>	
(十二) 鼯鼠科 Pteromyidae	
49、飞鼠 <i>Pteromys volans</i>	
(十三) 林跳鼠科 Zapodidae	
50、蹶鼠 <i>Sicista concolor</i>	
(十四) 跳鼠科 Dipodidae	
51、五趾跳鼠 <i>Allactaga sibirica</i>	
52、三趾跳鼠 <i>Dipus sagitta</i>	
(十五) 仓鼠科 Cricetidae	
53、黑线仓鼠 <i>Cricetulus barabensis</i>	
54、大仓鼠 <i>C. triton</i>	
55、林旅鼠 <i>Myopus schisticolor</i>	
56、红背鼠平 <i>Clethrionomys rutilus</i>	

Species	Protection Level
57、棕背鼠平 <i>C. rufocanus</i>	
58、东方田鼠 <i>Microtus fortis</i>	
59、普通田鼠 <i>M. arvalis</i>	
60、莫氏田鼠 <i>M. maxmowezii</i>	
61、麝鼠 <i>Ondatra zibethica</i>	
62、东北鼯鼠 <i>Myospalax psilurus</i>	
63、草原鼯鼠 <i>M. aspalax</i>	
(十六) 鼠科 Muridae	
64、巢鼠 <i>Micromys minutus</i>	
65、大林姬鼠 <i>Apodemus speciosus</i>	
66、黑线姬鼠 <i>Apodemus agrarius</i>	
67、褐家鼠 <i>Rattus norvegicus</i>	

Species	Protection Level
68、小家鼠 <i>Mus musculus</i>	
六、偶蹄目 ARTIODACTYLA	
(十七) 猪科 Suidae	
69、野猪 <i>Sus scrofa</i>	
(十八) 麝科 Moschidae	
70、原麝 <i>Moschus moschiferus</i>	I
(十九) 鹿科 Cervidae	
71、马鹿 <i>Cervus elaphus</i>	II
72、梅花鹿 <i>C. nippon</i>	I
73、狍 <i>Capreolus capreolus</i>	
74、驼鹿 <i>Alces alces</i>	II
(二十) 牛科 Bovidae	
75、青羊 <i>Naemorhedus goral</i>	II

Appendix 1.2 List of Amphibian

No.	Name	Latin Name	Habitat Environment	Number	Economic Value
	两栖纲	AMPHIBIA			
I	有尾目	CAUDATA			
一	小鲵科	Hynobiidae			
1	极北鲵	<i>Salamandrella</i>	1,2	+++	1,4
2	东北小鲵	<i>Hynobius leechii</i>	1,2	++	1,4
II	无尾目	SALIENTIA(ANURA)			
二	盘舌蟾科	Discoglossidae			
3	东方铃蟾	<i>Bombina orientalis</i>	1,2	+	1,3,4
三	蟾蜍科	Bufo			
4	中华蟾蜍	<i>Bufo gargarizans</i>	1,2,3	+++	1,4
5	花背蟾蜍	<i>B. raddei</i>	1,2,3	++	1,4
四	蛙科	Ranidae			
6	东北林蛙	<i>Rana dybowskii</i>	1,2,3	+	1,2,4
7	黑龙江林	<i>Rana amurensis</i>	1,2,3	+++	1,2,4
8	黑斑侧褶	<i>Rana nigromaculata</i>	1,2,3	+	1,2,4
9	粗皮蛙	<i>Rana rugosa</i>	1,2	+	1,2,4

Notes: Habitat environment: 1-marshland, 2-water area, 3-grassy marshland, 4- forest
 Number : +++ dominant species, ++ common species, + rare species
 Economic value: 1-officinal, 2-edible, 3-ornamental, 4-beneficial to

Appendix 1.3 List of Reptile

No.	Name	Latin Name	Habit Environment	Number	Economic Value
	爬行动物纲	REPTILIA			
I	龟鳖目	TESTUDINES			
一	鳖科	Trionychidae			
1	鳖	<i>Pelodiscus sinensis</i>	2	+	1,2,3
II	有鳞目	SQUAMATA			
	蜥蜴亚目	LACERTILIA			
二	蜥蜴科	<i>Lacertidae</i>			
2	黑龙江草蜥	<i>Takydromus amurensis</i>	3,4	++	1,4
3	白条草蜥	<i>Takydromus wolteri</i>	3,4	+	1,4
4	丽斑麻蜥	<i>Eremia argus</i>	3,4	+	1,4
	蛇亚目	SERPENTES			
三	游蛇科	Colubridae			
5	黄脊游蛇	<i>Coluber spinalis</i>	3,4	+	1,3,4
6	白条锦蛇	<i>Elaphe dione</i>	3,4	++	1,3,4
7	红点锦蛇	<i>Elaphe rufoldorsata</i>	3,4	++	1,3,4
8	棕黑锦蛇	<i>Elaphe schrenckii</i>	3,4	++	1,3,4
9	虎斑颈槽蛇	<i>Rhabdophis tigrina</i>	3,4	+	1,3,4
四	蝰科	Viperidae			
10	乌苏里蝮	<i>Gloydius ussuriensis</i>	3,4	+	1,3,4

Notes: Habitat environment: 1-marshland, 2-water area, 3-grassy marshland, 4- forest lands

Number : +++ dominant species, ++ common species, + rare species

Economic value: 1-officinal, 2-edible, 3-ornamental, 4-beneficial to agriculture and forestry

Appendix 1.4 List of Fish

No.	Name	Latin Name	Feeding	Number	Fauna	Economic Value
	圆口纲	CYLOSTOMI				
I	七鳃鳗目	Petromyzontiformes				
一	七鳃鳗科	Petromyzonidae				
1	雷氏七鳃鳗	<i>Lampetra reisseneri</i>	1	+	1	+
	鱼纲	PISCES				
II	鲑形目	Salmoniformes				
二	鲑科	Salmonidae				
2	哲罗鱼	<i>Hucho taimen</i>	1	+	4	+++
3	细鳞鱼	<i>Brachymystax lenok</i>	1	++	4	+++
4	乌苏里白	<i>Coregonus ussuriensis</i>	1	+	2	+++
5	大麻哈鱼	<i>Oncorhynchus keta</i>	1	+	1	+++
三	茴鱼科	Thymallidae				
6	黑龙江茴	<i>Thymallus arcticus</i>	1	++	4	++
四	狗鱼科	Esocidae				
7	黑斑狗鱼	<i>Esox reicherti</i>	1	++	3	++
III	鲤形目	Cypriniformes				
五	鲤科	Cyprinidae				
8	草鱼	<i>Ctenopharyngodon idellus</i>	2	+	5	++
9	青鱼	<i>Mylopharyngodon piceus</i>	1	+	5	+++△
10	真鲢	<i>Phoxinus czekanowskii</i>	3	+	3	+
11	洛氏鲢	<i>Phoxinus lagowskii</i>	3	++	4	+
12	鳊鱼	<i>Aristichthys nobilis</i>	3	++		
13	餐条 (白鲮子)	<i>Hemiculter leucieculus</i>	3	++	5	++
14	花鲢	<i>Hemibarbus maculatus</i>	1	+	5	+
15	红鳍鲌	<i>Culter erythropterus</i>	1	+	5	+
16	鳊鲌	<i>Parabramis pekinensis</i>	2	+++	5	+++
17	兴凯刺鲃	<i>Acanthorhodeus chankaensis</i>	2	++	5	++
18	黑龙江鲃	<i>Rhodens sericeus</i>	2	+	1	+
19	亚细亚陆鱼	<i>Tribolodon brandti (Dybowski)</i>	2	+	5	+++
20	鲂	<i>Megalobrama tarminalis</i>	2	++	5	++
21	鳊鱼	<i>Atistichthys mobilis</i>	3	++	5	++
22	赤眼鲮	<i>Squaliobarbus curriculus</i>	3	++	5	++
23	鳊鱼	<i>Elopichthys bambusa</i>	1	++	5	++
24	细鳞斜颌	<i>Plagiognathops microlepis Bleeker</i>	2	++	5	++
25	银鲫	<i>Carassius auratus gibelio</i>	2	++	5	++
26	银鲴	<i>Xenocypris argentea Günther</i>	3	++	5	++
27	洛氏鲢	<i>Phoxinus lagowskii Dybowski</i>	3	++	5	++
28	尖头鲢	<i>Phoxinus oxycephalus Sauvage et Dabry</i>	3	++	5	++
29	花鱼骨	<i>Hemibarbus Maculatus</i>	1	++	5	++
30	华鲮	<i>Sarcohilichthys sinensis</i>	3	++	5	++

No.	Name	Latin Name	Feeding	Number	Fauna	Economic Value
31	麦穗鱼	<i>Pseccorasora parva</i>	3	+	1	+
32	东北鳊	<i>Sarcocheilichthys lacustris</i>	1	+	5	+
33	东北黑鳍	<i>S.nigripinnisczerskii</i>	1	+	5	+
34	蛇鮈	<i>Saurogobio dalryi</i>	1	+	5	+
35	犬首鮈	<i>Gobio gobio</i>	1	+	1	+
36	红鳍鲌	<i>CultererythropterusBasilewsk</i>	3	++	3	+
37	蒙古红鲌	<i>Erythroculter mongolicus</i>	3	++	3	+
38	油餐	<i>Hemiculter bleekeri bleekeri warpachowsky</i>	3	++	3	+
39	平口鮈	<i>LadislaviataczanowskiiDybo</i>	3	++	5	+
40	高体鮈	<i>Gobio soldatovi Bery</i>	1	++	1	+
41	棒花鱼	<i>Abbottina rivularis</i>	3	++	5	+
42	鲤鱼	<i>Cyprinus carpis</i>	3	+++	1	+++
43	鲢鱼	<i>Hypophthalmichthys molitrix</i>	2	++	1	++
六	鳅科	Cobitidae				
44	黑龙江花	<i>Cobitis lutheri</i>	2	++	3	+
45	北方花鳅	<i>C.granoci</i>	2	+	3	+
46	黑龙江泥	<i>Misgurnus mohoity</i>	2	+++	1	+++
47	北方条鳅	<i>Nemachilus nudus</i>	3	+	4	+
IV	鲶形目	Siluriformes				
七	鲶科	Siluridae				
48	鲶	<i>Silurus asotus</i>	1	++	1	+++
49	怀头鲶	<i>Silurus soldatovi</i>	1	++	1	++
V	鳕形目	Gadiformes				
八	鳕科	Gadidae				
50	江鳕	<i>Lota lota</i>	1	++	2	++
VI	鲈形目	Perciformes				
九	鱼旨科	Serranidae				
51	鳊鱼	<i>Siniperca chuatsi</i>	1	+	5	++
十	塘鳢科	Eleotridae				
52	葛氏鲈塘	<i>Perccottus glehii</i>	1	++	6	++
十	鳢科	Channidae				
53	乌鳢	<i>Channa gregus</i>	1	+	6	++
VII	鲉形目	Scorpaeniformes				
十	杜父鱼科	Cottidae				
54	克氏杜父	<i>Cottus czerskii</i>	1	+	4	+

Notes: Feeding habits: 1—carnivorous fishes; 2—herbivorous fishes; 3—omnivorous
Number: +++ dominant species, ++ common species, + rare species
Faunas: 1 tertiary flora group, 2 arctic freshwater fauna group, 3 northern plain
4 north mountain group, 5 river plain group, 6 subtropical plain group
Economic value: +++ big, ++medium, + small

Appendix 1.5 List of Aves

Species	Protectio n Level	Species	Protectio n Level
一、潜鸟目 GAVIIFORMES		31.赤颈鸭 <i>A. penelope</i>	
(一) 潜鸟科 Gaviidae		32.白眉鸭 <i>A. querquedula</i>	
1.绿喉潜鸟 (黑喉潜鸟) <i>Gavia arctica</i>		33.琵嘴鸭 <i>A. clypeata</i>	
二、鸕鷀目 PODICIPEDIFORMES		34.红头潜鸭 <i>Aythya ferina</i>	
(二) 鸕鷀科 Podicipedidae		35.青头潜鸭 <i>A. baeri</i>	
2.小鸕鷀 <i>Podiceps ruficollis</i>		36.凤头潜鸭 <i>A. fuligula</i>	
3.角鸕鷀 <i>P. auritus</i>	II	37.鸳鸯 <i>Aix galericulata</i>	II
4.黑颈鸕鷀 <i>P. nigricollis</i>		38.斑脸海番鸭 <i>Melanitta fusca</i>	
5.凤头鸕鷀 <i>Podiceps cristatus</i>		39.丑鸭 <i>Histrionicus histrionicus</i>	
6.赤颈鸕鷀 <i>P. grisegena</i>	II	40.长尾鸭 <i>Clangula hyemalis</i>	
三、鸕形目 PELECANIFORMES		41.鹊鸭 <i>Bucephala clangula</i>	
(三) 鸕鷀科 Phalacrocoracidae		42.白 (斑头) 秋沙鸭 <i>Mergus albellus</i>	
7.普通鸕鷀 <i>Phalacrocorax carbo</i>		43.中华秋沙鸭 <i>M. squamatus</i>	I
8.海鸕鷀 <i>P. pelagicus</i>	II	44.红胸秋沙鸭 <i>M. serrator</i>	
四、鸕型目 CICONIFORMES		45.普通秋沙鸭 <i>M. merganser</i>	
(四) 鹭科 Ardeidae		六、隼形目 FALCONIFORMES	
9.苍鹭 <i>Ardea cinerea rectirostris</i>		(八) 鹰科 Accipitridae	
10.草鹭 <i>A. Purpurea manilensis</i>		46.凤头蜂鹰 <i>Pernis ptilorhynchus</i>	II
11.绿鹭 <i>Butorides stratus</i>		47.黑鸢 <i>Milvus migrans</i>	II
12.大白鹭 <i>Egretta alba</i>		48.苍鹰 <i>Accipiter gentilis</i>	II
13.夜鹭 <i>Nycticorax nycticorax</i>		49.雀鹰 <i>A. nisus</i>	II
14.黄斑苇鸕 <i>Ixobrychus sinensis</i>		50.松雀鹰 <i>A. virgatus</i>	II
15.紫背苇鸕 <i>I. eurhythmus</i>		51.普通鵟 <i>Buteo buteo</i>	II
16.大麻鸕 <i>Botaurus stellaris</i>		52.毛脚鵟 <i>B. lagopus</i>	II
(五) 鸕科 Ciconiidae		53.大鵟 <i>B. hemilasius</i>	II
17.东方白鸕 <i>Ciconia boyciana</i>	I	54.灰脸鵟鹰 <i>Bustastur indicus</i>	II
18.黑鸕 <i>C. nigra</i>	I	55.鹰雕 <i>Spizaetus nipalensis</i>	II
(六) 鸕科 Threskiornithidae		56.金雕 <i>Aquila chrysaetos</i>	I
19.白琵鹭 <i>Platalea leucorodia</i>	II	57.乌雕 <i>A. clanga</i>	II
五、雁形目 ANSERIFORMES		58.玉带海雕 <i>Haliaeetus leucoryphus</i>	I
(七) 鸭科 Anatidae		59.白尾海雕 <i>H. albicilla</i>	I
20.鸿雁 <i>Anser cygnoides</i>		60.白尾鸕 <i>Circus cyaneus</i>	II
21.豆雁 <i>A. fabalis</i>		61.鹊鸕 <i>C. melanoleucos</i>	II
22.灰雁 <i>A. anser</i>		62.白腹鸕 <i>C. spilonotus</i>	II
23.大天鹅 <i>Cygnus cygnus</i>	II	63.鸞 <i>Pandion haliaetus</i>	II
24.赤麻鸭 <i>Tadorna ferruginea</i>		64.秃鸞 <i>Aegypius monachus</i>	II
25.针尾鸭 <i>Anas acuta</i>		(九) 隼科 Falconidae	
26.绿翅鸭 <i>A. crecca</i>		65.矛隼 <i>Falco rusticolus</i>	II
27.罗纹鸭 <i>A. falcata</i>		66.游隼 <i>F. peregrinus</i>	II

Species	Protection Level	Species	Protection Level
28.绿头鸭 <i>A. platyrhynchos</i>		67.燕隼 <i>F. subbuteo</i>	II
29.斑嘴鸭 <i>A. poecilorhyncha</i>		68.灰背隼 <i>F. columbarius</i>	II
30.赤膀鸭 <i>A. strepera</i>		69.红脚隼 <i>F. amurensis</i>	II
70.红隼 <i>F. tinnunculus</i>	II	101.红脚鹧 <i>T. totanus</i>	
七、鸡形目 GALLIFORMES		102.青脚鹧 <i>T. nebularia</i>	
(十) 松鸡科 Tetraonidae		103.泽鹧 <i>T. stagnatilis</i>	
71.黑嘴松鸡 <i>Tetrao parvirostris</i>	I	104.白腰草鹧 <i>T. ochropus</i>	
72.黑琴鸡 <i>Tetrix tetrix</i>	II	105.林鹧 <i>T. glareola</i>	
73.花尾榛鸡 <i>Bonasa bonasia</i>	II	106.矶鹧 <i>T. hypoleucos</i>	
(十一) 雉科 Phasianidae		107.翘嘴鹧 <i>Xenus cinereus</i>	
74.斑翅山鹧 <i>Perdix dauuricae</i>		108.翻石鹧 <i>Arenaria interpres</i>	
75.鹌鹑 <i>Coturnix coturnix</i>		109.半蹼鹧 <i>Limnodromus semipalmatus</i>	
76.环颈雉 <i>Phasianus colchicus</i>		110.孤沙锥 <i>Gallinago solitaria</i>	
八、鹤形目 GRUIFORMES		111.针尾沙锥 <i>G. stenura</i>	
(十二) 三趾鹑科 Turnicidae		112.大沙锥 <i>G. megala</i>	
77.黄脚三趾鹑 <i>Turnix tanki</i>		113.扇尾沙锥 <i>G. gallinago</i>	
(十三) 鹤科 Gruidae		114.丘鹑 <i>Scolopax rusticola</i>	
78.灰鹤 <i>Grus grus</i>	II	115.长趾滨鹑 <i>Calidris subminuta</i>	
79.白头鹤 <i>G. monacha</i>	I	116.青脚滨鹑 <i>C. temminckii</i>	
80.丹顶鹤 <i>G. japonensis</i>	I	117.尖尾滨鹑 <i>C. acuminata</i>	
81.白枕鹤 <i>G. vipio</i>	II	118.黑腹滨鹑 <i>C. alpina</i>	
(十四) 秧鸡科 Rallidae		119.弯嘴滨鹑 <i>C. ferruginea</i>	
82.普通秧鸡 <i>Rallus aquaticus</i>		120.阔嘴鹧 <i>Limicola falcinellus</i>	
83.小田鸡 <i>Porzana pusilla</i>		(十八) 燕鹧科 Glareolidae	
84.斑胁田鸡 <i>P. paykullii</i>		121.普通燕鹧 <i>Glareola maldivarum</i>	
85.黑水鸡(红骨顶) <i>Gallinula chloropus</i>		十、鸥形目 LARIFORMES	
86.骨顶鸡 <i>Fulica atra</i>		(十九) 鸥科 Laridae	
九、鸻形目 CHARADRIIFORMES		122.黑尾鸥 <i>Larus crassirostris</i>	
(十五) 蛎鹬科 Haematopodidae		123.海鸥 <i>L. canus</i>	
87.蛎鹬 <i>Haematopus ostralegus</i>		124.银鸥 <i>L. argentatus</i>	
(十六) 鸻科 Charadriidae		125.灰背鸥 <i>L. schistisagus</i>	
88.凤头麦鸡 <i>Vanellus vanellus</i>		126.红嘴鸥 <i>L. ridibundus</i>	
89.灰头麦鸡 <i>V. cinereus</i>		127.黑嘴鸥 <i>L. saundersi</i>	
90.灰斑鸻 <i>Pluvialis squatarola</i>		128.须浮鸥 <i>Chlidonias hybrida</i>	
91.金斑鸻 <i>P. fulva</i>		129.白翅浮鸥 <i>C. leucoptera</i>	
92.剑鸻 <i>Charadrius placidus</i>		130.普通燕鸥 <i>Sterna hirundo</i>	
93.金眶鸻 <i>C. dubius</i>		131.白额燕鸥 <i>S. albifrons</i>	
94.环颈鸻 <i>C. alexandrinus</i>		(二十) 海雀科 Alcidae	
(十七) 鹬科 Scolopacidae		132.扁嘴海雀 <i>Synthliboramphus antiquus</i>	
95.小杓鹬 <i>Numenius minutus</i>	II	十一、鸽形目 COLUMBIFORMES	
96.中杓鹬 <i>N. phaeopus</i>		(二十一) 沙鸡科 Pteroclididae	

