Altenburg & Wymenga ECOLOGISCH ONDERZOEK

Achtergronddocument (ecoprofiel Zomertaling en Slobeend)

A&W-rapport 1758 bijlagerapport

in opdracht van

Vogelbescherming NEDERLAND

Achtergronddocument (ecoprofiel Zomertaling en Slobeend)

A&W-rapport 1758

C. van der Weyde
E.B. Oosterveld
L.W. Bruinzeel

Foto Voorplaat
Slobeend, Benny Klazenga

C. van der Weyde, E.B. Oosterveld, L.W. Bruinzeel 2012
Ecologisch profiel van Zomertaling en Slobeend. A&W-rapport 1758
Altenburg & Wymenga ecologisch onderzoek, Feanwâlden

Opdrachtgever
Vogelbescherming Nederland
Postbus 925
3700 AX Zeist
Telefoon 030 67 37 799

Uitvoerder
Altenburg & Wymenga ecologisch onderzoek bv
Postbus 32
9269 ZR Feanwâlden
Telefoon 0511 47 47 64
Fax 0511 47 27 40
info@altwym.nl
www.altwym.nl

Projectnummer	Projectleider	Status
1679zos	L.W. Bruinzeel	Eindrapport

Autorisatie	Paraaf	Datum
Goedgekeurd	L.W. Bruinzeel	19 maart 2012

Inhoud

Samenvatting

In opdracht van Vogelbescherming Nederland is een literatuurstudie uitgevoerd naar de achteruitgang van de Slobeend *Anas clypeata* en de Zomertaling *Anas querquedula* in Nederland en daarbuiten.

Dit zijn de resultaten van een vertaalsessie die door Jevgeni Shergalin is uitgevoerd in opdracht van A en W.

1 Russische Literatuur deel 1

1.1 Artemyev, Yu., T., Popov, V., A. 1977. [Birds of Volga-Kama Region].

Saint-Petersburg, ''Nauka'' Publishers. 296 p. (In Russian).

Garganey Anas querquedula L., 1758**.** Pp. 64-67

Once Eversman (1866) wrote that the Garganey was a much more common bird in the southern regions comparing with the northern ones, to which the Kazan Provence had been related (according to his words). It is connected with the fact that the Garganey prefers to breed on open water bodies, willingly settles on field lakes, completely free of any tree vegetation, in bays and backwater of steppe rivers. Naturally the Garganey is widely spread in southern and central parts of the Region, but in the northern parts the Garganey is replaced by the Teal, preferring to breed on overgrown water bodies. Sushkin (1897), for example, did not find the Garganey in the wooded and mountanous Regions of Ufa Province. Vorontsov (1949) suggests that in Kama Front-Uralia the Garganey is recorded in small numbers, but in the north the Garganey number is considerably smaller. In Udmurtian Autonomous Republic the Garganey number is considerably lower than the Teal number. The Garganey occurs not everywhere (Kirisov, 1958). In Gorkiy Region the Teal is a common species, especially in Zavolzhye (Trans-Volga) (Vorontsov, 1967). In Mari Autonomous Republic the Teal is also a common bird. In Tatarian Autonomous Republic the Garganey is recorded much more often than the Teal. Among the Anseriformes, which were bagged by us, the Garganey compiles 40%.

Further to the south the Garganeys` role in waterfowl populations increases. The Garganey arrives at the second half of April. Before the 15th of April it wasn`t observed by us.

In birds, which are bagged shortly after the arrival, testicals are usually not developed, and there is no sperm in epididymus.

The first discovery of the Garganey`s nest was recorded on the 3rd of May (1947), but the egg laying usually begins much later, on the 10th-15th of May, and we haven`t met the eggs with full clutch earlier than the 18th of May. The nests are located in dry place, usually not in large deepening of the soil, are lining with dry grass, and during the egg laying they are lining with the light down with brown spot in the middle. The number of eggs in a clutch doesn`t exceed 13 (in average 9) eggs. We have found nests not only in places, which have the access to the water bodies, often in 20-50m from the coast among the miscellaneous meadow vegetation, but in clean meadows near the brier shrubs and osier-bed. In addition to this, on the 15th of May 1949, in the pine forest margin at 1,5 km from Kama River the nest with two eggs was found. All the eggs, discovered by us, were located on a grass. Sometimes the Garganey nests are placed on small distance from each other. Therefore, in the third decade of May 1952 we discovered 3 nests on an open meadow, which was located between 2 lakes with the square, smaller than 2 ha. The brood records, which were taken in the Kama River floodplain was lower than the Belaya River mouth in 1932 and in the Volga River floodplain, which was higher than the Kama River mouth in 1951 and 1952, showed that in Kama on 1 sq km of river`s floodplain 4-5 broods could be found, but in the Volga floodplain the brood`s number is just 1.

We have observed the contents of 200 Garganeys stomachs, which include the stomachs of the birds, bagged during the field work and those, which were received from hunters. During

the stomachs dissection, which was made shortly after the bird bagging, we usually discovered the great number of animal food, but in stomachs, which were received from hunters, the most common food was seeds. It seems that the gastric acid has an effect on the animal food after the duck`s death, therefore it is important to make a dissection shortly after the bird`s bagging. In animal food the dominants are the following: mollusks, chironomids, caddis flies, dragongly maggots. The vegetable food are seeds of bulrush, pondgrass and pond docks, vegetative parts of plants and little duckweeds.

Shoveler *Anas clypeata* L., 1758. Pp. 66-67.

E.A.Eversman (1866) wrote that the Shoveler was recorded everywhere in water bodies with dead freshwater; in water bodies with running water this species is a very rare. Bogdanov (1871) writes that the Shoveler is recorded in all areas of Povolzhye (Volga River area), and it is quite common everywhere. Pleske (1878) writes that this species is a quite common during the nesting period in the lower reaches of the Belaya River. M.Ruzskiy (1893) writes that the Shoveler breeds not in large number and only in large river valleys. Nowadays we can state that the Shoveler is related to the rarest dabbling ducks of the Volga-Kama Territory, its ''specific weight'' in Anseriformes population during the autumn migration is lower than 1%, whenever in breeding period the Shoveler`s number reaches 5-6%. The bird does not form any aggregations anywhere, and usually is recorded to be found by separate pairs. Yu.T.Artemyev observed the Shoveler aggregation only once, in shallow water of the water storage basin, which was situated in the territory with large plantations of emergent vegetation near the Sherbet valley (Kuibyshev Region of Tatarian Autonomic Republic) in spring of 1960.

The Shoveler arrives in the part of Kama River mouth relatively late. Despite the fact it was early spring, the first time when we discovered the Shoveler was the 23rd of April 1951. In 1960 (the year of relatively high Shoveler population) the Shoveler arrived on the 26th of April, whenever it usually arrives nearly on the 1st of May. We have not found any nests during the entire period of our works. A.A.Pershakov (1936), who was working in the Kama River floodplain of Menzelinsk Region, writes that the Shoveler was found there quite seldom. A.R.Delivron in the territory of Zhigulev Nature Reserve throughout 3 years of his ornithological research (1932-1934) has sighted the Shoveler only once – it was the 19th of April 1933. However this species is very likely to breed in the territory of this region. Many times we have the possibility to bag the Shovelers and observe their broods. There are some data on numerous records of the Shoveler broods in Simbirsk Province, written by Zhitkov and Buturlin (1906). Whenever Plesskiy points at the Shoveler`s breeding in Kirov Region (1955), Kirisov points at the Shoveler`s breeding in Udmurtian Autonomian Republic (1958) and Vorontsov points at the Shoveler`s breeding in Kama Front-Uralia (1949). The study of the Shoveler`s feeding, conducted by V.I.Tikhvinskiy (1931) and us, showes that the major part of food make up the mollusks (Planorbis, Bithynia, Limnaea, Valvata, Physa), insects and crustaceans. The remains of *Dreissena polymorpha* are presented in the Shoveler`s nutrition after the filling up of water reservoir.

The autumn passage in 1959 was not well expressed; it began at the end of the first decade of September and lasted up to the 3rd of October. S.I.Snigirevskiy (oral communication) found the Shoveler on the 18th of October, as soon as the snow has fallen. The probability that it was the wounded specimen, who could not have the possibility to undertake a migration, is not excluded. Later than the 10th of October we did not observe any Shoveler specimens.

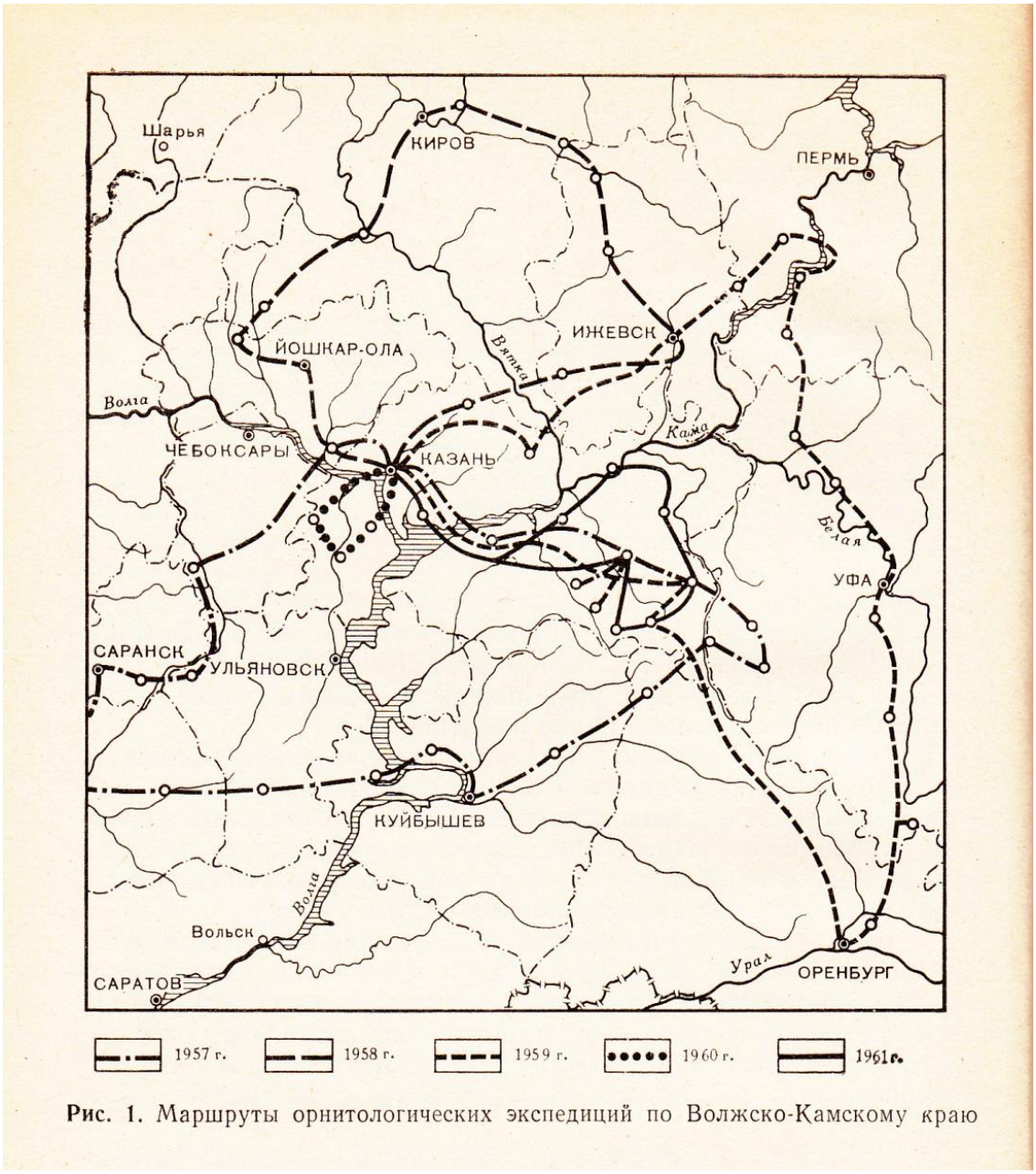


Рис. 1. Маршруты орнитологических экспедиций по Волжско-Камскому краю

Figure 1, placed above, represents the routes of otnithological expeditions in the Volga-Kama Territory. In the upper centre of the picture Kirov town is situated, in the right corner Perm' town is located, in the lower right corner Orenburg town is situated, and in the lower left part Saratov town is located.

1.2 Babenko, V., G. 2000. [Birds of the Lower Amur River area (Nizhnee Priamurye)].

Moscow, ''Prometey'' Publishers. 724 p. (In Russian).

Garganey *Anas querquedula* Linnaeus, 1758. Pp. 117-120.
Status. This bird is not a numerous, but breeding and common migratory species.
Distribution. The species is widely spread throughout the whole studied territory.
Seasonal movements. In the Khabarovsk vicinity Garganeys appear in the first half of April, the massive arrival takes place by the beginning of May, in a region of the Bolon Lake, first birds appear from the 20th of April (Roslyakov, 1980b, 1987). The Garganey pairs were observed on the Amur River, near the Chepchiki flow, on the 4th of May (Kistyakovskiy, Smogorzhevskiy, 1973). The beginning of migration on the Bolon Lake goes on at the beginning of May, on the Udyl Lake Garganeys are usually observed from the 16th of May, the intensive migration goes on from the 17th to the 31st of May (Poyarkov, 1992). In spring, on the Evoron Lake, birds appear at the end of April (Roslyakov, 1975a). In 1986, on the Evoron Lake, birds appeared in the first decade of May, the intensive arrival was observed on the 18th-23rd of May 1988 (Pronkevich, Voronov, 1996). In the Komsomolsk National Park the migration goes on at the second half of May (Kolbin et al., 1994). On the Shantar Islands birds were bagged on the 14th of May (Dulkeit, Shulpin, 1937). Migratory flocks, including up to 10 specimens, were registered during the period between 16th and 23rd of May 1991 near the Mago and Puir settlements and on the 24th of May 1980 near the settlement named after P.Osipenko.

In summer period the birds, which are not breeding, but flying (flocks included up to 8 specimens) were regularly registered by us on different water bodies of the Nizhnee Priamurye (Lower Amur River Basin). In autumn, in the Komsomolsk National Park the migration goes on in September (Kolbin et al, 1994). On the Evoron Lake, Garganeys by flocks, consisted of 7-35 birds, leave from the middle of August (Roslyakov, 1975a). In the Khabarovsk vicinities the passage goes on from the end of August till October, the massive passage goes on from the 5th to 25th September (Roslyakov, 1980b, 1987). In Khekhtsirskiy Natural Park birds are observed up to the period between 22nd - 27th of October (Ivanov, 1993). One bird was recorded by us in the Dzhapi River mouth on the 13th of October 1982.

Habitats. Very often in the breeding period this species is observed on small water bodies: on ''staritsa'' (dead lakes) and lakes, seldom it breeds not far from small settlements.

Numbers. On the Evoron Lake the Garganey numbers reaches 400-500 pairs and considerably fluctuates in a certain period of time (Roslyakov, 1975a), in total, in the Nizhnee Priamurye, starting from Khabarovsk, where nearly 8 thousand pairs usually breed, whereas after the duckling appearance, in the most favourable biotopes, their numbers can reach 200-400 specimens per 1000 ha (Roslyakov, 1984a).

The table shows the Garganey numbers in 1979-1984 on the lakes of the Nizhnee Priamurye (Poyarkov, Babenko, 1986, 1991).

Lake	The pair number
Bolon'	40-50
Evoron	28-32
Chukchagirskoe	24-30
Udyl'	32-34
Orlik	5-7
Orel'	20-50

In breeding period the average number of this species on different water bodies of the Nizhnee Priamurye was 1,1 pairs per 10 km, in some habitats (the Gorin River lower reaches) it can reach 3-5 broods per 1 km of the river bed (Babenko, 1983, 1984b; Poyarkov, Babenko, 1986; Kolbin et al., 1994; Kolbin, 1996; our data). In the middle Priamurye (Amur River area) the number of this innumerable duck can reach 5, 7 specimens per 1 km of a river (Smirenskiy, 1986).

Breeding. On the 1st of June 1973 the nest with semicomplete clutch (2 eggs) was found on the swamped meadow in the Zeya River valley (in the region of the Gilimkur River mouth) (Kislenko et al, 1998). The egg clutch near Khabarovsk and on the Bolon' Lake was registered at the end of May (Tscherbakov, 1975). In the Khabarovsk vicinities the duckings usually appear at the end of June- beginning of July, but they are ready to fly from the middle of August; the beginning of egg laying on the Bolon' Lake was registered in the period between the 5th and 8th of May; in a full clutch 7-12 eggs can be, whereas the first broods on the Bolon' lake appear from the 16th to 18th of June, and on the Evoron Lake young birds appear in the period between the 1st and 5th of July, but the massive brood appearance on the Evoron Lake was observed on the 10th-15th of July; in average, in broods 8,5 ducklings appear (Roslyakov, 1975a, 1980b, 1987). The incubated clutches were found on the 28th of May near the Verkhniy Nergen settlement; the female and 5 males, followed by her, were recorded near Ommi settlement; the full clutch, consisted of 10 not incubated eggs, was found near Novaya Ferma settlement on the 24th of June 1961 (Kistyakovskiy, Smogorzhevskiy, 1973). In broods (n=10) with recently incubated ducklings, which appear in the Nizhnee Priamurye at the end of June, the average number is 7,5 ducklings (Poyarkov, 1992).
Broods with one-day old ducklings in a region of the Tyr settlement were observed on the 27th of June 1961 (Kistyakovskiy, Smogorzhevskiy, 1973).
The Garganey copulation was recorded on the 14th of June 1982 on the Dzhapi River. On the 29th of May 1978, in the Komsomolsk-on-Amur Region, a female, in whose oviduct the formed egg had been located, was found. Broods with downy chicks were registered on the 4th-7th of July 1978 in the Komsomolsk-on-Amur Region and the Gorin River mouth; on the 24th of July 1987, on the Chernaya River, a female with 4 ducklings, which had the size of the female at a half, was observed.

Feeding. In stomachs of 2 ducks, bagged by us on the 14th of June 1982 on the Dzhapi River, seeds and vegetative parts of plants were found. In stomachs of birds, bagged in the Nizhnee Priamurye, some gastropods were found numerous times (Poyarkov, 1992).
Moult. A replacement of contour feather in the Garganey males begins at the end of June-July; in a bird, bagged on the 24th of June 1979 on the Udyl' Lake, the replacement of body feathers on sides, shoulders, tail base and on the base of hackle (neck) was started; a male, bagged on the same place on the 28th of June 1979, had a similar moult topography, however, the replacement of the tertiary remiges was taking place, also the head moult was started, as well as two pairs of the central rectrices were being replaced; it is clear that in females the moult starts shortly after the moment, when ducklings are ready to fly; thus in the female, bagged on the 3rd of August, the moult has not started yet; the second, namely, the autumn moult, in the Nizhnee Priamurye does not start until September; in this month males in the breeding plumage are not even observed, but in the birds, bagged at the beginning of September, the moult does not take place; in the females, the moult takes place shortly after the time, when ducklings are ready to fly; the second (autumn) moult starts not earlier than September (Poyarkov, 1992; N.D.Poyarkov, personal communication).

Shoveler *Anas clypeata* Linnaeus, 1758. Pp. 120-121.
Status. It is inconsiderable in number, breeding and migratory species.

Distribution. It is observed on the Bolon', Evoron, Chukchagirskoe, Udyl', Orel' Lakes, in the Amgun' River valley (Roslyakov, 1975a, 1980b; Poyarkov, Babenko, 1986, 1991), in the Komsomolsk Natural Park (Kolbin et al, 1994) and the Amur River mouth (Schrenk, 1861). In the breeding period a pair of birds was observed by us in the lower reaches of the Tugur River.
Seasonal movements. In Zool. Museum of Moscow State University the specimen, bagged in April 1908 under Khabarovsk, is kept. In the Khekhtsirskiy Natural Park the Shoveler is observed since April (Ivanov, 1993).

The spring migration period near Khabarovsk starts at the 25th-28th of April; in 1986, on the Bolon' Lake, birds appeared at the second half of May, whereas on the Evoron Lake they appeared at the beginning of May (Roslyakov, 1975a, b, 1980b; Poyarkov, 1992). In 1986, on the Evoron Lake, the birds appeared at the third decade of April; an intensive passage took place in the period between the 18th and 23rd of May 1988 (Pronkevich, Voronov, 1996). In Komsomolsk Natural Park, the spring migration period starts in the 3rd decade of April and continues up to the middle of May (Kolbin et al., 1994). Birds were bagged in the Amur River mouth on the 22nd and 26th of May (Shulpin, 1936). On the Shantar Islands birds were registered since the beginning of June (Dulkeyt, Shulpin, 1937).
Birds, which spend summer here, (their flocks consist of 4-14 specimens, including females and males) were registered by us on the 21st-26th of June 1982 and 1986 near the Orel'-Chlya settlement and in the Schastye Bay Region.
In autumn, the passage on the Shantar Islands goes in September (Dulkeyt, Shulpin, 1937). On the Muhtel' Lake, during the migration, not large Shoveler groups were observed at the end of August- September 1986 (Poyarkov, Budris, 1991). On the Evoron Lake the migration starts in August and continues up to the 20th of October (Roslyakov, 1975a). In the Komsomolsk Natural Park the Shoveler passage was registered in September (Kolbin et al, 1994). Near Khabarovsk the last birds were observed on the 12th-15th of October (Roslyakov, 1980b). Post-breeding nomadic migrations with slightly expressed movement to the south were recorded on the 8th-23rd of August in the Chyornaya River mouth; at the same place the last birds were registered on the 4th of October 1988.
Habitats. This species prefers to settle on shallow, well warmed small lakes, bays and large lakes.
Numbers. G. E. Roslyakov (1975a, 1984a) presents the various data, concerning the Shoveler number, showing that on the Evoron Lake 40-50 pairs are breeding, but in the whole territory of Nizhnee Priamurye 50-60 pars are breeding. In May, in the Gorin River lower reaches, on the 10th km of the river, 0,2-1,5 birds are recorded (Kolbin, 1996).

The table shows the Shoveler numbers on different lakes of the Nizhnee Priamurye (1979-1984) (Poyarkov, Babenko, 1986, 1991).

Lake	The pair number
Bolon'	6-7
Evoron	17-20
Chukchagirskoe	10-12
Orlik	2-6
Udyl'	4-5

Breeding. In broods 4-7 ducklings are presented, which appear at the end of July, but can be ready to fly just by the end of August (Roslyakov, 1975, 1980, 1987). On the 26th of July 1984, on the Orlik Lake, 25-30 birds are recorded; in broods (n=15) of the 1-2 aged classes 7

ducklings can appear (Poyarkov, 1992). On the 21st of June 1980, in a lower reaches of the Tugur River, the male, whose testicle size compiled 22 x 11 and 17 x 9mm, was bagged.
Moult. In the male, bagged on the 27th of June 1983 on the Bolon' Lake, the replacement of flight feathers (remiges) has started, a moult of contour feather on the head, neck, belly, sides and back was taken place; in the female, bagged on the Bolon' Lake, the moult of sides, neck and tail base has started; in males and females the moult takes place at the end of June (Poyarkov, 1992; N.D. Poyarkov, personal communication).Unfavourable factors. The mortality of ducklings reaches 50% (Poyarkov, 1992).

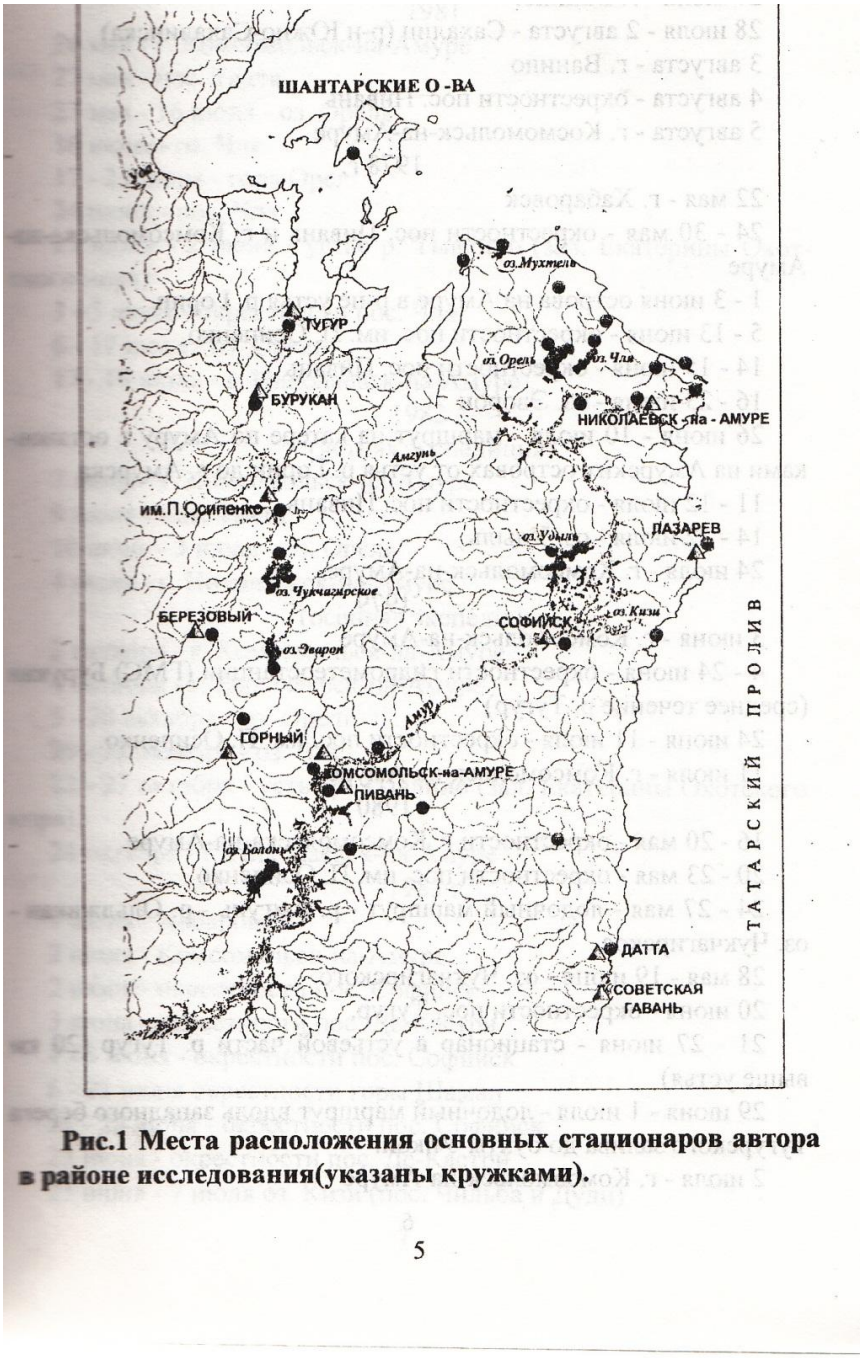


Рис.1 Места расположения основных стационаров автора в районе исследования(указаны кружками).

5

Figure 1, placed above, represents the location of the main permanent camps in the study territory (marked by circles). In the upper part of the picture the Shantar Islands are situated, whenever in the right part of the picture the Tatar Strait is located.

1.3 Danilov, N.N., Ryzhanovskiy, V.N., Ryabitsev, V.K. 1984. [Birds of Yamal Peninsula]

Moscow, ''Nauka'' Publishers. 336 p. (In Russian).

Garganey *Anas querquedula* L. Pp. 48-49

In the Ob River valley flocks of Garganey, pairs and single birds regularly visit the territory of cis-Ob (around Ob) forest-tundra and southern Yamal. A.S.Shostak (1921) mentioned the Garganey records in the S. of Yamal. According to hunters' reports from Yar-Sale, the Garganeys were recorded in the vicinities of Yar-Sale at the beginning of June 1976. These were the flocks, consisting of 5-6 birds and pairs. Also there is data on the Garganey bags in this region in Autumn 1975 and 30th of August 1976. The male was bagged by us from the flock (6 specimens, males and females) on the 13th of June 1971 in Puiko; on the 29 th of June 1976 at the middle stream of the Yadayakhodyyakho River the male was recorded, who was feeding together with the Garganey male on the floodplain lake.
Data on breeding are unknown.

Shoveler *Anas clypeata* L. P.49.

This is an unnumerous breeding duck of the river floodplains of southern Yamal. L.N.Dobrinskiy (1959) considered the Shoveler as a common breeding bird of S. Yamal and rare in the Middle Yamal. Annually Shoveler pairs and separate males were recorded by us in the lower parts of Ob' and Hadytayakhe Rivers. The northernmost region for observations of pairs were the upper parts of Yadayakhadyyakho River. They were stayed everywhere only in river valleys.
The arrival of Shovelers took place together with the arrival of other dabbling ducks. The earliest dates of their arrival are the following: 18th of May in Yar-Sale (1979), 25th of May in Hadyta factoria (Hadyta local station) (1973). Since the spring arrival, the Shovelers were observed dominantly by pairs; much more seldom the single males were recorded. The flocks (up to 30 specimens) is a rare phenomenon.
A nest with 10 eggs was found near Khadyta factoria on the 1st of July 1977 on *Calamagrostis* spp. meadow in a floodplain river; on the 8th of July the female continued to incubate. The brood of 7 ducklings, who began to be covered with feathers, was recorded on the 28th of July 1976 near Yar-Sale; since month, at the same place, 2 slightly grown up ducklings were recorded. On the Hadytayakhe River the brood with 5 downy ducklings was recorded on the 6th of August 1981.
Males, who were bagged in spring, weighed 618, 600 and 542 g, wing was by length at 241, 245 and 248 mm.

1.4 Dubovik, A.D. 1972. The sex correlation in ducks in breeding period.

// Zoological problems of Siberia. Novosibirsk, “Nauka” Publishers. P.318. In Russian.

