Summer avifauna of Schmidt Peninsula, northern Sakhalin

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ABSTRACT

Bird surveys were conducted in various habitats in Schmidt Peninsula, northern Sakhalin during summer of 1976, 1988 and 1998. A total of 120 bird species were recorded during surveys. Abundant species were *Troglodytes troglodytes, Tarsiger cyanurus, Phylloscopus proregulus* and *Parus ater* in coniferous forests, *Phylloscopus borealis* and *P. ater* in deciduous broad-leaved forests, and *Alauda arvensis, Saxicola torquata* and *Locustella ochotensis* in open habitats. In addidon, ducks, waders and gulls were common along coasts of lakes and sea. Summer avifauna of Schmidt Peninsula was characterized by high proportion of northern bird species such as *Anas penelope, Anas acuta, Bucephala clangula, Phylloscopus borealis, Fringilla monotifirngilla* and *Perisoreus infaustus.*

Introduction

In the late 19 century bird fauna of Sakhalin were studied by Schrenck(1859,1860), Suprunenko(1890) and Nikol'ski(1889). Since 1905 avifaunal studies on Sakhalin were conducted mainly by European and Japanese ornithologists before the II World War(Lönnberg 1908, Munsterhjelm 1922, Inukai & Matsuki 1925, Yamashina 1927, 1928, Momiyama 1928, 1932, Yamashina & Yamada 1934, Takahashi 1937, 1939, 1942, 1944) and after that by Russian ornithologists(Gizenko1955, Nechaev 1991). They, especially Nechaev(1991), clarified the status, distribution, habitat and breeding biology for each bird species throughout Sakhalin. Recently Fujimaki et al. (1996) and Poyarkov & Rozanov(1998) showed the structure of bird communities in various habitats of southern, central and northern Sakhalin. However, knowledge about the bird species compositions in different habitats has been insufficient.

The objective of the present paper is to clarify the bird species compositions in various habitats in Schmidt Peninsula, northern Sakhalin.

Study areas and methods

Schmidt Peninsula is situated in the northernmost part of Sakhalin(53°55'~54° 20'N, 142°15'~143° 00'E), 60 km from south to north and 35 km from east to west. The southern part is Okha Isthmus(10 to 12 km wide). There are two shallow lakes, Kueguda and Neurtu, in the northernmost part, and two mountains, Vostochny in eastern side and Zapadny in

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western side. Mt. Tri Brata(623 m above sea level) is the highest mountain among them. Many rivers and streams rise among these mountains. Of them Pil'vo, Dianovskaya and Valovskaya rivers are relatively long.

In the peninsula main forest types are coniferous forests dominated either by *Larix gmelinii* on mesic sites or by *Picea jezoensis* on dry sites, *Betula ermanii* forests in northern mountainous areas and *Pinus pumila-Alnus maximoczii* forests in high altitudes. *Larix gmelinii* forests are accompanied by *Ledum mecrophlylla, Sorbus sambucifolia* and *Pinus pumilia. Picea jezoencis* forests have undergrowth of *Vaccunium ovalifolium,* . In addition, riparian forests dominated by *Populus* and *Salix* occur along rivers and streams. These riparian forests have layered structure and contains patches covered with tall herbs such as *Filipendula camtschatica, Petasites amplus* and *Ultra plathyphylla.* The other important habitats in the peninsula are mar'(wet *Carex-Calamagrostis* glassland surrounded by forests), grassland along rivers, marshes, lakes and sea coasts.

Birds were surveyed along tributaries of Pil'vo River(Batareinaya and Slavyanka rivers) from late July to early August 1976, in the western coast of peninsula, Vostochnyi Mountains and along Valovskaya River in mid-August 1976, in the Severnyi Bay area, Lake Kueguda, Lake Neurtu, Vostochnyi Mountais and along Dianovskaya River from late June to early July 1988 by V. A. Nechaev. Then birds were surveyed in the forest zone of the middle reaches of the Pil'vo River in early July 1998 by Y. Fujimaki. In 1998 census routes were established along road in four different types of habitats; *Picea jezoensis, Larix gmelinii* and deciduous borad-leaved riparian forests and mar'.

