Transboundary cooperation among protected wetlands in the Tumen River Estuary

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Executive summary in English, Chinese and Russian *(to be prepared)*

1. Introduction

1.1. Background

The Tumen River Estuary is a globally important area with rich biodiversity and habitats for globally endangered and vulnerable species, including flagship species [1] of the North-East Asian Subregional Programme for Environmental Cooperation (NEASPEC). Three neighboring countries, i.e. China, Democratic People's Republic of Korea (DPRK) and the Russian Federation, already recognized its ecological importance, and introduced conservation measures such as by designating the area as a nature reserve. While research and monitoring in the Chinese and Russian territories of the Tumen River Delta indicated that it is a habitat for thousands of migratory bird species, a complete picture of the Tumen River Delta habitat could not be drawn due to the lack of information on the DPRK side until early 2010s. In this regard, UNESCAP East and North-East Asia Office (ENEA) and Hanns-Seidel-Foundation Korea Office (HSF), with the generous support of the Economic Cooperation Bureau of the People's Committee of Rason City, conducted a field survey in Rason Migratory Bird Reserve during 26-31 March 2014.

The field survey has produced the first markings of baseline information of the habitat including key geographical information, and most importantly, it confirmed that the Reserve meets Ramsar criteria as an "internationally important wetland" and that it supports over a hundred species of birds (Annex 1)[2]. Based on this initial finding, it was recommended that DPRK become a contracting party of the Ramsar Convention on Wetlands of International Importance (or Ramsar Convention) and designate Rason Migratory Bird Reserve as a Ramsar Site. Such recognition as an internationally important wetland also could provide a useful concept and framework for better management of the Reserve, i.e. effective management, wise use and international cooperation.

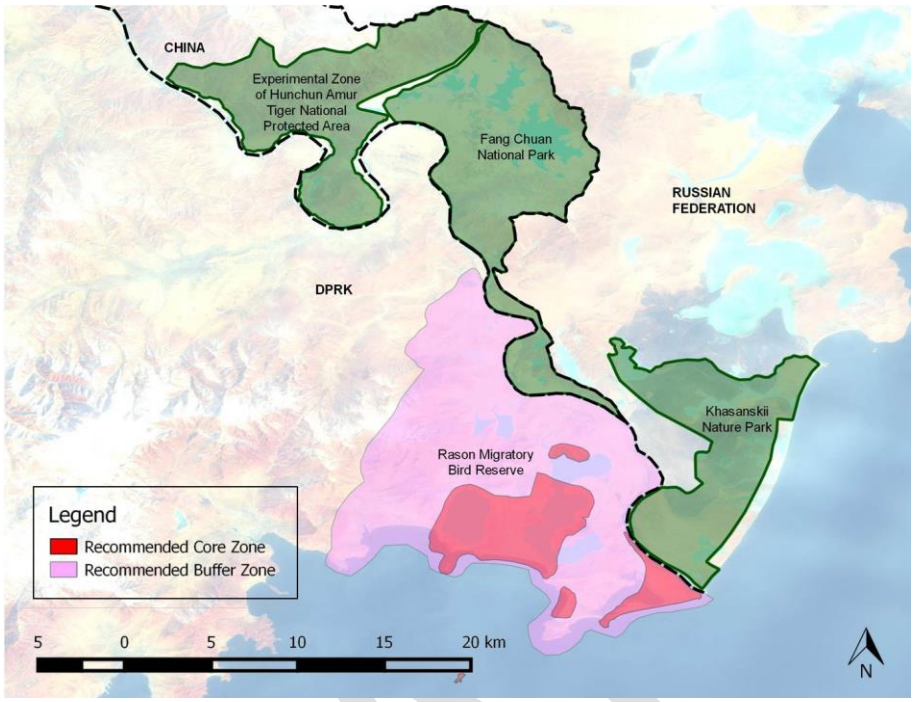
This work came to fruition with the accession of the DPRK to the Ramsar Convention as the 170th contracting party, and the certification of Rason Migratory Bird Reserve and Mundok Migratory Bird Reserve on 16 May 2018. It opens the possibility of comprehensive joint management of the Tumen River Estuary among all three neighboring countries with scientific background and conservation measures. Strengthened cross-border cooperation would be also further sought by jointly applying for Asia's first transboundary Ramsar Site.

Against this background, this report aims to provide the latest information on the Tumen River Estuary focusing on the Chinese and Russian sides, respectively, by reviewing their current status, environmental and socio-economic pressures, conservation and management systems, as well as challenges and opportunities; and discuss how to develop a joint management mechanism covering all Tumen River Basin for better conservation.

[1] NEASPEC flagship species include Amur tiger, Amur leopard, Snow leopard, Black-faced Spoonbill, White-naped Crane and Hooded Crane; and five of them (except Snow leopard) are found in the Tumen River area. For more information, http://www.neaspec.org/our-work/nature-conservation

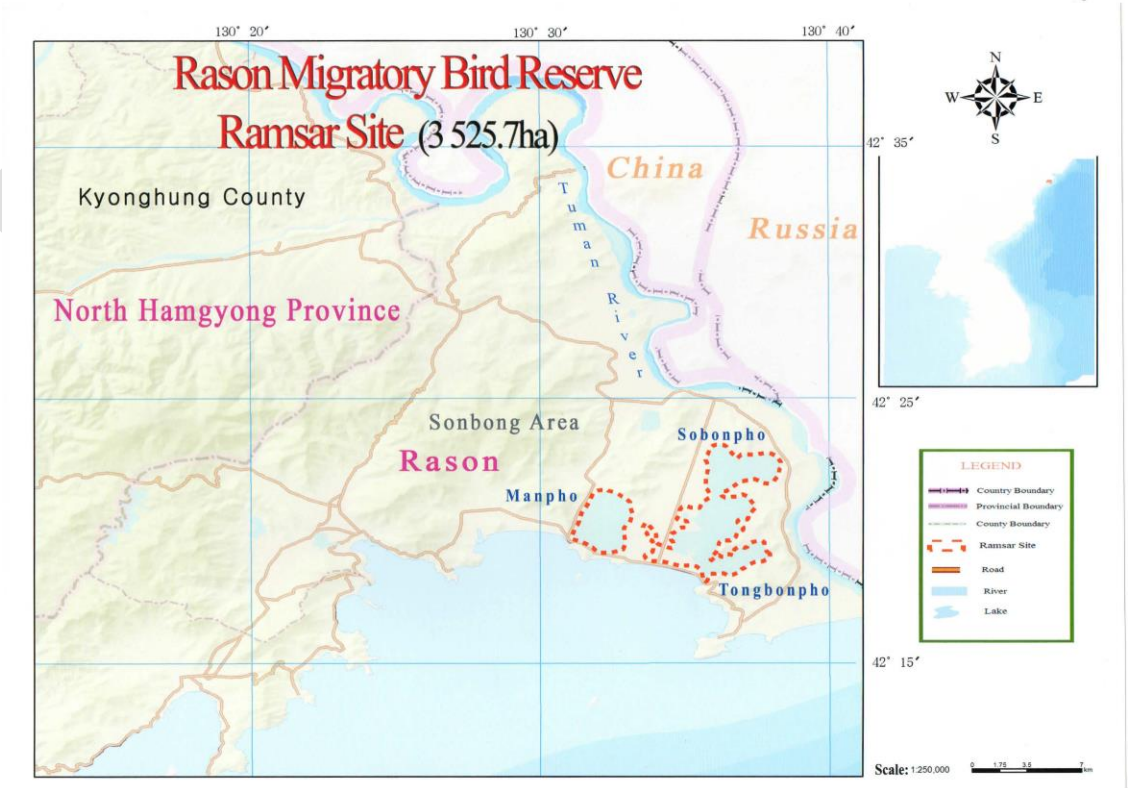
[2] "Rason Migratory Bird Reserve: Birds and Habitats" is accessible at http://www.neaspec.org/sites/default/files/Rason%20migratory%20bird%20reserve_birds%20and%20habitats.pdf

Figure xx. Wetlands and Key Protected Areas in China, DPRK and the Russian Federation at the Tumen River Delta



(Source: "Rason Migratory Bird Reserve: Birds and Habitats" (2014), NEASPEC and HSF)

Figure xx. Map of Rason Migratory Bird Reserve



(source: Ramsar Sites Information Service, available at:
https://rsis.ramsar.org/RISapp/files/26521667/pictures/KP2343_map180503.pdf?language=en)

Figure xx. Photos of Rason Migratory Bird Reserve

	Lagoon Tongbon
	Lagoon Sobon
	Lagoon Man

(source: Information Sheet on Ramsar Wetlands for Rason Migratory Bird Reserve)

1.2. Overview of ecosystem integrity/ ecological connectivity in Tumen River Estuary

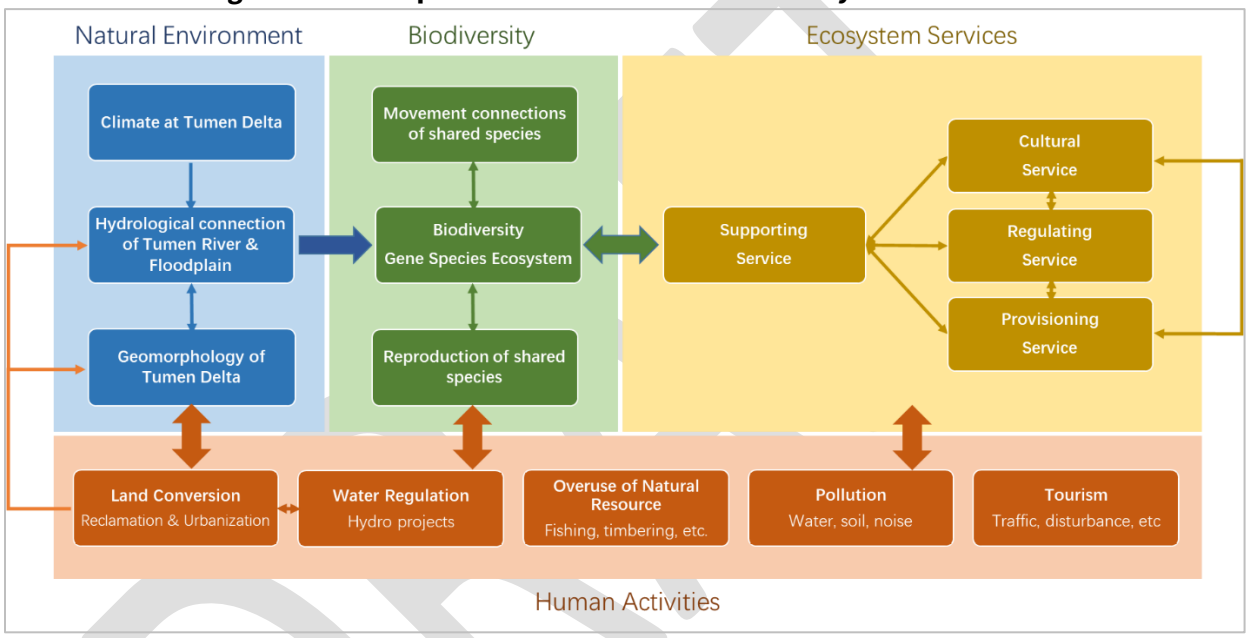
The Tumen River is one of the largest rivers of the East Sea/Sea of Japan basin. Its estuary part and riverine plain, nearly 1,000 km^2, is under the jurisdiction of China, Democratic People's Republic of Korea (DPRK) and the Russian Federation and represents a comprehensive ecosystem, which consists of wetlands, farmlands, savannah, forests and sand dunes. There are 2,090 species of vascular plants and 422 species of animals at river shed scale (Chai Xinxin et al., 2003), more than half number of species of vascular plants (>120) and 3/4 of animals (>300) were reported in the lower Tumen.

Wetland complex in lower Tumen River or Tumen Estuary starts at Jingxin Town, and about 55 km from the estuary is formed by comprehensive effects of geological, riverine, marine and climatic factors, with uniqueness and rich diversities in geomorphology. The types of wetland are various from riverine, lake, marsh, coastal and manmade, and some are neighbored by sand dunes. These wetlands are mainly distributed at Jingxin basin, China; Khasansky, Russian Federation; and Rason, DPRK. The total area of these wetlands is about 80 km^2 in Jingxin (2016 forest phase database of Hunchun Forestry Bureau); 330.0 km^2 (excluding coastal) in Khasan (source) and 115.6 km^2 in Rason (UNESCAP data in 2014).

Wetlands in lower Tumen are characterized at complexed distribution including separate waterbody with channelized linkages. Geographically, the wetlands complex consists of one integrated landscape at Tumen delta with side length less than 40 km. Distance between adjacent individual

waterbodies in three countries is normally less than 5 km and most is around 1-3 km. Hydrologically, the wetlands are connected either by channels or underground water, and all wetlands in the upstream Fangchuan are floodplain wetlands such as oxbow lakes, plain reservoirs (Jia Weixin et al., 2017); while Khasansky and Rason wetlands were affected by marine process and consist of both freshwater and brackish water lakes. Biologically, there are aquatic fauna and flora connections among the water systems in wetlands, and waterbirds which can easily fly across the delta region in hourly time. Ecologically, any change in any country may affect landscape pattern, hydrologic processes and biological attributes, particularly migratory waterbirds forage, roost and breed in different pieces of wetland habitat across nation boundaries. All these connections are under interventions of human activities and will influence human in ecological feedbacks.

Figure xx. Conceptual Model of Tumen Delta Ecosystem Feedback



Ecosystem in Tumen Estuary presents the same biota via multiple connections in three countries. It is reported that there are 32 species of fish, 8 species of amphibians, 126 species of birds, 24 species of mammals, and 305 vascular plants at Jingxin wetlands (Yang et al, 2006). Joint field survey by UNESCAP-HSF at Rason wetlands recorded 111 species and more than 42,000 individuals of birds in 2014. The list of birds of Khasansky wetlands counts 285 species, not including seabirds. Endangered species were reported in all three counties in various literatures, including Red Crowned Crane, White-naped Crane, etc. (Yang et al, 2006).

1.3. The role of wetlands for regional sustainable development

The Tumen River and associated wetlands play important roles for regional sustainable development. Freshwater runoff of Tumen secures water supply, saline balance stabilizing, desertification controls at estuary region, with an annual runoff of 55,108 m^3. Water resource supports agriculture, industry and urban development; biological resources including fishery and agricultural

biodiversity provides food and materials to the region; and the landscape, wildlife and culture of Tumen are the foundation of eco-tourism of the three countries. Population in Tumen Delta includes 5,660 in 14 villages in China, 2,756 of it are residential by the year of 2017; there are only 2 settlements with a total population of 643 in the Russian side (data for 2018); and xx in DPRK (data for xx) . Populations of towns in the delta are all less than 100,000. (Li Xiumin and Wu Xiaoqing 2006).

Agriculture and tourism are the key economic drivers at Jingxin, where includes 3,287 hm^2 of cropland containing 1,450 hm^2 of rice paddy. Agriculture relies on water resource and wetland. In 2017, Jiushaping Village registered "Jingxin Geese Homeland" as local rice products, which is grown in 700 hm^2 and near half of the total rice paddy farm (Sina news, 2019). Economic value of grain products at Jingxin is xx CNY. Fishery is associated with wetland and culture. The outskirts of the town founded tourism as the other key economic driver, with annual visitors of 3.81 million to Hunchun in 2018. The increasing rate of agriculture (2.9%) and industry (1.3%) is much slower than tourism in Hunchun prefecture (38%) in [year]. Total tourism income was reached 3.25 billion CNY which is three times of agriculture (Hunchun Municipal Government, 2019). This indicates that the ecosystem combinedwith its associated culture has played more important role in Hunchun, where Jingxin and Fangchuan become must-go attractive sites. The Jingxin wetland is now one favorable site for professional photographers and birders in China.

According to the Yanbian Statistic book 2016, total population in Jingxin is 5,660. Agriculture, forestry, animal husbandry and fishery value added (农林牧渔增加值) are listed as followed .

Content	Amount (Unit 10,000 RMB)
Gross	105,136
Agriculture	65,781
Forestry	8,983
Grazing	25,862
Fishing	3,208
Agriculture, forestry, animal husbandry and fishery services	1,302

In the Russian side, the agriculture industry has not been developed yet. The main economic emphasis in the region's development plan is placed on its role as an international transport and logistics corridor. This industry has been developing effectively thanks to the program "on the Free Port of Vladivostok" aimed at accelerating the economic growth by expanding the scope of cross-border trade, attracting investments, creating a network of logistics centers with special conditions for the transportation, storage and partial processing of goods, organizing export-oriented production, and deepening the integration of the Russian economy in the system of economic relations of the Asia-Pacific region. The main transport and logistics centers are located outside the wetland area and do not directly affect the area.

Serious prospects are seen in the development of the tourism industry in the region. In recent years, there has been a steady increase in tourist flow to the Primorsky Territory. For the first half of 2019, the number increased 25% compared to the same period in 2018 and reached 400 thousand foreign visitors. The most massive flow of foreign tourists recorded from China - more than 150

thousand people for six months in [year]. Primorsky Krai is one of the three leaders among Russian regions in terms of inbound tourism development. Unfortunately, the share of ecological tourism is still insignificant. The most popular direction of domestic tourism represented by various types of recreation connected with the coastal zone.

The growth of eco-tourism is expected in connection with the Russian Government's social initiative called the “Far Eastern Hectare” program, according to which every citizen has the right to receive a free land plot in the Far Eastern Federal District with an area of 1 hectare for development, settlement and entrepreneurial activity free of charge. Currently, there is a serious demand for the land allotments adjacent to Tumen Wetlands with the prospect of developing infrastructure for the touristic business.

There is 2,117 hm^2 of rice paddy in Rason which are important for food production. In March 2019, there was a trial eco-birding jointly organized by multiple organizations. A Swan Festival to promote CEPA and potential eco-tourism is under planning by local government of Rason.

1.4. Necessity and urgency of transboundary conservation

The ecosystem of Tumen Estuary does not only provide ecological basis for livelihood and sustainable development of the people in Tumen Delta but also important stopover and breeding habitat for waterbirds in the East Asia and Australasian Flyway and habitat for aquatic species. Under effort of international and national society, all national authorities are taking concerns on its segment in Tumen delta. However, the Tumen delta has become more vulnerable due to crossing effect of climatic and hydrologic change; and transboundary jurisdiction issues are obstacles for ecosystem management or integrated river basin management. One of the challenges is that the capacity on wetland conservation and management is not even in three countries, particularly baseline data of the region is a major gap. Monitoring and management on such as species, water, soil and other single elements are also to be focused, but understanding on ecological process and future trends is not sufficient yet. Furthermore, the development of the region is rapid and results in wetland use change. Under such pressure, transboundary conservation of shared ecosystem is necessary and urgent.

Natural and anthropogenic threats and different stages of economic development impact on the structure of the wetlands and ecological processes rapidly. Thus, information sharing, synchronized monitoring, joint research, river basin scale planning and integrated management at delta region are required.

- Wetlands in Tumen delta/estuary region are characterized with complex distribution of separate waterbodies with channelized linkages. There are geographical, hydrological, biological, ecological and social-economic connections in the estuary areas.
- The wetlands complex consists of one integrated landscape at Tumen delta with side length less than 40 km. Distance between adjacent individual waterbodies in three countries is normally less than 5 km and most of them are around 1-3 km.
- Such spatial connections provide integrity and shared habitats for shared fauna species. For instance, waterbirds can easily fly across the delta region in hourly time.

- The ecosystem in the Tumen Estuary provides important services to the region, including water supply for agriculture, fishery, tourism and others. Human activities in each country influence the ecosystem at delta scale.

Necessity and urgency

- Pressure of development in the estuary region has increased, but one country cannot control the challenges such as deterioration of shared biodiversity, spatial fragmentation and loss of habitat, alternation of ecological process, desynchronized monitoring and uncoordinated management by its neighboring country. Therefore, it is necessary and urgent to act on transboundary conservation.
- Current conservation efforts are not coordinated among three countries: Jingxin and Fangchuan wetlands are tourism-targeted scenic parks and under pressure of land conversion; Khasansky is part of the Far Eastern Specially Protected Natural Area System with missing gaps in between various protected area bodies; and Rason wetlands are bird reserve and Ramsar Site facing potential rapid economic development in upcoming future.

2. Status and trends

2.1. Key species[3], habitats, and ecosystem services

2.1.1. Species

Fishery

Aquatic species has been suffering severe decline due to anthropogenic disturbance in upstream of the Tumen river, such as dam construction, mining, harmful fishing and overfishing. For instance, Lamprey is out of commercial fishery list in Tumen, and dace production has been reduced from 2,000 tonne in 1950s to several tons by 2000s. Total amount of captured salmon products used to reach 150,000-200,000 kg in 1940s-1950s but reduced to 10,000 kg in 1980s. Currently, salmon is not in economic capture anymore.

Bird

Waterbirds are various by season. Endangered and threatened species are mostly presented in spring and autumn, including Red-crowned Crane, Hooded Crane, White-naped Crane and White-fronted Goose, with the peak number of 300,000 in autumn of 2019. The wintering waterbird population at Jingxin wetlands reached 14,972 during late 2016 and early 2017, with higher concentrated distribution in farmland-pond and pond-marsh habitats. The staging population of waterbirds is quite stable with current land-use and landscape pattern. With increasing number of photographers and birders, however, frequency of occasional disturbances might have been increased.

Mammals

Spotted seal swam 100 km upstream into the river in 1950s but now around 10 km or less. 150 Amur tigers were found in 1970s, but the number has been decreased to 20-30 in 1980s, 16-22 in 1990s, and around 20 now.

