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Materials to the breeding avifauna of the People's Democratic Republic of Korea

[With plates IV—VIII and 1 text-fig.]

Materiały do lęgowej fauny ptaków Koreańskiej Republiki Ludowo-Demokratycznej*

Abstract. The author observed 88 bird species during her stay in the People's Democratic Republic of Korea from 19 May to 14 June 1980. Two of them, *Numenius madagascariensis* and *Limosa limosa* were probably still on migration. The nesting of 3 species (*Loxia curvirostra*, *Pyrrhula pyrrhula* and *Erithacus akahige*) is doubtful, while the remaining 83 species may be reckoned among breeding or probably breeding birds. *Anas platyrhynchos*, *Pernis ptilorhyncus*, *Porzana fusca* and *Bradypterus thoracicus*, are the most interesting of the species observed. Descriptions of nests or their sites are given for 12 species.

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I. INTRODUCTION

The present paper is the fruit of observations conducted in the People's Democratic Republic of Korea as the continuation of the study on the avifauna of that country, started by a group of workers of the Institute of Systematic and Experimental Zoology, Polish Academy of Sciences, in Cracow in 1978. This investigation (which perhaps will also be

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continued in the future) may make it possible better to determine the status of some Far-East bird species, which is not as yet elucidated, and to provide information about the numbers of some common species. The latest elaboration of the birds of Korea (GORE and WON Pyong Oh, 1971) and numerous later articles mentioned in a study by WON Pyong Oh (1977) concern the avifauna and its changes over the space of the last 30 years only in the territory of the Republic of Korea. To be sure, a comprehensive monograph on the birds of Korea appeared also in the People's Democratic Republic of Korea (WON Hong Koo, 1964—1965), but the size of the edition was small and it has been unavailable for a long time. Moreover, this three-volume work is exclusively in the Korean language, which is also why the numerous observations published in it and the data concerning the occurrence and biology of birds are not accessible to a wide circle of ornithologists. Therefore, the present observations may at least partly fill the existing gap in the knowledge of the avifauna in the People's Democratic Republic of Korea.

During my stay in the People's Democratic Republic of Korea I met with much kindness and help of the workers of the Korean Academy of Sciences, especially those of the Ornithological Laboratory of the Zoological Institute. I wish to express my heartfelt thanks to Mr RIM Chu Yon, Head of the Ornithological Laboratory, who accompanied me in all my trips into the country and was extremely lavish in giving me his help and expert advice. I am also indebted to Mr SOK Ha Ryong of the Korean Acad. Sci. for help with translating Korean texts.

II. STUDY AREA AND METHOD

Observation of birds in North Korea was conducted during one- to several-day trips made from Pyongyang from 19 May to 14 June 1980. The material of field study consists of visual observations made using 7×50 field-glasses and specimens caught with nets (3 Polish and 2 American nets were used). Birds were also watched from the running car or train, but then only large or fairly characteristic species could be identified. A field guide to birds in the USSR (FLINT et al., 1968) and an illustrated survey of the birds of South Korea (GORE and WON Pyong Oh, 1971) were used for determination of species. If the determination of specimens caught or observed was uncertain, it was checked with the help of the collections of the Zoological Institute, Korean Acad. Sci. in Pyongyang.

The standard magnitudes measured on the birds captured were the lengths of folded wing, tarso-metatarsus, beak (from the plumage) and tail, and the weight of body. The nests, if found, were measured and described, the eggs measured and weighed. The Pesola-type spring balance



Fig. 1. People's Democratic Republic of Korea. The map shows the localities (Arabic numerals) and the division of the country into provinces (Roman numerals).

1 — Pyongyang (town), 2 — Yongak-san Mt., 3 — Taesong-san Mt., 4 — Mankyongdae, 5 — Nampo (region), 6 — Taesong-ho Lake, 7 — Myohyang-san Mts., 8 — Haeju (town), 9 — Sinchon (town), 10 — Suyang-san Mt., 11 — Hyesan (town), 12 — Samjiyon, 13 — Paektu-san Mt., 14 — Wonsan (town), 15 — Kosong (town), 16 — Samil-po Lake, 17 — Kumgang-san Mts., 18 — Siyung-ho Lake.

I — South Pyongan, II — North Pyongan, III — Chagang, IV — Ryanggang, V — North Hamgyong, VI — South Hamgyong, VII — Kangwon, VIII — North Hwanghae, IX — South Hwanghae, X — Pyongyang, XI — Kaesong

was used for weighing. Some nests (those with eggs in them) and some birds captured were collected and prepared for the collection of the Institute of Systematic and Experimental Zoology, Polish Acad. Sci., in Cracow.

The materials and observations come from various parts of the People's Democratic Republic of Korea. The sites of observation are plotted on the map (Fig. 1).

The time-table of trips and the places of observation were as follows:

- 19 May Pyongyang — boulevard on the Taedong River, in the nature of a park, haunted by people.
- 20 May Pyongyang — boulevard on the Taedong River and the Moranbong Park — like the boulevard, a place of recreation, visited by large numbers of people.
- 21 May Mankyongdae — a park visited by numerous tourist parties; a pine wood and the banks of the Taedong River.
- 22 May Taesong-san Mt. near Pyongyang — a young mixed wood (recreation place for inhabitants of the capital).
- 23 May Yongak-san Mt. — pine forest with an admixture of deciduous trees on the rocky slopes of the mountain.
- 24 May Environs of the town of Nampo and Laudo Cape at the estuary of the Taedong River. Flood-plain (halophytes) and neighbouring holiday-making and recreation grounds.
Taesong-ho Lake region: lake shore, wet thickets, pine and mixed woods, rice fields.
- 25—28 May Myohyang-san Mts. (1909 m a.s.l.) — surroundings of a hotel near the town Hyangsan; the valley of a mountain river (Phot. 1), mixed forest with prevailing coniferous trees and thick understorey; a complex of buildings of a late buddhist monastery Pohyon, now turned into a museum.
- 28 May Route along the Myohyang-Pyongyang railway line.
- 30 May Route along the Pyongyang-Haeju highway. Sinchon — surroundings of the museum in the nature of a village with sparsely scattered buildings; region of Suyang-san Mt.: young pine and mixed woods, wet meadow with clumps of brier-roses.
- 31 May Region of Suyang-san Mt.: the same place as on 30 May; route along the Haeju-Pyongyang highway.
- 1 June Route along the Hungnam-Hyesan railway line.
- 2 June Hyesan-Samjiyon route: a road leading mostly through larch, spruce and mixed forests and villages and hamlets situated at this road (Pochonbo, Chong-pong, Kon-chang, Pe-ke-pong).
- 2—6 June Samjiyon: larch (taiga — Phot. 3) forest in the vicinity of the hotel situated on Samjiyon Lake and the area within a radius of more than ten kilometres from Samjiyon including the following environments: high bog (Phot. 4), young birch-larch forest, birch-pine scrub along the stream, taiga

- forest close to the timber-line, summit of Paektusan Mt. above the timber-line (2744 m a.s.l.).
- 6—7 June Samjiyon-Hyesan-Pyongyang route.
- 8—9 June Region of Taesong-ho Lake (as for 24 May).
- 10 June Route along the Wonsan-Kosong highway, region of Samil-po Lake: pine forest, bamboo fields.
- 10—14 June Neighbourhood of the hotel at Kosong and the area within a radius of several kilometres, including the following environments: valleys of the Kumgang-san Mts. (Phot. 5) (the highest peak, 1638 m a.s.l.), settlements, a wet meadow with pits filled with water (probably left after peat exploitation) in the vicinity of rice fields and a pine forest with thickets at the edge (Phot. 2). This meadow was about 1 km (as the crow flies) away from Samil-po Lake.
- 14 June Observation done along the road running along the sea coast from Kosong to Wonsan and on the islands in the Pacific in the region of Siyung-ho Lake.

III. SURVEY OF SPECIES

The following list of birds observed is not complete. Some of the birds seen could not be determined (e.g. some members of the genus *Phylloscopus* or birds of prey because of the lack of any reliable local keys to these birds). A fairly large number of birds were not determined owing to poor knowledge of voices of the Far-East birds and the lack of records of their voices. Especially in the taiga larch forest in the Samjiyon region males sang high in the tree crowns, invisible from the ground and so indeterminate.

A total of 88 bird species were observed. In the cases when the determination is uncertain the species are marked with a question mark (?). The systematic system and nomenclature are based on a work by VAURIE (1959, 1965).

Phalacrocorax pelagicus PALLAS, 1811, (?). 10 June — a specimen seen on the rocks emerging from the sea between Wonsan and Kosong, more or less in the same place where this species was observed in the autumn of 1978 (BOCHENSKI et al., 1981). Cormorants are resident birds and the fact of their being observed twice, of which once in the breeding season, indicates the existence of a breeding colony in the proximity.

Butorides striatus (SCHRENCK, 1860). Observed twice on Taesong-ho Lake: 24 May — four specimens foraging on the shore of the lake and on 8 June two specimens feeding at a distance of several tens of metres from the place of the first observation. Moreover, I saw these birds in the region of the Kumgang-san Mts.: 13 June — a flying specimen in the

thicket near Samil-po Lake and another specimen flying amidst the trees growing at the roadside between Wonsan and Kosong on 14 June.

Bubulcus ibis (LINNAEUS, 1758). Seen once only, on 10 June — two birds in a flock of more than ten Great White Herons, foraging in rice fields between Wonsan and Kosong.

