

# Birds and their conservation in Rason Special Economic Zone, Democratic People's Republic of Korea

NIAL MOORES

We made four short bird surveys in Rason, north-eastern Democratic People's Republic of Korea (DPRK), between March 2014 and April 2017. We found a total of 228 species, including eight in Ramsar-defined internationally important concentrations, 12 globally threatened species and at least five species which appear not to have been recorded in the DPRK previously. We also confirmed breeding of about 15 species either for the first time nationally or for the first time in several decades. Twenty-four additional species were found as the result of a literature review. The results from our research have been shared with local authorities and the national Ministry of Land and Environment Protection, and will probably be used in the Ramsar Information Sheet for the Sonbong Migratory Bird Reserve in Rason—part of the process of designating the area as a Ramsar site once the DPRK accedes to the Convention, as currently proposed in 2018.

## INTRODUCTION

The Rason Special Economic Zone (hereafter Rason), Democratic People's Republic of Korea (DPRK), is located in the far north-east of the Korean Peninsula, and has an administrative area of 890 km<sup>2</sup> (Economic Cooperation Bureau 2016). Rason was established in 1992 to take advantage of two main seaports that remain ice-free throughout the year and is separated by the meandering Tumen River from its neighbours and main trading partners, the People's Republic of China (PRC) and the Russian Federation (Figure 1). In spite of its growing population, Rason still has a wonderful mix of accessible and relatively unspoilt habitats: wide bays and islands, low forested hills, open grassland and agricultural lands, dune systems and, towards the Tumen Delta in the east, three lakes, two of which, Manpo and Sobonpo, are shallow whilst one, Dongbonpo, is somewhat deeper. In 1995, national authorities designated an area of 3,200 ha including these lakes, adjacent ricefields and adjoining low hills as the Sonbong Migratory Bird Reserve, one of only 24 such areas nationwide (Anon. 2014). Subsequently, the area was highlighted for its importance to waterbirds in a national review of wetlands (Chong *et al.* 1995) and in the first national report to the Convention on Biological Diversity (DPRK 1997). An expanded 5,880 ha of habitat was then listed in 2004 by BirdLife International (2017a) as the Lake Manpo and Lake Bonpo Important Bird and Biodiversity Area (42.350°N 130.566°E).

More recently, the DPRK has initiated a series of projects focused on wetland and biodiversity conservation, as part of preparation for accession to the Ramsar Convention (Ramsar 2017b). Much of this work at the national level has been led by the Ministry of Land and Environment Protection, supported by outside bodies that include the Ramsar Convention Secretariat and the Korea office of the

Hanns Seidel Foundation (HSF), which is involved on a variety of projects in many parts of the world (see <https://www.hss.de/>). Local and national authorities communicated to the Foundation that they would welcome more research in Rason as no formal avifaunal surveys had been carried out there for several decades, there was no clear delineation of reserve boundaries and they wished to improve possible management approaches.

Accordingly, the first avifaunal and land-use survey, organised by the HSF, the East and North-east Asia Office of UNESCAP and partners in the DPRK, including the tourism office in Rason, was focused largely on the Sonbong Migratory Bird Reserve and was carried out between 21 and 26 March 2014. The team included Lu Cai, who mapped the major habitat types based on ground-truthing and 2013 satellite imagery, allowing conservation zones in the reserve and adjacent areas to be proposed (Anon. 2014). On behalf of Birds Korea, a bird conservation organisation based in the Republic of Korea (ROK) and dedicated to the conservation of birds and their habitats in both the ROK and DPRK, NM carried out three more bird surveys with Bernhard Seliger of the HSF, from 2–6 July 2016, 26–30 November 2016 and 21–24 April 2017. These surveys (funded by the HSF) aimed to record some of the seasonal changes in bird abundance and distribution, to help further inform decisions relevant to the management of the reserve and the Rason authorities' objective to develop the area's ecotourism potential.

## The avifauna of the Rason area

We are aware of records of 256 bird species in Rason (Appendix 1), most of which are migratory. In only four short surveys 228 species were found; however, we suspect that more than 300 occur here annually. Eight of these species were found to occur in Ramsar-defined internationally important concentrations of 1% or more of the estimated population (Criterion 6, Ramsar 2017a) and 12 species were globally threatened. We also found two additional species outside the survey periods and two more only as specimens. Based on our review of easily-accessible literature, predominantly Tomek (1999, 2002) and Science & Technology (2011), our surveys recorded five or more species for the first time in the DPRK and confirmed breeding of about 15 species either for the first time nationally or for the first time in several decades. These literature sources together revealed a further 24 species recorded in Rason that we did not find, including the Critically Endangered Baer's Pochard *Aythya baeri* and the Endangered Jankowski's Bunting *Emberiza jankowskii*. Published records of the latter species include a series of six birds collected between mid-September and early November 1929 in 'Bam Po' (Manpo), Rason (see Yamashina Institute online archive, [http://decochan.net/index.php?q=jankowski+bunting&and\\_or=and&icchi=part&p=2&co=ss](http://decochan.net/index.php?q=jankowski+bunting&and_or=and&icchi=part&p=2&co=ss)) and an additional one or more birds collected in 1931 (Science & Technology 2011).

**Figure 1.** Rason Special Economic Zone, DPR Korea.



All images taken in Rason Special Economic Zone, Democratic People's Republic of Korea.



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**Plate 1.** Reedbeds and marsh, Sobonpo, looking to the north-east, 2 July 2016.



BERNHARD SELIGER

**Plate 2.** Marsh and ponds between Manpo and Sobonpo, 20 April 2017.



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**Plate 3.** Farmland between Sobonpo and Manpo, 5 July 2016.



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**Plate 4.** Uam Ri, the intertidal area, 29 March 2014.



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**Plate 5.** Uam Ri, dune slack area, 29 March 2014.



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**Plate 6.** Uam Ri dunes, the grassy area where Chinese Grey Shrike *Lanius sphenocercus* was found, 3 July 2016.



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**Plate 7.** Mixed woodland above Pipa islet, 4 July 2016.



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**Plate 8.** Breeding cliffs, Alsom Island, 24 April 2017.

## Main habitat types in the Rason area

### Lakes

The three main lakes mentioned above were included in all four surveys, with the greatest effort made in March 2014, close to the expected peak of northward migration of some species. At that time, counts of about 20,000 waterbirds on the 788 ha Manpo and 22,000 on the 1,759 ha Sobonpo confirmed their international importance as defined by Ramsar Criterion 5 (Ramsar 2017a). Most of Manpo and Sobonpo appear to be less than 2 m deep, with abundant submerged and emergent vegetation close to the shoreline, including *Ceratophyllum demersum* and stands of *Phragmites* reed (Plates 1 & 2). The five most numerous avian species on these two lakes were: Eurasian Wigeon *Mareca penelope*—about 12,200, almost 2% of the East Asian population (Wetlands International 2017); Mallard *Anas platyrhynchos*—6,500; Tufted Duck *Aythya fuligula*—4,650, almost 2% of the East Asian population (Wetlands International 2017); Eurasian Coot *Fulica atra*—3,500; and Falcated Duck *M. falcata*—3,100, more than 3% of the global population (Wetlands International 2017). The 152 ha Dongbonpo appears to be somewhat deeper and is connected to the sea through sluices. Although we were unable to take water samples, it appears to be brackish and the depth appears to fluctuate 20–30 cm with the tide (Anon. 2014). This lake supported substantially fewer waterbirds, the most numerous being 1,100 Common Goldeneye *Bucephala clangula*. All three lakes were already largely covered in ice during the November survey, and held many fewer waterbirds in the July and April surveys than in March.