Bird surveys were conducted by the route census method or point-observation method. In 1976 and 1988 species and abundance of birds observed were recoerded. In route censuses of 1998 birds seen and/or hard within 25m width on either side of census routes were counted. If birds were observed outside of transect, only species was recorded and treated as inhabiting in the study areas. Along the stream and at open site within forests, birds were observed at fixed observation points for 30 minutes per observation point.

Each bird species was given four scores indicating their abundance in different habitats(abundant, common, rare or none).

Results

In forests dominated by *Picea jezoencis* along Pil'vo, Dianovskaya and Valovskaya rivers 37 birdspecies were recorded in 1976 and 1988(Table 1). Abundant and common species included *Tetrastes bonasia, Streptopelia orientalis, Cuculus saturatus, Dryocopos martius, Dendrocopos major, Poicoides tridactylus, Troglodytes troglodytes, Luscinia sibilans Luscinia calliope, Tarsiger cyanurus, Phylloscopus proregulus, Phylloscopus borealis, Regulus regulus, Ficedula mugimaki, Parus montanus, Parus ater, Sitta europaea, Certhia familiaris, Emberiza rustica, Fringilla montifringilla, Carduelis spinus, Pyrrhula pyrrhula, Loxia curvirostra, Perisoreus infaustus, Nucifraga caryocatactes* and *Corvus macrorhynchos.* Other 11 species were rare in this habitat. In 1998 a total of 14 species was recorded in the *P. jezoensis* forest along middle reaches of Pil'vo River. Of them *P. proregulus* was the most abundant, accounting for 42% in relative abundance. Other main species (species with relative abundance of 5% or greater) were *T. cyanurus, P. ater, E. rustica, F. montifringilla, C. spinus* and *P. infaustus*(Table 2).

In forests dominated by *Larix gmelinii* along Pil'vo, Dianovskaya and Valovskaya rivers, 43 bird species were recorded in 1976 and 1988. Abundant and common species were similar to those in forests dominated by *P. jezoensis* with some differnces in bird species composition(Table 1). In 1998 in the *L. gmelinii* forest along middle reaches of Pil'vo River, 16 birds species were observed and the main species were *P. proregulus, T. cyanurus, E. rustica, P. montanus, P. ater, C. spinus* and *F. montifirngilla*(Table 3).

In deciduous broad-leaved riparian forests

Table 1. Birds of Schmidt Peninsula, northern Sakhalin
1= *Picea* forest, 2=*Larix* forest, 3=riparian forest, 4=Mar', 5=mountainous forest
6=mountaintop, 7=grassland and "polyana", 8=stream, 9=lake and marsh,
10=sea coast, 11=residential area, A=abundant, C=common, R=rare

Species	1	2	3	4	5	6	7	8	9	10	11
Palacrocorax pelagicus										C	
Anas platyrhynchos			R				R		C		
Anas crecca									C		
Anas falcata									C		
Anas penelope									R		
Anas acuta									C		
Anas querquedura									C		
Anas clypeata									R		
Aythya fuligula									R		
Aythya marila									R		
Histrionicus histrionicus									R		
Bucephala clangula			C								
Mergus serrator			R						R		
Pndion haliaetus			R								
Haliaeetus albicilla			R							R	
Haliaeetus pelagicus			R							R	
Accipiter gentilis	R	R	R								
Accipiter nisus	R	R	R								
Buteo buteo	R	R	R								
Falco peregrinus										R	
Lagopus lagopus				R							
Falcipennis falcipennis	R	R			R	R					
Tetrastes bonasia	C	C	C		C	R					
Rallus aquaticus									C		
Charadrius dubius									R		
Calidris subminuta									R		
Tringa totanus									R		
Tringa ochropus		R	R	R							
Actitis hypoleucos								C			
Gallinago gallinago				C			R		C		
Scolopax rusticola			C								
Larus schistisagus										R	
Rissa tridactyla										R	
Uria aalge										C	
Uria lomvia										C	
Cepphus carbo										C	
Barchyramphus marmoratus	R	R									
Fratercula corniculata										R	
Lunda cirrhata										R	
Streptopelia orientalis	C	C	C	C	R	R					
Cuculus canorus	R	C	C	C	R	R	R				
Cuculus saturatus	C	C	C	C	C	R					
Surnia ulula	R	R	R								
Asio flammeus									R		
Strix uralensis	R	R	R								
Apus pacificus										C	
Alcedo atthis								R			
Dryocopus martius	C	R	C	R							

