North-East Asian
Subregional Programme for
Environmental Cooperation

Transboundary Cooperation among Protected Wetlands in the Lower Tumen River Area

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Abbreviations

DPR Korea	Democratic People's Republic of Korea
ESCAP-SOENEA	Economic and Social Commission for Asia and the Pacific Subregional Office for East and North-East Asia
HSF	Hanns Seidel Foundation
NEASPEC	North-East Asian Subregional Programme for Environmental Cooperation
NFGA	National Forestry and Grassland Administration, China
RMB	Renminbi
ROK	Republic of Korea
UNDP	United Nations Development Programme

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The report aims to share findings about the lower reaches of the Tumen River Area, in particular, the conservation of the Jingxin Wetland (China) and the Khasan Wetland (the Russian Federation), with member States, relevant stakeholders and those who are interested in transboundary cooperation for nature conservation. The report was reviewed by the North-East Asian Subregional Programme for Environmental Cooperation (NEASPEC) member States prior to publication.

Executive Summary

The North-East Asian Subregional Programme for Environmental Cooperation (NEASPEC) is an intergovernmental cooperation mechanism established in 1993 by six member States—China, Democratic People's Republic of Korea (DPR Korea), Japan, Mongolia, the Republic of Korea (ROK) and the Russian Federation. It supports subregional cooperation of the six member States and relevant stakeholders on air pollution, biodiversity and nature conservation, marine protected areas, low carbon cities, desertification and land degradation.

Since the adoption of the NEASPEC Nature Conservation Strategy in 2007, NEASPEC member States have supported the implementation of several projects on the conservation of migratory birds and habitats. Based on the outcomes and findings from projects of Conservation and Rehabilitation of Habitats for Key Migratory Birds in North-East Asia conducted from 2014 to 2016 and Managing Connectivity Conservation and Transboundary Cooperation in North-East Asia: Case of Dauria International Protected Areas conducted in 2017, the member States considered strengthening coordination among protected areas located along or near national boundaries to ensure long-term conservation of most threatened species and valuable landscapes in the subregion.

The Tumen River Estuary is an important area with rich biodiversity and habitats for globally endangered and vulnerable species, including flagship species of NEASPEC.[1] Three neighboring countries, China, DPR Korea and the Russian Federation, have already recognized its ecological importance and introduced conservation measures such as designating the area as a nature reserve.

In this connection, the transboundary area in the Tumen River Estuary was considered as an example to explore potential transboundary cooperation for biodiversity and wetlands conservation among member States. Such cooperation may include creating a transboundary protected area with coordinated mechanisms among member States, such as a transboundary Ramsar site, involving the Rason Migratory Bird Reserve in DPR Korea, the Khasansky Nature Park in the Russian Federation and the wetlands in Jingxin and Fangchuan National Park in China in the Tumen River Estuary (Figure 1).

Previously, the United Nations ESCAP Subregional Office for East and North-East Asia (ESCAP-SOENEA) and Hanns Seidel Foundation Korea Office (HSF), with the support of the Economic Cooperation Bureau of the People's Committee of Rason City, conducted a field survey in the Rason Migratory Bird Reserve in March 2014.[2]

The field survey produced the first markings of baseline information of the habitat, including key geographical information. It contributed to the completion of an overall picture of the Tumen River Delta habitat, which had been absent because of a lack of information on the DPR Korea side until the early 2010s. More importantly, the field survey confirmed that the Rason Migratory Bird Reserve meets the Ramsar sites criteria[3] as an "internationally important wetland" and supports over 100 species of birds (Annex I).[4]

Based on this initial finding, the project recommended that DPR Korea become a contracting party of the Ramsar Convention on Wetlands of International Importance (or Ramsar Convention) and designate the Rason Migratory Bird Reserve as a Ramsar Site (Figure 2). Such recognition as an internationally important wetland could provide a useful concept and framework for better management of the Reserve.

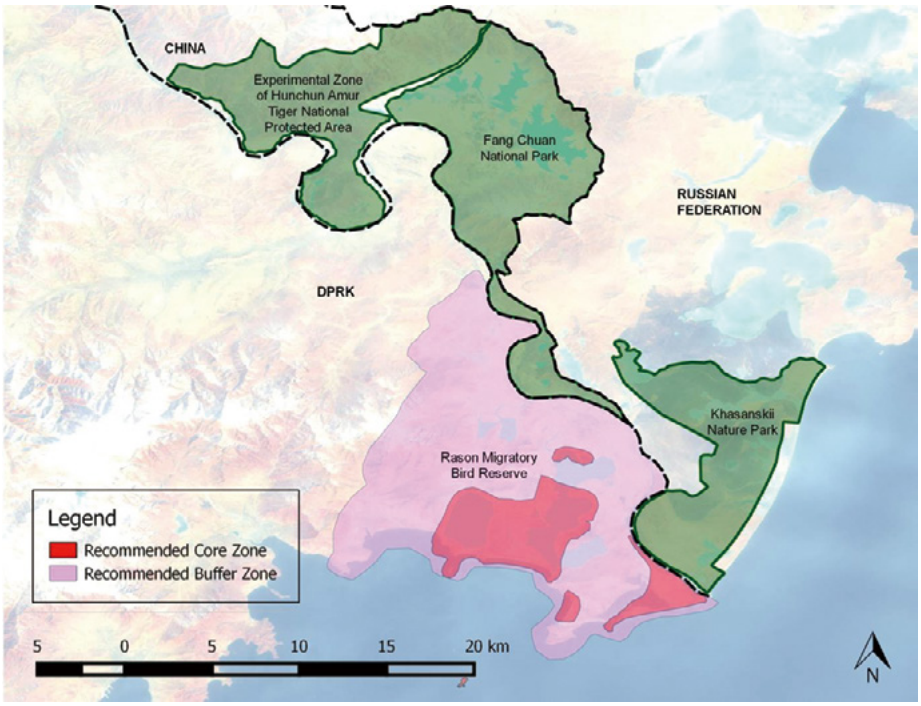
1 NEASPEC flagship species include Amur tiger, Amur leopard, Snow leopard, Black-faced Spoonbill, White-naped Crane and Hooded Crane; five of them (except Snow leopard) are found in the Tumen River area. More information is available at http://www.neaspec.org/our-work/nature-conservation

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

3 Secretariat of Ramsar Convention on Wetlands. The Ramsar Sites Criteria. https://www.ramsar.org/sites/default/files/documents/library/ramsarsites_criteria_eng.pdf

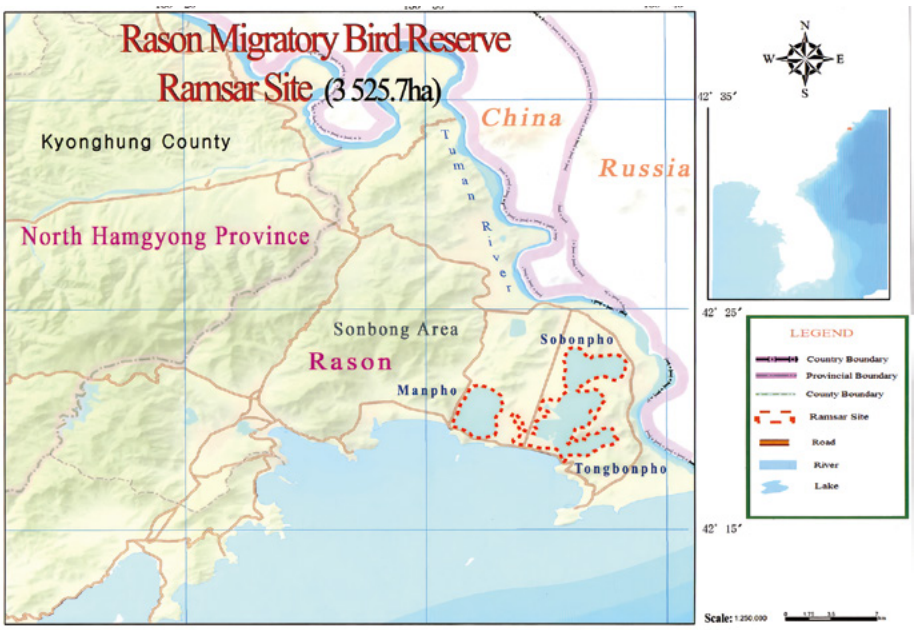
4 Same as reference 2 above

Figure 1. Wetlands and Key Protected Areas in China, DPR Korea and the Russian Federation at the Tumen River Estuary



Source: Rason Migratory Bird Reserve: Birds and Habitats (2014), NEASPEC and Hanns Seidel Foundation

Figure 2. Map of the Rason Migratory Bird Reserve



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

The work came to fruition with the accession of DPR Korea to the Ramsar Convention as the 170th contracting party and the certification of the Rason Migratory Bird Reserve and the Mundok Migratory Bird Reserve in May 2018.[5] In October 2019, the Ministry of Land and Environment Protection, DPR Korea, organized its first Swan Goose Festival at the Mundok Migratory Bird Reserve. A total of 160 participants, including embassy representatives from Mongolia, the Russian Federation and UN agencies attended the event.[6] In addition, the government of Rason city considered a Swan Festival to promote eco-tourism and further facilitate wetland conservation. These engagements offer the possibility of comprehensive joint management of the Tumen River Estuary among all three countries with scientific conservation measures. Strengthened cross-border cooperation may be further explored by jointly applying for Asia's first transboundary Ramsar Site.

Taking note of DPR Korea's efforts toward the conservation of migratory birds and habitats, this report examines the Chinese and Russian sides of the Tumen River Estuary. The objective is to explore the potential for establishing a transboundary protected area in this region. With an overview of migratory birds and their habitats along the lower Tumen River, the report further reviews the environmental significance of the Jingxin Wetland of China and the Khasan Wetland of the Russian Federation.

The report recommends enhancing transboundary cooperation in the lower Tumen River among China, DPR Korea and the Russian Federation by taking the following actions based on updated information and analysis of the region's environmental, social and economic status and conservation management systems:

- Promote the visibility and highlight the significance of conservation of the Jingxin Wetland and Khasan Wetland at national, regional and international levels;
- Promote joint strategic planning, coordinated monitoring and management plans;
- Conduct joint capacity-building activities, projects and scientific research in a more synchronized manner; and
- Expand and strengthen partnerships and networks of actors domestically, regionally and internationally to conserve the lower reaches of the Tumen River.