We conducted observations since 4 June till 17 July 1970 in the area between Ob-Ket Rivers, within the limits of Parabelskiy district of Tomsk Region. For clearing up the sex ratio we have chosen 664 registrations of the specimens of 8 species for 84 hours of observations during 14 days (since 4 till 25 June). …

The results were received the following: for the Mallard (26 specimens) – single males 5, the same, females 0, pairs 9, 3-bird groups (2 males and 1 female) 1, -4-bird groups (3 males and 1 female) 0, 5bird group (4 males and 1 female) 0; for Wigeon (88) respectively – 21; 2; 24; 3; 2; 0; Pintail (283) – 115; 24; 53; 6; 5; 0, for the Teal (46) – 13; 1; 16; 0; 0; 0; the Garganey (82) – 15; 6; 25; 2; 0; 1; Shoveler (61) – 9; 3; 23; 1; 0 ; 0 ; Tufted Duck (61) – 10; 2; 21; 1; 1; 0 and for the Goldeneye (19) – 7; 8; 2; 0; 0; 0. Males in the Mallard compiled 62,3%, females -37,7%; Pintail – 69 and 31; Teal – 63,4 and 36,6; Garganey – 58,5 and 41,5; Shoveler – 55,7 and 44,3; Tufted Duck – 59,5 and 40,5; in the Goldeneye – 47,3 and 52,7%.

1.5 Gorshkov, A.,Yu., Ayupov, A.,S. 1989. [The resources of waterflown birds of Tataria].

The Kazan Institute of Biology of Kazan Branch of Ac of Sc of the USSR. Kazan. 118p. (In Russian)

Garganey. Pp. 64-68

The data on the Garganey feeding are shown in the Table 37. The species number, shown in the table of the Garganey feeding, at the first and second periods made up the following values: 35 and 43 on the Kuibyshev water reservoir and 27 and 22 on the Nizhnekamsk (Lower Kama) water reservoir basins.
The Garganey food base on Kuibyshev water basin was the vegetable objects, consisting of the Bladder Sedge at the first half of the season (occurence of the species was 72,7% and a share of the stomach contents weight was 25,4%) and Willow Weed (adequately 36,3% and 20,4%).
Less frequent species was the Branched Burr (45,4% and 7,1%). At the second half of the season the most dominant species among the vegetable objects, suitable for birds feeding, were the Curltop Ladyfly (90,6% and 26,9%). Except of plant seeds in the Garganey stomachs the filamentous alga and duckweed were found.
In total, the share of the vegetable objects in feeding on the Kuibyshev water reservoir at the first half of the season was 68,5% and at the second half of the season was 42,0%.
On the Nizhnekamsk water reservoir among vegetable objects the dominants were the Cyperaceae, where the main species was the Bladder Sedge (occurence of the species was 81,8% and 25,5% of the weight), two species of the Bur Reed and the Willow Weed. At the second half of the season the same species were frequent. The duckweed in the Garganey feeding on this water body occured more often. The share of the vegetable objects in this species feeding on the Nizhnekamsk water reservoir during both periods was the same and compiled 74%.
The Garganey feeding on the Kuybishev water reservoir is quite diverse comparing with that species feeding on the Nizhnekamsk water reservoir. The numbers of species here in the first and second half of season were 20 and 26, and there were 8 and 11 on the Nizhnekamsk water reservoir. The main food during the season on the Kuybishev water reservoir was the gastropods (adequately to the observation periods were 62,9% and 84, 2% of the animal food weight). On the Nizhnekamsk water reservoir the main Garganey food was the aquatic invertebrate maggots (the chameleon lies and another dipterans). The share of mollusks and animal objects in feeding was 11,5% in the first half and 48,3% at the second half of the season. One of the main molluscs species, which is the zebra mussel (*Dreissen polymorpha*), was not marked in the Garganey feeding on this water reservoir.

Shoveler. P.72.

In the first half of summer on the Kuybishev water reservoir 4 birds were bagged. The main food, which was found in their stomachs, where the seeds of the following plant species: the seeds of curltop ladyfly, water dock, mara, spike sedge, sedge grass, creeping buttercup, floating and branched burr. In 3 stomachs the following molluscs were found: Anisus, Lymnaceae, Bithynia and Planorbis, which compiled 0,07, 0,78 and 98,0% of the total weight of food bollus (air-dry weight). In one of the stomachs, except of the stated ingredients, the wireworms (imago and 2 maggots) and 2 mosquito maggots.
In autumn period in the Shoveler feeding the seeds of the following plants dominate: curltop ladyfly and water persicaria, cornstalk weed, floating burr and dodder. The animal food, which

was found in one stomach, consisted of the remains of water beetles and *valvata clemensis* in another stomach.

On the Nizhnekamsk water reservoir in 3 stomachs of 4 bagged birds there were the seeds of the following plants: floating and branched burr, willow weed and sedge. The animal food, which was found in the 4th stomach, consisted of molluscs, aquatic bettles and seed shrimps (72,8% of total weight of food bollus).

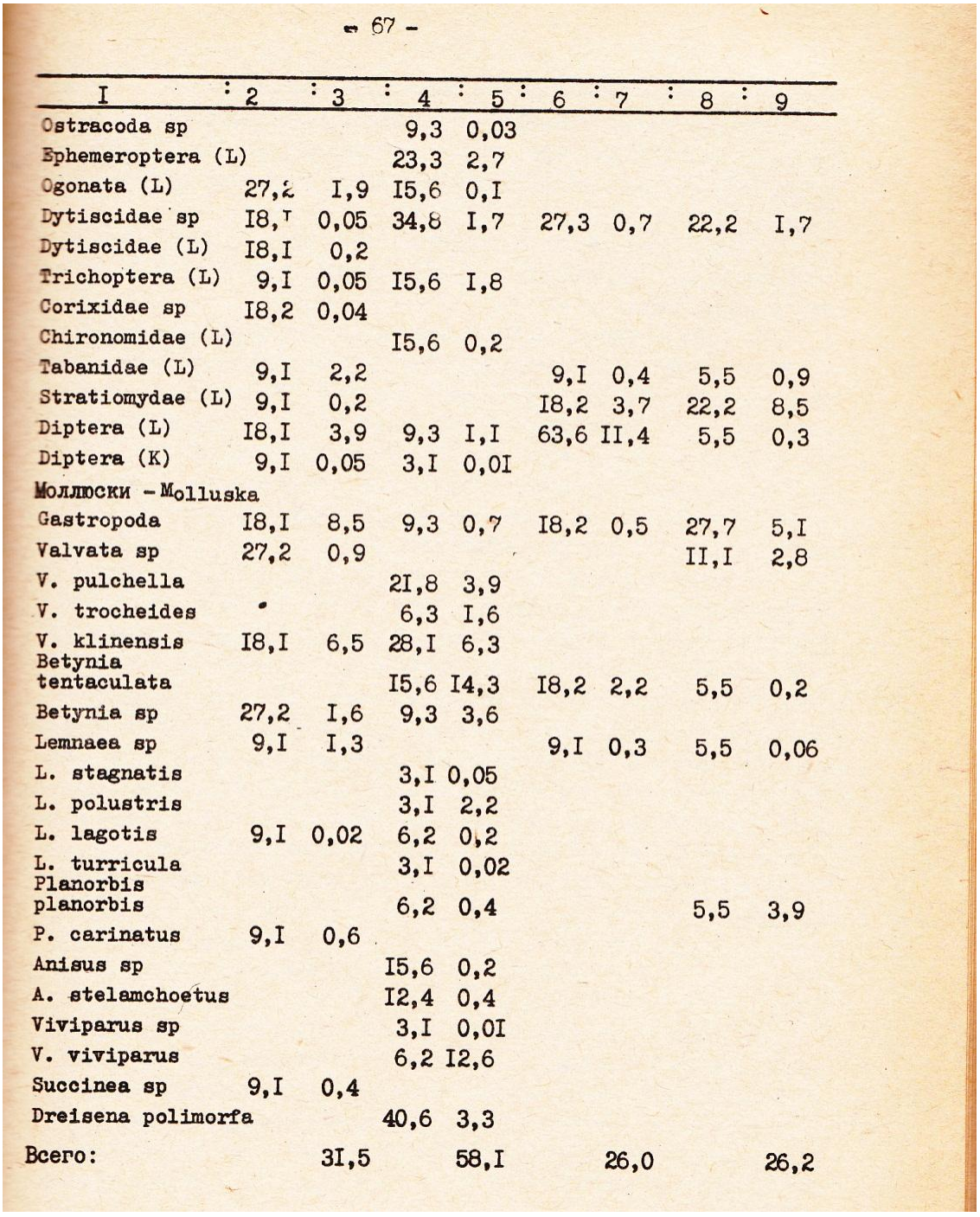
The table below represents the Garganey feeding ration on water reservoirs of Tataria (in g, air-dry weight). Table 37 consists of three columns. The first row. The left upper column represents the food, whenever two right columns represent the Kuybishev and Nizhnekamsk water reservoirs. The second row. The Kuybishev water reservoir (the second column from the left) consists of two periods: the Ist period (n=11) and the IInd period (n=32), whenever the Nizhnekamsk water reservoir (the first column from the right) consists of similar periods: the Ist (n=11) and the IInd (n=18). The third row. Each period of each reservoir consisted of two columns: the first means occurence and the second means the part of the weight in %. The first group of the column with food (the extreme left one) represents the plant seeds (this is written at the beginning of the Table 37 in bold).The second part of the column with food represents the animal food (this is written at the end of page 66 in bold). And the third part of the column with food represents the molluscs (this is written at the middle of page 67 in bold). The last row of the table represents the total value.

Таблица 37

Рацион чирка-трескунка на водохранилищах Татарии (в г, воздушно-сухой вес)

Корма	Куйбышевское				Нижнекамское			
	I период п=II		II период п=32		I период п=II		II период п=I8	
	Встречаемость	Доля от веса в %	Встречаемость	Доля от веса в %	Встречаемость	Доля от веса в %	Встречаемость	Доля от веса в %
I	2	3	4	5	6	7	8	9
СЕМЕНА РАСТЕНИЙ								
Лютиковые - Ranunculaceae								
Ranunculus sp	I8,I	0,I	6,2	0,2				
R. repens			I2,5	0,I	I8,2	2,2	5,5	0,08
R. polyathemos			9,3	0,07	I8,2	0,7	5,5	0,04
R. acris					9,I	0,I		
Розоцветные - Rosaceae								
Potentilla aserina	9,I	0,08						
Гречишные - Polygonaceae								
Rumex maritimus	27,2	0,6	25,0	0,8			5,5	0,08
R. crispus	9,I	0,05	3,I	2,5				
R. preudonathronatus			3,I	0,04				
Polygonum amphibium	36,3	20,8	25,0	I,8	27,3	I6,4	72,2	6,8
P.lapathifolium	45,4	2,3	90,6	27,3	9,I	0,I		
Маревые - Chenopodiaceae								
Ch. album	9,I	0,2						
Бурачниковые - Boraginaceae								
Myosotis sparsiflora			3,I	0,08				
Сложноцветные - Compositae								
Bidens tripartita	9,I	0,05						

I	2	3	4	5	6	7	8	9
Частуховые - Alis--mataceae								
Alisma plantago - aquatica			6,2	0,4				
Ежеголовниковые--Sparganiceae								
Sparganium erectum	45,4	7,6			36,4	4,6	83,3	28,4
S. emersum	36,6	0,9	34,8	5,5	63,6	I2,8	6I,I	I5,8
Злаковые-Gramineae								
Agrostis sp	9,I	7,9	3,I	0,03				
Осоковые --Cyperaceae								
Eriophorum sp					9,I	0,3		
Eleocharis mammillata			3,I	0,I	9,I	0,9		
Eleocharis palustris	27,2	I,6	9,3	0,2	36,6	2,6		
Scirpus lacustris	9,I	0,I	6,2	I,7	I8,2	0,5	II,I	2,0
Carex vulpina					36,6	3,3	5,5	0,05
C. vesicaria	72,7	25,6			8I,8	25,7	72,2	I5,2
C. inflata			3,I	0,0I	I8,2	0,2		
C. riparia					9,I	I,7		
C. caespitosa					9,I	0,3		
C. acuta					9,I	0,2		
Рясковые- Lem--naceae								
Lemna sp					I8,2	0,2	I6,6	0,2
L. trisulca					9,I	0,5		
L. minor			3,I	0,2				
Spirodela polyrrhiza							5,5	0,02
Водоросли -Chlo-								
rophycophyta	9,I	0,4						
Всего:		68,5		4I,9		74,0		78,8
ЖИВОТНЫЕ КОРМА								
Pisces (остатки)	9,I	3,0	9,3	0,2				
Insecta			I2,5	0,6	9,I	6,8	5,5	2,4
Asellus aquatica							5,5	0,2



- 67 -

I	2	3	4	5	6	7	8	9
Ostracoda sp			9,3	0,03				
Ephemeroptera (L)			23,3	2,7				
Ogonata (L)	27,2	I,9	I5,6	0,I				
Dytiscidae sp	I8,I	0,05	34,8	I,7	27,3	0,7	22,2	I,7
Dytiscidae (L)	I8,I	0,2						
Trichoptera (L)	9,I	0,05	I5,6	I,8				
Corixidae sp	I8,2	0,04						
Chironomidae (L)			I5,6	0,2				
Tabanidae (L)	9,I	2,2			9,I	0,4	5,5	0,9
Stratiomydae (L)	9,I	0,2			I8,2	3,7	22,2	8,5
Diptera (L)	I8,I	3,9	9,3	I,I	63,6	II,4	5,5	0,3
Diptera (K)	9,I	0,05	3,I	0,0I				
Моллюски - Molluska								
Gastropoda	I8,I	8,5	9,3	0,7	I8,2	0,5	27,7	5,I
Valvata sp	27,2	0,9					II,I	2,8
V. pulchella			2I,8	3,9				
V. trocheides			6,3	I,6				
V. klinensis	I8,I	6,5	28,I	6,3				
Betynia tentaculata			I5,6	I4,3	I8,2	2,2	5,5	0,2
Betynia sp	27,2	I,6	9,3	3,6				
Lemnaea sp	9,I	I,3			9,I	0,3	5,5	0,06
L. stagnatis			3,I	0,05				
L. polustris			3,I	2,2				
L. lagotis	9,I	0,02	6,2	0,2				
L. turricula			3,I	0,02				
Planorbis planorbis			6,2	0,4			5,5	3,9
P. carinatus	9,I	0,6						
Anisus sp			I5,6	0,2				
A. stelamchoetus			I2,4	0,4				
Viviparus sp			3,I	0,0I				
V. viviparus			6,2	I2,6				
Succinea sp	9,I	0,4						
Dreisena polimorfa			40,6	3,3				
Всего:		3I,5		58,I		26,0		26,2

Garganey. *Anas querquedula* L. Pp. 26-30.

In nesting period the Garganey among Anseriformes is a numerous species. At this time, its share equals 12,9-72,1 % of the whole Anseriformes population (table 14, 15). On the eastern passage the Garganey share compiles 9,7-67,9%. In the period of Anseriformes massive autumn migrations the Garganey population density considerably decreases, because it undertakes the nomadic movements to the winter grounds much earlier than other Anseriformes do. In spring the Garganey arrives at the second decade of April. At this time 50-56% of birds stay by pairs (Figure 7). The large number of the Garganey, united into pairs, is observed at the 3rd decade of April. Later on the pairs begin to disintegrate. Females start

breeding, as a result of which the share of single males and united into small groups males increases. The massive breeding is observed at the 2nd-3rd decade of May (it is month later than in the Mallard). At this time the most intensive disintegration of pairs and the dramatical increase of the males` share are taken place. In total, the breeding lasts for the long period of time and continues up to the second decade of July.

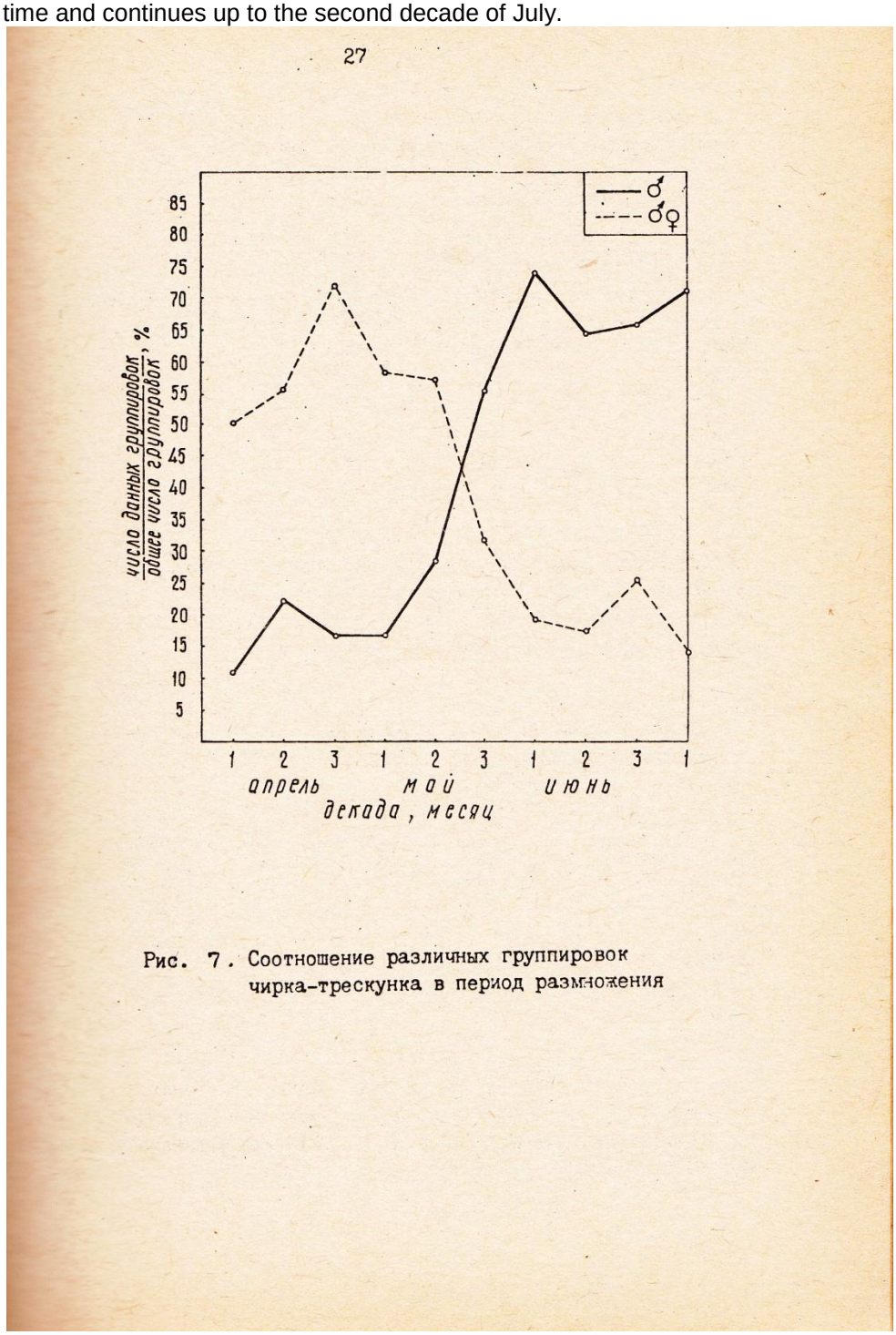


Рис. 7. Соотношение различных группировок чирка-трескунка в период размножения

Figure 7. The corelation between different Garganey groups in the breeding period. The x-line (absciss) represents different months, whereas in the y-line (ordinate) numerator is the number of these groups and in denominator is the total number of groups (in %).

Table 14. The table represents the density population of the Garganey on the Nizhnekamsk water reservoir (specimens per 1 squared km and in % of the waterfowl population).

Year	Spring passage		Breeding period (season)		Pre-hunting period (season)		Autumn passage	
	Absolute	%	Absolute	%	Absolute	%	Absolute	%
1982	----	----	192	46,2	----	----	43	14,3
1983	92	10,8	124	31,0	313	29,7	2	1,0
1984	107	11,1	65	32,0	3	0,2	0,1	0,9
1985	----	----	----	----	9	5,0	----	----
1986	----	----	----	----	27	7,2	----	----

Table 15. The table represents the density population of the Garganey on the Kuybishev water reservoir (specimens per 1 squared km and in % of the waterfowl population).

Year	Spring passage		Breeding period (season)		Pre-hunting period (season)		Autumn passage	
	Absolute	%	Absolute	%	Absolute	%	Absolute	%
1979	72	52,8	273	72,1	285	34,0	----	----
1980	84	67,9	87	51,6	144	40,1	1	0,4
1981	24	9,7	29	27,5	181	44,8	0	0
1982	----	----	----	32,0	157	27,0	----	----
1983	----	----	----	----	118	19,3	----	----
1984	----	----	7	12,9	25	13,15	----	----

For the Shoveler the highest breeding density is typical. The share of the Garganey clutches compiles 49, 8% (n=102) of all discovered duck nests. However, the breeding success is low, especially it is low on the Kuybishev water reservoir (Table 16).

Table 16. The table represents the Garganey breeding success.

Year	The studied region	The nest number per 1 squared km	The percentage value of the duck nest number	The percentage value of destroyed (or dead) egg number	The number of birds in a brood, which were not able to fly	The number of birds, which began to fly per 1 squared km
1979	The Kuybishev water reservoir	38,0	50,6	93,5	4,5	8,8
1980	--''--	14,0	47,8	62,1	4,4	23,3
1983	The zone of variable	17,4	41,4	78,6	5,0	16,5

	hydrostatic head of the Kuybishev water reservoir					
1983	The Kizhnekamsk water reservoir	78,5	55,3	79,6	5,6	89,6
1984	--''--	63,0	50,0	65,1	5,2	67,1

The clutch mortality of dabbling ducks, breeding in the ugodye (habitat, piece of land) of water reservoirs, is roughly the same, however, in the Garganey the highest mortality rate (43,2 +/- 6,3%) is observed. From 8,8 to 89,6 specimens begin to fly in different years per 1 squared km of the nest-suitable territory. As a whole, in the habitats of the Kuybishev water reservoir 1,5-2 thousand of the Garganey are observed, whenever in the Nizhnekamsk 20-300 thousand of the Garganey specimens are recorded. The main nesting habitats are flooded meadows and plot of islands, free of any wooded vegetation. Broods begin to appear at the end of June.
The Garganey density population is a subject to the considerable changes by years (Table 14, 15). Thus, in 1984, on the Nizhnekamsk water reservoir the size of value in the pre-hunting period decreased at 100 times then it was in 1983. On the Kuibyshev water reservoir the increase of the Garganey number is typical since the spring up to the breeding period and further to the pre-hunting period, and the sharp decrease is typical in the period of the massive autumn migrations of the large waterfowl number. The tendency of the Garganey number decrease is observed here. At the zone of the variable hydrostatic head of the Kuibyshev water reservoir (the Chistipol Region), where the observations took place in the breeding period, this trend is also observed (Table 17).

Table 17. The table represents the Garganey population density in its breeding period in the zone of the variable hydrostatic head of the Kuibyshev water reservoir (specimens per 1 squared km and in % of the waterfowl population).

Year	Absolute	%
1982	165	58,5
1983	100	55,7
1984	22	23,1

In 1984, in the pre-hunting period the population density compiled here 57 specimens per 1 squared km (13,1%) of the waterfowl population. In the Garganey clearly expressed autumn migrations are not observed. Since the hunting begins, during the September, the Garganey number steadily decreases, but in October just single specimens are found by us. The Garganey number on the Kuibyshev water reservoir in the pre-hunting period varies from 1,4 to 15,7 thousands, on the Nizhnekamsk the species number varies within the larger limits (from 0,5 to 48,3 thousand specimens).

Shoveler *Anas clypeata* L. Pp. 30-32.

The Shoveler is observed on all plots of the Kuibyshev and Nizhnekamsk water reservoirs. On the last one this species is numerous in the pre-hunting period. One of the factors, which determined the Shoveler concentration in this period in the flooded habitats of the Nizhnekamsk water reservoir, is , perhaps, the large number of the main food objects - molluscs, insects and Crustaceans (Tikhvinskiy, 1931; Popov et al., 1954), the biomass of

which is at 3,3 times larger than on the shallow plots of the Kuibyshev water reservoir (look the Chapter 4).
In spring, the Shoveler arrives on the water reservoir at the 2nd-3rd decades of April, the earliest arrival was recorded on the 9th of April 1983. The clearly expressed passage of the Shoveler was not observed. At this time, groups, consisted of 2-4 birds were registered. The beginning of egg laying started at the 3rd decade of May. Full clutches contained 5-10 eggs. The highest breeding density was registered on the island plots of the Kuibyshev water reservoir and in the zone of the variable hydrostatic head (Table 18).

Table 18. The table represents the Shoveler breeding density on the Kuibyshev and Nizhnekamsk water reservoirs.

Year	The studied region	The average number of nests per 1 squared km of the nest-suitable territory	The percentage value to the total number of duck nests
1980	Islands of the Kuybishev water reservoir	4,5	7,8
1983	The zone of the variable hydrostatic head of the Kuybishev water reservoir	4,4	13,8
1984	Flooded plots of the Nizhnekamsk water reservoir	1,6	3,3

The population density of the Shoveler is more stable than in other duck species. The most considerable changes in the Shoveler numbers are in the pre-hunting period (Table 19, 20).
In autumn, the Shoveler leaves in September and in the period of massive waterfowl passage on the Nizhnekamsk water reservoir, and its share of the total waterfowl population is less than 1%. On the Kuibyshev water reservoir the Shoveler is observed by single specimens in this period. At the 2nd-3d decades of August, when the concentration of birds in broods, which began to fly in the habitats of water reservoirs, the Shoveler numbers on the Nizhnekamsk water reservoir are at 1,4 - 31,3 thousand specimens. On the Kuibyshev water reservoir the maximum numbers compiles 1,4 thousand specimens (1983).

Table 19. The table represents the Shoveler population density on the Nizhnekamsk water reservoir (specimens per 1 squared km and in % of the waterfowl population).

Year	Spring passage		Breeding period (season)		Pre-hunting period (season)		Autumn passage	
	Absolute	%	Absolute	%	Absolute	%	Absolute	%
1982	----	----	21	4,9	----	----	2	0,5
1983	12	1,4	6	1,6	36	3,4	1	0,6
1984	32	3,3	4	1,8	209	10,1	1	0,1
1985	----	----	----	----	10	5,1	----	----
1986	----	----	----	----	15	4,1	----	----

Table 20. The table represents the Shoveler population density on the Kuibyshev water reservoir (specimens per 1 squared km and in % of the waterfowl population).

Year	Spring passage		Breeding period (season)		Pre-hunting period (season)		Autumn passage	
	Absolute	%	Absolute	%	Absolute	%	Absolute	%
1979	5	3,6	6	1,7	12	1,4	----	----
1980	3	2,4	6	3,5	1	0,3	0	0
1981	3	1,4	2	1,5	1	0,2	0	0
1982	----	----	1	0,9	0,1	0,2	----	----
1983	----	----	----	----	26	4,2	----	----
1984	----	----	3	4,9	0	0	----	----

1.6 Kistchinsky, A.A. 1980. Birds of Koryak Upland (Plateau).

Moscow, Nauka Publishers. 336 p. In Russian. Koryak Plateau is situated ot NE of Magadan – capital of Kolyma in the NE part of the Russian Far East.

Shoveler on pp.46-47.
Breeds in the southern part of Koryak Upland (plateau).(Fig. 2).

Р и с. 2. Распространение белоголовой гагары, белошея, широконоски и американского пепельного улита в Корякском нагорье

1 — лиственничные леса; *2* — территории с господством субальпийского и альпийского ландшафта; *3* — зона тундры; *4* — равнинные части берингийской лесотундры; *5* — юго-западная граница области гнездования Gavia pacifica; *6* — места летнего пребывания Philacte canagica; *7* — северная граница области гнездования Anas clypeata; *8* — пункты летних находок Heteroscelus incanus

Fig.2. Distribution of Gavia pacifica, Philacte canagica, Anas clypeata and Heteroscelus incanus. 1 – larch woods; 2 – territories with dominance of subalpine and alpine landscape; 3 – tundra zone; 4 – plain parts of the Beringian forest-tundra; 5 – south-western border of Gavia pacifica range; 6 – sites of summer presence of Philacte canagica; 7 – northern border of Anas clypeata distribution; 8 – points of records of Heteroscelus incanus. On the right – the Bering Sea.

Breeding was determined near Geka Bay, where Firsova on 29 June 1977 has found the nest with 10 eggs on island in the colony of Common Terns and Common Gulls, and in lower reaches of Kultushnaya River, where Shovelers were quite common. On 10 August 1957 two young birds just begun to fly have been killed there.

In Apuka River mouth in 1960 we observed the first pair and another male on 17 May. 19 and 24 May the pairs and small groups of Shovelers fed in grassy swamps of Apuka River flooded by tides, together with tens of Pintails, Wigeons and Teals. 2 and 13 June we observed 3 pairs of Shovelers in Apuka flood; probably, they were breeding were, though in very small number.

Further northerly and easterly we did not see Shovelers, though they sometimes nest (A.V.Krechmar, A.I.Artyukhov, A.G.Sorokin, per. commun.) at the middle stream of Anadyr River and Krasnoe Lake. The Shoveler pair was bagged at the middle of June 1935 on the pebble of sea coast near Navarin Cape (Portenko, 1939), but these birds were clearly non-breeding.

Specimen: Koltushnaya River mouth, 10.VIII 1957, female, juv.

1.7 Lykov, E.L. 2008. Breeding Anseriformes of Kaliningrad: numbers and distribution

Casarca 11 (1): 131-141. In Russian with English summary.

Garganey. Pp.136-138. In the 1890's one pair nested on Upper Pond in the central part of the town (Koenigsberg) (Tischler, 1941). At the present time in the town territory 9 females of Garganey are registered, 1-3 females per sq km. It breeds on wet meadows and on strongly swamped grounds. It is spread unevenly, gravitates to the peripheral parts (plots) (Fig.2) with urbanization extent from 1 to 3 points.
Shoveler. p.138. In the past 3-4 pairs regularly nested in Pregol River mouth in the town vicinities (Tischler, 1941). In Kaliningrad territory 9 Shoveler females are recorded with population density from 1 to 5 females / sq km. Breeds on wet and flooded sedge-cereal; meadows and on strongly swamped grounds. It is spread unevenly, gravitating to the peripheral plots with urbanization extent from 0 to 1 point (Fig.2).