### Reedbeds and marshy ponds

Lu Cai estimated that the reserve area holds approximately 247 ha of reedbeds, 45 ha of ponds and 209 ha assessed as marsh (largely patchily-vegetated damp ground, fallow fields and wet ditches), most of which is found in the south between Manpo and Sobonpo lakes (Plates 1 & 2). However, many reedbeds have recently been cut (with loss ongoing into 2017) for the construction of new fishponds. Moreover, reed cutting and burning appears to be done more or less annually in many parts of the reserve, apparently in order to prevent the spread of reeds into ricefields. Substantial survey effort was made in those few areas that still had extensive reedbeds as these supported a high diversity of breeding birds, especially in July. The most obvious of these species was Black-browed Reed Warbler *Acrocephalus bistrigiceps*, with more than 100 recorded. We were able to prove breeding in this habitat by five species not confirmed by Tomek (1999) to breed in the DPRK, finding either the nests and/or young of Gadwall *Mareca strepera*, Little Grebe *Tachybaptus ruficollis*, Great Crested Grebe *Podiceps cristatus*, Common Redshank *Tringa totanus* and Black-headed Gull *Larus ridibundus*. We also suspect breeding by Eurasian Bittern *Botaurus stellaris* (one heard booming and a second seen in flight) and Common Tern *Sterna hirundo* (adults were seen carrying food and a recently fledged juvenile was seen begging for food).

On the other hand, Chinese Penduline Tit *Remiz consobrinus*, a species which we had anticipated that we might find in this habitat, either during migration or possibly as a summer breeding visitor, proved to be very elusive. No birds were seen or heard during several days spent in suitable habitat in July 2016, and only one was found there in April 2017—in a lakeside area with a narrow fringe of reeds. This species has recently been found to breed in the Primorsky Krai region, Far East Russia, with many pairs now present there at several sites near the border with the DPRK (Gluschenko *et al.* 2010); these authors already assumed breeding in the north-east DPRK, although there are no breeding records in the ornithological review by Tomek (2002), who considered the species to be a rare migrant, tracing only one historical record from the north-east DPRK. Adding to the challenge associated with understanding the ecology and movements of the species, in 2017 Chinese Penduline

Tits were found breeding on Baekryeong Island, in the north-west of the ROK (Moores & Seliger 2017).

### Ricefields

As of 2013, the ill-defined reserve area contained or was contiguous with an estimated 2,117 ha of ricefields. Most of the Hill Pigeon *Columba rupestris* that we encountered, including a flock of 81 on 5 July 2016, and several of the small number of White-naped Crane *Antigone vipio* and the only Hooded Crane *Grus monacha* recorded in March 2014, were feeding in ricefields. However, many of the fields were intensively worked or traversed by large numbers of people during each of the survey periods (with the highest number of people present in April and July and the lowest in November). Ricefield management, including weeding, rice planting and harvesting, is mainly done by hand, as is cultivation and collection of edible plants along bunds. Moreover, several informal settlements are located away from the main agricultural cooperatives in ricefield areas and are used as a base for agriculture and for fishing activities in the lakes (Plate 3). As a result, many of the ricefields are highly disturbed and relatively bird-poor, except in areas where the fields directly abut reedbeds or marshy areas.

### Intertidal habitat

The tidal range in the Rason area is small and was estimated to be about 0.25–0.5 m during our survey periods. Most of the Tumen Delta proper, which is inaccessible for security reasons, appears to comprise extensive reedbeds, dunes and ponds. The most extensive intertidal habitat we could survey was therefore an area of about 45 ha of low sandy islands, sea shallows and open sandy mud north of Uam Ri (42.281°N 130.606°E), where we recorded several species of shorebird and gull on each visit and 21 Brent Goose *Branta bernicla* on 23 April 2017 (Plate 4).

### Dunes and dune slacks

Dunes and dune slacks cover large areas along the lower reaches of the Tumen River, from the delta north to Hunchun, China (Plate 5). Much of the most diverse and undisturbed areas of dunes in the Rason area are inaccessible for security reasons because they lie immediately adjacent to the border, with more accessible areas either degraded or in part converted to agriculture. Our survey effort was therefore largely limited to 45 ha of grass-covered dunes with scattered bushes in the hinterland of the Uam Ri intertidal area, about 6 km west of the mouth of the Tumen River, where we found a family party of Chinese Grey Shrike *Lanius sphenocercus* and good numbers of buntings, including breeding Chestnut-eared Bunting *Emberiza fucata* (Plate 6). Although we have not been able to determine the exact location of the 1929 series of Jankowski's Bunting records, we suspect that they might have been collected in rather similar habitat. Reportedly, the series of six was collected 'in the immediate vicinity of the [Tumen] River' (Austin 1948). Byers *et al.* (1995) state that the species prefers 'dry overgrown sand-dunes with relatively scant cover and low bushes' and Science & Technology (2011) states that the species was found in the coastal strip of the Tumen River.

### Drier agricultural landscapes

We surveyed drier agricultural land, used for growing crops such as potato and corn, only opportunistically. On 6 July 2016 we spent an hour in such habitat, close to 42.465°N 130.444°E, finding about 12 breeding Brown Shrike *Lanius cristatus confusus*.

### Forest

Much of Rason away from built-up or agricultural areas is either sparsely or densely covered in coniferous and mixed cold temperate forest. Near to the coast are extensive stands of what we tentatively identified as *Pinus densiflora*, often with a dense understorey of

*Azalea* sp.. Inland and on hills, much of the woodland is more mixed, either immature and regenerating or actively harvested for firewood. Although we made little attempt to identify tree species during the survey due to time constraints, mixed forest appears to contain at least some *Larix* sp., *Pinus* sp., *Abies* sp., *Betula* sp., *Ulmus* sp. (perhaps Siberian Elm *U. pumila*) and Mongolian Oak *Quercus mongolica*. During the three surveys in 2016 and 2017 we repeated counts along two main transects through areas of more easily accessible, diverse-looking forest. The first was along 4.9 km of seldom-used road on Sahyang San, from the peak at about 520 m down to about 215 m, between 42.284°N 130.298°E and 42.277°N 130.326°E. The second transect, on a busier paved road to Pipa Islet, started at 42.300°N 130.357°E and ran for 5.5 km through mixed forest and stands of *Pinus densiflora*, rising from 55 to 195 m, then falling to 10 m, finishing at 42.308°N 130.388°E (Plate 7). We recorded several Snowy-browed Nuthatch *Sitta villosa* during each survey in the woodland above Pipa Islet, including one entering a nest-hole, and several Red Crossbill *Loxia curvirostra*, both paired up and singing, in April 2017 in both areas. Although July is much less opportune than May and June for surveying forest birds, at least in the ROK, we nonetheless recorded at least 30 singing Pallas's Leaf Warbler *Phylloscopus proregulus*, 18 each of Korean Bush Warbler *Horornis canturians borealis* and Pale Thrush *Turdus pallidus*, and at least 16 Common Cuckoo *Cuculus canorus* along the two transects on 4 July 2016.