5 Secretariat of Ramsar Convention, 2018
https://www.ramsar.org/news/the-democratic-peoples-republic-of-korea-to-become-the-170th-contracting-party-to-the
6 East Asian-Australasian Flyway Partnership (EAAFP), 2019
https://www.eaaflyway.net/first-swan-goose-festival-in-dpr-korea-celebrating-world-migratory-bird-day/

1. Introduction of the Lower Tumen River Area

1. Introduction of the Lower Tumen River Area

1.1. Geographical overview

The Tumen River and drainage basin, nearly 33,168 km^2, is under the jurisdiction of China, DPR Korea and the Russian Federation and represents a comprehensive ecosystem consisting of wetlands, farmlands, grasslands, forests and sand dunes. With annual freshwater runoff of 55,108 m^3, it secures water supplies, stabilizes the saline balance, and controls desertification in the estuary, which underpins support for agriculture, industry and urban development.[7]

The wetland complex of the lower reaches of Tumen River starts from Jingxin Town (China), formed by comprehensive effects of geological, riverine, marine and climatic factors, with uniqueness and rich diversities in geomorphology. The wetland complex also provides biological resources, including fisheries, agricultural products and food, materials and habitats for biodiversity.

These wetlands are mainly distributed in Jingxin National Park (China), Khasansky Nature Park (Russian Federation) and Rason Migratory Bird Reserve (DPR Korea). The total area of these wetlands is about 80 km^2 in Jingxin[8], 330 km^2 (excluding coastal) in Khasan[9] and 115.6 km^2 in Rason.[10]

Wetlands in the lower reaches of Tumen River are characterized by complex distribution.

- Geographically, the wetland complex consists of one integrated landscape at Tumen River Estuary with a side length of less than 40 km. The distance between adjacent individual waterbodies in three countries is typically less than 5 km, and most are around 1-3 km.[11]
- 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 and plain reservoirs,[12] while Khasansky and Rason wetlands were affected by the marine process and consist of both freshwater and brackish water lakes.
- Biologically, there are aquatic fauna and flora connections among the water systems in the wetlands, and waterbirds can easily fly across the estuary region.
- Ecologically, 2,090 species of vascular plants and 422 species of animals exist at the watershed scale,[13] with more than half the number of species of vascular plants and three-fourths of animals reported in the lower reaches of Tumen River.[14]
- All these characteristics are interconnected and are affected by human activities such as land conversion, water regulation, overuse of natural resources, pollution and tourism, which have two-way interactive impacts with the natural environment (e.g., climate conditions, hydrological connection between Tumen River and its flood plain, geomorphology of Tumen River drainage), biodiversity (e.g., movement connections and reproduction of shared species, ecological genetics) and ecosystem services (e.g., cultural, regulating or provisioning services).

The ecosystems in the Tumen River Estuary present the same biota through multiple connections in the three countries. There are 32 species of fish, eight species of amphibians, 126 species of birds, 24 species of mammals and 305 vascular plants in Jingxin Wetland.[15] A joint field survey by ESCAP-HSF at the Rason wetlands recorded 111 species and more than

7 Wu X.Q., 2004
8 China National Forestry and Grassland Administration Database at http://www.stgz.org.cn/
9 Lai To. L., 2021
10 Same as reference 2 above
11 Li H., 2011
12 Jia W.X., et al., 2017
13 Chai X., et al., 2003
14 Yang G.Y., et al., 2006
15 Yang et al., 2006

42,000 individual birds in 2014.[16] The list of birds of the Khasansky wetlands includes 285 species, not including seabirds. Endangered species were reported in all three countries, including Red Crowned Crane and White-naped Crane.[17]

1.2. Socio-economic development along the lower reaches of the Tumen River Area

The Tumen River downstream area provides unique geographical features for transboundary socio-economic development. It serves as the crossroads and hub for transboundary trade, transport, industry and energy among such countries as China, DPR Korea, Japan, the Republic of Korea and the Russian Federation. The United Nations Development Programme (UNDP) initiated the Tumen River Area Development Project in 1992 (known today as the Greater Tumen Initiative) to promote international communication on economic development, based on the Outline of the China Tumen River Regional Cooperation Development Plan[18] and considering the developmental needs of the area, such as harbor construction and transportation system development.

To further promote transboundary cooperation and speed up the socio-economic development downstream of the Tumen River Estuary, China considers the area as one of the important sites for its Belt and Road Initiative implementation.[19] In addition, the Tumen River downstream area is expected to be developed as a collaborative international demonstration area and comprehensive tax-protected zone for border economy cooperation and ocean markets with new trade forms. The landscape, wildlife and culture of the lower Tumen River also lay the foundation for eco-tourism in regions of the Tumen River in China, DPR Korea and the Russian Federation.

The Tumen River Estuary exhibits varying degrees of disturbance and degradation attributed to factors such as population growth, human activities and economic development. For instance, the establishment and expansion of industrial infrastructure, conversion of natural wetlands into farmland through agricultural expansion and insufficient planning and management practices directly contribute to the degradation and loss of valuable wetland ecosystems within the estuary.

1.3. The significance of transboundary cooperation in the lower Tumen River Area

The interconnectedness of geographical, hydrological, biological and ecological features along the lower Tumen River highlights the critical importance of ecosystem integrity. Any changes occurring within the three countries along the lower Tumen River can potentially impact its landscape pattern, hydrologic processes and biological attributes. Moreover, the lower Tumen River Basin is home to diverse ecosystems that support rich biodiversity. For example, the diverse wetland habitats play a vital role as foraging, roosting and breeding grounds for migratory waterbirds that traverse national boundaries.

In addition, addressing environmental risks and socio-economic challenges requires transboundary cooperation among China, DPR Korea and the Russian Federation, which would enable 1) the creation of an enabling environment to develop coordinated strategies and mechanisms to respond to natural disasters and environmental risks; 2) sharing of resources, expertise, data and technologies to address multidimensional challenges for sustainable development; and 3) unlocking the potential of the region as a hub for cross-border connectivity, tourism and cultural exchanges.

The following sections examine Chinese and Russian Federation sides of the lower Tumen River, with a focus on the Jingxin Wetland (China) and the Khasan Wetland (the Russian Federation), to discuss the ecological, environmental and socio-economic connectivity of the region and explore enhanced transboundary cooperation.

16 Same as reference 2 above
17 Yang et al., 2006
18 The Central People's Government of the People's Republic of China, 2009
19 Yang J., 2015

2. China: the Jingxin Wetland

2. China: the Jingxin Wetland

2.1. Overview of the Jingxin Wetland

The Jingxin Wetland (129°52′00″-131°18′30″E, 42°25′20″-43°30′18″N) encapsulates all types of wetlands distributed along the lower reaches of the Tumen River located in the city of Hunchun, Yanbian Korean Autonomous Prefecture of the Jilin province, China. As a vast wetland area and important ecological buffer zone along the river, the Jingxin Wetland plays a crucial role in biodiversity conservation; in particular, in perching and reproduction of various bird species spreading along a total area of 24,080 ha in the eastern part of Changbai Mountain.[20]

Based on topography, the Jingxin Wetland can be categorized into five types: (1) rivers, (2) lakes, (3) marshes, (4) paddy fields and (5) other artificial wetlands. Riverine and lacustrine wetlands belong to the Tumen River system. The Tumen River crosses the Jingxin Wetland with a total length of 54.6 km, and the Quan River is its main tributary. There are 12 ponds and reservoirs, with a total area of 757 hm^2.[21] Some wetland areas of the Jingxin Wetland have been fragmented by residential areas, fishponds and agricultural farmland, where some natural wetlands were used for human activities.[22]

The Jingxin Wetland provides an invaluable ecosystem and habitat for various key species, including critically endangered ones. It is among the key protected wetlands in the Jilin Province in northeast China. As an important transit station for migratory birds (Annex II), the Jingxin Wetland is located in the transitional area of the land and water system. It has a high level of biodiversity and is a unique habitat for various species of wildlife and rich genetic material. Fifty-six species of wetland birds were recorded in earlier studies and Figure 3 presents a few examples.[23] In addition, various wild animal species were recorded, some of which are unique species with important gene pools.[24] The world-endangered Amur Leopard and Amur Tiger are also found in this area.[25]

The Jingxin Wetland also boasts a rich and diverse vegetation composition, encompassing forests, grasslands, and wetlands. In 2017, 153 species (109 genera, 54 families) of vegetation were recorded, and more than 60 types of medicinal vegetation were found.[26] More than 60 species of vegetation, such as water lily—a typical species distributed in this area—are listed as endangered or rare species at the national or provincial level. Pine, willow, birch, Rosaceae, Compositae, Gramineae and Cyperaceae are the main species of seed plants, showing the diversity of vegetation in the forest and wetland. There are several large ponds called “paozi” by local people, and there is an abundance of wild vegetation distributed in and around these areas. Vegetation species in the Jingxin Wetland are shown in Table 1.

The density of wetland vegetation in Jingxin Wetland doubles the density of vegetation in other wetlands in China.[27] For instance, carex tabulaeformis, carex macrophylla and reed plants are widely distributed in Jingxin, among which the carex tabulaeformis has the strongest water purification ability, followed by carex macrophylla and reed.[28]

20 Tian H., et al., 2012;

21 Zheng X.J., et al., 2016; and Liu Z.F, et al., 2009

22 Sun P., 2011

23 Fu T., et al. 1981.

24 Yang G., et al., 2006. Jilin Forestry Department database, 2016. Note: 190 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).

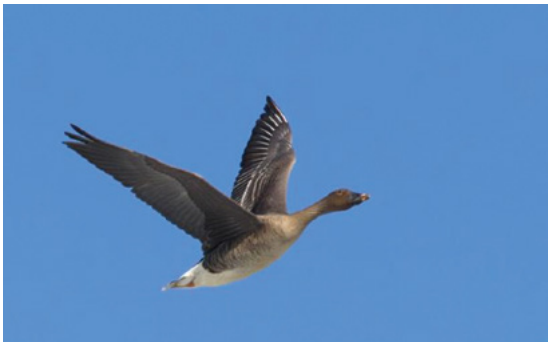
25 Yang G. et al., 2006.