1.8 Mineev, Yu., N. 2003. [Anseriformes of the East-European tundra].

Ekaterinburg, ''Nauka'' Publishers. 225 p. (In Russian).

Garganey. P. 50.

On the Verkhnyaya Vychegda the Garganey was breeding in the 1930s of the XX century (Borodin, 1932), and sporadically – in the Pechoro-Ilych Natural Park (Teplov, 1948; Teplova, 1957). S.M.Uspenkiy (1965) found the unbreeding ducks in the vicinity of Vorkuta town and suggested the species breeding to be spread in the forest tundra. In the Malozemelskaya tundra the Garganey breeds in the Urdyuzhskoe Lake Region (67 degrees 15' N.L.), in the Pechora River delta, Bolshezemelskaya tundra - in the water basins of the Bolshaya Rogovaya, More-Yu Rivers and on the coast of the Haypudyrskaya Bay (Mineev, 1995a).

Shoveler.

Brown (Brown, 1877) suggested the Shoveler distribution to be spread up to the Pechora River mouth, M.A.Menzbier (1895) – up to the 68 degrees of N.L.

In the west of Malozemel'skaya tundra the Shoveler breeds on the Barents Sea coast in the Vel't River mouth (Gladkov, 1951). In the north-east (Russkiy Zavorot Peninsula) some Shoveler arrivals were sighted, the species breeds in the Pechora River delta, on the coast and islands of the Korovinskaya Bay (Mineev, 1994b, 1995a).

At the beginning of XX century, in the Bol'shezemel'skaya tundra, the Shoveler was spread in the belt of shrub tundra (Kertselli, 1911), and this species was found by us in its breeding period up to the coast of the Haypudyrskaya Bay (Mineev, 1987a).

In the Republic of Komi, this numerous species was found on breeding in the Verkhnyaya Vychegda water basin (Borodin, 1932; our data), as well as in the middle and in the Middle and Nizhnyaya Pechora (Dmokhovskiy, 1933). Since 1938, in the Pechoro-Ilych Natural Park the Shoveler was not breeding (Teplov, 1948), nowadays it is sporadically found there.

Garganey. P. 84

The main breeding areas of this species are the forest tundra and the belt of ''large-ernik'' shrub tundra (bushes of *Empetraceae* Lindl., which grow in tundra in large number). Relatively high number of breeding birds is typical for the Pechora River floodplain, the Bolshaya Rogovaya River basin and the Urdyuzhskoe Lake region (see Diagram 12). The data on the duck aggregation during the moulting period and before the autumn migration are unknown.

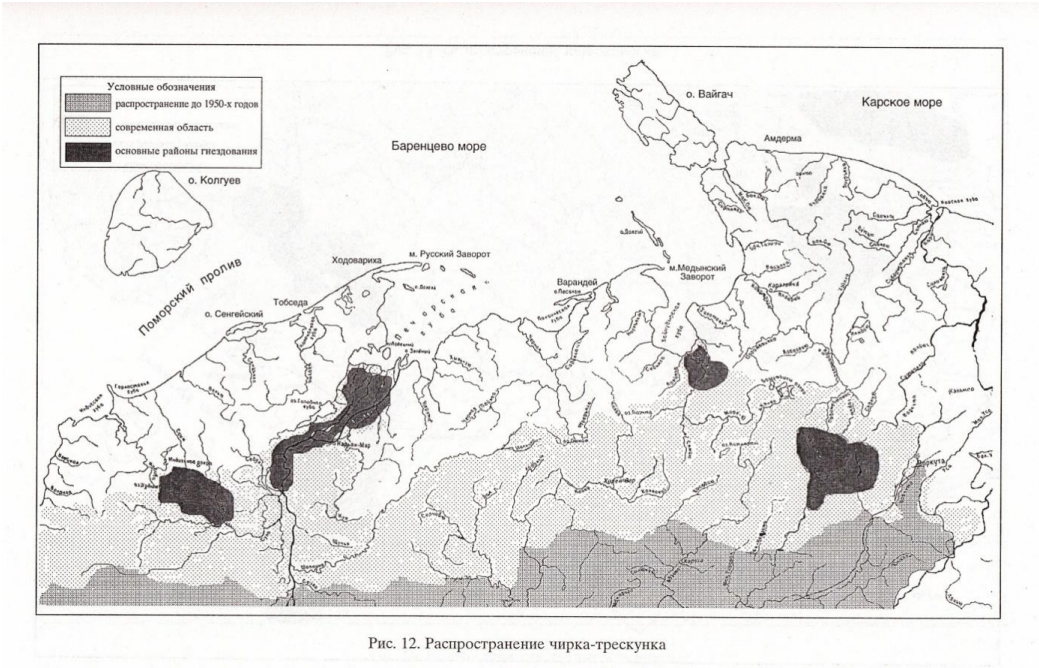


Рис. 12. Распространение чирка-трескунка

Figure 12 shows the Garganey distribution.Type Codes, related to the Figure 12, represent the following: The upper sign is the Garganey distribution up to the 1990s; The middle sign represents the modern region; The lower sigh represents the main Garganey breeding areas.

Shoveler.

During the breeding period the number of this species is relatively high only in the Pechora River floodplain and in area between Adzva, Bolshaya Rogovaya and Usa Rivers (see Diagram 13).

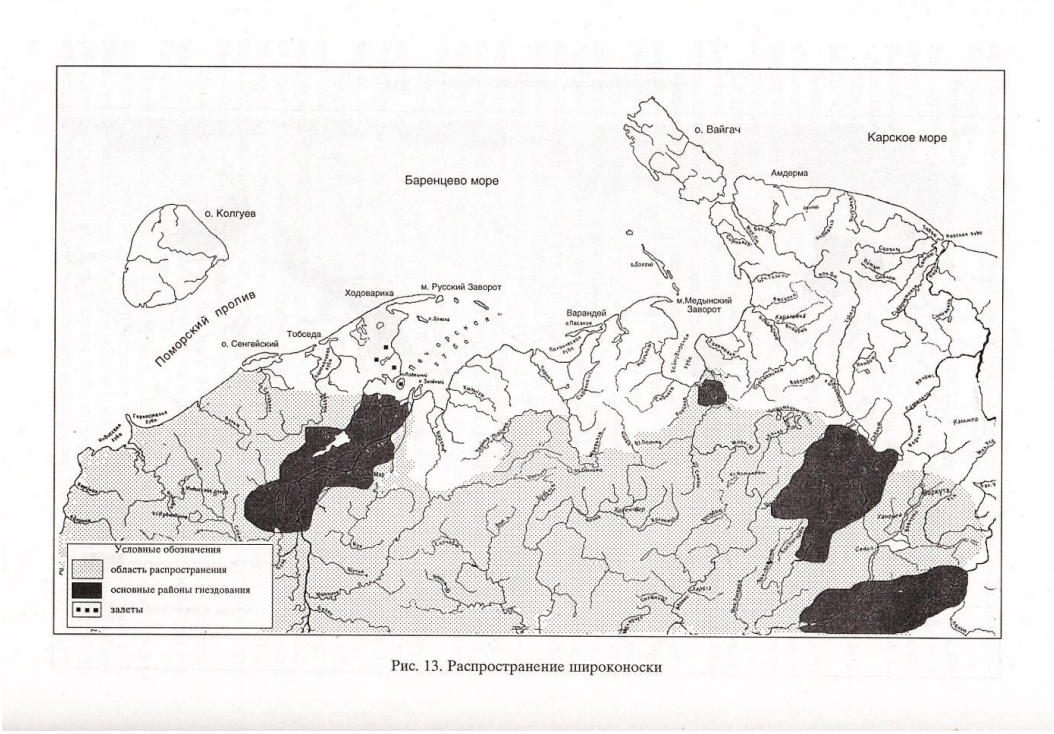


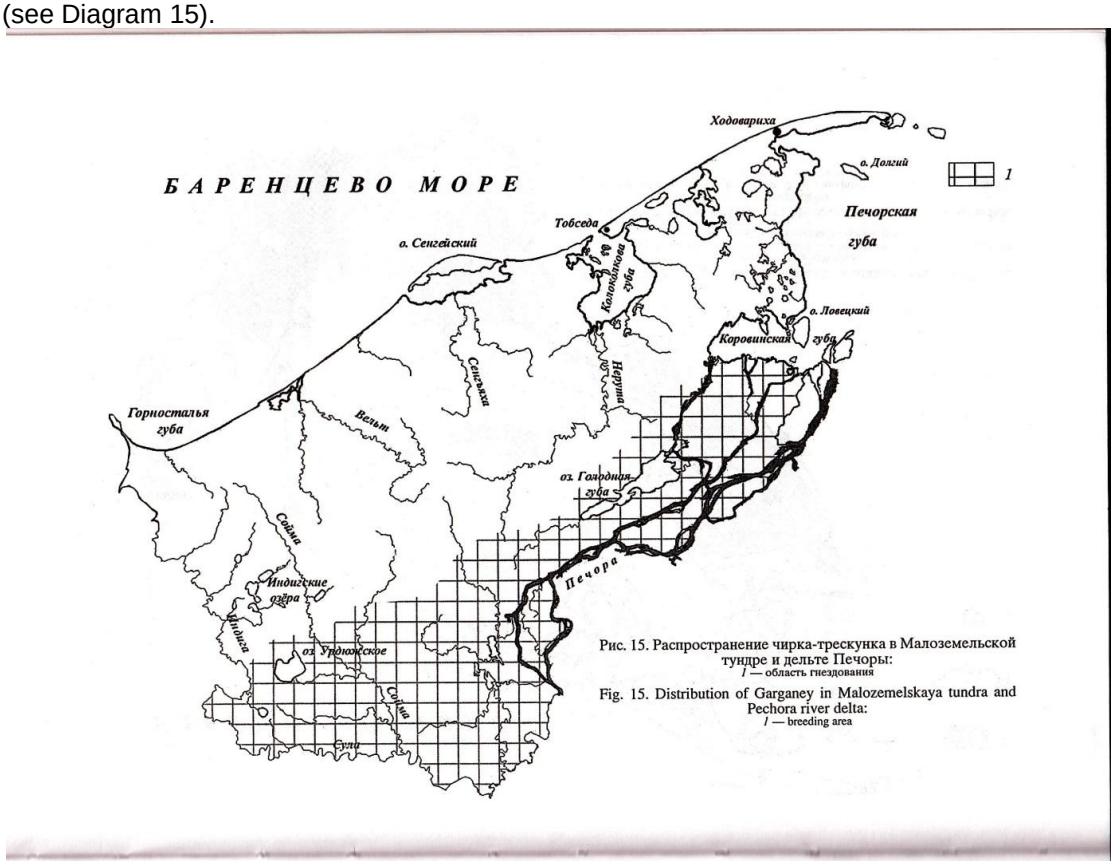
Рис. 13. Распространение широконоски

Figure 13 represents the Shoveler distribution.The Type Codes, related to the figure 13, represent the following: The upper sign is the Shoveler distribution territory;The middle sign represents the main Shoveler breeding areas; The lower sign is the Shoveler vagrants.

1.9 Mineev., O., Yu. 2005. [The waterfowl birds of the Malozemelskaya Tundra and Pechora River delta].

Ekaterinburg, ''Nauka'' Publishers. 163 p. (In Russian).

Garganey *Anas querquedula* Linnaeus, 1758. P. 44
The northern border of the Garganey distribution in Malozemelskaya tundra is unknown. It is found breeding on the Urdyuzskoe Lake region (67 degrees 12' N.L.) and Pechora River delta (see Diagram 15).



*Along the upper part of the picture the Barents Sea is located***.**

Shoveler *Anas clypeata* Linnaeus, 1758.

Breeding species. The Shoveler is spread up to the Barents Sea coast. It can be found during the breeding period in the Velt River lower reaches (Gladkov, 1951), the Pechora River delta (Mineev O., Mineev Yu., 2002a) and the Chernaya River basin (Mineev O., Mineev Yu., 2005). Some separate birds, pairs and groups of birds, consisting of 3 specimens, are found on the Lovetskiy and Chayachiy Islands (Korovinskaya ''Guba'' (Bay)), the Russkiy Zavorot Peninsula and on the area between Suly, Indigi and Soymy Rivers (see Diagram 16).
The ducks arrival on the Barents Sea coast has began on the 25th of May and shortly, in some period of time, has finished (Miheev, 1953). On the Sengeyskiy Strait the Shoveler spring migration has not been observed (Mineev Yu., 1986b).
The usual Shoveler wintering grounds are the Netherlands, Germany and Denmark (Scott, Rose, 1996).

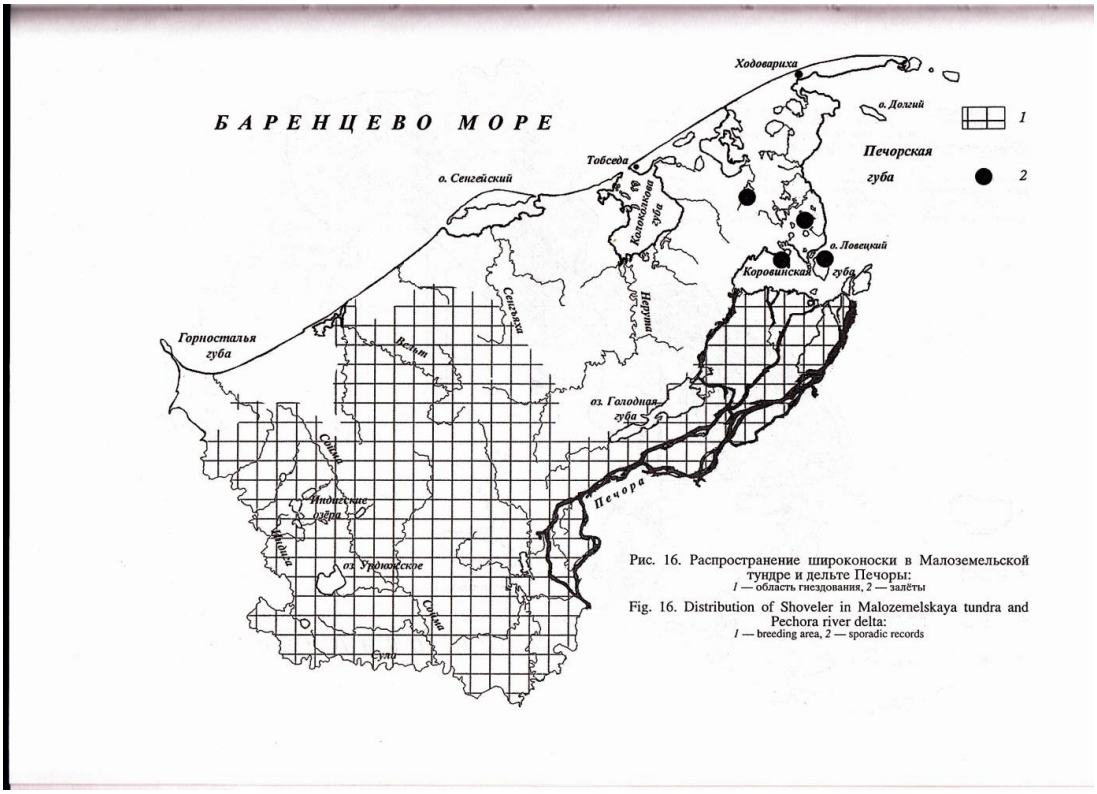


Рис. 16. Распространение широконоски в Малоземельской тундре и дельте Печоры:
1 — область гнездования, *2* — залёты

Fig. 16. Distribution of Shoveler in Malozemelskaya tundra and Pechora river delta:
1 — breeding area, *2* — sporadic records

*Along the upper part of the picture the Barents Sea is located***.**

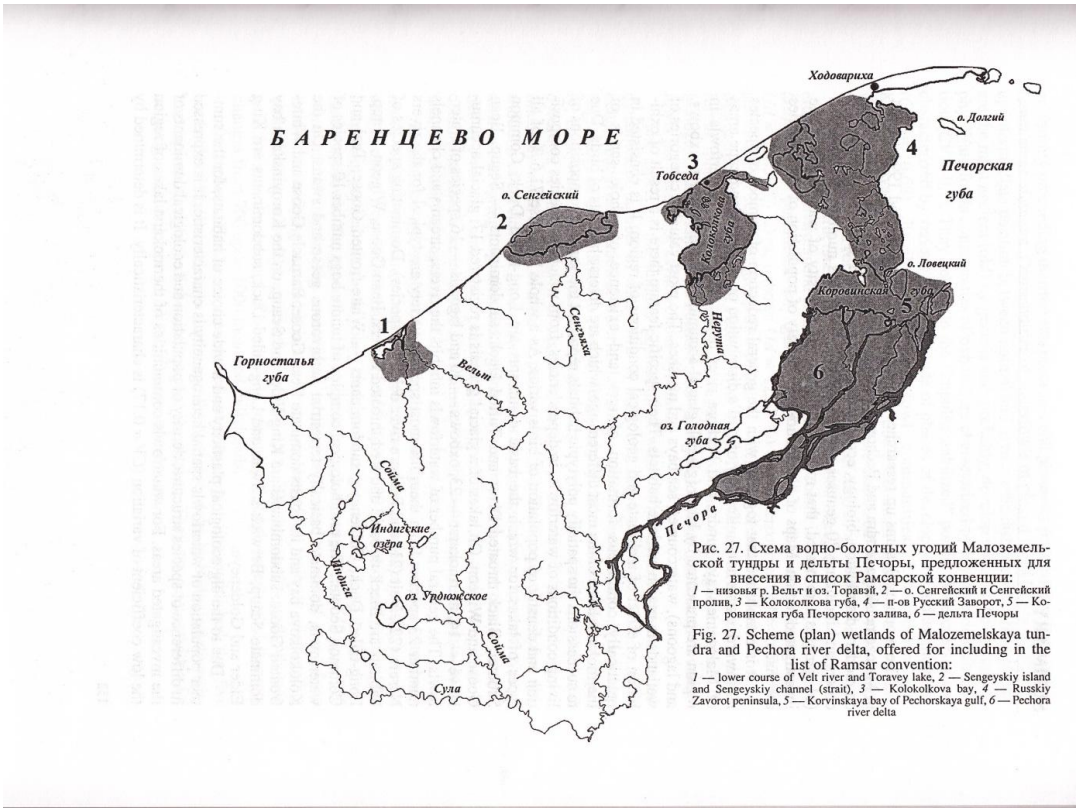


Рис. 27. Схема водно-болотных угодий Малоземельской тундры и дельты Печоры, предложенных для внесения в список Рамсарской конвенции:
1 — низовья р. Вельт и оз. Торавэй, *2* — о. Сенгейский и Сенгейский пролив, *3* — Колоколкова губа, *4* — п-ов Русский Заворот, *5* — Коровинская губа Печорского залива, *6* — дельта Печоры

Fig. 27. Scheme (plan) wetlands of Malozemelskaya tundra and Pechora river delta, offered for including in the list of Ramsar convention:
1 — lower course of Velt river and Toravey lake, *2* — Sengeyskiy island and Sengeyskiy channel (strait), *3* — Kolokolkova bay, *4* — Russkiy Zavorot peninsula, *5* — Korvinskaya bay of Pechorskaya gulf, *6* — Pechora river delta

Along the upper part of the picture the Barents Sea is located.

1.10 Mineev, Yu. N., Mineev, O. Yu. 2009. [Waterfowl of Malozemelskaya Tundra Pechora River Delta].

Saint-Petersburg, ''Nauka'' Publishers. 264 p. (In Russian).

Garganey *Anas querquedula* Linnaeus, 1758. Pp. 80-82

Status. Breeding and migratory species.
Distribution. Garganey is recorded in the Pechora River delta, whereas the northern border of the species distribution in Malozemelskaya Tundra is unknown.
Migration. The data is absent. Probably, the Garganey arrives at the end of May - beginning of June.
Habitats. In the Pechora River delta the Garganey is recorded on shallow lakes of ''staritsa'' (old lakes), on water bodies of ''large-ernik'' tundra (bushes of *Empetraceae* Lindl., which grow in tundra in large number) and forest-tundra.
Population. In the study region ducks are rare and are registered quite seldom, namely not every year. In the Pechora River delta during some years the Garganey is considered to be a common bird, in other years this bird is quite rare.
Breeding. Near the Urdyuzhskoe Lake (67 degrees 12' N.L.) on the 16th of July the female with brood patch was bagged, on the 29th of July the moulting female was bagged. In the Pechora River delta the females with brood patches were bagged.

Shoveler *Anas clypeata* Linnaeus, 1758. P. 81

Status. Breeding and migratory species.
Distribution. In Malozemel'skaya tundra the Shoveler is spread up to the coast of the Barents Sea. The Shoveler breeds in the Pechora River delta (Seebohm, 1901; Mineev O., Mineev Yu., 2002a), Velt River basin (Gladkov, 1951) and Chernaya (Mineev O., Mineev Yu., 2005), in area between the Sula, Soyma and Pechora Rivers. In Kolokolkovaya ''Guba'' (Bay) and Russkiy Zavorot Peninsula up to Kuznetskaya Guba (including) mainly some unbreeding flocks (up to 6 specimens) of males, pairs and single ducks are recorded.
Migrations. On the 25th of May the arrival of Shovelers in the lower parts of Velt River was recorded. Since this time the ducks were registered every day, mainly by pairs (Mikheev, 1953). In spring, namely on the 20th-30th of May, quite small flocks of Shoveler fly to the lower Pechora River (Mineev, Yu., 1987). In autumn, in the area between the Sula and Soyma Rivers the last ducks are registered on the 30th of September.
Habitats. The main habitats of ducks are the following: shallow lakes, which are covered with sedge and bordered by willows, water bodies of sedge-moss boggy tundra and ''small-ernik'' (bushes of *Empetraceae* Lindl., which grow in tundra in small number) bush-moss tundra and coastal marshlands. Especially the Shovelers are attracted by ''staritsa'' (old lakes), located on flood plains and boggy willow-sedged meadows.
Population. Population density of ducks in the Velt River basin in the average is 0.5 specimens per 1 sq km. In floodplain of the Chernaya River and Pechora delta the population of ducks was 0.8 and 0.1 specimens per 10 km.
Breeding. In the Pechora River delta the nest with 3 eggs was found on the 27th of June (Seebohm, 1901). On the 2nd of June, in the lower parts of the Velt River the nest with 8 slightly incubated eggs was found. It was located on a small tussock (Gladkov, 1951). In the same region the brood with 10 semi-feathered ducklings was recorded on the 19th of July, and the brood of 6, very similar to previous ones, ducklings was recorded on the 30th of July (Gladkov, 1951). The brood, consisting of 12 ducklings, was found on the 30th of June in the Chernaya River floodland (Mineev, O., Mineev, Yu., 2005). In the Pechora River delta the

broods (n=3) consisted of 3-9 ducklings, in one of which the ducklings had the size of Temminck`s Stint *(Calidris temminckii*) (Mineev, O., Mineev, Yu., 2002a). This case was recorded on the 26th of July.

Рис. 1. Картосхема восточноевропейских тундр (Ненецкий автономный округ).

Заштриховано: Малоземельская тундра и дельта р. Печоры.

Figure 1 shows the map of East-European tundra (Nenets Autonomous District). The Malozemelskaya Tundra and the Pechora River Delta are dashed.

2 Russische Literatuur deel 2

2.1 Nechaev, V., A. 1991. [Birds of Sakhalin Island]. Vladivostok.

Far Eastern Branch of the USSR Academy of Sciences. 748 p. (In Russian).

Garganey *Anas querquedula* L. Pp. 68-70.

The common breeding and migratory species. A.M.Nikolskiy (1889) and L. Munsterhjelm (Munsterhjelm, 1922) noted that the Garganey was a very rare species on the Sakhalin Island. According to my data, at the present day the Garganey is not a rare species in breeding period, as well as in the central and northern regions of an island during the passage period.
The dates of seasonable movements. The spring passage goes on in April – May. In 1938, on the southern Sakhalin the first birds were observed on the 22th of April (Okada, 1939). On the Aniva Gulf (Lososey Bay) the passage flocks, the number of which on different days (21st of May 1976) reached up to 300 birds, was observed by me on the 19th-27th of May 1976 and on the 18th-19th 1980. An autumn migration goes on in September-October. On the Piltun Bay near the Vrangel Islands, on the 1st-2nd of September 1979, nearly 300 Garganeys in a duck flock were recorded (where the total number of this species was 2 thousand specimens), and on the Lososey Bay on 10th-22nd of October 1984, the flocks, consisted of 20-60 specimens were recorded by me.

Habitats. The Garganey breeds on fresh watered and salty lakes, as well as on old lakes, channels, tussocked swamps, usually located not far from 10 km from the large lakes (Nevskoe, Aynskoe, Tunaycha) and bays (Aniva, Nabilskiy, Niyskiy, Dagi, Chayvo, Piltun, Urkt, Baykal, Tyk etc.). Comparing with the Teal, the Garganey is a common species, which settles on water bodies, situated among sand dunes on spits, which separate lagoons from the sea.
Breeding. The pair formation goes on in the third decade of May - first half of June. On the coast of the Chayvo Bay the pairs were recorded on the 26th of May - 13th of June 1983. The nest building and egg laying take place at the second half of May - the first half of June; some pairs start to breed at the second half of June. The nest, found by V.V. Leonovich on the 5th of 1983 on the Piltun Bay, 8 fresh eggs were contained there. On the Nevskoye Lake on the 7th of June 1977 the female was bagged, who had laid 2 eggs; in the oviduct the egg in a soft shell was recorded. Two eggs with the late clutches were found by me: one of them was registered on the Chayvo Bay spit on the 12th of July 1975, whenever the other one was recorded on the Lyarvo Island (the Dagy Bay) on the 18th of July 1985. They were located in deepenings among the sedge leafs and dwarf willow. The sizes of one nest were: the first clutch- 47,5 x 33, 46 x 32, 47 x 33, 47,5 x 32 (2 eggs), 47,5 x 33, 48 x 32 and 48 x 33 (2 eggs); the second clutch – 43 x 33, 44 x 34, 44 x 35, 45 x 34, 46 x 34 and 46 x 35.
Near the Kostromskoye settlement the brood, consisted of 4 ducklings, was registered on the 10th of June 1977 (Eremin, 1982). The broods, consisting of downy chicks, were recorded on the 13th of July 1980 on the lake near the Poronaysk city, the broods, consisted of the ducklings, which would fly very soon, were recorded on the 2nd of August 1978 on the margin of the Aynskoe Lake, as well as on the 6th and 8th of August they were observed on the lake in the vicinity of the Krasnogorsk settlement and also on the 23rd of August 1979 were recorded in the Piltun River mouth. Males, concentrating on a moult, were observed at the following places: 15 birds were registered in the Aniva Bay (Lososey Bay) on the 17th of June 1987, 7 birds were observed in the Chayvo Bay on the 17th of July 1975, nearly 6 specimens were registered on the 23rd and 24th of June 1975 and 6 specimens were registered on the 6th of

July 1976; on the Schmidt Peninsula (Neurtu Bay) 10 males were observed on the 26th-29th of June 1988.

Feeding. In 10 birds, which were bagged in May-June (The Aniva and Chayvo Bay, the Nevskoe Lake) the Gastropods: *Assiminea* sp. et, which have the number, varying from 8 to 50 specimens (up to 80% of the contents mass); the seeds of sedge (from 10 to 50 specimens) as well as the seeds of eel grass, large-leaved pondweed etc. and also spiders, insect maggots, including caddisflies, the remains of Amphipoda and pebbles. The stomachs of 2 birds, bagged in August, contained the seeds of elderflower and sedge (up to 90% of the contents mass in one).
The mass of birds (g), bagged in May-June, was: the male mass (n=7) varied in limits between 347,7-404,5 g (362,8 +/- 8,5); the female mass (n=5) varied in limits between 345,5-396,5 g (376,6 +/- 10,9); whereas the mass of a young bird was 220 g. The wing length (mm) equaled the following measures: the male wing length (n=7) equaled 184-200 mm (188 +/- 2,4), whereas the female wing length (n=5) equaled 175-185 mm (180 +/- 2,1).

Shoveler *Anas clypeata* L.Pp. 70-71.

This is a very rare and common migratory species. The Shoveler is widely spread on water bodies throughout the whole territory of the island, but in spite of this the species is observed quite irregularly. Most often it is observed in the northern regions. In breeding period the Shoveler was recorded by me on the coast of the Aniva Bay (Lososey Bay), Aynskoe Lake and the following bays: the Terpenie, Chayvo, Dagy and Piltun bays. This bird, considered to be as a breeding species, is registered on the Nevskoe Lake (Takahashi, 1942). This species nests in the Tym River valley (Gizenko, 1955).
The spring passage takes place at the second half of April-May, separate pairs and specimens are stayed till the first decade of June. The flocks, which have the number of 25-30 birds, were registered on the 5th-8th of May 1984, up to 100 specimens were registered on the 12th-13th of May 1979, as well as on the 1st of June 1976 and also on the 30th of May 1979., whereas the flocks, consisted of 200 birds, were observed on the 18th-19th of May 1980 by me. An autumn passage takes place in September - October. On the Piltun Bay, near the Wrangel Islands, on the 1st-2nd of September 1979, in a mixed duck flock, nearly 500 Shovelers were observed by me (the number of species was up to 2 thousand specimens). This species stays for wintering on the prefecture of Japanese Islands; the female, which had been ringed on the Honsyu Island in the Tiba prefecture on the 26th of February 1971, was bagged on the 19th of September 1971 near the Dolinsk city (Yoshii et al., 1975), whenever the male, which had been ringed in the Saytamo prefecture on the 11th of November 1975, was bagged on the 17th of May 1977 on the Evay River near the Chayvo Bay (Report of the bird migration..., 1979).
The breeding biology of this species has not been studied yet. Females, whose downy chicks had been bagged, were registered by them on the 15th-17th of July 1987 on the Piltun Spit (Piltun Bay). Flocks, consisted of young birds, were observed by me on the 23rd of August 1979 in the Piltun River mouth. The flock, consisted of 4 males and 2 females, which were ready for a moult, was sighted on the 16th of July 1985 on the lake, located on the Lyarvo Island (Dagy Bay). On the 26th-30th of June 1988, nearly 30 males were observed on the coast of the Neurtu Bay (Schmidt Peninsula).
In the female stomach (on the 24th of May) some Gastropods were recorded: there were 40 specimens of *Assiminea* sp. and 10 specimens of *Assiminea lutea*, there were also 10 specimens of the sedge seeds.