Species	Protection Level	Species	Protection Level
97.白腰杓鹬 <i>N. arquata</i>		133.毛腿沙鸡 <i>Syrrhaptes paradoxus</i>	
98.红腰杓鹬 <i>N. madagascariensis</i>		(二十二) 鸠鸽科 <i>Columbidae</i>	
99.黑尾塍鹬 <i>Limosa limosa</i>		134.岩鸽 <i>Columba rupestris</i>	
100.鹤鹬 <i>Tringa erythropus</i>		135.山斑鸠 <i>Streptopelia orientalis</i>	
十二、鸊形目 CUCULIFORMES		164.蚁鸮 <i>Jynx torquilla</i>	
(二十三) 杜鹃科 <i>Cuculidae</i>		165.黑枕绿啄木鸟 <i>Picus canus</i>	
136.棕腹杜鹃 <i>Cuculus fugax</i>		166.黑啄木鸟 <i>Dryocopus matius</i>	
137.四声杜鹃 <i>C. micropterus</i>		167.大斑啄木鸟 <i>Picoides major</i>	
138.大杜鹃 <i>C. anorus</i>		168.白背啄木鸟 <i>P. leucotos</i>	
139.中杜鹃 <i>C. Saturatus</i>		169.棕腹啄木鸟 <i>P. hyperythrus</i>	
140.小杜鹃 <i>C. Poliocephalus</i>		170.小斑啄木鸟 <i>P. minor</i>	
十三、鸮形目 STRIGIFORMES		171.星头啄木鸟 <i>P. Canicapillus</i>	
(二十四) 鸮科 <i>Strigidae</i>		172.小星头啄木鸟 <i>P. kizuki</i>	
141.普通角鸮 <i>Otus scops</i>	II	173.三趾啄木鸟 <i>P. tridactylus</i>	
142.领角鸮 <i>O. bakkamoena</i>	II	十八、雀形目 PASSERIFORMES	
143.雕鸮 <i>Bubo bubo</i>	II	(三十一) 百灵科 <i>Alaudidae</i>	
144.毛腿渔鸮 <i>Ketupa blakistoni</i>	II	174.小沙百灵 <i>Calandrella cheleensis</i>	
145.雪鸮 <i>Nyctea scandiaca</i>	II	175.云雀 <i>Alauda arvensis</i>	
146.猛鸮 <i>Surnia ulula</i>	II	176.角百灵 <i>Eremophila alpestris</i>	
147. 花头鸺鹠 <i>Glaucidium passerinum</i>	II	(三十二) 燕科 <i>Hirundinidae</i>	
148.鹰鸮 <i>Ninox scutulata</i>	II	177.灰沙燕 <i>Riparia riparia</i>	
149.纵纹腹小鸮 <i>Athene noctua</i>	II	178.家燕 <i>Hirundo rustica</i>	
150.长尾林鸮 <i>Strix uralensis</i>	II	179.金腰燕 <i>H. daurica</i>	
151.乌林鸮 <i>S. nebulosa</i>	II	180.毛脚燕 <i>Delichon urbica</i>	
152.长耳鸮 <i>Asio otus</i>	II	(三十三) 鹑科 <i>Motacillidae</i>	
153.短耳鸮 <i>A. flammeus</i>	II	181.山鹑 <i>Dendronanthus indicus</i>	
154.鬼鸮 <i>Aegolius funereus</i>	II	182.黄鹑 <i>Motacilla flava</i>	
十四、夜鹰目 CAPRIMULGIFORMES		183.黄头鹑 <i>M. citreola</i>	
(二十五) 夜鹰科 <i>Caprimulgidae</i>		184.灰鹑 <i>M. cinerea</i>	
155.普通夜鹰 <i>Caprimulgus indicus</i>		185.白鹑 <i>M. alba</i>	
十五、雨燕目 APODIFORMES		186.田鸮 <i>Anthus novaeseelandiae</i>	
(二十六) 雨燕科 <i>Apodidae</i>		187.树鸮 <i>A. hodgsoni</i>	
156.白喉针尾雨燕 <i>Hirundapus caudacutus</i>		188.北鸮 <i>A. gustavi</i>	
157.楼燕 <i>Apus apus</i>		189.红喉鸮 <i>A. cervinus</i>	
158.白腰雨燕 <i>A. pacificus</i>		190.水鸮 <i>A. spinoletta</i>	
十六、佛法僧目 CORACIIFORMES		(三十四) 山椒鸟科 <i>Campephagidae</i>	
(二十七) 翠鸟科 <i>Alcedinidae</i>		191.灰山椒鸟 <i>Pericrocotus divaricatus</i>	
159.普通翠鸟 <i>Alcedo atthis</i>		(三十五) 太平鸟科 <i>Bombycillidae</i>	

Species	Protection Level	Species	Protection Level
160.赤翡翠 <i>Halcyon coromanda</i>		192.太平鸟 <i>Bombycilla garrulus</i>	
161.蓝翡翠 <i>H. pileata</i>		193.小太平鸟 <i>B. japonica</i>	
(二十八)佛法僧科 Coracidae		(三十六)伯劳科 Laniidae	
162.三宝鸟 <i>Eurystomus orientalis</i>		194.虎纹伯劳 <i>Lanius tigrinus</i>	
(二十九)戴胜科 Upupidae		195.牛头伯劳 <i>L. bucephalus</i>	
163.戴胜 <i>Upupa epops</i>		196.红尾伯劳 <i>L. cristatus</i>	
十七、鸢形目 PICIFORMES		197.灰伯劳 <i>L. excubitor</i>	
(三十)啄木鸟科 Picidae		198.楔尾伯劳 <i>L. sphenocercus</i>	
(三十七)黄鹡科 Oriolidae		233.棕头鸦雀 <i>Paradoxornis webbianus</i>	
199.黑枕黄鹡 <i>Oriolus chinensis</i>		234.震旦鸦雀 <i>P. heudei</i>	
(三十八)椋鸟科 Sturnidae		(四十五)莺科 Sylviidae	
200.北椋鸟 <i>Sturnus sturninus</i>		235.鳞头树莺 <i>Cettia squameiceps</i>	
201.灰椋鸟 <i>S. cineraceus</i>		236.日本(短翅)树莺 <i>C. diphone</i>	
(三十九)鸦科 Corvidae		237.斑胸短翅莺 <i>Bradypterus thoracicus</i>	
202.北噪鸦 <i>Perisoreus infaustus</i>		238.中华短翅莺 <i>B. Tacsanowskii</i>	
203.松鸦 <i>Garrulus glandarius</i>		239.小蝗莺 <i>Locustella certhiola</i>	
204.灰喜鹊 <i>Cyanopica cyana</i>		240.矛斑蝗莺 <i>L. lanceolata</i>	
205.喜鹊 <i>Pica pica</i>		241.苍眉蝗莺 <i>L. fasciolata</i>	
206.星鸦 <i>Nucifraga caryocatactes</i>		242.东方大苇莺 <i>Acrocephalus orientalis</i>	
207.达乌尔寒鸦 <i>Corvus dauurica</i>		243.黑眉苇莺 <i>A. bistrigiceps</i>	
208.秃鼻乌鸦 <i>C. frugilegus</i>		244.稻田苇莺 <i>A. agricola</i>	
209.大嘴乌鸦 <i>C. macrorhynchos</i>		245.厚嘴苇莺 <i>A. aedon</i>	
210.小嘴乌鸦 <i>C. corone</i>		246.褐柳莺 <i>Phylloscopus fuscatus</i>	
211.渡鸦 <i>C. Corax</i>		247.巨嘴柳莺 <i>P. schwarzi</i>	
(四十)河乌科 Cinclidae		248.黄眉柳莺 <i>P. inornatus</i>	
212.褐河乌 <i>Cinclus pallasii</i>		249.黄腰柳莺 <i>P. proregulus</i>	
(四十一)鹟科 Troglodytidae		250.极北柳莺 <i>P. borealis</i>	
213.鹟 <i>Troglodytes troglodytes</i>		251.暗绿柳莺 <i>P. trochiloides</i>	
(四十二)岩鹟科 Prunellidae		252.灰脚柳莺 <i>P. tenellipes</i>	
214.领岩鹟 <i>Prunella collaris</i>		253.冕柳莺 <i>P. coronatus</i>	
215.棕眉岩鹟 <i>P. montanella</i>		254.戴菊莺 <i>Regulus regulus</i>	
(四十三)鸫科 Turdidae		(四十六)鹎科 Muscicapidae	
216.红尾歌鸫 <i>Erithacus sibilans</i>		255.白眉姬鹎 <i>Ficedula zanthopygia</i>	
217.红点颏 <i>E. calliope</i>		256.鹎姬鹎 <i>F. mugimaki</i>	
218.蓝点颏 <i>E. svecica</i>		257.红喉姬鹎 <i>F. parva</i>	
219.蓝歌鸫 <i>E. cyane</i>		258.白腹蓝鹎 <i>Cyanoptila cyanomelana</i>	
220.红胁蓝尾鸫 <i>Tarsiger cyanurus</i>		259.乌鹎 <i>Muscicapa sibirica</i>	
221.北红尾鸫 <i>Phoenicurus aureus</i>		260.灰斑鹎 <i>M. griseisticta</i>	
222.黑喉石鹇 <i>Saxicola torquata</i>		261.北灰鹎 <i>M. latirostris</i>	
223.蓝头矶鹎 <i>Monticola cinclorhynchus</i>		262.寿带鸟 <i>Terpsiphone paradisi</i>	
224.蓝矶鹎 <i>M. solitarius</i>		(四十七)山雀科 Paridae	

Species	Protection Level	Species	Protection Level
225.白眉地鸫 <i>Zoothera sibirica</i>		263.大山雀 <i>Parus major</i>	
226.虎斑地鸫 <i>Z. dauma</i>		264.灰蓝山雀 <i>P. cyanus</i>	
227.灰背鸫 <i>Turdus hortulorum</i>		265.煤山雀 <i>P. ater</i>	
228.白腹鸫 <i>T. pallidus</i>		266.沼泽山雀 <i>P. palustris</i>	
229.白眉鸫 <i>T. obscurus</i>		267.褐头山雀 <i>P. montanus</i>	
230.赤颈鸫 <i>T. ruficollis</i>		268.银喉长尾山雀 <i>Aegithalos caudatus</i>	
231.斑鸫 <i>T. naumanni</i>		(四十八) 鸫科 Sittidae	
(四十四) 鸦雀科 Paradoxornithidae		269.普通鸫 <i>Sitta europaea</i>	
232.文须雀 <i>Panurus biarmicus</i>		(四十九)旋木雀科 Certhiidae	
270.旋木雀 <i>Certhia familiaris</i>		(五十四) 鹀科 Emberizidae	
(五十)攀雀科 Remizidae		290.白头鹀 <i>Emberiza leucocephala</i>	
271.攀雀 <i>Remiz pendulinus</i>		291.栗鹀 <i>E. rutila</i>	
(五十一)绣眼鸟科 Zosteropidae		292.黄胸鹀 <i>E. aureola</i>	
272.红胁绣眼鸟 <i>Zosterops erythropleura</i>		293.黄喉鹀 <i>E. elegans</i>	
(五十二)文鸟科 Ploceidae		294.灰头鹀 <i>E. spodocephala</i>	
273.(树)麻雀 <i>Passer montanus</i>		295.三道眉草鹀 <i>E. cioideas</i>	
(五十三)雀科 Fringillidae		296.栗斑腹鹀 <i>E. jankowskii</i>	
274.燕雀 <i>Fringilla montifringilla</i>		297.栗耳鹀 <i>E. fucata</i>	
275.苍头燕雀 <i>F. coelebs</i>		298.田鹀 <i>E. ruatica</i>	
276.金翅雀 <i>Carduelis sinica</i>		299.小鹀 <i>E. pusilla</i>	
277.黄雀 <i>C. spinus</i>		300.黄眉鹀 <i>E. chrysophrys</i>	
278.朱顶雀 <i>C. flammea</i>		301.白眉鹀 <i>E. tristrami</i>	
279.岭雀 <i>Leucosticte arctoa</i>		302.红颈苇鹀 <i>E. yessoensis</i>	
280.朱雀 <i>Carpodacus erythrinus</i>		303.苇鹀 <i>E. Pallasi</i>	
281.北朱雀 <i>C. roseus</i>		304.芦鹀 <i>E. schoeniclus</i>	
282.松雀 <i>Pinicola enucleator</i>		305.铁爪鹀 <i>Calcarius lapponicus</i>	
283.红交嘴雀 <i>Loxia curvirostra</i>		306.雪鹀 <i>Plectrophenax nivalis</i>	
284.白翅交嘴雀 <i>L. leucoptera</i>			
285.长尾雀 <i>Uragus sibircus</i>			
286.灰雀 <i>Pyrrhula pyrrhula</i>			
287.黑头蜡嘴雀 <i>Eophona personata</i>			
288.黑尾蜡嘴雀 <i>E. migratoria</i>			
289.锡嘴雀 <i>Coccothraustes coccothraustes</i>			

Appendix 1.6 List of Plants

No.	Chinese Name	Latin Name
苔藓植物		
一	合叶苔科	Scapaniaceae
1	大合叶苔	<i>Scapania paludosa</i>
2	腐木合叶苔	<i>Scapania missalongii</i>
二	瘤冠苔科	Grimaldiaceae
3	紫背苔	<i>Plagiochasma rupestre</i>
4	石地钱	<i>Reboulia hemisphaerica</i>
三	齿萼苔科	Geocalycaceae
5	多苞裂萼苔	<i>Chiloscyphus polyanthus</i>
6	全缘齿萼苔	<i>Lophocolea compacta</i>
四	羽苔科	Plagiochilaceae
7	广口平叶苔	<i>Pedinophyllum interruptum</i>
五	大萼苔科	Cephaloziaceae
8	钝瓣大萼苔	<i>Cephalozia ambigua</i>
9	曲枝大萼苔	<i>C. catenulata</i>
10	月瓣大萼苔	<i>C. lunulifolia</i>
11	拳叶苔	<i>Nowellia curvifolia</i>
六	光萼苔科	Porellaceae 藓
12	中华光萼苔	<i>Porella chinensis</i>
12	羽枝光萼苔	<i>P. pinnata</i>
13	多瓣光萼苔	<i>P. ulophylla</i>
七	耳叶苔科	Frullaniaceae
14	喙瓣耳叶苔	<i>Frullania pedicellata</i>
八	细磷苔科	Lejeuneaceae
15	兜叶细磷苔	<i>Lejeunea cavifolia</i>
17	鳃叶苔	<i>Trocholejeunea sandvicensis</i>
九	溪苔科	Blasiaceae
18	溪苔	<i>Pellia epiphylla</i>
十	瘤冠苔科	Grimaldiaceae
19	紫背苔	<i>Plagiochasma rupestre</i>
十一	地钱科	Marchantiaceae
20	地钱	<i>Marchantia polymerpha</i>
十二	泥炭藓科	Sphagnaceae
21	中位泥炭藓	<i>Sphagnum magellanicum</i>
22	毛壁泥炭藓	<i>Sphagnum imbricatum</i>
23	泥炭藓	<i>Sphagnum palustre</i>
24	粗叶泥炭藓	<i>Sphagnum squarrosum</i>
25	阔叶泥炭藓	<i>Sphagnum platyphyllum</i>
26	垂枝泥炭藓	<i>Sphagnum jensenii</i>

No.	Chinese Name	Latin Name
27	白齿泥炭藓	<i>Sphagnum girgensohnii</i>
十三	黑藓科	Andreaeaceae
28	东亚黑藓	<i>Andreaea fauriei</i>
十四	曲尾藓科	Dicranaceae
29	短颈小曲尾藓	<i>Dicramella cerviculata</i>
30	瓶藓	<i>Amphidium lapponicum</i>
31	卷毛藓	<i>Dieranoweisia crispula</i>
32	波叶曲尾藓	<i>Dicranum polysetum</i>
十五	白发藓科	Leucobryaceae
33	白发藓	<i>Leucobryum glaucum</i>
十六	凤尾藓科	Fissidentaceae
34	鳞叶凤尾藓	<i>Fissides taxifolius</i>
十七	葫芦藓科	Funariaceae
35	立碗藓	<i>Physcomitrium sphaericum</i>
36	刺边葫芦藓	<i>Funaria muehlenbergii</i>
十八	真藓科	Bryaceae
37	长蒴丝瓜藓	<i>Pohlia elongate</i>
38	丝瓜藓	<i>Pohlia cruda</i>
39	短月藓	<i>Brachymenium nepalense</i>
40	卵叶真藓	<i>Bryum neodamense</i>
41	大叶藓	<i>Rhodobryum roseum</i>
十九	提灯藓科	Miniaceae
42	疣灯藓	<i>Trachycystis microphylla</i>
43	小叶提灯藓	<i>Mnium riparium</i>
44	细枝提灯藓	<i>Mnium striatulum</i>
45	北地提灯藓	<i>Mnium cinclidoides</i>
二十	寒藓科	Meeseaceae
46	沼寒藓	<i>Paludella squarrosa</i>
二十一	珠藓科	Bartramiaceae
47	泽藓	<i>Philonotis Fontana</i>
二十二	虎尾藓科	Hedwigiaceae
48	虎尾藓	<i>Hedwigia ciliate</i>
二十三	水藓科	Fontinaliaceae
49	水藓	<i>Fontinalis antipyretica</i>

No.	Chinese Name	Latin Name
二十四	塔藓科	Hylocomiaceae
50	塔藓	<i>Hylocomium splendens</i>
二十五	金发藓科	Polytrichaceae
51	细叶金发藓	<i>Polytrichum longisetum</i>
52	直叶金发藓	<i>Polytrichum strictum</i>
蕨类植物		
一	卷柏科	Selaginellaceae
1	卷柏	<i>Selaginella tamariacina</i>
2	小卷柏	<i>Selaginella Helvetica</i>
3	鹿角卷柏	<i>Selaginella Rosti</i>
二	木贼科	Equisetaceae
4	木贼	<i>Hippochaete hyemale</i>
5	问荆	<i>Equisetum arvense</i>
6	林问荆	<i>Equisetum sylvaticum</i>
7	草问荆	<i>Equisetum Pratense</i>
8	水问荆	<i>Equisetum fluviatile</i>
9	犬问荆	<i>E. paluste L.</i>
三	阴地蕨科	Botrychiaceae
10	扇叶阴地蕨	<i>Botrychium lunaria</i>
11	劲直阴地蕨	<i>Botrychium strictum</i>
四	紫萁科	Osmundaceae
12	桂皮紫萁	<i>Osmunda cinnamomea</i>
五	石衣科	Hymenophyllaceae
13	团扇蕨	<i>Conocormus minutus</i>
六	碗蕨科	Dennstaedtiaceae
14	溪洞碗蕨	<i>Dennstaeditia wilfordii</i>
15	细毛碗蕨	<i>Dennstaedtia pillosella</i>
七	蕨科	Pteridaceae
16	蕨	<i>Pteridium aquilinum</i>
八	铁角蕨科	Aspleniaceae
17	过山蕨	<i>Camptosorus sibiricus</i>
18	小铁角蕨	<i>Asplenium subcarians</i>
九	蹄盖蕨科	Athyriaceae
19	禾秆蹄盖蕨	<i>Athyrium yokoscens</i>
20	东北角蕨	<i>Cornopteris crenulatoserrulata</i>
21	冷蕨	<i>Cystopteris fragilis</i>
十	金星蕨科	Thelypteridaceae
22	沼泽蕨	<i>Thelypteris palustris</i>

No.	Chinese Name	Latin Name
十一	球子蕨科	Onocleaceae
23	荚果蕨	<i>Matteuccia struthiopteris</i>
24	球子蕨	<i>Onoclea sensibilis</i>
十二	岩蕨科	Woodsiaceae
25	膀胱蕨	<i>Protowoodsia manchuriensis</i>
26	大囊岩蕨	<i>Woodsia macrochlaena</i>
27	心岩蕨	<i>Woodsia subcordata</i>
28	中岩蕨	<i>Woodsia intermedia</i>
29	耳羽岩蕨	<i>Woodsia polystichoides</i>
十三	鳞毛蕨科	Dryopteridaceae
30	粗茎鳞毛蕨	<i>Dryopteris crasserhizoma</i>
31	华北鳞毛蕨	<i>Dryopteris goeringiana</i>
32	三叉耳蕨	<i>polystichum tripterum</i>
十四	水龙骨科	Polypodiaceae
33	东北多足蕨	<i>Polypodium virginianum</i>
34	乌苏里瓦韦	<i>Lepisoerus ussuriensis</i>
35	有柄瓦韦	<i>Pyrrosia patiolosa</i>
十五	槐叶苹科	Salviniaceae
36	槐叶苹	<i>Salvinia natans</i>
十六	满江红科	Azollaceae
37	满江红	<i>Azolla filicoides</i>
种子植物		
一	松科	Pinaceae
1	冷杉	<i>Abies nephrolepis</i>
2	长白落叶松	<i>Larix olgensis</i>
3	鱼鳞云杉	<i>Picea jezoensis</i>
4	※红松	<i>Pinus koraiensis</i>
5	赤松	<i>Pinus densiflora</i>
6	兴凯赤松	<i>Pinus takahasii</i>
二	红豆杉科	Taxaceae
7	东北红豆杉	<i>Taxus cuspidata</i>
三	柏科	Cupressaceae
8	杜松	<i>Juniperus rigida</i>
9	朝鲜崖柏	<i>Thuia koraiensis</i>
四	胡桃科	Juglandaceae
10	胡桃楸	<i>Juglans mandshurica</i>
五	杨柳科	Salicaceae
11	大青杨	<i>Populus ussuriensis</i>
12	香杨	<i>Populus koreana</i>
13	山杨	<i>Populus davidiana</i>
14	三蕊柳	<i>Salix triandra</i>