2.1.2. Habitats

Wetlands habitats at both Chinese and Korean side are under pressure of climate, population, water development projects and land use conversion; while wetlands habitats in the Russian part have been relatively stable and even showed increase in forests. For instance, forests have been reduced 212,963.14 hm^2 from 2000 to 2010 in China but increased 14.55% in the Russian side (Jiang Shufang et al. 2014). Forests landscape diversity index was also reduced from 0.88 in 2000 to 0.74 in 2010 (Miao Chengyu et al., 2012). However, cropland in China was increased 19.36% [from 2000 to 2010?] and farmland in DPRK side was increased 28.54% [from xx to xx?].

[3] Key species includes NEASPEC flagship species, http://www.neaspec.org/our-work/nature-conservation

Natural wetlands, including rivers, marshes and lakes in the Tumen River Basin, have been converted to croplands, reservoir, fish nurseries and other use. Due to reclamation at Jingxin since 1960s, marshes were converted into rice paddies and shrunk from 2,126 hm^2 in 1968 to 1,009 hm^2 in 2001. Fragmentation of wetlands is another issue. Mean area of fragmented patches changed from 73.20 hm^2 in 2000 to 43.21 hm^2 in 2010 at Jingxin wetlands (Miao Chengyu et al., 2012). Increasing disturbances to existing wetlands and migratory waterbird habitats, such as farming activities, unregulated tourism and wildlife photographers, are of concern.

Ecological safety assessment shows that the wetland safety in Tumen River Basin from 1976 to 2014 had been dropping from safe to warning due to loss of natural wetlands, increase of manmade wetlands and reduction of vegetation coverage. The safety value at Korean side changed faster than Chinese side due to its increasing population density and croplands. Overall, it is predicted that the ecological situation of the Tumen River Basin will keep under warning status and DPRK side will continue a downgrade trend till 2035 (Jin Xuemei et al., 2017).

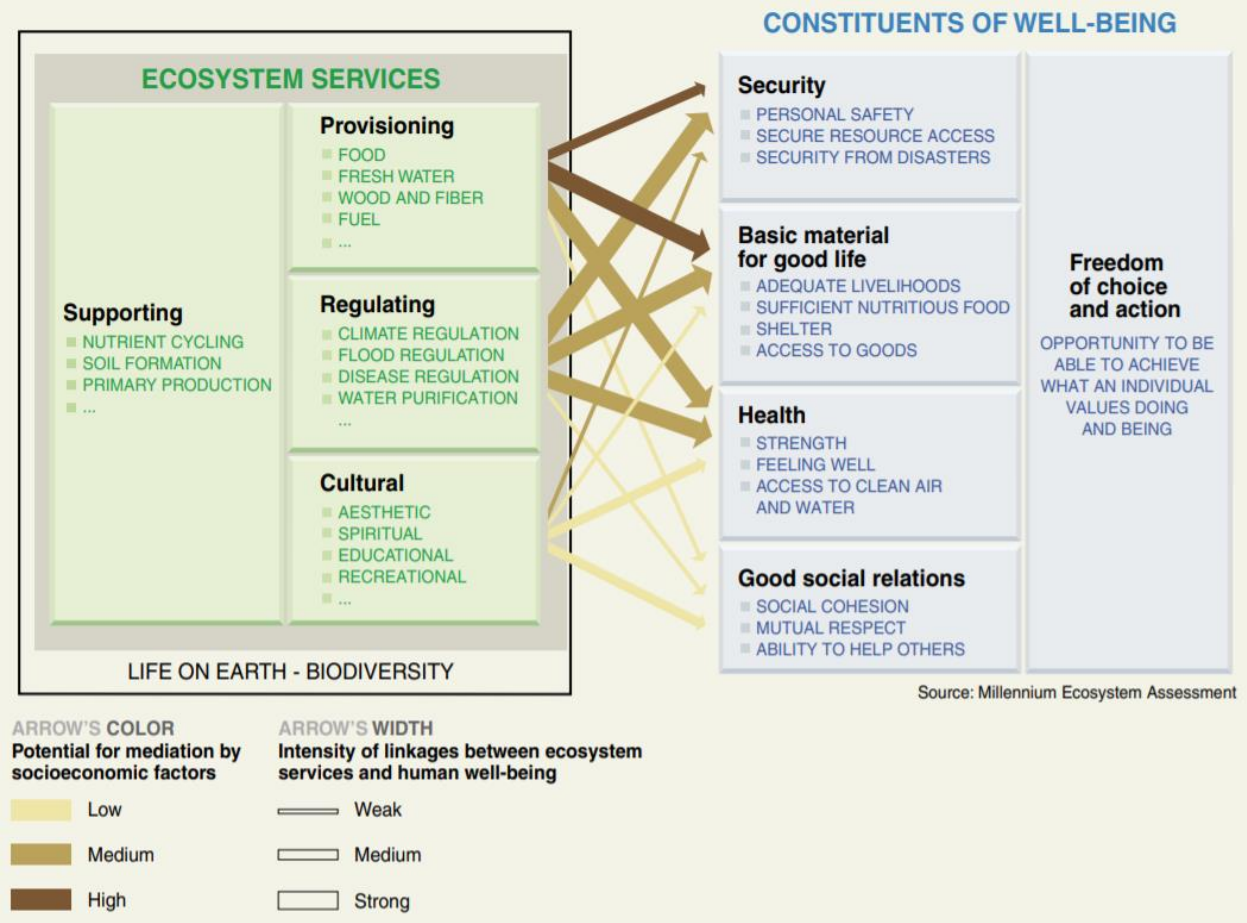
2.1.3. Ecosystem Service

Given by the Millennium Ecosystem Assessment (2005), the definition of ecosystem services as the *"...benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious and other nonmaterial benefits"*. There are four ecosystem services upon the Economics of Ecosystems and Biodiversity (TEEB)[4]:

- *Provisioning Services* are ecosystem services that describe the material or energy outputs from ecosystems. They include food, water, raw materials and medicinal resources;
- *Regulating Services* are the services that ecosystems provide by acting as regulators, for example, regulating the quality of air and soil, moderating extreme events including flood and disease control, mitigating climate change through carbon sequestration and storage, and retaining water and soil through erosion prevention;
- *Supporting Services* are the fundamental service to other three services that ecosystems provide physical space, energy and matter cycle for human being, including habitats for species and maintenance of genetic diversity; and
- *Cultural Services* are ecosystem services that ecosystem provides cultural interactions between human being and natural environment, such as aesthetic appreciation and inspiration for culture, art and design, recreation and mental and physical health, tourism.

[4] http://www.teebweb.org/resources/ecosystem-services/

Figure xx. Ecosystem Services



(source: Millennium Ecosystem Assessment 2005)

Supporting service is facing the pressure of development, especially land use change and unwise and overuse of natural resources. Natural ecosystems including forests, wetlands and grasslands are converting to farmlands; and hydrologic alteration, pollution, overfishing and anthropogenic impacts damage terrestrial and aquatic biodiversity.

Regulating service includes flooding and soil retention, drought regulation and desertification combating. Loss of wetlands reduces capacity of holding flooding surge, increases water evaporation and runoff flowing velocity, and speeds up desertification process. Drought risk will also rise when temperature and evaporation rate increase.

Provisioning service shows different patterns. For instance, water use increases upon social-economic demands. Agriculture in China has been increasing, including grain and aquaculture products. Literature shows that timber products and agriculture in DPRK were likely to have been increased (Jin Xuemeng, 2017). However, Capture fishery in Tumen river is declining.

Cultural service has been increasing under fast development of tourism. Tourists number presents an increasing trend with annual fluctuation. Tourists to Hunchun was 0.54 million in 2010, and 1.96 million in 2015, then 3.81 million with income increase from 0.64 billion CNY and 2.28 billion CNY, then 4.5 billion CNY, respectively. Inbound tourists from China to Primorye recorded more than 150,000 for six months in 2019. [Russian tourists were 0.15 million annually] (Zhao You, 2017).

2.2. xx

2.2.1. Environment and socio-economic pressures

The potential pressures in Chinese side will be development planning in Jingxin. There is an ongoing investment of 260 million CNY in tourism, under the project of "the First Town in the Orient" at Jingxin. There are also 210 million CNY of investment in border port, to build in a capacity of 2 million tons of cargo and 2 million of tourists. Such development projects will increase the pressure to the region.

2.2.2. Conservation and management systems

a. Local level

There are several designated protected areas in Jingxin, including Hunchun Provincial Nature Reserve, National Forestry Park, National Scenic Sites and Sand Park. Most importantly, the existing protected areas are currently under consideration to be merged into a new National Park on Amur Tiger and Leopard. Management bureau of Hunchun Provincial Nature Reserve conducts monitoring and regular management of protected areas; and forestry bureau of Hunchun City manages wetland and wildlife in general, covering areas out of nature reserve. In near future, merging of existing protected areas and their unified management will be next step.

b. Provincial level

Provincial Forestry Bureau (under Provincial Natural Resource Department) is the major responsible authority for management of protected area, and conservation of wetland and wildlife. Jilin Province adopted and enacted Regulation on Wetland Conservation in 2011 and revised in 2017.

Besides forestry, Provincial Ecology and Environment Department takes responsibility in environmental inspection and enforcement, e.g., illegal water and soil pollution, and land conversion without approval.

c. National level

National Law on Wetlands is under developing in China, which was listed on CPC in 2018. Wildlife Conservation Law was adopted in 1988 and revised in 2017. Since 2015, eco-civilization and green development became national key strategies, leading all wetland and wildlife conservation works. A framework of system on wetland conservation and restoration was

released in 2016, for redlining, eco-compensation, national inventory on land resources and national land zoning on functions.

At action level, China published National Wildlife Protection and Nature Reserve Development Program (2000-2050) and National Wild Fauna and Flora and Habitats Protection Master Planning (2000-2050) in 2000, then the State Council principally approved the "National Wetland Conservation Project Planning (2002-2030)" in 2003.

d. International or transboundary level

There is common recognizing of promoting multi-scale, multi-partner, multi-lateral international collaboration on transboundary conservation. International organizations, including UN agencies, Conventions, semi/mixed-Governmental Organizations (e.g. IUCN and EAAFP), and NGOs (e.g. HSF, WWF and HKWBS) are actively creating various dialogue and actions. Besides GTI, there are also NEASPEC, Ramsar Convention and EAAF, which exactly enhance the conservation of wetlands and migratory waterbirds in Tumen delta. With international support and encouragement, Rason Migratory Bird Reserve at DPRK listed as Ramsar Site in 2018.

The atmosphere among China, DPRK and the Republic of Korea is turning to warm and provides more potential in transboundary conservation on Yellow Sea, which will influence potential transboundary conservation in Tumen estuary. It can be foreseen that DPRK will be more active in bilateral cooperation with China and the Russian Federation, respectively, or even tri-lateral cooperation.

2.2.3. Challenges and opportunities

At national level, the development pattern in Chinese side is unclear due to local government's preference to tourism development and more investment in infrastructure construction. Lack of staff, illegal hunting and limited coverage of protected areas are the main challenges in Russian part. Rapid development and associated land conversion, low level of management and capacity in conservation and management, potential exploration of tourism will be the challenges in DPRK in coming years.

At tri-lateral level, there is no common concept and shared planning on wetland conservation and development, which results in data gap, and fragmented and isolated management in the three countries. Building clear recognition, synchronized concept and shared vision on wetland conservation and green development, thus, will be the major need. Language barrier will be also challenge for regular communication for timely information sharing. Lack of financial and technical mechanism, including lack of unified technology in monitoring and management, will also be operational challenges.

In China, opportunities are national policy change, including green development, redlining and national park system. There are chances to endorse better wetland conservation in planning of local development, particularly agriculture and tourism. In DPRK, increasing

activities after joining Convention on Wetlands and EAAFP would assist central government to provide more concern and support to Rason and local government to respond positively to international partners. Opportunity in Russia?

At bi-/tri-lateral level, further environmental projects may provide potential resources in transboundary cooperation, which potentially could be associated with existing mechanisms such as Green Belt and Road initiative and China-Mongolia-Russia Economic Corridor. At bi-lateral scale, there are China-Russia Agreement on Migratory Birds (2013) and China-Russia Agreement on Transboundary Conservation of Amur Tiger (2013), which could provide foundation for further progress in transboundary conservation across the two countries. DPRK aims to update the MoU between MoLEP and NFGA or Ministry of Natural Resource of China, which is expected to allocate opportunity for bilateral collaboration on wetland and migratory waterbirds in near future. Exchange on eco-civilization and green development at Tumen river basin will be also worth.

Internationally, high level dialogue set by UNESCAP will help creating synchronized concept and shared vision on Tumen Delta. Other parallel transboundary conservation activities in Yellow Sea will be also a potential platform to build concepts and visions for DPRK, co-facilitated by IUCN, EAAFP and RRC-EA. In actions and practice, joint training and monitoring projects would be conducted by international partners, such as joint spring survey at Tumen estuary by UNESCAP, Beijing Forestry University, Yanbian University and RAS. These on-ground activities will help matching development of capacity in monitoring and management. Most importantly, it is vital to establish a transboundary protected area in Tumen estuary for better conservation.

3. Jingxin and Fangchuan wetlands

3.1. Introduction

3.1.1. Overview of ecosystem integrity/ ecological connectivity in Tumen River Estuary

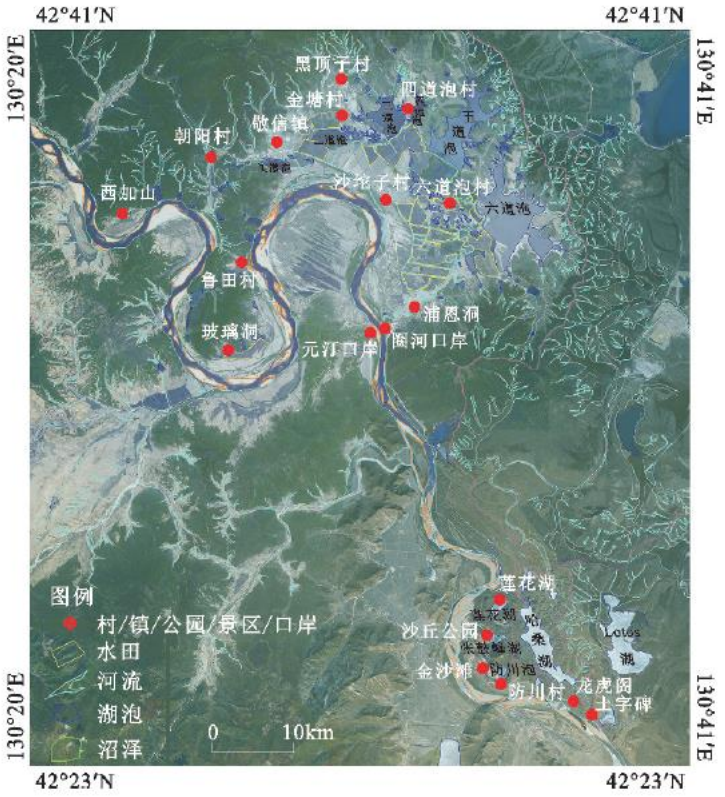
Jingxin wetland (129°52′00″— 131°18′30″E, 42°25′20″— 43°30′18″N) referred herein indicates all types of wetlands distributed along the lower Tumen river located at east western of Yanbian, Jilin province, China. It is an important region for perching and reproduction of various bird species.

This area is located to the east of Changbai Mountain, surrounded by mountains on its three sides, windy in spring and autumn. The Lower Tumen area, with a total area of 24,080 hectares. In this area, many kinds of wetland are distributed, such as river wetland, lake wetland, swampy wetland, etc. All these wetlands play an important role for the local ecology. Around 8,000 ha wetland can be estimated in the area (Pengyou Shi and Huizi Lv, 2016; Huitian et al. 2014; From Hunchun Nature Reserve unpublished document).

Fig xx. Jingxin Wetland

(Source: xx)

Fig xx. Distribution map of wetlands in lower reaches of Tumen River



(source: Jia Weixin et al., 2017)

According to the terrain and site of the wetland, the trust wetland can be divided into five systems: River type wetland (mainly refers to the Tumen River and its tributaries), lake type, swampy wetland, flood wetland and artificial wetland. Lakes and rivers distributed in Jingxin wetland belong to Tumen river system. The Tumen river crosses the wetland with the whole length of 54.6 km, and Quan river is the main tributary. There are 12 ponds and reservoirs, with the total area of 757 hm^2.

Jingxin wetland is fragmented by residential areas, fishponds and agricultural farmland, and some of the natural wetlands was turned to be artificial wetlands.

This area is located in the middle and low mountain areas of the eastern Changbai Mountains, surrounded by mountains on three sides. The area also belongs to temperate offshore monsoon climate zone with the average temperature of 5.6℃, thus climate is windy in spring and autumn; and wet and mild. The soil is mainly divided into 8 types and 21 sub-types.

The comprehensive effects of the topography, climate and ocean cause the multiple geography and geomorphological landscapes, especially the wetland form.

3.1.2. Necessity and urgency of transboundary conservation

Jingxin wetland was registered as Tumen river National forest park in 1997, which is very low-level protected area. In the year of 2001, Jingxin wetland became a part of the provincial nature reserve. However, when the provincial nature reserve changed as national level nature reserve in [year], Jingxin

wetland was excluded. The area is currently under the management of Hunchun forestry bureau, but there are very few activities taken in the wetland because of insufficient fund and human power upon the administration.

The Jingxin wetland is located at the junction of the three countries, and it is necessary for all neighboring countries to work together for a more effective conservation plan. Since Jingxin wetland area is not included in the protected area conservation plan in China, international mechanism may develop a joint conservation management plan for this area.

In the future, tourism as well as marine economy development project may have a considerable impact on the environment conservation if sustainable development is not carefully considered. Wetland conservation and economic development need joint efforts of all range countries, to consist the good environment, conserve important resources and promote the sustainable development (Yang G. et al., 2006)

3.2. Status and trends

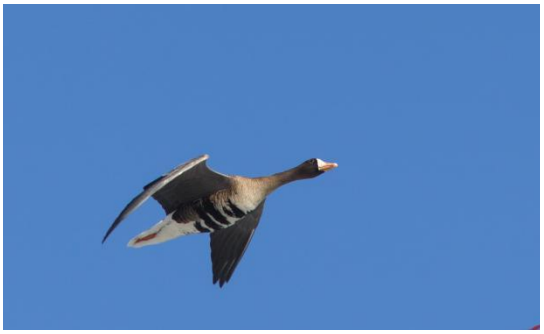
3.2.1. Key species and ecosystem services

Wetland ecosystem provides food and water to human and is also important for birds and other wildlife. Migratory birds benefit from Jingxin wetland for their migration, survival and rest.

Jingxin wetland is one of the key protected wetlands in Jilin province, and is an important transit station for migratory birds in Northeast area in China. About 200 species of migratory birds stay here each year during their migration from April to May and September to October. Some of them are listed as important key species at the National level. Wild animal species are very rich in Jingxin wetland, and some are unique species with important gene pool. 109 species (62 families, 31 orders) of wildlife are recorded, including 32 fish species (10 families, 7 orders), 8 amphibians (7 families, 3 orders), 126 bird species (32 families, 15 orders) and 24 mammals (13 families, 6 orders). The very endangered Amur leopard and tiger are also distributed in this area (Guang Yang, 2006; Jilin Forestry Department, 1999).

Figure xx. Joint birds list in Jingxin Wetland

a. Bean goose



b. White-fronted Goose

c. Red-billed gulls

d. White-tailed sea eagle

Jingxin wetland is the necessary place for Red-crowned cranes' migration from Japan to Xingkai Lake and the Sanjiang Plain. In the spring of 1989, 21 Red-crowned cranes were recorded, and at the same time more than 2,000 White-fronted goose, more than 30 swans, 60 White-tailed sea eagles, 2 Steller's sea eagles were recorded in Jingxin wetland.

Because of its unique geographical location and ecological environment as habitat for birds and other wildlife, it is believed that Jingxin wetland plays a very important role for many important species' breeding and migration. Three salmon species breeds in the rivers of this wetland area, and world endangered Amur tiger and leopard are also inhabiting in this area.

As one of the most productive and valuable ecosystems, wetland provides many kinds of important ecoservice. Using analytic hierarchy process (AHP) to evaluate the ecological environment of Jingxin Wetland in 2012, the comprehensive evaluation index (CEI) value was 0.7124, which indicated that the overall ecological environment of Jingxin Wetland was fine. Among the evaluation indexes, the weight of regulating flood function, climate function, tourism function and important animal habitat function is big, which means these functions play an important role in determining the value of wetland (Tian Hui et al., 2012).

In Jingxin, forests, grasslands and wetlands compose the complicated vegetation components, and the geographical composition of wild plants is very complex. Among the seed plants, pine, willow, birch, Rosaceae, Compositae, Gramineae and Cyperaceae are the main species, showing the characteristics of forest and wetland vegetation. There are several big water holes called "paozi" by local people, and many wild vegetations are distributed in and around these areas. In 2017, 153 species (109 genus, 54 families) of vegetation were recorded, and more than 60 medicinal vegetation were found as well (Weihong Zhu et al. not published report). More than 60 species of vegetation, such as water lily, a typical species distributed in this area, are listed as national- or provincial-level endangered or rare species.