2.2 Nikolaev, V.I. 1998. Birds of swamped complexes of “Zavidovo” National Park and Upper Volga River area.

Tver’ (ex-Kalinin, 120 km to N of Moscow), 215 p. In Russian.

Garganey p.45.

On the peat bogs and transitional bogs the Garganey is rare, on low bogs it is common breeding species. Garganey inhabits open, swamped sedge, sedge-moss parts with rare shrubs, especially near eutrophic lakes and on marginal zones of bogs, bordered with floodplain meadows and agricultural lands. In black-alder bogs it breeds on plots with rarefied tree stands, locating nests on tall tussocks near tree bases or under shrub coverage. The best conditions for breeding this species finds in floodplain low bogs, where the largest broods were noticed (in the average 7.1 duckling / brood) and minimal duckling mortality (17,1%) (Chemodanov, 1991).

In the floodplain-bog habitats of “Zavidovo” National Park on Garganey part there are up to 50% of all duck broods. On peat bogs this species gravitates to near-lake zones with developed tussock sedge-sphagnum and old dead vegetation, especially in the vicinities of the Common Gull colony. Broods on the peat bogs are sighted in the period 8/VI (1985) – 18/VI (1990). As a whole on bogs of different types the brood size (n=25) in June compiled 3-10 ducklings, in the average 5r,6.

Widely, but with low density the Garganey inhabits overgrowing peat quarries and flooded freser fields, drainage ditches of meliorating bogs, that have the meadow background of vegetation. Together with transformation (development) of bogs and drying up of channels the species number declines. The species is strongly suffering from cattle grazing, and mortality of nests on meliorating bogs can reach 30-40%. In the past the breeding cases of the Garganey on floated up peat bogs of Rybinsk water reservoir (Kaletskaya et al., 1959).

As a whole the Garganey in better extent than the rest duck species, is adapted to conditions of life on the bogs being meliorated for the purposes of agriculture.

Shoveler p.45-46.

It is common in the floodplain meadow-swamp sites (up to 10-25% of all broods), but on typical low bogs is rare. On the transitional and peat bogs the Shoveler practically does not occur in breeding time. In all cases the Shoveler gravitates to Laridae colonies.

As very rare breeding species of lakes and “mochazhina”s (swamped places in Russian) of the peat bogs the Shoveler is given for the Baltic countries and Leningrad Region of the Russian Federation (Taurinsh, 1961; Malchevskiy, Pukinskiy, 1983; Paltanavichius, 1987; Paal, 1989). The Shoveler nested more regularly at the 1940-50’s on peat bogs of Darwin Nature Reserve, that probably, was caused by sharp decline of meadow area on the banks of Rybinsk water reservoir. By the present time the Shoveler breeds by single p[airs on floated up peat bogs (Nemtsev, 1956; 1988).

In small number the Shoveler occurs on large overgrowing peat quarries, especially in those cases, if on the water surface of quarries the reed and cattail thickets are forming.

The nests are placing in sedge thickets or, in the case of peat bogs, in *Ledum palustre* shrubs and other shrubs.

2.3 Numerov, A., D. 2003. [Interspecific and intraspecific brood parasitism in birds].

Voronezh. FGUP IPF "Voronezh". 517 p. (In Russian).

Garganey *Anas querquedula* (L.). p. 459

The case of the laying of 15 eggs in one nest is registered that is likely to be related to the doubled clutch of two females (Dementyev et al., 1952). On the Engure Lake (Latvia) in 1958-1966 one case of egg laying by two females in nest was registered (0,3%, n=333). The size of this clutch maked up 15 eggs, though 99,1% of clutches contained 4-12 eggs (Mednis, 1968).

Shoveler *Anas clypeata* (L.)

The registered cases of 19-20 eggs laid in the nest are related to the doubled clutches of two females (Dementyev et al., 1952). On the Baykal Lake the intraspecific egg laying in 4 nests are recorded (2,3% of 171 checked nests) (Skryabin, 1967). On Engure Lake (Latvia) in 1958-1966 one case of egg laying by two females in the nest (Mednis, 1968) was recorded. On ''Trekhozyorki'' water body (Khakasian Republic) in 1992 one case (8,3%, n=12) of intraspecific egg laying was recorded. This clutch contained 17 eggs (Baikalov, Korovitskiy, 1994).

Shoveler *Anas clypeata* (L.) p.499**.**

The fact of the Shoveler egg laying in the Common Gull nest was determined in Estonia (Saluri, 1961). On the Baikal Lake the Shoveler egg was found by N.G.Skryabin (1967) in one Mallard nest (0,2% of 445 checked nests). On the Engure Lake (Latvia) in 1958-1966 3 cases of the Shoveler egg laying in the Tufted Duck nest were marked (Mednis, 1968).

Garganey *Anas querquedula* (L.)

The 3 cases of the Garganey egg laying in the Shoveler nests were registered in Estonia (Saluri, 1961). On the Engure Lake (Latvia) in 1958-1966 1 case of the Garganey egg laying in the Shoveler nests was recorded, and 2 cases of the Garganey egg laying in the Tufted Duck nests were registered (Mednis, 1968).

2.4 Poyarkov, N.D., Boldbaatar, S., Bukreev, S.A., M.N.Dementiev, B.M.Zvonov, N.Zhavkhlantsetseg. 2009, Materials on Anseriformes of Northwestern and Central Mongolia.

Casarca 12 (2): 170-193. In Russian with English summary.

Garganey. P.178. In the region studied by us – breeding species (Fomin, Bold, 1991), but we did not find nests or broods. About 170 individuals were sighted (85% among birds identified up to sex, were males). Among them more than a half stayed on small lake with fresh water in the south-eastern part of bank of Boone-Tsagaan-Nuur Lake.

Shoveler. Pp.178-179. Common widely spread species. Totally 602 birds were sighted. The part of males in this set of 111 individuals – 58 %. 6 nests were found (since 30 May till 3 June), among them 2 – with added eggs of the Mallard, and also the Mallard nest with 3 added eggs of Shoveler. Clutches were either fresh, or slightly-incubated; complete clutches contained from 7 to 12 eggs (n=5). In the first nest discovered by us (30 May, 11 fresh eggs) the first eggs was laid not later than 20 May. It's typical, that all nests were situated on islands with Laridae colonies, mainly of the Common Tern (*Sterna hirundo*) and Mongolian Gull (*Larus cachinnans mongolicus*). Broods were not sighted.

2.5 Pukinskiy, Yu.B. 2003. Breeding life of birds of Bikin River basin (The Russian Far East).

St.-Petersburg Univ. Press. Results of studies during 1969-1978. The Bikin River is situated in Primorie (Ussuriland) Russian Far East.

Garganey on p.27.

This species in summer is recorded only in lower parts of the Bikin River – from Silanshan mar (bog in Russian) to the mouth. Here the Garganeys, undoubtedly, breed (broods were registered) in the region of Shchegolikha River and near Burlit station, where in the II decade of May constantly the flying males with mating calls were recorded, and in the III decade of this month – pairs gravitated to permanent plots. For breeding, like Pintail, this duck choses extensive slightly-tussocky meadows, adjacent to the banks of water bodies in the forestless landscape.

The total number of birds breeding in the 1970's did not exceed 50 individuals. It is remarkable that in the first seasons of work on Bikin I observed the displaying males much more seldom than in subsequent years.

Shoveler on p.28.

Probably, breeds on strongly swamped extensive tussock-covered meadows in the region of Nizhniy Pereval – Luchegorsk. The single males were recorded at the middle of May 1976 also in upper parts, near Ulunga River. This species number is considerably lower, than in the Pintail and Garganey, and in the last season of work the Shoveler was not sighted at all (1978, region of Burlit station).

2.6 Ravkin, Yu. S. 1978. [Birds of the Front-Ob forest region]. Novosibirsk, ''Nauka'' Publishers. 288 p. (In Russian).

Garganey *Anas querquedula* L. Pp. 19-20.

The pre-breeding passage and nomadic movements take place at the second half of May – beginning of June. Their intensity is considerably high in the northern taiga (7-20) and is lower in the northern taiga of Front-Ob Region and southern Front-Irtysh (2-5). In the southern taiga and sub-taiga forests of Front-Ob the intensity of nomadic movements is higher (10-18). In the Ob river floodplain of southern taiga on the 3rd of June 1970 the nest with the clutch, consisting of 9 eggs, was found, and in the northern taiga the nest with the clutch was found on the 30th of June 1973. In the middle taiga the downy chicks (10 and 9) were observed on the 21st of June and the 19th of July 1972. In 1966, on the border of the middle and the southern taiga I. K. Prikhodko (1969) found the downy chicks during the period of time, lasting from the 19th of July to the 4th of August. In the broods there were 7, 10, 12 and 8 ducklings. The first young birds, capable of flying, were recorded by him on the 4th of August. In southern tayga the ducklings, capable of flying, have been bagged from the 7th to the 20th of August. Since the middle of July, after the young birds have become capable of flying, as well as after the arrival of nomadic birds, the frequency of the Garganey arrival in the southern taiga and sub-taiga forests increases, although in general the arrival of nomadic birds is not very high (4-16). At the same time in the northern and middle taiga the Garganey number decreases.

In northern taiga at the second half of June the Garganey is a very frequent bird on meadows and sors of a river floodplain as well as above floodplain lakes (10 and 14). It is a common bird on marshes (2-3); on channels (0,5) and above floodplain landscape (0,08) it is recorded seldom. In the middle taiga at the first half of June the Garganey is a very frequent on lakes, dead lakes, channels (12), quite common on meadows, small rivers and sors (2-5) and also in the average across the floodplain (3). At the same time in southern taiga in the Ob river floodplain this species is a very common (40), especially it is often found on hayfields and sors (67 and 38). Usually this species is a very common on flooded water bodies (2-7, on lakes - 10). In Front-Irtysh this bird is considered to be a common species of the flooded plains and lakes, seldom it is found on small rivers (0,9). In sub-taiga forests and at the first half of June the Garganey has been recorded on lakes (30) and small rivers (3).

In the average during the summer in the northern taiga the Garganey is often found on meadows and sors of the floodplain (12). On lowland swamps, above flood-plain lakes, forested areas of floodplain and dark coniferous taiga this species is a very common. On the rest water bodies, peat bogs and transitional swamps it is very rare (0,5-0,7). In the middle taiga the Garganey number is a little bit lower. At the pasture meadows and reserves the Garganey number is high (15 and 24), in the rest areas of the floodplain, birch-aspen forests, dwarf riams (raised bogs) and on numerous water bodies it is a very usual bird. Only on the Ob River the Garganey is rare (0,3).

In the southern taiga of the Front-Ob Region the Garganey number is higher (in average comparing with the northern taiga regions its number is higher at 2,5 times). The Garganey prefers to stay on the flooded plains (lands) of this region. In the southern taiga of the Front-Irtysh Region the Garganey number is lower (on water bodies its number is lower at 1,5 times, in the average in the territory of this region its number is lower at 50 times).

In sub-taiga forests of the Front-Ob Region the Garganey number (in the average) during the summer is high on lakes, this species is a quite common on small rivers, flooded willow meadows and on open swamps (2-6). At the end of May this bird is very usual on temporary

(seasonal) lakes, fields, copses (63, in average during the summer the Garganey number is 9). On the Ob' River it has been rarely recorded.

Summing up the results of the Garganey distribution, it is possible to state that the Garganey prefers to settle on floodplain lakes of all sub-zones, although sometimes it is found on other water bodies, located in the depth of taiga. The Garganey is not attracted by large rivers. In taiga sub-zones (in the average), especially on water bodies its number is roughly the same (2-3), and only in sub-taiga forests its number is a little bit higher (5). In the average the Garganey number in the separate zones of the Ob' River valley was roughly the same throughout the territory of the northern sub-zones. In the southern taiga of the Front-Irtysh Region and areas between rivers the Garganey number is much more lower (0,3 and 0,9).

Shoveler *Anas clypeata* L. Pp. 20-21

In 1966, on the Vasyugan the first Shovelers arrived on the 9th of May (Prikhodko, 1969). In the second half of May and especially at the first half of June the passage and nomadic movements have taken place. In the northern and southern taiga of the Front-Ob region their intensity is relatively high (in 1968 and 1972 -0,2-0,5). In sub-taiga forests the intensity of nomadic movements is the average (mean) (4). On the 2nd of August 1966, on the border of southern and middle taiga I.K.Prikhodko recorded downy chicks, and in a day some nonflying youngs were observed probably from repeated clutches; on the 8th of August some flying youngs were observed. The last summer nomadic movements in Front-Ob Region are not very intense (usually 1-3). In the northern taiga the Shoveler number at the first half of summer was steadily decreasing. In the second half of July the Shoveler was not recorded anywhere, however it was presented in the August records. In the middle taiga it was recorded only at the end of May- beginning of June and at the second half of August. Just in the southern taiga of the Front-Ob Region the Shoveler was being recorded during the whole summer, although at the beginning of this season its number was higher than the Shoveler number during the next months. In the Front-Irtysh the Shoveler was recorded at the first half of June, but in the sub-taiga forests of the Front-Ob region it was observed at the end of May and the beginning of July and August.

In the northern taiga at the first half of June the Shoveler number is high on meadows and sors, on lowland flooded swamps and small lakes (12-23), and also in average throughout the floodplain (12). In willow-shrubs, on meadows, lakes, channels and dark coniferous taiga this bird is a very common (2-5). On the lakes of the Front-Irtysh Region it was rarely recorded, and in the sub-taiga forests as well as on willow meadows of the Ob River floodplain it was from time to time recorded at the end of May .

In the average during the summer in the northern taiga the Shoveler is a typical bird to settle on all water bodies and flooded lands (1-3). In the middle taiga the Shoveler is a rare bird on meadows and water bodies of the Ob River floodplain (0,2 and 0,7), on Ob' River it is very rare (0,01). The Shoveler number in this region is at 10-20 times smaller than the Shoveler number in the northern taiga. In the southern taiga of the Front-Ob Region valley the Shoveler number is twice higher than in the northern taiga, but on water bodies the number of this species is roughly the same. In this region the Shoveler prefers to settle on the flooding habitats. It has not been recorded only on the Ob' River; in villages and on small floodplains it is rare. The Shoveler prefers to settle mainly on sors and meadows (5-8). In the depth of taiga it was not recorded by us. In sub-taiga forests the Shoveler was observed on flood plain meadow at the end of May (14), whereas in July – August it was observed on the lakes in terraces above floodplain (6).

Hence, the most preferrable areas for the Shoveler to settle on is the Ob' River valley, located in the southern taiga, however the Shoveler number in the rest sub-zones, especially in the middle taiga, is lower. In the southern taiga of the Front-Irtysh Region the Shoveler is recorded even more seldom.

2.7 Rogacheva., E.V., Syroechkovskiy, E. E., Chernikov, O. A. 2008. [Birds of Evenkia and adjacent territories]. Moscow, KMK Scientific Press. 754 p. (In Russian).

Garganey. Pp. 118-120.

Anas querquedula Linnaeus, 1758
This is Palearctic duck, a common species for the south of Central Siberia; it prefers to settle on large river floodplains and in taiga zones (in exceptional cases, on the Enisey River the Garganey nesting is observed in the belt of northern tayga margins, near the Arctic circle - on the Bolshoe Konoshelie Island). In Evenkia this bird is considered to be a rare species.
Near the Evenkia western margins, in the middle taiga Enisey, this species is a rare, but sometimes it is considered to be a breeding duck of this region (Mirnoe, Eloguya lower reaches). It is spread on small water bodies among hummocky marshes in the Enisey River floodplain and plain tributaries. The Garganey numbers are considerably changing from year to year: in some years the Garganey is a common bird in central tayga. In Mirnoe, on spring massage, the Garganey is regularly observed, but it is roughly at 100 times less frequent than the Teal. The arrival dates of both species are very similar.

According to data of 1978-1985, N. V. Anzigitova (1986) characterizes the Garganey migration in Mirnoe in the following way: in spring the bird was being registered every year, in autumn it was registered just in 1979 and 1980; it arrives on the 5th-9th of May, whenever the mean duration of spring migration is 23 days (the period between the 8th and 30th of May); an autumn passage lasts for 22 days (the 11th of August - the 1st of September).
In summer, in Mirnoe, the Garganey is observed quite seldom. In 1974, on the 22th of June the Garganey pair was registered on a small forested lake, which is called Linkovo, on the first above flood-plain terrace of the Enisey; on the 27th of July a single bird was feeding on backwater in the left-bank of the Enisey River; on the 25th of August, on the ''sor'' (salt lake) meadows of the left-bank of the Enisey floodplain 5 young birds were registered. In 1977, the Garganey was recorded in Mirnoe just in autumn, especially during nomadic movements (Rogacheva et al, 1978, 1988).

In southern margins of Evenkia, on the lower Angara River, the Garganey is rare, but sometimes breeds in Motyginskoe ''mnogoostrovie'' (a complex of islands, located in one line). Garganeys were bagged by Motyginsk hunters not in large numbers (by single specimens) and not every year. On the 19th of June 1962, a pair of Garganeys was observed by us in the channel between islands, located near the Motygin (Syroechkovskiy et al, 1978).
A. S. Martynov (1983) supposed the middle Angara to be one of places with the highest Garganey number within the limits of Krasnoyarsk region. We do not handle an information, confirming this statement.

To the east of Evenkia, during the breeding period, the Garganey is usual in upstream of the Nizhnyaya [Lower] Tunguska River (Irkutsk Region) (Tkachenko, 1937; Lisovskiy, Lisovskaya, 2007). In the Vilyui water basin (Yakutia) it is widely spread everywhere, including the north up to the 65 degrees of N.L. Among the middle and lower Vilyui, in the place, where the meadow plots are widely spread, the Garganey number in some parts is not smaller than the Teal one, thus it is considered to be not a numerous species, but in other places it is quite a common duck. For example, in spring of 1966, in the Malykay settlement, on the Marha River, a hunter-amateur Y. S. Ivanov bagged 120 ducks, among which 13 Garganeys and 13 Teals were registered there. In that year, in the same area, but on another lake one hunter bagged 11 Teals and 13 Garganeys. In spring, Garganeys arrive on the Vilyui River a bit later than Teals do: arrival goes in the middle of May. On the 25th of May 1964, on a small swamp, the

Garganey copulation was observed. Birds become ready to fly much later than Teals do: on the average, it usually happens on the 10th of August.

In Evenkia, a place where a subzone of southern tayga and large rivers with developed floodplain, flowing in northern direction, are absent, the Garganey number is small. A. S. Martynov (1983) marked that the Garganey numbers in Central Siberia experiences great cyclic changes, and in some years this species can be the common one in the nothern parts of the area (for example, in 1980 in eastern Evenkia). In fact, A. E. Volkov, who by order of A. S. Martynov in this year was counting waterfowl on the Chunya River, which flows to the south of eastern Evenkia, did not confirm this information.
A.Ya.Tugarinov (1924) does not mention the Garganey in his article on the birds of Podkamennaya Tunguska. In spring 1958, in this river upstream, near the hunters lodge of the Chamba, Garganeys as well as Teals were for the first time registered on the 16th of May. In the next days they were regularly observed on water flooded bushes, located in a forest, and their number was considerably large: 1-2 Garganey flocks, consisted of 3-5 birds, were regularly registered. In the bagged males the testicles were well developed. In nesting period, near the Chamba River, Garganeys were not observed.
In the mid-channel of the Podkamennaya Tunguska River the Garganey number is small, as river floodplains in this region are not developed at all. According to A. E. Volkov data, in June 1980, in the Chunya river water basin (right tributary of the Tunguska River), Garganeys (as well as Teals) were observed in the upper part of this water basin – on the plot, spreading from the Strelka-Chunya settlement up to the Dyurdaptutari River mouth, where the river valley is well developed. In 1985, O.A.Chernikov and A.V.Ladygin did not find any Garganey on the same piece of land.

In the Podkamennaya Tunguska lower reaches the Garganey number increases on some flooded water bodies, which are located especially among the river. Since the number of appropriate water bodies is not large, and the hunters` number is large, therefore the Garganey number is small.

In Evenkian part of the Central Siberian Reserve, in semi-mountain conditions, Garganeys are not found at all. During 3 years of observations Yu. P. Shaparev (1988) has seen the Garganey just once: it was registered on spring passage together with the Teals` flock; although during the feeding period as well as in flight the Garganey was staying separately from another birds.

Concerning the Garganey distribution on the Nizhnyaya Tunguska River the set of data is small. In 1915 and 1918 M. I. Tkachenko (1937) did not find any Garganey specimen within the Evenkia Region limits, in the same way, in 1914, I. N. Shukhov did not find any Garganey specimen in Turukhansk. In the mid-channel of the Nizhnyaya Tunguska River the Garganey, according to O. A. Chernikov observations in summer 1986, is a rare, probably, just vagrant bird, but not a breeding duck; not in large numbers it is found in spring (for example, in the Ilimpeya lower reaches) and sporadically is shot by hunters. In the view of some local residents, comparing to now, in the past, especially in spring, Garganeys were found in large numbers.

In northern Evenkia, in the region of the Essey and Chirinda Rivers the single pairs of Garganey was not found by O.A.Chernikov and A.E.Volkov. A.S.Martynov (1983) does not mention about the Garganey male, bagged on the Essey Lake.
In the north-west of Evenkia (the Putorana Plateau), near the Agatskie Lakes, A.A.Romanov (2004, 2006) mentions the cases of separate Garganey pairs being observed on the 3rd of

June 1991 on the ''razvodye'' (opening) of the Nyakshingda River waterhead; furthermore, on the 7th-8th of June 1991, on ''zaberegi'' (young shore ices) of the lake, some single males were registered. On the 12th of June 2003, on spills, in the Agata River mouth, two Garganey pairs were observed. Throughout July 2001, on the Kureyskiy Dyupkun Lake, the Garganey was observed just once: on the 16th of July, 3 birds in the central part of a lake were observed (Romanov, 2003). In June-July 2006, throughout the spring passage, 3 Garganey pairs, which were feeding on a flooded lake, were observed on the 3rd of June, on upstream of the Kureyka River, near the place, where the Yagtali River falls in it. It seems, it was just a spring flights.
One case of the Garganey being flown in the central regions of the Putorana Plateau (Michurin, Mironenko, 1986) is registered. The cases of the Garganeys` breeding on this plateau are unknown.

Shoveler. Pp. 120-122

Anas clypeata Linnaeus, 1758
This is a Holarctic species. The Shoveler is a species with the high breeding specialization. It is not a forested species, which prefers open landscapes and the large river valleys in tayga zones. In this connection and it its distribution up to the north, the Shoveler is similar with the Mallard, although it is not so widely spread in the north direction that the last one. In the Central Siberia the Shoveler is a common specis on the south, but sometimes it is bred on the Enisey up to the Arctic circle. In Evenkia it is very rare.

In Evenkia western margins, on the mid-tayga Enisey (Mirnoe), on breeding the Shoveler is rare. The spring passage is poorly expressed. The Shoveler arrives in Mirnoe late, whenever the last duck arrives at the end of May. The passage goes on the 28th of May - 3rd of June. Shovelers fly by pairs, quite seldom they stay by small flocks, consisted of up to 12 specimens; usually, they stay separately from other ducks. Last birds arrive approximately on the 10th of June. In 1973, on the 28th of May, the first Shoveler was observed on a lake near the Mirnoe. In 1974, on the 31st of May, near the settlement, one male was bagged, on the 2nd of June two Shoveler pairs were registered there.

According to data of 1978-1985, N.V.Anzigitova (1986) characterizes the Shoveler passage in Mirnoe in the following way: in spring it was annually observed, in autumn – just in 1978 and 1979; it arrives on the 10th-19th of May, the mean duration of passage is 17 days (the period between the 15th and 31st of May); it flies mainly at the height of 0-10m from 5 to 10 hours; the mean size of the passage group is 2 specimens (from 1 to 4); the autumn passage ends on the 9th-20th of September, its mean duration is 28 days (the period between the 18th of August and 14th of September).

Perhaps, Shovelers breed near Mirnoe, somewhere in undiscovered part of floodplain. On the 27th of August 1973, on the left bank of sandy beach with small water bodies, 2 flying young birds were bagged. In 1977, on the 1st-10th of June, the Shoveler pair was observed on the temporary lake near the settlement (village). In 1978, on the 28th-30th of May, the Shoveler passage on the Enisey River was expressed quite clearly, whenever the last birds were staying in Mirnoe up to the 10th of June. Two times - on the 12th of July 1981 and in 1983 - some Shoveler broods on the meadow lakes of Mirnovskaya floodplain were registered (Rogacheva et al, 1978, 1988).

On southern Evenkian margins, in the lower Angara, the Shoveler number on passage and breeding is small. D.V.Vladyshevskiy on the Angara, westward of the Motygin village,

observed the Shoveler quite often during its breeding period (20 bagged by him ducks consisted of 2-3 Shovelers).

It is sometimes breeds in the floodplain of the Motyginskoe „mnogoostrovie“ (land with many islands). In June 1962 the Shoveler, breeding in the Angara floodplain, near the Motygin village and on dead lakes of the Kamenka River right tributary, even in its upper reaches, near the Evenkia margins, was found (Syroechkovskiy et al, 1978). In the mid Angara, in spring, the Shoveler is observed in the Kezhemskoe „mnogoostrovie“.

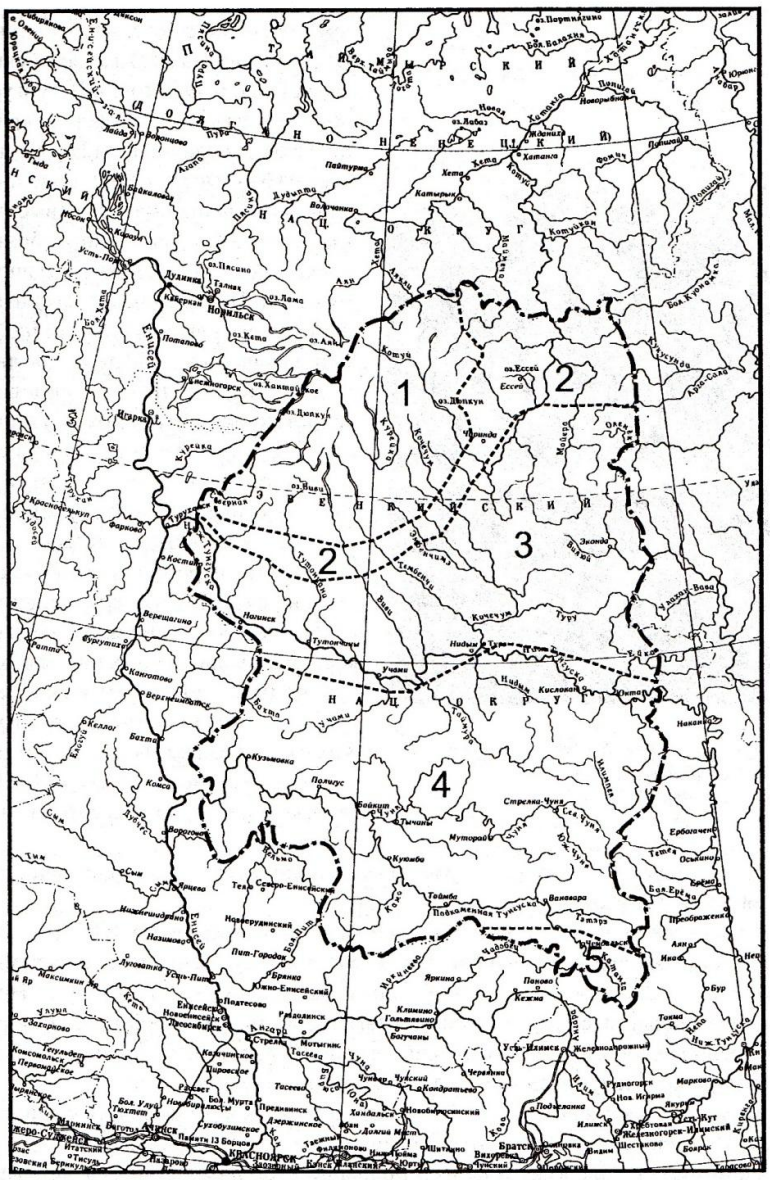
To the east of Evenkia, the Shoveler breeds on the floodplain of the Nizhnyaya Tunguska upstream, flowing in the Irkutsk ''Oblast'' (Region). In the Vilyui River water basin (Yakutia) it is a common bird and penetrates further to the north. In 1853-1854, R.K.Maak (1886) sometimes found the Shoveler on the Vilyui River and flooded lakes, adjacent to them. On the 30th of May 1854, near the Vilyui River mouth, on the brae, covered with willow, he found the Shoveler nest. The nest consisted of dry grass, was covered with down and contained 11 slightly incubated eggs. On the 12th of July, on the Tykan (64 degrees 15 min. of N.L.) he bagged some slightly large ducklings.

According to data of B.N.Andreev (1974), the Shoveler aggregation on the lower reaches of the Vilyui River, in Mastakhsk lake land and in the Nidzhili Lake region. Here in autumn before the Shoveler arrival some flocks, consisted of up to some hundreds of birds. The spring arrival on the middle Vilyui takes place on the 10th-15th of May. Shovelers start to breed at the end of May. In a full clutch 9-11 eggs are located. Nests are always located near the water or not far from it in the floodplain of lakes.

In the territory of Evenkia the Shoveler is rare, especially during the breeding period.
In 1921, in the upstream of the Podkamennaya Tunguska River, near the Verkhnyaya [Upper] Kontora settlement (southern tayga) A.Ya.Tugarinov (1924) considered the Shoveler arrival to be early - on the 6th of May - it takes place earlier than in other dabbling ducks. This is quite unusual, because usually the Shoveler arrives two weeks later than the Mallard, Teal and Wigeon do. In 1958, in the Chamba as well on the Enisey Rivers, the first Shovelers appeared late - on the 25th of May and since that time, even in small numbers, they were being observed till the end of arrival: on the first days of June. According to the suppliers` interrogation in the Vanavara village, the Shoveler in the usptream of the Podkamennaya Tunguska River is registered, but it is observed not so often.