No.	Chinese Name	Latin Name
15	钻天柳	<i>hosonia arbutifolia</i>
16	杞柳	<i>Salix integra</i>
17	江界柳	<i>Salix kangensis</i>
18	细叶沼柳	<i>Salix rosmarinifolia</i>
19	大黄柳	<i>Salix raddeana</i>
20	旱柳	<i>Salix matsudana</i>
六	桦木科	Betulaceae
21	毛赤杨	<i>Alnus sibirica var. hirsute</i>
22	白桦	<i>Brtula platyphylla</i>
23	黑桦	<i>Brtula davurica</i>
24	丛桦	<i>Betula humilis</i>
25	榛子	<i>Corylus heterophylla</i>
26	毛榛子	<i>Croylus mandshurica</i>
七	壳斗科	Fagaceae
27	蒙古栎	<i>Quercus mongolica</i>
八	榆科	Ulmaceae
28	裂叶榆	<i>Ulmus laciniata</i>
29	春榆	<i>U. japonica</i>
九	桑科	Moraceae
30	律草	<i>Humulus scandens</i>
十	荨麻科	Urticaceae
31	珠芽艾麻	<i>Laportea bulbifera</i>
32	山冷水花	<i>Pilea japonica</i>
33	宽叶荨麻	<i>Urtica laetevirens</i>
34	狭叶荨麻	<i>Urtica angustifolia</i>
35	乌苏里荨麻	<i>Urtica eyanescens</i>
十一	桑寄生科	Loranthaceae
36	槲寄生	<i>Viscum coloratum</i>
十二	蓼科	Polygonaceae
37	狐尾蓼	<i>Polygonum alopecuroides</i>
38	细叶蓼	<i>Polygonum angustifolium</i>
39	扁蓄蓼	<i>Polygonum aviculare</i>
40	伏地蓼	<i>Polygonum calcatum</i>
41	分叉蓼	<i>Polygonum divaricatum</i>
42	多叶蓼	<i>Polygonum folisum</i>
43	水蓼	<i>Polygonum hydropiper</i>
44	矮蓼	<i>Polygonum kirinenese</i>
45	谷地蓼	<i>Polygonum limosum</i>
46	酸模叶蓼	<i>Polygonum lapathifolium</i>
47	耳叶蓼	<i>Polygonum manshuriense</i>
48	头状蓼	<i>Polygonum nepalensis</i>

No.	Chinese Name	Latin Name
49	东方蓼	<i>Polygonum orientale</i>
50	疏花蓼	<i>Polyoonam pauciflorum</i>
51	穿叶蓼	<i>Polygonum perflitatum</i>
52	两色蓼	<i>Polygonum roseoviride</i>
53	箭叶蓼	<i>Polygonum sieboldi</i>
54	水湿蓼	<i>Polygonum strigosum</i>
55	松江蓼	<i>Polygonum sungarensis</i>
56	桃叶蓼	<i>Polygonum vulgare</i>
57	香蓼	<i>Polygonum viscosum</i>
58	酸模	<i>Rumex acetosa</i>
59	长刺酸模	<i>Rumex maritimus</i>
60	洋铁酸模	<i>Rumex patientia</i>
61	乌苏里酸模	<i>Rumex stenophyllus</i>
十三	马齿苋科	Portulacaceae
62	马齿苋	<i>Portulaca oleracea</i>
十四	石竹科	Caryophyllaceae
63	无心菜	<i>Arenaria serpyllifolia</i>
64	卷耳	<i>Cerastium arvease</i>
65	狗筋蔓	<i>Cucubalus baccifer</i>
66	石竹	<i>Dianthus chinensis</i>
67	细梗丝石竹	<i>Gypsophila pacifica</i>
68	丝瓣剪秋萝	<i>Lychnis wilfordii</i>
69	浅裂剪秋萝	<i>Lychnis cognata</i>
70	大花剪秋罗	<i>Lychnis fulgens</i>
71	鹅肠菜	<i>Malachium aquaticum</i>
72	光萼女娄菜	<i>Melandrium firmum</i>
73	女娄菜	<i>Melandrium apricum</i>
74	石米努草	<i>Minuartia larinica</i>
75	森林假繁缕	<i>Pseudostelaria sylvatica</i>
76	毛假繁缕	<i>Pseudostellaria japonica</i>
77	蔓假繁缕	<i>Pseudostellaria davidii</i>
78	狗筋麦瓶草	<i>Siene vulgaris</i>
79	长柱麦瓶草	<i>Siene macrostyla</i>
80	繁缕	<i>Stellaria media</i>
81	伞繁缕	<i>Stellaria longifolia</i>
82	细叶繁缕	<i>Stellaria filicaulis</i>
83	翻白繁缕	<i>Stellaria discolor</i>
84	沼繁缕	<i>Stellaria palustris</i>
十五	藜科	Chenopodiaceae
85	藜	<i>Chenopodium album</i>
86	灰绿藜	<i>Chenopodium glaucum</i>

No.	Chinese Name	Latin Name
87	红叶藜	<i>Chenopodium rubrum</i>
88	小藜	<i>Chenopodium serotinum</i>
89	地肤	<i>Kochia scoparia</i>
十六	五味子科	Schisandraceae
90	五味子	<i>Schisandra chinensis</i>
十七	毛茛科	Ranunculaceae
91	细叶黄乌头	<i>Aconitum barbatum</i>
92	黄花乌头	<i>Aconitum corcanm</i>
93	鸭绿乌头	<i>Aconitum jaluense</i>
94	北乌头	<i>Aconitum kusnezoffii</i>
95	蔓乌头	<i>Aconitum volubile</i>
96	细叶乌头	<i>Aconitum macrorhynchum</i>
97	类叶升麻	<i>Actaea asiatica</i>
98	侧金盏花	<i>Adonis amurensis</i>
99	黑水银莲花	<i>Anemone amurensis</i>
100	长毛银莲花	<i>Anemone narcissiflora</i>
101	多被银莲花	<i>Anemone raddeana</i>
102	大花银莲花	<i>Anemone silvestris</i>
103	阴地银莲花	<i>Anemone umbrosa</i>
104	耧斗菜	<i>Aquilegia viridiflora</i>
105	驴蹄菜	<i>Caltha palustris</i>
106	兴安升麻	<i>Cimicifuga dahurica</i>
107	大三叶升麻	<i>C. heracleifolia</i>
108	棉团铁线莲	<i>Clematis hexapetala</i>
109	辣蓼铁线莲	<i>Clematis mandshurica</i>
110	齿叶铁线莲	<i>Clematis serratifolia</i>
111	林地铁线莲	<i>Clematis brevicaudata</i>
112	大人字果	<i>Enemion raddeanum</i>
113	菟葵	<i>Eranthis stellata</i>
114	东北天葵	<i>Isopyrum manshuricum</i>
115	蓝堇草	<i>Leptopyrum fumarioides</i>
116	白头翁	<i>Pulsatilla chinensis</i>
117	朝鲜白头翁	<i>Pulsatilla koreana</i>
118	毛茛	<i>Ranunculus japonicus</i>
119	单叶毛茛	<i>Ranunculus monophyullus</i>
120	沼地毛茛	<i>Ranunculus radicans</i>
121	回回蒜毛茛	<i>Ranunculus chinensis</i>
122	深山毛茛	<i>Ranunculus francheti</i>
123	翼果唐松草	<i>Thalictrum aquilegifolium</i>
124	球果唐松草	<i>Thalictrum baiclense</i>
125	肾叶唐松草	<i>Thalictrum petaloideum</i>

No.	Chinese Name	Latin Name
126	腺毛唐松草	<i>Th. Foetidum</i>
127	箭头唐松草	<i>Th. simplex</i>
128	长瓣金莲花	<i>T. macropetalus</i>
129	短瓣金莲花	<i>T. ledebouri</i>
130	宽瓣金莲花	<i>Trollius asiaticus</i>
十八	小檗科	Berberidaceae
131	大叶小檗	<i>Berberis amurensis</i>
132	类叶牡丹	<i>Caulophyllum robustum</i>
十九	防己科	Menispermaceae
133	蝙蝠葛	<i>Menispermum dauricum</i>
二十	金鱼藻科	Ceratophyllaceae
134	金鱼藻	<i>Ceratophyllum demersum</i>
135	东北金鱼藻	<i>C. manshuricum</i>
二十一	金粟兰科	Chloranthaceae
136	银线草	<i>Chloranthus japonicus</i>
二十二	马兜铃科	Aristolochiaceae
137	北马兜铃	<i>Aristolochla contorta</i>
二十三	芍药科	Paeoniaceae
138	芍药	<i>Paeonia lactiflora</i>
139	山芍药	<i>Paeonia japonica</i>
140	草芍药	<i>Paeonia obovata</i>
二十四	猕猴桃科	Actinidiaceae
141	葛枣猕猴桃	<i>Actinidia polygama</i>
142	软枣猕猴桃	<i>Actinidia arguta</i>
二十五	金丝桃科	Hypericaceae
143	长柱金丝桃	<i>Hypericum ascyron</i>
144	短柱金丝桃	<i>Hypericum gebleri</i>
二十六	罂粟科	Papaveraceae
145	白屈菜	<i>Chelidonium majus</i>
146	东北延胡索	<i>Corydalis ambigua</i>
147	全叶延胡索	<i>Corydalis repens</i>
148	齿瓣延胡索	<i>Corydalis turtschaninovii</i>
149	巨紫堇	<i>Corydalis gigantea</i>
150	球果紫堇	<i>Corydalis pallida</i>
151	荷青花	<i>Hylomecon japonica</i>

No.	Chinese Name	Latin Name
152	野罂粟	<i>Papaver nudicaule</i>
二十七	十字花科	Cruciferae
153	西伯利亚庭芥	<i>Alyssum sibiricum</i>
154	白花碎米荠	<i>Cardamine leucantha</i>
155	草甸碎米荠	<i>Cardamine pratensis</i>
156	葶苈	<i>Draba nemorosa</i>
157	花旗竿	<i>Dontostemon dentatus</i>
158	桂竹糖芥	<i>Erysimum cheiranthoides</i>
159	独行菜	<i>Lepidium apetalum</i>
二十八	景天科	Crassulaceae
160	钝叶瓦松	<i>Orostachys malacophyllus</i>
161	瓦松	<i>Orostachys fimbriatus</i>
162	费菜（土三七）	<i>Sedum aizoon</i>
二十九	虎耳草科	Saxifragaceae
163	落新妇	<i>Astilbe chinensis</i>
164	光萼溲疏	<i>Deutzia glabrata</i>
165	小花溲疏	<i>Deutzia parviflora</i>
166	梅花草	<i>Parnassia plustris</i>
167	扯根菜	<i>Penthorum chinense</i>
168	东北山梅花	<i>Philadelphus schrenkii</i>
169	尖叶茶藨子	<i>Ribes maximowiczianum</i>
170	东北茶藨子	<i>Ribes mandshuricum</i>
三十	蔷薇科	Rosaceae
171	龙牙草	<i>Agrimonia pilos</i>
172	假升麻	<i>Aruncus sylvester</i>
173	东北沼委陵菜	<i>Comarum palustre</i>
174	蚊子草	<i>Filipendula palmata</i>
175	翻白蚊子草	<i>Filipendula intemedia</i>
176	细叶蚊子草	<i>Filipendula angustiloba</i>
177	东方草莓	<i>Fragaria orientalis</i>
178	水杨梅	<i>Geum aleppicum</i>
179	二裂委陵菜	<i>Potentilla bifurca</i>
180	莓叶委陵菜	<i>Potentilla fragarioides</i>
181	翻白委陵菜	<i>Potentilla discolor</i>
182	委陵菜	<i>Potentilla chinensis</i>

No.	Chinese Name	Latin Name
183	轮叶委陵菜	<i>Potentilla verticillaris</i>
184	蛇莓委陵菜	<i>Potentilla centigrana</i>
185	狼牙委陵菜	<i>Potentilla cryptotaeniae</i>
186	三叶委陵菜	<i>Potentilla freyniana</i>
187	蔓委陵菜	<i>Potentilla flagellaris</i>
188	东北扁核木	<i>Prinsepia sinensis</i>
189	稠李	<i>Prunus padus</i>
190	斑叶稠李	<i>Prunus maackii</i>
191	山里红	<i>Comarum pinnatifida</i>
192	秋子梨	<i>Pyrus ussuriensis</i>
193	刺玫蔷薇	<i>Rosa davurica</i>
194	刺蔷薇	<i>Rosa acicularis</i>
195	石生悬钩子	<i>Rubus saxatilis</i>
196	山楂叶悬钩子（托盘）	<i>Rubus crataegifolius</i>
197	小白花地榆	<i>Sanguisorba parviflora</i>
198	腺地榆	<i>Sanguisorba glandulosa</i>
199	地榆	<i>Sanguisorba officinalis</i>
200	垂穗粉花地榆	<i>Sanguisorba tenuifolia</i>
201	直穗粉花地榆	<i>Sanguisorba grandiflora</i>
202	绣线菊	<i>Spiraea salicifolia</i>
203	石棒绣线菊	<i>Spiraea media</i>
204	绢毛绣线菊	<i>Spiraea serisea</i>
205	珍珠梅	<i>Sorbaria sorbifolia</i>
三十一	豆科	Fabaceae
206	湿地黄耆	<i>Astragalus uliginosus</i>
207	黄耆	<i>Astragalus membranaceus</i>
208	草木犀	<i>Astragalus melilotoides</i>
209	※野大豆	<i>Glycine soja</i>
210	鸡眼草	<i>Kummerowia striata</i>
211	三脉山黧豆	<i>Lathyrus komarovii</i>
212	东北山黧豆	<i>Lathyrus vaniotii</i>
213	山黧豆	<i>Lathyrus palustris</i>
214	胡枝子	<i>Lespedeza bicolor</i>
215	山槐	<i>Maackia amurensis</i>
216	苦参	<i>Sophora flavescens</i>
217	野火球	<i>Trifolium lupinaster</i>
218	山野豌豆	<i>Vicia amoena</i>

No.	Chinese Name	Latin Name
219	广布野豌豆	<i>Vicia cracca</i>
220	多茎野豌豆	<i>Vicia multicaulis</i>
221	细叶野豌豆	<i>Vicia tenuifolia</i>
222	歪头菜	<i>Vicia unijuga</i>
三十二	酢浆草科	Oxalidaceae
223	酢浆草	<i>Oxalis corniculata</i>
三十三	牻牛儿苗科	Geraniaceae
224	牻牛儿苗	<i>Erodium stephanianum</i>
225	草甸老鹳草	<i>Geranium pratense</i>
226	突节老鹳草	<i>Geranium krameri</i>
227	老鹳草	<i>Geranium wilfordii</i>
228	粗根老鹳草	<i>Geranium dahuricum</i>
三十四	大戟科	Euphorbiaceae
229	林大戟	<i>Euphorbia lucorum</i>
230	猫眼草	<i>Euphorbia lunulata</i>
231	狼毒大戟	<i>Euphorbia pallassii</i>
232	叶底珠	<i>Securinega suffruticosa</i>
三十五	芸香科	Rutaceae
233	白藜	<i>Dictamnus dasycarpus</i>
234	※黄菠萝	<i>Phellodendron amurense</i>
三十六	远志科	Polygalaceae
235	远志	<i>Polygala tenuifolia</i>
三十七	槭树科	Aceraceae
236	色木槭	<i>Acer mono Maxim.</i>
237	茶条槭	<i>Acer ginnala Maxim.</i>
238	花楷槭	<i>Acer ukurunduense</i>
三十八	凤仙花科	Balsaminaceae
239	水金凤	<i>Impatiens noli-tangere</i>
三十九	卫矛科	Celastraceae
240	南蛇藤	<i>Celastrus orbiculatus</i>
241	瘤枝卫矛	<i>Eu. pauciflorus Maxim.</i>
242	卫矛	<i>Euonymus alatus</i>
四十	鼠李科	Rhamnaceae

No.	Chinese Name	Latin Name
243	东北鼠李	<i>Rhamnus yoshinoi</i>
244	鼠李	<i>Rhamnus davuricus</i>
四十一	葡萄科	Vitaceae
245	白藜	<i>Ampelopsis japonica</i>
246	山葡萄	<i>Vitis amurensis</i>
四十二	椴树科	Tiliaceae
247	糠椴	<i>Tilia mandshurica</i>
248	※紫椴	<i>Tilia amurensis</i>
四十三	锦葵科	Malvaceae
249	苘麻	<i>Abutilon theophrasti</i>
250	野西瓜苗	<i>Hibiscus trionum</i>
四十四	堇菜科	Violaceae
251	鸡腿堇菜	<i>Viola acuminata</i>
252	球果堇菜	<i>Viola collina</i>
253	裂叶堇菜	<i>Viola dissecta</i>
254	东北堇菜	<i>Viola mandshurica</i>
255	白花堇菜	<i>Viola patrinii</i>
256	茜堇菜	<i>Viola phalacrocorpa</i>
257	早开堇菜	<i>Viola prionantha</i>
258	库页堇菜	<i>Viola sacchalimensis</i>
259	斑叶堇菜	<i>Viola variegata</i>
260	堇菜	<i>Viola verecunda</i>
261	紫花地丁	<i>Viola yedoensis</i>
262	阴地堇菜	<i>Viola yezoensis</i>
四十五	葫芦科	Cucurbitaceae
263	赤爬	<i>Thladiantha dubia</i>
四十六	菱科	Trapaceae
264	耳菱	<i>Trapa potaninii</i>
四十七	柳叶菜科	Onagraceae
265	柳兰	<i>Chamaenerion angustifolium</i>
266	露珠草	<i>Circaea cordata</i>
四十八	山茱萸科	Cornaceae
267	红瑞木	<i>Cornus alba</i>

No.	Chinese Name	Latin Name
四十九	五加科	Araliaceae
268	刺五加	<i>Acanthopanax senticosus</i>
269	龙牙楸木	<i>Aralia elata</i>
五十	伞形科	Umbelliferae
270	大活(走马芹)	<i>Angelica dahurica</i>
271	大叶柴胡	<i>Bupleurum longiradiatum</i>
272	细叶柴胡	<i>Bupleurum scorzoneaeifolium</i>
273	北柴胡	<i>Bupleurum chinense</i>
274	毒芹	<i>Cicuta virosa</i>
275	石防风	<i>Peucedanum terebinthaceum</i>
276	防风	<i>Saposhnikovia divaricata</i>
277	泽芹	<i>Sium suave</i>
278	窃衣	<i>Torilis japonica</i>
279	红花鹿蹄草	<i>Pyrola incarnata</i>
280	兴安鹿蹄草	<i>Pyrola dahurica</i>
五十一	杜鹃花科	Ericaceae
281	兴安杜鹃	<i>Rhododendron dauricum</i>
五十二	报春花科	Primulaceae
282	点地梅	<i>Androsace umbellata</i>
283	狼尾巴花	<i>Lysimachia barystachys</i>
284	珍珠菜	<i>Lysimachia clethroides</i>
285	黄连花	<i>Lysimachia davurica</i>
286	樱草	<i>Primula sieboldii</i>
287	箭报春	<i>Primula fistulosa</i>
288	七瓣莲	<i>Trientalis europaea</i>
五十三	木犀科	Oleaceae
289	※水曲柳	<i>Fraxinus mandshurica</i>
290	花曲柳	<i>Fraxinus rhynchophylla</i>
291	暴马丁香	<i>Syringa reticulata</i>
五十四	龙胆科	Gentianaceae
292	东北龙胆	<i>Gentiana mandshurica</i>
293	龙胆	<i>Gentiana scabra</i>
294	鳞叶龙胆	<i>Gentiana squarrosa</i>
295	三花龙胆	<i>Gentiana triflora</i>
296	笔龙胆	<i>Gentiana zollingeri</i>