Table xx. Vegetation species in Jingxin wetland

Family	Genera	Species	Family	Genera	Species
gramineae	11	17	gentianaceae	1	1
compositae	7	12	Asclepiadaceae	1	1
sedge	6	17	Ranunculaceae	1	1

Labiatae	5	6	equisetaceae	1	1
leguminosae	4	4	lythaceae	1	1
polygonaceae	2	10	rosaceae	1	1
Onagraceae	2	4	Onodeaccae	1	1
Commelinaceae	2	2	umbelliferae	1	1
Urticaceae	2	2	Moraceae	1	1
Juncus effusus	1	3	sheguke	1	1
Typhaceae	1	2	Brassicaceae Burnett	1	1
Alismataceae	1	2	Caryophyllaceae	1	1
water chestnut	1	1	Araceae	1	1
Nelumbonaceae	1	1	halorrhagidaceae	1	1
Sparganiaceae	1	1	scrophulariae	1	1
cucurbitaceae	1	1	salicaceae	1	1
Salviniacae	1	1	ulmaceae	1	1
Lemnaceae	1	1	pontederiaceae	1	1
plantaginaceae	1	1			
Source: Weihong Zhu et al. (Unpublished report, 2017)					

Wetland is a paradise for birds and many other rare or endangered wildlife as it provides certain biological habitat condition such as water, safe environment, complete food chain and less human activity. Wetland has pollution tolerance, purification ability, developed root system, suitable for planting and beautifying environment, and has landscape benefit, economic benefit, cultural value and comprehensive utilization value.

Jingxin wetland is located in the transitional area of land and water system, and wildlife and structure contain the two parts characteristics which has high level of biodiversity status and can provide many wildlife unique habitat and rich genetic material. Ciconiiformes, Anseriformes, Gruiformes, Charadriiformes, Lariformes and a few Passeriformes account 36.6% of the bird species (Yang G. et al., 2006).

During the migration season of wetland waterbirds, only a few species can fly uninterrupted to complete their entire migration process, and most of the birds have to look for place to rest along the way. Stopover sites, thus, are important for migration birds. Many birds prefer wetland environment, and especially waterfowls take the wetland as their main activity sites. In China, wetlands support half of the rare birds population and 57 endangered bird species in Asia. These include 31 species surviving in China and 9 out of 15 Crane species.

Wetland can be called “biology supermarket”, which has high biodiversity level and species richness. The density of wetland vegetation in Jingxin is 0.0056 species/km^2, which is twice as 0.0028 species/km^2 in China. In Jingxin wetland, carex tabulaeformis, carex macrophylla and reed plants are widely distributed. The purification ability of carex tabulaeformis is the strongest, followed by carex macrophylla and reed. The purification ability significantly correlates with the number of soil microorganisams in the rhizosphere of the three wetland plants.

The whole Tumen river region has suffered different levels of disturbance and destruction due to longtime human impacts, in which the downstream loss is the most. As Jingxin wetland is distributed in the downstream region, it faces biodiversity loss and soil degradation which directly caused wetland loss (Xiaojun Zheng, et al., 2016). Local farmers use the nature wetland and river to expand their farmland. In the 1980s, swamp wetland in Jingxin was around 2,000 km^2 and served as the only habitat for breeding and resting area for the endangered migratory birds. However, by the early 1998, 1/4 to 1/5 of the region was changed to paddy field (Jilin forestry department, 1999).

Artificial wetland area also has been increasing due to the Longshan reservoir construction, as well as expansion of paddy field, fishing pond and hatch pond (Zhifeng Liu, et al., 2009). The other reason of the loss on Jingxin wetland is economic development and population increase (Yuhui Liu, et al., 2004).

3.2.2. Habitat conditions and trends

Over the recent years, wetlands has become very weak ecosystem facing threats of area loss, degradation, biodiversity decrease due to anthropogenic factors and climate change.

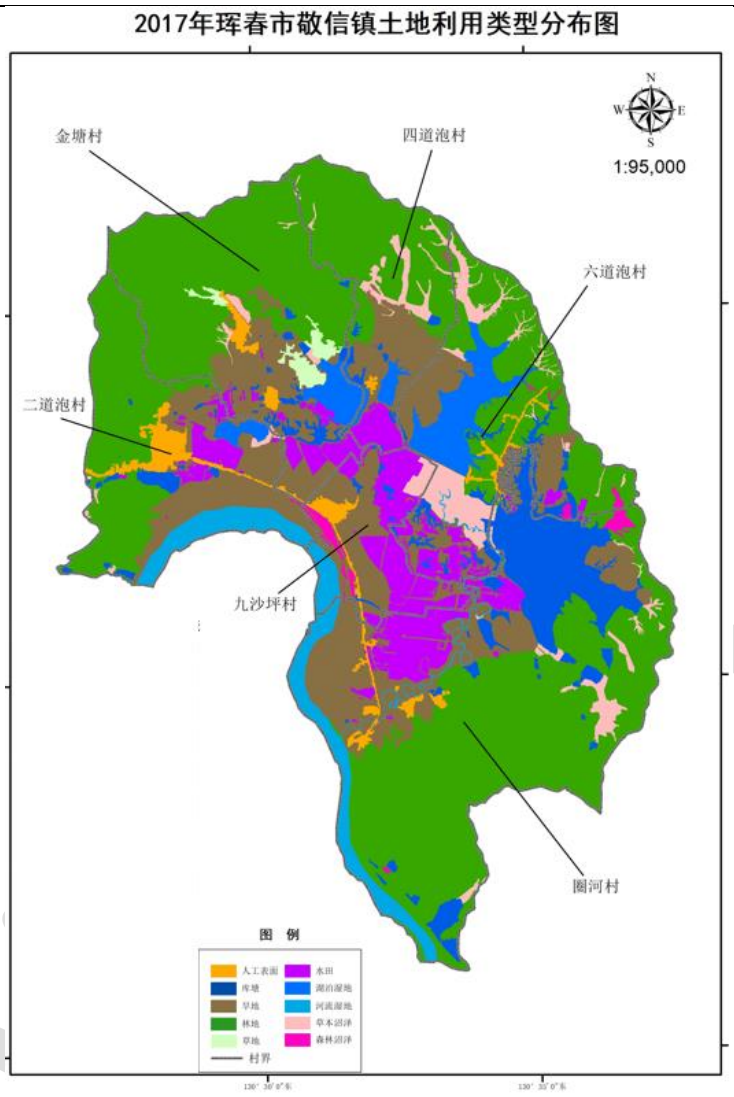
The acurate size calculation of different wetland types is always important index to understand the situation of wetland. According to Liu Zhifeng's comparison of remote sensing images between 1964 and 2004, it was found that compared with 1964, the river patches of Jingxin wetland decreased by 25 pieces; the area decreased by 12 km^2; the area of swamps decreased by 50%; the area of constructed wetlands increased by 16.923 km^2; and the area of natural wetlands decreased by 17.33km^2 (Liu Zhifeng et al., 2009). Table xx shows the recent research result of the 2017 remote sensing data and field survey on the size of different type of wetlands in Jingxin.

Due to the influence of human activities, it is expected that the area of natural wetlands continues to decrease and the area of artificial wetlands increases partly.

Table xx. Wetland area in Jingxin in 2017 (Weihong Zhu, not published report, 2019)

Land cover	Area (hm^2)
herbaceous swamp	626.37
Grassland	107.07
Dry land	3,321.27
River wetland	788.67
Lake wetland	678.22
Pond	1,207.85
Forest	8,086.96
Artificial land	397.03
Forest swamp	95.13
Paddy field	1,316.30

Figure xx. Jingxin land use map (2017)



(source: xx)

3.2.3. Environment and socioeconomic pressures

Downstream region of Tumen river is one of the important places for implementing the Belt and Road Initiative of China (Yangjun, 2015). In 2019, Hunchun city (where Jingxin wetland is located) was listed as one of the 14 marine economic demonstration cities, and established the college of Geography and Ocean Science in Yanbian University to promote marine products development and trade. The City also opened additional ports transportations from Hunchun to other cities in China and other countries (Xinhuashe, 2019). Hunchun city is also one of the important touristic sites. Tourism plays an important role for the local economy, but has risk for the local ecology due to the large population in China.

According to the news about the interviews with government officials about new developing strategy in Hunchun, ocean development will be to increase sea production in industrial zone, enlarge production capacity in industrial scale, extend the industrial supply chain, make sea products brands, promote ocean tourism projects and develop ocean tourism.

Transportation system will be strengthened between Hunchun and Zhoushan harbor, and more convenient transportation system will be prepared. In the Tumen river area, international collaboration demonstration area, comprehensive tax-protected zone for border economy cooperation, ocean markets and new trade forms will be developed. With the purpose to develop a middle-level modern city of Hunchun, more population and information will be attracted to the area. Hunchun International harbor project will be developed based on three phase, from covering 85 ha area close to Hunchun railway port area with the total construction investment of 1 billion RMB, to promoting logistics among China, DPRK and the Russian Federation.

Jingxin wetland distributed in the southernmost part of Hunchun city, especially Fangchuan, is the main attraction site of Hunchun. Since the Fangchuan National Scenic area was established in [year] as an important tourist attraction, Hunchun government provided funds and policy support. A series of travel facilities were built such as Wanghaige, Longhuge, sand park and lotus lake park. Residents in Fangchuan village used to move to other areas to make money, but they are coming back to the town to operate home-stay businesses (延边广播电视台, 2019).

Figure xx. Fangchuan residence house for travelers

source: 延边广播电视提案, 2019

Hunchun city holds Goose Watchgin Festival every March or April since [year] to attract more tourists from other places in China and other countries to see migratory birds. In the Longshan lake which is located in the central of the wetlands, bird watching and photograph shooting facilities were built and more travelers visits the area during the bird migratory season. Restaurants and hotels have more profits in the season when they used cannot earn such much.

Figure xx. Bird watching at Longshan Lake

(source: xx)

Tourism in China, DPRK and the Russian Federation is under the different situation. In China, tourism development in the Yanbian area is very fast. More travelers come to visit Yanbian, and market is more stable. However, the development in the DPRK boarder area is slow because of the economic and political limitation. Tourism development in the Russian Far East gets slow due to economic deprevation over the recent years (Yanling Wen and Qianyu Zhang, 2010)

Tourism market in Hunchun has more potential to be further developed, for instance by focusing local factors such as its unique Korean-Chinese culture, Changbai Montain and Fangchuan area (see Figure xx for three countries view). Ecotourism such as bird watching has not been broadely introduced or organized by the local tour companies, thus there are very few bird watching guides available.

Figure xx. Migratory birds in Jingxin Wetland

(source: xx)

Figure xx. Fangchuan area three countries

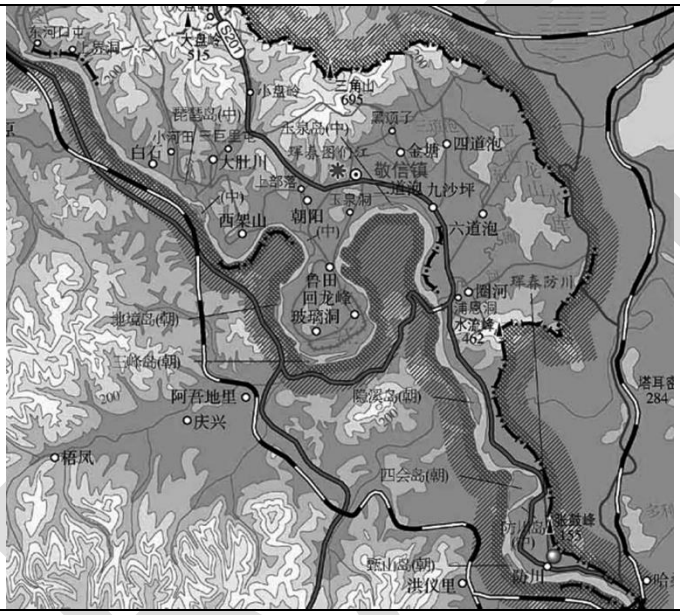
(source: xx)

3.2.4. Conservation and management systems

UNDP initiated the Tumen River Area Development Project in 1992, with the purpose to promote the international communication on economic development, based on *The outline of the development and development plan for the Tumen river in China,* considering the development needs

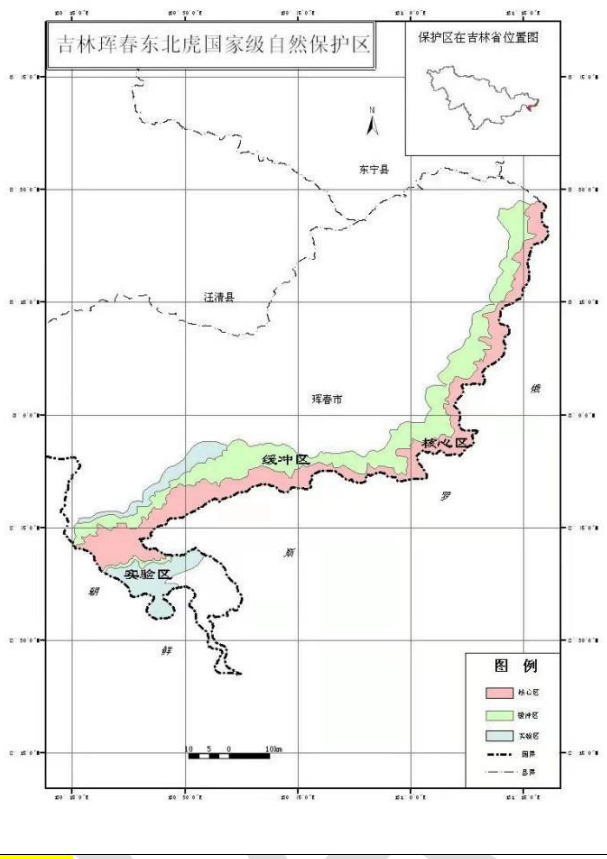
such as harbor construction and transportation system development. In 1997, Jingxin area was registered as Jingxin National Forestry Park, under the management of Forestry department. In the year of 2001, Jingxin wetland was included as one part of the Hunchun Amur tiger Provincial Nature Reserve. The conservation management in local level belonged to Nature Reserve Bureau of Hunchun. However, main part of the Jingxin wetland area was excluded from the Reserve in 2005, when this nature reserve was promoted to National level due to the Tumen river development plan. In the same year, Fangchuan National Scenic Spot was established under the management of Hunchun government, covering most part of the downstream wetlands of Tumen river.

Figure xx. Jingxin wetland area



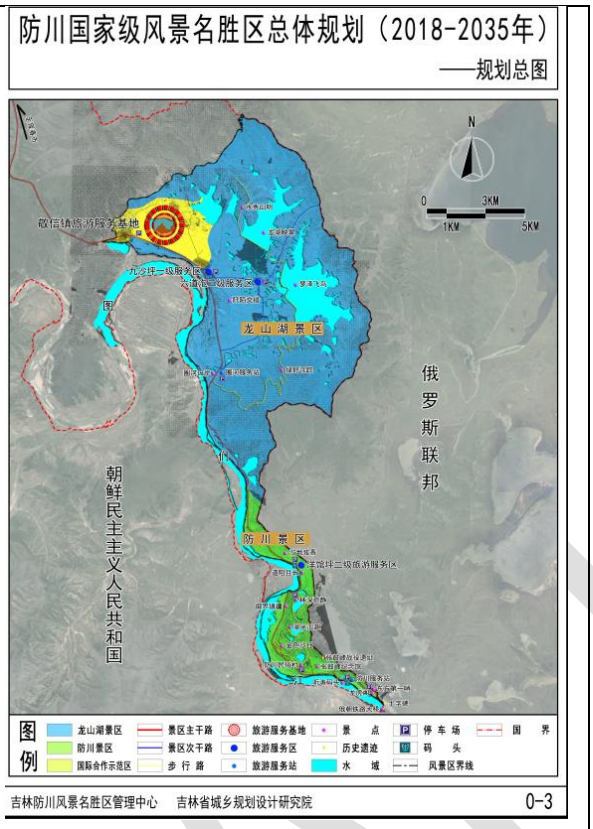
Source: Mingyou Shi and Huizi Lv, 2016

Figure xx. Hunchun Amur tiger National Nature Reserve



(source: xx)

Figure xx. Fangchuan National Scenic Spot



(source: xx)

Yanbian State government established Yanbian wetland center in 2016, which is a non-profit organization under the management of prefecture government. The center's main objectives include conducting the wetland resource survey, monitoring the change of wetland landscape, and providing conservation suggestions based on science. In the national level, the main conservation management group is National Forestry and Grassland Administration (NFGA).

3.2.5. Challenges and opportunities

Jingxin wetland is not listed now as nature reserve in China, but regular monitoring and daily patrol are functionally conducted. Insufficient fund and scientific knowledge bring risks for an effective management, and cannot provide quality information to prepare a well-structured development plan in the local area.

Current use of Jingxin wetland	Way of use
River area	The Quanhe river and Tumen river are currently not much in specific use, and their conservation is not well managed. There are potential ways to develop sustainable ecotourism programmes.
Natural wetland	Area loss by farming is not sustainable way of use. The wetland size is increasing with the very important reason of the farming activities. More education and law enforcement will be needed.

Bird watching	The purpose is to conserve migratory birds resting for one month in Jingxin wetland. Such activities provide more opportunities for the local people, especially those who are running restaurants and home-stay services. There are also potential areas to attract local people to expand the bird watching activities. Examples may include training of local residents as bird guides or hand-made local souvenirs. More scientific training will be needed for such as disease prevention and migratory bird management.
Tourist sites around wetlands	Especially in Fangchuan area, there are not enough facilities about wetland, thus more wetland-related programmes can be developed.

Farming area expansion (especially paddy field) and traditional grazing style may decrease the wetland size, and fish-pond industry may cause the wetland landscape to be more fragmented. Ocean economy development may also bring potential threats to the local ecology. Population increase, more heavy traffic and harbor constructions may cause impact on the ecology, if such development activities are not well managed. Industries relying on wetland resources can be threatned as well.

Due to its special geographical location, Jingxin wetland receives international attention. Fortunately, current atmosphere towards environmental ecology in China is favorable to promote conservation actions.

Since 2009, central government has started a pilot programme to provide compensation for wetland ecology. For instance, special funding for wetland allowance project was established in 2010; and the ecology civilization construction outline designated the wetland conservation red line in 2013. In the same year, the State Forestry Administration (currently NFGA) announced the wetland conservation management regulation. Thus, sustainable development can be promoted along with such guidelines.

3.3. Diverse perspectives in wetland management and use

3.3.1. Conservation authorities

Due to the administrative reform, conservation authorities have been experiencing many changes including new management strategies, plans and management regulations to be revised or implemented in the near future. Uncertainties still exist until the all reform process is settled down; and local management authories may experience insufficient budget for daily management and conflicts with development plans.

Since the Ministry of Natural Resources was established in 2018, the previous conservation system has been changing. Forestry and grassland department now combined together as one department. Ministry of Natural Resources is also responsible for national park management. In the local level, the previous system such as Hunchun Nature Reserve and Hunchun forestry department still exists, and now belongs to the branch of National park system. However, staff management as well as

national park regulation are under reform process, and it will take more time to make everything get organized in the local level. As for Jingxin area, Hunchun Forestry department takes the responsibility of the whole wetland management. However, wildlife issues will be under the management of Hunchun Nature Reserve, and tourism issue will be managed by the Hunchun government (Scenic spot administration). Currently, there are no ongoing economic development compensation projects in Jingxin wetland.

Table xx. [title]

Name	Description
Hunchun Forestry Bureau 珲春市林业局	• Managed by Government, National Forestry and Grassland Administration, National Park Administration • Working on wildlife management
Scenic Area Management Bureau 风景名胜区管理局	• Managed by Government • Working on the Fangchuan scenic area management
Hunchun Tiger Nature Reserve 珲春东北虎自然保护区管理局	• Managed by Government, National Forestry and Grassland Administration of China, National Park Administration • Working on wildlife management

3.3.2. Local communities

Main source of livelihood includes agriculture, grazing (cattle as the main livestock), beekeeping and fishing (especially Tumen river region). However, expanded farming area and traditional grazing style have negative influence on the local wetland ecology and environment. Also farmers are willing to develop their economic conditions under the pressure of market economy.

Jingxin area as the most southern part of Hunchun is the important place for tourism development. Fangchuan scenic is one of the eight famous tourism sites in Jilin province. A compensation project has started since 2007 to cover losses when harvests or live stocks are damaged by wildlife such as migratory birds (especially goose species). All applications for compensation are reviewed and evaluated by the Forestry department.

Table xx. [title]

Local stakeholders	Livelihood changes by development projects	Benefit/loss from wetland
Local villager (e.g. farmers)	Income of local villagers has increased by various kinds of poverty reduction activities by government. However, their livelihood pattern such as grazing style or wetland farming has not changed.	half (some are benefited by growing wetland-friendly products; but others are not)
Restaurant owner	-	Benefit
Local ecotourism related company (e.g. Longshan lake Industrial Co., Ltd.)	-	Benefit
Mining company	-	Loss

Table xx. [title]

Name	Description
Amur tiger and Amur leopard monitoring and research center, state Forestry and Grassland Administration of China, National Park Administration 国家林业和草原局国家公园管理局东北虎豹监测与研究中心	• Managed by National Forestry and Grassland Administration, and National Park Administration • Working on wildlife monitoring and research
Amur tiger and leopard National park research institute 东北虎豹国家公园研究院	• Managed by Beijing Normal University and Yanbian University • Working on wildlife monitoring and research
Northeast Tiger and Leopard Biodiversity National Observation and Research Station 东北虎豹生物多样性国家野外科学观测研究站	• Managed by Ministry of Science and Technology
Key laboratory of SFGA on Conservation Ecology in the Northeast Tiger and Leopard National Park 东北虎豹国家公园保护生态学重点实验室	• Managed by National Forestry and Grassland Administration, and National Park Administration • Working on wildlife monitoring and research
Jilin Hunchun Wildlife Conservation Association 吉林省珲春市野生动植物保护协会	Chinese NGO
Global Protected area friendly system 保护地友好体系	Chinese NGO http://www.baohudi.org/
Photographic Society in Hunchun 珲春摄影协会	
Hunchun Tourist company	List includes 宇通国际旅行社，东方龙旅行社，三国情旅行社，珲春国际旅行社，信成旅行社，时代旅行社，驴妈妈旅行社，滨海国际旅行社，泰达国际旅行社，红菊国际旅行社
Restaurants in Jingxin	List includes 敬信饭店,望海饭店,莲花饭店,渔米乡饭店,独一处饭店,荣华园饭店,旺好角饭店,吉春农村饭店,延边圈河农家乐饭店,心和饭店

3.3.3. Other important stakeholders/third parties

Those who have pond contractors at Jingxin and Fanchuan areas, have access to these areas and utilize wetland resources for economic development, such as farming businesses of fish, shrimp, crab and ducks. The local restaurants sell food of wildlife years before, many people came for consuming the wild goose, but now after these strict management for restaurant it is rare to see this in the area.