In 1985, in the middle part of the Podkamennaya Tunguska River, in the upper part of its right tributary water basin of the Chunya River, the Shoveler was found by A.V.Ladygin and O. A.Chernikov in the breeding period. Some single Shovelers were registered on the Chunya River (0,8 specimens per 10km of the river bed); the character of the Shoveler presence here is unknown.

In the Podkamennaya Tunguska lower reaches, where near the river one small floodplain is formed, the Shoveler usually breeds; local hunters know this species very well.
In spring 1988, in the Evenkian part of the Central Siberian Reserve, the first Shovelers appeared late - on the 19th of May, during the massive passage of other species; the passage ended on the 27th of May (Shaparev, 1988). The Shoveler breeds in this reserve part very seldom.



КАРТА 1. Природно-зональная структура Эвенкии (природно-зональные границы).
1. Горные тундры, лесотундра и крайняя северная тайга плато Путорана;
2. Зональная полоса крайней северной тайги (редколесья) с вкраплениями лесотундровых участков;
3. Зональная полоса типичной северной тайги;
4. Подзона средней тайги;
5. Подзона южной тайги.

Figure 1, placed above, represents the natural-zonal structure of Evenkia (zonal boundaries), 1. Mountanous tundra, forest tundra and extreme northern taiga of the Putorana Plateau; 2. The zonal belt of extreme northern taiga with the forest tundra plots, included in it; 3. The zonal belt of the typical northern taiga; 4. The sub-zone of the mid taiga; 5. The sub-zone of the southern taiga.

It is relatively southern duck, staying on a floodplain, the Shoveler in the Nizhnyaya Tunguska water basin is rare. Nevertheless, in 1915 and 1918, M.I.Tkachenko (1937) found the Shoveler quite seldom and considered it to be the breeding species across the whole stream of the Tunguska River in Evenkia Region. He found the Shoveler in the lower reaches of the river near the Turukhansk, and I. N. Shukhov (1916) found the Shoveler in spring 1914.
According to data, collected by O. A. Chernikov in 1986, nowadays, in the middle part (stream) of the Nizhnyaya Tunguska River (to the west of Tura), the Shoveler is recorded in spring seldom. Its breeding is not proved.

At the same time, on the watershed of the Nidyma tributaries of the Huroikongda and Vodurchana Rivers, among the rare larch stands on the Boro Lake – one of the largest lakes, situated on an open tundra-like swamp, N.V.Vronskiy saw some Shovelers on a small „polynia“ (open water stretch) – perhaps, they were vagrant birds. In the bagged female, the gonads were at the middle stage of development. On the 18th of June, on route of the Huroikongdy (the mid taiga) he also saw some Shoveler specimens.

In northern Evenkia, near the Essey and Chirinda Lakes, the Shoveler was not found by A.E.Volkov and O.A.Chernikov. At the same time, according to A.S.Martynov data (1983), the species is known to the hunters in the Moyero-Kotuiskaya hollow. He suggested that the Shoveler penetrates here to the north further than the Mallard does, without confirming this information by facts. In our opinion, this is hardly possible.

A. A. Romanov (2006) mentions the single pairs of Shovelers, observed in spring 2003, in the Evenkian part of the Putorana Plateau, in the Agata River mouth, 3 Shoveler pairs were feeding, whenever on the 12th of June just one Shoveler pair was found during feeding time.
On the upstream of the Kureyka River, before its falling into the Kureyskiy Dyupkun Lake, during the eastern passage, namely on the 5th of June, 8 pairs of Shovelers were observed in the place, where the Yagtali River falled into the Kureyku River.

2.8 Romanov, A.A. 1996. Birds of Putorana Plateau. Moscow, Putorana State Nature Reserve. 297 p. In Russian. Putorana Plateau is situated to S of Taimyr Peninsula.

Garganey. P.28.

Single pairs were recorded on spring passage in all regions of the Plateau: 29 May 1988 on polynia (open water stretch) in Kapchug River mouth, 22 June 1989 on the floodplain small lake near Ayan River (in Chopkokon River mouth region), 4 June 1990 on polynia in Kutaramakan River source, 3 June 1991 on floods of Nyakshingda River source. In the south of Putorana 7-8 June 1991 also single males were recorded, who were feeding on Nyakshingda Lake. The breeding cases are known for the central part of Plateau (Michurin, Mironenko, 1968).

Shoveler. P.28.

At the centre of Putorana Plateau the Shoveler was sighted on passage in 1988: on polynia in Kapchug River mouth one pair stayed 1 June and 3 pairs – 4 June. In the west of Putorana on Khantaiskoe Lake E.E.Syroechkovskiy has bagged single female on 16 June 1960. In 1990 on Kutoramakan Lake near Kapchuk River mouth 22 June 10 pairs were feeding. On forest lakjes and floodplain lakes of small rivers of wide valley between Kutoramakan Lake and Keta Lake on 25 and 26 June the males were recorded, who actively chased females (that points at continuation of egg laying), and also small groups of males, whose plumage was situated at the different stage of moult. In the region of Kutoramakan Lake we suppose breeding. Some researchers relate this species to the breeding ones (Zyryanov, Larin, 1983).

2.9 Shchekin, B., V. 2007. [Birds of Dauria]. Chita, ''*Encyclopedia* of *Zabaikalye*'' Publishers. 504 p. (In Russian).

Garganey. Pp.75-76.

The Garganey breeds in the whole territory of South-Eastern Zabaykalye [Trans-Baikalia], the typical habitats during the breeding period are shallow, mainly small overgrown fresh-watered lakes, surrounded by swamps, old lakes in a river valley, puddles among wet tussocked meadows.

In spring the Garganeys arrive in surroundings of the Chita town at the beginning of May. Their first arrivals on the Ugdan Lake were registered on the 3rd of May 1972, at the 2nd of May 1973 and on the 3rd of May 1986. It is interesting that V.S. Molleson (1897) also marked the Garganey arrival on the Chikoi River on 3rd of May. From the words of A.N. Leontyev (1972) the massive arrival of the Garganeys on the Toreyskie Lakes takes place on the 9th of May. The small passage flocks are observed in the middle and even at the end of May, and mainly after the arrival, birds stayed by pairs near their nesting territories.

On the 31st of 1970 on wet meadow at 15m from the Ugdan Lake the Garganey nest was found. It was covered with last seasoned grass, which was overhanging above. The duck covered the clutch with the down and some bits of the sedge dry leafs, from which the nest walls were made up, also it was invisible from above. The number of eggs in a clutch is 9. The sizes of two of them are following: 44,4 x 33,1 and 41,9 x 32,9mm. The weight are 27,0 and 25,2g. The eggs were without any incubation signs.

In autumn, the massive Garganey passage on the Toreyskie Lakes was observed on the 10th of September (Leontyev, 1972). It begins much more earlier- at the middle of August. On the 19th of August 1961 the migration flock, consisted of 5 birds, was observed on the steppe lake with fresh water near the Hara-byrka village of Olovyaninskiy Region. On the 29th of August 1963 on a stream in the creek valley of Borovushka (the upper reaches of the Zharcha River in Tungokochenskiy Region), the Garganey was bagged from the same flock. Later, on the 15th of September the Garganeys were not registered. The Garganey number on autumn migration is not high. They compile only 5% of the total number of ducks, bagged on hunting at the same time.

Shoveler. Pp. 76-78.

The Shoveler is related to the number of the most common breeding birds of Dauria, although the total Shoveler number is not high, their nests are found easier than the nests of other ducks. In certain extent, this is connected with the fact that they breed on lakes in a steppe, river valleys near old lakes and not large thermokarst lakes, surrounded by wide open meadows, often used for cattle grazing.

In the vicinity of the Chita city the Shovelers arrive in spring at the third decade of April. On the Ugdan lake their arrival were registered on the 23rd of April 1978, 28th of April 1987 and 26th of 1988. The Shoveler number on lakes is steadily increasing by the middle of May, but they never form any noticeable aggregations. Usually, on each of water bodies, chosen for breeding, only one or several pairs are recorded. A.N. Leontyev (1972) marked the date of the massive Shoveler arrival on the Toreyskie Lakes to be the period between 5th-19th of May.

The Shoveler nests were observed many times. As long as in ornithological literature are no any data of this species biology in the Zabaykalye [Trans-Baikalia], the descriptions of some fixed facts are stated below.

On the 15th of June 1973 on a meadow at 200m from the Ugdan Lake the nest was found, which represents a hole in the middle of a sedge tussock. The nest diameter was 16-18 cm, the nest-cup depth was 6 cm. The nest-cup was covered with dry layer of the last seasoned sedge, and on the edges is made of the mixture, consisting of brown down of the duck and rotten dry sedge. In the nest the full clutch of smooth pale-yellow 13 eggs was observed. Their sizes were 51,3 -53,7 x 35,1-36,7 mm. The weight of two eggs, taken for the finding out the level of incubation, was 37,2 and 37,0 g. The eggs were strongly influenced by incubation. In embrios eyes and gelatinous body were clearly seen.

On the 5th of 1892 in the Chita River floodplain between the Kashtak and Smolenka villages of Chita Region one nest, located on a wet tussocked meadow approximately at 200m from the thermokarst lake bank. The duck made it up on a sedge tussock. The nest represented itself a thin-walled composition, consisted of dry sedge without any down traces on it. The nest diameter was 22cm, the depth was 8cm. The clutch consisted of 6 eggs. Their sizes were 49,1-54,3 x 36,0-37,9 mm. The weight of each of them was 40,0 g. The incubation, seemingly, has started recently, since the protein solidification had been marked.

On the 1st of June of 1984 the nest was found on a meadow approximately at 100m from the Ugdan Lake. At this time it was located on a flat hay tussock, stayed on a place since the stack had been driven away in autumn. The duck has taken wings from beneath me. The nest diameter was 35 cm, whereas the diameter of nest cup was 16 cm. The clutch was consisted of 9 white-coloured eggs with greenish tint. Their sizes were 51,0-55,5 x 36,8-39,3 mm. The weight of one of them was 45,0 g. The eggs were not hatched. The repeating revision of this nest, which was taken place on the 28th of June, showed that the ducklings were hatched in favourable conditions. In the nest cup one addled egg was laying, but the empty egg-shells were laying on hay near the nest.

On the 22th of June 1985 approximately at 10 m from the place of the previous nest location an another nest was found. At this time the duck made it up under a shed, consisted of dry grass. The main material for this was the sedge. The down was not used by ducks at all. The nest sizes were 22 x 25 cm, the dimensions of nest cup diameter were 13, 5 x 17 cm and the depth of nest cup was 8 cm. The clutch consisted of 7 slighly greenish eggs. Their sizes were 53, 6-56, 4 x 38,0 -39,5 mm. The level of incubation has not been found out.

On the 5th of July 1988 on the small island, located on the Kunkur Lake, which is situated in 100 m from the bank, one Shoveler nest was found. It was located in the central part of the island, overgrown with different cereals, and it represented a hole, covered with some bits of cereal stems and surrounded by a roll, consisted of the same cereal pieces. The nest diameter was 24 cm, the nest cup diameter was 15 cm and the depth of the nest cup was 5 cm. The clutch consisted of 5 eggs. Their sizes were 51,1-53,1 x 37,1-38,4 mm. The weight of two eggs compiled 34, 2 and 34,0 g. The clutch was left, and eggs were addled ones. The one of checked egg was slightly hatched, another one was an addled egg.

At that day on this island another Shoveler nest, located in the middle of cereals, was found. It was made of the cereal stem pieces with the admixture of the bird dark down. The nest diameter was 27 cm, the nest cup diameter was 17 cm and the depth of cup nest compiled 9 cm. In a clutch 8 pinky-cream eggs were found. Their sizes compiled 52,4-55,7 x 37,6-39,0

mm. The weight of one of them was 45, 8 g. The eggs were slightly hatched – the protein solidification was recorded.

The third nest, which was found on the same island, located among the different cereal thickets. It was made of dry cereals with small admixture of the duck down. The clutch consisted of 8 slighly pinked eggs. Their sizes were 51,4-52,7 x 36,0-38,0 mm. The incubation level has not been found out.

The Shoveler nest number on island included not only the described cases. The continuation of inspection, taken place on the 6th of June, showed that there were several nests, some of which were left, devastated and the other ones were found to be with the hatching ducks on them, though both of these groups were observed at the distance of 10 meetres between each other, that is very important - the Shoveler among all breeding ducks was the dominant species.

On 7th of June 1986 on the Ugdan Lake near the edge of cereal thickets the Shoveler brood was recorded. The duck was swimming with 9 just hatched downy chicks.

On the autumn passage the Shovelers are observed in flocks together with the Teal quite often. Sometimes they fly by not large, but separate flocks. The Shovelers do not form significant aggregations on their stop-over cites. The dates when migration begins are very hard to state, because on the Zabaykalye Lakes the Shovelers stay for the whole summer. A.N. Leontyev (1972) stated that the date of the massive passage on the Toreyskie Lakes was the 21st of August. The migration is taking place within the whole September, but separate flocks delay until the appearance of ''zabereg'' (shore ice). On the 1st of October 1961, on the steppe lakes between Tsugol and Borzhigantay villages of the Mogoytuyskiy Region some Shovelers were stayed among another ducks. On the 9th of October 1987, on the Kenon Lake one Shoveler was registered, which was swimming on the edge of reed thickets.

2.10 Viksne, J.,A., Viksne, E.K., Mihelson, H.A. 1981. Changes of the Shoveler and Tufted Duck clutch sizes. Pp. 103-107

[The Baltic Ornithological Conference. Scientific conference abstracts]. Riga, The Institute of Biology of Ac of Sc. of the Latvian Republic Publishers. Part II. 210 p. (In Russian).

A.A. Mednis; The Latvian Institute of Biology of Ac. of Sc. of the Latvian Republic.

The material was collected in 1961-1979 on the overgrown shallow Engure Lake. In the first years of work, the study mainly was taken place on 5 grassy islands, and since 1966 the study was taken place on wide pieces of land with dead floating vegetation at the central part of the lake, adjacent to the islands. A complete annual census of the duck nests, including the Shoveler and the Tufted Duck nests, a data collection of the nesting biology (clutch sizes, the date of the first egg laying, an incubation level, a clutch faith etc), a complete trapping, a female and its offspring ringing were taken place. Considering all these factors it can be possible to check an existing dependance of a clutch size on its age and origin of a female (incubating female), the nesting place in the last year (resident or colonicus), as well as on the nature of breeding place and population (density) of the whole breeding population, including separate groups of females.

The correlation of a clutch size and a female age as well as the date of egg-laying in the Engure Lake the Shoveler population and the Tufted Duck were stated by us earlier (Mednis, 1968). In old females the average egg number in a clutch is larger than in one-aged ducks; in early breeding females of both aged groups the clutch size in the average is higher than in the late breeding ducks. Therefore the current presentation is dedicated to the finding out the dependance of the clutch size on the population (density) and the competition level, since the number of eggs in a clutch plays am important role in the autoregulation mechanism of the population number.

The Shoveler population on a lake is considerably not large, and it nests predominantly on one island, therefore in this species it is possible to consider the changes of the clutch sizes depending on the number of breeding females in different years. The number (high, average or low) was determined on the basis of the deviation value (in percent) of the nests number of that year different from the flexible average value from the nests number for 3 years. The average egg number for each aged group in years with decreasing, the mean (average) and increasing density of population are presented in the Table I. Due to the breeding density increase the mean number of eggs in the Shoveler clutch is decreasing ($p<0,05$). The changes of the average value of the Shoveler clutch size, depending on the breeding nests number can be considered as an autoregulation mechanism of bird number, since the changes of an average value of a clutch are found in one aged ducks and old females. It is necessary to mention that due to the breeding density increase, the share of one aged females (see n in the Table I), which in the connection with the average considerably small meaning of a clutch could lower the average meaning of a clutch, has not been increased.

As a result of the recent researches on the Engure Lake is stated that in the Shoveler the high number of hatched ducklings decreases the survival of young ducks, but the changes in the number of breeding females do not effect on the offspring faith (Mihelson, 1974). The decrease of a clutch size with the increasing number of breeding females shows that the females` number in some kind effects on the reproduction number (ratio).

Table 1. Table represents the Shoveler clutch size, which depends on the breeding density.

Breeding density	The female age			
	The local one-aged and immigrants (mainly one-aged birds)	Old	Unknown	Total
Low	9,97	10,43	9,87	10,15
	n=62	n=53	n=15	n=130
Average	9,52	10,05	9,20	9,78
	n=67	n=76	n=5	n=148
High	9,51	9,62	9,82	9,58
	n=78	n=78	n=11	n=167

3 Russische Literatuur deel 3

3.1 Zimin, V.B., Sazonov, S.V., Lapshin, N.V., Khokhlova, T.Yu, Artemyev, A.V., Annenkov, V.G., Yakovleva, M.V. 1993. [Ornithofauna of Karelia].

Petrozavodsk. Karelian Scientific Centre of the Russian Ac. of Sc. 220 pages. (In Russian).

Garganey *Anas querquedula* L. p. 25.

The Garganey mainly breeds in the southern part of the Republic, reaching the north up to the Kalevalskiy Region [31]. In the White Sea Region it breeds up to the Kandalaksha [15,80]. Unbreeding birds also appear on the Kola Peninsula [122]. The species settles on the banks of overgrown rivers, streams and lakes, it avoids to settle on the rivers with rapid flow, and stony lakes.
It is rare everywhere on breeding and a very common bird on passage [32, 105, 110, 126]. In the ''Kivach'' Natural Park the Garganey breeds not every year. On the rivers, at 10 km of the route, 0,5 Garganey pairs appear in May, whenever just 0,1 broods appear in July; on streams 1,6 pairs and 0,4 broods can be met; on the lakes of mixed type 0,6 pairs and 0,1 broods per 1000 ha of the water-covered area are sighted. On the passage in the Kivach the largest flocks consisted of 6 specimens in spring and 14 birds in autumn, and usually these are single specimens and pairs. On the Shuya River (Front-Onega district) in the antropogenic landscape in May the Garganey was a numerous species, 60-85 specimens could be sighted per day, up to 60 birds including there.

Shoveler *Anas clypeata* L. p. 25-26.

The Shoveler mainly breeds in the south of Karelia. Breeding is registered in the Pudozhskiy district and near the Shuya village (Front-Onega district). In the Sortavala vicinities and in the ''Kivach'' Natural Park the summer arrivals were registered. In the south-eastern Front-Ladoga this bird is not a numerous species, but annually has broods of ducklings on the swamps in the Svir' River mouth, seldom – on other banks [110]. It breeds in the White Sea Region, especially in its southern coast [15]. In the north of Karelia the Shoveler is a rare vagrant species [157]. In its breeding period the Shoveler was not registered, but in some years, the Shoveler breeds on the Kola Peninsula [122]. It breeds on the overgrown plots of lakes and rivers, sedge swamps. Everywhere it is a rare bird.
On the passage, in the largest part of the territory the Shoveler is not a numerous bird [15,110], or it is even absent. In spring, it can stay for feeding on meadows. Thus, on the ploughland near the Shuya village, at the beginning of May up to 55 birds could be observed.

3.2 Zimin, V.B., Popovkina, A.B., Syroechkovskiy, E.E. Jr. 2003. [Management and conservation of waterfowl populations in Northern Eurasia

(with special focus on the White Sea-Baltic flyway: Abstracts, presented to the International symposium (April, 23-28, 2003, Olonets, Karelia, Russia)]. Petrozavodsk. Institute of Biology of Karelian Scient. Center of the Russian Ac. of Sc. 253p. (In Russian)

The summer dynamics of the Anseriformes number in administrative units of Saint-Petersburg.
V.M. Khrabriy; *Zoological Institute RAN, Saint-Petersburg, Russia*
khrabryi@VH12202.sps.edu
Pp. 154-156

Data were collected by the author in 1977 - 2002 years. Waterfowl censuses were conducted every year in the period between 15th of May and 7th of July in all present-day administrative units of Saint-Petersburg. The records were taken on all park water bodies, ponds, rivers, streams, flooded (inundated) quarries, separate areas (pieces of land) on the northern and southern coasts of Nevskaya ''Guba'' (Bay), Lakhta and Sestroretsk Floods. Census technique was combined: there was a route-based navigation; point censuse method and the study of birds from a boat were used. All observed ducks were counted. The overall survey area was 22 000 ha. The aim of the study was to reveal the dynamics of the specific composition and the numbers of Anseriformes, observed in the city territory in the reproductive period. The collected data are the following:

Anas querquedula- in May - at the beginning of June the Garganey number fluctuated within the limits of 0.2-0.8 (0.5 on the average) specimens per 1000 ha of the surveyed territory. The annual number of broods was 0-4. The numbers are significantly increasing (Rs=0.322, p=0.14).

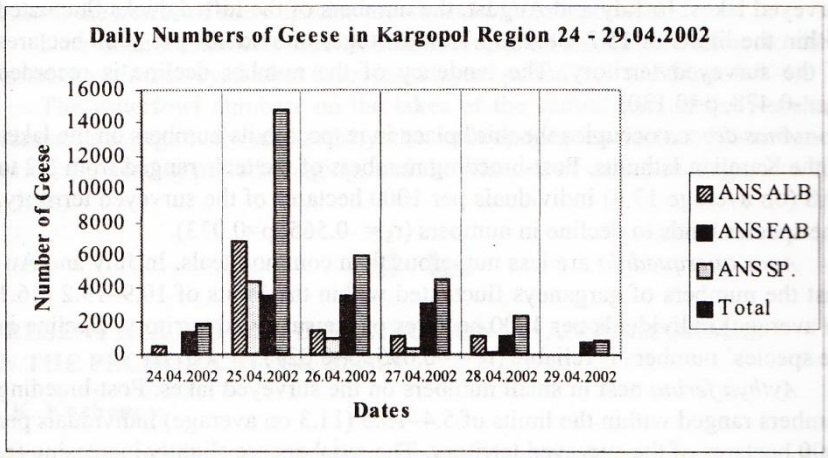
Anas clypeata- The Shoveler were observed quite rare comparing with other ducks on the surveyed territory. The breeding birds were recorded on the Sestroretsk Flood and on offshore strip of the Nevskaya ''Guba'' (Bay). In May - at the beginning of June the Shoveler number for all years of study fluctuated within the limits of 0-0.5 (0.2 on the average) individuals per 1000 ha of the surveyed territory.

The collected data show that Anseriformes species tended to reliable decline in their numbers in administrative units of Saint-Petersburg in the last 25 years (Rs=-0.798, p=0.0003).

The main factors, which have a negative effect on the waterfowl numbers are the destruction of habitats, a human disturbance during the nesting period and escorting of broods.

of commercial fertilizers. The grain crop was earlier 2600 kg per hectare and now only 700 kg.

Geese prefer winter wheat and rye fields. Most fields grow now hay and are not productive as goose pasture. In the long run most fields will be conquered by bushes and trees and come unsuitable for geese and cranes. This does not mean total loss of biodiversity but alteration of bird species.



SUMMER DYNAMICS OF WATERFOWL NUMBERS ON SOME LAKES OF THE KARELIAN ISTHMUS, THE LENINGRAD OBLAST

V.M. Khrabryi

Zoological Institire, Russian Academy of Sciences, St. Petersburg, Russia
khrabryi@VH12202.spb.edu

Data were collected by the author in the central part of the Karelian Isthmus on the Bolshoe Kirillovskoe, Vishnevskoe, Volochaevskoe, Nakhimovskoe, and Pobednoe lakes in 1992–2002. Waterfowl censuses were conducted before noon in the period between 15 July and 15 August. All ducks observed in the 200m shore zone of the lakes were counted with the help of x12 binoculars. Census technique was combined. Birds were counted on the pedestrian routes along the shoreline, from inflatable boat, and in the reed beds. The overall survey area was 1200 hectares. Our aim was to reveal the

dynamics of the specific composition and the numbers of Anseriformes prior to the opening of the summer hunting season.

Anas platyrhynchos is the most common duck species on the surveyed lakes. Post-breeding numbers of the mallards ranged from 15.5 to 71.9 (48.1 on average) individuals per 1000 hectares of the surveyed territory. The species tends to decline in numbers ($r_S = -0.564$, p=0.0747).

Aythya fuligula occupies the second place in respect to its numbers on the surveyed lakes. In July and August, the numbers of the tufted ducks fluctuated within the limits of 15.2–58.1 (33.7 on average) individuals per 1000 hectares of the surveyed territory. The tendency of the number decline is recorded (r_S= -0.478, p=0.130).

Anas crecca occupies the third place in respect to its numbers on the lakes of the Karelian Isthmus. Post-breeding numbers of the teals ranged from 5.2 to 19.8 (on average 17.4) individuals per 1000 hectares of the surveyed territory. The species tends to decline in numbers (r_S = -0.565, p=0.073).

Anas querquedula are less numerous than common teals. In July and August the numbers of garganeys fluctuated within the limits of 10.9–19.2 (16.1 on average) individuals per 1000 hectares of the surveyed territory. Decline in the species' numbers is reliable ($r_S = -0.695$, p=0.027).

Aythya ferina nest in small numbers on the surveyed lakes. Post-breeding numbers ranged within the limits of 5.4–15.5 (11.3 on average) individuals per 1000 hectares of the surveyed territory. The numbers are slightly increasing (r_S =0.425, p=0.178).

Anas clypeata were observed more rarely than the previous duck species. In July and August the numbers of shovelers fluctuated within the limits of 3.5–12.3 (8.6 on average) individuals per 1000 hectares of the surveyed territory. The numbers of shovelers are reliably declining ($r_S = -0.894$, p=0.004).

Bucephala clangula are rare now on the lakes of the Karelian Isthmus. Post-breeding numbers of the species ranged between 3.4 and 11.2 (7.2 on average) individuals per 1000 hectares of the surveyed territory.

Mergus serrator also nest at the lakes of the Karelian Isthmus in small numbers. Post-breeding numbers of the species ranged between 0 and 1.5 (0.9 on average) individuals per 1000 hectares of the surveyed territory.

Mergus merganser is a rare nesting species. Post-breeding numbers of goosanders fluctuated within the limits of 0–1.7 (0.8 on average) individuals per 1000 hectares of the surveyed territory. The numbers of goosanders has reliably increased (r_S =0.703, p=0.026).

Anas acuta is one of the rarest breeding ducks on the surveyed lakes of the Karelian Isthmus. Post-breeding numbers of pintails ranged between 0 and 1.6 (0.5 on average) individuals per 1000 hectares of the surveyed territory.

Anas penelope: Only 7 individual adults have been observed over the whole survey period. A brood of 4 already fledged ducklings accompanied by a female was found on Bolshoe Kirillovskoe Lake on 12 August 1996.

The mallards and tufted ducks determine the overall numbers of Anseriformes; the shares of these species are 48 and 16%, respectively.

Data obtained indicate that Anseriform species tended to decline in their numbers on the surveyed lakes in the last 11-year period (r_S = -0.564, p=0.074).

The waterfowl numbers on the lakes of the central part of the Karelian Isthmus are negatively affected by the anthropogenous factors (disturbance during the nesting period, logging, and the absence of nature management activities).

PRESENT STATUS AND DISTRIBUTION OF ANSERIFORMES IN THE PECHORA RIVER BASIN

S.K. Kochanov

Institute of Biology, Komi Research Centre, Ural Branch of RAS, Syktyvkar, Russia. kochanov@ib.komisc.ru

Industrial development of Pechora Basin natural resources and growing urbanisation cause great changes in spatial distribution and structure of wildlife populations, including waterfowl. Investigations on the present biological processes in bird populations of the region were caused by the necessity to solve a number of practical and theoretical problems. Waterfowl, mainly Anseriformes, are of prime interest for such investigations (high species diversity, great ability to serve as indicators of anthropogenic pressure and pollution, migrations and transfer of pollutants, conservation problems, etc.).

The paper includes data on Anseriformes species composition, numbers and distribution collected by the author in 12 key sites of the Pechora River Basin in 1985–2002. Published information was also used (Seebohm, Brown 1876, 1880; Dmokhovsky 1933; Teplova 1957; Estafjev 1977, 1981; Mineev 1987, 1989, 1994; Kochanov 1992; Neyfeld et al., 1992; Estafjev et al., 1995; etc.).

Anseriformes in the study region are represented by 32 species; breeding was confirmed for 23 (74.2%) of them, the rest have been recorded during the migration period or occasionally (status unknown). According to geographic

3.3 A.A. Estafyev, R.N. Voronin, Yu.N. Mineev, S.K. Kochanov, A.B. Beshkarev. 1995. [Fauna of European North East of Russia. Avifauna; Vol. I, pt. 1]

St. Petersburg, ''Nauka'' Publishers. Executive editor – R.L. Potapov, Readers – V.N. Guryev, L.P. Krylova, 325p. (In Russian).

Anas querquedula Linnaeus, 1758 – Garganey. Pp. 44-45.

Status. This is a breeding and migratory species.

Distribution. In breeding period it is a common species in the taiga region, it can be found on the Barents Sea coast, but on the Yugorsky Peninsula it is not usually sighted. On the Kanin Peninsula its breeding is observed up to the Chizhe (Spangenberg, Leonovich, 1960), in the Malozemelskaya tundra it is found in elfin woods, in some years it can be a very numerous bird in the Pechora River lower reaches up to the Pechora Bay, in another period of time the Garganey is very rare. In the Bolshezemelskaya tundra it is widely spread in the western and central parts. It breeds in the river basin of the Bolshaya Rogovaya, More Yu and Chernaya as well as on the coast of the Khaypudyr Bay (Mineev, 1987).

Wintering grounds. Birds from the Komi Republic winter on the South Caspian (Vengerov, 1965), the data, concerning another territory, is absent.

Migrations. In the Pechora-Ilych Natural Reserve, the Garganeys appear on the 23rd of April - 9th of May, in the average, their arrival takes place on the 5th of May (Teplova, 1957a). On the Kanin Peninsula the Garganeys were sighted on the 2nd of June (Spangenberg, Leonovich, 1960), in the Bolshezemelsaya tundra they were recorded on the 13th of June (Uspenskiy, 1965). The autumn migration in tundra starts together with the Teals.