No.	Chinese Name	Latin Name
297	东北算牙菜	<i>Swetia pseudochinensis</i>
五十五	睡菜科	Menyanthaceae
298	苳菜	<i>Nymphoides peltata</i>
五十六	萝藦科	Asclepiadaceae
299	白薇	<i>Cynanchum atratum</i>
300	徐长卿	<i>Cynanchum paniculatum</i>
301	萝藦	<i>Metaplexis japonica</i>
五十七	茜草科	Rubiaceae
302	北方拉拉藤	<i>Galium borelae</i>
303	蓬子菜拉拉藤	<i>Galium verum</i>
304	林拉拉藤	<i>Galium paradoxum</i>
305	茜草	<i>Rubia cordifolia</i>
五十八	花荵科	Polemoniaceae
306	花荵	<i>Polemonium linifolium</i>
五十九	旋花科	Convolvulaceae
307	打碗花	<i>Calystegia hedracea</i>
308	日本打碗花	<i>Calystegia japonica</i>
309	宽叶打碗花	<i>C. sepium</i>
310	田旋花	<i>Convolvulus arvensis</i>
311	菟丝子	<i>Cuscuta chinensis</i>
六十	紫草科	Borraginaceae
312	山茄子	<i>Brachybotrys paridiformis</i>
313	紫草	<i>Lithospermum erythrorhizon</i>
314	湿地勿忘草	<i>Myosotis caepistosa</i>
315	附地菜	<i>Trigonotis peduncularis</i>
316	北附地菜	<i>Trigonotis radicans</i>
六十一	唇形科	Lbiatae
317	藿香	<i>Agastache rugosa</i>
318	风轮菜	<i>Clinopodium chinense</i>
319	香青兰	<i>Dracocephalum moldavica</i>
320	香薷	<i>Elsholtzia ciliate</i>
321	连钱草(活血丹)	<i>Glechoma longituba</i>
322	夏至草	<i>Lagopsis supina</i>

No.	Chinese Name	Latin Name
323	野芝麻	<i>Lamium album</i>
324	益母草	<i>Leonurus japonicus</i>
325	细叶益母草	<i>Leonurus sibiricus</i>
326	薄荷	<i>Mentha haplocalyx</i>
327	荠苎	<i>Mosla dianthera</i>
328	糙苏	<i>phlomis umbrosa</i>
329	蓝萼香茶菜	<i>Plectranthus japonicus</i>
330	东北夏枯草	<i>Prunella asiatica</i>
331	黄芩	<i>Scutellaria baicalensis</i>
332	水苏	<i>Stachys chinensis</i>
六十二	茄科	Solanaceae
333	挂金灯酸浆	<i>Physalis alkekengi</i>
334	龙葵	<i>Solanum nigrum</i>
六十三	玄参科	Scrophulariaceae
335	柳穿鱼	<i>Linaria vulgaris</i>
336	返顾马先蒿	<i>Pedicularis resupinata</i>
337	阴行草	<i>Siphonostegia chinensis</i>
338	轮叶婆婆纳	<i>Veronica sibirica</i>
六十四	列当科	Orobanchaceae
339	列当	<i>Orobanche caerulea</i>
六十五	狸藻科	Lentibulariaceae
340	小狸藻	<i>Utricularia minor</i>
六十六	车前科	Plantaginaceae
341	车前	<i>Plantago asiatica</i>
342	平车前	<i>Plantago depressa</i>
六十七	忍冬科	Caprifoliaceae
343	金银花	<i>Lonicera japonica</i>
344	蓝靛果忍冬	<i>Lonicera deulis</i>
345	接骨木	<i>Sambucus williamsii</i>
346	鸡树条荚蒾	<i>Viburnum sargentii</i>
六十八	五福花科	Adoxaceae
347	五福花	<i>Adoxa moschatellina</i>
六十九	败酱科	Valerianaceae

No.	Chinese Name	Latin Name
348	岩败酱	<i>Patrinia rupestris</i>
349	败酱	<i>Patrinia scabiosaefolia</i>
350	西伯利亚败酱	<i>Patrinia sibirica</i>
351	黑水缬草	<i>Valeriana amurensis</i>
七十	川续断科	Dipsacaceae
352	华北蓝盆花	<i>Scabiosa tschiliensis</i>
七十一	桔梗科	Campanulaceae
353	狭叶沙参	<i>Adenophora gmelinii</i>
354	沼沙参	<i>Adenophora palustris</i>
355	长白沙参	<i>Adenophora pereskiaefolia</i>
356	轮叶沙参	<i>Adenophora tetraphylla</i>
357	聚花风铃草	<i>Campanula glomerata</i>
358	羊乳	<i>Codonopsis lanceolata</i>
359	紫斑风铃草	<i>Campanula punctata</i>
360	党参	<i>Codonopsis pilosula</i>
361	山梗菜	<i>Lobelia sessilifolia</i>
362	桔梗	<i>Platycodon grandiflorum</i>
七十二	菊科	Compositae
363	黄金菊	<i>Achyrophorus ciliatus</i>
364	著	<i>Achillea millefolium</i>
365	和尚菜	<i>Adenocaulon himalaicum</i>
366	牛蒡	<i>Arctium lappa</i>
367	黄花蒿	<i>Artemisia annua</i>
368	艾蒿	<i>Artemisia argyi</i>
369	山蒿	<i>Artemisia brachyloba</i>
370	茵陈蒿	<i>Artemisia capillaries</i>
371	牡蒿	<i>Artemisia japonica</i>
372	柳蒿	<i>Artemisia integrifolia</i>
373	万年蒿	<i>Artemisia sacrorum</i>
374	大籽蒿	<i>Artemisia sieversiana</i>
375	宽叶山蒿	<i>Artemisia stolonifera</i>
376	紫菀	<i>Aster tataricus</i>
377	关苍术	<i>Atractylodes japonica</i>
378	鬼针草	<i>Bidens bipinnata</i>
379	狼把草	<i>Bidens tripartita</i>
380	山尖子	<i>Cacalia hastata</i>
381	丝毛飞簾	<i>Carduus crispus</i>
382	金挖耳	<i>Carpesium divaricatum</i>

No.	Chinese Name	Latin Name
383	野菊	<i>Chrysanthemum indicum</i>
384	刺儿菜	<i>Cirsium segetum</i>
385	东风菜	<i>Doellingeria scaber</i>
386	宽叶蓝刺头	<i>Echinops latifolius</i>
387	泽兰	<i>Eupatorium japonicum</i>
388	林泽兰	<i>Eupatorium lindleyanum</i>
389	阿尔泰狗娃花	<i>Heteropappus altaicus</i>
390	伞叶山柳菊	<i>Hieracium umbellatum</i>
391	旋覆花	<i>Inula japonica</i>
392	苦苣菜	<i>Ixeris denticulata</i>
393	山莴苣	<i>Lactuca indica</i>
394	火绒草	<i>Leontopodium leontopodii</i>
395	蹄叶橐吾	<i>Ligularia fischeri</i>
396	凤毛菊	<i>Saussurea japonica</i>
397	笔管草	<i>Scorzonera albicaulis</i>
398	羽叶千里光	<i>Senecio argunensis</i>
399	苣荬菜	<i>Sonchus brachyotus</i>
400	狗舌草	<i>Tephrosia campestris</i>
401	蒙古蒲公英	<i>Taraxacum mongolicum</i>
402	苍耳	<i>Xanthium sibiricum</i>
七十三	泽泻科	Alismataceae
403	草泽泻	<i>Alisma gramineum</i>
404	泽泻	<i>Alisma orientale</i>
405	※浮叶慈姑	<i>Sagittaria natans</i>
406	三裂慈姑	<i>Sagittaria trifolia</i>
七十四	水鳖科	Hydrocharitaceae
407	黑藻	<i>Hydrilla verticillata</i>
408	水车前	<i>Ottelia alismoides</i>
七十五	眼子菜科	Potamogetonaceae
409	眼子菜	<i>Potamogeton distinctus</i>
410	小眼子菜	<i>Potamogeton pusillus</i>
七十六	百合科	Liliaceae
411	薤白	<i>Allium macrostemon</i>
412	茗葱	<i>Allium victorialis</i>
413	兴安天门冬	<i>Asparagus dauricus</i>
414	铃兰	<i>Convallaria keiskei</i>

No.	Chinese Name	Latin Name
415	宝珠草	<i>Disporum viridescens</i>
416	轮叶贝母	<i>Fritillaria maximowiczii</i>
417	朝鲜顶冰花	<i>Gagea lutea</i>
418	小黄花菜	<i>Hemerocallis minor</i>
419	舞鹤草	<i>Maianthemum dilatatum</i>
420	玉竹	<i>Polygonatum odoratum</i>
421	二苞黄精	<i>Polygonatum involucreatum</i>
422	黄精	<i>Polygonatum sibiricum</i>
423	鹿药	<i>Smilacina japonica</i>
424	华北菝葜	<i>Smilax sieboldii</i>
425	藜芦	<i>V. nigrum</i>
七十七	薯蓣科	Dioscoreaceae
426	穿龙薯蓣	<i>Dioscorea nipponica</i>
七十八	雨久花科	Pontederiaceae
427	雨久花	<i>Monochoria korsakowii</i>
428	鸭舌草	<i>Monochoria vaginalis</i>
七十九	鸢尾科	Iridaceae
429	白花马蔺	<i>Iris lacteal</i>
430	燕子花	<i>Iris laevigata</i>
八十	灯心草科	Juncaceae
431	灯心草	<i>Juncus effusus</i>
八十一	鸭跖草科	Commelinaceae
432	鸭跖草	<i>Commelina communis</i>
八十二	禾本科	Gramineae
433	芒剪股颖	<i>Agrostis trinii</i>
434	看麦娘	<i>Alopecurus aequalis</i>
435	荻草	<i>Arthraxon hipidus</i>
436	菵草	<i>Beckmannia syzigachne</i>
437	小叶章	<i>Calamagrostis angustifolia</i>
438	拂子茅	<i>Calamagrostis epigejos</i>
439	野青茅	<i>Deyeuxia brachytricha</i>
440	大叶章	<i>Deyeuxia langsdorffii</i>
441	马唐	<i>Digitaria sanguinalis</i>
442	野稗	<i>Echinochloa crusgalli</i>
443	牛筋草	<i>Eleusine indica</i>
444	画眉草	<i>Eragrostis pilosa</i>

No.	Chinese Name	Latin Name
445	远东羊茅	<i>Festuca extremiorientalis</i>
446	东北甜茅	<i>Glyceria triflora</i>
447	茅香	<i>Hierochloa odorata</i>
448	粟草	<i>Milium effusum</i>
449	芒	<i>Miscanthus sinensis</i> Anderss.
450	狼尾草	<i>Pennisetum alopecuroides</i>
451	芦苇	<i>Phragmites communis</i>
452	林地早熟禾	<i>Poa nemoralis</i>
453	泽地早熟禾	<i>Poa palustris</i>
454	狗尾草	<i>Setaria viridis</i>
455	大油芒	<i>Spodiopogon sibiricus</i>
456	菰	<i>Zizania latifolia</i>
八十三	天南星科	Araceae
457	菖蒲	<i>Acorus calamus</i>
458	东北天南星	<i>Arisaema amurense</i>
459	朝鲜天南星	<i>Arisaema peninsul</i>
460	水芋	<i>Calla palustris</i>
八十四	浮萍科	Lemnaceae
461	浮萍	<i>Lemna minor</i>
八十五	黑三棱科	Sparganiaceae
462	黑三棱	<i>Sparganium coreanum</i>
八十六	香蒲科	Typhaceae
463	宽叶香蒲	<i>Typha latifolia</i>
464	小香蒲	<i>Typha minima</i>
465	香蒲	<i>Typha orientalis</i>
八十七	莎草科	Cyperaceae
466	苔草	<i>Carex dispalata</i>
467	针苔草	<i>Carex dahurica</i>
468	沼苔草	<i>Carex limosa</i>
469	乌拉草	<i>Carex meyeriana</i>
470	乌苏里苔草	<i>Carex ussuriensis</i>
471	凸脉苔草	<i>Carex lanceolata</i>
472	高秆莎草	<i>Cyperus difformis</i>
473	头穗莎草	<i>Cyperus glomeratus</i>
474	碎米莎草	<i>Cyperus iria</i>
475	莎草	<i>Cyperus rotundus</i>

No.	Chinese Name	Latin Name
476	牛毛毡	<i>Eleocharis acicularis</i>
477	羊胡子草	<i>Eriophorum vaginatum</i>
478	水莎草	<i>Juncellus serotinus</i>
479	水葱	<i>Scirpus tabernaemontani</i>
480	荆三棱	<i>Scirpus fluviatilis</i>
481	单穗蕙草	<i>Scirpus radicans</i>
八十八	兰科	Orchidaceae
482	杓兰	<i>Cypripedium calceolus</i>
483	斑花杓兰	<i>Cypripedium guttatum</i>
484	大花杓兰	<i>Cypripedium macranthum</i>
485	沼兰	<i>Limnorchis hologlottis</i>
486	二叶兜被兰	<i>Neottianthe cucullata</i>

Attached Table 1: Information Table of Forest Sub-compartments of Tiger-friendly Forest Tending Lands

Attached Table 1.1 Information Table of Forest Sub-compartments of Tiger-friendly Forest Tending Lands in the Project Area of Heilongjiang Provincial Department (Dongning County)

Geographical location	Forest compartment	Sub-compartment	Area (hectare)	Scope and coordinates
Tuanjie Forest Farm	3	1	17	669930 4870992、669022 4869682 668921 4869729、669904 4871050
Tuanjie Forest Farm	3	14	17	669521 4869109、669442 4868857 669009 4869322、669324 4869411
Houshan	3	21	26	669718 4868045、669584 4867708 669258 4868271、669436 4868534
Houshan	3	30	35	669813 4867452、669366 4867213 669057 4867960、668844 4868765
Xiaomeikuang	4	12	26	671967 4869216、671507 4868522 671297 4868996、671680 4869305
Tuanjie Forest Farm	5	1	33	669128 4870228、668485 4869187 668202 4869544、669122 4870304
Daduchuan Ridge	5	14	33	668486 4868467、668210 4867660 667736 4868009、667869 4868685
Tuanjie Forest Farm	6	2	16	668880 4868524、668894 4868304 668628 4868377、668764 4869202
Tuanjie Forest Farm	6	3	18	669092 4867879、668721 4867855 668572 4868103、668628 4868372
Sunhaishendi Daobei	6	6	41	669359 4867199、669124 4866957 668487 4867728、668532 4867847
Beishan	8	9	52	672412 4868145、671731 4867356 671686 4868011、672171 4868641
Mafendui	8	14	16	672623 4867750、672476 4867472 672137 4867604、672252 4868013
Mafendui	8	21	24	672528 4867374、672428 4866987 671735 4867350、672105 4867550
Mafendui	8	23	16	672397 4866986、672074 4866621 671872 4866969、672000 4867073
Houshan	9	1	40	671590 4867635、671223 4866931 670481 4867327、671421 4867779
Houshan	9	6	27	671227 4866820、670919 4866781 670193 4867152、670527 4867304
Houshan	9	12	13	671232 4866791、671211 4866407 670630 4866389、670807 4866756
Houshan	10	7	24	670353 4866959、670077 4866299 669825 4866450、670046 4867240
Houshan	10	11	15	670504 4866549、670758 4866265 670119 4866257、670365 4866948

Geographical location	Forest compartment	Sub-compartment	Area (hectare)	Scope and coordinates
Houshan	10	16	21	671852 4866156、671669 4866044 670127 4866252、670388 4866403
Sunhaishendi	11	3	16	669586 4866289、669264 4866140 668711 4866568、669002 4866691
Sunhaishendi	11	12	19	669293 4866105、669065 4865742 668509 4865927、669135 4866351
Changlazi	12	15	33	670002 4864826、669221 4864331 669027 4864639、669380 4865176
Xishan	13	6	23	671401 4865492、670886 4865128 670648 4865418、670971,4865732
Xishan	13	13	33	671216 4864948、670735 4864441 670362 4864867、671289 4865230
Caiying Ridge	16	28	22	669605 4862649、669592 4862275 669071 4862958、669423 4863014
Erpaichanggo u	17	18	22	671709 4863129、671212 4862601 671150 4862862、671516 4863268
Caiying Ridge	18	8	23	668963 4861299、668868 4861199 668195 4861489、668114 4861676
Gaoliwo	18	12	27	668651 4860883、668228 4860495 668084 4860603、667822 4861437
Gaoliwo	18	13	19	668227 4860867、668079 4860608 667682 4861201、667723 4861469
Caiying Ridge	19	15	13	668852 4862144、668889 4861593 668546 4861991、668546 4862212
Caiying Ridge	20	8	15	669797 4862135、669455 4861733 669262 4862062、669717 4862284
LaoniuHousha n	20	32	16	670020 4860837、669750 4860287 669295 4860748、669644 4860903
Xiaobudui	27	6	13	668633 4857724、668445 4859223 668274 4859745、668468 4859957
Xiaobudui	27	9	62	668718 4859238、668003 4858443 667895 4858934、668255 4859742
Banzifang	30	6	27	670954 4859354、670849 4859006 670259 4859717、670305 4859855
Banzifang	30	10	37	671345 4859021、670728 4858487 670186 4858529、671054 4859062
Banzifang	31	20	17	671547 4858043、671438 4857680 670879 4858033、671161 4858241
Sirenban	32	4	28	667799 4857332、667042 4856715 666937 4856935、667596 4857505
Sirenban	35	3	16	667398 4856253、666424 4855863 666427 4856040、667397 4856337
Bajiazi	37	15	13	667229 4854819、666540 4854569 666391 4855044、667253 4855141
Shengli Yuangengdian	39	6	16	667286 4853787、666294 4853318 666268 4853494、667080 4853985
Shengli Yuangengdian	39	21	21	667036 4853331、667216 4852971 666527 4853121、666975 4853638
Xibeigouzi	41	8	36	667549 4852517、666921 4852228 666536 4852560、666966 4852834
Xibeigouzi	41	10	15	666484 4852165、666125 4851823 666002 4851923、666266 4852572
Xibeigouzi	41	14	33	666859 4852175、666386 4851574 665931 4851685、666430 4852568

Geographical location	Forest compartment	Sub-compartment	Area (hectare)	Scope and coordinates
MayingXishan	41	17	27	666498 4851435、666401 4850951 665964 4851547、666656 4851871
Xibeigouzi	42	5	37	667383 4851872、667030 4851649 666675 4851755、667603 4852345
MayingXishan	42	9	37	667717 4852103、666998 4851253 666562 4851389、667672 4852308
Xinangou	42	13	18	667467 4851168、667302 4850975 666559 4851204、667202 4851362
MayingXishan	43	1	34	668814 4851876、668647 4851544 668158 4852549、668254 4853076
MayingDongs han	44	7	36	671147 4851317、670532 4850797 670116 4851219、670079 4851615
Nanshan in Maying Village	45	1	26	669427 4851173、669088 4849910 668722 4850930、669065 4851207
Nanshan in Maying Village	45	5	39	669930 4870992、669022 4869682 668921 4869729、669904 4871050
Nanshan in Maying Village	45	7	51	669521 4869109、669442 4868857 669009 4869322、669324 4869411
Nanshan in Maying Village	48	6	21	669718 4868045、669584 4867708 669258 4868271、669436 4868534
MayingDongs han	48	9	29	669813 4867452、669366 4867213 669057 4867960、668844 4868765
Nanshan in Maying Village	48	10	15	671967 4869216、671507 4868522 671297 4868996、671680 4869305
Nanshan in Maying Village	48	11	27	669128 4870228、668485 4869187 668202 4869544、669122 4870304
Nanshan in Maying Village	48	13	38	668486 4868467、668210 4867660 667736 4868009、667869 4868685
ShimenziDong shan	49	4	25	668880 4868524、668894 4868304 668628 4868377、668764 4869202
ShimenziDong shan	49	6	32	669092 4867879、668721 4867855 668572 4868103、668628 4868372
ShimenziDong shan	49	9	20	669359 4867199、669124 4866957 668487 4867728、668532 4867847

Geographical location	Forest compartment	Sub-compartment	Area (hectare)	Scope and coordinates
ShimenziDongshan	50	5	28	672412 4868145、671731 4867356 671686 4868011、672171 4868641
ShimenziDongshan	51	14	24	672623 4867750、672476 4867472 672137 4867604、672252 4868013
ShimenziDongshan	51	16	21	672528 4867374、672428 4866987 671735 4867350、672105 4867550
ShimenziDongshan	53	20	13	672397 4866986、672074 4866621 671872 4866969、672000 4867073
Tuanjie	56	6	17	671590 4867635、671223 4866931 670481 4867327、671421 4867779
Tuanjie	57	3	28	671227 4866820、670919 4866781 670193 4867152、670527 4867304
Tuanjie	57	7	48	671232 4866791、671211 4866407 670630 4866389、670807 4866756
Tuanjie	57	12	49	670353 4866959、670077 4866299 669825 4866450、670046 4867240
Tuanjie	57	20	25	670504 4866549、670758 4866265 670119 4866257、670365 4866948
Dacaopen	58	5	17	671852 4866156、671669 4866044 670127 4866252、670388 4866403
ShimenziDongshan	200	52	29	669586 4866289、669264 4866140 668711 4866568、669002 4866691
Xiaomeikuang Houshan	2	12	38	669293 4866105、669065 4865742 668509 4865927、669135 4866351
Xiaomeikuang Houshan	2	13	13	670002 4864826、669221 4864331 669027 4864639、669380 4865176
Xiaomeikuang Houshan	3	9	27	671401 4865492、670886 4865128 670648 4865418、670971,4865732
Xiaomeikuang Houshan	4	7	15	671216 4864948、670735 4864441 670362 4864867、671289 4865230
Xiaomeikuang	4	18	17	669605 4862649、669592 4862275 669071 4862958、669423 4863014
Xiaomeikuang Xishan	6	14	14	671709 4863129、671212 4862601 671150 4862862、671516 4863268
Xiaomeikuang Xishan	7	2	21	668963 4861299、668868 4861199 668195 4861489、668114 4861676
Xiaomeikuang Xishan	7	13	15	668651 4860883、668228 4860495 668084 4860603、667822 4861437
Xiaomeikuang Xishan	7	17	24	668227 4860867、668079 4860608 667682 4861201、667723 4861469
Xiaomeikuang Xishan	7	18	18	668852 4862144、668889 4861593 668546 4861991、668546 4862212