Yanbian state government established a wetland center in [year], to improve science-policy linkages to bridge the gap between researchers and policy makers. The center cooperates with academia and researchers, and conduct monitoring and sustainable development research for legislation.

Other organizations such as WCS, WWF and Baohudi (Chinese organization) have been working for this area for a long time, and contributed to capacity building and fund-raising.

3.3.4. International/ regional mechanism

Saving important bird species and endangered big cats requires joint conservation efforts of all range countries and strengthened collaboration through such as well-established communication channel or support from international organizations. [any further narratives or examples to support 3.3.4?]

3.4. Gaps and needs analysis

3.4.1. Data and monitoring

According to the current management department in local level (Hunchun Forestry Bureau), the latest research for birds in the wetland was funded by Baohudi in 2014. However, data is not available to the public yest as it was the joint research with other research organizations. The newly established Yanbian Wetland Centre under the management of Yanbian government, conducts monitoring on wetland landscape change and establishes database based on specific projects.

Constant monitoring on wetland change and species is essential to make management decisions. Also the urgent need is long-term monitoring activities in the Jingxin wetland. However, it is very challenging due to lack of human power and budget.

3.4.2. Management capacity

As for the local management groups, the regulations and work plans have to be clarified first. Then, fund-raising activities, patrolling skills (e.g. GPS usage, map reading and driving), species identification skills (fauna and flora) and other capacities such as law enforcement, data management and mapping are also needed.

Table xx. [title]

Management group	Respective role	Responsibilities
Hunchun Forest Bureau	Wetland management upon the regulations	Education, patrol to prevent poaching, etc.
Hunchun Nature Reserve	Management on wildlife related issues	Deal with cases about wildlife (e.g. wildlife roadkill)
Scenic Spot Administration	Scenic spot management	Affairs related to scenic spots
Yanbian Wetland Protection Center	Yanbian Government wetland research center	Collect wetland information in Yanbian, monitoring wetland change, etc.
local villages	Resource user (mostly for farming and grazing)	-
fishpond owners	Resource user	Tax

3.4.3. CEPA on value of wetlands

- Communication: government-led [any examples?]

- Education: the local forestry authorities organize the Hunchun Goose Festival every year, and publicize and educate local residents during the birds' migration season. The education purpose is to raise awareness of wetland birds for local residents, who used to consume wild goose meat. It is now hard to see this menu in the local restaurants.

- Public awareness: higher education institutions, bird watching groups. [any examples?]

3.4.4. Synergy of regional/local development planning and conservation planning

Hunchun Forestry Bureau becomes the main conservation group in the Jingxin wetland area. Due to the insufficient funds, only limited number of patrols can be done during spring and autumn migration season to prevent bird hunting. With the support by other conservation groups such as Baohudi, Jiushaping villiage, a local community, built a farm patrol team, and now contributes daily patrol works, according to the Hunchun Forestry Bureau.

Jilin province tried to develop Hunchun as one of the important ocean economies in 2019. This development plan may bring economy opportunities to Hunchun, but at the same time cause unexpected conflicts for ecology conservation as well.

Jingxin area is also an important area for the transportation to the Russian Federation and DPRK, located in only 15 km to the Sea of Japan/East Sea. In the latest ocean development plan, one of the important actions is to construct the harbor to the Russian Federation and to other areas in China. Harbor construction itself can bring impacts to wetlands, but economic development, traffic and population increase accordingly may have influence on the ecology and environment of the area.

Chinese government now pays careful attention to green growth, so more conservation plans may come out as the ocean development happens.

3.4.5. Resources availability

Recently, environmental charities and NGOs in China are active, and more public- and non-government organizations care about nature conservation than before. A new programme such as migratory birds conservation project, *Renniaofei*, was launched by SEE foundation to save 100 wetlands and 24 endangered wetland birds during 2016-2026.

3.5. Conclusion

Jingxin wetland is located in the downstream area of the Tumen river, where China, DPRK and the Russian Federation share the same ecosystem. Three important ecosystems, i.e. forest, ocean and

wetland, exist in this special area. However, from the Chinese side, it is not easy to list the Jingxin wetland as an important national-level wetland due to its small size. With economic development over the decades, Jingxin wetland lost its natural swamp, and is facing threats by anthopogenic impacts and insufficient management effort.

Despite all benefits and sustainable ecological services that welands can provide, Jingxin wetland is challenged by economic development plans. However, it is expected that China's ecological civilization construction and international joint efforts will provide more opportunities for better conservation and sustainable use of Jingxin wetland.

3.5.1. Shared core/important/special value and trends of changes

Both of them are as important transit region for important birds, and they provide habitats for large and endangered wild animals as well. The joint area is very important for connecting the North-East Asian ecological network. Both of them face similar management problems, such as weak protection management and insufficient human power and funding.

Based on the existing information and wetland monitoring data of the Tumen River Basin in China, a wetland health evaluation system was established in [year] to check ecological characteristics, ecosystem service function as well as social and political environment. Prohect layers include 22 indexes, and the index weight has been determined by analytic hierarchy process (AHP) and field method. Results showed that the Jingxin wetland health status has been degradaded (Weihong zhu, et al., 2014). Currently, desertification prevention programme and Tumen river lotus restoration programme are under implementation.

3.5.2. Country differences

Ecology environment is different by each country, so most threats caused by human beings are different as well. [any examples?]

3.5.3. Shared challenges and opportunities

Similar to the situation of the Russian side, Jingxin wetland is not listed as an important protected area in China's protected area system, and faces similar problems such as insufficient monitoring, management personnel and funds.

3.6. Recommendations

Following steps can be considered towards strengthening and institutionalizing the cooperation among three protected wetlands in the Tumen River Estuary across China, DPRK and the Russian Federation.

- Establish a complete monitoring system, which will provide basic information on conservation and management

- Complete a management system to formulate a feasible working plan for wetland conservation management
- Design a wetland area(s) for conservation, restoration and reconstruction based on the detailed information and management regulations for each wetland of three countries
- Prepare a joint plan for sustainable use upon the conservation and restoration status

Proposals for future activities

- Carry out regular wetland survey
- Establish wetland monitoring stations
- Promote pilot projects for wetland conservation and restoration
- Prioritize natural recovery of wetland, supplemented with artificial restoration
- Ecologically restore fragmented or degraded wetlands with comprehensive treatment
- Establish a wetland restoration project
- Change lifestyles of local residents towards more sustainable way
- Apply to designate the Tumen River wetland areas as a wetland of international importance.
- Complete science supporting system
- Establish a pilot programme for environmental education, and expand environmental education.

4. Khasan wetland

4.1. Introduction

4.1.1. Overview of ecosystem integrity and ecological connectivity in Tumen River Estuary

The Tumen River is one of the largest rivers of the Sea of Japan/East Sea basin. Its estuary part and plain are under the jurisdiction of three countries and represent a single ecosystem. Here, within a limited space, at the junction of the mainland and the ocean, a wide variety of ecological environments is represented. The relief of the region is contrasting. Its western, most elevated part is covered with forest. With a decrease in relief towards the seacoast, the proportion of woody vegetation gradually decreases. Separate sections of the coastal landscape in the Russian sector acquire a unique look, called the “anthropogenic savannah”. Despite the man-made origin (a consequence of old felling and regular fires), this landscape is stable and is characterized by a specific composition of avifauna and an unusually high nesting density of a number of bird species. The sea hosts a network of coastal islets, which are of particular value as a nesting and wintering place for colonial birds and waterfowl. The dominant part of the seacoast is low-lying. Shallow bays, salty lagoons and freshwater lakes, as well as sand-silt spits with rich littoral biodiversity, attracting hundreds of thousands of waterfowl and shorebirds during migrations, are confined to it.

The relief and typical monsoon climate of the area determined its natural vegetation. Here, 1,251 species of vascular plants belonging to 541 genera of 140 families are represented. Grassy communities occupy up to 90% of the coastal lowlands (Chubar, 2000).

A specific feature of the coastal plain is an abundance of sandy hill ridges alternating with depressions, occupied by various kinds of water bodies. The areas of freshwater lakes vary from 0.2 to 3.3 km^2; maximum depths are up to 1.6-4 m. The area of the largest lagoons reaches several dozens of square kilometers. They have a limited but constant exchange with sea waters, in particular due to the tides. The adjacent water area is characterized by irregular semidiurnal tides, but amplitude does not exceed 50 cm. The general water movement is reversional: in the high tide phase, the flow is directed to the north, and in the low tide phase to the south and south-west (Moschenko et al., 2000).

Floods ensure regular biotic and abiotic exchange between the waters of Tumen River, isolated non-flowing freshwater reservoirs of the plain and salty water lagoons. During the spring flood and during intense rains, rivers and lakes and oxbow lakes overflow and unite, and the whole coastal plain becomes completely covered with water. This exchange can be best seen in the composition of the ichthyofauna of freshwater lakes in the coastal lowlands, where new species appear from time to time, partly due to leaks of cultivated fish species from Chinese pond farms (Sokolovsky et al., 2000). This should also be taken into account when evaluating of the risks of pollution exchange between industrialized areas of Tumen river basin and poorly developed or practically not disturbed areas.

According to the data from the end of the 20th century, the region is usually classified as non-polluted (in terms of the water content of metals such as Cd, Pb and Zn) or slightly contaminated with

Cu and organochlorine compounds (Shulkin, 2000; Shulkin, Moshchenko, 2000; and Chernova, Kavun, 2000).

4.1.2. Role of wetlands for regional sustainable development

4.1.3. Necessity and urgency of transboundary conservation

Khasansky Nature Park has got a low protection rank in the system of protected areas of the Russian Federation and is subject to regional government legislation: these two facts are its weak points. Two main problems are associated with the lack of funding as well as the possibility of optimizing and revising borders. Due to the lack of sufficient funding, the park does not fulfill a significant part of the functions declared and established at the time of its creation. The Directorate was officially abolished about 10 years ago, and there is no staff. Instead, a ranger from another institution performs the function of territorial protection. Promising environmental projects (e.g., the creation of Red-crowned crane breeding population) are paused. Until now (22 years after the establishment), land and cadastral issues have not been fully settled, and the area and the functional zones of the territory are constantly being reviewed. The latest administrative decisions in this regard date 2019 (Regulation ... dated May 31, 2019). In general, there is a trend towards increased recreational load, and the allocation of special areas that allow some of the previously unmentioned activities (Fig. 4, Table 6).

All this is happening during the time of serious changes in the system of regional protected areas [year??]. Currently, the process of departmental reassignment of a number of protected areas has been initiated. In particular, Far Eastern State Marine Biosphere Reserve was under the jurisdiction of the Russian Academy of Sciences since its foundation in [year], but now the option of transferring it to the Ministry of Natural Resources of the Russian Federation is being considered. There is a possibility of joining the Khasansky Park to the Far Eastern State Marine Biosphere Reserve or to the Land of the Leopard National Park. Theoretically, the risk of complete abolition of the Khasansky Park is not excluded, and at least freshly introduced amendments to the regional legislative framework allow this possibility (Annex xx). In general, the situation looks stagnant, and a new impulse is required. Such an impulse could become the involvement of the park in the cross-border Ramsar site or a protected area. Biological arguments justifying the importance of an international approach to the conservation of Tumen Delta are discussed in the later section.

4.2. Status and trends

4.2.1. Background

The expert community has expressed several points of view regarding further steps to protect wetlands in the Russian part of the Tumen River Estuary. As the ornithological value of this territory is universally recognized, the idea of creating a protected area with an emphasis on bird conservation has been around since the beginning of ornithological studies of the study of the region. In different years, various options for preserving the area have been suggested, from the creation of an independent federal nature reserve to the joining of coastal wetlands to the Far Eastern Biosphere Marine Reserve

already functioning nearby. In the late 1990s, an attempt was made to make the estuary of Tumen River and the adjacent water area a Ramsar Site of International importance. Its official name was “Khasan-Tumen River Delta”. The declared area of 87,400 ha (Fig. xx-a) covered the entire spectrum of aquatic habitats of birds and met the Ramsar criteria in excess (Litvinenko and Shibaev, 1997). The international significance of the site was recognized by the Russian government, but the best that was achieved was the inclusion of this site in the shadow Ramsar list with the prospect of being transferred into the actual list (National Report on the Implementation of the Ramsar Convention on Wetlands, Uruguay, 2015). That status facilitated the creation of the Khasansky Nature Park, which occupied about a half of the coastal lowland territory, which is part of the shadow “Khasan-Tumen River Delta” site. Its establishment in 1997 became an emergency measure in response to the plans being worked out to create an international industrial cluster in the estuary part of Tumen River, which envisaged a serious transformation of the Russian part of the border-adjacent wetlands (Tumen River Economic Development Area (TREDA) project).

A part of the expert community regarded this step as the only plausible one at that time, while others considered it as a “losing ground”. The disadvantages of this decision were (1) the small area of the park (12,298 ha, which was 3 times less than the land area of the shadow Ramsar site), (2) its suboptimal localization, and most importantly, (3) its regional (prefectural) status, not federal-level, which did not guarantee irreversibility of the protected status. Over time, regional environmental emphasis has shifted towards the conservation of large mammals, mainly big cats. The system of protected areas of southwestern Primorye was seriously optimized for these tasks. The total area of protected land with limited or prohibited access in the south-west of Primorye significantly exceeded the average regional standards, which significantly reduced the prospects of giving Khasansky Park a higher protection status (limits were exhausted). A return to the idea of restoring the site within the Khasan-Tumen River Delta is currently being assessed as a futile path. The idea of including the Khasansky Park within the existing borders as part of the Transboundary Ramsar Site seems quite realistic, but it may turn out to be ineffective since the Ramsar status in the Russian legislation system is advisory rather than binding.

One way or another, the objective of this study is to assess the current environmental significance of the Khasansky Park territory as an alternative (or a successor) to the Khasan-Tumen River Delta (shadow Ramsar site) and a candidate for joining the cross-border Ramsar site.

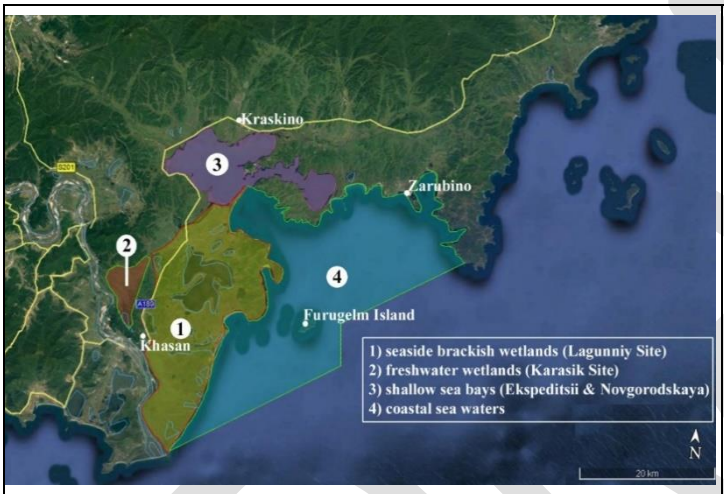
Justifying the borders of Khasan-Tumen River Delta site took into account four major landscape and ecosystem components, characterized by a special contribution to the maintenance of biodiversity in the region (Figure xx).

1) Seaside brackish wetlands, with a developed network of channels, fresh and brackish lakes and shallow lagoons located on the coastal lowlands (Lagunny site – 29,600 ha) - the core of the land, the most important stopover and breeding sites of numerous waterfowls, shorebirds, cranes, rails, grebes and others; and foraging places for sea colonial species
2) Freshwater wetlands (Karasik site, 3,400 ha) - mostly wetlands, an important breeding area for some rare birds
3) Shallow sea bays (12,400 ha) – important stopover sites for waterfowls and sea water birds

4) Costal sea waters (42,000 ha) – partially non-freezing water area, the area of mass nesting and wintering of sea colonial birds, and wintering of waterfowl

The total area of the nominated territory amounted to 87,400 ha (Figure xx-a). Khasansky Nature Park occupies about a half of the land core of the Khasan-Tumen River Delta shadow site. It lost the sea and shallow bays completely, as well as the largest Ptichya lagoon (Figure xx). As a result, it completely loses its importance in supporting the marine avifauna - about 15 species of colonial nesting birds, numbering many thousands of individuals, as well as an impressive list of migrants and wintering waterfowls that keep to the water area and vast bays. The most significant territory loss is nesting habitats for Black-faced Spoonbill and Chinese Egret, located on the coastal island of Furugelm. The above listed losses require reassessment of compliance with the Ramsar criteria.

Fig xx. Territory ratio of the Khasan-Tumen River Delta (Shadow Ramsar Site) and Khasansky Nature Park



a) "Khasan-Tumen River Delta" Shadow Ramsar Site (87,400.0 ha)

b) Khasansky Nature Park (12,298.2 ha)

4.2.2. Key species and ecosystem services

Over 140 years of research have been devoted to birds in Southwestern Primorye, resulting in many publications including several monographic summaries (e.g. the most recent of them such as Nazarenko et. al., 2016 and Glushchenko et al., 2016). The format of summarizing papers does not always allow us to isolate the necessary information regarding a specific territory of interest, so we had to turn to the primary sources. We analyzed a rather impressive list of ornithological works (more than 50) published after the establishment of the Khasansky Park, although only a part of them is listed in the cited literature.

The main area of ornithological studies of the last two decades is faunistics, an inventory of species composition, clarification of nesting status of poorly studied and new species for the region. The second direction, well developed and covered in publications, is long-term monitoring of marine

colonial birds' populations nesting on nearby islands of the marine reserve and using coastal wetlands for foraging. The third is the special work on assessing the status of individual Red Data Book species (single-species studies). In this regard, the situation with Black-faced spoonbill, Chinese egret, Baer's pochard, Reed parrotbill, Japanese swamp warbler and others is well studied, while some "white spots" still remain. For example, the current situation with migrating waders is not monitored at all, and we do not know the scale of their migration and the way they use the territory. There is a large time gap in the data on migratory waterbirds (the last express inventory, still unpublished, was carried out in 2005). There are completely no data on the status of wintering waterfowls and sea colonial species in the water area adjacent to the park.

In general, the information from publications, together with unpublished data from the Institute of Biology and Soil Sciences, is sufficient to upgrade the current ornithological significance of the Khasansky nature park, and to assess population trends, threats and prospects.

A complete list of avian species, indicating their breeding and conservation status, is given in Annex III. The order, volume, Russian and Latin names of taxa are given in accordance with the monograph (Nazarenko et al., 2016) and the taxonomic summary (The Howard and Moore's, 2014).

The bird fauna of the park consists of 285 species and exceeds 300 if we take into account the accidental visitors. The number makes up more than half of the entire avifauna of the Primorsky Territory, estimated at 505 species (Glushchenko, 2016). Its fauna is represented by 51 families and is rather heterogeneous in the ecological and systematic sense (Table xx). The most fully represented families are 26 species of Anatidae (e.g. Ducks, Geese and Swans), 34 species of Charadriidae (e.g. Plovers Lapwings), 13 species of Scolopacidae (e.g. Sandpipers) and 7 species of Rallidae (e.g. Rails and Coots). The listed representatives of the wetland complex form a massive bird background during the migration period, but are rather poorly represented in the nesting period (Annex III). The basis of the summer population of water and near-water birds is 15 species of Ardeidae (e.g. Heron), 11 species of Laridae (e.g. Gulls and Terns) and 5 species of Podicipedidae (e.g. Grebes). The nesting fauna is represented by the following categories: 84 species breeding within the Park territory and 14 species nesting in the nearby territories including on the Sea Islands but regularly visiting the coastal plain for feeding purposes. Some of these species, for example, Black-faced spoonbill and Chinese egret, are critically dependent on the coastal wetlands, since they have no other alternative foraging land. The vast majority of species (162) are seasonal migrants, of which 141 species transit through this territory, or make a stopover here for up to several weeks to replenish fat reserves. In addition to waders and waterfowl, this includes a large group of passerines associated with tree-shrub communities. Of the non-nesting species, 21 species spend their summers here as vagrant birds or stay for molting. Finally, 25 species spend their winter here - these are mainly birds of prey. For the latter category, the territory of the Park is not critical, as it is one of their many alternative places for wintering.