In the Pechora-Ilych Natural Reserve the autumn migration starts between the 20th of August and 24th of September, in the average it takes place on the 10th of September (Teplova, 1957a).

Habitats. In tundra the Garganey habitats are small, shallow, covered with water vegetation lakes with the thick shrubs, located around of them, streams and river valleys; in the taiga region the Garganeys settle on the water bodies with shrub and tree (woody) vegetation and river floodplains (Estafyev, 1981).

Number. In tundra and forest tundra the Garganey number is not high. In taiga the highest Garganey numbers was recorded in the middle Pechora (5,6 specimens) and its numbers is much lower (2,2 specimens per 1square km) on the water bodies of the North and Nether-Polar Urals (Estafyev, 1981).

Breeding. In tundra, on the 22nd of June, in the ovarian tube (oviduct) of the bagged female an egg was found, which was ready for its laying. According to the gonad state, the female had laid another two eggs before this. The male from this pair had quite enlarged testicles (Mineev, 1987). In the Pechora-Ilych Nature Reserve broods were sighted since the 13th of July (Teplova, 1957a).

Feeding. In tundra it mainly consumes animal food: maggots of chironomids (Chironomidae), aquatic and terrestrial insects, Crustaceans, etc. The vegetative parts of aquatic plants and its seeds in the Garganey feeding ration are on the second place (Mineev, 1987). In the Pechora-

Ilych Nature Reserve the main food components are insects, mollusks, seeds of sedge and buttercup (Ranunculus), green parts of plants (Teplova, 1957a).

Anas clypeata Linnaeus, 1758 – Shoveler. Pp. 45-46.

Status. Breeding and migratory species.

Distribution. In its breeding period it is a common bird in the taiga region, forest tundra and south tundra, somewhere it penetrates into the Barents Sea coast. On the Kanin Peninsula it breeds up to the Kiya River (Spangenberg, Leonovich, 1960), in the Malozemelskaya Tundra – in the Pasha River lower reaches (Semenov, 1939), whenever in the west of the Malozemelskaya tundra the Shoveler breeds in the Velt River lower reaches (Gladkov, 1951a). In the Pechora River floodplain the Shoveler reaches the coast of the Pechora Bay and the south tundra of the Russkiy Zavorot Peninsula. In the Bolshezemelskaya tundra it breeds up to the coast of the Khaypudyr Bay (Mineev, 1987).

Wintering grounds. A small number of birds, ringed in the Komi Republic, were bagged in Holland and France (Vengerov, 1965).

Migration area. The clear data is absent.

Migrations. In the Pechora-Ilych Natural Reserve the first birds appear on the 20th of April-10th of May, in the average on the 4th of May, whenever the last birds appear at the end of May (Teplova, 1957a). On the base of this species number during the passage, the Shoveler is situated at the 13th place (0,8% of the total number) among the migratory waterfowl (Sokolskiy, 1964). In spring, on the Nizhni (Lower) Pechora the Shovelers fly on the 20th-30th of May by small flocks (Mineev, 1987). On the Kanin Peninsula they appear since the 4th of June (Spangenberg, Leonovich, 1960), on the Barents Sea coast, in the Velt River lower reaches they appear since the 25th of May (Gladkov, 1951a; Mikheev, 1953); in the Bolshezemelskaya tundra – since the 25th of May and since the 5th-6th of June (Morozov, 1987a).

The autumn migration from tundra and forest tundra ends at the end of September. Shovelers migrate from the Pechora-Ilych Natural Reserve since the middle of April up to the middle of October, but in the average, the first migratory flocks appear since the 15th of September (Teplova, 1957a).

Habitats. Shovelers settle on laydi (wide swamped or meadow coastal plain or shallow area of the northern seas), overgown lakes and streams with shrub and woody vegetation on its banks, and on farm meadows as well.

Number. Throughout the whole territory of the Shoveler distribution this bird is a rare.

Breeding. Nests are located in sedge tussocks among the sedge and another types of grass vegetation, located near the lakes. The period of egg laying is extended. The full clutch, consisting of 8 eggs on the Barents Sea coast in the lower reaches of the Velt River, was found on the 2nd of June (Gladkov, 1951a), in the Usa River lower reaches the clutch, consisting of 10 fresh eggs, was found on the 1st of July (Morozov, 1987a). In the upstream of the Bolshaya Rogovaya River egg laying started since the 17th of June. Near the Inta city on the 16th of June one incomplete Shoveler clutch with 6 eggs was found (S.K. Kochanov, oral communication).

In the Malozemelskaya tundra the Shoveler brood with 10 semi-fledgling ducklings, which were approximately at the size of 1/3 of adult birds, were found on the 19th of July, 6 ducklings of the same size were sighted on the 30th of July as well (Gladkov, 1951a). The brood, consisting of 5 ducklings, in which the intensive change of feather was taking place, was sighted on the 16th of August on the Khaypudyr Bay coast in the Bolshezemelskaya tundra (Mineev, 1987). On the Mezeni River, in the Udorskiy Region of the Komi Republic, on the 30th of July ducklings in broods were covered with down, but no grown remiges were found yet (Turyeva, 1951).

Feeding. In the Pechora-Ilych Natural Reserve in the feeding ration the dominant ingredients are the green parts of plants and seeds, and afterwards just insects and mollusks follow them (Teplova, 1957a).

3.4 Fefelov, I.V., Tupitsy, I.I., Podkovyrov, V.A., Zhuravlev, V.E; Science Editor - S.V. Pyzhjanov. 2001. [Birds of the Selenga River delta: A faunistic review

Irkutsk, ''East Siberian Publ Co''. 320 p. (In Russian).

Garganey Anas querquedula L. Pp. 65-67

Status. This is common breeding and migratory species.
Range and subspecies classification. It is spread in the forested and arid zones of Eurasia, preferring to settle on the wide and open plots of floodplain and front-lake biotopes. Subspecies are not determined. In small numbers the Garganey breeds on the delta plots of the Lake Baykal rivers, namely, on the Goloustnaya River delta plot; it is a common bird on large deltas of the Selenga and Upper Angara with the Kichera, as well as on the Isthmus of the Svyatoi Nos Peninsula.

Distribution throughout the delta territory. The species prefers to settle on open habitats: mainly on estuarine slots and enlargements of channels, lakes and ''staritsa'' (dead lakes) with well developed water vegetation. It breeds in dry and wet places, predominantly in the lowest delta and delta front, and in the last one nests are located on tussocks.

Numbers and their changes. The Garganey compiles 2-4% of the duck breeding population in the delta, but in some years this indicator increases up to 8%. In the middle of 1960s, probably the Garganey was much more rare than it is now (Skryabin, 1975). The breeding density in 1980-1990's compiled 6-10 nests/ square km. The nest numbers in the delta is estimated at some hundreds, but in the period with low water (rare precipitations), namely at the turn of the 1970's and the 1980s it was estimated at some tens. In the period of autumn migration the Garganey is regularly sighted, but it is still not a numerous species. The maximum number was registered on the 30th of August 1991: 39 specimens at a 10 km route were recorded.

The main ecology features. The first birds appear at the beginning of the first-second decades of April. After 10-15 days the massive migration starts, which lasts approximately for two weeks. The passage usually ends in the last decade of May. The average duration of migration is 33-40 days (Shinkarenko, 1979). The autumn passage starts at the end of August - beginning of September. The period of massive migrations takes place in the first days of September and in the average lasts for 22 days. The average duration of migration in different years fluctuates in the limits between the 30 and 45 days, and finishes at the end of September - beginning of October. During the migrations the Garganeys are sighted by separate pairs and not large groups. The groups, consisting of 30-100 specimens, usually are quite rare.
The Garganey incubates the first eggs at the end of the second decade of May. The massive breeding takes place on the 1st-15th of June, the last fresh egg clutch, consisted of 7 eggs, was found on the 5th of July, the duration of egg laying was 50 days in 1964. The average (mean) size of the clutch changes in different years varied from 8,0 up to 10,1 eggs. The success of duckling hatching, as well as in the majority of ducks, is estimated (determined) by bird predation. Adding to this, the largest number of all dead eggs is destroyed by the Carrion Crow – in different time its share compiles not lower than 20%, but in some years this share reaches more than 60%. Usually 5-12% of eggs are destroyed by the Marsch Harrier. The large number of eggs (up to 40%) is eaten by the large seagulls. The clutch death (mortality), caused by floods, is considerably not high, and in different years it fluctuates in the limits between the 12,5 and 25% of incubated eggs. The Garganey is very sensitive to the disturbance factor. The number of Garganey eggs, abandoned after the one or several human visits, is the maximum one comparing to the number of another duck species, and it compiled

nearly 17%. The success of the Garganey egg hatching is considerable lower than in other duck species (in the average it is equaled to the 23,5%), and it is strongly fluctuates in different years within the limits between 9 and 60%.
The first Garganey downy chicks appear at the end of June - beginning of July. The massive duckling brood is observed at the middle of July. The young ones are ready to fly at the end of July.

The role in ecosystems. Feeding. Just the autumn feeding ration is studied. At this time, the plant seeds are the dominant ones (73, 7% of the total volume with the hundred per cent occurence); insects (43, 5%) and molluscs (which compiled respectively 34,8% and 7,9%) also take place in the Garganey feeding ration. Unlike other ducks, some spiders were found in the Garganey feeding ration.
In the connection with not high number and biomass, the Garganey role in the ecosystems of the delta is not very significant.

Shoveler. Anas clypeata L. Pp. 67-69.

Status. This is a numerous breeding and migratory species.
Areal (range) and subspecific classification. It settles in the North America and in the largest part of the Eurasia, starting from the tundra up to the 49th parallel, on the well warmed water bodies with a great amount of plankton in it. Subspecies are not determined yet. It is widely spread throughout the whole Lake Baykal bank up to the submountain region, and preferring to settle on the open water bodies with the grass-covered banks.

Distribution throughout the delta territory. During the breeding period the Shoveler is unpretencious. Nests are mainly located on smooth dry plots, but sometimes they are found on waterlogged tussocked plots. On islands of the delta front, at the low water level stand, the Shoveler together with the Pintail and the Gadwall were the dominant species among the whole dabbling duck number, whenever at the high water level stand these species were the dominant among the Anseriformes (Anatides) number. In the rest delta parts the Shoveler was the dominant species at any water content level. Concerning the habitat choice, the Shoveler prefers to stay among the seagull colonies. Adding to this, in virtue of its habitat versatility, the Shoveler breeds in colonies of the xerocolous Common Gulls, hydrophilous Black-headed Gulls and the Whiskered Terns.

Numbers and their changes. M.G.Bakutin (1950, 1957) estimated the Shoveler as not a numerous species during its breeding period. However, in 1964 N.G.Skryabin (1975) noticed that the Shoveler was a common bird. In the last two decades the Shoveler was a numerous bird.
In the 1970s, the Shoveler share among the breeding ducks did not reach 10-12%, however, in the 1980s it rose up to 20-30%. The breeding density considerably increased: from the 6 nests/ square km at the end of the 1980s up to the 16 in 1982, but from 1984 it increased up to the 40-100 nests and more. The expansive density growth, is undoubtedly connected with the changes in the water content level and the territory shortening, which is suitable for breeding, however, the increase of the Shoveler number, even in smaller quantity (scope, extent), has taken place. According to the literary data, up to the 1980s the nest number did not exceed 0,6-1 thousand (in 1964 - approximately 1,5 thousands), but by the middle-end of this decade, according to our estimates, the Shoveler number could reach 10 thousands or less. As stated below, in the chapter with the name ''The dynamics of the fauna and the bird population'', during the transition from the low flow to the high-water period the productinal opportunities of

the delta ecosystems have increased; tendencies of some water bodies to the eutrophication (which could not improve the situation of the Shoveler feeding base) were also observed.
In the autumn migration period the Shoveler number usually compiled 1-4% of ducks. However, in the 1985 and 1990 its share did not fall lower than 4%, quite often the share compiled 6-10% , sometimes it could reach 16% (as it was in 1985), at the same year the maximum index of the Shoveler number during the migration period compiled 18,8 thousands. The maximum number of birds, when all ducks were stayed together, was on the 28th of August 1990: it was an aggregation of 318 specimens per 10 km of the route.

The main ecology features. The first birds are observed at the end of the second decade of April, approximately after two weeks the massive passage takes place, which lasts for 6-15 days. The last migratory Shovelers were sighted on the 19th of May. The total period of the spring migration compiled 26-30 days (Shinkarenko, 1979).
The autumn migration begins on the 25th of August - 7th of September. The massive passage lasts for 20 days, the total duration of the passage in different years compiles 39-48 days (Shinkarenko, 1986). In spring and autumn the migration takes place mainly by pairs and small groups, consisting of 10-30 specimens, whenever the flocks of larger size are sighted quite seldom.
They usually appear, being divided into pairs. The first eggs are laid at the beginning of the first five-day period of May. The massive egg laying usually begins after 5-6 days and continues up to the end of May. Due to the high mortality rate of the Shoveler nests, the duration of egg laying can reach 40-50 days (usually 25). The beginning of massive incubation take place at the end of May. Due to the repetitive breeding, in the Selenga River delta some clutches with unnaturally small egg number (2-5) were sighted, and at the same time nests, containing 15-18 eggs, related to more than one female, were also observed there. Much more usual there were 10 eggs in the nest, in different years its average number compiled 8,8-9,8 eggs. The duration of incubation fluctuated from 21 to 26 days, whenever its average number is 24 days (Shinkarenko, 1983).
Among the factors which determine the success of the duckling hatching the main one is the bird predation. In some years, more than 35% of laid eggs were destroyed by the Common and Herring Gulls, whenever the indicator usually showed 10-16%. Comparing with other duck species the Shoveler clutches are usually suffered from the Crow and Marsh Harrier. In different years, the share of laid eggs which were subjected to these species predation compiled respectively 6-16% and 1-14%. During the strong floods, the mortality rate of the Shoveler clutches reaches almost 60%, during the high water level period – only 20-26%, whenever during the low water level period and the time of temperate water content the share does not exceed 6%. In total, the egg survival is relatively stable and even high, which in the average is 50,5%, fluctuating from 35 to 65%.
The downy chicks appear at the first decade of June, their hatching period lasts approximately for 20 days. The young Shovelers are ready to fly on the first days of August, by the end of the month the main part of the Shoveler youngs begins to fly.

The role in ecosystems. Feeding. The Shoveler is a special filter feeder species which collects food in the shallow water layer. The domination of molluscs and insects is connected with this (the previous state). The molluscs` occurence is very high in spring and summer periods (the occurrence equals 57,7-83,3, its volume is 37,7-25,5%), but slightly decreases in autumn. Insects, mainly water maggots, are the dominant ones during all seasons (34,8-66,7% of the total occurence, 10,45-14,2% of the volume). Freshwater shrimps play an important role in the Shoveler feeding ration just in spring (66,7% of occurence, 8,5% of volume). The plant seeds are found in 90-100% of cases, and they compile 48-73% of the volume. It is important to consider that in the connection with rapid digestion of zooplankton its share in the feeding

ration should be higher than it is shown in the analysis; this, in particular, should be related to the small Crustacea, which do not occur in the Shoveler stomachs at all.
Quite peculiar feeding features and the high Shoveler number ensure the transition of the large amount of substance and energy from the water ecosytems of delta to the terrestrial ones, and also the energy removal from the delta during the autumn leaving (departure).

3.5 Ptitcy Srednei Azii [Birds of the Middle Asia]. (In 5 volumes). Almaty, 2007. Vol.1.

574 p. ISBN 9965-25-294-7. Edited by Acad. Anver K.Rustamov & Prof. Anatoliy F.Kovshar. In Russian.

Garganey Pp. 194-198. Author of sketch – D.Yu.Kashkarov.

Garganey does not form subspecies.

Distribution. Character of presence...
In the territory of the Middle Asia the Garganey certainly breeds only within the Balkhash-Alakol depression, on the separate water bodies of Tien-Shan, in particular in the valleys of rivers Tekes, Bayankola, and Cholkudysu (Dolgushin, 1960) on Issyk-Kul, Son-Kul, and in Chu valley (Yanushevich et al., 1959). There is a series of communications on records of the Garganey in summer that has allowed in own time to suppose the Garganey breeding on the eastern coast of the Aral Sea. , in SyrDaria river delta (Zarudnyi, 1916), on Bilikul and in the lower parts of Chu River (Dolgushin, 1960), on the lakes of Khorezm (Kostin, 1956), on AmuDaria lower Chardzhou (Zarudnyi, 1896). All of them later were not confirmed and cannot be an evidence for the statement on breeding.

Besides that, clearly summering birds occur in summer on many lakes at the middle stream of SyrDaria (Dolgushin, 1960), in the lower parts and delta of AmuDaria, on the lakes of Khorezm (Salikhbaev, 1961), Aidar-Arnasai hollow (Meklenburtsev, 1957), in the lower reaches of Kurukkeles (Kashkarov, 1987), in Zerafshan valley (Akhmedov, 1950), on Kashkadaria (Meklenburtsev, 1958), in upper stream of AmuDaria (Abdusalyamov, 1971), on the lakes of Pamiro-Alai (Ivanov, 1969), in the lower streams of Murgab and Tedzhen Rivers (Dementiev, 1952).

Habitats. During period of breeding and moulting the Garganey inhabits dominantly lakes with thickets of above-water vegetation, sometimes these are small water bodies, overgrown by sedge. On passages the Garganey visits the most of sall the lakes with shallow waters and developed above-water vegetation and quite often it can be met on overgrown channels of drainage or irrigation systems. The passage Garganeys might be sighted also on coast but they prefer to feed in lakes with shallow water, floods, flooded fields etc. In winter the Garganey occurs exclusively on the shallow lakes, densely overgrowing lakes and non-freezing lakes. In the period of fall of temperature, the Garganey like Teal is scattering across non-freezing rivers and channels n foothills.

Number in Balkhash-Alakol hollow is quite high (Dolgushin, 1960). At the sites of the isolated breeding on the lakes of Tien-Shan the Garganey number consists of several tens individuals (Yanushevich et al., 1959). There is a little data on the Garganey number during migrations. Probably, that is connected with the fact that on spring it arrives late and in autumn earlier than others and hides (is missed) from many observers. Nevertheless that by number this species yields to the Teal at many times. More abundant passage, in comparison with other regions, is recorded in the Northern Cis-Aral Sea area (Varshavskiy, 1965), in lower stream of Chu and Ili Rivers, near Alma-Ata (Dolgushin, 1960).

The spring migration goes on comparatively late and covers entire territory of the Middle Asia. In lower parts of Atrek River and on the Caspian Sea near Gasan-Kuli the passage begins in the 2nd half of March and continues whole April, the last birds were observed here on 12 May (Dementiev, 1952); in lower parts of Murgab River the Garganeys were recorded 26 March and

2 April (Loudon, 1902). On Zerafshan these birds appear on the first dates of March, are quite common at the beginning of April, the last birds are delaying till the end of April (Maslov, 1947; Bogdanov, 1956). At the same dates the passage goes on Dalverzinskie lakes, in Golodnaya steppe, in Fergana valley (Kashkarov, 1987; Stolzmann, 1897). According to oral communication of E.A.Mukhina, who conducted observations in the vicinities of Bukhara goitre gazelle breeding centre since 1983 till 1993, about 30% of all Garganeys is sighted in March, 65% - In April, 5% - in May.

The Garganeys arrive at the middle of March on water bodies of the middle stream of SyrDaria River in the years average by climatic conditions (Spangenberg, Feigin, 1936), in AmuDaria River delta and in lower parts of SyrDaria – at the beginning of April (Salikhbaev, 1961; Dolgushin, 1960). During April the main number of Garganeys passes by in lower part of Chu River, near Alma-Ata, in lower parts of Ili River (Dolgushin, 1960). At the same time the passage goes in Chu River valley, but in the separate warm years the birds were observed 7-8 March (Yanushevich et al., 1959), 12 March 1976, 16 March 1971 and 12 March 1973 (Toropova, Shukurov, 1991). In upper parts of Bije River the passage was registered on 10 April, in Ayaguz delta – at the middle of month; passage finishes at the beginning of May. At the same time the front of passage reaches Fort-Shevchenko on the eastern shore of the Caspian Sea (Dolgushin, 1960).

Breeding. Like in majority of dabbling ducks, on the first year of life only part of the Garganey population reaches the sexual maturity. The rest part has nomadic style of life and is situate as inside the breeding range and outside its borders. The ratio of the breeding and single (non-breeding) birds is unknown. The mature birds arrive by pairs to the breeding sites. The nest is situated on the ground amidst dense grass or shrub and a small pit lined with grass and down. The complete clutches contain from 6 to 10 eggs, in the known broods 6 ducklings were left by the moment of the beginning of flight in ducklings (Dolgushin, 1960).

Data on breeding dates are fragmentary. In Chu River valley the females with increased oviducts or eggs ready to be laid were bagged on 12 and 14 May 1957. Nest with full clutch was found on 30 May. On Son-Kul slightly-incubated clutch was discovered on 26 June; 14 August flying young birds were sighted here (Yanushevich et al., 1959). In Ili valley the nests with fresh or slightly incubated eggs were found by E.L. Shestoperov (1929) on 21-22 June. In Cholkudysu River valley on 20 June 1953 the downy ducklings were found, and on 24 July non-flying ducklings of the female's size were observed (Korelov, 1956).

Fig.40. The Garganey distribution in the Middle Asia: 1-breeding, 2 – summer records (non-breeding), winter records, 4 – passage in spring, 5 – passage in autumn.

Moult in adult birds and single birds takes place twice per year – post-breeding (complete) before departure and pre-breeding (partial), that already takes place on wintering grounds. In adult females both moults follow one behind other, being begun at the period of leading the ducklings (Isakov, 1952).

The main sites for the Garganey concentration for moult are fixed to the N-W of the Middle Asia. Within the limits of the region the mass moult takes place on the lakes of the Tien-Shan (Son-Kul and Chatyr-Kul). Ducks appear here at the end of June, feather replacements continues entire June, by the end of the month majority of birds stand up on the wing. Probably, the separate specimens moult in the Chu River valley and Naryn River valley (Yanushevich et al., 1959).

Autumn migration begins at the middle of August – earlier than in other ducks; finishes in the southern regions of the Middle Asia at the end of October. On Tekes River in the Central Tien-Shan the first flocks are recorded on 9 August 1956 (Vinokurov, 1960). In Ili River valley and in the delta of this river, and also near Alma-Ata the passage begins since the end of August, goes intensively entire September, finishes at the middle of October (Dolgushin, 1960). In the same dates the passage birds can be observed in Chu River valley (Yanushevich et al., 1959) and on Issyk-Kul (Pyatkov, 1947). On Syr Daria in the region of Turkestan and lower reaches of Arys the main passage continues since the middle of September till the middle of October (Dolgushin, 1960).

Near Tashkent young birds appear at the beginning of August, the real passage was observed since the 20th dates of month. The last passage Garganeys in Tashkent Region and Golodnaya steppe were observed at the middle of October (Kashkarov, 1987). In AmuDaria River delta Kh.S.Salikhbaev (1961) observed significant passage in October and even at the beginning of November.

By oral communication of E.A.Mukhina, on the lakes in the region of Karaulbazar near Bukhara the Garganeys were observed since the beginning of August till the middle of November 1983-1993. The most frequently they were sighted in September. On Zerafshan the energetic passage of the Garganey goes on in the first decade of September (Akhmedov, 1950), on Kashkadarja – on the 20th dates of month (Meklenburtsev, 1958). On Pamir lakes, in particular on Bulunkul and Yashilkul, R.N.Meklenburtsev (1936, 1946) sighted the first passage birds at the end of August, in September their number increased. On Surhob River in 1976 the passage Garganeys were sighted since the middle of September, and at the beginning of November their number increased (Muratov, 1980).

In Murgab River valley “quite many” Garganeys were observed in the second decade of September (Eminov, Kekilova, 1975). In the south-eastern shore of the Caspian Sea, in lower reaches of Atrek and on Uzboi, the passage begins in the second half of August and goes dominantly in the compressed dates. The last passage birds occur here at the beginning of November (Isakov, Vorobyov, 1940).

Wintering. The Garganey wintering in the territory of the Middle Asia is the sporadic phenomenon. In small number and not each year the Garganeys occur in winter on not-freezing aryks and river in the foothills of Talass Alatau and in the plain part of Chimkent Region (Dolgushin, 1960). On Issyk-Kul in the period since 1944 till 1947 only once 5 birds were observed (Pyatkov, 1954). In Tashkent Region and on neighbouring water bodies the Garganeys were not sighted.

Probably, that in rare years in small number they stay to winter in AmuDaria River basin, including water bodies of the middle and lower Zerafshan. In the collection of Bukhara Pedagogical Institute before the skins were kept, bagged 2 February and 25 December 1939 (Maslov, 1947). On Kattakurgan water reservoir, lakes Shurgak and Shurkul in February-March 1967 140 birds were found, and in relevant period of 1976 – in total number 75 birds (A.Sagitov and R.Sagitov, 1978). Unfortunately, the generalized character of the last communication does not allow to judge, whether they were wintering birds or those who began their migration.

Not every year single Garganeys spend winter om not-freezing rivers of Pamiro-Alai (Ivanov, 1969: Abdusalyamov, 1971). They occur irregularly in the region of “Tigrovaya Balka” region (Seleznev, Bidos, 1984).

Communication on record in 1974 in the zone of Karakum channel of 20 400 Garganeys (Khakyev, 1976) and 688 individuals in the territory of Turkmenistan (Poslavski et al., 1991) provoke big doubts, that in many times exceed the results of previous and next (subsequent) observations. It is necessary to take into account that aerial survey, which was used by authors, in majority of cases does not allow to identify different species like Teal, Garganey and Marbled Duck.

On the Dzhar system of floods in Murgab River valley E.A.Rustamov (1979) recorded several tens Garganeys. In lower reaches (stream) of Atrek and on the south-eastern shore of the Caspian Sea this species does not winter (Isakov, Vorobyov, 1940; Isakov, 1952; Dementiev, 1952).

Feeding. Feeding is mixed, but animal food takes considerably more space (Isakov, 1952). It's possible to suppose that availability and abundance of animal food at the end of the day determines the late dates of spring passage, limitedness of wintering region and other peculiarities of life mode of this duck. As animal food the following items are used: small molluscs, larvae of water insects, lower Crustaceas, and also adult insects, falling in water. Vegetation food – sprouts and roots of Potamogeton, Vallisneria, Arabis, Ceratophyllum, Lemna and other water plants (Dolgushin, 1960). The ratio between animal food and vegetation food considerably varies by seasons. In summer the share of animal food increases, in the period of moult and passages the vegetation food go on the first place. In autumn months on water bodies of Tajikistan and Uzbekistan the Garganeys eat in a number the seeds of Echinochloa crusgalli, Amaranthus, Phragmites, green mass of algae (water plants) etc.

Daily activity is a little distinct from those in a majority of other dabbling duck species. There, where disturbance is absent, the Garganeys can feed at any time of the day. In inhabited places, especially during passages, they hide themselves in day-time, and with twilights arrival they in a number fly on shallow floods, flooded field and swampy sites, where they till sunrise. In autumn at the middle stream of SyrDaria river the Garganey flocks can be seen by feeding still on wet rice fields. They undertake the transit migrations dominantly at night.

Importance and conservation. The Garganey has high quality as a game bird and everywhere at the regions of range is willing object of game (sport hunting). However due to reason of early departure and lesser total number the Garganey is shot in a much smaller number than Teal. In the territory of Uzbekistan about 4000 birds per season are shot (Kashkarov, Abdullaev, 1992). The resources of the species are using to all probability, incompletely.

3.6 Labutin, Yu.V., Germogenov, N.I., Pozdnyakov, V.I. Executive editor – N.G. Solomonova. 1988. [Birds of wetlands (flooded landscapes) in the Lower Lena River Valley] Novosibirsk,

‘’Nauka’’ Publishers, Siberian Diversion. 193 p. (In Russian).

***Anas querquedula* L., 1758 – Garganey.** Pp. 44-45.

The northern margin of the Garganey distribution in the Lena River water basin is known at the latitude of the middle Vilyuy River [Stepanyan, 1975], on the Vilyuy – up to 65 degrees of n.l. [Andreev, 1974; Stepanyan, 1975]. In the studied region the Garganey is common in the region of Soroka Ostrovov [Forty Islands] [Labutin et al, 1978a]. Its number is considerably lower on the territory, which is located behind the Arctic Circle, very seldom it breeds in the Muna River mouth (68 degrees of n.l.). In spring, the Garganey appears mainly by pairs and later than the Teal.

In spring, in the southern part of the territory, the length of testicles (18^{th} - 29^{th} of May 1977) compiled 17-24 mm (n=5), whenever the diameter of the largest follicles compiled 8-18 mm (n=3). On the 28^{th} of May 1974, in the Kenkeme River mouth, the Garganey courtship display was recorded, during which two males with loud call were flying behind the female above the small lake with sharp change of height. The Garganey broods in the Dyanishka River mouth consisted of 1-8, in the average 5, 6 ducklings [Labutin et al, 1978a]. The Garganey does not form any considerable aggregations during the moult period in the lower Lena River valley; as well as the summer migrations of the Garganey males, which could be clearly expressed in the Central Yakutia [Larionov, 1963], were not recorded there.

In May, the Garganey consumes the vegetative food (mainly seeds) as well as small invertebrates (Table 12, 13). It can also feed vertebrates. In the Garganey oesophagus, bagged in the Kenkeme River mouth in spring 1974, the minnow (fish species) (3cm) was found.

Table 12 shows the Garganey feeding ration (southern and central regions, May 1977 and 1981).

Food	The rate of occurrence in stomachs (n=10)	
	Absolute	(%)
Vegetative food	10	100
Sedge, seeds	1	10
Clasping-leaved Pondweed, seeds	1	10
Bur reed, seeds	1	10
Bean trefoil, seeds	1	10
Mare`s-tail *(Hippuris vulgaris* L.), small retorts	1	10
Alder, seeds	2	20
Plants (not determined)	9	90
Plants (not determined), remains	2	20
Animal food	6	60
Molluscs, remains	1	10
Coleopterans (chitin)	2	20
Insects, remains	3	30

Table 13. The table shows the morphometric measures of the Garganey (the Kenkeme River mouth, Fourty Islands). Note: In the nominator males are presented whenever in the denominator females are shown.