Egretta alba (LINNAEUS, 1758). Specimens of this species were observed in flocks foraging in rice fields in the south-eastern part of the country. On 10 June I observed flocks of 18, 10, 4 and 10 birds along the Wonsan-Kosong route. The same day a flock of 18 was seen in the region of Samil-po Lake. Four days later flocks of 6, 11 and ca 50 specimens were seen along the same route (Kosong-Wonsan). They were for the most part one-species flocks, only once there were two Cattle Egrets and one Grey Heron in the flock of Great White Herons.

Ardea cinerea LINNAEUS, 1758. 10 June — only 1 specimen seen in a flock of Great White Herons, foraging in fields, between Wonsan and Kosong.

Anas platyrhynchos LINNAEUS, 1758. Two adult specimens were seen swimming on Samjiyon Lake on 4 June and a duck leading a flock of several-day-old chicks was flushed from an islet in the middle of the lake. The Mallard had been known from Korea as a migrant before (WON Hong Koo, 1956; GORE, WON Pyong Oh, 1971). The maps showing the distribution of the Mallard, presented by DELACOUR (1966) and DEMENTEV et al. (1951—1954) suggest the possibility of its nesting in this country. The present observation of chicks is the second finding of the nesting of this species in Korea — the first was mentioned by HO Hon (1968).

Pernis ptilorhyncus (TEMMINCK, 1821). 5 June — a bird was seen to be circling above the forest in the Samjiyon region. It had two distinct light stripes on the tail. The Crested Honey Buzzard, regarded by VAURIE (1965) as a separate species, is a breeding bird in China (ET-CHECOPAR and HUE, 1978) and in the Soviet Union (PANOV, 1973; DEMENTEV et al., 1951; NECHAEV, 1974b; GIZENKO, 1955). It has been recorded from the Korean Peninsula scarcely several times: AUSTIN (1948) observed this species three times in winter and WON Hong Koo (1956) writes about an observation of it at Kaesong in the breeding season (10 May) of 1932. However, many authors agree that the nesting of this species in Korea is very probable (AUSTIN, 1948; DEMENTEV et al., 1951—1954; GORE and WON Pyong Oh, 1971; VAURIE, 1965; ET-CHECOPAR and HUE, 1978) and the present observation seems to confirm their supposition.

Accipiter soloensis (HORSFIELD, 1822). It probably breeds in Korea. To be sure, I did not see its nests, but I observed a pair on Taesong-ho Lake on 24 May. The birds were not shy and one of them had its observation post on a pole of electric line amidst rice fields. It led people ap-

proach to a distance of about 5 m and, when frightened away, returned to that place in a few tens of minutes. I also observed some Chinese Goshawks in Myohyong-san Mts. On 26—28 May a pair was seen staying constantly at the same place and on 28 May I watched another pair about 3 km away. At the same time some local people brought me an old male that they had been keeping in captivity for several days. It may therefore be believed that there were at least three pairs of these birds living close to each other. The number of the birds encountered, their behaviour (permanent observation post, little shyness) and the development of their gonads (the testes of the male captured were enlarged) indicate that the Chinese Goshawk breeds in Korea and in places it may even be numerous.

Buteo buteo (LINNAEUS, 1758). Only once, on 1 June, one specimen was seen circling at a rather great height over Hyesan.

Falco tinnunculus LINNAEUS, 1758. I come upon Kestrels in the south-eastern part of the country, one bird on Samil-po Lake on 10 June and one, foraging near Kuryong Waterfall in the Kumgang-san Mts., on 12 June.

Some indeterminate birds of prey were besides seen in various parts of the country: in the region of Suyang-san Mt. on 31 May, in the Samjiyon region on 3 June, on the summit of Manmul-san in the Kumgang-san Mts. on 11 June, and two birds on 13 June; one of these last, corresponding in size and shape to the Buzzard, was being driven away by the other, which in these respects resembled the birds of the family *Falconidae*.

Tetrastes bonasia (LINNAEUS, 1758). I observed Hazel Hens in the taiga near Samjiyon: a pair on 2 June and one bird, scampering away from in front of the car on a forest road a few kilometres away from the place of the previous observation, on 4 June.

Phasianus colchicus LINNAEUS, 1758. This bird is common in the southern lowlands of the country. I often saw pheasants by the wayside (even within the boundaries of the town of Pyongyang) or I heard their voices and found feathers of birds that had fallen victims to predators.

Porzana fusca (TEMMINCK et SCHLEGEL, 1849). It is probably a breeding bird in Korea. A pair was observed on pits filled with water near Samil-po Lake on 13 June. Later, the same day Ruddy-breasted Crakes were flushed several times in rice fields bordering on these ponds and in adjacent thickets. Probably the flushing birds were not same each time and therefore at least two pairs nested on the ponds and in the rice fields. The occurrence and probable nesting of the Ruddy-breasted Crake found near the Kumgang-san Mts., and so about 250 km away from the place of their observation in the autumn of 1978 (BOCHENSKI et al., 1981), indicate that the whole peninsula is being colonized and that members of this species are no longer a rarity in the Korean Peninsula (GORE and WON Pyong Oh, 1971; BOCHENSKI et al., 1981).

Gallicrex cinerea (GMELIN, 1789). These birds were fairly frequently encountered in rice fields. Everywhere where rice had been planted and the fields inundated with water they could be seen or their rather characteristic voice heard.

Fulica atra (LINNAEUS, 1758). On 24 May two Coots swam in a small bay, overgrown with reeds along the shore, near the place where the Taedong River opens into the Yellow Sea.

Charadrius dubius SCOPOLI, 1786. On 8 June there was one specimen on the muddy shore of Taesong-ho Lake, exposed owing to the low water level. When put up, the bird flew a distance of several tens of metres and returned to the place from which it had flushed. The behaviour of the Little Ringed Plover and the time of observation suggest its nesting in that region.

Limosa limosa (LINNAEUS, 1758). One Black-tailed Godwit foraged in the shallows uncovered at low tide near Nampo on 24 May.

Numenius madagascariensis (LINNAEUS, 1766). Two specimens foraged on halophytes near Nampo.

Larus crassirostris VIEILLOT, 1818. It was observed on the sea coast: one bird in the region of the port of Nampo on 24 May and on the eastern coast between Wonsan and Kosong on 10 and 14 June. There were above 1000 birds on Siyung-ho Lake and on the nearby rocky islets jutting out of the sea. They flew from the islets to the lake and back. Probably the lake was their feeding area and their breeding colonies were on the islets.

Columba rupestris PALLAS, 1811. A pair was observed on steep crags of Yongak-san Mt. on 23 May.

Streptopelia decaocto (FRIVALDSZKY, 1838). One specimen seen only once in the Moran-bong Park in Pyongyang on 20 May.

Streptopelia orientalis (LATHAM, 1790). The commonest pigeon observed in the south of the country. It was fairly frequent and numerous: three or more pairs lived in the vicinity of the hotel in Myohyang-san, at least two pairs at Taesong-ho Lake, and probably two pairs nested in a small wood near Samil-po Lake. The presence of the Rufous Turtle Dove was besides observed in Pyongyang (2 pairs), in the region of Suyang-san Mt., at Kosong and the Pyongyang-Haeju and Wonsan-Kosong routes. As in the autumn of 1978 (BOCHENSKI et al., 1981), I did not come upon these birds in the north, but their occurrence at Samjiyon has been reported by HO Hon and RIM Chu Yon (1975). We may therefore suppose that it is a rarer bird in the north.

Cuculus micropterus GOULD, 1838. I heard the voice of these cuckoos in Myohyang-san on 25—27 May. They called both in the daytime and at dark. Since they could be heard on both sides of a fairly large valley, at least two male Indian Cuckoos lived there.

Cuculus canorus LINNAEUS, 1758. The commonest of the three cu-

ckoo species heard. The voice of this cuckoo was heard everywhere, i.e. in all places where observations were made. This bird is fairly numerous, which I infer from the frequency of observations and the fact that the voices of two or even three birds were sometimes heard at the same time (e.g. on Taesong-ho Lake, in the region of Samil-po Lake and near Hyesan).

Cuculus saturatus BLYTH, 1843. I heard the voice of this cuckoo on Taesong-ho Lake on 24 May, in Myohyang-san on 26 May, in the region of Suyang-san Mt. on 21 May and several times at Samjiyon from 1 to 6 June and at Kosong from 10 to 13 June. It is encountered more rarely than is *Cuculus canorus* but occurs all over the country, both in the north and in the south, at the eastern and western coasts, in uplands and lowlands.

Caprimulgus indicus LATHAM, 1790. I heard the voice of the Jungle Nightjar several times at Kosong on 12 and 13 June, calls of two birds, coming from different sides, being heard at the same time. This suggested that there lived at least two pairs of these birds in the vicinity of the hotel at Kosong.