26 Zhu W.H., et al., 2014

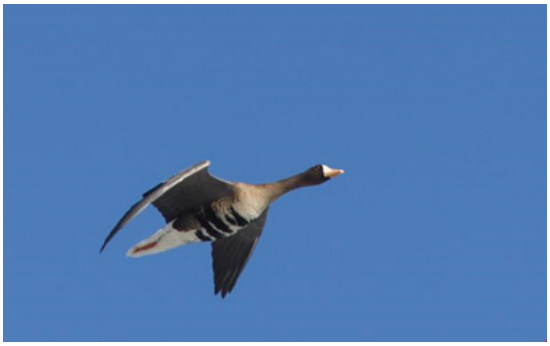
27 Shi M., et al., 2016. Note: the density of wetland vegetation in Jingxin is 0.0056 species/km2 which is twice as 0.0028 species/km2 in China.

28 Wang W.Y., 2020. Note: the purification ability significantly correlates with the number of soil microorganisms in the rhizosphere of the three wetland plants.

Figure 3. Birds in the Jingxin Wetland



a. Bean goose



b. White-fronted goose

c. Red-billed gull

d. White-tailed sea eagle

Source: photos provided by Weihong Zhu, co-author of this report

Table 1. Vegetation Species in the Jingxin Wetland

Family	Genera	Species
Gramineae	11	17
Compositae	7	12
Sedge	6	17
Labiatae	5	6
Leguminosae	4	4
Polygonaceae	2	10
Onagraceae	2	4
Commelinaceae	2	2
Urticaceae	2	2
Juncus effusus	1	3
Typhaceae	1	2
Alismataceae	1	2
Water chestnut	1	1
Nelumbonaceae	1	1
Sparganiaceae	1	1
Cucurbitaceae	1	1
Salviniacae	1	1
Lemnaceae	1	1
Plantaginaceae	1	1

Family	Genera	Species
Gentianaceae	1	1
Asclepiadaceae	1	1
Ranunculaceae	1	1
Equisetaceae	1	1
Lythaceae	1	1
Rosaceae	1	1
Onodeaccae	1	1
Umbelliferae	1	1
Moraceae	1	1
Sheguke	1	1
Brassicaceae Burnett	1	1
Caryophyllaceae	1	1
Araceae	1	1
Halorrhagidaceae	1	1
Scrophulariae	1	1
Salicaceae	1	1
Ulmaceae	1	1
Pontederiaceae	1	1

Source: Provided by Weihong Zhu, co-author of the report

2.2. Institutional arrangement and management of the Jingxin Wetland

The administrative reform in China in 2018 resulted in significant changes among conservation authorities. This included the establishment of the Ministry of Natural Resources as the main conservation management authority at the national level. It administers the National Forestry and Grassland Administration (NFGA), among other associated departments and affiliated agencies. NFGA implements national policies, decisions and plans to govern forestry and grassland work in China. At the local level, the previous systems (e.g., the Hunchun Nature Reserve and Hunchun Forestry Bureau) have been incorporated into a branch of the National Park Administration. Staff management and national park regulations are being reformed, but it will take more time to ensure complete organization and implementation at the local level.

The city of Hunchun in Jilin Province of China, where Jingxin Wetland is located and the downstream of the Tumen River is distributed, is responsible for wetland management. Conservation authorities for Jingxin Wetland management are at provincial and local levels (Table 2). It is currently under the management of the Hunchun Forestry Bureau (local level) and is not included in any of the national-level conservation plans for protected areas in China. Despite noting that it was registered as Jingxin National Forestry Park (e.g., current Tumen River National Forest Park) in 1997 and used to be a part of the provincial-level nature reserve (e.g., Hunchun Amur Tiger Provincial Nature Reserve) in 2001, the Hunchun Forestry Bureau takes responsibility for the wetland management, while wildlife issues are under the management of Hunchun Nature Reserve and tourism-related issues are managed by the Scenic Area Management Bureau of the municipal government of Hunchun.

Table 2. Conservation Authorities of the Jingxin Wetland

Name	Description
Hunchun Forestry Bureau[29] 珲春市林业局	Managed by the 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 the Government Working on Fangchuan scenic area management
Hunchun Tiger Nature Reserve[30] 珲春东北虎自然保护区管理局	Managed by the Government, National Forestry and Grassland Administration of China, National Park Administration Working on wildlife management

2.3. Challenges and opportunities of the Jingxin Wetland for sustainable development

The city of Hunchun aims to transform itself into a middle-level modern city that has the capacity to mobilize more information and human resources. It was listed as one of China's 14 marine economic demonstration cities in 2019. Aligned with the proposal on national support to ocean development and marine economic demonstration cities put forward by the National Committee of the Chinese People's Political Consultative Conference in 2019,[31] Hunchun has made efforts to 1) increase sea production in the industrial zone, 2) enlarge production capacity on an industrial scale, 3) extend industrial supply chains, 4) develop sea product brands, and 5) promote ocean tourism projects and develop ocean tourism.[32]

Within this context, the Hunchun government has implemented several major projects in the sectors of transport, trade, marine development and tourism. For example, it has developed a three-phased Hunchun international harbor project to promote logistics among China, DPR Korea and the Russian Federation. The project covers an 85 ha area close to the Hunchun railway port area, with a total construction investment of Renminbi (RMB) 1 billion (approximately US$148 million). It opened additional ports for transportation between Hunchun and other cities nationally and internationally.[33]

29 Website accessible at http://www.hunchun.gov.cn/szf_1881/zfjg/201912/t20191202_2391.html

30 Website accessible at https://mp.weixin.qq.com/s/esTUVAkn4Va80xE3EILl-g

31 The National Committee of the Chinese People's Political Consultative Conference (CPPCC) News, 2019

32 Tumen News, 2021

33 Xinhua Press Release, 2019

Hunchun City is also a premier tourist site, and its tourism industry has boosted the local economy. For instance, the annual Goose Watching Festival every spring in Hunchun attracts domestic and international tourists. In addition, the city has built facilities for bird watching and photography (Figure 4 and Figure 5), which have attracted tourists during migration season. Based on interviews in local communities, tourism brings added profits to restaurants and hotels.[34]

The Jingxin Wetland, located in the southernmost part of Hunchun City, and Fangchuan Village, located in Jingxin Town, are popular tourist attractions. At the Fangchuan National Scenic Area, tourists can see a unique cross-border view of three countries (China, DPR Korea and the Russian Federation, Figure 6) and the Tumen River Estuary. Established as an important tourist attraction with distinguished features and Korean-Chinese culture, Fangchuan National Scenic Area and other tourist attractions in Fangchuan Village got funding and policy support from Hunchun's government. With boosted local economies, residents who had relocated in search of better employment opportunities in other regions have returned to the village to operate home-stay businesses (Figure 7).[35]

Tourism plays an important role in the local economy, but it also has risks to the conservation of local ecosystems. Tourism and marine economy development projects in the Jingxin Wetland area may have a considerable adverse impact on environment conservation, if strategic plans and synergies between economic development and environmental conservation are not carefully considered. For local communities, the main sources of income are agriculture, grazing livestock (primarily cattle), beekeeping and fishing (especially in the Tumen River region). However, expanding farming areas (especially paddy fields) and traditional grazing areas may decrease the wetland size, and the fishpond industry may cause the wetland landscape to become more fragmented. Ocean economic development may also bring potential threats to the local ecology. Population increases, heavier traffic and harbor construction may adversely impact ecosystems if development activities are managed poorly. Industries relying on wetland resources may also be threatened.

The sustainable development of the Jingxin Wetland requires strategic plans and synergies between environmental conservation and socio-economic development. As shown in Table 3, the utilization of the Jingxin Wetland requires strategic planning, scientific training, laws and regulations compliance, education and eco-friendly programmes. The Regulation on the Reform and Development of Forestry Financing Management, established in 2016 by the Ministry of Finance of China, stated that earmarked funds and compensation will support wetland conservation, wetland nature reserves and national wetland parks.[36] In addition, considering the adverse impact on farming by wildlife and migratory birds, the Hunchun Forestry Bureau launched a project to compensate local communities for their economic loss incurred from enforced measures for conserving migratory birds.

34 Wen Y.L., et al., 2010.

35 Yanbian Radio and Television Station, 2019

36 National Forestry and Grassland Administration, 2018. Suggestions on Establishing Compensation Mechanisms for Wetland's Ecological Benefits, accessible at http://www.forestry.gov.cn/main/4861/20180912/152426397471251.html

Figure 4. Migratory Birds in the Jingxin Wetland

Source: photos taken by Li Hailong and provided by the co-author of this report

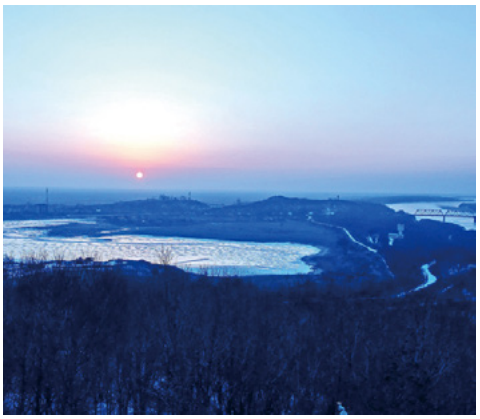
Figure 5. Bird Watching at Longshan Lake

Source: China Jilin Website[37]

Figure 6. Fangchuan Residence House for Travelers

Source: China News, photo provided by Hunchun Municipal Committee[38]

Figure 7. Fangchuan Area Viewed from China, DPR Korea and the Russian Federation



Source: Yanbian News Media, 2018[39]

37 China Jilin Website is accessible at www.cnjiwang.com
38 China News, 2021. https://www.chinanews.com.cn/cj/2021/05-15/9477818.shtml
39 Yanbian News Media, 2018. Fangchuan. http://www.ybrbnews.cn/xinsheYB/content/2018-12/26/167_338742.html

Table 3. Utilization of the Jingxin Wetland

Areas	Potential methods of utilization
Riverine areas	The Quanhe River and Tumen River are yet to be fully utilized in a sustainable way, with the potential to develop sustainable eco-tourism programs along the river.
Natural wetlands	Sustainable land practices and management, increased education and law enforcement are required for natural wetlands conservation, especially noting natural wetlands loss from farming activities in the Jingxin Wetland.
Bird watching areas	The purpose of bird watching activities is to protect migratory birds resting for one month in the Jingxin Wetland. Migratory bird watching may benefit the local people, especially for those running businesses, restaurants and home-stay services, because it has the potential to attract people to enter the local tourist industry to expand bird watching activities. To better conserve migratory birds and their habitats without significant adverse impact from bird watching activities, local residents could be trained as bird guides and further scientific training on disease prevention and migratory bird conservation management could be conducted.
Tourist sites around wetlands	Noting the lack of wetland facilities in certain tourist sites (e.g. Fangchuan), wetland-related programs could be developed to build infrastructures needed to support conservation, research, management, educational and recreational activities.