#### Grassy areas

There were extensive areas of grass and low brier *Rubus* sp. on many of the hills surrounding the lakes, although some areas had been burnt over—apparently to drive insects and snakes away from human settlements. We visited one area close to Manpo, locally known as Snake Mountain (42.365°N 130.551°E), during three of the surveys, checking about 60 ha of habitat there. Some of this area was lightly grazed by cattle. Diversity appeared to be low, with more numerous species including Meadow *Emberiza cioides* and Chestnut-eared Bunting and, in some other grassy areas, sympatric nesting Eurasian Skylark *Alauda arvensis* and what are listed by Moores *et al.* (2014) as Far Eastern Skylark *Alauda japonica* (see Selected species accounts).

#### Coastal zone

Because of its many bays, Rason has about 100 km of coastline (excluding islands), half of which we were able to access or count during one or more of the surveys. Away from the two main harbours of Najin and Sonbong, the latter much used for mariculture, the coastal strip and inshore waters appear to be largely natural or near-natural, and rather less disturbed than in many other parts of the East Sea coast in the ROK and western Japan. Several bays held substantial numbers of sea duck and grebes, especially in March and November, but locally even in July, including one over-summering Harlequin Duck *Histrionicus histrionicus*, two Red-breasted Merganser *Mergus serrator*, 20 Arctic Loon *Gavia arctica* and 40 Red-necked Grebe *Podiceps grisegena*. Although Tomek (1999) questioned whether or not Japanese Cormorant *Phalacrocorax capillatus* breeds in the DPRK, we found one substantial colony of this species on mainland cliffs (42.273°N 130.629°E) in July 2016 which contained at least 290 adults and young juveniles.

#### Islands

Alsom (Egg Island) together with adjacent islets was designated a seabird breeding reserve in 1959 (Plate 8). The main island, central coordinates about 42.234°N 130.531°E, is about 16 ha in area and its closest point is 5.5 km from the mainland. It is impossible to visit the island without special permission. Nonetheless, a documentary on wildlife and culture was recently filmed here, and included footage of a Slaty-backed Gull *Larus schistisagus* nest with eggs (apparently the first confirmation of breeding in the DPRK). From

our boat-based survey around the island in April 2017, we observed that it also supports small numbers of breeding Pelagic Cormorant *P. pelagicus* (a species not thought to breed in the DPRK by Tomek 1999); we saw several birds sitting on nests. Auk species were also seen in the vicinity of the island (see Selected species accounts).

## SELECTED SPECIES ACCOUNTS

Details of records of 27 species are provided below. They have been selected for two or more of the following reasons: they are not covered in the text above; they appear to represent either first national records, first breeding records, or first breeding records in recent decades; they are globally threatened; they were found in Ramsar-defined internationally important concentrations.

### Mute Swan *Cygnus olor*

Although there is a substantial feral breeding population in Japan, there is no known feral population in the DPRK or the ROK; however, a minimum of 106 was counted in late March 2014, mostly on Manpo—7% of the estimated flyway population of this species (Wetlands International 2017).

### Mandarin Duck *Aix galericulata*

Although only four were found during the July 2016 survey, at least 135 were counted in late March 2014, about 4% of the Korean population (Wetlands International 2017).

### Gadwall *Mareca strepera*

Tomek (1999) lists only one breeding season record and suggests that the species may breed in the DPRK even though there are 'no data concerning its nesting'. In July 2016 we found several pairs and two broods of ducklings. As there are no breeding records from the ROK (Moores *et al.* 2014), this apparently becomes the first confirmation of breeding from the Korean peninsula.

### American Wigeon *Mareca americana*

A male was seen on Manpo by NM at long range on 28 March 2014; identification was based on the striking blackish-green and grey head pattern, strong white crown-stripe, and purplish breast and flanks. Hybrids between American and Eurasian Wigeon *M. penelope* have been recorded in several parts of East Asia (e.g. Brazil 1991, Carey 1993) and are more frequently noted than pure individuals in the ROK, with hybrid characters easy to detect, even at long range, in most cases. However, a very few birds (perhaps back-crossed hybrids) are much harder to identify with confidence and require close and prolonged scrutiny (pers. obs.). The views of this bird were too distant to rule out limited hybrid influence. This species is not listed for the DPRK by Tomek (1999) but both hybrids and birds of normal appearance are recorded annually in the ROK (e.g. Edelsten & Moores 2013).

### Surf Scoter *Melanitta perspicillata*

A distant adult male was seen well and images obtained on 27 November 2016 in Sonbong Bay. Identification was based on the striking black and white head pattern, diagnostic bill shape and lack of white on the secondaries. This is apparently the first record of this species for the Korean peninsula. In adjacent areas, Brazil (1991) traced 11 records from Hokkaido and northern Honshu, Japan, up to 1990; the species is not listed on a checklist of the birds of Primorsky Krai, Far East Russia (Gluschenko *et al.* 2010).

### Siberian Scoter *Melanitta stejnegeri*

Now accepted as a full species (Garner *et al.* 2004, del Hoyo *et al.* 2017a), it probably occurs in Rason in internationally important numbers. The species was found during all four surveys (with at least

five present in one bay in July 2016); the highest count was 4,085 during the November 2016 survey when we surveyed only half of the coast. This is equivalent to 1% of the lower end of the perhaps optimistic population estimate of 400,000–700,000 (BirdLife International 2017b). Our counts support the opinion of Fiebig (in Tomek 1999), who wrote that flocks of several thousand could be found along the east coast of the DPRK.

#### **Long-tailed Duck *Clangula hyemalis* VU**

Our highest count of this Vulnerable species was at least 1,990, all seen from land, in November 2016. During the same survey, long lines of birds on the horizon were suspected to be this species but were too far from shore to identify. In April 2017 we found only small numbers close to shore but observed a raft of 160 more than 5 km off shore, close to Alsom. Tomek (1999) knew of only six DPRK records post-1950, three of which were from Rason. According to Yuri Shibaev (pers. comm. March 2014), ‘thousands’ can be seen in Peter the Great Bay, which stretches north from the Tumen Delta for more than 150 km along the coast.

#### **Pacific Loon *Gavia pacifica***

At least two in non-breeding plumage were seen in good light about 1 km offshore on 27 November 2016, with one seen at less than 500 m the following day. Identification was based on the lack of white flank patch, the less clear-cut face pattern and the rounder crown and slighter bill than several adjacent Arctic Loon *Gavia arctica*. Tomek (1999) did not list this species for the DPRK although Moores (2017a) found it locally numerous along the East Sea coast of the ROK and off the coast of Kangwon province, DPRK, in March 2017.

#### **Great Crested Grebe *Podiceps cristatus***

Recorded during all four surveys, with our November 2016 count of 448 along part of the coast representing more than 1% of the East Asian population of the species (Wetlands International 2017). In July 2016 we found 2–3 pairs in breeding habitat and obtained images of young juveniles and a bird on the nest. Tomek (1999) suspected breeding in the DPRK but could not trace any records.