Dendrocopos major	C	R	R	R	R	R						
Dendrocopos minor		R	C	R								
Picoides tridactylus	C	C		R								
Alauda alvensis				C			C					
Hirundo rustica												R
Delichon urbica											R	
Motacilla flava				C			C		C			
Motacilla cinerea								C				
Motacilla alba								C	C			R
Anthus hodgsoni		A		A	C	C						
Lanius cristatus				R								
Troglodytes troglodytes	A	C	C		C	R						
Luscinia sibilans	C	C	C		R							
Luscinia calliope	C	C	A	C	C	C						
Tarsiger cyanurus	A	C	R		C							
Saxicola torquata				C			C					
Turdus obscurus	R		R		R							
Locustella ochotensis			C				A		C			
Locustella lanceolata			C	A			C					
Phylloscopus fusucatus			C	C	R	C						
Phylloscopus inornatus		R										
Phylloscopus proregulus	A	A	C	R	C	R						
Phylloscopus borealis	C	C	A	R	C	R						
Regulus regulus	C	R										
Ficedula mugimaki	C		C									
Ficedula parva			R									
Muscicapa latirostris			C									
Aegithalos caudatus		C	C									
Parus montanus	C	C	C		C							
Parus ater	A	A	A		C							
Sitta europaea	C	C	C		C							
Certhia familiaris	C	R	R		R							
Emberiza rustica	C	C	C	C								
Emberiza aureola		R		C			C		R			
Emberiza spodocephala			C									
Fringilla montifringilla	C	C	C	R	R							
Carduelis sinica				R								
Carduelis spinus	A	C	C	R	R							
Carduelis flammea				R		R						
Caprodacus erythrinus			R			R						
Caprodacus roseus		R		R								
Pinicila enucleator		R		R	R	C						
Loxia curvirostra	C	R										
Loxia leucoptera	R	R										
Pyrrhula pyrrhula	C	C	C		C	R						
Passer montanus												R
Perisoreus infaustus	C	C			R							
Nucifraga caryocatactes	C	C			C							
Corvus corone	R	C	C	R								
Corvus macrorhyncos	C	C	C	R								

Table 2. Birds of *Picea jezoensis* forest in Schmidt Peninsula. Figures indicate the number of birds counted on a 50 m by 2 km transect. If the birds were observed outside the transect, the species was represented with a plus mark.

Species	No. of birds counted (%)
Streptopelia orientalis	+
Cuculus saturatus	+
Troglodytes troglodytes	+
Tarsiger cyanurus	2.7 (16)
Phylloscopus proregulus	7.3 (42)
Regulus regulus	0.7 (4)
Parus montanus	0.7 (4)
Parus ater	2 (11)
Emberiza rustica	0.7 (11)
Fringilla montifringilla	0.7 (11)
Carduelis spinus	1.3 (7)
Perisoreus infaustus	1.3 (7)
Nucifraga caryocatactes	+
Corvus macrorhyncos	+

Table 3. Birds of *Larix gmelinii* forest in Schmidt Peninsula

Species	No. of birds counted (%)
Tetrastes bonasia	0.4 (2)
Cuculus canorus	+
Cuculus saturatus	+
Troglodytes troglodytes	0.4 (2)
Luscinia sibilans	0.4 (2)
Luscinia calliope	0.4 (2)
Tarsiger cyanurus	2.4 (14)
Phylloscopus proregulus	6.0 (35)
Parus montanus	0.8 (5)
Parus ater	1.2 (7)
Emberiza rustica	2.0 (12)
Fringilla montifringilla	1.2 (7)
Carduelis spinus	1.6 (9)
Nucifraga caryocatactes	+
Corvus corone	+
Corvus macrorhyncos	0.4 (2)

accompanied by *Picea* and *Larix* 46 bird species were recorded in 1976 and 1988. Abundant and common species were *Bucephala clangla, T. bonasia, S. orientalis, C. saturatus, D. martius, Dendrocopos minor, T. troglodytes, L. sibilians, L. calliope, Locustella ochotensis, Locustella lanceolata, Phylloscopus fuscatus, P. proregulus, P. borealis, F mugimaki, Muscicapa latirostris, Aegithalos candatus, P. montanns, P. ater, S. europaea, C. familiaris, F. montifringilla, C. spinus, P. pyrrhula, E. rustica, Emberiza spodocephala, Corvus macrorhynchos* and *Corvus corone*. Other 22 species were rare(Table 1). In the deciduous broad-leaved riparian forest along middle reaches of Pil'vo River, a total of 18 species was recorded in 1998. Main species were *Actitis hypoleucos, T. troglodytes, L. calliope, L. ochotensis, L. lanceolata, P. borealis, E. spodocephala* and *F. montifringilla*(Table 4). Species composition differed fairly from those in *Picea* and *Larix* forests. In the riparian-forest transect surveyed in 1998. *A. hypoleucos* was included as main species because the transect crossed the stream along which the sandpiper bred. Glassland birds such as *L.*