Considering the geographic location of Jingxin Wetland at the junction of China, DPR Korea and the Russian Federation, it is critical for all neighboring countries to work together for a more balanced plan between wetland conservation and economic development. China has favorable conditions for promoting conservation activities in this area.

Conservation of the Jingxin Wetland requires collective efforts from stakeholders. It is promising to witness the ongoing conservation actions including, for instance, the Yanbian Prefecture government's decision to establish a wetland center to improve science-policy linkages to bridge the gap between researchers and policy makers. The center's main objectives include conducting wetland resource surveys, monitoring changes in the wetland landscape, and providing conservation suggestions based on science. The center cooperates with academia and researchers and conducts monitoring and sustainable development research to inform legislation. Other organizations, such as the Wildlife Conservation Society, World Wildlife Fund and Baohudi (Chinese organization), have long worked in this area and contributed to capacity building and fundraising for wetland conservation.

In addition, an increasing number of environmental charities and NGOs in China have been active and dedicated to nature conservation. The Society of Entrepreneurs and Ecology Foundation has launched new programs, such as "Renniaofei," the 2016-2026 migratory birds conservation project, to save hundreds of wetlands and 24 endangered wetland birds.[40] A list of relevant stakeholders for the Jingxin Wetland conservation is detailed in Annex III.

Capacity building on mobilizing financial support and enhancing data management is needed to better conserve the Jingxin Wetland. Constant monitoring of wetland changes is essential for making management decisions. However, data and information on the Jingxin Wetland area are inadequate to inform decision making. According to the Hunchun Forestry Bureau, the latest research on birds in the wetland area was funded by Baohudi in 2014. However, data is not readily available to the public yet. The Yanbian Wetland Center, which is under the management of the Yanbian government, conducts monitoring of wetland landscape changes and establishes databases for specific projects.

There is also an urgent need for long-term monitoring activities in the Jingxin Wetland. However, a lack of human resources and budget constraints make this challenging. Due to insufficient funds, only a limited number of patrols can be conducted during the spring and autumn migration seasons to prevent bird hunting. With support from conservation groups such as Baohudi and Jiushaping Village, local communities have built farm patrol teams and now carry out daily patrols.

40 The Society of Entrepreneurs and Ecology Foundation and Free Flying Wings. Introduction of Jingxin Wetland at https://bird.see.org.cn/#/landlist/index?id=1

Overall, bolstering financial support and strengthening management capacity are needed to ensure the conservation of the Jingxin Wetland. Insufficient quality information hampers the preparation of a comprehensive development plan for the area, despite regular monitoring and daily patrols. The Jingxin Wetland area faces challenges in effectively managing its wetlands because of limited funds and a lack of scientific knowledge. Specifically, improving patrolling skills, including GPS usage, map reading, and driving, enhancing species identification abilities for both fauna and flora, strengthening law enforcement measures and improving data management and mapping capabilities are vital areas that require attention.

2.4. Conclusions

The Jingxin Wetland is located in the downstream area of the Tumen River, where China, DPR Korea and the Russian Federation share the ecosystem, including forest, ocean and wetland. Although Jingxin Wetland is not listed as a national-level wetland, it is important to recognize its unique features and the invaluable ecosystem integrity and habitats it provides for various key species.

Decades of economic development have caused the Jingxin Wetland to lose its natural swamp, and it is facing anthropogenic threats coupled with insufficient funding and management capacity. Despite all the benefits and sustainable ecological services that wetlands provide, the adverse impact from economic development challenges conservation of the Jingxin Wetland. Environmental conservationists expect that the Jingxin Wetland will attract higher-level attention to improve its conservation and sustainable use.

The need to strengthen synergies between regional and local development and conservation planning remains evident. The Tumen River downstream area holds distinctive geographical characteristics that lend themselves to transboundary cooperation in various sectors, including trade, transport, energy, ocean development and industry. Recognizing the strategic significance of the city of Hunchun and its associated Jingxin Wetland area, China has formulated a comprehensive plan for their socioeconomic development. However, it is crucial for neighboring countries to collaborate and foster synergies between their own socioeconomic development and conservation plans.

3. Russian Federation: the Khasan Wetland

3. Russian Federation: the Khasan Wetland

3.1. Overview

During the late 1990s, efforts were made to designate the estuary of the Tumen River and its surrounding water areas as a significant Ramsar site. Officially known as the Khasan-Tumen River Delta, the designated area covers a vast expanse of 87,400 ha, encompassing diverse aquatic habitats for birds that exceeded the criteria set by Ramsar.[41] Recognizing the international importance of the site, the Russian Federation government included it in the Ramsar "shadow list," with the prospect of it eventually being transferred to the official list.[42]

This designation paved the way for the establishment of the Khasansky Nature Park, which occupies approximately half the coastal lowland territory and is a part of the shadow Khasan-Tumen River Delta site.[43] The park was established in 1997 when the development of an international industrial cluster (known as the Tumen River Economic Development Area project) emerged in the estuary region of the Tumen River, which posed significant environmental risks to the Russian portion of the adjacent wetlands.

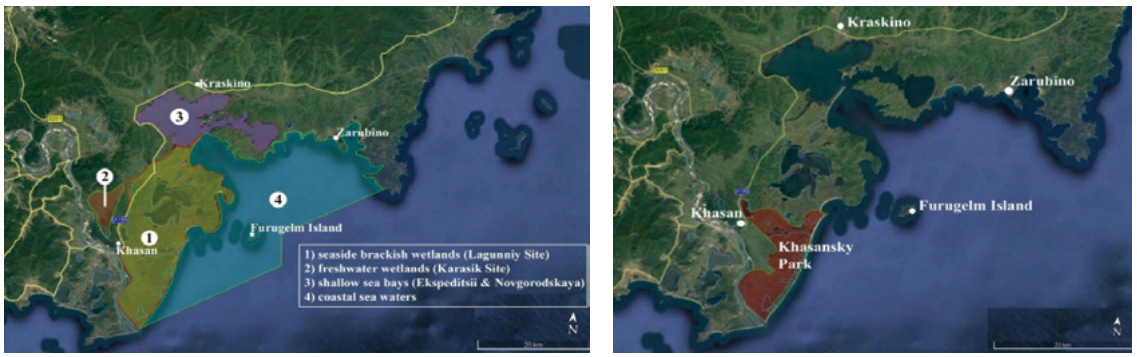
The Khasan-Tumen River Delta site has four major landscape and ecosystem components. These four landscapes[44] are characterized by their special contribution to the maintenance of biodiversity within the region (Figure 8a):

1) Seaside brackish wetlands, which include:

   - A developed network of channels
   - Freshwater and brackish lakes
   - Shallow lagoons located on the coastal lowlands (Lagunny site—29,600 ha)
   - Coastal wetlands comprising the core of the land: the wetlands are the principal stopover and breeding site for numerous waterfowl, shorebirds, cranes, rails, grebes and others. They also provide foraging places for sea colonial species

2) Freshwater wetlands (e.g., Karasik site, 3,400 ha), which provide important breeding areas for rare birds
3) Shallow sea bays (12,400 ha), which provide important stopover sites for waterfowl and sea waterbirds
4) Coastal sea waters (42,000 ha), which are partially non-freezing water areas providing mass nesting and wintering sites for sea colonial birds and wintering of waterfowl.

Figure 8. 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)

Source: Zhigula L.D. 2008

41 Litvinenko and Shibaev, 1996
42 Secretariat of Ramsar Convention on Wetlands, 2015. National Report on the Implementation of the Ramsar Convention on Wetlands, Uruguay.
43 Vyshkvartsev d.i. et al., 2002
44 Zhigula L. D., 2008

Studies showed the significant role of the Khasansky Nature Park in hosting various key bird species, including endangered species. Research has been devoted to birds in Southwestern Primorye, where the Khasan wetland is located. It has resulted in a wealth of publications, including several monographic summaries.[45] The author of this report analyzed an extensive list of more than 50 ornithological works published after the park was established.[46]

The main body of ornithological studies conducted over the last two decades on the Southwestern Primorye includes:

1) Faunistics, where studies generated an inventory of species composition, clarifying the nesting status of poorly studied and new species within the region
2) Long-term monitoring of marine colonial bird populations nesting on nearby islands in the marine reserve, which use coastal wetlands for foraging. This area of study has been well developed and covered in numerous publications
3) Specialized work on assessing the status of individual Red Data Book species (single-species studies). The Black-faced spoonbill, Chinese egret, Baer's pochard, Reed parrotbill, and Japanese swamp warbler, among others, are well studied, while there are still some species yet to be studied and monitored. For example, there is no present monitoring of migrating waders, with the scale of their migration and their territory use still unknown. There is a large time gap between the data on migratory waterbirds (the last express inventory, in 2005, is still unpublished). There is no data on the status of wintering waterfowls and sea colonial species in the water area adjacent to the park.

Information from publications along with unpublished data from the Institute of Biology and Soil Sciences provide sufficient reason 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 in Annex IV.[47]

The Khasansky Nature Park is comprised of at least 285 species of bird fauna.[48] An overview of the species is detailed below:[49]

1) This number comprises more than half of the avifauna population of the entire Primorsky Territory, which is estimated to be approximately 505 species.
2) Its fauna is represented by 51 families and is rather heterogeneous and comprehensive (Annex V). The family with the most comprehensive representation is the 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 seven species of Rallidae (e.g., Rails and Coots). These species are representative of the wetland complex and form a massive bird background during the migration period but have rather poor representation during the nesting period (Annex V).
3) The basis of the summer population of water and near-waterbirds are 15 species of Ardeidae (e.g., Heron), 11 species of Laridae (e.g., Gulls and Terns) and five species of Podicipedidae (e.g., Grebes).
4) Nesting fauna are represented by the following categories:

    - 84 species breeding within the Park territory and 14 species nesting in nearby territories, including the Sea Islands, but regularly visiting the coastal plain for feeding. Some of these species, including the Black-faced spoonbill and Chinese egret, are acutely dependent on the coastal wetlands since they have no other alternative land for foraging.
    - The vast majority of species (162) are seasonal migrants, 141 of which transit through the territory or make a stopover 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.