#### **Horned Grebe *Podiceps auritus* VU**

This Vulnerable species is very local, both along the Korean East Sea coast and in Rason, with 40 found in two bays in November 2016. On 23 April 2017 we counted more than 344 adults in breeding plumage in one bay, more than 1% of the flyway population (Wetlands International 2017). On this date four species of grebe were seen in the same wide bay, with perhaps several hundred birds present, many in mixed groups, but too distant to identify with confidence and count in the misty conditions.

#### **Black-necked Grebe *Podiceps nigricollis***

Recorded during all four surveys, with the highest numbers in late April 2017, when we counted a conservative 2,458—about 2.5% of the East Asian population (Wetlands International 2017)—along probably a third or less of the Rason coastline. Bays which we were unable to visit in April 2017 held hundreds of Black-necked Grebe in April 2016.

#### **Eurasian Spoonbill *Platalea leucorodia***

Nineteen were seen on 29 March 2014; images were obtained. One was also seen on 4 July 2016. Tomek (1999) cites only one record for the DPRK, although with caveats, and states that ‘without finding this species for certain, it should not be entered in the list of birds’.

#### **Mountain Hawk Eagle *Nisaetus nipalensis***

A mounted specimen was for sale in a tourist shop in Rajin in March 2014. Although the species is believed to breed as

close as the Primorsky Krai (Gluschenko *et al.* 2010), based on our understanding of trade it seems highly unlikely that this specimen was imported from there to sell in Rason. The status of this generally sedentary species in Korea remains enigmatic; the three specimens (recorded in January 1914, February 1925 and September 1934) listed in Austin (1948) are all from unknown locations in ‘Kangwon Do’. As these records predate the division of Korea in 1945, they may originate from either the DRPK or the ROK. Park (2002) added one further record of this sometimes difficult to identify species, a bird seen in Gangwon province, ROK, in September 2000.

#### **Steller’s Sea Eagle *Haliaeetus pelagicus* VU**

We saw three or four birds in late November 2016, including a very heavy-billed, all dark brown—including the tail—individual which was digiscoped at very long range on 27 November, sitting out in the Tumen River. The dark form *niger* of Steller’s Sea Eagle was once considered to be a distinct species or subspecies, although today it is generally considered to be a very rare colour morph (Meyburg *et al.* 2017).

#### **Swinhoe’s Rail *Coturnicops exquisitus* VU**

On 2 July 2016 a distinctive call was heard 4–5 times in two minutes emanating from wet reeds and grass at the edge of a small pond. The call was brief and unvarying (somewhat reminiscent of Common Moorhen *Gallinula chloropus*) and nearly identical to recording XC343055 on xeno-canto.org; this recording was played briefly on-site but without response. Tomek (1999) traced only one DPRK record of this poorly-known species, which has also been very rarely reported in the ROK, with only four records this century, three in late autumn and one unpublished sight record at an undisclosed location in mid-June 2013 (e.g. Park & Seo 2008, pers. obs.).

#### **Northern Lapwing *Vanellus vanellus***

Tomek (1999) quotes Yankovskii as finding this species in Korea in May and June in the drainage basin of the Tumen River in the 1890s. Although she suspected that Northern Lapwing might still nest, Tomek required confirmation before including the species in the DPRK’s current breeding avifauna. We found and obtained images of protective adults with three young juveniles. As the species has not been recorded breeding in the ROK (Moores *et al.* 2014), this is perhaps the first confirmed Korean breeding record in 120 years.

#### **Far Eastern Curlew *Numenius madagascariensis* EN**

This Endangered species was recorded in three of the four surveys, with at least 219 counted during the survey in late April 2017—presumed to be the highest count in the east of the DPRK. The west coast of the DPRK is now known to be extremely important for the species, with 2,700 in April 2016 and more than 6,000 in April 2017 counted along different parts of the coast in South and North Pyongan provinces (Riegen *et al.* 2016, A. Riegen pers. comm. September 2017).

#### **Relict Gull *Larus relictus* VU**

Although not listed in Tomek (1999) or in DPRK (2002), we found this Vulnerable species in three of the four surveys, with two adults in breeding plumage and three first-winter birds on Dongbonpo on 30 March 2014, four first-winter birds on Dongbonpo on 27 November 2016, one adult on Sobonpo on 21 April 2017, one second calendar-year bird in Songbong harbour on 22 April 2017, and three second calendar-year birds together on the Uam intertidal wetland on 23 April 2017. The species is probably rather more regular on the east coast of the DPRK than these records suggest; it winters in small numbers in the Nakdong estuary near Busan, ROK, and we found 4–5 during a stop in Wonsan Bay, 440 km south-west of Rason, in March 2017 (Moores 2017a).

### Caspian Tern *Hydroprogne caspia*

On 3 July 2016 a single bird was observed and digiscoped in the Uam intertidal wetland. This appears to be only the third DPRK record, following two records in South Pyongan province on the west coast in spring 2009 and 2016 (Riegen 2009, Moores 2016).

### Common Murre *Uria aalge*

Although seen only twice from land during the surveys, at least 340 were counted on cliffs and on the sea around Alsom on 24 April 2017. Our observations strongly support assertions of breeding in the DPRK first made almost a century ago (Tomek 1999).

### Spectacled Guillemot *Cephus carbo*

Recorded during all four surveys, with small groups seen feeding along several stretches of coast and 171 seen around Alsom on 24 April 2017, including many birds flying into rock crevices on cliff-faces and among boulders. These observations strongly support assertions, questioned by Tomek (1999), that the species breeds in the DPRK. Although we did not see nests or young, the species is largely sedentary, remaining near breeding colonies in the south of its range throughout the year (Nettleship *et al.* 2017). The species nests in rock crevices, caves and among boulders on talus slopes and, even in the north of its range, starts to return to breeding colonies at the end of April, with egg-laying in mid-May in Peter the Great Bay, north of the Tumen delta (Kondratyev *et al.* 2000).

### Long-billed Murrelet *Brachyramphus perdix NT*

Only recorded in April 2017, with six birds in breeding plumage seen close to shore off Pipa Islet on 22 April, one seen off Uam Ri on the following day, and 33–49, many in full breeding plumage, seen in heavy rain between Pipa Islet and Alsom on 24 April. Local breeding is strongly suspected—much of the hinterland to the coastline in Rason is forested and largely undisturbed, as are several islands. The species is known to breed in the South Primorsky region, Far East Russia, although it is uncommon there. In Primorsky birds nest in coniferous forest, with all nests located being in larch trees *Larix gmelini*, about 2.5–7 m above the ground and within 50 cm of the bole; eggs and hatchlings were found in late June (Kondratyev *et al.* 2000). However, Duckworth (2006) cites a total of only three records in the DPRK up to that time, including one in June 1933 and one in May 2002.