Table xx. Family diversity of the avifauna of Khasansky Nature Park

№	Family name	species number
1	Accipitridae – Ястребиные, Kites, Hawks and Eagles	17
2	Acrocephalidae – Bush, Reed and Swamp Warblers	4

3	Aegithalidae – Ополовники, Long-tailed Tits	1
4	Alaudidae – Жаворонковые, Larks	1
5	Alcedinidae – Зимородковые, Kingfishers	1
6	Anatidae – Утиные, Ducks, Geese, Swans	26
7	Apodidae – Стрижиные, Swifts	1
8	Ardeidae – Цаплевые, Herons	15
9	Campephagidae – Личинкоедовые, Minivets and Cuckooshrikes	1
10	Caprimulgidae – Козодоевые, Nightjars	1
11	Certhiidae – Пищуховые, Treecreepers	1
12	Charadriidae – Ржанковые, Plovers & Lapwings	34
13	Ciconiidae – Аистовые, Storks	1
14	Columbidae – Голубиные, Pigeons	2
15	Coraciidae – Сизоворонковые, Rollers	1
16	Corvidae – Врановые, Crows and Jays	8
17	Cuculidae – Кукушковые, Cuckoos	3
18	Emberizidae – Овсянковые, Old World Buntings	13
19	Falconidae – Соколиные, Falcons and Caracaras	7
20	Fringillidae – Вьюрковые, Finches, Euphonias and Hawaiivan Honeycreepers	12
21	Gruidae – Журавлиные, Cranes	3
22	Haematopodidae – Кулики-сороки, Oystercatchers & Ibisbill	1
23	Hirundinidae – Ласточковые, Swallows	5
24	Laniidae – Сорокопутовые, Shrikes	4
25	Laridae – Чайковые, Gulls and Terns	11
26	Locustellidae – Сверчковые, Bush Warblers	5
27	Motacillidae – Трясогузковые, Wagtails and Pipits	14
28	Muscicapidae – Мухоловковые, Chats and Flycatchers	14
29	Oriolidae – Иволговые, Orioles, Figbirds and allies	1
30	Pandionidae – Скопиные, Osprey	1
31	Paridae – Синицевые, Tits, Chickadees	4
32	Passeridae – Воробьиные, Sparrows, Snowfinches and allies	1
33	Phalacrocoracidae – Баклановые, Cormorants	1
34	Phasianidae – Фазановые, Partridges, Pheasants, Grouse	2
35	Phylloscopidae – Пеночковые, Old World Leaf Warblers	8
36	Picidae – Дятловые, Woodpeckers	8
37	Plectrophenacidae – Подорожниковые, Longspurs	2
38	Podicipedidae – Поганковые, Grebes	5
39	Prunellidae – Завирушковые, Accentors	1
40	Rallidae – Пастушковые, Rails and Coots	7
41	Recurvirostridae – Шилоклювковые, Stilts and Avocets	1
42	Remizidae – Ремезовые, Penduline Tits	1
43	Scolopacidae – Бекасовые, Sandpipers	13

44	Scotocercidae – Bush Warblers and allies	2
45	Sittidae – Поползневые, Nuthatches, Spotted Creepers and Wallcreeper	1
46	Strigidae – Совиные, Owls	5
47	Sturnidae – Скворцовые, Starlings	3
48	Sylviidae – Славковые, Sylvia Warblers, Parrotbills and allies	2
49	Threskiornithidae - Ибисовые, Ibises	2
50	Turdidae – Дроздовые, Thrushes	4
51	Turnicidae – Трехперстковые, Buttonquails	1
52	Upupidae – Удодовые, Hoopoes	1
53	Zosteropidae – Белоглазковые, White-Eyes	1

The avian fauna of the Park represents several multidirectional population trends, reflecting global processes in populations. In particular, over the past 20–25 years, the species list has incorporated 23 new species, including 13 breeding species (Table xx). For some species, it was the matter of clarification of their status, but others are really new to the region (new breeding species for the Russian Federation, that have firmly settled in this region). These includes Little grebe, Chinese egret, Little egret, Black-faced spoonbill, American herring gull and Eastern penduline tit. The species that are at the initial stage of expansion and are episodically breeding but hard-to-detect are Yellow bittern, Chinese pond heron, Japanese swamp warbler, Indian cuckoo, Reed parrotbill and Red-billed starling. Their breeding was suspected earlier and now it has been proven (Balatsky, 2015; Burkovsky et al., 2000, 2015; Gluschenko, Korobov, 2014, 2015; Glushchenko et al., 2015, 2016a, 2016b; Litvinenko, Shibaev, 1999a,b, 2011,2016; Sotnikov et al., 2016; and Shibaev, 2010, 2014).

Table xx. New bird species that have added to the avifaunistic list of the Khasansky Nature Park and surrounding territories over the past 20 years

English name	Scientific name	Russian name	new breeders	new regular visitors
Brent Goose Brant	*Branta bernicla nigricans* (Lawrence, 1846)	Черная казарка		*
Greater Flamingo	*Phoenicopterus roseus* (Pallas, 1811)	Розовый фламинго		*
Little Grebe	*Tachybaptus ruficollis poggei* (Reichenow, 1902)	Малая поганка	*	
Indian Cuckoo	*Cuculus micropterus micropterus* (Gould, 1838)	Индийская кукушка	*	
Ruddy-breasted Crake	*Zapornia fusca erythrothorax* (Temminck & Schlegel, 1849)	Красноногий погоныш	*	
Yellow Bittern	*Ixobrychus sinensis* (J.F. Gmelin, 1789)	Китайский волчок	*	
Chinese Pond Heron	*Ardeola bacchus* (Bonaparte, 1855)	Белокрылая цапля	*	
Little Egret	*Egretta garzetta garzetta* (Linnaeus, 1766)	Малая белая цапля	*	
Chinese Egret	*Egretta eulophotes* (Swinhoe, 1860)	Желтоклювая цапля	*	

Black-faced Spoonbill	*Platalea minor* (Temminck & Schlegel, 1849)	Малая колпица	*	
Grey-headed Lapwing	*Vanellus cinereus* (Blyth, 1842)	Серый чибис		*
Little Gull	*Hydrocoloeus minutus* (Pallas, 1776)	Малая чайка		*
Relict Gull	*Ichthyaetus relictus* (Lönnberg, 1931)	Реликтовая чайка		*
Great Black-headed Gull	*Ichthyaetus ichthyaetus* (Pallas, 1773)	Черноголовый хохотун		*
American Herring Gull	*Larus (smithsonianus) mongolicus* Sushkin, 1925	Монгольская чайка	*	
Black-capped Kingfisher	*Halcyon pileata* (Boddaert, 1783)	Ошейниковый зимородок		*
Blyth's Pipit	*Anthus godlewskii* (Taczanowski, 1876)	Конёк Годлевского		*
Eastern Penduline Tit	*Remiz consobrinus consobrinus* (Swinhoe, 1870)	Восточный ремез	*	
Japanese Swamp Warbler	*Locustella pryeri sinensis* (Witherby, 1912)	Японский сверчок	*	
Reed Parrotbill	*Paradoxornis heudei polivanovi* (Stepanyan, 1974)	Тростниковая сутора	*	
European Starling	*Sturnus vulgaris poltaratskyi* (Finsch, 1878)	Обыкновенный скворец		*
Rosy Starling	*Pastor roseus* (Linnaeus, 1758)	Розовый скворец		*
Red-billed Starling	*Spodiopsar sericeus* (J.F. Gmelin, 1789)	Красноклювый (шелковистый) скворец	*	

Baer's pochard and Falcated duck are among the most important losses. Individuals of the first species are still sometimes recorded in the nesting period, but without signs of breeding, the latter species stops in a noticeable number during the spring migration (single-species flocks of up to 200 individuals) and in a small number in summers, but without breeding (Peklo, 2011; and Surmach et al., unpublished).

In general, the fauna of the Park is a somewhat of a lesser version of the shadow Site due to the lack of its marine component (water area and shallow lagoons). These habitats could add another 15 species of birds to the faunistic list and, more significantly, would increase the Park's internationally important rating as a wetland regularly supporting at least 20,000 water birds. To satisfy this formal criterion, it would be sufficient to include nearby Ptichya lagoon to the Park, which is an analogue of shallow bays in terms of importance for water birds.

The territory includes 31 species from the IUCN Red List including 7 endangered and 3 critically endangered (Table xx). Here we give a brief overview of the status of globally protected species, for which the territory of the Khasansky Park is important and critical.

Baer's pochard. Until the mid-1970s, at least 30–40 pairs nested between the Tumen River and the Expedition Bay on fresh islands and brackish lagoons of the coastal plain. This was one of the dominant species of nesting waterfowl, and by this parameter, this wetland was the second most

important in the coastal area after Lake Khanka. However, from the mid-1980s the nesting number sharply decreased and remained at a very low level until the beginning of the current century (surveys of 1984, 1990, 1993 and 1995-98, revealed only a few individual birds) (Litvinenko and Shibaev, 1999). A special survey organized in 2014 as part of a coordinated survey revealed only 2 single individuals and a group of 3 birds with no signs of nesting (Surmach and Shibaev, unpublished). In the last 5 years, data on this species are absent; a tiny population might have survived. One of the main reasons for the plight of the species is the spring hunt for waterfowl.

Falcated duck. Until recently, it was a common migratory and rare breeding species of the area in question. Given the powerful negative trend of its global population in recent decades, the state of this species during migration in southwestern Primorye does not look so catastrophic. As before, the species is present among spring migrants in a noticeable amount. In particular, single-species accumulations can reach 200 individuals (data from 2014). Falcated duck stays in the Khasansky park only for a short time due to hunting, but it remains at the nearby large Ptichya lagoon for at least a month, until mid-May, which indicates the importance of this region for this species. In recent years, only individual non-breeding males are found during the breeding period. The species does not form molting clusters either.

White-naped and Red-crowned cranes. For both species, coastal wetland is the most important stopover site during spring migration, and during autumn for Red-crowned cranes. As shown by satellite tracking, this is the most important stopover point between Korean wintering grounds and the closest breeding areas on Lake Khanka. Judging by the numbers of migrating birds, a significant part of the Korean population flies through this territory, and simultaneous accumulations of two crane species reach 1,500 individuals. Cranes actively use this territory from the second decade to the end of March, and leave it 1-2 days after the beginning of the spring hunt (usually the last weekend of March). Hunting does not directly damage cranes as no cases of poaching were recorded in this territory, but it prevents the nesting in this area. In the first half of the 20th century, the estuary of Tumen River was part of the breeding range of Red-crowned crane. There is no data on the breeding of White-naped crane here. If we prevent spring wildfires from happening, the territory has the potential to restore a small breeding group of Red-crowned and, possibly, White-naped cranes. Hooded crane is practically not represented on this territory, since the main migration routes lie outside the Russian Federation.

Oriental white stork. It is the only rare migrating species in this area. In recent years, single migrants and summering individuals were regularly observed. Probably it is possible to attract species for breeding by installing artificial nest poles in Khasansky park.

Chinese egret and Black-faced spoonbill. Furugelm Island, located 7 km from the border of the Khasansky Park, is the only breeding colony of these species in the Russian Federation and in the basin of the Sea of Japan/East Sea. The egret first bred in 1998. Until 2000, 35–40 pairs regularly bred here, and then the numbers were steadily declining; 20 pairs bred on this island in 2006, and only 11 nests were found in 2014. It is believed that the reasons for the decline are not in the breeding colony, which is well guarded by the Far Eastern Marine Reserve, but in the absence of real protection of the foraging land located on the shore. Up to 50% of the foraging area of Chinese egret and Black-faced spoonbill is located within Khasansky Park. Aside from the Russian territories, the latter species actively visits the DPRK territory for feeding (unpublished satellite tracking data for 2016). Black-faced spoonbill

is also a newcomer from the South China Sea to Russia and is extremely dependent on the situation on coastal feeding areas. Currently, the colony numbers about a dozen breeding pairs and two dozen non-breeding individuals (Shibaev, 2010). This species has no other alternative breeding sites within the Russian part of the Sea of Japan/East Sea; therefore, the territory under consideration is critically important for it (Shibaev and Litvinenko, 1999 ab; Shibaev, 2010; and other).

Spoon-billed sandpiper. The situation with this species has not been specifically studied. However, judging by the regular random encounters of individual birds here and satellite tracking data (oral communication with the project coordinator), sandy-silt shallows of the Khasansky Park may be among the most important stopover sites for this extremely rare species.

Table xx. IUCN Red listed bird species presented at Khasansky Nature Park

№	Species	IUCN Status	Breeding species	Migrants and summer visitors	nests nearby and visits for food	Transient or stopover	Wintering species
1	Bewick's Swan	EN				*	
2	Swan Goose	VU				*	
3	Lesser White-fronted Goose	EN				*	
4	Baer's Pochard	CR	*				
5	Falcated Teal	NT		*			
6	Japanese Quail	NT	*				
7	Slavonian Grebe/Horned Grebe	VU				*	
8	Band-bellied Crake	NT	*				
9	White-naped Crane	VU				*	
10	Red-crowned Crane	EN				*	
11	Oriental White Stork	EN		*			
12	Chinese Egret	VU			*		
13	Black-faced Spoonbill	EN			*		
14	Eurasian Oystercatcher	VU				*	
15	Far Eastern Curlew	EN		*			
16	Black-tailed Godwit	NT				*	
17	Great Knot	EN				*	
18	Spoon-billed Sandpiper	CR				*	
19	Asian Dowitcher	NT				*	
20	Cinereous Vulture	NT					*
21	Hen Harrier/Northern Harrier	NT					*
22	Steller’s Sea Eagle	VU					*
23	Saker Falcon	EN					*
24	Pechora Pipit	VU				*	
25	Menzbier's Pipit	VU				*	
26	Japanese Reed Bunting/Ochre-rumped Bunting	NT	*				
27	Rustic Bunting	VU				*	
28	Yellow-breasted Bunting	CR				*	
29	Japanese Swamp Warbler	NT	*				
30	Manchurian Reed Warbler	VU	*				
31	Reed Parrotbill	NT	*				

4.2.3. **Habitat conditions and trends**

The geographical location of the park (almost uninhabited southwestern outskirts of the country), the border status of the territory with limited citizen access, the protected status of the adjacent sea area and the almost complete absence of roads and any economic activity caused the wetland to be saved in its relatively pristine form.

The only regular negative anthropogenic factor with a serious impact on this and the adjacent territories are grass wildfires. This permanent seasonal factor has a serious impact on the state of nesting avifauna, inhibiting the land-breeding bird species from further occupying this territory, but does not significantly affect the course of mass migrations and the summer use of the area by water and near-water birds. As evidence of the relative well-being of this territory, one can point to a number of positive changes that have occurred in the avifauna of the Park over the past 20 years (Table xx).

The risks of a radical transformation of the wetland that arose in the late 1990s in connection with the TREDA plans are now largely eliminated, partly due to the creation of the Khasansky Park and the inclusion of the wetland in the list of shadow Ramsar sites. Of all the planned infrastructure projects for the large-scale development of the region, only three have so far been implemented. These projects are the construction of a railway line, road connection between the Russian village of Kraskino and Chinese Hunchun, and the development of port infrastructure in Zarubino (the construction of a coal terminal). None of them, according to experts, has a direct or indirect influence on the state of the wetland.

However, there are a number of concerns regarding future prospects. The most urgent current problem is the pollution of the sea and coastal lagoons, caused by the effluents of Tumen River. The results of comprehensive studies of ecological conditions and the biota of southwest part of the Peter the Great Bay and mouth of Tumen River undertaken in the late 1990s by the Far Eastern Branch of the Russian Academy of Sciences revealed serious problems with the content of river flows. However, due to powerful processes of self-restoration of both marine and terrestrial ecosystems, the Tumen delta was categorized as unpolluted or slightly polluted, according to a number of key indicators. The recommended continuous monitoring of the situation has not been established, and the real present issues are unknown. However, judging by indirect evidence, the situation continues to worsen. Another problem is the potential risk of a return to the long-standing idea of industrial development of titanium-magnetite deposits in the territory adjacent to the southeastern tip of the Khasansky Park. In fact, this is a section of a sandy wall that limits the flow of water from the coastal plain, thereby forming a wetland. Its development can turn into a disaster for the latter. This site, unfortunately, was prudently not included in the Khasansky Park.

4.2.4. Conservation and management systems

There are six strictly protected nature reserves of federal subordination in the Primorsky Territory. Two of them are located in the extreme southwest of the region just in area of the author's expertise (Fig. xx, shown in red):

- Kedrovaya Pad Nature Reserve is currently part of the Land of the Leopard National Park as a strict protected reserve;
- Far Eastern Biosphere Marine Reserve, under the Russian Academy of Sciences, protects marine ecosystems and consists of two clusters (south and north);
- Land of the Leopard National Park is a structure of Federal subordination. In addition to the main territory (dark green), it has an extensive buffer zone (light green); and
- Khasansky Nature Park (blue) is a Special Protected Area of prefectural subordination.

Figure xx. Conservation zoning in the South-West of Primorsky Krai

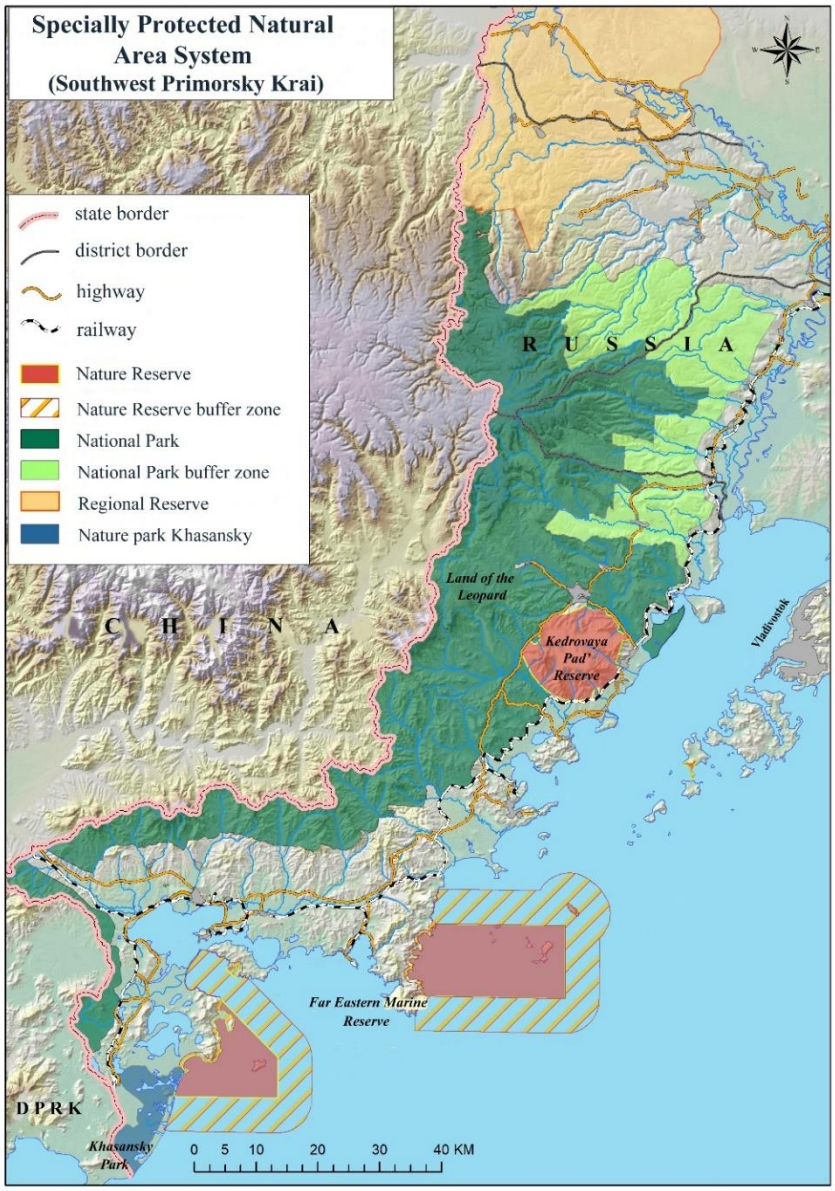


Figure xx. Conservation zoning in the Khasansky Nature Park

1) Strict protected Area (2,970.50 ha)

2) Restricted Use Area (4,301.40 ha)

3) Educational tourism area (2,409.40 ha)

4) Area of intense recreational use (240.2 ha)

5) Reserve area (2,376.70 ha)

Total: 12,298.2 ha

Note: upon the Decree of the Administration of the Primorsky Territory No. 325-pas dated May 31, 2019

Table xx. Regulation of permitted and prohibited activities in the Khasansky Nature Park

№	Area type	Area (ha)	Allowed	Prohibited
1	Protected Area	2,970.50	N/A	protected area with a complete prohibition of any recreational and all types of economic activities, including haying, grazing, laying new roads and linear structures, recreation and fishing
2	Restricted Use Area	4,301.40	implementation of sports and amateur hunting for waterfowls in accordance with the applicable legislation; and agricultural work	construction of facilities; felling of trees and shrubs (except for sanitary); storage and use of fertilizers and pesticides; and stray dogs

3	Educational tourism area	2,409.40	N/A	all types of legal hunting for wild animals and birds, as well as carrying firearms, crossbows, loops, traps, ammunition and other tools applicable to hunting or extraction of wildlife, with the exception of hunting in order to regulate the number of game resources; employees carrying service weapons while performing their official duties to protect the regime of the natural park; felling of trees and shrubs (except for sanitary); making bonfires outside equipped sites; construction of facilities not related to showing the sights of the territory (pavilions over archaeological sites, observation platforms, observation towers, etc.); and works causing a change of the landscape
4	Area of intense recreational use	240.20	N/A	transformation of large landforms and basic elements of the internal structure of the landscape; and allocation of land for individual construction
5	Reserve area	2,376.70	laying of ecological trails, fishing with a fishing rod, photo hunting; recreational loads are determined by the Directorate of the Protected Area based on scientifically established standards.	all types of hunting for wild animals and birds, as well as carrying firearms, crossbows, loops, traps, ammunition and other tools applicable to hunting or extraction of wildlife, with the exception of hunting in order to regulate the number of game resources; employees carrying service weapons while performing their official duties to protect the regime of the natural park; all types of logging; construction of new roads and linear structures; making bonfires outside equipped sites; replacement of soil; construction of structures not related to the maintenance of the regime of the natural park; and other economic activities causing a violation of the natural structure of the landscape
Note: upon the Decree of the Administration of the Primorsky Territory No. 325-pas dated May 31, 2019				

4.3. Conclusion

4.3.1. Shared core/important/special value and trends of changes

The territory of the Khasansky park, in comparison with “Khasan-Tumen River Delta Shadow site”, had lost some of the key positions that characterize it as a wetland of international importance. However, for a number of parameters, it continues to comply with criteria for Wetlands of international importance, namely in frame of types of available wetlands (codes: E, F, G, M, O and P; Table xx) and concerning a Special Criteria by species and ecological communities (codes: A1, A2 and A4; Table xx). Some important biotopic losses (codes: A3 and A5; Table 5) of the Khasansky Park compared to the “Khasan-Tumen River Delta” (Shadow Ramsar Site) can be compensated by Chinese and DPRK wetlands when the Park becomes part of a united cross-border Site (synergistic effect). The relevance

and urgency of this step is dictated by the emerging and partially implemented processes of optimizing the management system of regional environmental policy.