45 E.g., most recently Nazarenko et. al., 2016 and Glushchenko et al., 2016

46 The format of summarizing papers does not always allow for a showcase of important information regarding a specific area of interest, so in this instance, this report will turn to primary sources.

47 The order, volume and 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).

48 It exceeds 300 species if accidental visitors are taken into account.

49 Glushchenko, Y.N. et al, 2016

5) 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 Park is not critical for their survival, as it is just one of many places for wintering.

The Park's avian fauna represents several multidirectional population trends, reflecting global processes in populations. In particular, over the past 20-to-25 years, 23 new species, including 13 new breeding species, have been added (Annex VI). For some species, it was simply a matter of clarifying their status, but other species were added because they were new to the region (e.g., new breeding species for the Russian Federation that have firmly settled in this region). These include the Little grebe, Chinese egret, Little egret, Black-faced spoonbill, American herring gull and Eastern penduline tit. These species are in the initial stages of expansion and are episodically breeding. However, the Yellow bittern, Chinese pond heron, Japanese swamp warbler, Indian cuckoo, Reed parrotbill and Red-billed starling are harder to detect. Their breeding patterns were earlier in the year.[50]

The Park is a lesser version of the shadow Site due to lacking a marine component (water area and shallow lagoons). If these habitats (Annex VI) were included, it would add another 15 species of birds to the faunistic list and, more significantly, bolster the Park's international importance as a wetland by regularly supporting at least 20,000 waterbirds. To satisfy this formal criterion, it would be sufficient to include the nearby Ptichya lagoon in the Park, which is analogous to shallow bays in terms of importance for waterbirds.

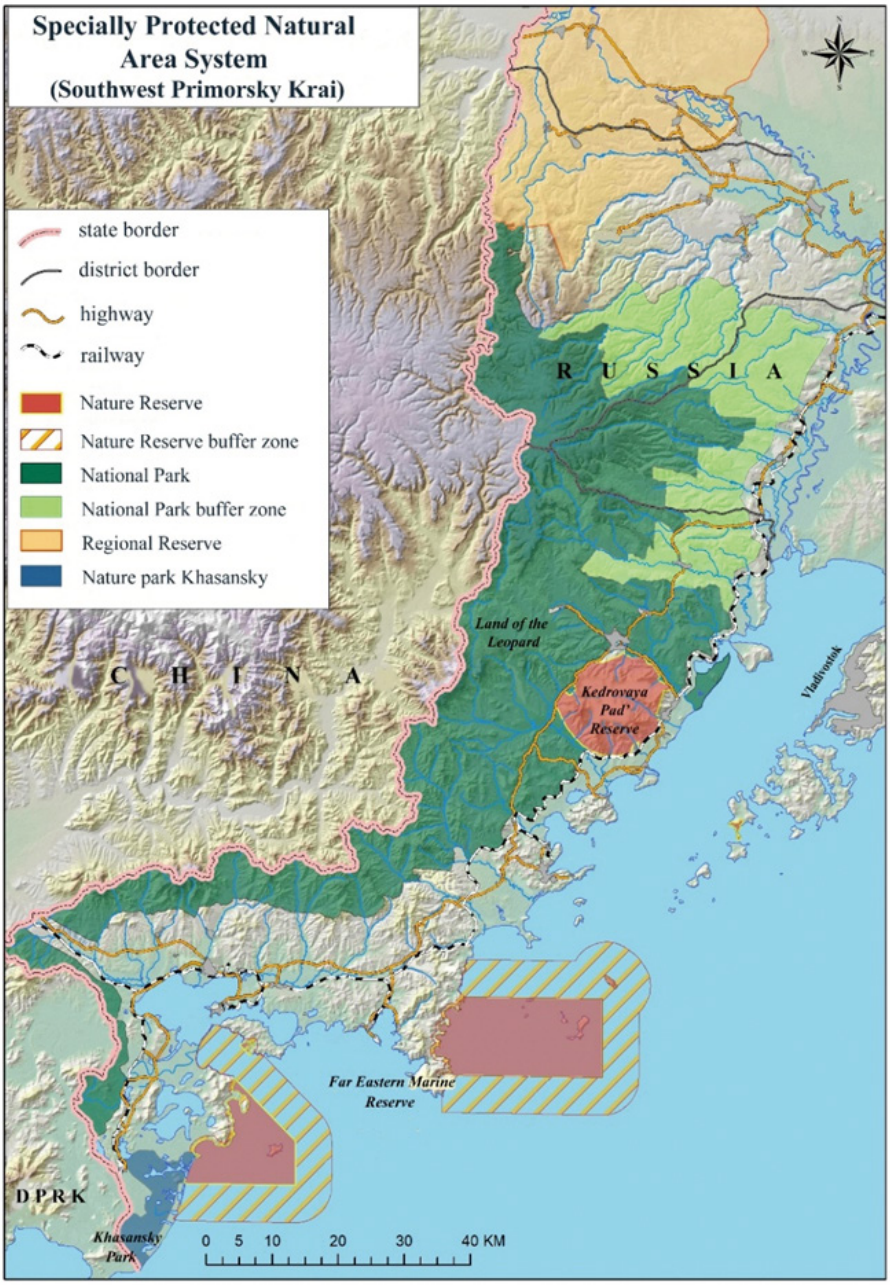
The Khasansky Nature Park is critical for globally protected species. A brief overview of the status of globally protected species is presented in Annex VII. Notably, it includes 31 species from the IUCN Red List, including seven endangered and three critically endangered species (Annex VIII), two of which are flagship species of NEASPEC (Black-faced Spoonbill and White-naped Crane).

3.2. Conservation and management systems

There are six strictly protected nature reserves of federal subordination in the Primorsky Territory. Two are located in the extreme southwest of the region (Figure 9, shown in red). Regulations governing permitted and prohibited activities in the Khasansky Nature Park are shown in Table 4.

50 Balatsky, 2015; Burkovsky et al., 2000, 2015; Gluschenko and Korobov, 2014, 2015; Glushchenko et al., 2015, 2016a, 2016b; Litvinenko, Shibaev, 1999a and 1999b, 2011,2016; Sotnikov et al., 2016; and Shibaev, 2010, 2014.

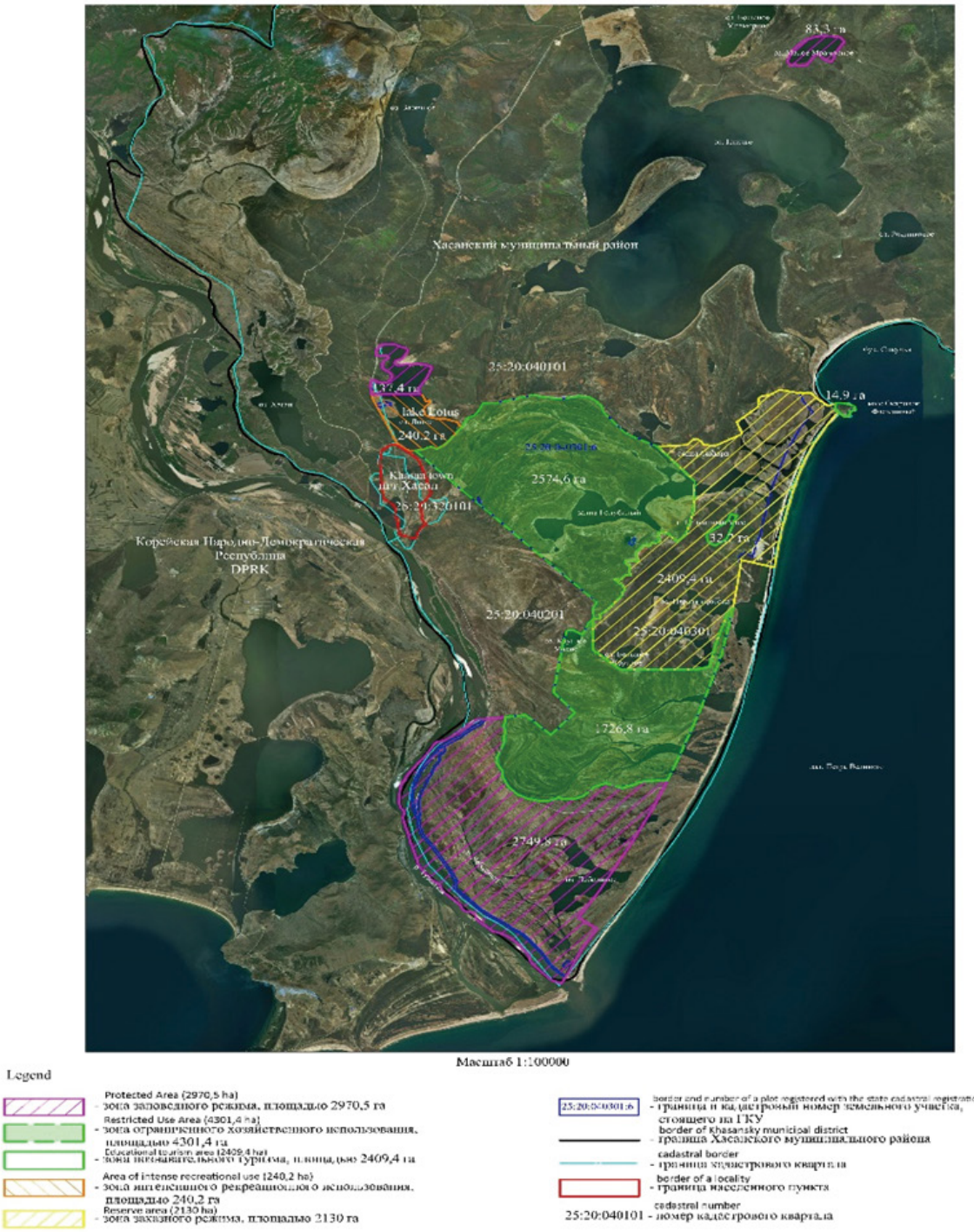
Figure 9. Conservation Zoning in the South-West of Primorsky Krai



Source: Provided by Eugene Egidarev, V.I. Il'ichev Pacific Oceanological Institute, Vladivostok, Russia.