### Rhinoceros Auklet *Cerorhinca monocerata*

We recorded this species in July 2016 and April 2017, dates that are strongly indicative of breeding in Rason, as earlier asserted by DPRK ornithologists (in Tomek 1999). According to Kondratyev *et al.* (2000), in South Primorsky, Far East Russia, the species arrives at nesting colonies in mid-April, eggs are laid in late April and May and hatch in late May and June, with most fledglings leaving by the end of July. In 2016 we found a distant flock of 190 off Taecho Island, Najin Harbour (42.161°N 130.278°E), on 2 July, 60 including several young birds and one adult carrying fish on the sea off Uam Ri on the following day, 38 off Pipa Islet on 4 July, and eight on the sea near Sonbong on 5 July. In April 2017 we saw between 7 and 15 adults, although none were close to Alsom.

### Chinese Grey Shrike *Lanius sphenocercus*

We recorded this species in all four surveys, on each occasion finding birds in several of the same areas. The highest survey count was 10, including two young juveniles begging and receiving food from an adult in July 2016. Won Hong-Koo (in Tomek 2002) considered that this species bred in the DPRK. However, his assessment was bluntly contradicted by Tomek.

### Eurasian Skylark *Alauda arvensis*

#### Far Eastern Skylark *Alauda japonica*

These taxa, although often lumped together, appear to differ consistently (at least in both Russia and Korea) in calls, songs, some plumage features, size and in the way in which the tail is spread during song flights. The larger, paler and more melodic *A. arvensis* sings with the tail held open and the shorter-tailed, rust-toned *A. japonica* sings with the tail held mainly closed (Moores 2012, Yury Shibaev and Sergei Surmach pers. comm. 2014). Sympatric breeding by two skylark taxa as at Rason is not new to Korea (see Austin 1948).

### Eastern House Martin *Delichon lagopodum*

On 21 April 2017 a bird seen well at close range for 20–30 seconds was identified as the taxon *lagopodum* based on its clean white underparts, very broad white rump band with white on the uppertail coverts, and a moderately notched tail (del Hoyo & Collar 2017). Although not listed for the DPRK by Tomek (2002) or for the ROK by Park (2002), this taxon is now known to be a regular migrant through the southern provinces of Korea, including Socheong Island and Baekryeong Island, close to the DPRK mainland (Moores 2007, pers. obs.), and is also an uncommon migrant and rare breeder in the Primorsky Krai (Gluschenko *et al.* 2010).

### Thick-billed Warbler *Arundinax aedon*

In July 2016 four were encountered, including two observed as they chased each other through an extensive area of low trees and bushes close to the peak of Sahyang San on 4 July. The mid-summer presence of birds in potentially suitable breeding habitat in three different areas found during only six survey days strongly suggests that this species continues to breed in the DPRK, as first confirmed by Bergman, who collected a fledgling on 2 August 1935 at Nongsadong in neighbouring North Hamgyong province (Duckworth & Moores 2008).

### Grey Bunting *Emberiza variabilis*

On 22 April 2017 at least two were heard calling 8–10 times from dense understorey in coniferous forest above Pipa Islet, but remained invisible. This species is often extraordinarily skulking and the calls, if heard indistinctly, can be confused with those of other bunting species. However, I have extensive experience of the species, including its calls, and although not listed for the DPRK by Tomek (2002), it is likely to prove to be a regular migrant. Grey Bunting is a locally fairly common summer visitor to Hokkaido, Japan, between April and October (Brazil 1991) and is now known to be regular in winter and during both migration periods in the ROK, with several records from Socheong and Baekryeong Islands, which at their closest lie within 15 km of the DPRK mainland (Moores 2007, pers. obs.). Despite the difficulty of detection the species has also been recorded in Primorsky Krai (Gluschenko *et al.* 2010).

## POTENTIAL FOR CONSERVATION AND ECOTOURISM

Our surveys confirm that the open waters, reedbeds and ponds of Sonbong Migratory Bird Reserve, the Alsom Seabird Breeding Reserve and adjacent marine waters are all very important for several bird species and support several species at or near the southern limit of their known breeding range. Several other habitats, particularly forest and dune systems, are also of potentially high conservation importance at the national and perhaps regional level.

The Rason Special Economic Zone is only two hours by road from the rapidly expanding Chinese city of Yanbian—with its international airport—and much of the low-lying land in Rason has been included in various large-scale development plans which

would probably be extremely detrimental to birdlife and biodiversity if completed as proposed. For example, the Economic Cooperation Bureau (2016) predicts a five-fold increase in population to one million in Rason, and a more than 12-fold increase in annual tonnage handled by the ports. They also call for the 'improvement' of the Tumen River and five of Rason's streams and large-scale expansion of heavy manufacturing industries and tourism. Even now, the threat of reed cutting and burning within the reserve area, as practiced by local communities, is being compounded by overseas investment calling for conversion of at least some reedbeds into commercial fish-ponds. However, there is still room for cautious optimism. In spite of huge and growing development pressure and much habitat already lost in the lower Tumen region, there is a growing interest in conservation. In July 2017 the DPRK Ministry of Land and Environment Protection became a member of the IUCN and in September 2017, encouraged by the success of the surveys, the ministry stated its intention to designate the Sonbong Migratory Bird Reserve as a Ramsar site, as part of their proposed accession to the Ramsar Convention in 2018 (Moore 2017b). The lower Tumen area already holds several protected areas established for birds and the iconic Amur Tiger *Panthera tigris altaica*, a species said occasionally also to occur in Rason in winter. The road from Yanbian to Rason passes through the Hunchun Amur Tiger National Protected Area and close to the Hunchun wetlands, and much of the Russian side of the Tumen Delta is contained within the Khasanskii Nature Park.

As in many parts of the world it can be extremely challenging for decision-makers tasked with conserving biodiversity to harmonise development plans with effective conservation unless there are some measurable economic benefits. In Rason, even in an era of rising political tension, at least some of these economic benefits could more easily be accrued with international support through improvements in forestry, agriculture and aquaculture (all within the current scope of the Hanns Seidel Foundation's remit in the DPRK), in improved reserve management, and in the development of environmentally-responsible tourism, including birdwatching-based ecotourism. With its special status and focus on international trade, Rason, with several international hotels, is already probably the easiest place in the DPRK for tourists to visit. For ornithologists and birdwatchers, visits are still only possible through coordination with local authorities and ground agents and there are some additional challenges, e.g. the need to show all cameras and computers to immigration authorities on arrival and departure. However, with its compact mix of habitats, rich biodiversity and fascinating culture, Rason has enormous ecotourism potential, either as a destination in its own right or as one of several hotspots on an extended tour taking in other sites in the DPRK, China and Far East Russia.

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## Appendix 1.

Checklist of the birds of Rason Special Economic Zone, Democratic People's Republic of Korea.

As in the main text the order is from Moores *et al.* (2014) with common names and taxonomic revisions based on del Hoyo *et al.* (2017b). Seasonality and abundance are based on our counts. It should therefore be understood that for most species any further survey effort, and/or counts made in additional areas, would probably require upward revision in stated abundance, in many cases substantially. In addition, the status of a few species that we recorded only once or twice has been interpreted in this checklist either as uncommon migrants or as unexpected records. This assessment has been made in the context of the same species' status in the ROK (Moores *et al.* 2014), in the Primorsky Krai, Far East Russia (based on Gluschenko *et al.* 2010) and in Jilin province, PR China, based on an unpublished checklist developed by Paul Holt, incorporating records from Zheng (2011) and other sources.