Geographical location	Forest compartment	Sub-compartment	Area (hectare)	Scope and coordinates
Xiaomeikuang Xishan	7	19	17	669797 4862135、669455 4861733 669262 4862062、669717 4862284
Mafendui	9	2	23	670020 4860837、669750 4860287 669295 4860748、669644 4860903
Chaifangqi Orchard	10	2	26	668633 4857724、668445 4859223 668274 4859745、668468 4859957
Chaifangqi Orchard	10	6	17	668718 4859238、668003 4858443 667895 4858934、668255 4859742
Changlazi	11	15	27	670954 4859354、670849 4859006 670259 4859717、670305 4859855
Sunhaishendi	11	18	16	671345 4859021、670728 4858487 670186 4858529、671054 4859062
LinchangXishan	12	7	14	671547 4858043、671438 4857680 670879 4858033、671161 4858241
Paotai	13	23	22	667799 4857332、667042 4856715 666937 4856935、667596 4857505
Paotai	13	28	19	667398 4856253、666424 4855863 666427 4856040、667397 4856337
LinchangNanshan	14	3	45	667229 4854819、666540 4854569 666391 4855044、667253 4855141
Changlazi	16	11	20	667286 4853787、666294 4853318 666268 4853494、667080 4853985
Erpaichanggou	17	12	29	667036 4853331、667216 4852971 666527 4853121、666975 4853638
Gaoliwo	18	6	16	667549 4852517、666921 4852228 666536 4852560、666966 4852834
Caiying Ridge	19	9	23	666484 4852165、666125 4851823 666002 4851923、666266 4852572
Zhangyongfu Valley	20	20	14	666859 4852175、666386 4851574 665931 4851685、666430 4852568
Zhangyongfu Valley	20	35	31	666498 4851435、666401 4850951 665964 4851547、666656 4851871
Xiaobudui	24	1	20	667383 4851872、667030 4851649 666675 4851755、667603 4852345
Yingmen Mountain	26	3	25	667717 4852103、666998 4851253 666562 4851389、667672 4852308
Yingmen Mountain	26	6	25	667467 4851168、667302 4850975 666559 4851204、667202 4851362
Yingmen Mountain	26	7	18	668814 4851876、668647 4851544 668158 4852549、668254 4853076
Yingmen Mountain	26	13	31	671147 4851317、670532 4850797 670116 4851219、670079 4851615
Banzifang	28	5	28	669427 4851173、669088 4849910 668722 4850930、669065 4851207

Geographical location	Forest compartment	Sub-compartment	Area (hectare)	Scope and coordinates
Banzifang	28	6	25	669930 4870992、669022 4869682 668921 4869729、669904 4871050
Banzifang	28	7	37	669521 4869109、669442 4868857 669009 4869322、669324 4869411
Banzifang	29	2	23	669718 4868045、669584 4867708 669258 4868271、669436 4868534
Banzifang	29	4	14	669813 4867452、669366 4867213 669057 4867960、668844 4868765
Banzifang	29	7	33	671967 4869216、671507 4868522 671297 4868996、671680 4869305
Banzifang	29	8	22	669128 4870228、668485 4869187 668202 4869544、669122 4870304
Banzifang	30	9	9	668486 4868467、668210 4867660 667736 4868009、667869 4868685
HongxingXishan	31	21	27	668880 4868524、668894 4868304 668628 4868377、668764 4869202
HongxingXishan	31	23	43	669092 4867879、668721 4867855 668572 4868103、668628 4868372
HongxingXishan	31	26	50	669359 4867199、669124 4866957 668487 4867728、668532 4867847
HongxingXishan	31	27	22	672412 4868145、671731 4867356 671686 4868011、672171 4868641
HongxingXishan	31	31	16	672623 4867750、672476 4867472 672137 4867604、672252 4868013
HongxingXishan	31	32	24	672528 4867374、672428 4866987 671735 4867350、672105 4867550
Sirenban	32	3	11	672397 4866986、672074 4866621 671872 4866969、672000 4867073

Attached Table 1.2 Information Table of Forest Sub-compartments of Tiger-friendly Forest Tending Lands in the Project Area of Heilongjiang Forest Industry Group (Dongning County)

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
Hancong River	8	1	11.8	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	2	19.4	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	3	17.2	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	4	10.0	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	5	14.0	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	6	16.2	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	7	18.2	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	8	18.4	Natural	General public welfare forest	Oak	Young growth
Hancong	8	9	16.2	Natu	General	Oak	Young

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
River				ral	public welfare forest		growth
Hancong River	8	10	6.4	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	11	11.8	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	12	12.4	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	13	9.6	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	14	3.0	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	15	6.8	Natural	General public welfare forest	Larch	Young growth
Hancong River	8	16	16.2	Natural	General public welfare forest	Maple albizia	Young growth
Hancong River	8	17	8.6	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	18	5.8	Natural	General public	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Hancong River	8	19	9.4	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	20	15.2	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	21	12.2	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Hancong River	8	22	10.6	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	23	13.4	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	24	11.6	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	25	13.0	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	26	12.8	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	27	17.8	Natural	General public	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Hancong River	8	28	20.0	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	29	10.4	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	30	15.0	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	31	14.4	Natural	General public welfare forest	Oak	Young growth
Hancong River	8	32	17.2	Natural	General public welfare forest	Oak	Young growth
Hancong River	9	7	12.0	Natural	General public welfare forest	Maple albizia	Young growth
Hancong River	9	8	7.4	Natural	General public welfare forest	Oak	Young growth
Hancong River	9	10	11.0	Natural	General public welfare forest	Oak	Young growth
Hancong River	9	11	9.6	Natural	General public welfare	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					forest		
Hancong River	9	12	19.8	Natural	General public welfare forest	Maple albizia	Young growth
Hancong River	9	13	13.6	Natural	General public welfare forest	Maple albizia	Young growth
Hancong River	9	14	3.8	Natural	General public welfare forest	Oak	Young growth
Hancong River	9	16	12.4	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Hancong River	9	17	10.8	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Hancong River	9	18	11.6	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Hancong River	9	19	10.8	Natural	General public welfare forest	Oak	Young growth
Hancong River	9	20	8.2	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
Hancong River	9	21	14.8	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Hancong River	9	22	15.6	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Hancong River	9	23	18.0	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Hancong River	9	24	3.6	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Hancong River	9	27	13.6	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Hancong River	9	28	12.6	Natural	General public welfare forest	Maple albizia	Young growth
Hancong River	9	29	15.2	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Hancong River	9	30	14.0	Natural	General public welfare	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					forest		
Hancong River	9	31	15.8	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Hancong River	9	32	3.8	Natural	General public welfare forest	Larch	Young growth
Hancong River	9	33	11.8	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Hancong River	47	30	14.8	Natural	General public welfare forest	Oak	Young growth
Hancong River	51	4	11.4	Natural	General public welfare forest	White birch	Young growth
Hancong River	51	5	7.6	Natural	General public welfare forest	White birch	Young growth
Hancong River	51	6	3.8	Natural	General public welfare forest	White birch	Young growth
Hancong River	51	7	2.2	Natural	General public welfare forest	Larch	Young growth
Hancong River	51	8	12.0	Natural	General public	White birch	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Hancong River	51	9	1.2	Natural	General public welfare forest	Larch	Young growth
Hancong River	51	10	3.8	Natural	General public welfare forest	White birch	Young growth
Hancong River	52	50	3.0	Artificial	General public welfare forest	Larch	Young growth
Huangsong	2	20	4.2	Natural	General public welfare forest	White birch	Young growth
Huangsong	2	22	1.0	Natural	General public welfare forest	White birch	Young growth
Huangsong	2	23	10.0	Natural	General public welfare forest	Maple albizia	Young growth
Huangsong	2	24	13.4	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Huangsong	2	25	7.6	Natural	General public welfare forest	Oak	Young growth
Huangsong	2	26	19.8	Natural	General public	Basswood	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest	(Amur Linden)	
Huangson g	2	27	14.2	Natural	General public welfare forest	Fir	Young growth
Huangson g	2	28	13.6	Natural	General public welfare forest	Korean pine	Young growth
Huangson g	2	29	5.4	Natural	General public welfare forest	White birch	Young growth
Huangson g	2	30	9.2	Natural	General public welfare forest	Fir	Young growth
Huangson g	2	31	15.4	Natural	General public welfare forest	Fir	Young growth
Huangson g	2	32	17.8	Natural	General public welfare forest	White birch	Young growth
Huangson g	2	33	19.6	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Huangson g	3	3	13.8	Natural	General public welfare forest	Oak	Young growth
Huangson	3	4	9.2	Natu	General	Oak	Young

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
g				ral	public welfare forest		growth
Huangson g	3	5	11.2	Natural	General public welfare forest	Oak	Young growth
Huangson g	3	6	10.2	Natural	General public welfare forest	Oak	Young growth
Huangson g	3	7	13.8	Natural	General public welfare forest	Maple albizia	Young growth
Huangson g	3	8	8.2	Natural	General public welfare forest	Fir	Young growth
Huangson g	3	9	12.2	Natural	General public welfare forest	Oak	Young growth
Huangson g	3	10	19.4	Natural	General public welfare forest	Korean pine	Young growth
Huangson g	3	11	8.0	Natural	General public welfare forest	Fir	Young growth
Huangson g	3	12	18.0	Natural	General public welfare forest	Fir	Young growth
Huangson g	3	13	12.2	Natural	General public	Ash tree	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Huangson g	3	14	8.6	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Huangson g	3	15	15.2	Natural	General public welfare forest	Fir	Young growth
Huangson g	3	16	14.6	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Huangson g	3	17	17.2	Natural	General public welfare forest	Larch	Young growth
Huangson g	18	20	10.0	Natural	General public welfare forest	Korean pine	Young growth
Huangson g	18	21	13.0	Natural	General public welfare forest	Spruce	Young growth
Huangson g	18	22	13.0	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Huangson g	18	23	17.4	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
)	
Huangson g	18	24	16.6	Natural	General public welfare forest	Fir	Young growth
Huangson g	18	25	12.8	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Huangson g	18	26	15.2	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Huangson g	18	27	7.2	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Huangson g	18	28	12.0	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Huangson g	18	29	6.6	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Huangson g	18	30	10.4	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Huangson g	18	31	10.8	Natural	General public	Ribbed birch	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Huangson g	18	32	16.8	Natural	General public welfare forest	Maple albizia	Young growth
Huangson g	18	33	8.2	Natural	General public welfare forest	Korean pine	Young growth
Huangson g	23	25	7.2	Artificial	General public welfare forest	Larch	Young growth
Huangson g	23	26	9.8	Natural	General public welfare forest	White birch	Young growth
Huangson g	23	27	14.6	Natural	General public welfare forest	Fir	Young growth
Huangson g	23	28	5.2	Natural	General public welfare forest	Oak	Young growth
Huangson g	23	29	12.6	Natural	General public welfare forest	Oak	Young growth
Huangson g	23	30	16.2	Natural	General public welfare forest	Oak	Young growth
Huangson g	23	31	6.0	Natural	General public welfare	Korean pine	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					forest		
Huangsong	23	32	10.0	Natural	General public welfare forest	Fir	Young growth
Huangsong	23	33	14.6	Natural	General public welfare forest	Fir	Young growth
Huangsong	23	34	18.2	Natural	General public welfare forest	Korean pine	Young growth
Huangsong	23	35	18.6	Natural	General public welfare forest	Oak	Young growth
Huichuan	22	1	13.0	Natural	General public welfare forest	Oak	Young growth
Huichuan	22	2	13.6	Natural	General public welfare forest	Oak	Young growth
Huichuan	22	3	15.8	Natural	General public welfare forest	Oak	Young growth
Huichuan	22	4	16.0	Natural	General public welfare forest	Oak	Young growth
Huichuan	22	5	12.4	Natural	General public welfare forest	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
Huichuan	22	6	3.4	Artificial	General public welfare forest	Larch	Young growth
Huichuan	22	7	10.4	Artificial	General public welfare forest	Spruce	Young growth
Huichuan	22	8	17.0	Natural	General public welfare forest	Oak	Young growth
Huichuan	22	9	13.6	Natural	General public welfare forest	Oak	Young growth
Huichuan	22	10	12.0	Natural	General public welfare forest	Oak	Young growth
Huichuan	22	11	10.0	Natural	General public welfare forest	Oak	Young growth
Huichuan	22	12	17.8	Natural	General public welfare forest	Oak	Young growth
Huichuan	22	13	18.8	Natural	General public welfare forest	Oak	Young growth
Huichuan	22	14	16.0	Natural	General public welfare forest	Oak	Young growth
Huichuan	22	15	5.0	Natural	General	Oak	Young

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
				Natural	public welfare forest		Young growth
Huichuan	22	16	6.8	Natural	General public welfare forest	Oak	Young growth
Huichuan	22	17	18.0	Natural	General public welfare forest	Oak	Young growth
Huichuan	23	1	17.6	Natural	General public welfare forest	Oak	Young growth
Huichuan	23	2	14.0	Natural	General public welfare forest	Oak	Young growth
Huichuan	23	3	14.4	Natural	General public welfare forest	Oak	Young growth
Huichuan	23	4	17.8	Natural	General public welfare forest	Oak	Young growth
Huichuan	23	6	19.2	Natural	General public welfare forest	Oak	Young growth
Huichuan	23	7	11.8	Natural	General public welfare forest	Oak	Young growth
Huichuan	46	1	5.3	Natural	General public	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Huichuan	46	2	5.4	Artificial	General public welfare forest	Spruce	Young growth
Huichuan	46	3	17.8	Artificial	General public welfare forest	Korean pine	Young growth
Huichuan	46	4	13.8	Artificial	General public welfare forest	Spruce	Young growth
Huichuan	46	5	7.8	Natural	General public welfare forest	Oak	Young growth
Huichuan	46	6	14.6	Natural	General public welfare forest	Oak	Young growth
Huichuan	46	7	12.2	Natural	General public welfare forest	Oak	Young growth
Huichuan	46	8	10.8	Artificial	General public welfare forest	Larch	Young growth
Huichuan	46	9	6.8	Natural	General public welfare forest	Oak	Young growth
Huichuan	46	10	15.0	Natural	General public welfare	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					forest		
Huichuan	46	11	9.4	Natural	General public welfare forest	Oak	Young growth
Huichuan	47	1	13.0	Natural	General public welfare forest	Oak	Young growth
Huichuan	47	2	11.8	Natural	General public welfare forest	Oak	Young growth
Huichuan	47	3	12.0	Natural	General public welfare forest	Oak	Young growth
Huichuan	47	4	10.1	Natural	General public welfare forest	Oak	Young growth
Huichuan	47	5	14.4	Natural	General public welfare forest	Oak	Young growth
Huichuan	47	6	1.2	Artificial	General public welfare forest	Larch	Young growth
Huichuan	47	7	5.6	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	10	10	7.4	Artificial	General public welfare forest	Larch	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
Liuqiaogou	10	11	14.8	Artificial	General public welfare forest	Larch	Young growth
Liuqiaogou	10	12	10.2	Artificial	General public welfare forest	Spruce	Young growth
Liuqiaogou	10	13	16.8	Artificial	General public welfare forest	Spruce	Young growth
Liuqiaogou	10	14	17.2	Artificial	General public welfare forest	Spruce	Young growth
Liuqiaogou	10	15	14.2	Artificial	General public welfare forest	Larch	Young growth
Liuqiaogou	10	16	19.2	Artificial	General public welfare forest	Larch	Young growth
Liuqiaogou	10	17	18.8	Artificial	General public welfare forest	Spruce	Young growth
Liuqiaogou	10	18	6.4	Artificial	General public welfare forest	Spruce	Young growth
Liuqiaogou	10	19	14.8	Artificial	General public welfare forest	Larch	Young growth
Liuqiaogou	10	20	15.6	Artif	General	Larch	Young

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
u				icial	public welfare forest		growth
Liuqiaogou	10	21	16.4	Artificial	General public welfare forest	Larch	Young growth
Liuqiaogou	10	22	15.0	Artificial	General public welfare forest	Larch	Young growth
Liuqiaogou	10	23	9.0	Artificial	General public welfare forest	Larch	Young growth
Liuqiaogou	10	24	12.4	Artificial	General public welfare forest	Spruce	Young growth
Liuqiaogou	10	25	13.0	Artificial	General public welfare forest	Larch	Young growth
Liuqiaogou	10	26	7.6	Artificial	General public welfare forest	Spruce	Young growth
Liuqiaogou	13	31	9.6	Artificial	General public welfare forest	Larch	Young growth
Liuqiaogou	13	32	9.0	Artificial	General public welfare forest	Spruce	Young growth
Liuqiaogou	13	33	12.0	Artificial	General public	Spruce	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Liuqiaogou	13	34	16.0	Artificial	General public welfare forest	Korean pine	Young growth
Liuqiaogou	21	20	16.2	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	21	21	12.6	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	21	22	16.8	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	22	5	8.2	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	22	6	8.2	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	22	7	12.0	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	22	8	12.0	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	22	9	13.0	Natural	General public welfare	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					forest		
Liuqiaogou	22	10	13.4	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	22	11	12.0	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	22	12	13.2	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	22	13	15.0	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	22	14	17.2	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	22	15	16.6	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	22	16	18.2	Natural	General public welfare forest	Oak	Young growth
Liuqiaogou	22	17	8.4	Natural	General public welfare forest	Oak	Young growth
Qingshan	8	1	7.8	Natural	General public welfare forest	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
Qingshan	8	2	10.0	Natural	General public welfare forest	Oak	Young growth
Qingshan	8	3	15.8	Natural	General public welfare forest	Oak	Young growth
Qingshan	8	4	13.8	Natural	General public welfare forest	Oak	Young growth
Qingshan	8	5	19.0	Natural	General public welfare forest	Oak	Young growth
Qingshan	8	6	19.2	Natural	General public welfare forest	Oak	Young growth
Qingshan	8	7	11.2	Natural	General public welfare forest	Oak	Young growth
Qingshan	9	1	9.8	Natural	General public welfare forest	Oak	Young growth
Qingshan	9	2	17.4	Natural	General public welfare forest	Oak	Young growth
Qingshan	9	3	12.8	Natural	General public welfare forest	Oak	Young growth
Qingshan	9	4	11.2	Natural	General	Oak	Young

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
				Natural	public welfare forest		Young growth
Qingshan	9	5	13.8	Natural	General public welfare forest	Oak	Young growth
Qingshan	9	6	12.3	Natural	General public welfare forest	Oak	Young growth
Qingshan	22	1	13.0	Natural	General public welfare forest	Oak	Young growth
Qingshan	22	2	6.4	Natural	General public welfare forest	Maple albizia	Young growth
Qingshan	22	3	8.0	Natural	General public welfare forest	Oak	Young growth
Qingshan	22	4	12.6	Natural	General public welfare forest	Oak	Young growth
Qingshan	22	5	8.0	Natural	General public welfare forest	Oak	Young growth
Qingshan	22	6	12.4	Natural	General public welfare forest	Oak	Young growth
Qingshan	23	1	16.2	Natural	General public	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Qingshan	23	2	17.0	Natural	General public welfare forest	Oak	Young growth
Qingshan	23	3	13.0	Natural	General public welfare forest	Oak	Young growth
Qingshan	23	4	11.6	Natural	General public welfare forest	Oak	Young growth
Qingshan	23	5	20.0	Natural	General public welfare forest	Oak	Young growth
Qingshan	23	6	8.6	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Qingshan	23	7	17.0	Natural	General public welfare forest	Oak	Young growth
Qingshan	23	8	4.2	Natural	General public welfare forest	Oak	Young growth
Qingshan	24	1	7.6	Natural	General public welfare forest	Oak	Young growth
Qingshan	26	10	13.4	Natural	General public	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Qingshan	26	11	18.2	Natural	General public welfare forest	Oak	Young growth
Qingshan	26	12	10.6	Natural	General public welfare forest	Oak	Young growth
Qingshan	26	13	3.4	Natural	General public welfare forest	Oak	Young growth
Qingshan	29	6	2.8	Natural	General public welfare forest	Oak	Young growth
Qingshan	29	7	14.8	Natural	General public welfare forest	Oak	Young growth
Qingshan	78	20	9.4	Natural	General public welfare forest	Larch	Young growth
Qingshan	87	25	5.4	Natural	General public welfare forest	Larch	Young growth
Qingshan	87	26	14.0	Natural	General public welfare forest	Larch	Young growth
Qingshan	87	31	16.4	Natural	General public welfare	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					forest		
Qingshan	87	32	13.6	Natural	General public welfare forest	Oak	Young growth
Qingshan	87	33	12.6	Natural	General public welfare forest	Oak	Young growth
Qingshan	87	34	10.0	Natural	General public welfare forest	Oak	Young growth
Qingshan	87	35	10.0	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	38	30	12.2	Natural	General public welfare forest	Poplar	Young growth
Sanjielazi	38	31	19.0	Artificial	General public welfare forest	Spruce	Young growth
Sanjielazi	38	32	8.2	Natural	General public welfare forest	Poplar	Young growth
Sanjielazi	41	10	18.6	Natural	General public welfare forest	White birch	Young growth
Sanjielazi	41	11	15.0	Natural	General public welfare forest	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
Sanjielazi	41	12	14.6	Natural	General public welfare forest	White birch	Young growth
Sanjielazi	41	13	14.8	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	41	14	7.8	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	41	15	13.2	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	41	16	8.0	Natural	General public welfare forest	White birch	Young growth
Sanjielazi	41	17	4.2	Natural	General public welfare forest	Maple albizia	Young growth
Sanjielazi	41	18	4.2	Natural	General public welfare forest	White birch	Young growth
Sanjielazi	41	19	8.2	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	54	2	18.4	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	54	3	10.0	Natu	General	Oak	Young