Hirundapus caudacutus (LATHAM, 1801). About 10 birds of this species (well-seen needles at the end of the tail) circled and foraged over Samjiyon Lake together with a flock of *Hirundo rustica*. I saw them every day during my stay at Samjiyon (1—6 June). Both the time of observation and the fact that the birds stayed at the same place for several days indicate the nesting of the White-throated Needle-tailed Swift in the Samjiyon region. The southern boundary of the distribution area of *Hirundapus caudacutus* runs across the territory of the People's Democratic Republic of Korea (VAURIE, 1965; ETCHECOPAR and HUE, 1978). In the breeding season (i.e. June and July — PANOVA, 1973) this bird was observed in the mountains in the north (AUSTIN, 1948, after WON and YAMASHINA). Although WON Hong Koo (1964—1965) writes that *Hirundapus caudacutus* is widely distributed from Paektu-san to the southern Cholla Province (in Southern Korea), the dates of observations indicate that in the breeding season all the observations except one (made in the province of Southern Hwanghae on 2 July 1957) were made in northern provinces (Northern Pyongan, Northern and Southern Hamgyong — WON Hong Koo, 1964—1965). The present observation of the White-throated Needle-tailed Swift at Samjiyon is another evidence of the existence of a colony in this place for many years — members of this species were seen here on 24 July 1958 (WON Hong Koo, 1964—1965) and in the years 1964—1967 (HO Hon and RIM Chu Yon, 1975) and it probably belongs to the colonies of *Hirundapus caudacutus* situated rather far to the south.

Apus pacificus (LATHAM, 1801). A colony of White-rumped Swifts is situated on an island in the region of Siyung-ho Lake. About 80 birds

circled over one of the islets, 1—2 hectares in area. A nest was found in a small niche in a rocky fissure. The edges of the fissure were 3—5 cm apart. The nest was wedged between the walls of the fissure, unsupported from below. It was built mainly of straw and grass blades; there were also feathers, pine needles and dead leaves with a small addition of pine bark and scales of tree buds. The nest material was intertwined and firmly glued together with saliva at the circumference of the cup. The straw stalks and grass blades were bent, often at a very acute angle. No layers could be distinguished in the nest only the grass stalks and blades at the edge of the cup were somewhat thicker and more solidly glued together, while the rest of the nest was made up of finer elements. Nest measurements: inner diameter — 65×60 mm, outer diameter — 110×100 mm, height — 40 mm, depth — 30 mm. There were three blind chicks, 2—3 days old, and an adult bird in the nest. Breeding colonies of White-rumped Swifts probably occur also on other islets, of which a large number are scattered along the eastern coast of the Korean Peninsula. I saw some birds circling above these islets, but the long distance made their identification impossible. In addition to the birds on the sea coast, I observed about 10 White-rumped Swifts foraging over the summit of Paektu-san Mt. on 5 June. In the area of the Paektu-san massif these birds were seen also on 18 July 1958 (WON Hong Koo, 1964—1965) and in 1964—1967 (HO Hon and RIM Chu Yon, 1975). It may therefore be supposed that there has been a colony of *Apus pacificus* on the steep rocky slopes of the Paektu-san crater for more than 20 years (the dates of observations rule out migrations — DEMENTEV et al., 1951—1954).

Eurystomus orientalis (LINNAEUS, 1766). One specimen seen only once in the Moranbong Park in Pyongyang on 20 May.

Halcyon pileata (BODDEART, 1783). This species was observed in the Kumgang-san Mts. in the region of the Singyesa Temple. Two adult birds, probably a couple, flew repeatedly over from tree to tree. The behaviour of the birds indicated that the valley in which they were observed was their breeding territory. There were numerous steep slopes providing suitable sites for nesting in the neighbourhood of the stream bed, dried up in this season of the year.

Halcyon coromanda (LATHAM, 1790). One bird perching in a tree by the river at Kosong on 13 June.

Alcedo atthis (LINNAEUS, 1758). A common breeding bird. Kingfishers were observed on Taesong-san Mt. near Pyongyang on 22 May, on Taesong-ho Lake on 24 May and 9 June, at Kosong on 12 June and near Samil-po Lake on 13 June, nests being found in all these sites but Kosong. On Taesong-san Mt., overgrown with a pine-dominant mixed forest, a nest was placed in a ditch dug to join two not very large artificial ponds, about 10 m away from the water edge. In the ditch, 80 cm wide and 140 cm deep the nest was situated under the overhang of the

edge, about 1 m above the ditch bottom. The horizontal passage, 38 cm long, bent down at the end or ending in a chamber, the floor of which was below the level of the passage (it was invisible when the passage was lit with a torch). There were probably little ones in the nest (low squeaky voices came at times from the burrow). Two or more pairs of these birds live in all probability on Taesong-ho Lake. On 24 May I saw two birds about 1 km apart. The nest of one pair, found on 9 June, was in a one-metre high bank, about 100 m from the water edge. A tunnel, 60 cm long, led to the nest in a chamber, 15 cm in diameter and 10 cm high. On the floor of the chamber, lined with fragments of the shells of crustaceans and bones of fish, there were 7 roundish eggs, with a white shiny shell (in six eggs there were embryos with distinct, fairly large eyes, one egg was addle). Dimensions of the eggs: 20.7×17.7 , 21.0×18.1 , 20.9×17.9 , 21.6×17.7 , 21.8×17.8 , 21.7×17.4 , 21.1×17.6 . The respective weights of the eggs were as follows: 3.3, 3.5, 3.5, 3.2, 3.4, 3.2, 3.25 g. The third of the nests was found in a steep bank by a road running along ponds and rice fields. The bank was several metres high and the entrance to the nest, 7 cm in diameter, was situated 60 cm under the overhanging bank edge. The passage leading to the nest chamber was 53 cm long and „lined" with remains of insects (chiefly wing-covers). Three birds flew out of the nest and then there were grown-up fledglings in it on 13 June. An old ruined nest with a 45-cm-long passage was at a distance of 20—30 m from it. Its chamber was not damaged and measured 15 cm in diameter and 10 cm in height. Like the previous nest it was situated under the overhanging edge of a bank, at a height of about 1 m from the base of the bank.

Upupa epops LINNAEUS, 1758. Breeding species, observed twice on Taesong-ho Lake: on 24 May two adult birds and on 8 June probably the same birds, flying towards the forest with some food in their bills and so nursing the chicks.

Picus canus GMELIN, 1788. The commonest of the four observed species of woodpeckers. Observations: 23 May — a male on Yongak-san Mt. (by its side, in the same tree, there was a hole pecked by the woodpecker, its diameter being greater than that with the woodpeckers of the genus *Dendrocopos*); 26 May — a specimen at Myohyang-san; 10 June — one bird in the vicinity of the hotel at Kosong; 13 June — a specimen in the region of Samil-po Lake. In addition, the voice of this woodpecker was heard twice: on 1 June near Hyesan and on 11 June near the summit of Manmulsan in the Kumgang-san Mts.

Dryocopus martius (LINNAEUS, 1758). Seen only once in a mixed forest in the Myohyang-san region on 26 May. The bird was foraging, flying from one tree to another.

Dendrocopos major (LINNAEUS, 1758). Breeding species. A nest with chicks was found by the road to the Kuryong Waterfall in the Kumgang-

-san Mts. on 12 June. The chicks were already so big that they were waiting for food at the entrance to the hole. Some Great Spotted Woodpeckers were also observed by Taesong-ho Lake (male) on 24 May and near the hotel at Kosong on 10 and 11 May, whereas I heard its voice on Taesong-san Mt. on 22 May.

Dendrocopos kizuki (TEMMINCK, 1835). Breeding species. To be sure, I did not find a nest but twice I saw adults gathering food for their chicks, i.e. with many insects in their beaks: in a young pine wood near Suyang-san Mt. on 30 May and near the hotel at Myohyang-san on 28 May. It is probably a fairly common species, e.g. 2 pairs lived at a short distance (about 1 km) from each other at Myohyang-san — in addition to the birds gathering food, I saw another specimen of this species in the vicinity of the buildings of a buddhist monastery on 27 May. I also saw a Japanese Pygmy Woodpecker on Taesong-san Mt. on 22 May.

Hirundo rustica LINNAEUS, 1758. Frequent and numerous throughout the country. On a par with the Tree Sparrow it is the commonest bird, the colonies of Swallows being probably present in each small village and town. These birds, a few to more than ten in number, are seen everywhere in the proximity of settlements as well as foraging over fields and forests.

Galerida cristata (LINNAEUS, 1758). Only once one specimen was seen while foraging on a path near Taesong-ho Lake on 8 June.

Alauda arvensis LINNAEUS, 1758. I heard voices of two singing males about 2—3 km south of the town of Haeju on 31 May.

Motacilla cinerea TUNSTALL, 1771. A common breeding bird which nests on the banks of mountain streams and rivers. They were observed in the Myohyang-san Mts. from 25 do 28 May, at Pe-ke-pong on 2 June, in the region of a raised bog near Samjiyon on 2 June, along the Wonsan-Kosong route on 10 June and in the valley leading to the summit of Manmulsan and along the stream flowing from Kuryong Waterfall in the Kumgang-san Mts. on 10—13 June. Walking a few kilometres along a stream or river, one always met several pairs, e.g. I observed 5 pairs in the Myohyang-san Mts. and 3—4 pairs along the stream flowing from Kuryong Waterfall. The breeding season of these birds is stretched in time: one of the nests found in the Myohyang-san Mts. contained newly laid eggs and at the same time in another nest there were chicks, 5—7 days old. The nests were placed among stones on the ground and screened by herbs growing there or overhanging grass blades. They resembled the nests of European Grey Wagtails. The nest material consisted of sticks, stalks, grasses, dry grass ears and blades, moss, pine needles, rootlets and animals' hair, including horse-hair. The material became finer towards the inside of the nest. Measurements of the nest with chicks (5—7 days old): outer diameter — 14.5×15 cm, inner diameter — 8.5×7.5 cm, depth — 4.5 cm; measurements of the nest with eggs:

outer diameter — 12×8 cm, inner diameter — 6×5 cm, depth — 4 cm, height (after the removal of the nest from the fissure between stones) — 4.3 cm. Measurements of eggs: 18.3×14.8 , 18.0×14.7 , 18.3×14.7 , 18.8×14.9 , 18.6×14.5 ; their weight, respectively: 2.0, 2.0, 2.0, 2.1, 1.9 g.