Table xx. Compliance of the territories under consideration with criteria for Wetlands of international importance

Group	Description	Shadow Ramsar Site "Khasan-Tumen River Delta"	Khasansky Park	Comment concerning Khasansky Park
A — Reference, rare or unique wetlands	1— It is an example of a reference, rare or unique for the corresponding biogeographic region, type of a wetland ecosystem and **is in a natural or near-natural state.**	+	+	Estimated as still in natural or near natural condition (description in Chapter 4.1) and unique for the Russian Far East and the Sea of Japan basin type of wetlands
B — Wetlands of International Importance for the Conservation of Biological Diversity / Special criteria by species and ecological communities	2 — supports the existence of **vulnerable or endangered species** or communities.	+	+	31 of 285 recorded species are listed in the IUCN Red List (Table xx). Two critically endangered species (Baer's pochard and Yellow-breasted bunting) have nearly disappeared in this site, but the condition of the habitats allows for the possibility of restoration of their populations. Other rare species supported in varying degrees.
	3 — ensures the existence of populations of plants and / or animals that are of great importance for maintaining the biological diversity of the corresponding biogeographic region.	+	**???**	It supports 285 species of birds, including 84 nesting species. The distribution of a significant proportion of species is limited to the southern regions of Primorye and they do not breed in the rest of Russia.
	4 — is the habitat of plant and / or animal species **at a critical stage of their biological cycle** or provides shelter under adverse conditions.	+	+	It is the only and no other alternative feeding place for Black-faced spoonbill and Chinese egret, the only breeding population in the Sea of Japan basin/East Sea. It's a very important spring stopover site for White-naped and Red-crowned

				cranes, and for up to 50 species of waders
	5 — a wetland could be considered internationally important if it regularly supports at least 20,000 waterbirds.	**+**	- **!!!**	Due to exclusion of the sea water area and the biggest lagoon (Ptichya), Khasansky Park does not fulfill this requirement.

Table xx. List of types of wetlands according to the Ramsar classification and their presence in the territories under consideration

Type	Description	"Khasan-Tumen River Delta" (Shadow Ramsar Site)	Khasansky Park	Comments (Park versus Shadow Site)
A	permanent shallow sea areas less than 6 m deep at low tide, including sea bays and straits	+	-	Not represented
D	rocky coasts, including rocky coastal islands and cliffs	+	-	Very small areas - analogues of this type of habitat, are found on rocky buttes near the seacoast.
E	sand, shell and pebble coasts, including sand bars, spits and dune systems	+	+	Very limited areas, about 20% of Shadow site's corresponding biotopes
F	estuaries: permanent waters of estuaries and deltas	+	+	
G	intertidal mud, sand and saline surfaces	+	+	
H	intertidal marshes, including sea marshes, salt meadows, salt marshes, coastal salty and fresh marshes	+	**+**	Limited areas, about 50% of Shadow site's corresponding biotopes
M	permanent rivers, streams, creeks; including waterfalls	+	+	

O	permanent freshwater lakes (over 8 ha); including great oxbows.	+	+	The largest freshwater reservoir - lake. Lotosovoye (277.6 ha)
P	seasonal, temporary freshwater lakes (over 8 ha); including floodplain lakes.	+	+	
Q	Permanent saline / salsuginous / alkaline lakes	+	- **!!!**	

4.3.2. Country differences

A specific feature of the Russian sector is its current condition, estimated as close to natural not only throughout the Park, but also in the unprotected area adjacent to it. This is a consequence of the regional environmental policy and the general economic underdevelopment of the region. The territory of the Khasansky park, in contrast to the wetlands of Tumen estuary in neighboring countries, is characterized by an extremely low population density and a complete absence of agricultural industry. On one hand, this circumstance is positive, but on the other hand, it brings a negative connotation in terms of the significance of the territory for birds. As it turns out, agricultural fields adjacent to wetlands are much more attractive for many birds than wild wetlands in terms of food properties. For this reason, the Khasansky Park is noticeably inferior to neighboring countries in terms of gatherings of ducks and geese. On the contrary, Russian territory plays a more important role in supporting sea-related waterfowl (pochards, grebes and other), thanks to the vast protected water area and also waders, due to the coastal sandy-silt shoals that are significantly larger than similar DPRK habitats.

Only the Russian sector functions as a critical foraging land for Black-faced spoonbill, one of the NEASPEC key species, particularly its only nesting colony in the basin of the Sea of Japan/East Sea located on Furugelm Island. In addition, this area is an important stopover place and a potential breeding site for one more NEASPEC key species, White-naped crane. The vast majority of the cranes from the Korean-Japanese wintering grounds pass through this territory.

The fundamental negative feature of the Russian sector is the long and ineradicable tradition of hunting for waterfowl (poaching). The estuary part of Tumen River is the second most important traditional hunting area after Lake Khanka, located 300 km to the north. This extremely negative factor has been in place for many decades and, as it seems, with no real prospect of being terminated due to the powerful lobby. Even the establishment of the Khasansky Park with its prefectural status does not prevent, but only partly regulates hunting. Spring hunting has a strong influence on the redistribution of waterfowl in the region during migration, namely, shifts their gatherings to the wetlands of neighboring countries. In the Russian sector, only sea-associated species are massively represented.

Finally, the differences in the ecotourism appeal of the Tumen wetlands. The Russian sector is inferior to DPRK and Chinese sectors in terms of spectacular views of the area and prospects for the development of the tourism industry. The main reasons are: 1) a flat landscape, and lack of convenient

viewing hills around the most interesting reservoirs, 2) extremely difficult access to the wetland, due to complete absence of roads and unsuitability of water bodies for water-motor vehicles, 3) a complete lack of hotel infrastructure, 4) low demand for this type of vacation from the Russian consumer, and 5) dubious profitability of this industry for investors.

Given all of the above, it would be wise for the Russian sector of the future cross-border Ramsar Site to play the role of a buffer zone with a low recreational load and a ground for scientific monitoring.

5. Diverse perspectives in wetland management and use

5.1. Conservation authorities

5.1.1. China

In China, related authorities are (including matching agency at provincial and county level):

Ministry of Foreign Affairs and Ministry of Commercial: international cooperation and Green Belt and Road;

National Forestry and Grassland Administration (NFGA): forestry, wetlands, wildlife and protected areas, erosion, combating desertification, department of wetland, dept. of wildlife and dept. of protected areas under NFGA will be the key player, dept. of wetland is also the Ramsar Authority in China;

Ministry of Ecology and Environment: pollution inspection, Green Belt and Road;

Ministry of Agriculture: Aquatic biodiversity conservation, fishery, farmland, rural development;

Ministry of Water Resources: river and water management, water projects;

National Tourism Administration: tourism development;

Jilin Provincial Government: provincial planning on development and conservation

Hunchun City Government: local planning on development and conservation

Jingxin Township Government: local practitioner

Protected Area management authorities in Hunchun: Hunchun Provincial Nature Reserve, National Forestry Park, National Scenic Sites, National Park….

5.1.2. Russia

5.1.3. Local communities

5.1.4. Other important stakeholders/third parties (e.g., private tourism company? hunters?)

Local NGOs

tour guides on birds

farmer's restaurant owners

Tourism agencies and companies

Trading companies

5.1.5. International/ regional mechanisms

Wetland Convention.

The Convention's mission is "the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world". Russia join in 1977; China join in 1992; DPRK in 2018.

GTI.

Initiated in 1995… China, Russia, DPRK, ROK, Mongolia, Japan

EAAFP.

The Partnership, adopted in the list of the World Summit on Sustainable Development (WSSD) as a Type II initiative – an informal and voluntary initiative, was launched on 6 November 2006, and aims to protect migratory waterbirds, their habitat and the livelihoods of people dependent upon them. Partners include governments, inter-governmental agencies international non-government organisations and international business sector. Russia joined in 2006; China joined in 2007; DPRK joined in 2018.

NEASPEC.

CAFF-AMBI

5.2. Gaps and needs analysis

5.2.1. Data and monitoring

There is no regular monitoring, such as monthly, on wildlife and habitat in all three countries. Socioeconomic studies are the major hotspot than natural sciences.

Remote sensing data are the most used in literatures and mostly at Yanbian University. Regular environmental monitoring is systemically conducted in China on meteorology, hydrology, water quality. Studies on landscape ecology and hydrology are popular among Chinese scholars.

Wildlife data are occasionally reported in Chinese and Russian parts and presented in species number, including plant, waterbird, fish and mammal. The most detailed waterbird data at Rason was first recorded in 2014. Species list were updated in June and November 2016 and March 2019 by the contribution of BirdsKorea. No systematic studies have been conducted on waterbird population dynamics coping with habitat change at Tumen Estuary region.

Such a situation reflects the scientific interests and capacity difference in the three countries: China build up monitoring system under different functional authorities, including hydrology

bureau; Russia may have less concern and investment in monitoring due to lowest population density and conservation policy; DPRK has not developed a regular monitoring system on protected areas and wildlife at Rason due to lack of personnel and equipment.

5.2.2. **Management capacity (to mitigate challenges)**

In China, both Jingxin and Fangchuan wetlands are listed as scenic sites, which focus on tourism resources and tourist service. Management on wildlife and wetland ecosystem is not the priority of site authority. But as part of Hunchun Provincial Nature Reserve and now part of National Park, the bureau does have monitoring and patrolling activities. Also, there is policy on eco-compensation for geese damaged crop between the nature reserve and local farmers.

Russia. Khasansky Nature Park is in a low position in the hierarchy of the Russian system of protected areas, due to its prefectural subordination. The disadvantage of this status is unsustainable financing, so at present, the Park does not have its own staff of management and science. The control function is carried out in the form of seasonal patrolling of the territory for preventing illegal hunting by employees of neighboring protected areas of federal subordination or by Regional Agencies like the “Directorate for the Protection of Wildlife Objects and Protected Areas” and the “Department of Primorsky region for protection, monitoring and regulation of wildlife resources use”. Scientific activity is not carried out at all. Ramsar Site designation and Involvement in cross-border cooperation may increase status and attract stable funding to maintain a permanent staff

DPRK.

After being listed as Ramsar Site, Rason government appointed a specific manager for Rason Bird Reserve.

5.2.3. **CEPA on value of wetlands**

In China, CEPA is a regular work combining multiple occasions, including World Wetland Day, Bird Loving Week, Nature School and etc. But there is lack of CEPA on transboundary conservation and integrity of ecosystem. Existing CEPA activities are all site or country based. The governments, publics and most of stakeholders are still recognizing the value and importance of wetlands at site scale without view of ecosystem integrity at all Tumen delta scale. Emphasis on ecological connections among sites in three countries need to be promoted with advertising of tourism and economy.

5.2.4. **Synergy of regional/local development planning and conservation planning**

In Russia, there is potential of establishing Far East Park. In China, the 14th Five Year Planning (2021-2025) now is under development. It is important to put transboundary conservation, Ramsar Site designation and green development solution into it.

Any other local development strategies in Hunchun and Khasansky that might affect the development in either a positive or negative way of TRS?

5.2.5. Resources availability (internal and external, such as regional initiative and NGO/GO aid)

Gaps

- There is no regular monitoring, such as monthly, on wildlife and habitat in all three countries. Socioeconomic studies are the major hotspot than natural sciences. Funding support to systematic monitoring and research is limited at time being.
- the scientific interests and capacity difference in the three countries: China build up monitoring system under different functional authorities, including hydrology bureau; Russia may have less concern and investment in monitoring due to lowest population density and conservation policy; DPRK has not developed a regular monitoring system on protected areas and wildlife at Rason due to lack of personnel and equipment, particularly gears on environmental factors, such as meteorology, hydrology, nutrients in water and soil.
- Random training and survey activities are now available by joint support from international organizations, such as UNESCAP, EAAFP, HSF, WWF HK and HKBWS.

What needs to be done to close these gaps (need analysis)?

6. Conclusions

6.1. Shared core/important/special value and trends of changes

6.2. Country differences

6.3. Shared challenges and opportunities

[Prof. Lu Cai]

Trend

- Wetlands habitats at both Chinese and Korean side are under pressure of climate, human population, development driving water projects and land use conversion. Meanwhile Russian part has been relatively stable and even increasing in forests.
- Ecological safety assessment shows that the wetland safety in Tumen River Basin from 1976 to 2014 had been dropping from safe to warning due to loss of natural wetlands and increasing of manmade wetlands and reducing of vegetation coverage.
- The safety value at Korean side changed faster than Chinese side due its increasing population density and croplands. Anticipation indicated that the ecological situation of Tumen River Basin will keep under warning status and Korean side will continue a downgrade trend till 2035. (Jin Xuemei et al., 2017)

Challenges

- There is no shared concept and planning. The development pattern in Chinese side is unclear due to local government. Clear recognition, concept on conservation and development
- Development, particularly agriculture and tourism, still are the key drivers to wetlands change in the area.
- Different capacity and management status, including monitoring, research and management.
- Lack of financial and technical mechanism.
- Language barrier at site level communication.

Potential opportunities

- Multilateral: Green Belt and Road Initiative, Yellow Sea Ecoregion
- Bilateral: China-Russia Migratory Bird Agreement, China-Russia Amur Tiger cooperation, 70th Anni of China-DPRK relationship, MoU updating between NFGA and MNR, China and MoLEP DRRK
- Ramsar and EAAFP framework
- International society: HSF, WWF HK, HKBWS, MCF (mangrove conservation foundation)

7. Recommendations

Future steps towards strengthening and institutionalizing the cooperation among three protected wetlands in the Tumen River Estuary across China, DPRK and the Russian Federation

[Prof. Lu Cai]

Recommendations

- enhance commutation and training through organizing conference on conservation and management of wetlands in Tumen Estuary
- promote information and data sharing among three countries by mechanism developing, particularly on environmental risk early warning, such as bird flu
- develop standardized technical protocol and conduct synchronized wetland inventory, including waterbird census, when the conditions are possible
- improve trilateral CEPA activities, e.g., Youth Campaign on wetlands
- Develop transboundary ecotourism plan basing on joint research projects
- Explore the route map and mechanism of transboundary Ramsar Site or other type of international wetland protected area and promote integrated, coordinated wetland conservation and management, including shared and joint monitoring and management plan
- Encourage all stakeholders to explore international, regional and national mechanism to

[Dr. Sergei Surmach]

Additionally for the Russian sector of the Tumen Estuary:

- Based on full-fledged field studies, to assess the environmental significance of the Hasanski Park territory for support of sandpipers, cranes and waterfowl during the spring migration and its specific environmental role in frame of transboundary protected areas.
- To assess the validity of conservation zoning in the Khasansky Nature Park, in terms of priorities for the protection of ecosystems and key species.

- To study the scope and role of the hunting press on the condition of migrating and breeding birds and develop regulations to minimize the negative effect of bird hunting (managing the timing of the opening of hunting, limiting the size of prey, training hunters to recognize bird species that are forbidden to be shot, etc.).
- To study the impact of regular grass burning on bird habitats and consider measures to prevent or minimizing this limiting factor.
- To carry out some biotechnical measures that improve the attractiveness of the territory for rare and protected birds, for example, the placing of artificial nest constructions to attract the Oriental white stork for breeding.

Strategic planning on establishing Transboundary Ramsar Site in Tumen River Estuary by Ramsar Convention COP14, 2021, Wuhan city, China

- Present findings of the joint study and 2020 survey results
- Engagement with central and local governments and key stakeholders
    - Role of DPRK
    - Role of China (COP14 host)
    - Role of Russia
- Expanded partnerships (Greater Tumen Initiative, EAAFP, HSF etc.)

[Prof. Lu Cai]

7.1. Proposal for future activities (to be integrated and elaborated)

1. Synchronized waterbird and wetland survey in China, Russia and DPRK in later March or early April 2020.

2. An academic workshop on wetland conservation and management of Tumen River. The talks will cover status, changes, threats, future trends and management of water, soil, forest, grassland, river, lake, rice paddies, tourism, biodiversity and protected areas in Tumen River basin. This will provide a full picture of Tumen River basin. Identify the future need for Ramsar Site designation in Russia and China separately and possible format and step to be a trilateral transboundary protected area.

3. Priority and gap discussion by visit to each local government: Hunchun, Khasan and Rason; identify the concerns, issues and need of each government.

4. Transboundary conservation workshop of three local governments and international experts, with participation of national government representatives.

5. Run a trial information and data sharing contact among three countries by a proposed mechanism, particularly on environmental risk early warning, such as bird flu.

6. Promote an integrated and coordinated wetland conservation and management, including shared and simultaneous monitoring and management plan, such as same dates in April and October.

7. Conclude all the outcome to high level official meeting and present the action plan to three national governments.

8. Encourage standardized technical protocol and conduct annul or biennial synchronized wetland survey, including waterbird census, when the conditions are possible

9. Propose joint wetland cultural festival, such as goose festival or swan festival, improve trilateral CEPA activities, e.g., Youth Campaign on wetlands

10. Develop transboundary ecotourism plan basing on joint research projects

Annex I

Bird Species and Their Numbers Recorded during the Field survey Bird Survey *(Rason, 26-31 March 2014)*

No.	Common Name	(North) Korean Name	Scientific Name	Status	26-28 Mar	29 Mar	30-31 Mar	Total	Habitat		Migration
									W: water bird + F: forest bird	L: shallow water A: aquatic plant D: diver (deep water) T: tidal flat N sand or mud bar S: sea water G: grass field P: rice paddies F: forest B: bush V: village R: raptor	
1	Hooded Crane	흰목검은두루미 (갯두루미)	*Grus monacha*	VU	0	1	0	1	W	L+A+P	M
2	White-naped Crane	재두루미	*Grus vipio*	VU	0	11	23	34	W	L+A+P	M
3	Taiga Bean Goose	큰부리큰기러기	*Anser fabalis*		15	20	40	75	W	L+A+P	M
4	Tundra Bean Goose	큰기러기	*Anser serrirostris*		10	115	450	575	W	L+A+P	M
5	Greater White-fronted Goose	쇠기러기	*Anseralbifrons*		460	250	250	600	W	L+P	M
6	Northern Pintail	가창오리	*Anasacuta*		170	20	400	570	W	L+P	M
7	Falcated Duck	붉은꼭두오리	*Anasfalcata*	NT, II	1,105	1,300	2,000	3,100	W	L+A	M
8	Eurasian Wigeon	알숭오리	*Anaspenelope*	II, HC	8,170	2,250	4,000	12,200	W	L+A	M
9	Mute Swan	혹고니	*Cygnus olor*	II, HC	106	P	P	106	W	L+A	M
10	American Wigeon	아메리카 홍머리오리	*Anasamericana*	FR	1	0	0	1	W	L+A	M
11	Whooper Swan	큰고니	*Cygnus cygnus*		303	10	P	315	W	L+A	M
12	Gadwall	알락오리	*Anasstrepera*		108	100	500	610	W	L+A	M

13	Relict Gull	고대갈매기	*Ichthyaetusrelictus*	VU, FR	0	0	5	5	W	L+T	M
14	Eurasian Spoonbill	누른뺨저어새	*Platalealeucorodia*	FR	0	19	0	19	W	L+T	M
15	Great Knot	붉은어깨갯도요	*Calidristenuirostris*	VU	0	1	0	1	W	L+T	M
16	Baikal Teal	반달오리	*Anasformosa*	HC	30	130	235	350	W	L	M
17	Northern Shoveler	넙적부리오리	*Anasclypeata*		170	100	200	370	W	L	M
18	Garganey	알락발구지	*Anasquerquedula*		4	0	11	15	W	L	M
19	Eurasian Teal	되강오리	*Anascrecca*		225	200	500	750	W	L	M
20	Tufted Duck	흰죽지댕기오리	*Aythyafuligula*	II	440	2,900	4,000	4,650	W	D	M
21	Red-necked Grebe	붉은목농병아리	*Podicepsgrisegena*	HC	83	2	25	110	W	D	M
22	Common Pochard	흰죽지오리	*Aythyaferina*		515	1,100	500	2,100	W	D	M
23	Greater Scaup	흰죽지검은머리오리	*Aythyamarila*		2	60	100	160	W	D	M
24	Common Goldeneye	까치비오리	*Bucephalaclangula*		8	30	1,180	1,200	W	D	M
25	Smew	흰비오리	*Mergellusalbellus*		7	P	P	7	W	D	M
26	Far Eastern Curlew	알락꼬리마도요	*Numeniusmadagascariensis*	VU	0	1	0	4	W	T	M
27	Long-tailed Duck	바다꿩	*Clangulahyemalis*	VU, HC	246	P	140	390	W	S	M
28	Harlequin Duck	흰무늬오리	*Histrionicushistrionicus*		3	8	21	32	W	S	M
29	White-winged Scoter	흰눈썹검은오리	*Melanittadeglandi*		163	57	50	270	W	S	M
30	American Scoter	검은오리	*Melanittaamericana*		12	0	30	42	W	S	M
31	Red-throated Loon	붉은부리다마지	*Gaviastellata*		0	0	1	1	W	S	M
32	Arctic Loon	푸른목다마지	*Gaviaarctica*		0	0	1	1	W	S	M
33	Mallard	청둥오리	*Anasplatyrhynchos*		1,100	500	5,500	6,700	W	L+A+P	-
34	Eastern Spot-billed Duck	흰뺨검둥오리	*Anaszonorhyncha*		25	30	200	250	W	L+A+P	-
35	Northern Lapwing	댕기도요	*Vanellusvanellus*		0	0	50	50	W	G+L+T	-
36	Black-tailed Gull	개갈매기	*Laruscrassirostris*		20	75	75	170	W	S+T+L	-
37	Common Gull	갈매기	*Laruscanus*		15	75	100	190	W	S+T+L	-