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

Figure 10. Conservation Zoning in the Khasansky Nature Park



- Strict protected area (2,970.50 ha)
- Educational tourism area (2,409.40 ha)
- Reserve area (2,376.70 ha)
- Restricted use area (4,301.40 ha)
- Area of intense recreational use (240.2 ha)

Total: 12,298.2 ha

Source: The Decree of the Primorsky Territory Administration: On approval of the Regulations on the Khasansky Nature Park, accessible at http://publication.pravo.gov.ru/Document/View/2500201906040006?index=3&rangeSize=1

Table 4. 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 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 waterfowl in accordance with applicable legislation and agricultural work	Construction of facilities, felling of trees and shrubs (except for sanitary reasons), 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 bird and carrying firearms, crossbows, loops, traps, ammunition and other tools applicable to hunting or extraction of wildlife, with the exception of hunting 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 reasons); making bonfires outside equipped sites; construction of facilities not related to showing sights of the territory (e.g., pavilions over archaeological sites, observation platforms and observation towers); and works causing a change in the landscape
4	Area of intense recreational	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 and digital hunting cameras for scientists to capture wildlife animals and birds; 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 and carrying firearms, crossbows, loops, traps, ammunition and other tools applicable to hunting or extraction of wildlife, with the exception of hunting 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				

Source: The Decree of the Primorsky Territory Administration: On approval of the Regulations on the Khasansky Nature Park, accessible at http://publication.pravo.gov.ru/Document/View/2500201906040006?index=3&rangeSize=1

As a conservation area, the Khasansky Nature Park has a low protection rank in the protected areas system of the Russian Federation. It is thus subject to regional government legislation rather than that of the federal level. With its prefectural status, the Khasansky Nature Park does not prevent hunting but only partially regulates it. Spring hunting has a strong impact on the redistribution of waterfowl in the region during their migration, namely, shifting gatherings to wetlands of neighboring countries. As a result, only sea-associated species have a large representation on the Russian side of the estuary. It has also been associated with the long tradition of hunting waterfowl (poaching), a fundamental challenge for the Russian Federation to address, but this egregious tradition has existed for decades and seems unlikely to be terminated because of powerful lobbying.

These two challenges are also associated with a lack of funding. Insufficient funding means that the park does not fulfill a significant portion of its functions. The Directorate was officially abolished 13 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 breeding of the Red-crowned crane) have been paused. Twenty-five years after the park's establishment, land and cadastral issues have not been fully settled, and the area and functional zones of the territory are constantly under review. In general, there is a trend toward increased recreational load and the allocation of special areas that allow some of the previously mentioned activities.

3.3. Environmental significance and risks of the Khasansky Nature Park

Despite the lack of funding and low protection, the Khasansky Nature Park has been preserved in a relatively pristine form. The Park is in the almost uninhabited southwestern outskirts of the country, with limited citizen access to the territory. Furthermore, it is adjacent to protected sea areas with almost a complete absence of roads and economic activities. This geographical location has allowed the wetland to be preserved in relatively pristine form.

In addition, the risk that arose in the late 1990s of a radical transformation of the wetland from the Tumen River Economic Development Area plans has now been largely eliminated, partly due to the creation of the Khasansky Nature Park and the inclusion of the wetland in the list of shadow Ramsar sites. These projects included the construction of a railway line, a road connection between the Russian village of Kraskino and the Chinese village of Hunchun, and the development of port infrastructure in Zarubino (the construction of a coal terminal). Based on studies by experts, none of them is expected to have a direct or indirect influence on the state of the wetland.

There are still several concerns about the Khasansky Nature Park and Khasan wetlands conservation, which include the following:

- **Grass wildfires.** Grass wildfires are a regular negative anthropogenic influence with a serious impact on this and adjacent territories. This permanent seasonal factor impacts nesting avifauna, inhibiting the land-breeding bird species from further occupying this territory. However, wildfire does not significantly affect the course of mass migrations and the summer use of the area by waterbirds.
- **Pollution of the sea and coastal lagoons.** The most urgent problem is the pollution of the sea and coastal lagoons by the effluents of the Tumen River. The results of comprehensive studies undertaken in the late 1990s by the Far Eastern Branch of the Russian Academy of Sciences on the ecological conditions and biota of the southwest part of Peter the Great Bay and the mouth of the Tumen River revealed serious problems with the content of river flows. However, due to the powerful self-restoration processes in both marine and terrestrial ecosystems, the Tumen delta was categorized as unpolluted or slightly polluted, according to a number of key indicators. The recommended continual monitoring of the situation has not yet been established and present issues are still unknown. Indirect evidence suggests the situation has worsened.
- **Potential industrial development.** Another problem is the potential risk of a return to the long-standing idea of the industrial development of titanium-magnetite deposits in the territory adjacent to the southeastern tip of Khasansky Nature Park. This section of the sandy wall limits the flow of water from the coastal plain, thereby forming a wetland. This industrial development could be disastrous for the wetland but the site, unfortunately, was not

included in the Khasansky Nature Park.

Khasansky Nature Park, which occupies about half the land core of the Khasan-Tumen River Delta shadow site, has lost its sea and shallow bay area completely and the Ptichya lagoon. As a result, it has lost its importance in supporting the marine avifauna (e.g., about 15 species of colonial nesting birds numbering in the thousands and an impressive list of migrants and wintering waterfowls that keep to the water area and vast bays). The most significant territory loss is the nesting habitats of the Black-faced Spoonbill and the Chinese Egret, located on the coastal island of Furugelm. These losses in habitats and marine avifauna require a reassessment of Khasansky Nature Park's compliance with the Ramsar sites criteria.

There are divergent perspectives on the inclusion of Khasansky Nature Park as part of the cross-border Ramsar site. As the ornithological value of the Tumen River Estuary is universally recognized, the concept of designating a protected area with an emphasis on bird conservation has been floated since ornithological studies began in the region. Over the years, a variety of options for preserving the area have been suggested—from the creation of an independent federal nature reserve to merging the coastal wetlands with the nearby Far Eastern Biosphere Marine Reserve. While some experts considered it a plausible measure at the time, others regarded it as "losing ground"; the size of the park (12,298 ha) was three times less than the land area of the shadow Ramsar site, raising doubts about its adequacy in providing comprehensive protection. Additionally, its suboptimal localization and regional-level status, rather than a federal-level designation, posed challenges in ensuring the long-term irreversibility of its protected status.

Over time, the prospects of giving Khasansky Nature Park a higher protection status diminished. The regional environmental emphasis had shifted toward the conservation of larger mammals, mainly big cats, and the system of protected areas in the southwestern Primorye was particularly suited for these tasks. The total area of protected land with limited or prohibited access in the southwest of Primorye significantly exceeded the average regional standards.

However, there has been a return to the concept of restoring the site within the Khasan-Tumen River Delta. The idea of including Khasansky Nature Park within existing borders as a part of the Transboundary Ramsar Site seems plausible. However, it may ultimately be an ineffective and futile attempt since the status of Ramsar in Russian legislation is advisory rather than binding.

The process of departmental reassignment for several protected areas had been initiated, which offers some new possibilities. In particular, the Far Eastern State Marine Biosphere Reserve, which has been under the jurisdiction of the Russian Academy of Sciences since its foundation, has now been transferred to the Ministry of Natural Resources of the Russian Federation. There is also a possibility of merging the Khasansky Nature Park with the land of the Leopard National Park. The risk of complete abolition of the Khasansky Nature Park has not been excluded, but at a minimum, amendments were introduced to the regional legislative framework to allow for this possibility.

In general, the situation appears to have stagnated and requires reinvigorated interest. Renewed interest could lead to the involvement of the Khasansky Nature Park in a transboundary protected area, such as a cross-border Ramsar site.

3.4. Conclusions

The Khasansky Nature Park continues to comply with criteria for wetlands of international importance, despite having lost some of the key components that characterize it as a wetland of international importance in comparison with the "Khasan-Tumen River Delta Shadow site." For instance, it complies with the frame of types of available wetlands (codes: E, F, G, M, O and P; Annex X) and also a Special Criteria by species and ecological communities (codes: A1, B2 and B4; Annex XI). Some important biotope losses of the Khasansky Nature Park can be compensated by Chinese and DPR Korean wetlands if the Park becomes part of a united cross-border site (synergistic effect). The relevance and urgency of this step are dictated by the emerging and partially implemented processes of optimizing the management system of regional environmental policy.

The Russian side of the Tumen River Estuary shows the effectiveness of environmental policy and signals the underdevelopment of the local economy. This is because the Russian side's wetlands are close to their natural state, not only throughout the Khasansky Nature Park, but also in the unprotected area adjacent to it. In contrast to the wetlands of the Tumen River Estuary in neighboring countries, the territory of the Khasansky Nature Park is characterized by an extremely low population density and a complete absence of the agricultural industry. On one hand, pristine conditions are positive; but on the other hand, they carry negative connotations in terms of the significance of the territory for birds because agricultural fields adjacent to wetlands are much more attractive than wild wetlands for food for many species of birds. Consequently, the Khasansky Nature Park is noticeably inferior to similar areas in neighboring countries in terms of amassing gatherings of ducks and geese.

It is also remarkable that only the Russian side of the Tumen River Estuary functions as a critical foraging landscape for the Black-faced spoonbill—a NEASPEC flagship species—and crucially provides its only nesting colony. Additionally, this area provides an important stopover place and potential breeding site for another NEASPEC flagship species, the White-naped crane. The vast majority of cranes from the Korean-Japanese wintering grounds pass through this territory. In addition, the Russian side of the Tumen River Estuary plays a more significant role in supporting sea-related waterfowls (e.g., pochards and grebes) because of the vast protected areas and coastal sandy-silt shoals that are significantly larger than those of the DPR Korea habitats.

Finally, the local ecotourism of Tumen River Estuary on the Russian Federation side is inferior to that of China and DPR Korea. The main reasons include: 1) a flat landscape with a lack of convenient viewing hills surrounding the most appealing reservoirs, 2) treacherous access to the wetlands from a complete absence of roads and unsuitable water bodies to operate motorized water vehicles, 3) a complete lack of hotel infrastructure, 4) low demand from domestic tourists, and 5) uncertain profitability for investors. The Russian Federation may consider having this area act as a buffer zone in a potential transboundary protected area (e.g. a cross-border Ramsar Site) in the Tumen River Estuary.