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
				Natural	public welfare forest		growth
Sanjielazi	54	4	16.2	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	54	6	7.6	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	54	7	13.0	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	54	8	9.8	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	54	9	6.8	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	54	11	19.8	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	54	12	14.4	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	54	13	11.6	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	54	14	16.4	Natural	General public	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Sanjielazi	55	25	18.2	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	1	11.2	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	2	13.2	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	3	10.8	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	4	10.6	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	5	15.6	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	6	16.0	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	7	12.8	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	8	11.6	Natural	General public welfare	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					forest		
Sanjielazi	57	9	7.4	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	10	15.0	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	11	5.6	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	12	9.0	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	13	10.2	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	14	19.0	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	15	19.2	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	16	14.4	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	57	17	9.8	Natural	General public welfare forest	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
Sanjielazi	58	21	11.6	Artificial	General public welfare forest	Spruce	Young growth
Sanjielazi	58	22	9.8	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	58	23	7.6	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	58	24	11.2	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	58	25	11.4	Natural	General public welfare forest	Oak	Young growth
Sanjielazi	58	26	13.2	Natural	General public welfare forest	Oak	Young growth
Shuangyazi	20	1	15.0	Natural	General public welfare forest	Oak	Young growth
Shuangyazi	20	2	18.8	Natural	General public welfare forest	Oak	Young growth
Shuangyazi	20	3	5.6	Natural	General public welfare forest	Oak	Young growth
Shuangyazi	20	4	7.8	Natural	General	Oak	Young

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
zi				ral	public welfare forest		growth
Shuangya zi	20	5	5.8	Natural	General public welfare forest	Oak	Young growth
Shuangya zi	20	6	9.2	Natural	General public welfare forest	Oak	Young growth
Shuangya zi	20	7	5.4	Natural	General public welfare forest	Maple albizia	Young growth
Shuangya zi	20	8	17.0	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Shuangya zi	20	9	19.6	Natural	General public welfare forest	Oak	Young growth
Shuangya zi	20	10	8.2	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Shuangya zi	20	11	16.0	Natural	General public welfare forest	Oak	Young growth
Shuangya zi	20	12	16.0	Natural	General public welfare forest	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
Shuangyazi	20	13	18.0	Natural	General public welfare forest	White birch	Young growth
Shuangyazi	20	14	16.2	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Shuangyazi	20	15	18.8	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Shuangyazi	20	16	10.0	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Shuangyazi	20	17	7.6	Natural	General public welfare forest	Maple albizia	Young growth
Shuangyazi	20	18	17.6	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Shuangyazi	20	19	10.8	Natural	General public welfare forest	Maple albizia	Young growth
Shuangyazi	20	20	4.2	Artificial	General public welfare forest	Korean pine	Young growth
Shuangyazi	20	21	6.4	Natural	General	Oak	Young

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
zi				ral	public welfare forest		growth
Shuangya zi	20	22	13.8	Natural	General public welfare forest	Maple albizia	Young growth
Shuangya zi	20	23	7.8	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Shuangya zi	20	24	11.0	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Shuangya zi	20	25	13.4	Natural	General public welfare forest	Maple albizia	Young growth
Shuangya zi	20	26	7.4	Natural	General public welfare forest	Oak	Young growth
Shuangya zi	20	27	14.8	Natural	General public welfare forest	Oak	Young growth
Shuangya zi	20	28	11.6	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Shuangya zi	20	29	12.2	Natural	General public welfare	Basswood (Amur	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					forest	Linden)	
Shuangyazi	20	30	10.6	Natural	General public welfare forest	Maple albizia	Young growth
Shuangyazi	20	31	9.6	Natural	General public welfare forest	Oak	Young growth
Shuangyazi	20	32	17.4	Natural	General public welfare forest	Oak	Young growth
Shuangyazi	20	33	7.8	Natural	General public welfare forest	Oak	Young growth
Shuangyazi	20	34	15.0	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Shuangyazi	20	35	13.8	Natural	General public welfare forest	Maple albizia	Young growth
Shuangyazi	20	36	8.8	Natural	General public welfare forest	Maple albizia	Young growth
Shuangyazi	20	37	19.6	Natural	General public welfare forest	Oak	Young growth
Shuangyazi	20	38	13.4	Natural	General public	Basswood	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest	(Amur Linden)	
Shuangyazi	20	39	12.2	Natural	General public welfare forest	Oak	Young growth
Shuangyazi	21	1	16.4	Natural	General public welfare forest	Oak	Young growth
Shuangyazi	21	2	4.0	Natural	General public welfare forest	Oak	Young growth
Shuangyazi	21	3	5.8	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	1	13.8	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	2	14.2	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	3	16.0	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	4	7.4	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	5	17.4	Natural	General public	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Taipingchuan	73	6	16.6	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	7	17.6	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	8	14.2	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	9	15.0	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	10	10.0	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	11	14.6	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	12	10.4	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	13	10.4	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	14	13.8	Natural	General public welfare	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					forest		
Taipingchuan	73	15	12.6	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	16	8.6	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	73	17	3.8	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	82	1	16.8	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	82	3	13.4	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	86	1	4.8	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	86	2	9.2	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	86	3	13.4	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	86	4	17.2	Natural	General public welfare forest	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
Taipingchuan	86	5	15.4	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	86	6	14.0	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	86	7	13.2	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	86	8	13.6	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	86	9	6.0	Natural	General public welfare forest	Oak	Young growth
Taipingchuan	86	10	12.2	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	103	20	19.8	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	103	21	17.4	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	103	22	11.0	Natural	General public welfare forest	Oak	Young growth
Wanbaow	103	23	15.8	Natu	General	Oak	Young

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
an				ral	public welfare forest		growth
Wanbaowan	103	24	18.8	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	103	25	13.0	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	103	26	4.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	103	27	11.0	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	103	28	15.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	103	29	14.0	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	103	30	9.4	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	103	31	10.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	103	32	10.0	Natural	General public	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Wanbaowan	109	1	16.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	109	2	11.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	109	3	19.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	110	1	18.8	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	110	2	11.4	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	110	3	18.0	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	110	4	17.2	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	110	5	7.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	110	6	16.2	Natural	General public welfare	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					forest		
Wanbaowan	110	7	10.0	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	110	8	16.0	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	110	9	16.4	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	110	10	5.4	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	111	1	16.4	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	111	2	17.0	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	111	3	14.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	111	4	14.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	111	5	18.0	Natural	General public welfare forest	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
Wanbaowan	111	6	19.8	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	111	7	16.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	111	8	15.4	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	111	9	16.4	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	111	10	19.0	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	111	16	18.2	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	111	17	17.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	111	18	8.4	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	111	19	6.6	Natural	General public welfare forest	Oak	Young growth
Wanbaow	112	1	12.4	Natu	General	Oak	Young

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
an				ral	public welfare forest		growth
Wanbaowan	112	2	15.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	3	15.8	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	4	9.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	5	16.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	6	13.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	7	11.8	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	8	16.8	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	9	13.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	10	10.6	Natural	General public	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Wanbaowan	112	11	19.4	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	12	13.0	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	13	19.4	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	14	18.8	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	15	15.4	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	16	15.8	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	17	11.6	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	18	16.0	Natural	General public welfare forest	Oak	Young growth
Wanbaowan	112	19	9.6	Natural	General public welfare	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					forest		
Yuanshan	25	4	19.4	Natural	General public welfare forest	White birch	Young growth
Yuanshan	25	5	13.0	Natural	General public welfare forest	Oak	Young growth
Yuanshan	25	6	7.6	Natural	General public welfare forest	Oak	Young growth
Yuanshan	25	7	12.2	Natural	General public welfare forest	Oak	Young growth
Yuanshan	25	8	9.6	Natural	General public welfare forest	Oak	Young growth
Yuanshan	26	1	10.4	Natural	General public welfare forest	Maple albizia	Young growth
Yuanshan	26	2	12.0	Natural	General public welfare forest	Maple albizia	Young growth
Yuanshan	26	3	8.0	Natural	General public welfare forest	Maple albizia	Young growth
Yuanshan	28	1	13.4	Natural	General public welfare forest	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
Yuanshan	28	2	9.0	Natural	General public welfare forest	Oak	Young growth
Yuanshan	28	3	7.6	Natural	General public welfare forest	Oak	Young growth
Yuanshan	28	4	8.6	Natural	General public welfare forest	Oak	Young growth
Yuanshan	28	5	17.0	Natural	General public welfare forest	Oak	Young growth
Yuanshan	28	6	7.0	Natural	General public welfare forest	Oak	Young growth
Yuanshan	28	7	11.6	Natural	General public welfare forest	Oak	Young growth
Yuanshan	28	8	9.0	Natural	General public welfare forest	Oak	Young growth
Yuanshan	29	31	15.2	Natural	General public welfare forest	Oak	Young growth
Yuanshan	29	32	13.8	Natural	General public welfare forest	Larch	Young growth
Yuanshan	29	33	11.2	Natural	General	Oak	Young

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
				Natural	public welfare forest		Young growth
Yuanshan	40	1	7.8	Natural	General public welfare forest	Oak	Young growth
Yuanshan	40	2	11.8	Natural	General public welfare forest	Oak	Young growth
Yuanshan	40	3	5.2	Natural	General public welfare forest	Oak	Young growth
Yuanshan	40	4	13.0	Natural	General public welfare forest	Oak	Young growth
Yuanshan	40	5	11.4	Natural	General public welfare forest	Oak	Young growth
Yuanshan	40	6	14.6	Natural	General public welfare forest	Oak	Young growth
Yuanshan	40	7	12.8	Natural	General public welfare forest	Oak	Young growth
Yuanshan	40	8	11.4	Natural	General public welfare forest	Oak	Young growth
Yuanshan	40	9	12.0	Natural	General public	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Yuanshan	52	30	4.8	Artificial	General public welfare forest	Larch	Young growth
Yuanshan	52	31	13.8	Artificial	General public welfare forest	Larch	Young growth
Yuanshan	52	32	14.0	Artificial	General public welfare forest	Larch	Young growth
Yuanshan	52	33	13.8	Natural	General public welfare forest	Oak	Young growth
Yuanshan	52	34	10.2	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Yuanshan	53	15	14.0	Natural	General public welfare forest	Oak	Young growth
Yuanshan	53	16	18.6	Natural	General public welfare forest	Oak	Young growth
Yuanshan	53	17	9.8	Natural	General public welfare forest	Oak	Young growth
Yuanshan	53	18	7.2	Natural	General public	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Yuanshan	53	19	16.8	Artificial	General public welfare forest	Larch	Young growth
Yuanshan	53	20	2.6	Artificial	General public welfare forest	Larch	Young growth
Yuanshan	53	21	3.6	Natural	General public welfare forest	Oak	Young growth
Yuanshan	53	22	11.0	Artificial	General public welfare forest	Spruce	Young growth
Yuanshan	53	23	16.8	Artificial	General public welfare forest	Spruce	Young growth
Yuanshan	53	24	10.2	Artificial	General public welfare forest	Spruce	Young growth
Yuanshan	53	25	15.2	Natural	General public welfare forest	Oak	Young growth
Yuanshan	53	26	5.8	Natural	General public welfare forest	Oak	Young growth
Zhonggulu	1	1	11.2	Natural	General public welfare	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					forest		
Zhongguli u	1	2	11.2	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	1	3	9.0	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	1	4	16.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	1	5	11.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	1	6	17.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	1	7	13.6	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	1	8	10.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	1	9	11.6	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	1	10	14.4	Natural	General public welfare forest	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
Zhongguli u	1	11	6.0	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	1	12	11.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	2	1	12.0	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	2	2	17.2	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	2	3	5.6	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	2	4	5.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	2	5	13.2	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	2	6	13.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	2	7	11.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli	2	8	13.2	Natu	General	Oak	Young

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
u				Natural	public welfare forest		growth
Zhongguli u	2	9	11.0	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	2	10	13.4	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	2	11	10.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	2	12	13.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	2	13	18.0	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	2	14	17.0	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	4	1	14.2	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	4	2	14.0	Artificial	General public welfare forest	Spruce	Young growth
Zhongguli u	4	3	9.4	Natural	General public	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Zhongguli u	4	4	15.6	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	4	5	12.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	5	2	17.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	5	3	15.0	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	5	4	6.4	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	5	5	14.4	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	5	6	12.4	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	5	7	10.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	5	8	17.4	Natural	General public welfare	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					forest		
Zhongguli u	5	9	10.6	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	5	10	10.0	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	5	11	9.8	Artificial	General public welfare forest	Spruce	Young growth
Zhongguli u	5	12	13.2	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	5	13	13.8	Artificial	General public welfare forest	Spruce	Young growth
Zhongguli u	5	14	11.8	Artificial	General public welfare forest	Spruce	Young growth
Zhongguli u	15	5	18.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	15	6	16.6	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	15	7	6.2	Natural	General public welfare forest	Oak	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
Zhongguli u	31	2	9.4	Natural	General public welfare forest	Spruce	Young growth
Zhongguli u	31	3	15.0	Artificial	General public welfare forest	Spruce	Young growth
Zhongguli u	31	4	8.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	31	5	6.8	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	31	6	15.4	Artificial	General public welfare forest	Spruce	Young growth
Zhongguli u	31	7	14.4	Artificial	General public welfare forest	Spruce	Young growth
Zhongguli u	31	8	14.0	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	31	9	5.6	Natural	General public welfare forest	Oak	Young growth
Zhongguli u	39	7	16.2	Natural	General public welfare forest	Larch	Young growth
Zhongguli	39	8	20.0	Natu	General	Larch	Young

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
u				Natural	public welfare forest		growth
Zhongguli u	39	9	18.6	Natural	General public welfare forest	Larch	Young growth
Zhongguli u	39	10	13.0	Natural	General public welfare forest	Larch	Young growth
Zhongguli u	39	11	11.2	Natural	General public welfare forest	Korean pine	Young growth
Zhongguli u	39	12	15.4	Natural	General public welfare forest	Larch	Young growth
Zhongguli u	39	13	6.2	Natural	General public welfare forest	Larch	Young growth
Zhongguli u	39	14	15.0	Natural	General public welfare forest	Larch	Young growth
Zhongguli u	39	15	12.6	Natural	General public welfare forest	Larch	Young growth
Zhongguli u	39	16	14.6	Natural	General public welfare forest	Larch	Young growth
Zhongguli u	39	18	10.2	Natural	General public	Larch	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					welfare forest		
Zhongguli u	39	19	19.0	Natural	General public welfare forest	Larch	Young growth
Zhongguli u	39	20	5.8	Natural	General public welfare forest	Larch	Young growth
Zhongguli u	40	21	11.8	Natural	General public welfare forest	Fir	Young growth
Zhongguli u	40	22	8.0	Natural	General public welfare forest	Fir	Young growth
Zhongguli u	40	25	19.9	Natural	General public welfare forest	Larch	Young growth
Zhongguli u	40	31	13.2	Natural	General public welfare forest	Larch	Young growth
Zhongguli u	40	33	7.2	Natural	General public welfare forest	Larch	Young growth
Zhongguli u	40	34	16.0	Natural	General public welfare forest	Larch	Young growth
Zhongguli u	40	35	13.2	Natural	General public welfare	Larch	Young growth

Forest farm (station)	Forest compartment	Sub-compartment	Area (hectare)	Origin	Management Area	Tree Variety	Age Group
					forest		
Zhonggulu	40	36	18.8	Natural	General public welfare forest	Larch	Young growth
Zhonggulu	40	38	5.0	Natural	General public welfare forest	Basswood (Amur Linden)	Young growth
Zhonggulu	40	39	14.2	Natural	General public welfare forest	Larch	Young growth
Zhonggulu	40	40	15.6	Natural	General public welfare forest	Larch	Young growth
Zhonggulu	40	41	16.8	Natural	General public welfare forest	Larch	Young growth

Attached Table 1.3 Sub-compartments Information Table of Tiger-friendly Forest Tending Lands in the Project Area of Heilongjiang Forest Industry Group (Muling City)

Lincha ng	Fore st com part ment	Sub-com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
Dongxi ng	012 B	16	21.4	Natural	General public welfare forest	Basswo od (Amur Linden)	Young growth
Dongxi ng	037 B	1	15.4	Natural	General public welfare forest	Basswo od (Amur Linden)	Young growth
Dongxi ng	037 B	6	25.8	Natural	General public welfare forest	Basswo od (Amur Linden)	Young growth
Dongxi ng	037 B	13	13.8	Natural	General public welfare forest	Basswo od (Amur Linden)	Young growth
Dongxi ng	037 B	15	16.8	Natural	General public welfare forest	Basswo od (Amur Linden)	Young growth
Dongxi ng	037 B	19	12.6	Natural	General public welfare forest	Basswo od (Amur Linden)	Young growth
Dongxi ng	037 B	20	15.6	Natural	General public	Ribbed birch	Young growth

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
					welfare forest		
Dongxi ng	037 B	25	18.6	Natural	General public welfare forest	Maple albizia	Young growth
Dongxi ng	050 B	1	3.4	Natural	General public welfare forest	Korean pine	Young growth
Dongxi ng	050 B	2	10	Natural	General public welfare forest	Larch	Young growth
Dongxi ng	050 B	3	25	Natural	General public welfare forest	White birch	Young growth
Dongxi ng	050 B	4	63	Natural	General public welfare forest	Fir	Young growth
Dongxi ng	050 B	5	29	Natural	General public welfare forest	Oak	Young growth
Dongxi ng	050 B	6	41	Natural	General public welfare forest	Oak	Young growth
Dongxi ng	050 B	7	41	Natural	General public welfare forest	Oak	Young growth
Dongxi ng	050 B	8	46	Natural	General public welfare	Korean pine	Young growth

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
					forest		
Dongxi ng	050 B	13	35	Natural	General public welfare forest	Fir	Young growth
Huashu River	003F	2	10.8	Natural	General public welfare forest	Fir	Young growth
Huashu River	003F	7	25	Natural	General public welfare forest	Korean pine	Young growth
Huashu River	003F	8	25	Natural	General public welfare forest	Oak	Young growth
Huashu River	003F	9	25	Natural	General public welfare forest	Oak	Young growth
Huashu River	003F	10	20.2	Natural	General public welfare forest	Oak	Young growth
Huashu River	003F	1	8.6	Natural	General public welfare forest	Oak	Young growth
Huashu River	003F	3	25	Natural	General public welfare forest	Oak	Young growth
Huashu River	005F	1	12	Natural	General public welfare forest	Oak	Young growth

Lincha ng	Fore st com part ment	Sub-com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
Huashu River	005F	2	11.8	Natural	General public welfare forest	Larch	Young growth
Huashu River	006F	4	25	Natural	General public welfare forest	Spruce	Young growth
Huashu River	006F	5	8	Natural	General public welfare forest	Oak	Young growth
Huashu River	006F	9	25	Natural	General public welfare forest	Oak	Young growth
Huashu River	008F	1	25	Natural	General public welfare forest	Oak	Young growth
Huashu River	008F	2	10.8	Natural	General public welfare forest	Oak	Young growth
Huashu River	008F	3	22	Natural	General public welfare forest	Oak	Young growth
Huashu River	008F	4	24	Natural	General public welfare forest	Oak	Young growth
Huashu River	008F	5	25	Natural	General public welfare forest	Oak	Young growth
Huashu	008F	6	22	Natural	General	Oak	Young