Indicator (key figure)	N	Lim	M
The body mass (g)	29/14 (where the first number is a numerator and the second one is a denominator)	289-500 /280-350 (where the numbers before the dash represent the numerator and after it- the denominator)	343,2/303,2 (where the first number is a numerator and the second one is a denominator)
The body length (mm)	26/14	295-405/352-380	374,3/364,5
The wing length	28/14	174-201/173-185	189,5-178,9
The tail length	22/11	65-95/65-89	75,9/74,5

***Anas clypeata* L., 1758 – Shovele**r. Pp. 45-46.

It breeds everywhere, but on the southern part of the territory this species is numerous, in the north it is rare.

In spring it appears on the 16th- 25th of May, leaves at the end of August-beginning of September. It arrives mainly by pairs, seldom – by small flocks, consisting of up to 5-8 eggs. Pre-breeding period lasts for 7 (1980) – 13 (1981) days.

Unlike another water fowl the Shoveler mainly breeds on water body banks – lakes and ‘’staritsa’’ (dead lakes). Two Shoveler nests in the Muna River mouth were located at 1-10m from water on the willow-grass (here ‘’grass’’ is referred to the *Gramineae* or cereals) and horsetail meadows, in one case – on a small hillock, and another – on a flat place. The base of the nest was a hollow, covered with down on its edges. The outer diameter of the nest (n=4) equaled 19,5-22,0 cm, whenever the inner one equaled 13,5-15,7 cm and the width of the nesting hollow equaled 8.6-12,0 cm. The start of egg laying was registered in the last 5 days of May (n=2) – the first 5 days of June (n=2). In 3 cases Shovelers laid 10 eggs, in one case - 11 eggs. Their sizes (n=41) compiled 34,1-38,8 x 49,3-55,8, in the average compiled 36, 92 (+/- 0,15) x 51,89 (+/- 0,20) mm. In the Shoveler clutch, on the plot with high population of the Tufted Duck, one egg, which was incubated by the *Anas fuligula L.*, was found. All eggs were incubated.

Broods appear on the 5th-15th of July. The number of ducklings in a brood is 2-11, in the average it is 6,6 (n=19). The Shoveler feeding is mixed (Table 14, 15). Despite the fact that the animal food comparing with the vegetative food lies in the second place, it is still consumed by birds during the Shoveler breeding period.

Table 14 The table shows the Shoveler feeding ration (1973, 1976-1981).

	Occurrence in stomachs					
	May (n=10)		**June-July (n=4)**		**August-September (n=11)**	
	Absolute	**%**	**Absolute**	**%**	**Absolute**	**%**
Vegetative food	10	100	4	100	9	81,8
Sedge (Cyperaceae), seeds	----	----	----	----	1	9,1
Cárex aquátilis L., seeds	2	20	----	----	1	9,1
Sedge (not determined), seeds	2	20	----	----	2	18,2
Clasping-leaved pondweed, seeds	2	20	----	----	3	27,3
Potamogeton friesii L., seeds	----	----	----	----	3	27,3
Potamogeton friesii L., leafs	----	----	----	----	3	27,3
Potamogeton pectinatus L., seeds	----	----	----	----	1	9,1
Bur reed	2	20	----	----	----	----
Mare`s-tail *(Hippuris vulgaris* L.), small retorts	2	20	----	----	2	18,2
Cowberry	----	----	----	----	1	9,1
Horsetail, remains	----	----	1	25	1	9,1
Plants (not determined)	6	60	----	----	1	9,1
Plants (not determined), seeds	6	60	4	100	----	----
Animal food	6	60	3	75	7	63,6
Molluscs (not determined), remains	2	20	1	25	5	45,5
Gastropods	3	30	2	50	----	----
Coleopterans, remains	2	20	----	----	----	----
Caddisflies	----	----	----	----	1	9,1
Insects	1	10	----	----	2	18,2

Table 15. The table, placed above, shows the morphometric measures of the Shoveler.

Indicator (key figure)	N	Lim	M
The body mass (g)	27/17 (where the first number is a numerator and the second one is a denominator)	400-750 /450-530 (where the numbers before the dash represent the numerator and after it- the denominator)	551,9/546,8 (where the first number is a numerator and the second one is a denominator)
The body length (mm)	27/17	453-530/430-530	476,9/463,1
The wing length	27/17	225-263/210-240	244,1/225,1
The tail length	20/14	78-120/75-100	93,5/85,5

3.7 Ptitcy Srednei Azii [Birds of the Middle Asia]. (In 5 volumes). Almaty, 2007. Vol.1. 574 p.

ISBN 9965-25-294-7. Edited by Acad. Anver K.Rustamov & Prof. Anatoliy F.Kovshar. In Russian.

Shoveler. Pp.219-222. Author of sketch – D. Saparmuradov.

Subspecies. Shoveler does not from subspecies.
Habitats. The Shoveler settles on fresh and brakish, shallow and not too much overgrown plain water bodies. In mountains the Shoveler lives on the plateau with lakes. In high-mountain areas of the Altai mountain ridge at the altitude 3600-4500 m a.s.l. the frozen Shovelers were found (Nozdryukhin, 1988). The species settles also on water reservoirs.

Number. In the Middle Asia on passages and wintering it is common, in some sites even numerous bird. During wintering and passage on the eastern shore of the Caspian Sea the Shoveler is one of numerous duck species (Zhitnikov, 1900; Isakov, Vorobyev, 1940; Dementiev, 1952; Karavaev, 1991). However its number is not stable and varies by years.
According to data of M.K.Laptev et al. (1934), recalculated by A.A.Karavaev (1991), in February 1932 in the Gasan-Kuli Bay and open shore only 750 birds wintered. In January 1978 near eastern shore of the Caspian Sea 6800 Shovelers were counted on wintering (Luri, Sabinevskiy, 1968). According to many-year counts during 1977-1991 very low number was in 1976/77 – 118 (in January for a short period shallow areas were frozen), 1977/78 – 2392, 1980/81 – 842, 1983/84 – 2276, 1985/86 – 3972, 1986/87 – 5334 and 1989/90 – 6044 (late flood on Atrek River). The highest number of these ducks in winter-spring period was recorded in 1982/83 – 21429, 1984/85 – 20788, 1988/89 – 37670 ducks. The average number per one count since September till April compiled from 574 to 3761 specimens. The high number can be explained by a bigger biomass of planktone on Adjiyab spawning grounds and flood of Atrek River and mass breeding of Chironomids (Karavaev, 1991).

At the same time in Uzbekistan for the last 25 years any changes in the Shoveler number could not be traced. Along the middle stream of SyrDaria River in the period of the mass migration the Shoveler compiled up to 5% of migratory ducks (Kashkarov, 1987). In the lower reaches of the Chu River out of 54900 birds belonged to 19 species, the part of the Shoveler compiled 1.4% (Gavrilov, 1968).

Spring migration. In the south-eastern Caspian Sea the Shoveler leaves wintering grounds in the second half of March, the main their number leaves in April, but single individuals can be sighted at the end of May and in summer (Isakov, Vorobiov, 1940; Dementiev, 1952; Karavaev, 1991). On Murgab the trans-migration was observed since the 20th dates of March till the middle of the 3rd decade of April (Radde, Walter, 1889; Loudon, 1902; Tashliev, 1958). On Dalverzinskie lakes and in Golodnaya steppe the Shovelers concentrate in the 1st decade of March, the swing of passage takes place in the second half of month. The mass migration goes on at the middle of April, it goes to nil by the end of month (Kashkarov, 1987). In the second half of April the Shoveler passage was observed on Aral shore and in the lower reaches of AmuDaria River (Zarudnyi, 1916; Kostin, 1956; Kashkarov, 1987).

In Bukhara Region these ducks appear on passage in March (Maslov, 1947). In Gissar valley the Shoveler in small number can be met since the middle of March and till the first dates of

May (Ivanov, 1940). I.A.Abdusalyamov (1971) records it insignificant trans-migration in the first half of March along Kafirnigan River valley. The first passage individuals were met in Pamir by R.N.Meklenburtsev (1946) 16 April and they have been quite numerous 6 May. In the northern part of the Aral Sea the passage takes place in the second half of April and lasts about 1 week, the most intensive was on 28-30 April (Bostanjoglo, 1911). Beginning of arrival and passage in Chuiskaya valley (average dates) in the Shoveler – the 3rd decade of March, and mass migration in the second decade of April (Umrikhina, 1984). In the lower reaches of Chu River on spring migration the Shoveler compiled 1.5 % of all Anseriformes, their highest number is recorded in the last decade of March (Shnitnikov, 1949). The first appearance of the Shovelers in Tentek dekta was registered on 18 March 2003 (Berezovikov, 2004). The Shovelers fly by small groups without forming large flocks, and as a rule, independently without mixing with other duck species. Pairs are visible in flocks. Passage by pairs or by single individuals become especially common in April (Gavrilov, 1981).

Fig. 45. The Shoveler distribution in the Middle Asia: 1 – breeding, 2 - summer records (non-breeding), 3 – winter records, 4 – passage in spring, 5 – passage in autumn.

Breeding. The literature data are very poor. In Murgab incomplete clutches were found 29 May – 2 fresh eggs and 5 June – 4 eggs (Tashliev, 1958). In AmuDaria on Kattashor Lake the brood with ducklings was met in the second half of May (pers. comm. A.N.Poslavskiy). On Dalverzinskie Lakes in Uzbekistan female with 3 downy ducklings was observed at the middle of April. At the end of July the brood of 6 ducklings with the size of adult bird was found (Kashkarov, 1987). R.N.Meklenburtsev (1936) has found the pair of breeding birds near Nuratau ridge footnotes.

On Issyk-Kul Lake 24 April the male was bagged, whose testicles were increased considerably: 16x8 and 21x9 mm. On Son-Kul Lake 3 nests were found: 12 June with 1 egg; 26 June with 6 eggs (28 June they were 9, and 29 June – 10 eggs), 26 June 2 (29 June they were 5, and 1 July – 7 eggs). Besides that, on Son-Kul Lake 21 June several nests of the Shoveler were found, in which there were clutches with 7 eggs. Sizes of eggs from the clutches on Son-Kul (n=18) are in the average the following: 49.0 x 36.2 mm. The nests, discovered on Son-Kul are as small pit in soil, whose bottom is lined with dry grass and down. Just hatched ducklings of Shoveler are met here on 13 July (Yanushevich et al., 1959). In lower reaches of Sarysu River 21-22 July I.A.Dolgushin observed many broods, in majority of them the ducklings have reached the sizes of adult birds. 19 July in Lepsa River small downy ducklings were met. At the same time in Ili River delta the female with an egg.
From above-mentioned fragmentary data it is seen that reproductive cycle of the Shoveler is strongly extended and covers the period since the end of March till the end of July and first half of August.

Moult. Moult is not studied in the Central Asia. It is known only, that on Sonkul Lake the overmoulted male was bagged on 12 August, while on 28 August many moulting ducks were observed, among them the Shovelers were represented too. Males at this time were already flying (Yanushevich et al., 1959).

Autumn migration. Leaves comparatively early. On Ili River and near Alma-Ata the last Shovelers were observed at the end of October – beginning of November (Dolgushin, 1960). The autumn passage of the Shoveler in the northern regions of Kyrgyzstan is insignificant, the separate groups and flocks jointly with other duck species were recorded since 16 August (Manas) till 8 October (Tyulek) (Toropova, Shurupov, 1991). In Chu River valley the last birds were sighted on 4 and 13 November (Yanushevich et al., 1959). In Pamir (Yashilkul Lake) the

Shovelers were observed since 16 September (Meklenburtsev, 1946). In the lower reaches of Yakhsu River in Tadjikistan the Shoveler in the total flow of migrants was registered during 6-17 October (Abdusalyamov, Lebedev, 1978). In Aidarkul Lake region in autumn the main passage of the Shoveler together with other ducks took place before 15 October (Lanovenko, 1984). In Golodnaya steppe the Shoveler becomes common already on the first dates of September, and on the first decade of October – one of the most numerous among Anseriformes (Kashkarov, 1987). On water bodies of SurkhanDaria River basin on the autumn passage the Shoveler is recorded since 5 September till 16 October (Salikhbaev, Ostapenko, 1964). In Kashkadaria river basin this duck was observed in insignificant number during 20-26 September (Meklenburtsev, 1958). The first appearance on Tedzhen (Tejen) in autumn was recorded already at the middle of August (Shestoperov, 1936), and on fresh-water lakes of Western Uzboi – in the first half of October (Dementiev, 1952). The Shoveler arrives on the eastern shore of the Caspian Sea mainly since September till the end of the 2nd decade of October (Vasiliev, 1977).

Wintering grounds. In the Middle Asia the Shovelers winter as a rule in its southern parts. Irregular wintering of the limited number of these ducks is recorded at the middle stream of SyrDaria, at the sites of confluence of Kales River (Dolgushin 1960). In Zerafshan valley on lakes with water escape the Shoveler is also recorded in small number (Sagitov et al., 1978). In the first half of winter 1962/63 on Dalverzinskie Lakes they are quite common, but in the second half of January after prolonged frosts the considerable part of birds wandered to the south (Kashkarov, 1987). Insignificant wintering takes place in the lowland Tajikistan (Abdusalyamov, 1971). The biggest wintering region of the Shoveler in the Middle Asia is the south-eastern shore of the Caspian Sea and lower reaches of the Atrek River (Isakov, Vorobiev, 1940; Dementiev, 1952; Karavaev, 1991), and also water bodies of the southern Turkmenistan (Rustamov et al., 1990).

Feeding. The Shoveler on passages and wintering is dominantly vegetarian duck. In 44 Shovelers, bagged (shot) on wintering ground in the south-eastern Caspian Sea, animal food is discovered in 28 stomachs, that by occurrence compiled 63.7 %, and by weight – 9.6%. Molluscs of 8 species dominated, which were found in 25 stomachs (56.8% and 9.2%). Food was dominantly Dreissena sp. (40.8% and 5.1%) and Planorbis planorbis (20.3% and 0.9%). Besides that, among animal food the insect are discovered in 11 stomachs (25.0% by occurrence and 0.2% by weight). The vegetative parts of plants and seeds are found respectively in 8 (18.2 % and 2.7%) and 44 stomachs (100% and 87.7%). Among 24 plant species in the Shoveler food the following seeds were dominated: Sparganium ramosum, Scirpus lacustris, Echinochloa grus galli, Ceratophyllum sp. (Isakov, Vorobyov, 1940). It's possible to add that on the south-western shore of the Caspian Sea (Lenkoran) the seeds also have primary importance (Isakov, 1952). Analysis of 26 stomachs of the Shovelers from Uzbekistan shows, that vegetative food play important role (Kashkarov, 1987).
Daily activity. In daytime the Shoveler rests on open water bodies, after sunset it flies for feeding on lakes, estuaries and floods, where it stays till the morning (Maslov, 1947; Karavaev, 1991).

Importance and conservation. In autumn and winter the Shoveler in the Middle Asia is one of the best objects of the sport hunting. The comparative easiness of their bagging and strong fluctuations in number in different years require the strict observance of norms and dates of hunting.

3.8 Vartapetov, L.G. 1984. [Birds of the Taiga Interfluves of Western Siberia]. Novosibirsk.

''Nauka'' Publishers, Siberian Division. Associate Editor – Yu.S. Ravkin. 242 p. (In Russian).

Garganey Anas querquedula L. Pp. 18-19.

The Garganey passage of the mean (average) intensity takes place on the water bodies of northern taiga at the beginning of June, but in the rest subzones it happens only at the second half of May (2nd - 9th). In the north taiga the Garganey is a common bird in the peat bogs and large taiga rivers (1-2), also it is rare in the river floodplains (0,5).
At the same time, in the mid-taiga it appears mainly on lakes and floodplains of taiga rivers (8) and very seldom on rivers. In the southern taiga it is common in June on string bogs and peat bogs and small taiga rivers (1-2), it does not occur in sub-taiga forests. Females with downy chicks were sighted on the 22nd of June 1977 in the mid-taiga and on the 1st of July 1976 in the northern taiga. Here, on the 24th of July, the Garganey female with 9 ducklings, which were feathered, but not ready to fly, were observed.

After the breeding period, in July, in the northern taiga the Garganey number increases almost at 7 times, and it becomes a numerous bird in the riverine dark coniferous forests (76), on small ''staritsa'' (dead lakes) and filled with water lowered sites between ridges. In the first half of August the Garganey is found on the dead lakes of the large taiga rivers (31), but in the second half of the month it usually disappears. At the same time, in the mid-taiga, the Garganeys were found just on the dead lakes of the taiga rivers in the first half of August (16). On small southern taiga rivers its number increases up to 7 specimens per 10 km of the river bank, but on (disappearing, drying out?) sub-taiga rivers the Garganeys were sighted just at the end of July (1).

In the average, during the summer, in the northern taiga, the Garganey prefer to settle on riverine dark coniferous forests (26), sometimes being sighted on the filled with water lowered sites between ridges. The lower percentage of the Garganey number was recorded on the dead lake of taiga rivers (5), whenever the lowest value (comparing with the previous statement) of the Garganey number was registered on the upper swamps and also rivers (0,1-0,5). The high percentage of the Garganey number is recorded on the dead lake of taiga rivers (9), and quite low value is related to the Garganey settlement on rivers (0,01) and large above-floodplain lakes (0,4). In the southern taiga the Garganey number is the same as in northern sub-zones. This Garganey is a common bird on wide watershed string bogs and peat bogs and small taiga rivers (4-6). In sub-taiga forests, on the water bodies, the Garganey number is at 3 times smaller than in previous sub-zones. Here, the Garganey is sighted on small rivers and low moors in combination with hay-mowing meadows (1 and 0,3).

Thus, throughout the interfluve (an area between rivers), the Garganey number is quite even within the limits of taiga sub-zones, but it is quite low in sub-taiga forests. In the Ob River valley, mainly in the southern taiga region, in the average, throughout the territory its number is considerably high. However, on the water bodies with floodplain and interfluve quite even Garganey number is registered, except of sub-taiga forests, where in the floodplain its number is higher than in the interfluve.

Shoveler Anas clypeata L. Pp. 19-20.

In the northern taiga the Shoveler was not sighted by us, although in the Ob River valley within the limits of this sub-zone, in summer 1973, this bird was a common species, which was sighted throughout the whole territory of the floodplain. In the mid-taiga the Shoveler was sighted just in June on large above-floodplain lakes (3). In the southern taiga it was not found, but in sub-taiga forests the Shoveler was registered only at the end of May - beginning of June on pit lakes, filled with ice-water among the wide black bogs, covered with sedge and reed (1).
Thus, on taiga interfluves the Shoveler is a rare bird throughout the whole territory of the region. In the Ob River valley its number is small within the limits of the mid-taiga, but its value is considerably higher in the rest sub-zones, especially in the southern taiga floodplain.

3.9 Melnikov, Yu.I., Melnikov, N.I., Klimenko, N.M. 2010. [On incubation of the doubled clutch by Shoveler Anas clypeata and Pintail Anas acuta].

// The Russ. J. of Ornithology. Vol.19. Express-issue 550: 281-282. In Russian.

During conducting work in Selenga River delta (south of the Lake Baikal) 20 May 1975 in the region of Hirelda channel the duck nest was found. This nest contained 6 eggs of Shoveler Anas clypeata and 4 eggs of Pintail Anas acuta. Besides that another 4 eggs of Pintail were scattered around nest, where the Pintail was flushed from. Judging on the extent of incubation, this clutch was formed by Shoveler (incubation degree of eggs was 3 points), and Pintail joined to the Shoveler (2 points). The nest was situated in kaltus between lakes among very disperse colony of the Common Gull Larus canus, on the plot with wonderful feeding and protective conditions, where there was not a shortage of sites for nest allocation. Nest was placed near base of Glyceria triflora bunch and was well protected by old dead vegetation. The bolster made of feathers' down was well expressed and consisted of the down of both duck species. Since the nest was situated near path, we could quite frequently check it.

In 2 days after discovery of clutch the Shoveler was flushed from the nest, but on the next day – Pintail. In subsequent week the clutch was incubated by Shoveler, and then 3 times we flushed Pintail from the nest. At 4 days before hatching the clutch was incubated by Shoveler. Hatching happened at 2 days, because synchrony of egg-laying of eggs by both species was incomplete. The Shoveler, nevertheless, waited hatching of both ducks, tough usually in similar cases duck quite often leave the eggs who begun to hatch. Ducklings were ringed by us by aluminium rings with plastic enclosure. Pintail near nest was not recorded near nest in this time and brood was led by Pintail.

We did not see the brood anymore. However in the first week after opening of autumn hunting at 500 m from ringing sites from the group consisted of 4 birds the Pintail with ring was shot, pointing that this duck belonged to a.m. brood. The latter indicates at opportunity of rearing of ducklings of different species in one brood in the natural conditions.

3.10 Berezovikov, N.N., Grachev, V.A. 2007. [The cases of male participation in escorting broods in the Mallard Anas platyrhynchos , Gadwall A.strepera and Garganey A.querquedula].

// The Russ. J. of Ornithology. Vol. 16. Express-issue 355: 540-541 In Russian.

It is well known that in dabbling ducks the males stay near nests only during egg-laying, and then they wander to the moulting grounds, without participation in incubation and escorting broods (Tugarinov, 1941; Isakov, 1952; Dolgushin, 1960; Kashkarov, 1987; Lysenko, 1991). So, in the Mallard Anas platyrhynchos, for example, male together with female participate in selection of site for nest, carries building material for nest and during first time of incubation is situated in neighbourhood from nest, participating in its conservation (Klippert 1956; Dolgushin, 1960).

For the period of studies since 1954 till 2006 on the lakes Markakol, Zaisan, Aalakol, Sasykkol, Balkhash, in deltas of Ili, Tentek, Ural rivers, and also on other water bodies of Eastern-Kazakhstan, Almata, Akmolinsk, Kustanai, North-Kazakhstan, Western-Kazakhstan and Atyrau Region we were lucky to observe more 1000 broods of dabbling ducks, but only in 23 species we have recorded 5 cases of discovery of males together with female and ducklings.

So, in Western-Kazakhstan Region in interflow area between Utva and Ilek Rivers (Kyzyltalskiy pond near Aksai town) 29 May 1991 near Garganey Anas querquedula broods consisted of 4 downy duckling together with female the male stayed too, which during appearance of people flew together with female and expressed strong alarm. Later returning to this site, we again say this male, who stayed together with brood....

Above-mentioned facts of male participation in escorting broods, from one side, are evidence of exclusive rarity of this phenomenon in the dabbling ducks and from other side, observations near early broods of male in breeding plumage (still before the beginning of moult on them) come us to the conclusion that sometimes they stay with female in the period of incubation and escort of brood and probably participate in the second breeding cycle. In any case, usually extended breeding period (since April till August) of Gadwall and records of non-flying ducklings till October inclusively (Grachev 1974; Berezovikov 1989, 2007) speak in favour of this statement. Further accumulation of similar fact allows objectively explain this phenomenon, and in this publication we only try to draw attention of specialists to an existence of similar phenomenon and necessity of its study.

4 Russische Literatuur deel 4

4.1 Kuchin, A.OP. 2004. [Birds of Altai]. Gorno-Altaisk. Pp.146-154. In Russian.

Garganey. Pp.144-150.

Outer look and other general characteristics.
The breeding range of the Garganey, occupies in European-Asiatic part of Russian the medium position and spreads from western borders to the Pacific Ocean. In his time P.P.Sushkin (1938) recorded that the Garganey during breeding period is very common on western edge of Altai and in Kulunda steppe, but in Altai is rare and spread sporadically. In the taiga North-Eastern Altai, on Chulyshman plateau and Ukok plateau the Garganey does not occur. A.P.Velizhanin and G.A.Velizhanin (1929) mention this duck in Barnaul district as the species in a number on breeding, and on spring and autumn passage. At the present time the Garganey is common breeding bird in foothills, in front-Altai forest-steppe plains and in Kulunda steppe the Garganey breeds in Central Altai, in Chuiskaya (Chu) steppe (Derevshchikov, 1974) and on Ukok Plateau. E.A.Irisov bagged these ducks in August-September 1964-1967 at the middle stream if Tarkhata River, in mouth and middle stream of Bailyugem River, in the vicinities of Tashanta, on Zerlyukol and Karakul and lakes, at the middle stream of Kolguta River.

The Garganey is found on breeding in Chulcha River basin on Itukol Lake (Folitarek and Dementiev, 1938) and on Saigonysh Lake 24 July 1974 (Stakheev, 2000). On Teletskoe Lake the Garganey breeding was not determined. But they on lake are quite numerous on spring and autumn passages.

Expeditions of P.P.Sushklin, crossing North-Eastern Altai along Lebed, its tributary Bolshoi Manyk, Saur and Kobo in 1912 since 5 till 8 July did not find Garganey. According to the long-term observations of the hunter V.I.Tokarev, the Garganey in spring was observed almost annually. Travelling by boat in lower part of Lebed River 12 May 1981, he sighted flock of Garganeys of 10 individuals (9 males, 1 female), another 2 flocks of 7 birds (5 males, 2 females). Male stayed on the pond neat Maiskiy settlement 13 May 1983 joined to formed pair of the Garganeys. We saw on Lebed River in Kaurchak River mouth 11 May 1898 the flock of the Garganeys of 11 birds (8 males, 3 females) and in Andaba River mouth 13 May 1988 – flocks of 15 males. We sighted here 3 May 1990 the flock of 5 birds, while mating displays were observed 28 April 1994 the flock of Garganeys in the number of more than 100 individuals was sighted here 4 May 1995.

The Garganey arrives in spring later than other ducks. Usually at the end of the second or first half of the 3rd decade of April. So, on Biya River, in Bijsk vicinities, in 1939-1941 the average date of arrival – 22 April, the earliest – 17 April (1940), the latest – 26 April (1943); in the lower stream of Katun' River (Bystryanka – Obraztsovka) in 1968-1988 respectively: 23 April, early – 17 April (1981), late – 30 April (1969). In the North-Eastern Altai in the lower stream of Lebed River the first Garganeys were registered: 23 April (1982), 23 April (1995), 28 April (1994), and on Ulagan Plateau on Sarlukol Lake – 20 April (2000). In the dates of appearance of the Garganeys the correlation with weather conditions might be traced: in early and warm spring the Garganey appear earlier than in cold and prolonged.

The spring passage on Teletskoe Lake was observed in 1979 on 20 April. In the first half of May near northern banks of the lake the Garganey was common. In 1979 on 6 May on the part

of the route near Yailyu settlement the Garganey flock was recorded of 130 individuals. Passage is lasting also in the first decade of June (Stakheev, 2000).
Already during passage the pair forming can be noticed, especially on the first days after arrival they can be seen by pairs. In spite of that, the males intensively chase females of own species. Soon the courtship displays begin in them.

Nest, as a rule, is placing on ground in dry place, but obligatory not far from water. The nest is a small pit in natural deepening, if not in the pit, - bird digs such a pit independently. The nest is building quite thoroughly, is lining by dry stems of grass and together with egg laying – the nest also is lining with female's down. In result of down accumulation tall bolster is forming around eggs that serve for hiding eggs during absence of female. 9 nests were measured by us: outer diameter 17-18 cm, nest-cup diameter – 11-12 cm, depth 6-8 cm.

We found 3 nests of the Garganey 12 June (1986) in Blagoveshchensk Game Reserve near Kisloe Lake. The nests were situated on the meadow edge in dense grass and sedge: in the first nest – 5 eggs, the 6th egg was damaged by cattle (sheep), it was slightly incubated, bolster made of down was very small (the nest was abandoned). In the second nest there were 10 eggs, bolster made of down was high. Another nest of Garganey was discovered on the farmstead of the former settlement.

The Garganey nest was found in the floodland of the lower part of Katun River on dry pasture for cattle, that was situated on tussock near stump of the fallen tree, where on 22 May (1971) there were 10 eggs. In the same day on the same place another nest was found, situated on tussock in grass. In 1976 on 20 May we found the nest with 9 eggs in birch wood under solitary standing tree, 30 May in the nest ducklings already were not sighted, only egg-shells were discovered. Here in complete 10 clutches the number of eggs was from 8 to 11. Eggs are of olive-pale colour: their length 41-50 mm, width 25-35 mm, weight 28-32 gr.

Female sits on the nest very tightly, even allows people to come at short distance, sometimes it is possible even to take female by hands. Egg laying lasts since May till the beginning of June. The first broods were sighted in the foothills already at the end of May, while the latest record of ducklings still in down happened at the end of July. On island in the lower stream of Katun' River on 26 July (1975) I have sighted the brood consisted of 3-4-day ducklings. On Biya-Chumysh Upland in Chemrovka River floodland we have found the Garganey nest 12 June (1983) at the initial period of egg-laying (2 eggs). In the Central Altai on Tyuguryuk alpine bogs the brood of 1-2-day ducklings was sighted 2 July (1970) and on Ulagan Plateau on Kochkovatoe Lake we have discovered female with 9 small downy chicks on 23 June (2000). On Kulunda Lake in Suyetka River mouth we have catched on 9 July (1987) still incompletely feathered Garganey duckling (down on head, on remiges long sheaths without brushlets). Young bird with incompletely grown remiges was bagged in Chuiskaya (Chu) steppe near Kosh-Agach on 13 August (Sushkin, 1938).

The Garganey feeds by vegetation and animal food, among animals - Garganey eats water insects and their larvae, Crustacea and molluscs. Vegetation food includes the seeds and green parts of water plants. Out of 7 stomachs of the Garganeys, bagged in Kanskaya steppe in August-September 1970-1983, in two stomachs there was grinded vegetation mass, in 4 stomachs – the seeds of water plants.

In August the evening movements from one water bodies to other begin. In autumn passage on Teletskoe Lake the Garganey participate since August till the middle of September (Stakheev, 2000). Pre-departure flocks of the Garganeys at some sites consist of 50 individuals. Thus, on

Utkul Lake, on the bank bar on 15 August (1974) the flock of 53 individuals was met, and on lakes in the vicinities of Urojainoe settlement 23 October (1972) – the flock of 89 Garganeys. On Front-Altayan plains and foothills in September and the first half of October the flocks from 5-10 to 15 individuals occurred. The last Garganeys were observed on Katun' River in the lower stream on 25 October (1965), 29 October (1979).