4. Recommendations for transboundary cooperation in the Lower Tumen River Area

4. Recommendations for transboundary cooperation in the lower Tumen River Area

Common challenges for conserving the protected wetlands areas along the lower Tumen River among China, DPR Korea and the Russian Federation have been identified through the overview in this report of two representative areas (the Jingxing Wetland in China and the Khasan Wetland in the Russian Federation) and the earlier study on the Rason Migratory Bird Reserve in DPR Korea. The lower Tumen River and associated wetlands have unique geographical features and ecosystem integrity and play important roles in the promotion of regional sustainable development, especially in wetlands and biodiversity conservation, energy, trade and transportation, industry development and tourism. However, this report identifies the following challenges, which call for stronger political commitment, coordinated conservation and development strategies, planning and collective transboundary efforts among the three countries:

1. **Inadequate enabling conditions for wetlands conservation.** The enabling conditions to conserve the wetlands along the lower Tumen River would need further enhancement among the three countries. Such enabling conditions include strong political commitment, adequate levels of governance, enhanced management capacity and systems and stable financial support. Based on the analysis of the Jingxin Wetland in China and the Khasan Wetland in the Russian Federation, both areas are administrated at the local rather than national level and have faced insufficient support in terms of funding, human resources and capacity building. In particular for the Khasansky Nature Park, a lower rank of protection also leads to less stringent regulations for certain human activities (e.g., hunting) that generate adverse impact on its ecological protection.

2. **Increasing pressures of socio-economic development in areas along the lower Tumen River.** The lower Tumen River has increasingly faced socio-economic development pressures. The Jingxin Wetland in China is under pressure to balance environmental conservation with economic and industrial development, in particular agricultural land use. The Khasan Wetland is part of the Far Eastern Specially Protected Natural Area System with missing gaps between various protected area bodies in the Russian Federation. Furthermore, the Rason wetlands in DPR Korea include migratory bird reserves and were designated as a Ramsar Site while facing potential rapid economic development. Taking tourism around protected wetlands as an example, the three countries are at different stages of development. The Jingxin Wetland and Yanbian area in China have tourism-oriented scenic parks and businesses, and tourism there has been rapid with a more stable tourism market. However, the development of tourism in the DPR Korea border area has been slow because of economic and political limitations and in the Khasan Wetland of the Russian Federation because of difficulties in accessing the nature parks from geographical features and extremely low population density, all of which have conserved the areas with pristine conditions.

3. **Need for greater alignment of strategies and planning between wetlands conservation and other relevant sectoral development.** The abovementioned socio-economic development pressures would lead to the degradation and loss of shared biodiversity and habitats and the alteration of ecological processes among the three countries. The countries need to further promote greater alignment between wetlands conservation and socio-economic development by enhancing strategies across relevant key sectors at the national level. Their conservation efforts also need to be enhanced in a more synchronized and coordinated manner at the regional level, such as by strategic planning for sustainable development programs in the transboundary area and establishment of consistent and shared baseline data, monitoring, and knowledge of ecological status and conservation.

This report makes the following recommendations for transboundary cooperation along the lower Tumen River among China, DPR Korea and the Russian Federation.

1. **Raise ambitions and commitments at subnational, national and regional levels for promoting transboundary cooperation on biodiversity and wetlands conservation along the lower Tumen River.** A confluence of international agendas (e.g., the 2030 Agenda, the Paris Agreement, the Ramsar Convention on Wetlands and the Kunming-Montreal Global Biodiversity Framework) and national strategies (e.g., Nationally Determined Contributions, National Biodiversity Strategies and Action Plans) urged countries to drive a paradigm shift toward sustainable development and better align international, regional, national and local strategies and efforts.[51]

   Within the powerful global frameworks for change, countries should mainstream biodiversity and wetlands conservation across relevant sectors and set specific targets with clear roadmaps and action plans. Seizing the momentum, the potential designation of a transboundary Ramsar site or another type of international wetland protected area to promote integrated, coordinated wetland conservation and management for the Tumen River Estuary could be considered, especially noting that Resolution XIV.6 of the COP14 to the Ramsar Convention on Wetlands encouraged countries to do so.[52]

   Furthermore, the governing authorities of the Jingxin Wetland and the Khasan Wetland should capitalize on opportunities to 1) better align local practices with national strategies and 2) strengthen communications with higher-level management authorities (e.g., ministerial-level) to seek increased commitment and adequate attention to the significance of wetlands conservation along the lower Tumen River.

   Governing authorities should develop concrete action plans to demonstrate commitments for biodiversity, wetland conservation and agroecological sustainable practices in the areas. Through workshops and dialogues at national, sub-national and local levels in China, DPR Korea and the Russian Federation, relevant decision makers should raise awareness of the status of, and challenges to, wetlands conservation in the transboundary area, which require wise use of wetlands and coordinated management measures.

2. **Expand and strengthen partnerships and networks domestically, regionally and internationally to scale up joint conservation efforts and promote visibility of the lower Tumen River.** Conservation efforts in transboundary wetlands require strengthened partnerships among various stakeholders across key sectors and enhanced cross-border coordination, including national and local governments, private sector, local communities (especially youth), international organizations, NGOs and scientific institutions.

   With a vision to scale up joint conservation efforts and further promote the visibility of the lower Tumen River area at the regional level and beyond, relevant stakeholders could effectively seek support from partners at the international (e.g., NEASPEC Secretariat), regional (e.g., Ramsar centers, networks and Ramsar Regional Initiatives)[53] and national levels to build capacity and enhance communications about transboundary wetlands conservation.

   Especially noting the challenges of insufficient funding and management capacity faced by both the Jingxin Wetland and the Khasansky Nature Park, technical assistance and/or financial support from potential partnering entities could be considered, in particular engaging with the private sector to leverage more resources and involvement in tourism and recreation, agriculture, technologies and conservation practices.

51 Global Wetland Outlook Special Edition, 2021. https://www.global-wetland-outlook.ramsar.org/report-1

52 Secretariat of the Convention on Biological Diversity, 2022. Resolution XIV.6 at the 14th Meeting of the Conference of the Contracting Parties to the Ramsar Convention on Wetlands. https://www.ramsar.org/sites/default/files/documents/library/xiv.6_synergies_e.pdf

53 Secretariat of the Convention on Biological Diversity, 2022. Resolution XIV.7 Ramsar Regional Initiatives at the 14th Meeting of the Conference of the Contracting Parties to the Ramsar Convention on Wetlands. https://www.ramsar.org/sites/default/files/documents/library/xiv.7_ramsar_regional_initiatives_e.pdf

In addition, the visibility of joint efforts and the lower Tumen River could be promoted through a broad participation of stakeholders in trilateral communication, education and public awareness activities, such as regional campaigns for youth on biodiversity and wetland conservation issues, joint wetlands culture festivals and migratory bird festivals.

3. **Promote joint and strategic planning, coordinated monitoring and management plans for cross-sector and transboundary conservation among the three countries.** Activities undertaken in one country would impact the interconnected ecosystems in its neighbors. With the unique transboundary geographical features of the Tumen River Estuary that hold both ecological significance and development opportunities through transboundary transport, industrial development, ocean economy and ecotourism, it is essential for transboundary conservation of biodiversity and wetlands to enhance integration and coordination of policies across major sectors in each country and develop a transboundary vision and cross-border strategic planning.

   This report recommends that the three countries consider the following actions:

   - jointly conducting a comprehensive stocktaking assessment of the Tumen River Estuary's conservation status, stakeholder engagement and ongoing transboundary projects and their impact on the area;
   - jointly developing transboundary management plans (e.g., transboundary ecotourism) in a strategic manner to adopt sustainable practices and balance the need for enhancing wetland ecological conservation with socio-economic development. An example would be a comprehensive plan to provide regulatory, technical, financial and technological support to restore fragmented and degraded wetlands in the transboundary areas; and
   - establishing joint cooperation mechanisms to implement coordinated policies and action plans, with such mechanisms including sharing monitoring information and data (e.g., spatial planning, migratory species, early-warning systems for environmental risks and disasters) to better manage and track the progress of wetlands conservation.

4. **Conduct capacity-building activities and joint scientific research to enhance transboundary cooperation.** At the technical and operational level, scientific knowledge and tools, expertise and professional trainings are essential to better conserve and manage shared wetland resources. The three countries should organize regular capacity-building activities, knowledge exchange and joint scientific research to improve institutional capacity, which directly contribute to the accelerated implementation of coordinated strategies for transboundary wetland conservation.

   The following activities are recommended for the three countries:

   - organizing transboundary biodiversity and wetlands conservation workshops, site visits and trainings for local, national and regional stakeholders involved in the conservation of the Tumen River to raise their awareness and capacity;
   - conducting synchronized, regular waterbirds surveys and wetland inventories based on a standardized protocol to establish the regional baseline for further monitoring and tracking of progress;
   - exchanging knowledge and resources of biotechnical measures to improve the attractiveness of the territory for rare and protected birds; for instance, placing artificial nest constructions for breeding; and
   - establishing a transboundary pilot program for environmental education, tailored to align with the circumstances of the Tumen River Estuary and its stakeholders.

Annex

Annex I

Bird Species and Their Numbers Recorded during the Field Survey - Bird Survey (Rason, 26-31 March 2014)[54]

Habitat

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

No.	Common Name	(North) Korean Name	Scientific Name	Status	26-28 Mar	29 Mar	30-31 Mar	Total	Habitat		Migration
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	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

54 ESCAP, "Rason Migratory Bird Reserve: Birds and Habitats" at https://www.neaspec.org/sites/default/files/Rason%20migratory%20bird%20reserve_birds%20and%20habitats.pdf

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	흰눈섭검은오리	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	Haematopusostralegusosculans		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	종다리	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	북 멧새	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	비둘기	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

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 DPR Korea based on a limited literature search; FR = likely to be a first record of this species for the DPR Korea based on Tomek (1999-2002) and on a limited literature search.

1. Order and Nomenclature from Birds Korea (2013).
2. Under status, NT (globally Near-threatened) and VU (globally Vulnerable) follow BirdLife International (2014);
3. In count rows, "P" indicates Present but not counted.