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
River					public welfare forest		growth
Huashu River	008F	7	23	Natural	General public welfare forest	Oak	Young growth
Huashu River	008F	8	24	Natural	General public welfare forest	Oak	Young growth
Huashu River	008F	13	25	Natural	General public welfare forest	Oak	Young growth
Huashu River	045F	1	6	Natural	General public welfare forest	Oak	Young growth
Huashu River	045F	4	7.8	Natural	General public welfare forest	Oak	Young growth
Huashu River	045F	5	25	Natural	General public welfare forest	Oak	Young growth
Huashu River	045F	6	22	Natural	General public welfare forest	Oak	Young growth
Huashu River	045F	7	25	Natural	General public welfare forest	Oak	Young growth
Huashu River	045F	8	25	Natural	General public	Oak	Young growth

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
					welfare forest		
Huashu River	045F	9	16	Natural	General public welfare forest	Spruce	Young growth
Huashu River	045F	10	25	Natural	General public welfare forest	Korean pine	Young growth
Huashu River	046F	1	13.2	Natural	General public welfare forest	Spruce	Young growth
Huashu River	046F	2	22	Natural	General public welfare forest	Oak	Young growth
Huashu River	046F	3	24	Natural	General public welfare forest	Oak	Young growth
Huashu River	046F	4	18	Natural	General public welfare forest	Oak	Young growth
Huashu River	046F	5	19	Natural	General public welfare forest	Larch	Young growth
Huashu River	046F	6	22	Natural	General public welfare forest	Oak	Young growth
Huashu River	046F	7	25	Natural	General public welfare	Oak	Young growth

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
					forest		
Huashu River	046F	8	25	Natural	General public welfare forest	Oak	Young growth
Huashu River	046F	9	25	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	025 Q	1	18	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	025 Q	1	20	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	025 Q	1	16	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	025 Q	1	16.4	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	025 Q	1	13.8	Natural	General public welfare forest	Larch	Young growth
Shiziqi ao	025 Q	1	13.6	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	025 Q	1	15.8	Natural	General public welfare forest	Larch	Young growth

Lincha ng	Fore st com part ment	Sub-com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
Shiziqi ao	025 Q	3	11.4	Natural	General public welfare forest	Larch	Young growth
Shiziqi ao	025 Q	3	16	Natural	General public welfare forest	Spruce	Young growth
Shiziqi ao	025 Q	3	11.6	Natural	General public welfare forest	Spruce	Young growth
Shiziqi ao	025 Q	3	19	Natural	General public welfare forest	Spruce	Young growth
Shiziqi ao	025 Q	5	14.4	Natural	General public welfare forest	Larch	Young growth
Shiziqi ao	025 Q	5	14.6	Natural	General public welfare forest	Larch	Young growth
Shiziqi ao	025 Q	5	15.8	Natural	General public welfare forest	Spruce	Young growth
Shiziqi ao	025 Q	6	15.4	Natural	General public welfare forest	Spruce	Young growth
Shiziqi ao	025 Q	6	15	Natural	General public welfare forest	Larch	Young growth
Shiziqi	028	2	0.8	Artifici	General	Larch	Young

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
ao	Q			al forest	public welfare forest		growth
Shiziqi ao	028 Q	2	0.7	Artifici al forest	General public welfare forest	Larch	Young growth
Shiziqi ao	028 Q	2	0.9	Artifici al forest	General public welfare forest	Larch	Young growth
Shiziqi ao	028 Q	4	1	Artifici al forest	General public welfare forest	Larch	Young growth
Shiziqi ao	030 Q	1	8	Natural	General public welfare forest	Spruce	Young growth
Shiziqi ao	030 Q	1/3	14.8	Natural	General public welfare forest	Larch	Young growth
Shiziqi ao	030 Q	1/3	17	Natural	General public welfare forest	Spruce	Young growth
Shiziqi ao	030 Q	1/7	20	Natural	General public welfare forest	Larch	Young growth
Shiziqi ao	036 Q	13	16.6	Natural	General public welfare forest	Spruce	Young growth
Shiziqi ao	036 Q	28	18.6	Natural	General public	Spruce	Young growth

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
					welfare forest		
Shiziqi ao	036 Q	5	12.4	Natural	General public welfare forest	Korean pine	Young growth
Shiziqi ao	036 Q	6	18.4	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	037 Q	10	9.8	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	037 Q	17	4.6	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	037 Q	17	10.8	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	037 Q	18	10.6	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	037 Q	9	12.4	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	043 Q	1	8	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	043 Q	10	8	Natural	General public welfare	Oak	Young growth

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
					forest		
Shiziqi ao	043 Q	10	17.8	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	043 Q	11	16	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	043 Q	11	10	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	043 Q	12	19	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	043 Q	14	20	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	043 Q	15	16	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	043 Q	16	20	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	043 Q	16	16	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	043 Q	18	14	Natural	General public welfare forest	Oak	Young growth

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
Shiziqi ao	044 Q	11	5.6	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	044 Q	12	17	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	044 Q	12	13	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	044 Q	16	13	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	044 Q	16	10	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	044 Q	16	14	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	044 Q	17	14	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	044 Q	17	20	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	044 Q	17	17	Natural	General public welfare forest	Oak	Young growth
Shiziqi	044	21	15.8	Natural	General	Oak	Young

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
ao	Q				public welfare forest		growth
Shiziqi ao	044 Q	22	18	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	044 Q	23	11.8	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	044 Q	8	11.2	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	048 Q	12	8.8	Natural	General public welfare forest	Maple albizia	Young growth
Shiziqi ao	048 Q	12	14.8	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	048 Q	2	14.8	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	048 Q	3	11.6	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	048 Q	4	15.6	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	048 Q	4	13	Natural	General public	Oak	Young growth

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
					welfare forest		
Shiziqi ao	055 Q	1	14.6	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	055 Q	1	16	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	055 Q	2	15.6	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	055 Q	2	9.6	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	055 Q	3	11	Natural	General public welfare forest	Basswo od (Amur Linden)	Young growth
Shiziqi ao	055 Q	3	13.2	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	055 Q	4	6	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	055 Q	4	9.6	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	055 Q	5	15.8	Natural	General public	Oak	Young growth

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
					welfare forest		
Shiziqi ao	055 Q	5	4.6	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	055 Q	5	17.6	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	055 Q	5	8.4	Natural	General public welfare forest	Oak	Young growth
Shiziqi ao	055 Q	6	18.4	Natural	General public welfare forest	Oak	Young growth
Shuang ning	018 R	6	4.4	Natural	General public welfare forest	Oak	Young growth
Shuang ning	018 R	8	8	Natural	General public welfare forest	Larch	Young growth
Shuang ning	018 R	9	5	Natural	General public welfare forest	Larch	Young growth
Shuang ning	018 R	10	3	Natural	General public welfare forest	Larch	Young growth
Shuang ning	018 R	11	6	Natural	General public welfare	Oak	Young growth

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
					forest		
Shuang ning	018 R	12	11	Natural	General public welfare forest	Oak	Young growth
Shuang ning	018 R	13	10	Natural	General public welfare forest	Oak	Young growth
Shuang ning	018 R	14	5	Natural	General public welfare forest	Oak	Young growth
Shuang ning	018 R	15	9	Natural	General public welfare forest	Oak	Young growth
Shuang ning	019 R	5	20	Natural	General public welfare forest	Poplar	Young growth
Shuang ning	019 R	6	23	Natural	General public welfare forest	Spruce	Young growth
Shuang ning	019 R	7	20.6	Natural	General public welfare forest	Poplar	Young growth
Shuang ning	019 R	8	18	Natural	General public welfare forest	White birch	Young growth
Shuang ning	026 R	3	7	Natural	General public welfare forest	Oak	Young growth

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
Shuang ning	026 R	4	6	Natural	General public welfare forest	White birch	Young growth
Shuang ning	026 R	8	24	Natural	General public welfare forest	Oak	Young growth
Shuang ning	026 R	9	26	Natural	General public welfare forest	Oak	Young growth
Shuang ning	026 R	10	14	Natural	General public welfare forest	Oak	Young growth
Shuang ning	026 R	11	30.2	Natural	General public welfare forest	White birch	Young growth
Shuang ning	027 R	3	9	Natural	General public welfare forest	Maple albizia	Young growth
Shuang ning	027 R	4	3.8	Natural	General public welfare forest	White birch	Young growth
Shuang ning	027 R	5	8	Natural	General public welfare forest	Oak	Young growth
Shuang ning	027 R	6	16.4	Natural	General public welfare forest	Oak	Young growth
Shuang	027	7	11	Natural	General	Oak	Young

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
ning	R				public welfare forest		growth
Shuang ning	027 R	9	25	Natural	General public welfare forest	Oak	Young growth
Shuang ning	045 R	3	15.8	Natural	General public welfare forest	Oak	Young growth
Shuang ning	045 R	4	24.8	Natural	General public welfare forest	Oak	Young growth
Shuang ning	045 R	5	38.4	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	002 V	3	1.6	Artifici al forest	General public welfare forest	Oak	Young growth
Yangm uqiao	002 V	33	1	Artifici al forest	General public welfare forest	Oak	Young growth
Yangm uqiao	010 V	9	0.5	Artifici al forest	General public welfare forest	Oak	Young growth
Yangm uqiao	010 V	10	1.4	Artifici al forest	General public welfare forest	Oak	Young growth
Yangm uqiao	010 V	18	0.4	Artifici al	General public	Oak	Young growth

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
				forest	welfare forest		
Yangm uqiao	018 V	15	1.2	Artifici al forest	General public welfare forest	Oak	Young growth
Yangm uqiao	018 V	3	0.6	Artifici al forest	General public welfare forest	Oak	Young growth
Yangm uqiao	031 V	18	11	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	031 V	19	26	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	031 V	21	23.8	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	031 V	22	16.6	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	035 V	1	32	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	035 V	2	28	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	035 V	3	27	Natural	General public welfare	Oak	Young growth

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
					forest		
Yangm uqiao	035 V	4	10	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	035 V	5	5	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	035 V	17	5	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	035 V	18	7	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	035 V	19	30.8	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	057 V	15	8	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	057 V	17	49	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	057 V	18	10	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	060 V	5	17.4	Natural	General public welfare forest	Oak	Young growth

Lincha ng	Fore st com part ment	Sub-com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
Yangm uqiao	061 V	5	5	Natural	General public welfare forest	Spruce	Young growth
Yangm uqiao	061 V	6	15	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	061 V	7	10	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	061 V	8	6	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	061 V	9	20	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	061 V	11	13	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	061 V	14	11.2	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	061 V	16	19.6	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	064 V	2	18.2	Natural	General public welfare forest	Oak	Young growth
Yangm	064	3	39	Natural	General	Oak	Young

Lincha ng	Fore st com part ment	Sub- com part ment	Area (hectare)	Origin	Managemen t area	Tree variety	Age group
uqiao	V				public welfare forest		growth
Yangm uqiao	064 V	4	27	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	064 V	5	25	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	064 V	8	11	Natural	General public welfare forest	Maple albizia	Young growth
Yangm uqiao	064 V	9	20	Natural	General public welfare forest	Basswo od (Amur Linden)	Young growth
Yangm uqiao	064 V	10	37	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	064 V	11	18	Natural	General public welfare forest	Basswo od (Amur Linden)	Young growth
Yangm uqiao	064 V	12	25	Natural	General public welfare forest	Oak	Young growth
Yangm uqiao	064 V	13	16	Natural	General public welfare forest	Oak	Young growth

Attached Table 1.4 Sub-compartments Information Table of Tiger-friendly Forest Tending Lands in the Project Area of Jilin Province (Wangqing County)

Linchang	Forest compartment	Sub-compartment	Area (hectare)
Dahuanggou	1	1-9	158
Dahuanggou	2	1-14	203
Dahuanggou	3	1-21	256
Dahuanggou	4	1-12	248
Duhuangzi	62	1-14	133
Duhuangzi	63	1-37	194
Duhuangzi	64	1-12	160
Duhuangzi	65	1-31	308
Xinancha	86	1-10	124
Xinancha	87	1-15	160
Xinancha	88	1-23	206
Xinancha	89	1-10	164
Liudao	84	1-15	247
Liudao	85	1-20	291
Jincang	91	1-29	269
Jincang	92	1-16	148
Jincang	93	1-24	160
Jincang	94	1-18	155
Langxi	132	1-15	185
Langxi	133	1-8	138
Langxi	134	1-10	225

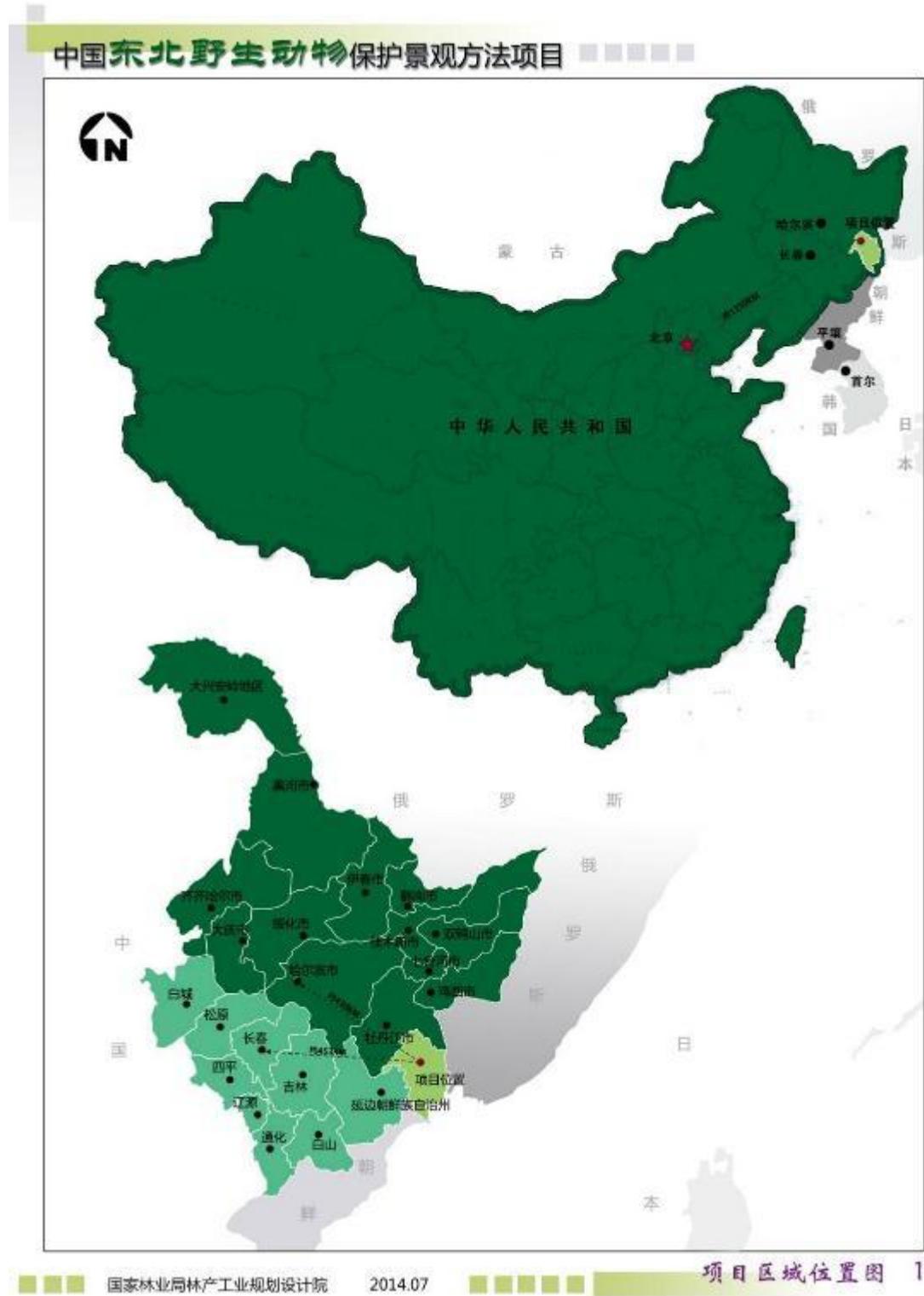
Attached Table 2: Information Table of Forest Sub-compartments of Vegetation Restoration Forestlands

Attached Table 2.1 Information Table of Forest Sub-compartments of Vegetation Restoration in the Project Area of Heilongjiang Provincial Department (Dongning County)

Geographical location	Forest compartment	Sub-compartment	Area (hectare)	Scope and coordinates
Jifanggou	2	15	40	670232 4868673、669790 4868167 669515 4868721、669904 4870080
Tuanjie Forest Farm	3	3	61	669970 4870434、669642 4869489 669055 4869862、669932 4870985
Cilaoyadi	3	27	20	669155 4868601、669533 4867565 669035 4868502、668766 4869314
Tuanjie Forest Farm	5	6	24	6668533 4868912、668497 4868466 667873 4868832、668759 4869553
Daduchuan Ridge	5	26	36	668468 4867283、668197 4866733 667739 4867097、668438 4867600
Xiaomeikou	7	15	54	671476 4868215、670897 4867745 669705 4868104、671275 4868317
Linchang Xishan	12	8	16	669664 4865489、669249 4865103 669111 4865645、669176 4865696
Linchang Xishan	12	11	36	670148 4865301、669702 4864689 669412 4865056、669798 4865475
Linchang Xishan	13	7	24	670931 4865223、670526 4864791 670345 4865397、670644 4865595
Linchang Xishan	13	15	15	670440 4864548、669974 4864276 669798 4864457、670298 4865055
Linchang Xishan	13	16	24	671623 4865949、670269 4863866 670575 4865837、670683 4866005
Paotai	13	33	39	670646 4863886、669738 4863618 669358 4863926、669967 4864253
Caiying Ridge	19	21	20	669300 4861575、669213 4860939 668852 4860805、668858 4861595
Caiying Ridge	20	18	40	670403 4861404、669762 4861123 669493 4861736、669923、4862141

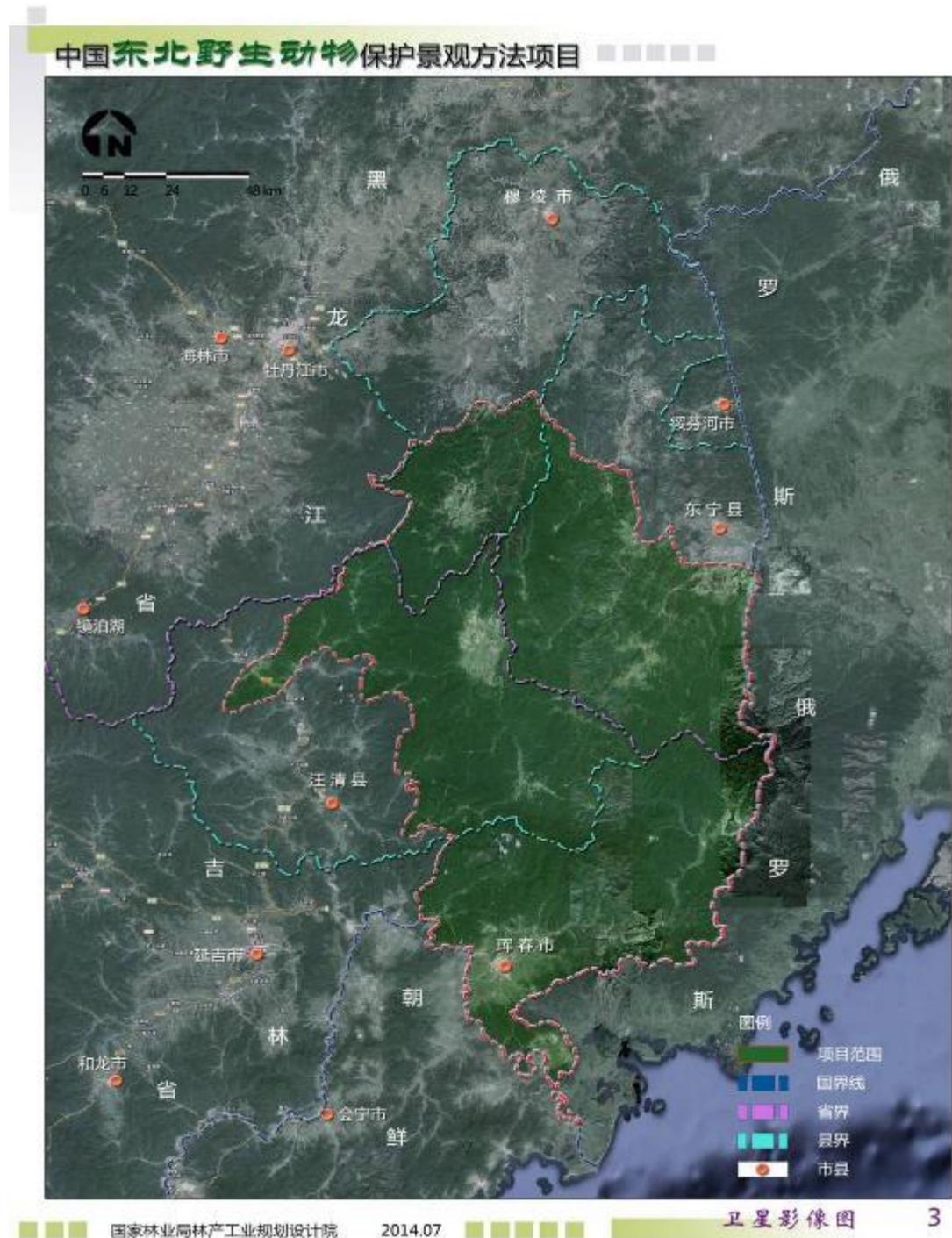
Geographical location	Forest compartment	Sub-compartment	Area (hectare)	Scope and coordinates
Erpaichan ggou	21	18	20	671950 4862019、671394 4861776 670726 4861102、670818 4862180
Erpaichan ggou	21	23	22	672443 4861910、672183 4861618 671518 4861751、672184 4862059
Sirenban	33	14	9	668006 4856297、667901 4856234 667684 4856480、667778 4856881