38	Glaucous Gull	흰갈매기	*Larushyperboreus*		20	20	3	40	W	S+T+L	-
39	Vega Gull	재갈매기	*Larusvegae*		10	2	5	17	W	S+T+L	-
40	Mongolian Gull	노랑발갈매기	*Larusmongolicus*		40	30	100	150	W	S+T+L	-
41	Slaty-backed Gull	큰재갈매기	*Larusschistisagus*		3	1	1	5	W	S+T+L	-
42	Heuglin's Gull	줄무늬 노랑발갈매기	*Larusheuglini*		2	1	0	4	W	S+T+L	-
43	Little Grebe	농병아리	*Tachybaptusruficollis*		1	0	0	1	W	L+D	-
44	Far Eastern Oystercatcher	까치도요	*Haematopusostralegus osculans*		0	5	0	5	W	L+T	-
45	Black-crowned Night Heron	밤물까마귀	*Nycticoraxnycticorax*		0	1	0	1	W	L+G	-
46	Black-headed Gull	붉은부리갈매기	*Chroicocephalusridibundus*		35	100	100	230	W	L+S	-
47	Mandarin Duck	원앙새	*Aix galericulata*	II	86	48	5	135	W	L+F	-
48	Eurasian Coot	물닭	*Fulicaatra*		1,970	900	1,500	3,500	W	D+A	-
49	Red-breasted Merganser	바다비오리	*Mergusserrator*		38	200	625	850	W	D+S	-
50	Temminck's Cormorant	바다까마우지	*Phalacrocoraxcapillatus*		0	0	10	10	W	D+S	-
51	Grey Heron	왜가리	*Ardeacinerea*		20	70	35	110	W	L	-
52	Great Egret	대백로	*Ardea alba*		25	190	85	300	W	L	-
53	Spotted Redshank	학도요	*Tringaerythropus*		0	0	1	1	W	L	-
54	Common Redshank	붉은발도요	*Tringatotanus*		0	0	2	2	W	L	-
55	Common Merganser	(갯)비오리	*Mergus merganser*		33	100	100	230	W	D	-
56	Great Crested Grebe	뿔농병아리	*Podicepscristatus*		81	75	45	200	W	D	-
57	Black-necked Grebe	검은목농병아리	*Podicepsnigricollis*		31	3	0	34	W	D	-
58	Pelagic Cormorant	까막가마우지	*Phalacrocoraxpelagicus*		14	3	35	52	W	D	-
59	Great Cormorant	깻까마우지	*Phalacrocoraxcarbo*		50	350	200	450	W	D	-
60	Little Ringed Plover	알도요	*Charadriusdubius*		1	5	2	8	W	N	-

61	Kentish Plover	흰가슴알도요	*Charadriusalexandrinus*		0	2	0	2	W	N	-
62	Common Snipe	깍도요	*Gallinagogallinago*		0	4	0	4	W	N	-
63	Spectacled Guillemot	붉은발바다오리	*Cepphuscarbo*		1	0	10	11	W	S	-
64	Rook	떼까마귀	*Corvusfrugilegus*		0	100	0	100	F	F+B+G+P	-
65	Eurasian Magpie	까치	*Pica pica*		20	30	20	70	F	F+B+G+V	-
66	Carrion Crow	까마귀	*Corvuscorone*		0	2	0	2	F	F+B+G+V	-
67	Eurasian Jay	어치	*Garrulusglandarius*		0	1	0	1	F	F+B+G	-
68	Marsh Tit	쇠박새	*Poecilepalustris*		0	0	3	3	F	F+B	-
69	Coal Tit	깨새	*Periparusater*		0	0	5	5	F	F+B	-
70	Siberian Accentor	떪종다리	*Prunellamontanella*		1	0	2	3	F	F+B	-
71	Ochre-rumped Bunting	검은머리멧새	*Emberizayessoensis*	NT	0	0	2	2	F	G+B	-
72	Red-billed Starling	붉은부리찌르레기	*Spodiopsarsericeus*		0	3	0	3	F	G+B	-
73	White-cheeked Starling	찌르러기	*Spodiopsarcineraceus*		2	7	0	9	F	G+B	-
74	Common Starling	흰점찌르러기	*Sturnus vulgaris*		0	3	0	3	F	G+B	-
75	Dusky Thrush	개똥지빠귀	*Turduseunomus*		0	4	1	5	F	G+B	-
76	Meadow Bunting	멧새	*Emberizacioides*		10	10	5	25	F	G+B	-
77	Rustic Bunting	뿔멧새	*Emberizarustica*		5	250	5	260	F	G+B	-
78	Yellow-throated Bunting	노랑떡멧새	*Emberizaelegans*		8	10	5	23	F	G+B	-
79	Black-faced Bunting	버들멧새	*Emberizaspodocephala*		0	1	0	1	F	G+B	-
80	Pallas's Reed Bunting	북떪멧새	*Emberizapallasi*		0	1	0	1	F	G+B	-
81	Common Reed Bunting	큰검은머리멧새	*Emberizaschoeniclus*		0	0	1	1	F	G+B	-
82	Common Pheasant	꿩	*Phasianus colchicus*		15	10	10	35	F	G+B	-
83	Eurasian Tree Sparrow	참새	*Passer montanus*		75	200	50	325	F	B+V	-
84	White Wagtail	알락할미새	*Motacilla alba*		5	8	4	17	F	M+B	-

85	Hill Pigeon	낭비둘기	*Columba rupestris*		0	0	2	2	F	F	-
86	Oriental Turtle Dove	떪비둘기	*Streptopeliaorientalis*		5	10	2	17	F	F	-
87	Great Spotted Woodpecker	알락딱따구리(오색더구리)	*Dendrocopos major*		0	1	1	2	F	F	-
88	Grey-headed Woodpecker	푸른딱따구리(청더구리)	*Picuscanus*		1	0	0	1	F	F	-
89	Goldcrest	금상모박새	*Regulusregulus*		2	0	5	7	F	F	-
90	Chinese Nuthatch	쇠동고비	*Sittavillosa*		0	0	6	6	F	F	-
91	Eastern Great Tit	박새	*Parus minor*		2	0	6	8	F	B	-
92	Vinous-throated Parrotbill	부비새	*Sinosutherawebbiana*		10	10	10	30	F	B	-
93	Naumann's Thrush	티티새	*Turdusnaumanni*		1	2	1	4	F	B	-
94	Daurian Redstart	딱새	*Phoenicurusauroreus*		0	1	0	1	F	B	-
95	Bull-headed Shrike	개구마리	*Laniusbucephalus*		1	1	1	3	F	B	-
96	Long-tailed Shrike	긴꼬리때까치	*Laniusschach*					1?	F	B	-
97	Chinese Grey Shrike	물개구마리	*Laniussphenocercus*		1	2	0	3	F	B	-
98	Brambling	꽃참새	*Fringillamontifringilla*		1	0	14	15	F	B	-
99	Long-tailed Rosefinch	긴꼬리양지니	*Carpodacussibiricus*		1	0	0	1	F	B	-
100	Pallas's Rosefinch	양지니	*Carpodacusroseus*		0	0	1	1	F	B	-
101	Grey-capped Greenfinch	방울새	*Chlorissinica*		25	20	20	65	F	B	-
102	Common Redpoll	붉은방울새	*Acanthisflammea*		0	1	0	1	F	B	-
103	Eurasian Siskin	검은머리방울새	*Spinusspinus*		1	1	3	5	F	B	-
104	Japanese Quail	메추리	*Coturnix japonica*	NT	1	2	0	3	F	G	-
105	Eurasian Skylark	종다리	*Alaudaarvensis*		15	20	25	60	F	G	-
106	Far Eastern Skylark	극동종다리	*Alauda japonica*		5	15	20	40	F	G	-
107	Eurasian Hoopoe	후투디	*Upupaepops*		1	1	0	1	F	G	-
108	Eurasian Sparrow hawk	큰새매	*Accipiter nisus*		0	0	1	1	F	R	-

109	White-tailed Eagle	흰꼬리수리	*Haliaeetusalbicilla*		0	2	0	2	F	R	-
110	Common Kestrel	조롱이	*Falco tinnunculus*		0	0	2	2	F	R	-
111	Peregrine Falcon	꿩매	*Falco peregrinus*		1	0	1	2	F	R	-
									W: 63 F: 48		

Notes

1. Order and Nomenclature from Birds Korea (2013).
2. Under status, NT (globally Near-threatened) and VU (globally Vulnerable) follow BirdLife International (2014);
   II= Internationally Important (based on Wetlands International 2014 and Ramsar Convention waterbird criteria for the identification of internationally important wetlands); HC = likely to be the highest count of this species in the DPRK based on a limited literature search; FR = likely to be a first record of this species for the DPRK based on Tomek (1999-2002) and on a limited literature search.
3. In count rows, "P" indicates Present but not counted.

Annex II

Wetland birds found in Jingxin wetland area[5]

English name	Scientific name	Chinese name	Conservation level in China	Status IUCN
Bewick's Swan	Cygnus bewickii Yarrell, 1830	小天鹅	2	EN
Swan Goose	Anser cygnoid (Linnaeus, 1758)	鸿雁	2	VU
Greater White-fronted Goose	Anser albifrons	白额雁	1	LC
Bean Goose	Anser fabalis	豆雁		LC
Common Merganser	Mergus merganser	普通秋沙鸭		LC
Scaly-sided Merganser	Mergus squamatus	中华秋沙鸭	1	EN
Smew	Mergellus albellus	斑头秋沙鸭		LC
Red-breasted Merganser	Mergus serrator Linnaeus, 1758	红胸秋沙鸭		NT
Common Pochard	Aythya ferina (Linnaeus, 1758)	红头潜鸭		VU
Baer's Pochard	Aythya baeri (Radde, 1863)	青头潜鸭		CR
Greater Scaup	Aythya marila nearctica (Stejneger, 1885)	斑背潜鸭		VU
Tufted Duck	Aythya fuligula	凤头潜鸭		LC
Common Goldeneye	Bucephala clangula	鹊鸭		LC
Mallard	Anas platyrhynchos	绿头鸭		LC
Falcated Teal	Mareca falcata (Georgi, 1775)	罗纹鸭		NT
Green-winged Teal	Anas crecca	绿翅鸭		LC
Gadwall	Mareca strepera	赤膀鸭		LC
Eastern Spot-billed Duck	Anas zonorhyncha	斑嘴鸭		LC
Northern Shoveler	Spatula clypeata	琵嘴鸭		LC
Northern Pintail	Anas acuta	针尾鸭		LC
Garganey	Spatula querquedula	白眉鸭		LC
Eurasian Wigeon	Mareca penelope	赤颈鸭		LC
Mandarin Duck	Aix galericulata	鸳鸯	2	LC

[5] based on the Hunchun nature reserve record

Japanese Quail	Coturnix japonica Temminck & Schlegel, 1849	鹌鹑		NT
Slavonian Grebe/Horned Grebe	Podiceps auritus auritus (Linnaeus, 1758)	角䴙䴘		VU
Little Grebe	Tachybaptus ruficollis	小䴙䴘		LC
Great Crested Grebe	Podiceps cristatus	凤头䴙䴘		LC
Great Cormorant	Phalacrocorax carbo	普通鸬鹚		LC
White-naped Crane	Antigone vipio (Pallas, 1811)	白枕鹤		VU
Red-crowned Crane	Grus japonensis viridirostris Vieillot, 1823	丹顶鹤		EN
Hooded Crane	Grus monacha Temminck, 1835	白头鹤		VU
Oriental White Stork	Ciconia boyciana Swinhoe, 1873	白鹳		EN
Eurasian Spoonbill	Platalea leucorodia	白琵鹭	2	LC
Great Egret	Ardea alba	大白鹭		LC
Little Egret	Egretta garzetta	白鹭		LC
Grey Heron	Ardea cinerea	苍鹭		LC
Purple Heron	Ardea purpurea	草鹭		LC
Cattle Egret	Bubulcus ibis	牛背鹭		LC
Eurasian Oystercatcher	Haematopus ostralegus osculans Swinhoe, 1871	蛎鹬		VU
Von Schrenck's Bittern	Ixobrychus eurhythmus	紫背苇鳽		LC
Northern Lapwing	Vanellus vanellus (Linnaeus, 1758)	凤头麦鸡		VU
Grey-headed Lapwing	Vanellus cinereus	灰头麦鸡		LC
Little Ringed Plover	Charadrius dubius	金眶鸻		LC
Black-neck Stilt	Himantopus mexicanus	黑颈长脚鹬		LC
Green Sandpiper	Tringa ochropus	白腰草鹬		LC
Common Greenshank	Tringa nebularia	青脚鹬		LC
Eurasian Curlew	Numenius arquata orientalis C.L. Brehm, 1831	白腰杓鹬		VU
Far Eastern Curlew	Numenius madagascariensis (Linnaeus, 1766)	大杓鹬		EN
Eurasian Woodcock	Scolopax rusticola	丘鹬		LC

Pintail Snipe	Gallinago stenura	针尾沙锥		LC
Asian Dowitcher	Limnodromus semipalmatus (Blyth, 1848)	半蹼鹬		NT
Black-headed Gull	Chroicocephalus ridibundus	红嘴鸥		LC
Black-tailed Gull	Larus crassirostris	黑尾鸥		LC
Slaty-backed Gull	Larus schistisagus	灰背鸥		LC
Siberian Gull	Larus smithsonianus	西伯利亚银鸥		LC
Mew Gull	Larus canus	普通海鸥		LC
Common Tern	Sterna hirundo	普通燕鸥		LC
Common Coot	Fulica atra	白骨顶		LC
Common Moorhen	Gallinula chloropus	黑水鸡		LC
Osprey	Pandion haliaetus	鹗	二级	LC
Cinereous Vulture	Aegypius monachus (Linnaeus, 1766)	秃鹫	二级	NT
Golden Eagle	Aquila chrysaetos	金雕	一级	LC
Steller’s Sea Eagle	Haliaeetus pelagicus (Pallas, 1811)	虎头海雕	一级	VU
White-tailed Sea Eagle	Haliaeetus albicilla	白尾海雕	一级	LC
Brown Shrike	Lanius cristatus	红尾伯劳		LC
Great Grey Shrike	Lanius excubitor	灰伯劳		LC
Chinese Gray Shrike	Lanius sphenocercus	楔尾伯劳		LC
Common Kingfisher	Alcedo atthis bengalensis J.F. Gmelin, 1788	普通翠鸟		VU
Saker Falcon	Falco cherrug milvipes Jerdon, 1871	猎隼		EN
Rustic Bunting	Ocyris rusticus (Pallas, 1776)	田鹀		VU
Yellow-breasted Bunting	Ocyris aureolus ornatus (Shulpin, 1928)	黄胸鹀		CR

ANNEX III.

A complete list of avian species in Khasansky Nature Park

Scientific name	Russian name	Status IUCN	Breeding species	Migrants and summer visitors	nests nearby and visits for food	Transient or stopover	Wintering species
Cygnus bewickii Yarrell, 1830	Малый лебедь	EN				*	
Cygnus cygnus (Linnaeus, 1758)	Лебедь-кликун	LC				*	
Anser cygnoid (Linnaeus, 1758)	Сухонос	VU				*	
Anser fabalis Gould, 1852	Гуменник	LC				*	
Anser albifrons albifrons (Scopoli, 1769)	Белолобый гусь	LC				*	
Anser erythropus (Linnaeus, 1758)	Пискулька	EN				*	
Bucephala clangula clangula (Linnaeus, 1758)	Обыкновенный гоголь	LC				*	
Mergellus albellus (Linnaeus, 1758)	Луток	LC				*	
Mergus merganser merganser Linnaeus, 1758	Большой крохаль	LC				*	
Mergus serrator Linnaeus, 1758	Длинноносый крохаль	NT				*	
Histrionicus histrionicus pacificus W.S. Brooks, 1915	Каменушка	LC				*	
Aythya ferina (Linnaeus, 1758)	Красноголовый нырок	VU		*			
Aythya baeri (Radde, 1863)	Бэров нырок	CR	*				
Aythya fuligula (Linnaeus, 1758)	Хохлатая чернеть	LC				*	
Aythya marila nearctica (Stejneger, 1885)	Морская чернеть	VU				*	
Spatula querquedula (Linnaeus, 1758)	Чирок-трескунок	LC	*				
Spatula clypeata (Linnaeus, 1758)	Широконоска	LC		*			
Sibirionetta formosa (Georgi, 1775)	Клоктун	LC				*	
Mareca falcata (Georgi, 1775)	Касатка	NT		*			
Mareca strepera strepera (Linnaeus, 1758)	Серая утка	LC				*	
Mareca penelope (Linnaeus, 1758)	Свиязь	LC				*	
Anas zonorhyncha Swinhoe, 1866	Черная кряква	LC	*				

Anas platyrhynchos platyrhynchos Linnaeus, 1758	Кряква	LC	*				
Anas acuta Linnaeus, 1758	Шилохвость	LC				*	
Anas crecca crecca Linnaeus, 1758	Чирок-свистунок	LC		*			
Aix galericulata (Linnaeus, 1758)	Мандаринка	LC		*			
Coturnix japonica Temminck & Schlegel, 1849	Японский перепел	NT	*				
Phasianus colchicus pallasi Rothschild, 1903	Фазан	LC	*				
Tachybaptus ruficollis poggei (Reichenow, 1902)	Малая поганка	LC	*				
Podiceps grisegena holbollii Reinhardt, 1854	Серощёкая поганка	LC	*				
Podiceps cristatus cristatus (Linnaeus, 1758)	Большая поганка, или чомга	LC	*				
Podiceps auritus auritus (Linnaeus, 1758)	Красношейная поганка	VU				*	
Podiceps nigricollis nigricollis C.L.Brehm, 1831	Черношейная поганка	LC		*			
Columba rupestris rupestris Pallas, 1811	Скалистый голубь	LC	*				
Streptopelia orientalis orientalis (Latham, 1790)	Большая горлица	LC	*				
Caprimulgus indicus jotaka Temminck & Schlegel, 1844	Большой козодой	LC	*				
Apus pacificus pacificus (Latham, 1801)	Белопоясный стриж	LC	*				
Cuculus micropterus micropterus Gould, 1838	Индийская кукушка	LC	*				
Cuculus canorus canorus Linnaeus, 1758	Обыкновенная кукушка	LC	*				
Cuculus poliocephalus Latham, 1790	Малая кукушка	LC	*				
Rallus indicus Blyth, 1849	Пастушок	LC	*				
Zapornia fusca erythrothorax (Temminck & Schlegel, 1849)	Красноногий погоныш	LC	*				
Zapornia paykullii (Ljungh, 1813)	Большой погоныш	NT	*				
Zapornia pusilla pusilla (Pallas, 1776)	Погоныш-крошка	LC	*				

Amaurornis phoenicurus phoenicurus (Pennant, 1769)	Белогрудый погоныш	LC	*				
Gallinula chloropus chloropus (Linnaeus, 1758)	Камышница	LC	*				
Fulica atra atra Linnaeus, 1758	Лысуха	LC	*				
Antigone vipio (Pallas, 1811)	Даурский журавль	VU				*	
Grus japonensis viridirostris Vieillot, 1823	Японский журавль	EN				*	
Grus monacha Temminck, 1835	Черный журавль	VU				*	
Ciconia boyciana Swinhoe, 1873	Дальневосточный аист	EN		*			
Botaurus stellaris stellaris (Linnaeus, 1758)	Большая выпь	LC	*				
Ixobrychus sinensis (J.F. Gmelin, 1789)	Китайский волчок	LC	*				
Ixobrychus eurhythmus (Swinhoe, 1873)	Амурский волчок	LC	*				
Ixobrychus cinnamomeus (J.F. Gmelin, 1789)	Охристый волчок	LC		*			
Nycticorax nycticorax nycricorax (Linnaeus, 1758)	Кваква	LC				*	
Butorides striata amurensis (von Schrenck, 1860)	Зеленая кваква	LC	*				
Ardeola bacchus (Bonaparte, 1855)	Белокрылая цапля	LC		*			
Bubulcus ibis coromandus (Boddaert, 1783)	Египетская цапля	LC		*			
Ardea cinerea jouyi A.H. Clark, 1907	Серая цапля	LC			*		
Ardea purpurea manilensis Meyen, 1834	Рыжая цапля	LC				*	
Ardea alba alba Linnaeus, 1758	Большая белая цапля	LC		*			
Ardea modesta J.E. Gray, 1831	Южная белая цапля	LC		*			
Ardea intermedia intermedia Wagler, 1829	Средняя белая цапля	LC		*			
Egretta garzetta garzetta (Linnaeus, 1766)	Малая белая цапля	LC			*		
Egretta eulophotes (Swinhoe, 1860)	Желтоклювая цапля	VU			*		
Platalea leucorodia leucorodia Linnaeus, 1758	Колпица	LC		*			
Platalea minor Temminck & Schlegel, 1849	Малая колпица	EN			*		