Motacilla alba LINNAEUS, 1758. Birds fairly frequently encountered: 2 pairs on the ponds on Taesong-san Mt. on 22 May — their behaviour indicated that the nests were situated in the stone reinforcement of the pond shores; 3 specimens on Taesong-ho Lake on 24 May and two on a river in the Myohyang-san Mts. on 25—27 May; single birds were seen along the Wonsan-Kosong route on 10 and 14 June and on the way from Kosong to Samil-po Lake on 10 June; near the hotel at Kosong on 10 and 12 June and in rice fields near Samil-po Lake on 13 June. The behaviour of the birds observed in the Myohyang-san Mts. and on Taesong-san Mt. suggested that the birds were incubating at that time. I often saw one bird visibly alarmed, while the other bird was probably sitting on the nest. At the same time I did not see any adult birds gathering food and so the chicks had not hatched yet.

Lanius tigrinus DRAPIEZ, 1828. It was seen three times: in the region of Suyang-san Mt. a bird was seen on a wet meadow overgrown with clumps of briar-rose on 30 May; 2 birds were sitting on electric wires by the road from Kosong to Samil-po Lake in the Kumgang-san Mts., while a family flock (4 specimens) foraged in a thicket near the lake on 13 June.

Lanius bucephalus TEMMINCK et SCHLEGEL, 1847. Seen only once on Taesong-ho Lake on 24 May.

Lanius cristatus LINNAEUS, 1758. Observed in urbanized environments: I saw a pair in the bushes on the boulevard by the River Taedong-gang in Pyongyang several times during my stay there. In addition, a bird was noticed by the busy road from Pyongyang to Nampo, near Mankyongdae on 21 May and also one bird at Sinchon, a place visited by numerous parties of tourists, on 30 May.

Oriolus chinensis LINNAEUS, 1766. Common bird of forests and copses. In each habitat of this sort examined in the southern part of the country I met mostly with more than 1 pair of these birds, e.g. 3 pairs on Taesong-ho Lake, about 8 pairs in the Myohyang-san Mts., 2 pairs in the Moranbong Park in Pyongyang and 4 pairs on Taesong-san Mt. To be sure, I did not observe the Black-naped Oriole in the north of the country, but it has been recorded from the regions of Samjiyon and Sopeksan by HO Hon and RIM Chu Yon (1975). It is then a breeding bird living all over the country, probably less numerous in its northern part. The coloration (a broad black stripe across the eyes and occiput) of the birds caught at Myohyang-san on 27 May and of all the birds observed indicates their membership in the subspecies *Oriolus chinensis diffusus* (SHARPE, 1877). Measurements of the birds captured (male and female,

respectively): wing — 150 and 155 mm, tarsometatarsus — 24 and 25 mm, beak — 30 and 29 mm, tail — 98 and 93 mm, body weight — 87.0 and 84.5 g. The length of the tarsometatarsal bone of the birds captured agrees with that given by ALI and RIPLEY (1973) and WON Hong Koo (1964—1965) for females and somewhat below the lowest limit of this measurement given by WON Hong Koo (1964—1965) for males and by TACZANOWSKI (1891—1893). HARTERT (1903—1922) and DEMENTEV et al. (1951—1954) give considerably larger measurements of the tarsometatarsus (37—38 mm). This is most likely a mistake, for it is impossible for the length of tarsometatarsus to differ by 12 mm in birds of this size.

The Black-naped Oriole begins to lay eggs in June. The male captured in the Myohyang-san Mts. on 27 May had its testes enlarged and the female caught at the same place showed no changes in the skin on the belly, which suggested that she had not incubated the eggs yet. On the other hand, two weeks later I found two nests, each with 4 eggs in the 2nd—3rd day of incubation, on Taesong-ho Lake on 8 and 9 June. Measurements of eggs: one clutch — 30.8×20.9 , 28.6×20.4 , 29.7×20.9 , 29.9×21.0 , their weight, respectively: 7.0, 6.0, 6.8, 6.5 g; the other clutch: 28.4×20.3 , 27.8×20.6 , 28.1×20.7 , 27.7×20.7 and their respective weights: 5.8, 6.0, 6.2, 6.0 g. The egg measurements lie within the lower limits of measurements given by DEMENTEV et al. (1951—1954) and are markedly lower than those quoted by HARTERT (1903—1922), WON Hong Koo (1964—1965) and TACZANOWSKI (1891—1893). The nests of Black-naped Orioles (Phot. 8) resembled in structure the nests of the Golden Oriole; they hung in the fork of the lowest horizontal branch of a deciduous tree, 2.5 and 3 m above the ground. Measurements of one nest: outer diameter — 13×10 cm, inner diameter — 8.7×7.5 cm, height — 8 cm, depth — 6.5 cm. The corresponding measurements of the other nest: 14×11.5 , 10×8 , 9 and 7.5 cm. Both these nests were built of grasses, bast, leaves, interwoven pieces of paper.

Sturnus sturninus (PALLAS, 1776). A flying bird was once seen in the Moranbong Park in Pyongyang on 20 May.

Sturnus cineraceus TEMMINCK, 1835. Observed twice: 4 birds in the boulevard on the River Taedong-gang in Pyongyang on 19 May and also 4 birds foraging in a rice field between Wonsan and Kosong.

Garrulus glandarius (LINNAEUS, 1758). I observed a pair of these birds several kilometres away from Samjiyon on 5 June. They were visibly uneasy, their behaviour suggesting the nearness of the nest. One bird was besides seen near the summit of Manmul-san in the Kumgang-san Mts. on 11 June and feathers of a Jay that had fallen victim to a predator were found in the Myohyang-san Mts. on 28 May. The finding of Jays in places a long way apart shows that they live all over the country, their secret ways of living in the breeding season being responsible for the small number of observations. The frequent observations of nume-

rous birds in autumn (BOCHENSKI et al., 1981) indicate that they are commoner than might be judged on the basis of the present observations. This is confirmed by WON Hong Koo (1964—1965), who writes that Jays are common throughout the country and that the failure in observing them in a region proves that this region has been explored poorly.

Cyanopica cyanus (PALLAS, 1776). Birds of this species were observed several times: a flock of 4 birds in a scrub surrounding Suyang-san Mt. on 30 May, 2 specimens seen from a railway carriage between Tanchon and Hyesan on 1 June and 4 birds in the forest at Pe-ke-pong. At the end of May and beginning of June Azure-winged Magpies mostly incubate eggs (WON Hong Koo, 1964—1965; PANOV, 1973; NECHAEV, 1974a; DEMENTEV et al., 1951—1954); it should be assumed therefore that there were small colonies of these birds both at Suyang-san and at Pe-ke-pong. The observation of 15—20 Azure-winged Magpies in the autumn of 1978 (BOCHENSKI et al., 1981) would indicate united family flocks of several pairs and confirms the existence of a colony in the region of Suyang-san.

Pica pica (LINNAEUS, 1758). This common breeding bird was encountered, especially in park habitats, e.g. the walking boulevard on the River Taedong-gang in Pyongyang, at least 3 nests in the Morangbong Park and 8—10 nests in the area of baths and motels on Laudo Cape near the harbour of Nampo. It is encountered often but less numerous in forests and thickets (single nests, pairs, specimens). It was not observed only in taiga in the Paektu-san region but this is just where (Samjiyon, Nampote, Mupong) the Magpie was reported from by HO Hon and RIM Chu Yon (1975), and so it is numerous throughout the country.

Nucifraga caryocatactes (LINNAEUS, 1758). Seen only once in taiga, close to the timber line, on Paektu-san Mt. on 5 June.

Corvus macrorhynchos WAGLER, 1827. Two observations: 4 birds on Taesong-san Mt. on 22 May and 3 birds foraging on the dikes between rice fields between Wonsan and Kosong on 14 June.

Corvus corone orientalis EVERSMAAN, 1841. As frequent as the Magpie but less numerous. Mostly single specimens, sometimes in flocks, were observed throughout the country, e.g. flocks of 4 and 6 birds foraging on the dikes between rice fields along the Wonsan-Kosong route or 6 birds feeding on a refuse dump near the hotel at Myohyang-san.

Cinclus pallasi TEMMINCK, 1820. This bird lives in the valleys of mountain streams; it may be common in places. In the Kumgang-san Mts. it was seen in the valley leading to the summit of Manmul-san on 11 June and in the neighbouring valley two pairs were met with over a distance of several kilometres along the river flowing from Kuryong Waterfall on 12 June. The occurrence of the Brown Dipper was also found in the Myohyang-san Mts. on 26 May (1 bird).

Troglodytes troglodytes (LINNAEUS, 1758). The newly-built, still

empty nest of a Wren was found in the Myohyang-san Mts. on 26 May. It was built in the hollow of a windfallen tree near a river. Both the manner of its placement, material, construction and size (overall height — 24 cm; outer diameter — 12×9.5 cm; depth from the opening to the bottom of the cup — 7.3 cm; diameter of the entrance opening — 4.6×2.3 cm) are the same as in the European Wrens and the nest, although empty, does not cause doubt as to the specific membership of its owner. Wrens were seen in a forest in the Hyesan region on 1 June, in the Kumgang Mts. on 12 June and a dead bird was found on the summit of Pek-tusan. Its measurements are: wing — 50; tarsometatarsus — 18; beak — 11, tail — 37 cm, body weight — 10.5 g.