Landscape Approach to Wildlife Conservation in Northeast China Project
 The Project Location Map



Landscape Approach to Wildlife Conservation in Northeast China Project

The Satellite Image Map



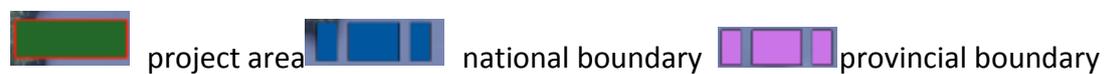
Legend

-  project area
-  national boundary
-  provincial boundary
-  county boundary
-  city or county

Landscape Approach to Wildlife Conservation in Northeast China Project
The Topographic Map



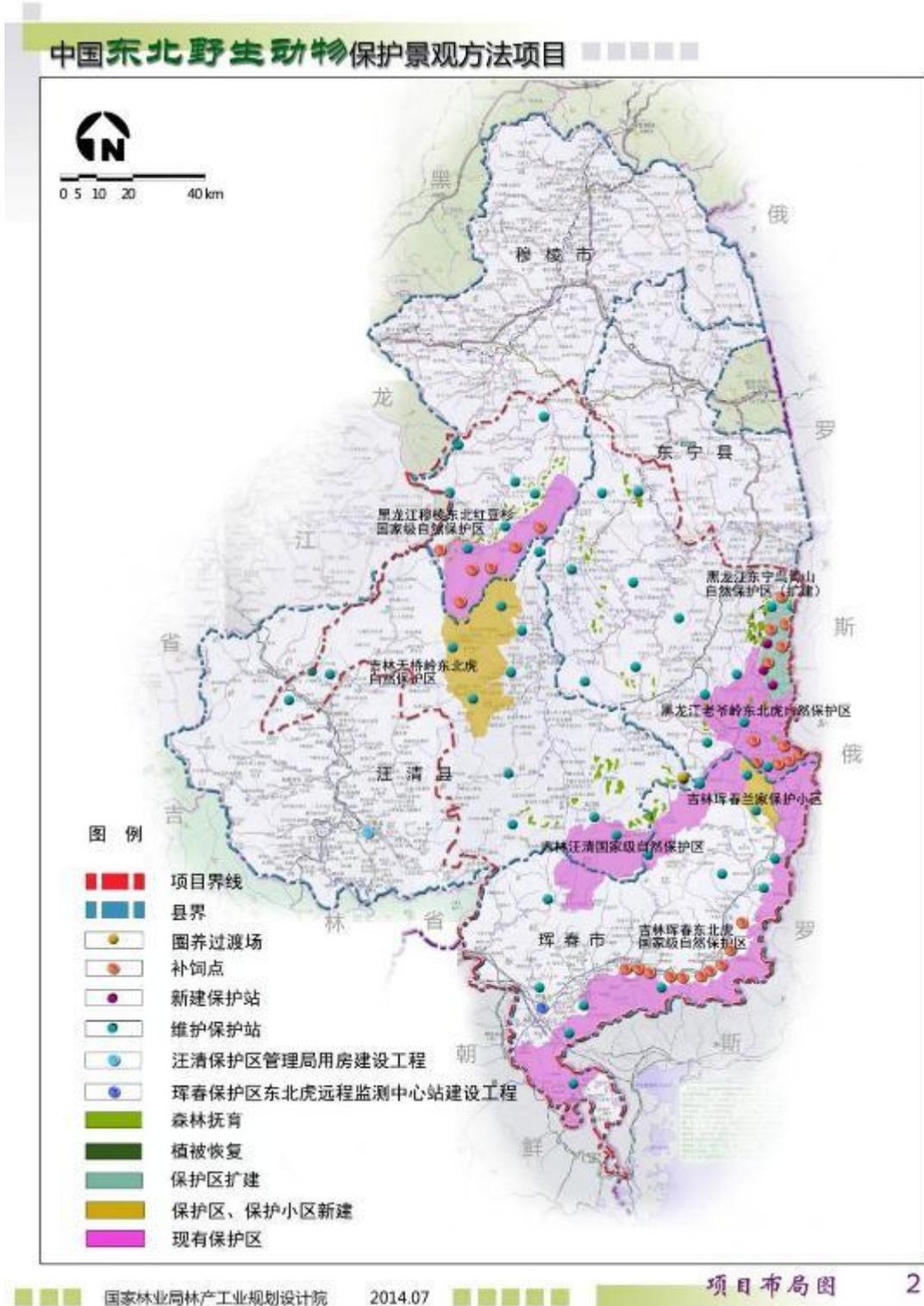
Legend



 county boundary
  city or county

Landscape Approach to Wildlife Conservation in Northeast China Project

The Project Layout Map



Legend

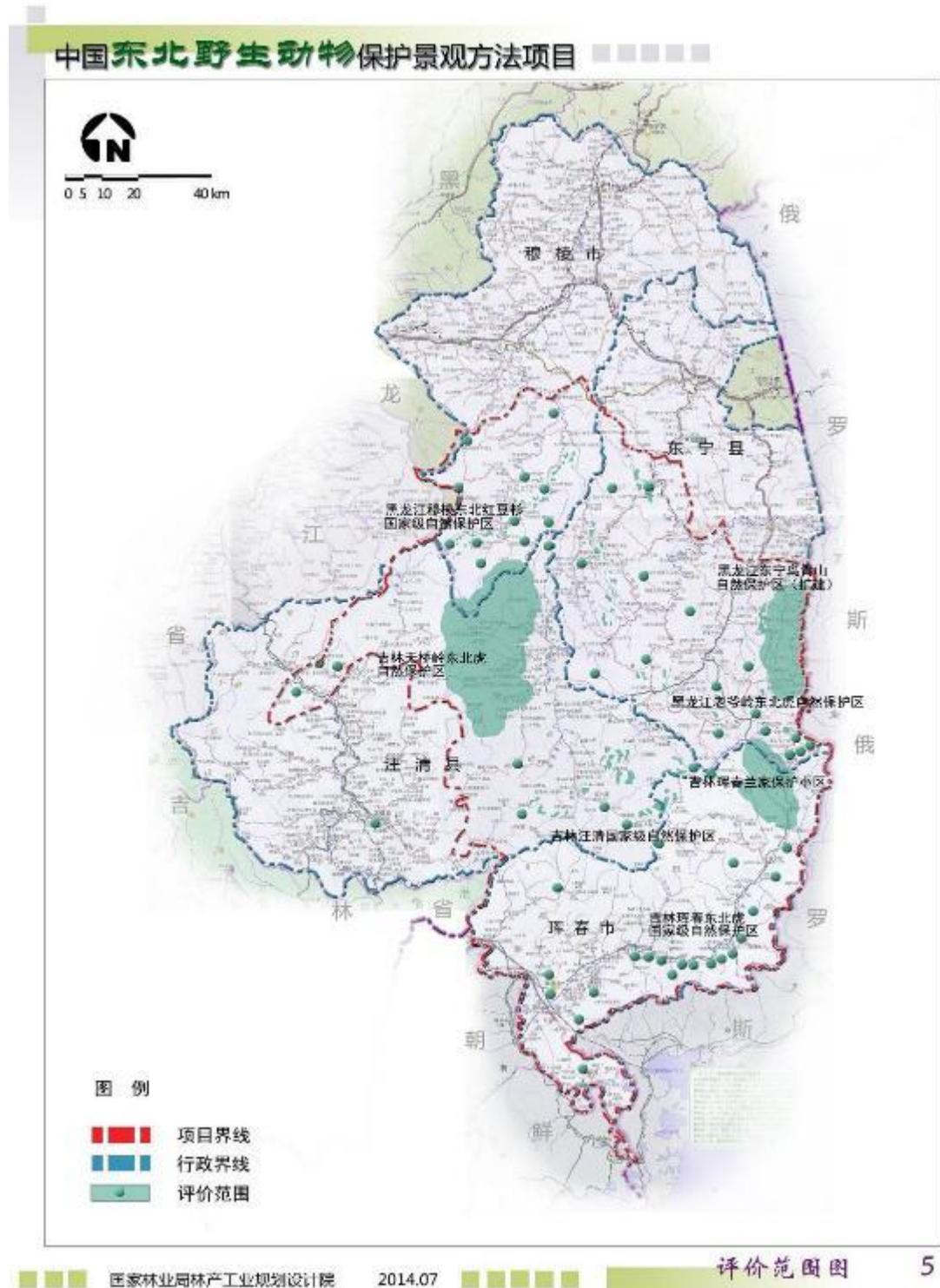
-  project boundary
-  county boundary
-  transitional enclosure
-  supplementary feeding station
-  newly-built protection station
-  maintained protection station
-  building construction of Wangqing Reserve Authority
-  Hunchun Reserve the Siberian Tiger Remote Monitoring Station

Construction

-  forest tending
-  vegetation recovery
-  reserve expansion
-  new construction of reserve and protection area
-  existing reserve

Landscape Approach to Wildlife Conservation in Northeast China Project

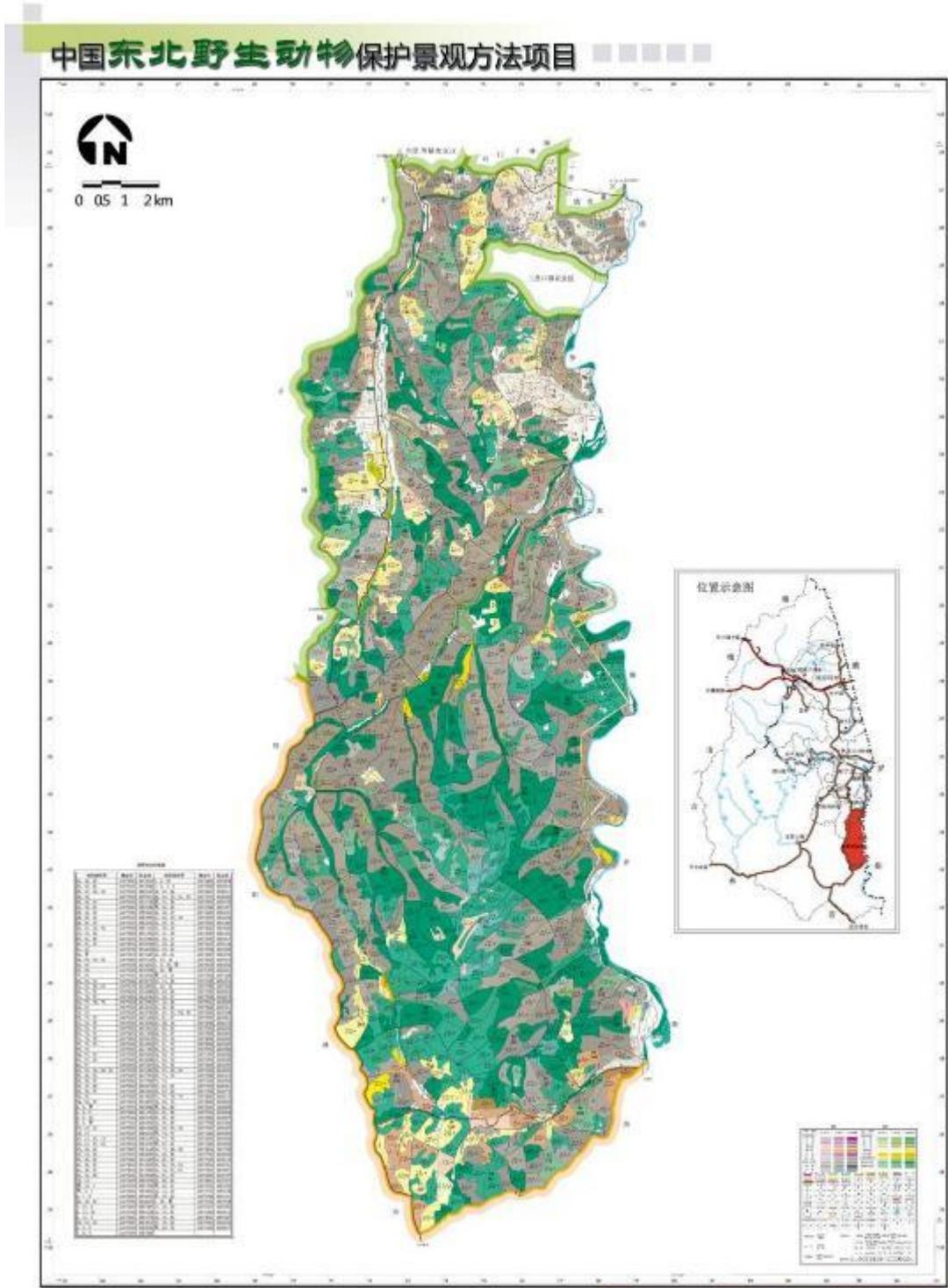
Scope Map of Assessment



Legend

■ ■ ■
 Scope of the project Administrative boundary Scope of Assessment

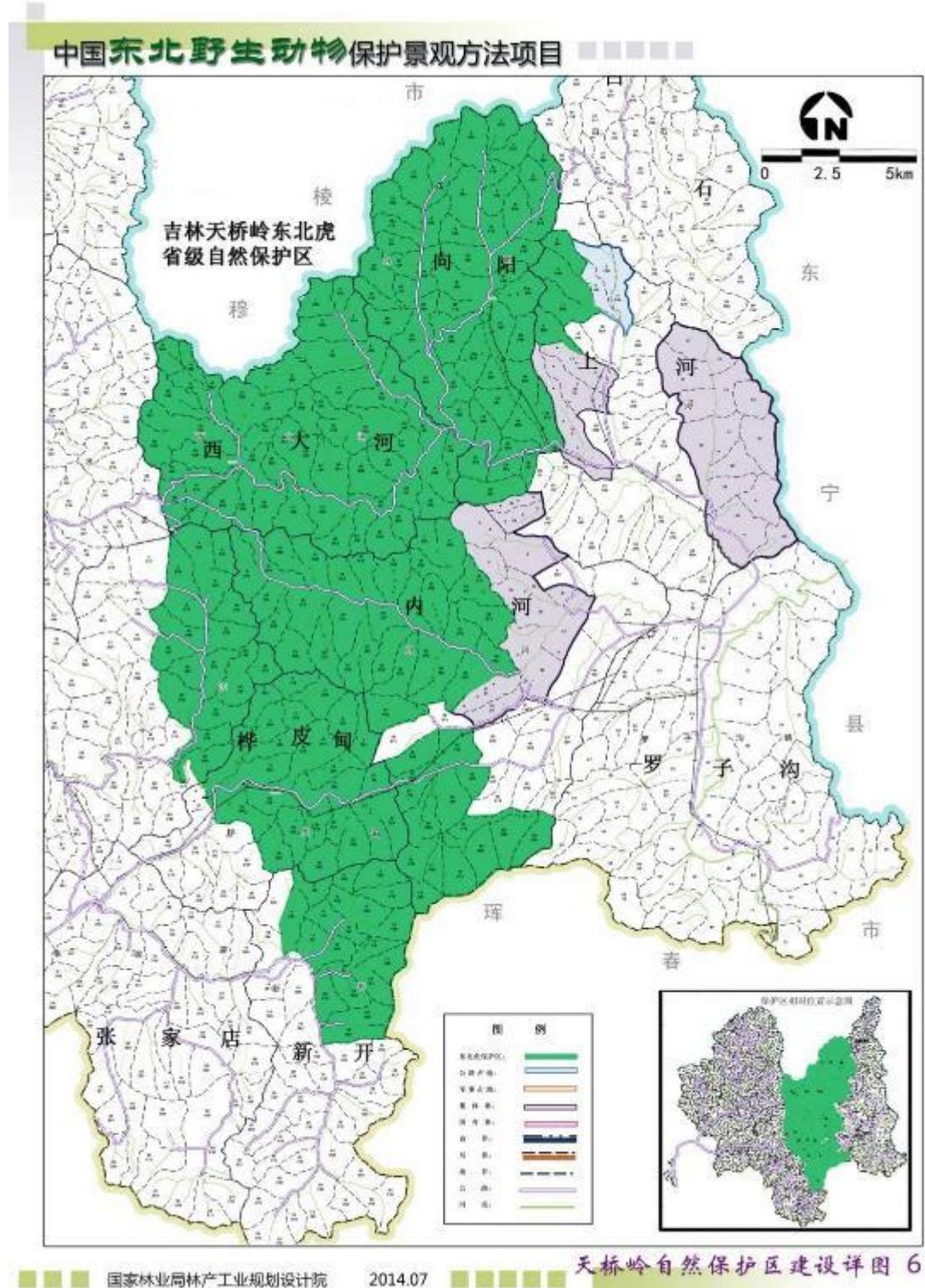
Landscape Approach to Wildlife Conservation in Northeast China Project
 Detailed Construction Map of the Niaoqingshan Natural Reserve



■ 国家林业局林产工业规划设计院 2014.07 乌青山自然保护区建设详图 5

Landscape Approach to Wildlife Conservation in Northeast China Project

Detailed Construction Map of the Tianqiaoling Natural Reserve

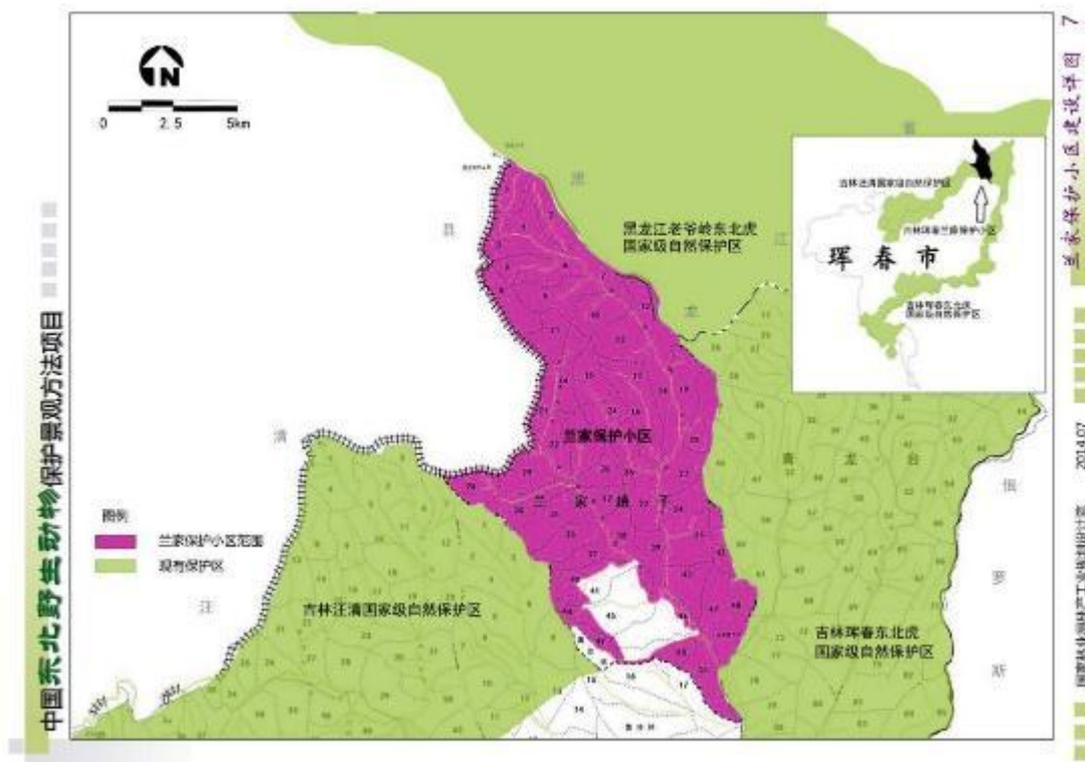


Legend

-  the Siberian Tiger Conservation Area
-  Highway Area
-  Military Area
-  Collectively Owned Forest
-  State-owned Forest
-  Provincial Boundary
-  Bureau Boundary
-  Farm Boundary
-  Highway
-  River

Landscape Approach to Wildlife Conservation in Northeast China Project

Detailed Construction Map of the Lanjia Protection area



Legend



Lanjia Natural Reserve



existing reserve