### Key:

Provisional Status (Prov. Status column)

R = mainly resident; S = mainly summer visitor; M = mainly migrant and/or winter visitor; U = unexpected record; L = literature record only.

### Abundance indicators

1 = very common (peak counts of >1,000); 2 = common (peak counts 100–999); 3 = fairly common or uncommon (peak counts 10–99); 4 = scarce (< 10 recorded in total).

### Breeding Status (Breed. Status column)

B = breeding confirmed/assumed, based on our observation of nest, eggs and/or nestlings/fledglings; P = breeding strongly suspected, based on e.g. presence of several individuals in potential breeding habitat in April or July; and breeding records in the ROK or Primorsky Krai, Far East Russia; N = breeding not suspected in Rason.

### Source

A = observations and counts made by NM and Bernhard Seliger; C = Tomek (1999, 2002); D = Science & Technology (2011); E = Kim *et al.* (2010); G = specimens found in Rason and identified by NM, these were assumed to have been collected locally; \* = opportunistic sightings outside surveys.

Species	Prov. Status	Breed. Status	Source	Species	Prov. Status	Breed. Status	Source
Brent Goose <i>Branta bernicla</i>	M3	N	A	Mallard <i>Anas platyrhynchos</i>	M1	P	A
Swan Goose <i>Anser cygnoid</i>	L	N	C	Chinese Spot-billed Duck <i>Anas zonorhyncha</i>	M2	B	A
Taiga Bean Goose <i>Anser fabalis fabalis</i>	M3	N	A	Northern Shoveler <i>Spatula clypeata</i>	M2	N	A
Tundra Bean Goose <i>Anser fabalis serrirostris</i>	M2	N	A	Northern Pintail <i>Anas acuta</i>	M2	N	A
Greater White-fronted Goose <i>Anser albifrons</i>	M2	N	A	Garganey <i>Spatula querquedula</i>	M3	P	A
Mute Swan <i>Cygnus olor</i>	M2	N	A	Baikal Teal <i>Sibirionetta formosa</i>	M2	N	A
Tundra Swan <i>Cygnus columbianus</i>	L	N	C	Common Teal <i>Anas crecca</i>	M2	N	A
Whooper Swan <i>Cygnus cygnus</i>	M2	N	A	Common Pochard <i>Aythya ferina</i>	M1	N	A
Mandarin Duck <i>Aix galericulata</i>	M2	P	A	Baer's Pochard <i>Aythya baeri</i>	L	N	C
Gadwall <i>Mareca strepera</i>	M2	B	A	Tufted Duck <i>Aythya fuligula</i>	M1	N	A
Falcated Duck <i>Mareca falcata</i>	M1	N	A	Greater Scaup <i>Aythya marila</i>	M2	N	A
Eurasian Wigeon <i>Mareca penelope</i>	M1	N	A	Harlequin Duck <i>Histrionicus histrionicus</i>	M2	N	A
American Wigeon <i>Mareca americana</i>	U	N	A	Surf Scoter <i>Melanitta perspicillata</i>	U	N	A