Cettia diphone (KITTLITZ, 1830). It is common in the southern part of the country: a singing male in the Moranbong Park on 10 May, two singing males in a young pine wood on Suyang-san Mt. on 30 May, a singing male by Taesong-ho Lake on 8 June and its nest on 9 June, two males by the Singyesa Temple in the Kumgang-san Mts. on 11 and 12 June, a bird near Samil-po Lake on 13 June and one by the Kosong-Wonsan route on 14 June. The nest found was placed among the stalks of herbs, 7 cm above the ground, at the edge of a steep bank overgrown with thick bushes. The nest was globular, with a side entrance, built of dry grasses with a small admixture of dead leaves. It was lined with very fine grass blades (Phot. 9). Measurements of the nest: overall outer height — 15.5 cm; outer diameter — 12×11 cm; inner (cup) diameter — 6 cm; cup depth — 2 cm; height from the floor to the ceiling of the nest — 7.5 cm. The entrance to the nest was oval, 7 cm high and 5.5 cm wide. The nest contained 5 pink-brown eggs, their measurements being 19.8×14.3 , 19.8×14.6 , 19.9×14.7 , 18.9×14.5 , 20.0×15.0 mm and their weights, respectively, 2.22, 1.95, 2.10, 1.95, 2.20 g. The eggs had been incubated for a fairly long time, the embryos being already well developed.

Bradypterus thoracicus (BLYTH, 1845). A pair of these birds was observed in the grass and thicket on the shore of a lake at Samjiyon from 1 to 6 June. The plumage of the birds agreed with its description given by DEMENTEV et al. (1951—1954). The male sang in the daytime and also fairly long after dark, sitting on a horizontal branch, not high above the ground (from several to 40 cm), and producing monotonous two-syllabic calls. Doing that, it perked up its head and somewhat drooped the wings. While the male was singing, the female walked about on the ground not far from it. Judging from DEMENTEV's description, that was their courtship. When alarmed, they escaped, mostly running quickly through the grass, only exceptionally, when flushed violently, flying away for a short distance, but soon they returned to the same place. One of the birds flew twice out of the same tussock of grass. At the base of this tussock, under the overhanging grass blades I found several pieces of reed leaves, which differed in colour from the surroundings and so

they probably were the beginning of the nest of these Spotted Bush Warblers. This species was observed only once in Korea by now: 19.VI.1958 in the region of Pektusan (Anon., 1967). According to VAURIE (1959), *Bradypterus thoracicus davidii* (LA TOUCHE, 1923) inhabites „south-eastern Transbaicalia and western Amurland south through Hopeh" and CHENG Tso-hsin (1976) mentions a locality of this bird in the area adjacent to the Korean Peninsula near Pektusan. The present observation extends the range of the Spotted Bush Warbler on the southern part of the mountain chain in the territory of the People's Democratic Republic of Korea.

Acrocephalus arundinaceus (LINNAEUS, 1758). I saw or heard voices of altogether 6—7 pairs in the reeds on Laudo Cape near the harbour of Nampo on 24 May, I heard the voices of 3—4 males singing simultaneously in a small field — a bamboo plantation — near Samil-po Lake on 10 June and I watched 2 pairs of these birds in the grasses and reeds overgrowing a marshy area with ponds remaining after peat exploitation also near Samil-po Lake on 13 June. It may therefore be supposed that the Great Red Warbler is locally a numerous bird.

Phylloscopus trochiloides (SUNDEVALL, 1837). Breeding species. A bird with food in its beak was observed at Myohyang-san on 26 May. At a distance of about 2 km from this bird a singing male of the same species was enticed with a voice replayed from magnetic tape (the birds were determined on the basis of the voice of singing males).

Phylloscopus coronatus (TEMMINCK et SCHLEGEL, 1847). One specimen caught at Myohyang-san on 27 May (measurements: wing — 66, tarsometatarsus — 20, beak — 10, tail — 52 mm, body weight 9.2 g). In addition to the bird caught another Crowned Willow Warbler was observed at Myohyang-san (the specific name have been assumed after DEMENTEV et al., 1951—1954; TICEHURST, 1938 and VOOUS, 1977, because VAURIE, 1959, hesitates whether the birds living in the Far East should be regarded as a separate species, *Phylloscopus coronatus*, or as the subspecies *Phylloscopus occipitalis coronatus* belonging to the species living in „Southern Russian Turkestan to eastern Afghanistan and western Himalayas to Nepal").

Ficedula zanthopygia (HAY, 1845). I saw 2 males, a short distance apart, in a pine forest not far from Mankyongdae on 21 May. One pair was observed also in a pine forest on Taesong-san Mt. on 22 May, whereas singing males were found in a mixed forest by Taesong-ho Lake on 24 May and on the riverside near the hotel at Kosong on 12 and 13 June.

Ficedula mugimaki (TEMMINCK, 1835). A male was captured in a net at Samjiyon on 4 June. Its testes were enlarged (about 5 mm in diameter) and so it was sexually active. Its measurements: wing — 71, tarsometatarsus — 18.5, beak — 8.5, tail — 50 mm, body weight 10.7 g. The

plumage of the bird (its olive back and lack of white patches on the wings) indicated that it was a male in its first plumage (VOROBÉV, 1954). The Mugimaki Flycatcher is a breeding bird in the Ussuriisk region (VOROBÉV, 1954) and in north-eastern China (CHENG Tso-hsin, 1976). In Korea it was recorded as a breeding bird only from a small area in the Pektusan region in the north of the country (WON Hong Koo, 1964—1965; HO Hon and RIM Chu Yon, 1975). In the Republic of Korea it is known as a common passage migrant (GORE and WON Pyong Oh, 1971) and so the southern boundary of its distribution runs in the mountains of the People's Democratic Republic of Korea.

Cyanoptila cyanomelana (TEMMINCK, 1829). Singing birds were observed twice, in a forest on Yongak-san Mt. on 23 May and in a deciduous forest in the region of Suyang-san Mt. on 30 May.

Muscicapa latirostris RAFFLES, 1822. Observed close to waters: a bird foraging on the River Taedong-gang in Pyongyang on 20 May, and another by the same river near Mankyongdae on 21 May. The largest numbers were seen at Samjiyon. During the present observation (1—6 June) there were 4 pairs there; they foraged at the edge of a forest near the lake. Measurements of a male caught: wing — 69, tarsometatarsus — 13, beak — 8, tail 48 mm, body weight — 10.5 g. The behaviour of these Brown Flycatchers, namely, their keeping in pairs, sexual activeness (the enlarged testes of the male captured) and their remaining at Samjiyon after the migration season evidence that they breed there and the number of pairs indicates that they may be locally abundant. This is supported by the suppositions of WON Hong Koo (1964—1965) and GORE and WON Pyong Oh (1971) as to the possible nesting of these birds in the Korean Peninsula.

Saxicola torquata (LINNAEUS, 1766). Encountered several times, singly or in pairs; on 21 May on the bank of the Taedong-gang near Mankyongdae a pair of these birds was visibly uneasy because of the presence of people, their behaviour indicated the nearness of the nest. A singing male was observed in a wet meadow with clumps of brier-roses near Suyang-san Mt. on 31 May, a pair near Samil-po on 13 June and a male seen from the running car on the road from Kosong to Wonsan.

Monticola gularis (SWINHOE, 1863). Three birds were seen from the car at the edge of a thicket by the road from Wonsan to Kosong on 10 June.

Phoenicurus aureus (PALLAS, 1776). A common breeding bird. In the southern part of the country it was encountered in a forest near Mankyongdae on 21 May. Its largest numbers were found at Myohyang-san, where this species was observed in the town itself on 25 May and its two nests in the valley of the River Hyangsan-chon, several kilometres from Myohyang-san, on 26 May. In one of the nests there were 7 nestlings 7—9 days old and in the other 6 fledgelings, which next left the nest success-

fully on 28 May. On 27 May I found a young bird, able to fly, in the premises of a former buddhist monastery Pohyon at Myohyang-san, about 3 km away from the previous nests. Daurian Redstarts were also observed in the north of the country: on 1 June a nest with one egg in it was found several kilometres south-west of Hyesan, on 6 June this nest was abandoned and contained 5 cold eggs, white in colour with rusty spots, which occurred more densely at the big end of the egg. Measurements of the eggs: 19.2×13.4 , 19.6×13.7 , 18.3×14.2 , 19.2×13.7 , 18.5×13.4 mm, their weights, respectively: 1.92, 1.87, 1.87, 1.92, 1.85 g. On 1—6 June a pair of these birds stayed near the hotel at Samjiyon and on 3 June another pair fed their chicks several kilometres away from Samjiyon (the nest was placed in a tree-hole — Phot. 4 — and so it was impossible to determine the age of the chicks). Out of the four nests observed, only one, near Hyesan, was built on the ground, in a depression (25×15 cm — Phot. 7) between the roots of a tree. The remaining nests were placed between stones, 25 cm above the ground, in the stone revetment of a road, at a height of 104 cm, and in a tree-hole, the opening of which was situated 195 cm above the ground. The three accessible were open, but all of them were sheltered from above by stones, earth (hollow in the ground) or wood (tree-hole). They were constructed of rootlets, grasses, dead leaves, needles, moss, feathers, sticks and animal hair and lined with finer material, chiefly rootlets, delicate grasses, feathers and animal hair. Measurements of the nest with fledgelings: outer diameter — 17×10 cm, inner diameter — 10×6 cm, depth — 1.5 cm. Measurements of the nest with eggs: outer diameter — 12×9.5 cm, inner diameter — 6×6 cm, height — 6.5 cm, depth — 3.5 cm. The nest was built in an old hollow trunk which had several openings, the one through which the birds flew in being 5×3 cm in diameter.