Phalacrocorax carbo sinensis (Staunton, 1796)	Большой баклан	LC			*		
Haematopus ostralegus osculans Swinhoe, 1871	Кулик-сорока	VU				*	
Himantopus himantopus himantopus (Linnaeus, 1758)	Ходулочник	LC		*			
Pluvialis squatarola squatarola (Linnaeus, 1758)	Тулес	LC				*	
Pluvialis fulva (J.F. Gmelin, 1789)	Бурокрылая ржанка	LC				*	
Charadrius hiaticula tundrae (P.R. Lowe, 1915)	Галстучник	LC				*	
Charadrius dubius curonicus J.F. Gmelin, 1789	Малый зуек	LC	*				
Charadrius alexandrinus dealbatus (Swinhoe, 1870)	Морской зуек	LC	*				
Charadrius mongolus mongolus Pallas, 1776	Монгольский зуек	LC				*	
Charadrius leschenaultii leschenaultii Lesson, 1826	Толстоклювый зуек	LC				*	
Vanellus vanellus (Linnaeus, 1758)	Чибис	VU	*				
Vanellus cinereus (Blyth, 1842)	Серый чибис	LC		*			
Numenius phaeopus variegatus (Scopoli, 1786)	Средний кроншнеп	LC				*	
Numenius minutus Gould, 1842	Кроншнеп-малютка	LC				*	
Numenius arquata orientalis C.L. Brehm, 1831	Большой кроншнеп	VU				*	
Numenius madagascariensis (Linnaeus, 1766)	Дальневосточный кроншнеп	EN		*			
Limosa lapponica menzbieri Portenko, 1936	Малый веретенник	LC				*	
Limosa limosa melanuroides Gould, 1846	Большой веретенник	NT				*	
A. i. oahuensis (Bloxham, 1826)	Камнешарка	LC				*	
Calidris tenuirostris (Horsfield, 1821)	Большой песочник	EN				*	
Calidris canutus rogersi (Mathews, 1913)	Исландский песочник	LC				*	

Calidris (Philomachus) pugnax (Linnaeus, 1758)	Турухтан	LC				*	
Calidris falcinellus sibirica (Dresser, 1876)	Грязовик	LC				*	
Calidris acuminata (Horsfield, 1821)	Острохвостый песочник	LC				*	
Calidris ferruginea (Pontoppidan, 1763)	Краснозобик	NT				*	
Calidris temminckii (Leisler, 1812)	Белохвостый песочник	LC				*	
Calidris subminuta (von Middendorff, 1853)	Длиннопалый песочник	LC				*	
Calidris (Eurynorhynchus) pygmea (Linnaeus, 1758)	Лопатень	CR				*	
Calidris ruficollis (Pallas, 1776)	Песочник-красношейка	NT				*	
Calidris alba rubida (J.F. Gmelin, 1789)	Песчанка	LC				*	
Calidris alpina sakhalina (Vieillot, 1816)	Чернозобик	LC				*	
Calidris (Tringites) subruficollis (Vieillot, 1819)	Желтозобик	NT				*	
Calidris melanotos (Vieillot, 1819)	Дутыш	LC				*	
Limnodromus semipalmatus (Blyth, 1848)	Азиатский бекасовидный веретенник	NT				*	
Scolopax rusticola Linnaeus, 1758	Вальдшнеп	LC				*	
Gallinago solitaria japonica (Bonaparte, 1856)	Горный дупель	LC					*
Gallinago hardwickii (J.E. Gray, 1831)	Японский бекас	LC				*	
Gallinago stenura (Bonaparte, 1831)	Азиатский бекас	LC				*	
Gallinago megala Swinhoe, 1861	Лесной дупель	LC				*	
Gallinago gallinago gallinago (Linnaeus, 1758)	Бекас	LC				*	
Xenus cinereus (Güldenstädt, 1775)	Мородунка	LC				*	
Actitis hypoleucos (Linnaeus, 1758)	Перевозчик	LC	*				
Tringa ochropus Linnaeus, 1758	Черныш	LC				*	
Tringa brevipes (Vieillot, 1816)	Сибирский пепельный улит	NT				*	

Tringa erythropus (Pallas, 1764)	Щеголь	LC				*	
Tringa nebularia (Gunnerus, 1767)	Большой улит	LC				*	
Tringa totanus ussuriensis Buturlin, 1934	Травник	LC	*				
Tringa glareola Linnaeus, 1758	Фифи	LC				*	
Tringa stagnatilis (Bechstein, 1803)	Поручейник	LC				*	
Phalaropus lobatus (Linnaeus, 1758)	Круглоносый плавунчик	LC				*	
Turnix tanki blanfordii Blyth, 1863	Пятнистая трехперстка	LC	*				
Chroicocephalus ridibundus (Linnaeus, 1766)	Озерная чайка	LC	*				
Larus crassirostris Vieillot, 1818	Чернохвостая чайка	LC			*		
Larus canus kamtschatkensis Bonaparte, 1857	Сизая чайка	LC				*	
Larus fuscus heuglini Bree, 1876	Халей/Восточная клуша	LC				*	
Larus (smithsonianus) mongolicus Sushkin, 1925	Монгольская чайка	LC			*		
Larus schistisagus Stejneger, 1884	Тихоокеанская чайка	LC			*		
Larus hyperboreus pallidissimus Portenko, 1939	Бургомистр	LC		*			
Sternula albifrons sinensis (J.F. Gmelin, 1789)	Малая крачка	LC				*	
Chlidonias hybrida hybrida (Pallas, 1811)	Белощекая крачка	LC				*	
Chlidonias leucopterus (Temminck, 1815)	Белокрылая крачка	LC				*	
Sterna hirundo longipennis Nordmann, 1835	Речная крачка	LC	*				
Pandion haliaetus haliaetus (Linnaeus, 1758)	Скопа	LC			*		
Pernis ptilorhynchus orientalis Taczanowski, 1891	Хохлатый осоед	LC				*	
Aegypius monachus (Linnaeus, 1766)	Черный/Серый гриф	NT					*
Aquila chrysaetos japonica Severtzov, 1888	Беркут	LC					*

Circus spilonotus spilonotus Kaup, 1847	Восточный болотный лунь	LC		*			
Circus cyaneus cyaneus (Linnaeus, 1766)	Полевой лунь	NT					*
Circus melanoleucos (Pennant, 1769)	Пегий лунь	LC	*				
Accipiter soloensis (Horsfield, 1821)	Короткопалый ястреб	LC				*	
Accipiter gularis gularis (Temminck & Schlegel, 1844)	Малый перепелятник	LC				*	
Accipiter nisus nisosimilis (Tickell, 1833)	Перепелятник	LC			*		
Accipiter gentilis albidus (Menzbier, 1882)	Тетеревятник	LC			*		
Haliaeetus albicilla albicilla (Linnaeus, 1758)	Орлан-белохвост	LC					*
Haliaeetus pelagicus (Pallas, 1811)	Белоплечий орлан	VU					*
Milvus migrans lineatus (J.E. Gray, 1831)	Черный коршун	LC				*	
Butastur indicus (J.F. Gmelin, 1788)	Ястребиный сарыч	LC			*		
Buteo lagopus menzbieri Dementiev, 1951	Зимняк	LC					*
Buteo japonicus japonicus (Temminck & Schlegel, 1844)	Японский канюк	LC					*
Buteo hemilasius Temminck & Schlegel, 1844	Мохноногий курганник	LC					*
Ninox japonica florensis (Wallace, 1864)	Иглоногая сова	LC				*	
Asio otus otus (Linnaeus, 1758)	Ушастая сова	LC	*				
Asio flammeus flammeus (Pontoppidan, 1763)	Болотная сова	LC					*
Strix uralensis nikolskii (Buturlin, 1907)	Длиннохвостая неясыть	LC					*
Bubo bubo ussuriensis Poliakov, 1915	Филин	LC	*				
Upupa epops epops Linnaeus, 1758	Удод	LC	*				
Jynx torquilla chinensis Hesse, 1911	Вертишейка	LC	*				
Picus canus jessoensis Stejneger, 1886	Седой дятел	LC	*				
Dryocopus martius martius (Linnaeus, 1758)	Желна	LC				*	
Dendrocopos kizuki permutatus (Meise, 1934)	Малый острокрылый дятел	LC				*	

Dendrocopos minor amurensis (Buturlin, 1908)	Малый пестрый дятел	LC	*				
Dendrocopos leucotos sinicus Buturlin, 1907	Белоспинный дятел	LC	*				
Dendrocopos major japonicus (Seebohm, 1883)	Большой пестрый дятел	LC				*	
Dendrocopos (Hypopicus) hyperythrus subrufinus (Cabanis & Heine, 1863)	Рыжебрюхий дятел	LC				*	
Eurystomus orientalis cyanicollis Vieillot, 1819	Восточный широкорот	LC				*	
Alcedo atthis bengalensis J.F. Gmelin, 1788	Обыкновенный зимородок	VU	*				
Falco tinnunculus interstinctus McClelland, 1840	Обыкновенная пустельга	LC	*				
Falco amurensis Radde, 1863	Амурский кобчик	LC				*	
Falco columbarius insignis (A.H. Clark, 1907)	Дербник	LC					*
Falco subbuteo subbuteo Linnaeus, 1758	Чеглок	LC			*		
Falco cherrug milvipes Jerdon, 1871	Балобан	EN					*
Falco rusticolus Linnaeus, 1758	Кречет	LC					*
Falco peregrinus japonensis J.F. Gmelin, 1788	Сапсан	LC			*		
Pericrocotus divaricatus Raffles, 1822	Личинкоед	LC					*
Oriolus chinensis diffusus Sharpe, 1877	Китайская иволга	LC					*
Lanius tigrinus Drapiez, 1828	Тигровый сорокопут	LC				*	
Lanius cristatus confusus Stegmann, 1929	Сибирский жулан	LC	*				
Lanius sphenocercus Cabanis, 1873	Клинохвостый сорокопут	LC	*				
Lanius borealis sibiricus Bogdanov, 1881	Северный сорокопут	LC					*
Cyanopica cyanus cyanus (Pallas, 1776)	Голубая сорока	LC				*	
Garrulus glandarius brandtii Eversmann, 1842	Сойка	LC					*
Pica pica sericea Gould, 1845	Сорока	LC	*				
Corvus dauuricus Pallas, 1776	Даурская галка	LC				*	

Corvus frugilegus pastinator Gould, 1845	Грач	LC				*	
Corvus corax kamtschaticus Dybowski, 1883	Ворон	LC					*
Corvus corone orientalis Eversmann, 1841	Чёрная ворона	LC	*				
Corvus macrorhynchos mandshuricus Buturlin, 1913	Большеклювая ворона	LC	*				
Prunella montanella montanella (Pallas, 1776)	Сибирская завирушка	LC					*
Passer montanus dybowskii Domaniewski, 1915	Полевой воробей	LC	*				
Dendronanthus indicus (J.F. Gmelin, 1789)	Древесная трясогузка	LC				*	
Anthus gustavi gustavi Swinhoe, 1863	Сибирский конек	VU				*	
Anthus (gustavi) menzbieri Shulpin, 1928	Конёк Мензбира	VU				*	
Anthus hodgsoni yunnanensis Uchida & Kuroda, 1916	Пятнистый конек	LC				*	
Anthus cervinus (Pallas, 1811)	Краснозобый конек	LC				*	
Anthus (rubescens) japonicus (Temminck & Schlegel, 1847)	Гольцовый конек	LC				*	
Anthus richardi Vieillot, 1818	Степной конек	LC				*	
Motacilla cinerea cinerea Tunstall, 1771	Горная трясогузка	LC	*				
Motacilla (alba) lugens Gloger, 1829	Камчатская трясогузка	LC	*				
Motacilla (alba) leucopsis Gould, 1838	Китайская белая трясогузка	LC	*				
Budytes citreolus citreolus Pallas, 1776	Желтоголовая трясогузка	LC				*	
Budytes (tschutschensis) macronyx (Stresemann, 1920)	Китайская желтая трясогузка	LC	*				
Budytes taivanus (Swinhoe, 1863)	Зеленоголовая трясогузка	LC				*	
Budytes tschutschensis plexa (Thayer & Bangs, 1914)	Берингийская желтая трясогузка	LC				*	
Fringilla montifringilla Linnaeus, 1758	Вьюрок	LC				*	
Coccothraustes coccothraustes schulpini H. Johansen, 1944	Обыкновенный дубонос	LC				*	

Eophona migratoria migratoria E. Hartert, 1903	Малый черноголовый дубонос	LC	*				
Erythrina erythrina grebnitskii (Stejneger, 1885)	Обыкновенная чечевица	LC				*	
Carpodacus [Uragus] sibiricus ussuriensis (Buturlin, 1915)	Урагус, или долгохвостая чечевица	LC	*				
Carpodacus roseus roseus (Pallas, 1776)	Сибирская чечевица	LC				*	
Pyrrhula cineracea Cabanis, 1872	Серый снегирь	LC				*	
Pyrrhula griseiventris rosacea Seebohm, 1882	Уссурийский снегирь	LC				*	
Leucosticte arctoa brunneonucha (von Brandt, 1842)	Сибирский горный вьюрок	LC					*
Chloris sinica ussuriensis E. Hartert, 1903	Китайская зеленушка	LC	*				
Acanthis flammea flammea (Linnaeus, 1758)	Обыкновенная чечетка	LC				*	
Spinus spinus (Linnaeus, 1758)	Чиж	LC				*	
Calcarius lapponicus kamtschaticus Portenko, 1937	Подорожник	LC					*
Plectrophenax nivalis vlasowae Portenko, 1937	Пуночка	LC					*
Spina fucata fucata (Pallas, 1776)	Ошейниковая овсянка	LC	*				
Emberiza cioides weigoldi Jacobi, 1923	Красноухая овсянка	LC	*				
Emberiza leucocephalos leucocephalos S.G. Gmelin, 1771	Белошапочная овсянка	LC					*
Schoeniclus yessoensis yessoensis (Swinhoe, 1874) [Schoeniclus yessoensis continentalis (Witherby, 1913)]	Рыжешейная овсянка	NT	*				
Schoeniclus pallasi minor (von Middendorff, 1853)	Полярная овсянка	LC					*
Schoeniclus schoeniclus pyrrhulinus Swinhoe, 1876	Тростниковая овсянка	LC	*				
Cristemberiza elegans elegans (Temminck, 1836)	Желтогорлая овсянка	LC				*	

Ocyris spodocephala spodocephala (Pallas, 1776)	Седоголовая овсянка	LC	*				
Ocyris rusticus (Pallas, 1776)	Овсянка-ремез	VU				*	
Ocyris rutilus (Pallas, 1776)	Рыжая овсянка	LC				*	
Ocyris pusillus (Pallas, 1776)	Овсянка-крошка	LC				*	
Ocyris aureolus ornatus (Shulpin, 1928)	Дубровник	CR				*	
Ocyris tristrami (Swinhoe, 1870)	Таежная овсянка	LC				*	
Periparus ater amurensis Buturlin, 1907	Московка	LC				*	
Poecile palustris brevirostris Taczanowski, 1872	Черноголовая гаичка	LC	*				
Poecile montanus baicalensis Swinhoe, 1871	Пухляк	LC				*	
Parus minor wladiwostokensis O. Kleinschmidt, 1913	Восточная синица	LC	*				
Remiz consobrinus consobrinus (Swinhoe, 1870)	Восточный ремез	LC	*				
Alauda arvensis intermedia Swinhoe, 1863	Полевой жаворонок	LC	*				
Locustella fasciolata (G.R. Gray, 1861)	Таёжный сверчок	LC				*	
Locustella pryeri sinensis (Witherby, 1912)	Японский сверчок	NT	*				
Locustella certhiola certhiola (Pallas, 1811)	Певчий сверчок	LC	*				
Locustella ochotensis ochotensis (von Middendorff, 1853)	Охотский сверчок	LC				*	
Locustella lanceolata lanceolata (Temminck, 1840)	Пятнистый сверчок	LC				*	
Arundinax aëdon rufescens (Stegmann, 1929)	Толстоклювая камышевка	LC	*				
Acrocephalus bistrigiceps Swinhoe, 1860	Пестроголовая, или чернобровая камышевка	LC	*				
Acrocephalus tangorum La Touche, 1912	Маньчжурская камышевка	VU	*				
Acrocephalus orientalis (Temminck & Schlegel, 1847)	Восточная дроздовидная камышевка	LC	*				

Delichon urbicum lagopodum (Pallas, 1811)	Воронок	LC				*	
Delichon dasypus dasypus (Bonaparte, 1850)	Восточный воронок	LC				*	
Cecropis daurica japonica (Temminck & Schlegel, 1845)	Рыжепоясничная ласточка	LC		*			
Hirundo rustica gutturalis Scopoli, 1786	Деревенская ласточка	LC		*			
Riparia riparia taczanowskii Stegmann, 1925	Береговушка	LC				*	
Abrornis inornata (Blyth, 1842)	Пеночка-зарничка	LC				*	
Abrornis proregulus (Pallas, 1811)	Корольковая пеночка	LC				*	
Phylloscopus fuscatus fuscatus (Blyth, 1842)	Бурая пеночка	LC				*	
Phylloscopus schwarzi (Radde, 1863)	Толстоклювая пеночка	LC				*	
Acanthopneuste borealis borealis (Blasius, 1858)	Пеночка-таловка	LC				*	
Acanthopneuste coronatus (Temminck & Schlegel, 1847)	Светлоголовая пеночка	LC				*	
Acanthopneuste plumbeitarsus (Swinhoe, 1860)	Зелёная пеночка	LC				*	
Acanthopneuste tenellipes (Swinhoe, 1860)	Бледноногая пеночка	LC				*	
Urosphena squameiceps ussurianus (Seebohm, 1881)	Короткохвостка	LC				*	
Horornis canturians borealis (C.W. Campbell, 1892)	Короткокрылая камышевка	LC	*				
Aegithalos caudatus caudatus (Linnaeus, 1758)	Ополовник	LC				*	
Paradoxornis heudei polivanovi Stepanyan, 1974	Тростниковая сутора	NT	*				
Sinosuthora webbiana mantschurica (Taczanowski, 1885)	Бурая сутора	LC	*				
Zosterops erythropleurus Swinhoe, 1863	Буробокая белоглазка	LC				*	
Certhia familiaris daurica Domaniewski, 1922	Обыкновенная пищуха	LC				*	

Sitta europaea amurensis Swinhoe, 1871	Обыкновенный поползень	LC				*	
Agropsar sturninus (Pallas, 1776)	Малый скворец	LC	*				
Agropsar philippensis (J.R. Forster, 1781)	Краснощекий скворец	LC	*				
Spodiopsar cineraceus (Temminck, 1835)	Серый скворец	LC	*				
Muscicapa griseisticta (Swinhoe, 1861)	Пестрогрудая мухоловка	LC				*	
Muscicapa sibirica sibirica J.F. Gmelin, 1789	Сибирская мухоловка	LC				*	
Muscicapa dauurica dauurica Pallas, 1811	Ширококлювая мухоловка	LC				*	
Cyanoptila cyanomelana intermedia (Weigold, 1922)	Синяя мухоловка	LC				*	
Icotorus sibilans (Swinhoe, 1863)	Соловей-свистун	LC				*	
Larvivora cyane bochaiensis Shulpin, 1928	Синий соловей	LC				*	
Calliope calliope calliope (Pallas, 1776)	Соловей-красношейка	LC				*	
Tarsiger cyanurus (Pallas, 1773)	Синехвостка	LC				*	
Ficedula albicilla (Pallas, 1811)	Восточная малая мухоловка	LC				*	
Ficedula mugimaki (Temminck, 1836)	Таежная мухоловка	LC				*	
Ficedula zanthopygia (Hay, 1845)	Желтоспинная мухоловка	LC	*				
Phoenicurus auroreus auroreus (Pallas, 1776)	Сибирская горихвостка	LC	*				
Monticola philippensis philippensis (Statius Muller, 1776)	Синий каменный дрозд	LC	*				
Saxicola maurus stejnegeri (Parrot, 1908)	Восточный чекан	LC	*				
Turdus hortulorum P.L. Sclater, 1863	Сизый дрозд	LC	*				
Turdus pallidus J.F. Gmelin, 1789	Бледный дрозд	LC				*	
Turdus naumanni Temminck, 1820	Дрозд Науманна	LC				*	
Turdus eunomus Temminck, 1831	Бурый дрозд	LC				*	
			84	**21**	**14**	**141**	**25**

ANNEX IV.

Important excerpts from the LAW OF THE PRIMORSKY KRAI on amendments to the low of Primorsky Krai "ON SPECIALLY PROTECTED NATURAL TERRITORIES OF THE PRIMORSKI KRAI "

Khasansky park is a protected area of regional importance (exact term translation is “nature park”). In accordance with recent changes to regional protected areas legislation, the following statements have been included into the law concerning protected areas of regional importance, particularly change of boundaries and abolition of protected areas of regional importance.

The changes to the law have been accepted on 24th of July, 2019.

Reasons for changes in the boundaries of specially protected natural areas of regional importance are:

- inclusion of a part of a specially protected natural territory of regional significance in the composition of a specially protected natural territory of federal significance;
- the exclusion from the specially protected natural territory of the regional importance of a part of the territory due to the loss of special environmental, scientific, cultural, aesthetic, recreational and health-improving significance by natural complexes and objects located in this territory, for the protection of which a specially protected natural territory of regional significance was formed;
- the need to increase the area of a specially protected natural territory of regional significance.

Reasons for the abolition of a specially protected natural territory of regional significance are:

- the inclusion of a specially protected natural territory of regional significance into a specially protected natural territory of federal significance;
- complete destruction of the protected natural complex or object as a result of natural or man-made impacts when it is impossible to restore them;
- the loss of protected natural complex or subject of special environmental, scientific, cultural, aesthetic, recreational and health-improving significance if it is impossible to restore it.
- Change of borders or the abolition of specially protected natural territories of regional significance for other reasons **is not allowed**.

If it is possible to restore a natural complex or object, as well as its special environmental, scientific, cultural, aesthetic, recreational and recreational value, the bodies and institutions authorized to manage specially protected natural territories of regional significance organize the necessary measures for the functioning and provision of a special protection regime in accordance with the objectives of creating a specially protected natural territory of regional importance.

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