Annex II

Wetland Birds Found in Jingxin Wetland Area[55]

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	班头秋沙鸭		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
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

55 Information presented was based on the Hunchun Nature Reserve record

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	2	LC
Cinereous Vulture	Aegypius monachus (Linnaeus, 1766)	秃鹫	2	NT
Golden Eagle	Aquila chrysaetos	金雕	1	LC
Steller's Sea Eagle	Haliaeetus pelagicus (Pallas, 1811)	虎头海雕	1	VU
White-tailed Sea Eagle	Haliaeetus albicilla	白尾海雕	1	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

List of Key Local Stakeholders in the Jingxin Wetland

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 the National Forestry and Grassland Administration, and National Park Administration Working on wildlife monitoring and research
Hunchun Forest Bureau[56]	Wetland management in line with regulation. Education and patrolling to prevent poaching, etc.
Hunchun Nature Reserve[57]	Management of wildlife related issues. Dealing with cases concerning wildlife (e.g., wildlife roadkill)
Yanbian Wetland Protection Center[58]	Yanbian Government wetland research center. Collecting wetland information in Yanbian monitoring wetland change, etc.
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[59] 东北虎豹生物多样性国家野外科学观测研究站	Managed by the Ministry of Science and Technology
Key Laboratory of State Forestry and Grassland Administration on Conservation Ecology in the Northeast Tiger and Leopard National Park[60] 东北虎豹国家公园保护生态学重点实验室	Managed by the National Forestry and Grassland Administration, and National Park Administration Working on wildlife monitoring and research
Scenic Spot Administration[61]	Scenic spot management
Jilin Hunchun Wildlife Conservation Association 吉林省珲春市野生动植物保护协会[62]	Chinese NGO
Global Protected area friendly system 保护地友好体系	Chinese NGO[63]
Photography groups in Hunchun 珲春摄影协会	-
Hunchun Tourist company	List shown in the footnote[64]
Local villages	Resource user (mostly for farming and grazing)
Restaurants in Jingxin	List shown in the footnote[65]
Fishpond owners	Resource users who pay for tax

56 Website accessible at http://www.hunchun.gov.cn/szf_1881/zfjg/201912/t20191202_2391.html

57 Website accessible at http://zfxxgk.yanbian.gov.cn/gzbm/cyqzfj/xxgkml/202011/t20201109_305781.html

58 Website accessible at http://zfxxgk.yanbian.gov.cn/gzbm/cyqzjj/xxgkml/202011/t20201111_306907.html

59 Website accessible at https://tiger.bnu.edu.cn/xwzx/xwzx/0c98e7a09ffa4fe8a021c64822b9a5d2.html

60 Website accessible at https://tiger.bnu.edu.cn/jggk/dbhbgjgybhstxgjlcjzdsys/index.html

61 Website accessible at http://www.hunchun.gov.cn/szf_1881/zfjg/201912/t20191202_2382.html

62 Jilin Hunchun Wildlife Conservation Association has no official webpage, but they promote their activities on https://weibo.com/u/3921757525

63 Global Protected area friendly system webpage accessible at http://www.baohudi.org/

64 The list of tourist companies in Chinese: 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

65 The list of Chinese restaurants 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

Annex IV

A complete list of avian species in Khasansky Nature Park[66]

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		*			

66 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)

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 V

Family Diversity of the Avifauna of Khasansky Nature Park[67]

№	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

67 Tyurin A. N., 2003

№	Family name	species number
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

Annex VI

New Bird Species 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
1. Brent Goose Brant	Branta bernicla nigricans (Lawrence, 1846)	Черная казарка	-	*
2. Greater Flamingo	Phoenicopterus roseus (Pallas, 1811)	Розовый фламинго	-	*
3. Little Grebe	Tachybaptus ruficollis poggei (Reichenow, 1902)	Малая поганка	*	-
4. Indian Cuckoo	Cuculus micropterus micropterus (Gould, 1838)	Индийская кукушка	*	-
5. Ruddy-breasted Crake	Zapornia fusca erythrothorax (Temminck & Schlegel, 1849)	Красноногий погоныш	*	-
6. Yellow Bittern	Ixobrychus sinensis (J.F. Gmelin, 1789)	Китайский волчок	*	-
7. Chinese Pond Heron	Ardeola bacchus (Bonaparte, 1855)	Белокрылая цапля	*	-
8. Little Egret	Egretta garzetta garzetta (Linnaeus, 1766)	Малая белая цапля	*	-
9. Chinese Egret	Egretta eulophotes (Swinhoe, 1860)	Желтоклювая цапля	*	-
10. Black-faced Spoonbill	Platalea minor (Temminck & Schlegel, 1849)	Малая колпица	*	-
11. Grey-headed Lapwing	Vanellus cinereus (Blyth, 1842)	Серый чибис	-	*
12. Little Gull	Hydrocoloeus minutus (Pallas, 1776)	Малая чайка	-	*
13. Relict Gull	Ichthyaetus relictus (Lönnberg, 1931)	Реликтовая чайка	-	*
14. Great Black-headed Gull	Ichthyaetus ichthyaetus (Pallas, 1773)	Черноголовый хохотун	-	*
15. American Herring Gull	Larus (smithsonianus) mongolicus Sushkin, 1925	Монгольская чайка	*	-
16. Black-capped Kingfisher	Halcyon pileata (Boddaert, 1783)	Ошейниковый зимородок	-	*
17. Blyth's Pipit	Anthus godlewskii (Taczanowski, 1876)	Конёк Годлевского	-	*
18. Eastern Penduline Tit	Remiz consobrinus consobrinus (Swinhoe, 1870)	Восточный ремез	*	-
19. Japanese Swamp Warbler	Locustella pryeri sinensis (Witherby, 1912)	Японский сверчок	*	-
20. Reed Parrotbill	Paradoxornis heudei polivanovi (Stepanyan, 1974)	Тростниковая сутора	*	-
21. European Starling	Sturnus vulgaris poltaratskyi (Finsch, 1878)	Обыкновенный скворец	-	*
22. Rosy Starling	Pastor roseus (Linnaeus, 1758)	Розовый скворец	-	*
23. Red-billed Starling	Spodiopsar sericeus (J.F. Gmelin, 1789)	Красноклювый (шелковистый) скворец	*	-

Source: see reference 67

Annex VII

An overview of the status of globally protected species in the Khasansky Nature Park

Baer's pochard. Until the mid-1970s, at least 30–40 pairs nested between the Tumen River and the Expedition Bay on the fresh islands and brackish lagoons of the coastal plain. The Baer's pochard was one of the dominant species of nesting waterfowl, and by this metric, this wetland was the second most important coastal area after Lake Khanka. However, from the mid-1980s, nesting numbers plummeted and remained at a very low level until the beginning of the century (surveys of 1984, 1990, 1993 and 1995-98 counted only a few birds).[68] A special survey organized in 2014 as part of a coordinated survey revealed only 2 individual birds and a group of 3 birds with no signs of nesting.[69] For the last 5 years, there has been an absence of data on this species; however, a tiny population of this species may still survive. This plight is symptomatic of the spring hunt for waterfowls.

Falcated duck. Until recently, it was a common migratory rare breeding species of the area. Given the strong negative trend of its global population in recent decades, the state of this species during its southwestern migration to Primorye does not look so catastrophic. As before, the species is noticeably present among spring migrants. Single-species accumulations can reach up to 200 individuals.[70] Falcated ducks stay in the Khasansky park only for short periods due to hunting, but they remain at the nearby large Ptichya lagoon for at least one month until mid-May. This indicates the importance of this region for the species. However, in recent years, only individual non-breeding males have been found during the breeding period. The species does not form molting clusters either.

White-naped and Red-crowned cranes. For both species, the coastal wetlands are the most important stopover site during their spring migrations and also during autumn migrations for Red-crowned cranes. As shown by satellite tracking, this is the most important stopover point between the Korean wintering grounds and the breeding areas in the closest proximity of one another on Lake Khanka. Judging by the number of migrating birds, a significant portion of the Korean population flies through this territory.[71] Further, the simultaneous accumulations of the two crane species reach 1,500 individuals.[72] Cranes have actively used this territory from the second decade to the end of March, and it leaves 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 have been recorded in this territory, but it prevents nesting in this area. In the first half of the 20th century, the Tumen River Estuary was a component of the breeding range of the Red-crowned crane. There is no data on the breeding of the White-naped cranes on this matter. If spring wildfires were prevented, the territory has the potential to restore a small breeding group of Red-crowned and, possibly, White-naped cranes also. Practically speaking, the Hooded crane is not represented in this territory since the main migration routes lie outside of the Russian Federation.

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

Chinese egret and Black-faced spoonbill. Furugelm Island, located 7 km from the border of the Khasansky Park, possesses the only breeding colony of these species in the Russian Federation. The egret was first bred here in 1998. Until 2000, 35–40 pairs were regularly bred here, then the numbers steadily declined- 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 do not exist in the breeding colony, which is well guarded by the Far Eastern Marine Reserve, but in the absence of any real protection for the foraging land located on the shore. Up to 50% of the foraging area of the Chinese egret and Black-faced spoonbill is located within Khasansky Park. Aside

68 Litvinenko and Shibaev, 1999

69 Surmach and Shibaev, unpublished

70 The World of Far Eastern Fauna and Flora, 2014, accessible at: http://uss.dvfu.ru/e-publications/2014/kolyada-as_zhivotnyi-i-rastitelnyi-mir-dv_v22.pdf

71 Higuchi H., et al., 2004

72 Higuchi H., et al., 2005

from the Russian territories, the latter species actively visits the DPR Korea territory for feeding.[73] The Black-faced spoonbill is also a newcomer from the South China Sea to the Russian Federation and is extremely dependent on the status of coastal feeding areas. Currently, the colony numbers around a dozen breeding pairs and two dozen non-breeding individuals.[74] This species has no other alternative breeding sites within the Russian part; therefore, the territory under consideration is critically important.[75]

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

73 Unpublished satellite tracking data from 2016

74 Shibaev, 2010

75 Litvinenko N.M., et al., 1999 a; Litvinenko N.M., et al, 1999b; and Shibaev, 2010

Annex VIII

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	*				

Source: The IUCN Red List, accessible at: https://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T13188339A13189399.en.

Annex IX

Important Excerpts from The Law of the Primorsky Krai on Amendments to The Law 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.

Annex X

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	+	-	

Source: Ramsar Wetland Definition, Classification and Criteria for Internationally Important Wetlands, accessible at https://rmi-data.sprep.org/system/files/RMI%20Ramsar%20Sites_appendix7.pdf

Annex XI

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 Nature 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
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 (also shown in Annex VIII). Two critically endangered species (Baer's pochard and Yellow-breasted bunting) have nearly disappeared at this site, but the condition of the habitats allows for the possibility of restoration of their populations. Other rare species are 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 the Russian Federation.
	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. It's a very important spring stopover site for White-naped and Red-crowned cranes and 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 the exclusion of the sea water area and the biggest lagoon (Ptichya), Khasansky Park does not fulfill this requirement.

Source: Ramsar Sites Criteria, accessible at
https://www.ramsar.org/sites/default/files/documents/library/ramsarsites_criteria_eng.pdf

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