Luscinia caliope (PALLAS, 1776). A nest with 4 eggs was found at Samjiyon on 4 June. The egg-incubating female left the nest when people were at a distance of several metres, hence the details of its plumage could not be observed very well. The structure of the nest (Phot. 10) is however a characteristic feature indicating that it belonged to *Luscinia caliope*. It was identical with the nests of *Luscinia caliope* in the collection of the Zoological Museum of Moscow University and in the private collection of Dr V.V. LEONOVICH in Moscow.

The nest was globular in shape with a side-entrance. Its outer measurements: height — 17 cm, width — 12 cm, length — 9 cm, diameter of entrance opening — 4×5.5 cm. Inner measurements nest-cup diameter = 6.5×6 cm, depth from the level of the entrance opening to the cup bottom — 3.5 cm, thickness of the walls — 3.5—4 cm. The nest was made of grass, stalks, rootlets, sticks, moss, needles, dead leaves, vegetable fibres and pieces of bark. The material of lining did not differ from that going into the make of the walls only that it was finer: delicate stalks, gras-

ses and rootlets. It was situated on the ground, between the twigs of dwarf shrubs about 2 m away from a birch in a young larch-birch wood. The twigs of the dwarf shrubs were about 0.5 m in height and although still leafless, they sheltered the nest well. The eggs in the nest resembled those of *Prunella modularis* or *Phoenicurus phoenicurus* in colour, they were turquoise-green and somewhat lustrous. Their measurements: 18.4×15.4 , 18.6×15.5 , 18.2×15.5 , 18.9×15.0 mm, the weights being, respectively: 2.45, 2.44, 2.35 and 2.37 g. (They were in the initial phase of incubation, blood-vessels were seen on the yolk). The length of these eggs was smaller than that given by other authors (TACZANOWSKI, 1891—1893; DEMENTEV et al., 1951—1954; SCHÖNWETTER, 1967—1979; GIZENKO, 1955; WON Hong Koo, 1964—1965), whereas their width lay within the limits specified by them. Consequently, the eggs found extend the range of variation of the egg dimensions and shape in the Siberian Rubythroat.

Luscinia cyane (PALLAS, 1776). A male and a female were caught at Myohyang-san on 27—28 May. The female had no breeding spots developed on the belly and so the birds had not started breeding by that time. The male captured was removed and the next day I saw another singing bird in that place. It must be assumed therefore that this species is common in the Myohyang-san Mts. Measurements of the birds caught: male: wing — 75 mm, tarsometatarsus — 25 mm, beak — 11 mm, tail — 48 mm; female: wing — 72 mm, tarsometatarsus — 25 mm, beak — 11 mm, tail — 52 mm; body weight — 20 g. The length of the beak (measured from the plumage) lies within the limits given by WON Hong Koo (1964—1965) but it is much smaller than the length quoted by TACZANOWSKI (1891—1893): 17—18 mm; and DEMENTEV et al. (1951—1954): 16—17 mm. The values given by these authors are probably those obtained by measuring from the skull. The beak length measured from the plumage on the birds in the collection of the Institute of Zoology, Polish Academy of Sciences, in Warsaw, and derived from the collections of KALINOWSKI, JANKOWSKI, DYBOWSKI and GODLEWSKI, and so those described by TACZANOWSKI, has values similar to those obtained at present, i.e. 10, 10, 11, 10 and 9.5 mm. The measurements of the wings and tail (SHULPIN, 1927) suggest the membership of the birds captured in the nominative subspecies *Luscinia cyane cyane* (PALLAS, 1776).

Erithacus akahige (TEMMINCK, 1835) (?). One bird, flying from branch to branch in the understorey of a forest was observed at Samjiyon on 4 June. It had a distinct orange patch on the throat and breast. A similar patch occurred in a male of *Ficedula mugimaki* that I caught. However, the shape of the bird being discussed and its behaviour (movements) resembled those of the European Robin *Erithacus rubecula*, ruling out the Mugimaki Flycatcher. The Japanese Robin breeds in the Japanese

se and Kuril Islands and in Sakhalin (GIZENKO, 1955; DEMENTEV et al., 1951—1954) and it migrates over East China. Its occurrence in the north of the Korean Peninsula is quite possible, although it has not hitherto been recorded from the People's Democratic Republic of Korea and has only several times been reported from the south of the peninsula (STRAW, 1953; GORE and WON Pyong Oh, 1971). The date of the present observation seems to exclude the passage (DEMENTEV et al., 1951—1954) and then it probably belongs to the breeding fauna of the People's Democratic Republic of Korea.

Zoothera dauma (LATHAM, 1790). One specimen was seen in a pine forest on Taesong-san Mt. on 22 May.

Paradoxornis (Suthora) webbiana (GRAY, 1852). A family flock of 10 Vinous-throated Parrotbills stayed in a thicket by Taesong-ho Lake. Probably they had left the nest a short time before, for their behaviour was very similar to the behaviour of the family flocks of Tits (I encountered the Vinous-throated Parrotbills in the same place where in the autumn of 1978 6 specimens of this species were found — BOCHENSKI et al., 1981).

Aegithalos caudatus (LINNAEUS, 1758). A family flock (10 or more specimens) was observed at Myohyang-san on 28 May. Two birds of this flock were caught using a net: a shapely male and an undergrown juvenile with a much shorter tail. Measurements of the male: wing — 61, tarsometatarsus — 17, beak 7.5, tail — 93 mm; body weight — 9.2 g.

Parus palustris LINNAEUS, 1758. Breeding bird. Family flocks of the Marsh Tit were encountered at Myohyang-san on 28 May and at Kosong on 12 and 13 June.

Tits belonging to the species *Parus palustris* and *Parus montanus* were observed single, in pairs and even in family flocks in various places of the country. I did not manage to determine their specific membership closely. Places and dates of observations: at Myohyang-san on 26—28 May, in a larch wood near Hyesan on 1 June, at Samjiyon (2—3 pairs) on 1—6 June, in a raised peatbog several kilometres from Samjiyon on 2 June, at Kosong on 10 June, near the Singyesa Temple in the Kumgang-san Mts. on 11 and 12 June, and in the region of Samil-po Lake on 13 June. WON Hong Koo's (1964—1965) observations indicate that *Parus montanus* is more frequently met with than is *Parus palustris*, especially in the mountains of northern Korea. To be sure, there are no records of its nesting, but 87 members of this species were caught in 3 northern provinces from March to October in 1958-1963. HO Hon and RIM Chu Yon (1975) found also Willow Tits at Samjiyon and Nempotesan in 1964—1967.

Parus ater LINNAEUS, 1758. Common breeding bird. I saw nests, birds nursing their young and flocks of juveniles all over the country: two pairs in Moranbong Park in Pyonyang on 20 May, a bird, the voice

of another being heard, in a pine forest near Mankyongdae on 21 May, 4 nests in a pine forest on Taesong-san Mt. on 22 May (one in a nest-box with an incomplete clutch, 2 in a roof and one in the stone wall of a ditch along a forest road, with fledgelings), 3 birds on Suyang-san Mt. on 30 May, a bird at Chong-pong and a pair and a single bird at Samjiyon on 2 June, a bird in a taiga forest close to the timber line on Paektu-san Mt. on 5 June, a flock of juveniles near the hotel at Kosong and in the Kumgang-san Mts. on 10 and 12 June, a few pairs along the way to the summit of Manmulsan Mt. on 11 June and one specimen in the neighbourhood of the Singyesa Temple on 11 and 12 June.

Parus varius TEMMINCK et SCHLEGEL, 1848. This species was observed only in the Myohyang-san Mts. — in the observation area there lived at least 4 pairs, of which two nested in cracks in the cornice under the eaves of the hotel building. One of these pairs was building the nest, while the other nursed the chicks. In addition, a pair was seen in a mixed forest about 3 kilometres from the hotel and another one was captured in the net about 150 m from the hotel. These birds were both caught at the same time in the same net the female had well-developed breeding spots, which indicated that the birds had a nest with chicks or eggs advanced in the process of incubation, probably not far from the net in which they were caught. Measurements of the birds captured: female: wing — 73 mm, tarsometatarsus — 21 mm, beak — 10.5 mm, body weight — 18 g; male: wing — 80 mm, tarsometatarsus — 21 mm, beak — 12 mm, tail — 61 mm, body weight — 15.5 g. These measurements lie within the limits given by WON Hong Koo (1964—1965) for the nominative subspecies *Parus varius varius*, only the beak of the specimens under description is somewhat shorter; it agrees with the corresponding measurement given by HARTERT (1903—1922) also for the nominative subspecies. It may therefore be assumed that the birds captured in the breeding season belonged to the subspecies *Parus varius varius* TEMMINCK et SCHLEGEL, 1848, and that the measurements given here extend the range of variation of the standard dimensions of this subspecies.