Species	Prov. Status	Breed. Status	Source	Species	Prov. Status	Breed. Status	Source
Siberian Scoter <i>Melanitta stejnegeri</i>	M1	N	A	Northern Lapwing <i>Vanellus vanellus</i>	S3	B	A
Black Scoter <i>Melanitta americana</i>	M2	N	A	Pacific Golden Plover <i>Pluvialis fulva</i>	M4	N	A
Long-tailed Duck <i>Clangula hyemalis</i>	M1	N	A	Grey Plover <i>Pluvialis squatarola</i>	M4	N	A
Common Goldeneye <i>Bucephala clangula</i>	M1	N	A	Long-billed Plover <i>Charadrius placidus</i>	S4	P	A
Smew <i>Mergellus albellus</i>	M4	N	A	Little Ringed Plover <i>Charadrius dubius</i>	S3	P	A
Goosander <i>Mergus merganser</i>	M2	N	A	Kentish Plover <i>Charadrius alexandrinus</i>	S4	P	A
Red-breasted Merganser <i>Mergus serrator</i>	M2	N	A	Lesser Sandplover <i>Charadrius mongolus</i>	L	N	C
Hazel Grouse <i>Bonasa bonasia</i>	R4	P	G	Common Snipe <i>Gallinago gallinago</i>	M3	N	A
Japanese Quail <i>Coturnix japonica</i>	M4	N	A	Black-tailed Godwit <i>Limosa limosa</i>	M4	N	A
Common Pheasant <i>Phasianus colchicus</i>	R3	B	A	Bar-tailed Godwit <i>Limosa lapponica</i>	M4	N	A
Red-throated Loon <i>Gavia stellata</i>	M3	N	A	Whimbrel <i>Numenius phaeopus</i>	M4	N	A
Arctic Loon <i>Gavia arctica</i>	M3	N	A	Eurasian Curlew <i>Numenius arquata</i>	L	N	C
Pacific Loon <i>Gavia pacifica</i>	M4	N	A	Far Eastern Curlew <i>Numenius madagascariensis</i>	M2	N	A
Streaked Shearwater <i>Calonectris leucomelas</i>	L	P	C	Spotted Redshank <i>Tringa erythropus</i>	M4	N	A
Little Grebe <i>Tachybaptus ruficollis</i>	S3	B	A	Common Redshank <i>Tringa totanus</i>	S4	B	A
Red-necked Grebe <i>Podiceps griseogen</i>	M2	N	A	Marsh Sandpiper <i>Tringa stagnatilis</i>	M4	N	A
Great Crested Grebe <i>Podiceps cristatus</i>	M2	B	A	Common Greenshank <i>Tringa nebularia</i>	M4	N	A
Horned Grebe <i>Podiceps auritus</i>	M2	N	A	Green Sandpiper <i>Tringa ochropus</i>	M3	N	A
Black-necked Grebe <i>Podiceps nigricollis</i>	M1	P	A	Wood Sandpiper <i>Tringa glareola</i>	M4	N	A
Black Stork <i>Ciconia nigra</i>	L	N	C	Grey-tailed Tattler <i>Tringa brevipes</i>	M4	N	A
Eurasian Spoonbill <i>Platalea leucorodia</i>	M3	N	A	Terek Sandpiper <i>Xenus cinereus</i>	M4	N	A
Eurasian Bittern <i>Botaurus stellaris</i>	S4	P	A	Common Sandpiper <i>Actitis hypoleucos</i>	L	N	C
Yellow Bittern <i>Ixobrychus sinensis</i>	S4	P	A	Great Knot <i>Calidris tenuirostris</i>	M4	N	A
Schrenck's Bittern <i>Ixobrychus eurhythmus</i>	S4	P	A	Red-necked Stint <i>Calidris ruficollis</i>	L	N	C
Black-crowned Night Heron <i>Nycticorax nycticorax</i>	M4	N	A	Long-toed Stint <i>Calidris subminuta</i>	M4	N	A
Chinese Pond Heron <i>Ardeola bacchus</i>	S4	N	A	Dunlin <i>Calidris alpina</i>	M4	N	A
Cattle Egret <i>Bubulcus ibis</i>	S4	P	A	Broad-billed Sandpiper <i>Calidris falcinellus</i>	L	N	C
Grey Heron <i>Ardea cinerea</i>	M2	P	A	Red-necked Phalarope <i>Phalaropus lobatus</i>	L	N	C
Purple Heron <i>Ardea purpurea</i>	M4	N	A	Black-headed Gull <i>Larus ridibundus</i>	M2	B	A
Great White Egret <i>Ardea alba</i>	M2	P	A	Saunders's Gull <i>Saundersilarus saundersi</i>	U	N	A
Intermediate Egret <i>Ardea intermedia</i>	S4	N	A	Relict Gull <i>Larus relictus</i>	M4	N	A
Little Egret <i>Egretta garzetta</i>	S4	N	A	Black-tailed Gull <i>Larus crassirostris</i>	S1	B	A
Pelagic Cormorant <i>Phalacrocorax pelagicus</i>	R3	B	A	Mew Gull <i>Larus canus</i>	M2	N	A
Great Cormorant <i>Phalacrocorax carbo</i>	M2	N	A	Glaucous Gull <i>Larus hyperboreus</i>	M3	N	A
Japanese Cormorant <i>Phalacrocorax capillatus</i>	S2	B	A	Arctic (Vega) Herring Gull <i>Larus smithsonianus vegae</i>	M3	N	A
Osprey <i>Pandion haliaetus</i>	M4	N	A	Arctic (Mongolian) Herring Gull <i>Larus smithsonianus mongolicus</i>	M3	P	A
Mountain Hawk Eagle <i>Nisaetus nipalensis</i>	U	N	G	Slaty-backed Gull <i>Larus schistisagus</i>	M3	B	A
Golden Eagle <i>Aquila chrysaetos</i>	L	N	C	Lesser Black-backed (Heuglin's) Gull <i>Larus fuscus heuglini</i>	M4	N	A
Chinese Sparrowhawk <i>Accipiter soloensis</i>	S4	P	A	Caspian Tern <i>Hydroprogne caspia</i>	U	N	A
Japanese Sparrowhawk <i>Accipiter gularis</i>	S4	P	A	Little Tern <i>Sternula albifrons</i>	M4	N	A
Eurasian Sparrowhawk <i>Accipiter nisus</i>	M4	N	A	Common Tern <i>Sterna hirundo</i>	S2	P	A
Northern Goshawk <i>Accipiter gentilis</i>	W4	N	A	Whiskered Tern <i>Chlidonias hybrida</i>	M4	N	A
Eastern Marsh Harrier <i>Circus spilonotus</i>	M4	N	A	White-winged Tern <i>Chlidonias leucopterus</i>	M3	P	A
Hen Harrier <i>Circus cyaneus</i>	W4	N	A	Common Murre <i>Uria aalge</i>	S2	B	A
Pied Harrier <i>Circus melanoleucos</i>	M4	N	A	Spectacled Guillemot <i>Cephus carbo</i>	R2	B	A
Black Kite <i>Milvus migrans</i>	M4	N	A	Long-billed Murrelet <i>Brachyramphus perdix</i>	S3	P	A
White-tailed Eagle <i>Haliaeetus albicilla</i>	M4	N	A	Ancient Murrelet <i>Synthliboramphus antiquus</i>	S4	P	A
Steller's Sea Eagle <i>Haliaeetus pelagicus</i>	M4	N	A	Rhinoceros Auklet <i>Cerorhinca monocerata</i>	S2	B	A
Grey-faced Buzzard <i>Butastur indicus</i>	M4	N	A	Tufted Puffin <i>Fratercula cirrhata</i>	L	N	E
Rough-legged Buzzard <i>Buteo lagopus</i>	W3	N	A	Hill Pigeon <i>Columba rupestris</i>	R3	P	A
Japanese Buzzard <i>Buteo japonicus</i>	W3	N	A	Oriental Turtle Dove <i>Streptopelia orientalis</i>	S3	P	A
Swinhoe's Rail <i>Coturnicops exquisitus</i>	S4	P	A	Northern Hawk Cuckoo <i>Hierococcyx hypertyrhus</i>	S4	P	A
Watercock <i>Gallixrex cinerea</i>	L	N	C	Lesser Cuckoo <i>Cuculus poliocephalus</i>	S4	P	A
Common Moorhen <i>Gallinula chloropus</i>	S3	B	A	Oriental Cuckoo <i>Cuculus saturatus optatus</i>	S4	P	A
Eurasian Coot <i>Fulica atra</i>	M1	B	A	Common Cuckoo <i>Cuculus canorus</i>	S3	P	A
White-naped Crane <i>Antigone vipio</i>	M3	N	A	Snowy Owl <i>Bubo scandiacus</i>	L	N	D
Hooded Crane <i>Grus monacha</i>	M4	N	A	Eurasian Eagle Owl <i>Bubo bubo</i>	R4	P	A
Eurasian Oystercatcher <i>Haematopus ostralegus</i>	M3	N	A	Ural Owl <i>Strix uralensis</i>	R4	P	A
Black-winged Stilt <i>Himantopus himantopus</i>	S4	N	A	Grey Nightjar <i>Caprimulgus jotaka</i>	S4	P	A