Table 4. Birds of deciduous broad-leaved forest in Schmidt Peninsula

Species	No. of birds counted (%)
Actitis hypoleucos	5.2 (13)
Streptopelia orientalis	+
Cuculus canorus	+
Cuculus saturatus	1.5 (4)
Dendrocopos minor	0.7 (2)
Troglodytes troglodytes	4.4 (11)
Luscinia sibilans	1.5 (4)
Luscinia calliope	2.2 (5)
Locustella ochotensis	7.4 (18)
Locustella lanceolata	3.0 (7)
Phylloscopus borealis	6.7 (17)
Parus montanus	1.5 (4)
Sitta europaea	0.7 (2)
Emberiza spodocephala	2.2 (5)
Fringilla montifringilla	2.2 (5)
Carduelis spinus	0.7 (2)
Pyrrhula pyrrhla	0.7 (2)
Corvus macrorhyncos	+

Table 5. Birds of mar' in Schmidt Peninsula

Species	No. of birds counted (%)
Anthus hodgsoni	6.7
Saxicola torquata	6.7
Locustella lanceolata	13.3
Emberiza rustica	3.3
Fringilla montifringilla	3.3
Carduelis spinus	3.3
Corvus macrorhyncos	3.3

ochotensis and *L. lanceolata* were also main species in the riparian forest because of the presense of open habitat within the forest.

In the mar'of Pil'vo-Dianovskaya lowland, 30 species were recorded in 1988. Abundant and common species included *Gallinago gallinago, S. orientalis, C. canorus, C. saturatus, Alauda arvensis, Motacilla flava, Anthus hodgsoni, L. calliope, Saxicola torquata, L. lanceolata, P. fusucatus, E. rustica,* and *Emberiza aureola* (Table 1). Most of them were birds preferring open habitatts. In addition, other 16 rare species were recorded. In 1998 in the mar' at middle reaches of Pil'vo River, the number of bird species recorded was only 7 and it was not apparent which species were main species because the length of the transect was short, 0. 3 km (Table 4). *F. montifringilla* and *Carduelis sinica* were observed at adjacent forest edge.

In mountainous forests dominated by *Picea* and *Betula ermanii,* 25 species were recoreded in 1976 and 1988 (Table 1). Species composition was similar to those in coniferous forests of *Picea* and *Larix.* In *Pinus pumila-Alnus maximowiczii* forests with scarce *B. ermanii* on the summit of Mt. Tri Brata and mountains in Cape Elizaveta, 16 species were recorded in 1976 and 1988 (Table 1).

In open habitats such as "polyana" (tall-glassland surrounded by forests) and tall glasslands of tall herbs along Pil'vo, Lianovskaya, Valovslaya rivers, 9 species were recorded in 1976, 1988 and 1998 (Table 1).

Along rivers, Pil'vo, Dianovskaya, Valovskaya and so on, *Actitis hypoleucos, Alcedo atthis, Motacilla cinerea* and *M. alba* were recorderd in 1976, 1988 and 1998 (Table 1).

On shores of Kueguda and Neurtu bays and lakes, and in marshes, 21 species were reconded (Table 1). They were mostly ducks and waders. A lot of ducks concentrated in Kueguda and Neurtu bays for moulting in late summer.

On sea shore of capes Gornera, Marii, Elizaveta, Levenshterna and so on, 13 species were recorded (Table 1). Common species were *Phalacrocorax pelagicus, Uria aalge, Uria lomvia, Cepphus carbo* and *Apus pacifics* (Table 1).

In residential areas only 3 species, *Hirundo rustica, Passer montanus* and *Motacilla alba,* were recorded.