Parus major LINNAEUS, 1758. This Tit was often observed but I did not encounter it in the north of the country. Places of observations: a pair in the Moranbong Park in Pyongyang on 20 May, on Taesong-san Mt. on 22 May, 3 pairs and a family flock of juveniles in the region of Laudo Cape at the mouth of the River Taedong-gang on 24 May, 5—6 pairs (2 nests in cracks under the eaves of a hotel building) in the Myohyang-san Mts. on 25—27 May, 2 pairs in the region of Suyang-san Mt. on 30 and 31 May, in the region of Samil-po Lake on 10 June, a family flock of juveniles and adult birds carrying nest material in the neighbourhood of the hotel at Kosong on 10—12 June and a flock of juveniles in the region of Samil-po Lake on 13 June.

Sitta europaea LINNAEUS, 1758. Two pairs were observed at Samji-

yon on 1—6 June. Moreover, this species was found in the Kumgang-san Mts., at Kosong on 11 June and in the valley leading to Kuryong Waterfall on 12 June.

Passer montanus LINNAEUS, 1758. The commonest and most abundant species. In all localities in which I carried out my observations I saw Tree Sparrows in numbers from several to several tens of specimens. They were particularly numerous in the vicinity of buildings in villages, towns and township and near single houses, for roofs are their nesting sites. In gaps under the roofing-tiles there were from several to more than ten nests. They are birds which on account of their large numbers can even do damage to crops.

Carduelis sinica (LINNAEUS, 1766). These birds were seen or heard in various places, especially those rather frequently visited by people: in the Moranbong Park in Pyongyang on 20 May, a pair in the park at Mankyongdae on 21 May, a pair on Taesong-san Mt. on 22 May, near the hotel at Hyesan on 1 June, in roadside trees among cultivated fields several kilometres from Hyesan on 6 June and at least 2 pairs in the vicinity of the hotel buildings at Kosong on 11 June.

Loxia curvirostra LINNAEUS, 1758. One pair was seen close to the timber-line on Paektu-san Mt. on 5 June.

Pyrrhula pyrrhula (LINNAEUS, 1758) (?). I heard a voice quite similar to the voice of the European Bulfinch in a taiga forest at Chong-pong on 1 June.

Eophona migratoria HARTERT, 1903. Flocks, pairs and single specimens were met with: 2 pairs on the boulevard on the River Taedong-gang and a bird in the Moranbong Park on 19 and 20 May, a flock of five or more pairs in a mixed forest near Mankyongdae on 21 May, a pair on Taesong-ho Lake on 24 May and 8 June and a bird in the region of Suyang-san Mt. on 30 May.

Emberiza cioides BRANDT, 1843. A singing bird was observed at Myohyang-san on 28 May.

Emberiza fucata PALLAS, 1776. These birds were encountered several times, mostly in wet areas: 2 birds, presumably a pair, foraged on Taesong-ho Lake on 24 May and 8 June and a bird was seen in a wet meadow in the region of Suyang-san Mt. on 31 May. This last bird was visibly uneasy, its behaviour suggesting the nearness of the nest. Two pairs of the Grey-hooded Bunting foraged in wide balks between rice fields near Samil-po Lake on 13 June.

Emberiza elegans TEMMINCK, 1835. As in the autumn of 1978, it was the most frequently and numerously observed Bunting: a singing male (it was later caught) at Myohyang-san on 26 May, a pair and separately a female and a male in various places in the region of Suyang-san Mt. on 30 and 31 May, at least 2 pairs (a male caught) near the hotel at Kosong on 10—13 June and at least 3 pairs (2 males caught) in the region of the

Singyesa Temple, several kilometres from Kosong on 12 and 13 June. Measurements of the males caught: wing — 73, 75, 71, 68 mm, tarsometatarsus — 20, 20, 19, 19 mm, beak — 10, 10, 10.5, 10 mm, tail — 71, 78, 72, 73 mm, body weight 17, 17.5, 17.2 and 15.5 g. The plumage of the birds captured was darker than that of the birds from the region of the Amur and Ussuri Rivers in the collections of JANKOWSKI and KALINOWSKI, stored in the Institute of Zoology, Polish Academy of Sciences, in Warsaw, and those taken in the People's Democratic Republic of Korea in the autumn of 1978 (collection of the ZZSiD PAN in Cracow); in accordance with VAURIE'S (1959) description our birds belong to the subspecies *Emberiza elegans elegans* TEMMINCK, 1835, whereas the birds captured in the autumn of 1978 were of the subspecies *Emberiza elegans ticehursti* SUSHKIN, 1926. The capture of birds belonging to two subspecies in the People's Democratic Republic of Korea in different seasons of the year indicates that the nominative subspecies nests in that country and the specimens of the subspecies *E.e. ticehursti* were on passage to their winter quarters in southern China (DEMENTEV et al., 1951—1954) and southern Japan (YAMASHINA, 1974).

Emberiza spodocephala PALLAS, 1776. Observed only in the north of the country: a male in the Chong-pong and Kon-chang forest more than ten kilometres north of Hyesan on 1 June. Four pairs were constantly met with (one male caught) near the hotel at Samjiyon from 1 to 6 June, a pair was seen in a peatbog several kilometres from Samjiyon on 2 June and a male killed by a running car about 10 km from Samjiyon on 4 June. Measurements of 2 males: wing — 65 and 76 mm, tarsometatarsus 19 and 20 mm, beak — 11 and 11.5 mm, tail — 58 and 68 mm, body weight — 16.5 and 18.7g. The coloration and measurements of the wing and beak of these birds indicate their membership in the nominative subspecies *Emberiza spodecephala spodecephala* PALLAS, 1776.

IV. REMARKS

The geographical situation and configuration of terrain causes great climatic differences in the Korean Peninsula and these in turn are responsible for the fact that the birds do not start breeding everywhere at the same time. In the south-eastern (Kumgang-san Mts.) and central parts of the People's Democratic Republic of Korea (Pyongyang Myohyang-san Mts.) the process of laying and brooding eggs and feeding the progeny begins about a month earlier than in does in the mountains of the Pektusan region. In the southern and central parts of the country the end of May and the first half of June are when the birds that set up their nests early have their young leaving the nest and start a second brood (e.g. Tits, Tree Sparrows, Longtailed Tits, Wagtails, Daurian Red-

starts) and the ones that build their nests later lay and incubate eggs (Orioles, Bush Warbler). At the same time in the north of the country only birds of a few species lay eggs or feed chicks (Daurian Redstarts, Siberian Blue Robin, Mallard), while most of them are busy forming pairs and occupying territories (Tits, Flycatchers, Spotted Bush Warblers).

During the present expedition we unluckily failed to find any nests of most species. There is therefore no direct evidence that they are breeding species (notably in the case of birds rarely observed in Korea). Nevertheless, a vast majority of the species found may be regarded as breeding, which is suggested by the time of observation and the advancement of the breeding process with other birds occurring in the same area. In the southern and central parts of the People's Democratic Republic of Korea at the end of May and at the beginning of June of 1980 the breeding season was in full swing and so most species had completed their migrations. Exceptionally, the observation of *Limosa limosa* and *Numenius madagascarensis* on 24 May involved, in all probability, the birds still on migration, for the third decade of May is still the migration season for these birds (LOBKOV et al., 1976; OMELKO M. A., 1971; OMELKO W. A., 1976) and in Korea they have hitherto been recorded as migrants only (WON Hong Koo, 1964—1965; GORE and WON Pyong Oh, 1971). As regards the birds observed in the north of the country, the nesting of such species as *Loxia curvirostra*, *Pyrrhula pyrrhula* and *Erithacus akahige* is not certain. In the Pektusan region I carried out observations at the beginning of June and so at the outset of the breeding season; the Robin and Bulfinch may therefore have belonged to the migrating or nomadic birds, the more so since so far they had been recorded exclusively as such from Korea (WON Hong Koo, 1964—1965; GORE and WON Pyong Oh, 1971). On the other hand, the Crossbill may have been leading a nomadic life after having reared its broods in the regions situated north of the People's Democratic Republic of Korea.

The result of our observations carried out during the present expedition to the People's Democratic Republic of Korea is the finding of the occurrence of 88 bird species there. This list can be extended by further 32 species, chiefly migrants, observed in that country in the autumn in 1978 (BOCHENSKI et al., 1981). Thus a total of 120 species of birds were found during 10 week's ornithological observations (i.e. from 18 September to 31 October 1978 and from 19 May to 14 June 1980); they form about a third of the list of 384 species given in the most recent monograph of the birds of Korea (GORE and WON Pyong Oh, 1971). This list is based on the literature concerning the avifauna of the whole peninsula and on the author's observations conducted in the territory of the Republic of Korea, and it includes all the species found up to that time. Now two further species should be added to it: *Motacilla lutea*,

observed in the autumn of 1978, and the probably breeding species *Bradypterus thoracicus*, found at present.

Translated into English
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STRESZCZENIE

Praca przedstawia wyniki obserwacji fauny lęgowej ptaków Koreańskiej Republiki Ludowo-Demokratycznej. Obserwacje prowadzone były od 19.V. do 14.VI.1980 w kilkunastu miejscach na terenie całego kraju (ryc. 1). Stwierdzono obecność 88 gatunków ptaków, z czego tylko 2, tj. *Numenius madagascariensis* i *Limosa limosa*, były prawdopodobnie jeszcze przelotne. Gnieźdzenie się 3 gatunków (*Loxia curvirostra*, *Pyrrhula pyrrhula* i *Erithacus akahige*) jest wątpliwe, natomiast pozostałe 83 gatunki można uważać za lęgowe. Gnieźdzenie się 21 gatunków zostało stwierdzone poprzez znalezienie gniazd (*Cettia diphone*, *Luscinia caliope*, *Motacilla cinerea*, *Phoenicurus aureus*, *Troglodytes troglodytes*, *Parus ater*, *Parus major*, *Parus varius*, *Oriolus chinensis*, *Pica pica*, *Dendrocopos major*, *Apus pacificus*, *Alcedo atthis*), złapanie czy obserwowanie lotnych młodych (*Parus palustris*, *Aegithalos caudatus*, *Paradoxornis webbiana*, *Lanius tigrinus*, *Anas platyrhynchos*), albo też obserwowanie ptaków dorosłych zbierających lub noszących pokarm (*Dendrocopos kizuki*, *Upupa epops*, *Phylloscopus trochiloides*).