Species	Prov. Status	Breed. Status	Source	Species	Prov. Status	Breed. Status	Source
Pacific Swift <i>Apus pacificus</i>	S4	P	A	Snowy-browed Nuthatch <i>Sitta villosa</i>	R4	B	A
Common Kingfisher <i>Alcedo atthis</i>	S4	B	A	Eurasian Treecreeper <i>Certhia familiaris</i>	M4	N	A
Eurasian Hoopoe <i>Upupa epops</i>	S4	B	A	Red-billed Starling <i>Spodiopsar sericeus</i>	M4	N	A
Eurasian Wryneck <i>Jynx torquilla</i> *	M4	N	A	White-cheeked Starling <i>Spodiopsar cineraceus</i>	M4	N	A
Japanese Pygmy Woodpecker <i>Picoides kizuki</i>	R4	P	A	Common Starling <i>Sturnus vulgaris</i>	M4	N	A
Lesser Spotted Woodpecker <i>Dryobates minor</i> *	M4	N	A	White's Thrush <i>Zoothera aurea</i>	S4	P	A
White-backed Woodpecker <i>Dendrocopos leucotos</i>	R4	P	A	Grey-backed Thrush <i>Turdus hortolorum</i>	S3	B	A
Great Spotted Woodpecker <i>Dendrocopos major</i>	R4	P	A	Pale Thrush <i>Turdus pallidus</i>	S3	B	A
Grey-faced Woodpecker <i>Picus canus</i>	R4	P	A	Naumann's Thrush <i>Turdus naumanni</i>	M4	N	A
Common Kestrel <i>Falco tinnunculus</i>	R3	B	A	Dusky Thrush <i>Turdus eunomus</i>	M4	N	A
Merlin <i>Falco columbarius</i>	M4	N	A	Asian Brown Flycatcher <i>Muscicapa dauurica</i>	S4	P	A
Eurasian Hobby <i>Falco subbuteo</i>	S4	P	A	Blue-and-white Flycatcher <i>Cyanoptila cyanomelana</i>	S3	P	A
Peregrine Falcon <i>Falco peregrinus</i>	M4	N	A	Siberian Blue Robin <i>Larivora cyane</i>	S3	P	A
Ashy Minivet <i>Pericrocotus divaricatus</i>	M4	N	A	Red-flanked Bluetail <i>Tarsiger cyanurus</i>	M4	N	A
Tiger Shrike <i>Lanius tigrinus</i>	S4	B	A	Yellow-rumped Flycatcher <i>Ficedula zanthopygia</i>	S4	P	A
Bull-headed Shrike <i>Lanius bucephalus</i>	M4	N	A	Narcissus Flycatcher <i>Ficedula narcissina</i>	L	N	C
Brown Shrike <i>Lanius cristatus</i>	S2	B	A	Mugimaki Flycatcher <i>Ficedula mugimaki</i>	L	N	C
Chinese Grey Shrike <i>Lanius sphenocercus</i>	R3	B	A	Daurian Redstart <i>Phoenicurus aureus</i>	S3	B	A
Black-naped Oriole <i>Oriolus chinensis</i>	S4	P	A	Blue Rock Thrush <i>Monticola solitarius</i>	S3	B	A
Asian Azure-winged Magpie <i>Cyanopica cyanus</i>	R4	P	A	White-throated Rock Thrush <i>Monticola gularis</i>	S4	P	A
Eurasian Jay <i>Garrulus glandarius</i>	R4	P	A	Common Stonechat <i>Saxicola torquatus stejnegeri</i>	M3	B	A
Eurasian Magpie <i>Pica pica</i>	R2	B	A	Eurasian Tree Sparrow <i>Passer montanus</i>	R2	B	A
Rook <i>Corvus frugilegus</i>	M2	N	A	Alpine Accentor <i>Prunella collaris</i>	M3	N	A
Carriion Crow <i>Corvus corone</i>	M4	N	A	Siberian Accentor <i>Prunella montanella</i>	M3	N	A
Large-billed Crow <i>Corvus macrorhynchos</i>	R4	P	A	Eastern Yellow Wagtail <i>Motacilla tschutschensis</i>	M2	N	A
Bohemian Waxwing <i>Bombycilla garrulus</i>	L	N	C	Grey Wagtail <i>Motacilla cinerea</i>	M3	P	A
Coal Tit <i>Pariparus ater</i>	M3	P	A	White Wagtail <i>Motacilla alba</i>	M2	B	A
Varied Tit <i>Sittiparus varius</i>	R4	P	A	Richard's Pipit <i>Anthus richardi</i>	M4	N	A
Marsh Tit <i>Poecile palustris</i>	R3	B	A	Olive-backed Pipit <i>Anthus hodgsoni</i>	M2	N	A
Willow Tit <i>Poecile montanus</i>	M4	N	A	Pechora Pipit <i>Anthus gustavi</i>	L	N	C
Great Tit <i>Parus major minor</i>	R3	B	A	Red-throated Pipit <i>Anthus cervinus</i>	M4	N	A
Chinese Penduline Tit <i>Remiz consobrinus</i>	M4	N	A	Buff-bellied Pipit <i>Anthus rubescens</i>	M3	N	A
Eurasian Skylark <i>Alauda arvensis</i>	R3	B	A	Brambling <i>Fringilla montifringilla</i>	M3	N	A
Far Eastern Skylark <i>Alauda japonica</i>	M4	B	A	Hawfinch <i>Coccothraustes coccothraustes</i>	M3	N	A
Sand Martin <i>Riparia riparia</i>	L	N	C	Pine Grosbeak <i>Pinicola enucleator</i>	L	N	C
Barn Swallow <i>Hirundo rustica</i>	M2	B	A	Eurasian Bullfinch <i>Pyrrhula pyrrhula</i>	M4	N	A
Eastern House Martin <i>Delichon lagopodum</i>	M4	N	A	Asian Rosy Finch <i>Leucosticte arctoa</i>	L	N	C
Red-rumped Swallow <i>Cecropis daurica</i>	M4	N	A	Long-tailed Rosefinch <i>Carpodacus sibiricus</i>	M3	P	A
Korean Bush Warbler <i>Horornis canturians borealis</i>	S3	P	A	Pallas's Rosefinch <i>Carpodacus roseus</i>	M4	N	A
Asian Stubtail <i>Urosphena squameiceps</i>	S4	P	A	Oriental Greenfinch <i>Chloris sinica</i>	M2	B	A
Long-tailed Tit <i>Aegithalos caudatus</i>	R3	B	A	Common Redpoll <i>Acanthis flammea</i>	M4	N	A
Dusky Warbler <i>Phylloscopus fuscatus</i>	M4	N	A	Arctic Redpoll <i>Acanthis hornemanni</i>	L	N	D
Radde's Warbler <i>Phylloscopus schwarzi</i>	S4	P	A	Red Crossbill <i>Loxia curvirostra</i>	M3	P	A
Pallas's Leaf Warbler <i>Phylloscopus proregulus</i>	S3	P	A	Eurasian Siskin <i>Spinus spinus</i>	M4	N	A
Yellow-browed Warbler <i>Phylloscopus inornatus</i>	M4	N	A	Meadow Bunting <i>Emberiza cioides</i>	M2	B	A
Two-barred Warbler <i>Phylloscopus plumbeitarsus</i>	S4	P	A	Jankowski's Bunting <i>Emberiza jankowskii</i>	L	N	C
Pale-legged Leaf Warbler <i>Phylloscopus tenellipes</i>	S3	P	A	Tristram's Bunting <i>Emberiza tristrami</i>	M3	P	A
Eastern Crowned Warbler <i>Phylloscopus coronatus</i>	S3	P	A	Chestnut-eared Bunting <i>Emberiza fucata</i>	S3	B	A
Oriental Reed Warbler <i>Acrocephalus orientalis</i>	S3	B	A	Rustic Bunting <i>Emberiza rustica</i>	M2	N	A
Black-browed Reed Warbler <i>Acrocephalus bistrigiceps</i>	S2	B	A	Yellow-throated Bunting <i>Emberiza elegans</i>	R3	B	A
Thick-billed Warbler <i>Arundinax aedon</i>	S4	P	A	Black-faced Bunting <i>Emberiza spodocephala</i>	M3	P	A
Vinous-throated Parrotbill <i>Sinosuthora webbiana</i>	R3	B	A	Grey Bunting <i>Emberiza variabilis</i>	M4	N	A
Chestnut-flanked White-eye <i>Zosterops erythropleurus</i>	S4	P	A	Pallas's Bunting <i>Emberiza pallasi</i>	M3	N	A
Goldcrest <i>Regulus regulus</i>	M4	N	A	Ochre-rumped Bunting <i>Emberiza yessoensis</i>	M4	N	A
Northern Wren <i>Troglodytes troglodytes</i>	M4	N	A	Reed Bunting <i>Emberiza schoeniclus</i>	M4	N	A
Eurasian Nuthatch <i>Sitta europaea</i>	R3	P	A	Lapland Longspur <i>Calcarius lapponicus</i>	M3	N	A