In addition, waders and gulls migrating through the peninsula were observed during late summer seasons of 1976 and 1988. They included *Charadrius dubius, Charadrius mongolus, Pluvialis fulva, Calidres ruficollis, Calidris subminuta, Calidris acumunata, Calidris alpina, Calidris ferruginea, Calidris canutus, Calidris tenuirostris, Tringa totanus, Tringa nubularia, Tringa guttifer, Tringa glareola, Heteroscelus brevipes, A. hypoleucos, Xenus cinereus, Limosa limosa, Numenius minutus, Larus ridibundus, Larus argentatus, Larus hyperboreus, Larus canus, Larus crassirostris, Rissa tridactyla* and *Sterna hirundo.*

During surveys in 1976, 1988 and 1998, a total of 120 species was recoreded.

Discussion

During our studies 3 to 46 bird species were observed in differnt habitats. In addtion to these species, Poyarkov & Rozanov (1998) recorded *Anas poecilorhyncha* in the glassland along Tenga River, northern Sakhalin. Of them about 100 species breed in Schmidt Peninsula.

In ever-green coniferous forests of central and sothern Sakhalin 20 bird species were recoreded (Fujimaki et al. 1996). Of them main species included *T. cyanurus, L. sibilans, P. proregulus, R. regulus, Parus montanus, P. ater* and *C. sinica.* Comparing with these results, in similar type of forests in Schmidt Peninsula, *E. rustica, F. montifringilla* and *P. infautus* were included as main species which were less abundant in central and sothern parts, although species compositions were relatively similar each other in northern, central and southern part of Sakhalin. Number of species recoreded in route census was smaller in Schmidt Peninsula than in central and southern part of Sakhalin (Fujimaki et al. 1996).

In *Larix gmelinii* forests of central Sakhalin, 12 bird species were observed and main species included *Anthus hodgsoni, L. calliope, P. proregulus, Parus montanus, P. ater, E. rustica* and *C. sinica* (Fujimaki et al. 1996). In contrast to this, in Schmidt Peninsula *T. cyanurus, C. spinus* and *F. montifringilla* were included as main species.

Ficedula narcissina and *Phylloscopus coronatus* recorded in broad -leaved forests of southern Sakhalin were not observed in Schmidt Peninsula. On the other hand, *P. borealis* and *F. montifringilla* were included as main species in broad-leaved forests of Schmidt Peninsula.

According to Poyakov & Rozanov(1998), in mar' habitats of northern Sakhalin *T. totanus, L. lanceolata, M. flava, Lanius cristatus* and *E. aureola* were dominant species. In the mar' survayed by us, however, *Saxicola torquata* and *L. ochotensis* were also dominant species, although species composition was similer between mar's of northern Sakhalin and that in our study area.

Based on our census results, characteristics of summer avifauna in Schmidt Peninsula are as follows;

1. There was a trend which the number of birds species recorded in each habitat was smaller in Schmidt Peninsula than in central and southern parts.

2. The proportion of northern bird species such as *Anas perelope, Anas acuta, Bucephala clangula, Phyllospcopus borealis, Fringilla monotifirngilla* and *Perisoreus infaustus,* was higher in Schmidt Peninsula than in central and southern parts of Sakhalin.

3. Two species, *Turdus obscurus* and *Ficedula prava* breed only in Schmidt Peninsula in Sakhalin.

4. In late summer Kueguda and Neurtu bays are suitable habitats for moulting of ducks and staying of waders and gulls migrating the peninsula.

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サハリン北部シュミット半島における夏の鳥類相

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摘要

サハリン北部シュミット半島の森林，草原，河川沿い，海岸，湖沼などいろいろの環境で，1978，1988，1998年の夏に鳥類相を調べた．調査期間中，全部で120種が記録された．これらのうち，生息数が多かったのは，エゾマツ林やグイマツ林ではミソサザイ，ルリビタキ，カラフトムシクイ，ヒガラなど，落葉広葉樹林ではメボソムシクイやヒガラなど，草原や湿原など開けた環境ではヒバリ，ノビタキ，シマセンニュウなどであった．このほか，湖岸や海岸ではカモ類，シギ・チドリ類，カモメ類などが見られた．シュミット半島の夏の鳥類相の特徴は，ヒドリガモ，オナガガモ，ホオジロガモ，メボソムシクイ，アトリ，アカオカケスなど主に高緯度で繁殖する鳥類の割合が南部や中部より多いことである．