Praca zawiera analizę usytuowania znalezionych gniazd, jak również wymiary i ciężar znajdujących się w nich jaj. Do najciekawszych obserwacji należą: stwierdzenie występowania *Pernis ptilorhyncus* — jest to 5 stwierdzenie tego gatunku na terenie półwyspu koreańskiego; prawdopodobne gnieźdzenie się *Porzana fusca* potwierdza zasiedlanie Korei przez te ptaki; prawdopodobnie istniejąca kolonia lęgowa *Hirundapus caudacutus* w okolicach góry Pektusan jest jedną z najbardziej na południe wysuniętych kolonii tych ptaków, ponieważ przez terytorium KRL-D przechodzi granica ich południowego zasięgu; stwierdzenie tokującej pary *Bradypterus thoracicus* jest drugą obserwacją tego gatunku w KRL-D, a obserwacja piskląt *Anas platyrhynchos* jest drugim stwierdzeniem gnieźdzenia się tej kaczki w Korei.

Złapane ptaki pozwoliły na oznaczenie przynależności podgatunkowej przedstawicieli *Emberiza elegans* i *Luscinia cyane*. Na półwyspie koreańskim gnieźdzą się przedstawiciele podgatunków nominatywnych, tj. *Luscinia cyane cyane* i *Emberiza elegans elegans*. Jaśniej ubarwiony podgatunek *Emberiza elegans ticehursti*, gnieźdzący się nad Amurem i Ussuri można spotkać w tym kraju w okresie przelotów.

Zaobserwowano różnice w przystępowaniu do lęgów w różnych częściach Korei. Znacznie wcześniej przystępują do lęgów ptaki w południowej części kraju niż w północnej.

Listę obserwowanych 88 gatunków można powiększyć o 32 gatunki ptaków głównie przelotnych, obserwowanych w jesieni 1978, co stanowi w sumie około $\frac{1}{3}$ z listy 384 gatunków będącej najnowszym opracowaniem ptaków Korei (GORE, WON Pyong Oh, 1971). Listę ptaków Korei należy powiększyć o dwa dalsze gatunki — obserwowany jesienią 1978 *Motacilla lutea*, oraz prawdopodobnie lęgowy *Bradypterus thoracicus* stwierdzony obecnie.

Redaktor pracy: prof. dr Z. Bocheński

Plate IV

- Phot. 1. A valley in the Myohyang-san Mts. Breeding biotope of *Emberiza elegans*, *Phoenicurus aureoreus*, *Parus varius*, *Accipiter soloensis* and other birds
- Phot. 2. Rice fields in the region of Samil-po Lake. Place of observation of *Alcedo atthis*, *Porzana fusca* and *Lanius tigrinus*



Phot. 1



Phot. 2

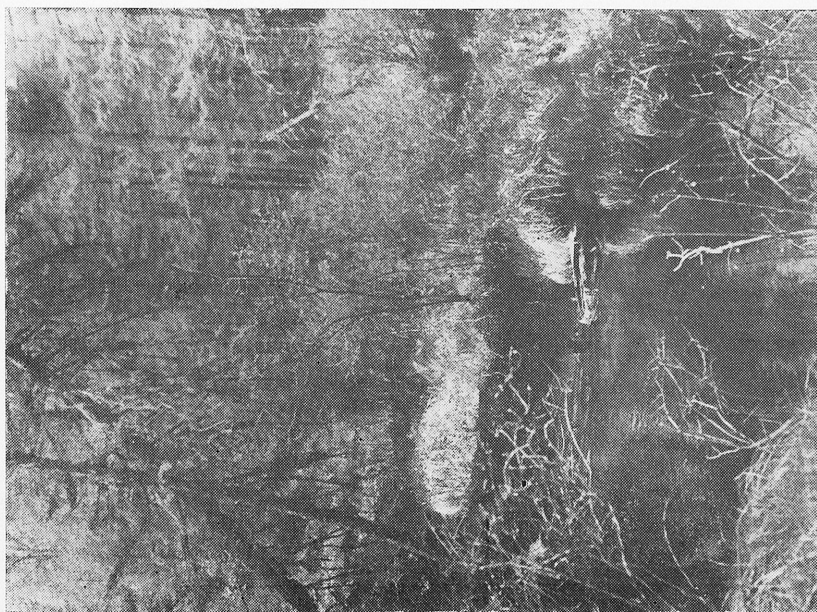
Plate V

Phot. 3. A taiga forest in the Samjiyon area. The place of occurrence of *Tetrastes bonasia*

Phot. 4. A high peatbog in the Samjiyon area. Breeding biotope of *Phoenicurus auro-reus* (its nest is situated in an old hollow trunk seen uppermost)



Phot. 4

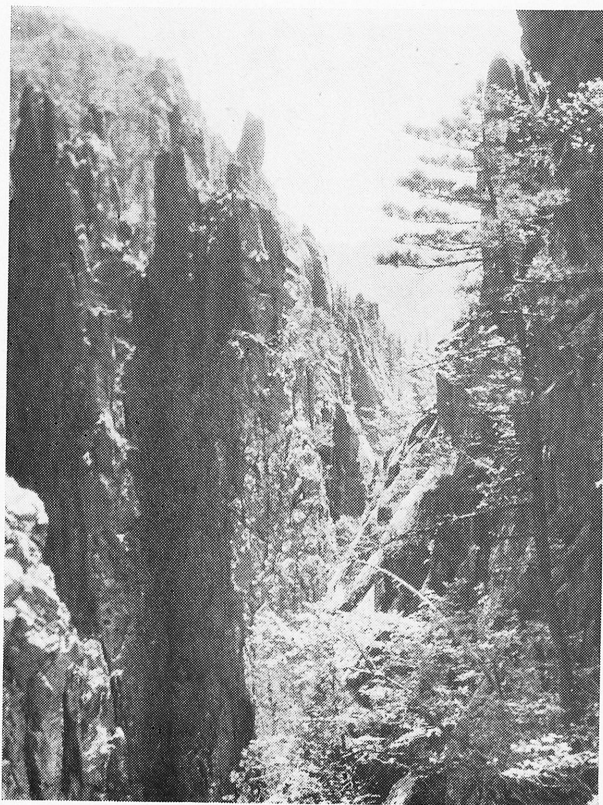


Phot. 3

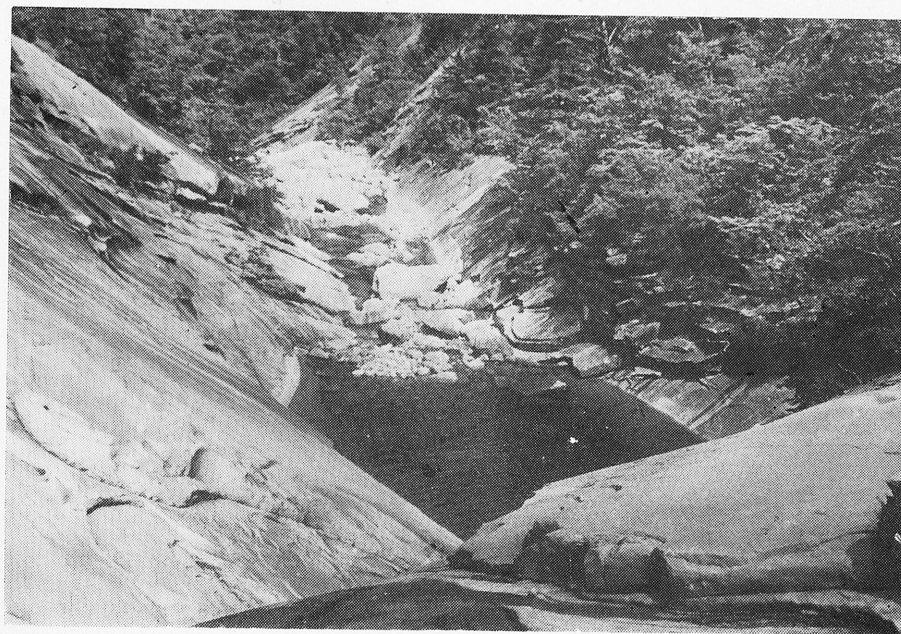
Plate VI

Phot. 5. Kumgang-san Mts.

Phot. 6. A river valley in the Kumgang-san Mts. Place of occurrence of *Cinclus pallasi*



Phot. 5



Phot. 6

Plate VII

Phot. 7. A nest of *Phoenicurus aureus*, situated in a small niche in the steep edge
of a road near Hyesan

Phot. 8. Nest of *Oriolus chinensis*



Phot. 7



Phot. 8

Plate VIII

Phot. 9. Nest of *Cettia diphone*

Phot. 10. Nest of *Luscinia caliope*



Phot. 9



Phot. 10