In some warm soft winters the pairs and the separate specimens of Garganeys fly together on non-freezing plots of the lower part of Katun' River and on not-freezing lakes near "Urojainyi" sovkhoz (Soviet farm) in 1972 on 14 November and on 17 December, and in winter of 1973 on 23 January 25 individuals stayed here. The Garganey pair was recorded on lakes was recorded on lakes on 9 December in 1978. On Katun River the pair was sighted (male and female) on 23 March (1980), who over wintered successfully, on lake the pair stayed (2 females) on 16 January (1983). In upper parts of Biya River from the sources to Kebezen settlement at the distance of 20 km on not-freezing river bed on 2 February 1977 13 wintering Garganeys were counted.

Shoveler. Pp.150-154.

Outer look and general characteristics.

The Shoveler range covers a major part of the territory of Russia from western borders to Kamchatka. In his time P.P.Sushkin (1938) recorded, that the Shoveler is common on the western edges of Altai, but is rare in the mountains on Ukok Plateau and Chulyshman Plateau it is absent completely, there are not data from a major part of the Central Altai and on Tenginskoe Lake this species was not registered yet. A.P.Velizhanin and G.A.Velijanin (1929) record that the Shoveler in Barnaul district occurs in a number on breeding, on spring and autumn passages.

At the present time the Shoveler is not rare on breeding in Kulunda steppe, in Blagoveshchensk Game Reserve and in the forest-steppe part of Priobskoe (cis-Ob) Plateau. Here the species was many times observed on breeding in 1988-1995. The Shoveler is a common in breeding period in Biya-Chumysh forest-steppe and in the floodland of upper stream (part) of Ob River, here the nests were found many times in 1974-1988, in Altai foothills - in 1974-1995. The Shoveler breeds in Central Altai in Kanskaya steppe and on Tenginskoe Lake (nest was found 30 May 1982). A.G.Derevshchikov (1974) relates the Shoveler to rare breeding birds in Chuiskaya (Chu) steppe. Young birds of brood were bagged by E.A.Irisov near Julukul Lake on 8 August (1982) and between lakes Karakul and Zerlikul on 8 August (1964). On Dzhulukul (Julukul) Lake V.A.Stakheev (2000) sighted the brood of non-flying ducklings on 9 August 1972.

In the North-Eastern Altai expedition of P.P.Sushkin has travelled along Lebed River and its tributaries since 5 till 8 July 1912 and did not observe Shovelers. He writes about that "…in this taiga Altai the Shoveler at least as a breeding bird certainly is absent". During last time the Shoveler almost annually is observed in spring period in 1979-1994 and behaves as a breeding species. In this period the Shoveler has penetrated probably as a result of human activity. Here in Lebed River floodland and on its tributaries long time ago dredges begun to work who excavated (washed through and separated) the scattered gold. As a result of that many depressions with water were formed with banks overgrown by vegetation.

The Shoveler arrive on breeding sites quite late – at the end of April or beginning of May. In Bijsk in 1939-1941 , the average date of the Shoveler arrival – 26 April, early – 20 April (1940), late – 2 May (1939), in the foothills of the area between Biya and Katun Rivers in 1977-1992 respectively 29 April, 25 April (1989) and 2 May (1979), and in the North-Eastern Altai at the middle stream of Lebed River in 1979-1994 – 29 April, 25 April (1989) and 3 May (1994). The simple appropriateness is tracing in that: in warm and early springs the Shoveler arrive at the middle of the 3rd decade of April, while during cold and delayed – at the beginning of May.

Yu.S.Ravkin met 3 passage birds in the foothills of the North-Eastern Altai on 23 May 1963. In the 1970's on Teletskoe Lake the Shoveler was sighted on passage in spring since 16 April in 1974 till 20 May in 1978 (Stakheev 2000).

On passage the Shovelers don't form large flocks, but fly by pairs or small groups, often together with other ducks. After arrival the Shovelers can be seen already by pairs, they are forming probably still on wintering grounds. At this time one female can be chased by several males and fights between them are quite common.

The nest usually is building on the ground and is a pit, lined with dry grass with abundant lining of down. It is well hidden by dense grass of shrubs. The Shovelers quite often settle in joint colonies of terns, gulls and waders, which protect them well from different enemies.

In Biya-Chumysh forest-steppe at the middle part of Chemrovka River on meadow near Lozhkino settlement on pasture we led observations for the Shoveler breeding in the colony of the Lapwings, Redshanks and Common Sandpipers in 1981-1984. The nest was situated on tussock in old sedge and it contained 2 eggs (litter was made of exclusively sedge, down was not represented yet) 18 May (1981). 4 eggs were discovered 20 May, 6 eggs – 21 May, 7 – 22 May, and during inspection of nest 26 May – 10 eggs. On 7 of June female continued to incubate clutch, but only 7 eggs remained in the nest. 21 June in the nest there was 1 egg with perished duckling. Here on meadow near river 20 May (1981) the second nest of the Shoveler with 2 eggs was found. In 1984 on 22 May here on the edge of the sedge bog there was another nest with 7 eggs, and 26 May their number was already 9, female continues to sit on the nest on 30 May.

In Kulunda steppe in the vicinities of Sukhoi Rakit settlement the Shoveler one nest was found with 4 eggs on 5 May (1988), and on Priobskoe (cis-Ob) plateau on Teleutskoe Lake on 1mainly by single individuals, pairs and small groups, 5 May (1994) in one nest there were 10 eggs, and in another nest – 1 egg. On 25 May in the first nest the ducklings were already absent (there were 8 egg-shells only) and in the second nest – 10 eggs. In the Central Altai on Tenginskoe Lake the nest was found with 7 eggs on 10 May 1982.

The average sizes of 3 nests: outer diameter 20-30 cm, nest-cup diameter 17-20 cm, depth – 9,5-10 cm. Number of eggs is from 7 to 10, their length 49-55 mm, width 34-38 mm, weight 33-44,2 gramms, eggs are bleaching of grey-green colour.

From above-mentioned data anyone can see that egg-laying in the Shoveler is strongly extended by time. The first downy ducklings are recorded from the end of May or the beginning of June, at the middle or end of June the number of ducklings was high. Thus, in Biya-Chumysh forest-steppe in Chemrovka River floodland the 2-3-day ducklings were registered 28 June (1987), while quite large downy ducklings - 3 July (1982). Stakheev (2000) recorded the discovery of the single Shovelers on Teletskoe Lake on 23 June 1978 and 2 July 1977. In high-

mountain area on Julukul Lake the brood of 6 ducklings (who will be able to fly very soon) was sighted in 1962, 8 August (Irisov, 1963), the brood of non-flying ducklings in 1972 on 9 August.

In autumn in September and the first half of October the Shoveler is observing in the foothills and on Front-Altayan plains. By small flocks Shovelers were sighted very seldom: pair of birds in upper parts of Biya River 17 September (1972), on the pond of Koksha settlement in lower parts of Katun' River 6 Sept. (1975), 22 September (1981), on pond near Lozhkino village 3 September (1977), on Suetka River (Kulunda) 4 October (1988), 20 and 21 September (1990), on Teleutskoe Lake on 1 October (1994). In Central Altai in the Kanskaya steppe we saw one Shoveler pair in 1979, 6 October, on Tenginskoe Lake in 1986 on 27 September.

The Shoveler leaves our area comparatively early, in the second she is sighting more and more seldom in foothills, and in the first decade of October the last birds are leaving. On Teletskoe Lake the Shoveler was sighted on autumn passage since 4 of August (1972) till 1st of October (1979) (Stakheev, 2000). In Ust-Kanskaya steppe in the last time we saw these birds on 6 October (1979) and in Lebedinskoe Game Reserve in pre-mountain plain on lake among Mallards 12 Shovelers stayed on 6, 7 and 8 October (1995).

The Shoveler is dominantly animal-easting among other ducks: feeding by water insects and their larvae, molluscs and Crustacea species. The Shoveler in small number eats the green parts of water plants and their seeds. The Shoveler the most of all get food by filtration of water on shallow places. The bird gets a food in small number from bottom, usually the bird submerge only head in water and does seldom the vertical stand.

4.2 Melnikov, M.V. 2005. [Record of the Garganey Anas querquedula on Eastern Murman].

// The Russ. J. of Ornithology. Vol.15. Express-issue 306: 18-19. In Russian.

During short excursion 2 June 2005 on Promernoe Lake in Dalnie Zelentsy settlement (Barents Sea, Eastern Murman) among several pairs of the Tufted Ducks Aythya fuligula and Pintails Anas acuta the Garganey Anas querquedula was recorded. Earlier in this region this species was not recorded (Bianki et al., 1993; Paneva, 2001). East of this study region, in Voyatka Bay (region of Sem Ostrovov archipelago) the apuir of the Garganeys was observed 16 June 1961 in the flock with the Teal Anas crecca (Karpovich 1962).

4.3 Zhukov, V.S. 2008. [On question of dependence of egg sizes on order of their laying (on the example of Shoveler Anas clypeata).]

// The Russ. J. of Ornithology. Vol.17, Express-issue 403: 314-315. In Russian.

The review of trends of egg size changes in connection with their laying by one female within the limits of one clutch was conducted by Raivo Mand (1988). According to this review, in the birds of Anseriformes order only decline of egg sizes was noticed during their laying. However, we, finding one nest of the Shoveler Anas clypeata, supposed that in this species, at least in the separate clutches, an increase of egg size during their laying can be met.

The observations were conducted in Chainskiy district of Tomsk Region (S of West Siberia), near abandoned Kuzurovo settlement. Settlement is situated in the floodland on the right bank of Oka River. The Shoveler here is a common breeding and passage species. The nest was found on 10 June 2006 on the meadow approximately at 200 m from settlement and at the distance of about 50 m from bank of small river Kuzur, that flows into Ob' River. The nest was situated among grass, approximately at 10 m from the road that went along Kuzur bank between river and nest. During discovery of nest the female took off from the nest. In the nest there were 6 eggs, but bird's down was absent. To all probability, that was incompletely finished clutch. The egg sizes, mm: 52.7x35.7, 54.1x35.9, 54.4-35.7, 55.0x36.2, 55.4x36.5 and 56.5x37.1, in the average =- 54.7 x 36.2.

The first 5 eggs were cold ones. The sixth, the biggest egg was warm. Nest was found at 11.15. to all probability, warm egg was laid not long time ago before discovery of nest, while cold eggs – earlier. The order of laying of the rest egg is unknown. Probability of laying of this large last egg by other female, to my opinion, is not great. From outer side by tint of coloration, large egg was not distinct from the rest eggs.

Mand, R. 1988. Intra-population variability of bird eggs. Tallinn: 1-195. In Russian.

4.4 Zinoviev, V.I. 2009. [The Garganey Anas querquedula of Ivankovskoe water reservoir].

// The Russian J. of Ornithology. Vol.18, Express-issue 506: 1466-1468. In Russian.

The Garganey Anas querquedula – common breeding bird of Ivankovskoe water reservoir. In spring the first Garganeys appear on water reservoir in the period since 11 April (1966) till 22 April (1955). The mass spring passage is attached to the 2nd-3rd decade of April – beginning of May. Birds arrive at night. They don't form the noticeable concentrations on rest sites during day time.

The Garganeys begin to breed at the end of April – beginning of May. The highest number of nests (18) was discovered on meadow massifs of wetland vicinities. The somewhat smaller number was on Sedge-shrub (10) and forest (3) bogs and on islands of Shoshinskiy and Ivankovskoe "ples" (open stretch of water) (5).

The nests are situated usually on dry raised sires, under shrubs of alder, willow or in bunches of sedge and obligatory in direct neighbourhood from water. Egg laying begins since the end of April and finishes in the 2nd-3rd decades of May. The modal number of egg in clutch was 9-10, average 8.8. The first broods appear on water reservoir in the first-second decades of June. The mass appearance of youngsters happens in the 3rd decade of June. The average number of downy chicks in brood is 7.5 (n=92), slightly flying young birds – 5.4 (n=119).

According to data of routine counts of 1963-1966, the part (share) of the Garganeys in the total number of the counted ducks in May-June equal to 52.5%, in July-August – 39.2%.

We have checked the contents of stomachs of 97 Garganeys. In April-May the food ration of Garganeys at 60% consists of vegetation and at 40% of animal components. The base animal food consists of Pulmonata moluscs (25.9%), vegetation – seeds of water plants and ground-water plants (48.7%). Importance of water insect larvae in spring feeding of the Garganeys is not great (6.2%).

In summer with increase of weight of vegetating plants the part of vegetative food – seeds of Polygonum amphibium, Scirpus lacustris, Potamogeton, Ceratophyllum demersum, Nymphaea candida etc. increases gradually in the Garganey ration. In October-November the importance of seeds in bird nutrition declines in a certain degree, remaining, however dominating (60.9%) and importance of water insects larvae (10.3%) increases.

As a whole in Garganey feeding the vegetation food dominates (74.6%): seeds of Carex physodes (18.6%), Polygonum amphibium (17.8%), Potamogeton (7.0%), Scirpus lacustris (7.0%) etc.: in animal part of food – molluscs (17.2%).

For 4 years of field works by method of complete helminthological dissections we have investigated 62 Garganeys. Both young (27) and adult (35) birds are infested by helminths at 100%. Totally 40 helminth species were recorded. By frequency of occurrence 4 species were numerous (mass), 8 –common and 28 – rare and occasional. In the species relation in Garganey's parasithofauna the occasional and rare species dominate in quantitative aspect – the common and numerous.

The Garganey – one of the most numerous species of waterfowl in hunters' bag for hunters of Moscow Sea. In particular, in April-May its part forms 43.2% of the number of all Anseriformes

who have been shot, and in August – 35,6%. From August till October the species importance in the total bag declines down to 8,3%. The average bagging of birds for many years (1954-1965) per 1 man-day of hunting is not great. In spring it is equal to 1 exemplar, in autumn – 1.5 exemplar.

The average weight (n=194) of Garganeys of Moscow Sea – 385 g. The maximal weight – 510 g (22 November 1963), minimal – 275 g (7 October 1956). From August to October the weight of young birds increases in the average by 47 g.

On Shoshinskiy ples (open stretch of water) of Moscow Sea 12 May 1951 and 5 September 1960 2 ringed Garganeys were bagged. The ringing in both cases was done in Holland, correspondingly, 3 August 1949 and 2 August 1959.

The autumn passage of Garganeys begins in the second half of September and lasts till the first dates of October. The last birds leave water body at the beginning –middle of October, sometimes halting till November (22 November 1963 the flock of 5 Garganeys was observed).

4.5 Zyurin, V.N. 2002. [Shooting of the Garganey Anas querquedula albino on Ilmen' Lake].

// The Russ. J. of Ornithology. Express-issue 204: 1073. In Russian.

During hunting on 27 September 2000 in Lovat' River mouth (Kopanets channel) the Garganey Anas querquedula in white plumage was shot by me, only on wings and tail the pale tint was saved. Bird stayed solitary. However at the even here several Garganeys were recorded, one of which was completely white (probably specimen shot by me), while the second one – partially white.

On Ilmen' Lake the Garganey by number takes the 3rd place after the Mallard Anas platyrhynchos and teal A.crecca. The Garganey breeds not only in the lower stream of rivers Lovat', Polist and Vergot, but along the eastern shore (bank) of lake and on the southern precipice (glint) without bogs and cattail thickets, where it occupies small ponds and channels covered by small vegetation. In spring and summer 2000 the breeding conditions for ducks were not distinct from normal ones. According to my many-year observations, the Garganeys leave Ilmen' Lake before the beginning of October. Probably, the Garganey albino was young and belonged to the local birds, i.e. location of it in the group together with other bird with albinism expression is evidence of presence of still undisintegrated brood. For 10-year period the Garganeys with deviation in coloration were not sighted by me yet.

The shot bird was passed over to the Chair of Vertebrate Zoology of St.-Petersburg University, where it was dissected, measured and weighed, and the studded skin was made what now is kept at the Chair's collection. It was young female. Body weight 445 g, dimensions, mm: wing of open wing 184, bill length 34.9, bill height 14.6, bill width 16.2, head length 74.7, tarsus length 29.8, length of medium toe 36.1, tail length 64. On wing feathers and on contour feather of the body, under general white type of feather coloration, the light-ochreous elements of plumage pattern are clearly visible , in particular – the mirror is considerable darker, than the stripes around it.

4.6 Blinov, T.K., Blinov, V.N. 1997. [Birds of the Southern Trans-Ural: Forest-steppe and steppe. Volume 2].

Fauna review and birds protection. The Siberian Division of the Russian Academy of Sciences. Novosibirsk. 296 p. (In Russian).

Garganey - Anas querquedula L. Pp.72-74

This is a numerous, breeding species. According to Yu.A. Isakov and E.S. Ptushenko (1952), the Ishim forest steppe is related to the regions with the highest Garganey number in its breeding period. In V.I. Azarov view, the massive passage usually takes place at the third decade of April – beginning of May. In 1970, Garganeys compiled 0,2 % of the migratory water fowl number. In the Baraba, the Garganey arrival usually starts at the end of April, whenever the massive arrival starts at the beginning and middle of May.

On water bodies of the southern forest steppe the Garganeys appeared at the second half of April. The passage in northern direction is the most intensive at the first half of May. On the interfluve of northern and southern sub-zones the passage density is much higher than in the Tobol River valley (1 and 2 specimens per km/h against 0,8 and 0,3).The eastern domination (exceedence) of the Garganey number over its density in breeding period is small (1,5-2-fold), but this is a considerable change at the first half of May just in some habitats of northern forest steppe, as well as in river floodplain and on temporary water bodies, located among meadows and fields in southern forest steppe.

According to the cases, when broods with downy chicks and nests were found, the egg laying periods are stretched. Thus, in one nest the egg laying started on the 4th of May 1982, whenever in other three nests it started from the 23rd of May up to 4th of June. In addition to this, in another nest, which was found on the 18th of July (it was one week before the time when ducklings were being hatched), the egg laying started just after the 24th of June. Three nests were located on tussocks among the bushy swamps and another two – on sudds, located near the limnetic zone. Since, at the second half of May the presence of non-breeding Garganeys, probably the migratory ones, is clearly seen, the Garganey males leave females and start migrating for a moult shortly after the egg laying is finished [Dolgushin - citation is taken from ‘’Birds of Kazakhstan’’, 1960], indications of the high Garganey number, having the average meanings for the second half of May and the first half of June, are the closest ones to the meanings of the breeding population density. Within the specified period, on the northern plot of the Tobol valley the Garganey is a numerous bird on the river floodplain and bushy swamps, noninundated swamps, river and pasture lands with the dead lakes and pit lakes (16-80 specimens/squared km); it is a common bird among the fields and pasture lands with copses, on uplands and flooded meadows (2-6); in the average, throughout the whole territory 5 specimens per squared km are found. On the interfluve of northern forest steppe the Garganeys in large numbers are found on small overgrown lakes (164), on small border lakes, in flooded birch forests (11-37), this bird is a common species on salt meadows, in birch-aspen forests with fields and flooded pit lakes, on upper swamps, covered with pine, and mesotrophic swamps with birch scrubs, sudds of large rivers, as well as on lacustrine meadows (2-9); in the average, throughout the territory 11 specimens per squared km are recorded.

On the southern plot of the Tobol valley the Garganeys are numerous in a floodplain, on a river and salt lakes (20-49), these birds are common on a half flooded meadows, pasture-lands and fields (2-4); in the average, throughout the territory 3 specimens per squared km are registered. On the interfluve of the southern sub-zone the Garganey is a numerous bird on open salt and

fresh lakes with the border, made of the reed and on small fresh lakes with the border of sudds (16-24); in the average throughout the whole territory 3 specimens per squared km are registered.

Therefore, the average meaningful indicators of the large Garganey number are the highest in the interfluve of the northern subzone, but the large Garganey number in the breeding period is the maximum in the forested and forest steppe zones of the West Siberia, and it decreases to the north and south from them.

In the first half of June, on the interfluve between the northern and southern subzones the Garganey passage for the eclipse moult (2 and 0,1 specimens per (km/h)), whenever in the northern subzone the migration density is stayed on the same level up to the second half of August. Throughout this period of time the flocks, which fly in the southern direction are met there. The aggregation of the Garganey specimens, which fly for the moult, are recorded on the floodplain of the Tobol River valley, mainly on the small fresh-watered and overgrown lakes, which are located in the interfluve of the northern forest steppe and on the open border lakes, located in the southern subzone of the studied territory. The number of birds, mainly the male number, aggregated here in June, approximately is 25-30 specimens per squared km. The small part of them, perhaps, is stayed for the moult period on these water bodies. According to V.I. Azarov, in 1970 the Garganeys compiled 3,3% of the moulting birds, whenever its average number on the water bodies is about 3 specimens per squared km.

In the steppe zone the Garganey is one of the numerous ducks. In the first half of May the Garganey number is high on large fresh- watered lakes (47 and 11), in the river floodplain and sedge- reed swamps (30 and 33); it is a common bird on open bitter lakes (7). At the beginning of June, its number in different habitats is varied. In the river floodplain areas and salty lakes the Garganey is a common bird, but on the large fresh-watered lakes its number considerably increases (from 11 to 85) and on sedge-reed swamps (from 33 to 68). The average indicators of these measures, seemingly, should be considered as the breeding density meanings.

In the southern subzone the large Garganey aggregations in the cattail-reed floodplain (109) were observed, but in the second half of the month just disappeared. They consisted of the birds, appeared there for the moult, and those, which were non-breeding specimens. In this part of the territory, the number of breeding birds is not high, comparing to its meaning in the northern subzone (from 0,02 to 5 specimens per squared km of the lakes and river floodplains). In average, during the first half of the summer the Garganey is a numerous bird in the river floodplains (42 and 44), on large fresh-watered lakes and reed-sedge swamps (50 and 52), on the reaches (open water areas) of the large salty lakes, salt meadows, on the reaches with cattail and reed floodplains (2-8). In the dry lands the Garganeys are observed very rare.

The young birds and those specimens, which have overgone a moulting period, are ready to fly since the second half of July. At the same time, a part of birds from the forest steppe leave these places, since the Garganey number from July to August decreases. On the contrary, in the steppe zone, in many habitats its number sharply increases (goes up); the maximum aggregations are sighted in the first half of August. The highest meanings of the Garganey number were recorded on the river floodplain areas (588 and 1454 specimens per squared km in the second half of July and at the beginning of August were registered there), on the fresh-watered lakes (55 and 235 respectively), in the floodplain areas, covered with the reed (69 and 212). In average, during the second half of the summer the maximum Garganey numbers in the Turgai meridional depression were registered in the flooded slots of land (712), on the large

fresh-watered lakes (308 and 120), in the floodplain areas, covered with the reed (101). It is a numerous species on the sedge-reed swamps and reaches, covered with the reed (26 and 20). The Gargeneys leave the forest steppe quite early: by the end of August this species is not sighted here. But sometimes the Garganeys were recorded on the salt meadows: some migratory birds were recorded in the second half of September (13 specimens per squared km). The maximum density of the autumn migration was recorded in the second half of August (9 specimens per km/h), whenever at the beginning of this month the density indicator of the Garganey migration was considerably lower (3). In September and October the Garganey migration is not clearly seen.

According to V.I.Azarov, in the Ishim forest steppe, the passage takes place in the third decade of September and in the first half of October. In 1976, the Garganeys compiled 2% of the migratory water fowl, which were marked by him, however, during the dry years the number of migratory Garganeys increases. Apparently, the migrants fly over the Turgai meridional depression in transit flight, though in separate years the stops of passage flocks are quite possible.

Shoveler – Anas clypeata L. Pp. 74-77

This is a common breeding species. In the southern region of the Tobol River valley the Shoveler appeared in the second half of April, on the interfluve it appeared just at the beginning of May. The Shoveler passage in the north-eastern direction was slightly expressed in the first half of May, on the interfluve of both subzones (3 and 0,1 specimens per km/h). The largest number of the migratory Shovelers in the southern part of the Tobola River valley is aggregated in the second half of April, in the river floodplain areas, whenever in the first half of May its number decreases here (46 and 12 specimens per squared km). On the shallow salty lakes the dynamics of the migratory duck number is reverse (6 and 19).

According to the V.I. Azarov, the spring passage takes place in the second half of April and in the first half of May; the massive migration takes place in the last and first decades of these months. In 1970, the Shoveler compiled 0,3% of the migratory water fowls. In the Baraba, the massive passage takes place at the beginning of May.

On the interfluve, located in the southern forest steppe, the Shoveler is a numerous in the first half of May on open fresh-watered and salty lakes, on spills (the flow of tides) among the pasture-lands (24 and by 13). In the southern part of the Tobol River valley the largest duck numbers are registered in the floodplains (inundated plains), on spills among the pasture-lands and meadows with drainage channels (80, 36 and 18); on small bushy swamps, large noninundated lakes and on a river this species is a very common (3-9). On the interfluve, located in the northern subzone, during the eastern migration the Shoveler number is high on flooded reed-sedge swamps, inundated plains, open reaches of the large lakes, salty and steppificated meadow grounds, suitable for the pasturage (from 17 to 82), the Shoveler is usually common on sudds of large lakes and lacustrine (pre-lake) meadows (1-4).

The Shoveler starts egg laying shortly soon after its arrival. In three of five discovered nests the egg laying started on the 1st - 6th of May, whenever in another two it started on the 11th - 13th of May. Three of them were located on tussocks among the small swamps, one of them was located on the border between the meadow and inundated area and another one was located on the sudd, among the Common Gull colonies. In the connection with the fact that in the second half of May an inconsiderable migration is sighted, but the duck nomadic movements for its eclipse starts in the second half of June, the measures of the duck population represent

the density of the local population in its breeding period, which have average meanings for the second half of May - first half of June. During this period of time the Shoveler number, in average, is the highest on the shallow water bodies, located in the interfluve of the northern forest steppe, which are rich of eclipse vegetation, - small overgrown lakes and inundated areas (49 and 38). A bit lower population can be found on shallow reaches of large lakes with some sudds (raft of land vegetation) on them, on reed-sedge swamps, border lakes, lacustrine and salty meadows (12 and 49), on bog forests (mainly aspen and birch forests) with fields and on fields, covered with permanent grasses (from 0,3 to 7).

In the southern subzone The Shoveler is a numerous species in the inundated areas of the Tobol River valley and a common bird on the river (11 and 5 specimens per squared km), except of this, birds are stayed on the dry salty lakes, and it is very rarely sighted on pasture lands, adjacent to these lakes (2 and 0,3). On the interfluve, located in the southern subzone, the Shoveler is a numerous bird on shallow and dry salty lakes (17), although it does not breed or appear in these places before it actually leaves. The Shoveler is a common bird on large fresh-watered lakes with the border of the reed, it breeds on pasture-lands, located near lakes (1-8). Thus, in breeding time, the Shoveler population density on the interfluve of both sub-zones is higher than in the Tobol valley, and it has a maximum value (meaning) on water bodies of the northern sub-zone. Here, the Shoveler number is higher than in the sub-zones of the forested zone – these are forests of the Ob River floodplain, located in the southern taiga. In average, in the forest steppe especially on the interfluve, the Shoveler number is higher than in the forest zone. Yu.A.Isakov and E.S. Ptushenko (1952) have the same suggestions about the previous fact.

The Shoveler insignificant migration for the eclipse in the southern direction is usually registered in the second half of June on the interfluve between the northern and southern sub-zones (0,3 and 0,05 specimens per squared km). According to V.I. Azarov observations, in 1970, on water bodies of the interfluve, located in the northern sub-zone the Shovelers compiled around 17% of the total number of water fowl, which have been overgone a moult process (in average, 17 birds per 1 squared km of water bodies).

In the steppe zone, the Shoveler prefers to breed on swamps and inundated areas, whenever on lakes its number is lower. Thus, in the second half of May-beginning of June the Shoveler number (which is, seemingly, near to the population density) was 13-47 specimens per squared km on swamps and inundated areas, whenever on lakes its number varied in the range between 0,8 and 8. In average, during the first half of summer, the Shoveler number is high on inundated areas, on sedge-reed swamps, on river floodplains with the reed, cattail and bulrush, grown in them, and on reaches of large light-salted lakes, covered with the reed (10-21). According to I.A. Dolgushin data [Birds of Kazakhstan, 1960], on a heavily overgrown water bodies, the Shovelers in large numbers, have moulting period at the beginning of July.
The Shoveler number increase, which is connected with the young birds that are ready to fly, as well as with the ducks, which had a moulting period before, is recorded in the northern forest steppe, mainly on its river floodplains and bushy swamps, located near the Tobol River valley, in the first half of July and on small, heavily overgrown lakes of the interfluve – in the second half of the month (22, 12 and 35 specimens per squared km).In the southern sub-zone it is registered in the first half of July on the river and border lakes of the interfluve (13 and 33).
Since the second half of July, throughout the whole territory, except of water bodies, located near the interfluve of the northern forest steppe, the Shoveler number decreases. However, it is not clear whether the part of the Shoveler population has nomadic movements to the south from the place, where specimens are aggregated, or it is formed on some unstudied territories. This is confirmed by the following fact: there is the duck population increase in the first half of

August, which is taken place on water bodies of the interfluve, located in the forest steppe – the Shoveler becomes a numerous species on overgrown fresh-watered and open border lakes (81 and 11), as well as it becomes a common bird on open reaches of large lakes, in river floodplains and on salty lakes, adjacent to inundated areas (1 and 2). However, here, in the second half of August the bird population decreases in average at 3 times (not large Shoveler number (from 2 to 9 specimens per squared km) is recorded on open reaches of large river, which are overgrown with the bulrush. In the northern part of the Tobol River valley ducks appear in the first half of August on river floodplains, bushy swamps and on a river (2 and 8), during the hunting period, mainly in the first days of September the Shovelers leave these places. In August, in the southern sub-zone the Shoveler number is high on the flooded lakes, located near the Tobol River valley (21), and it is a common bird on small fresh-watered lakes (4-7).

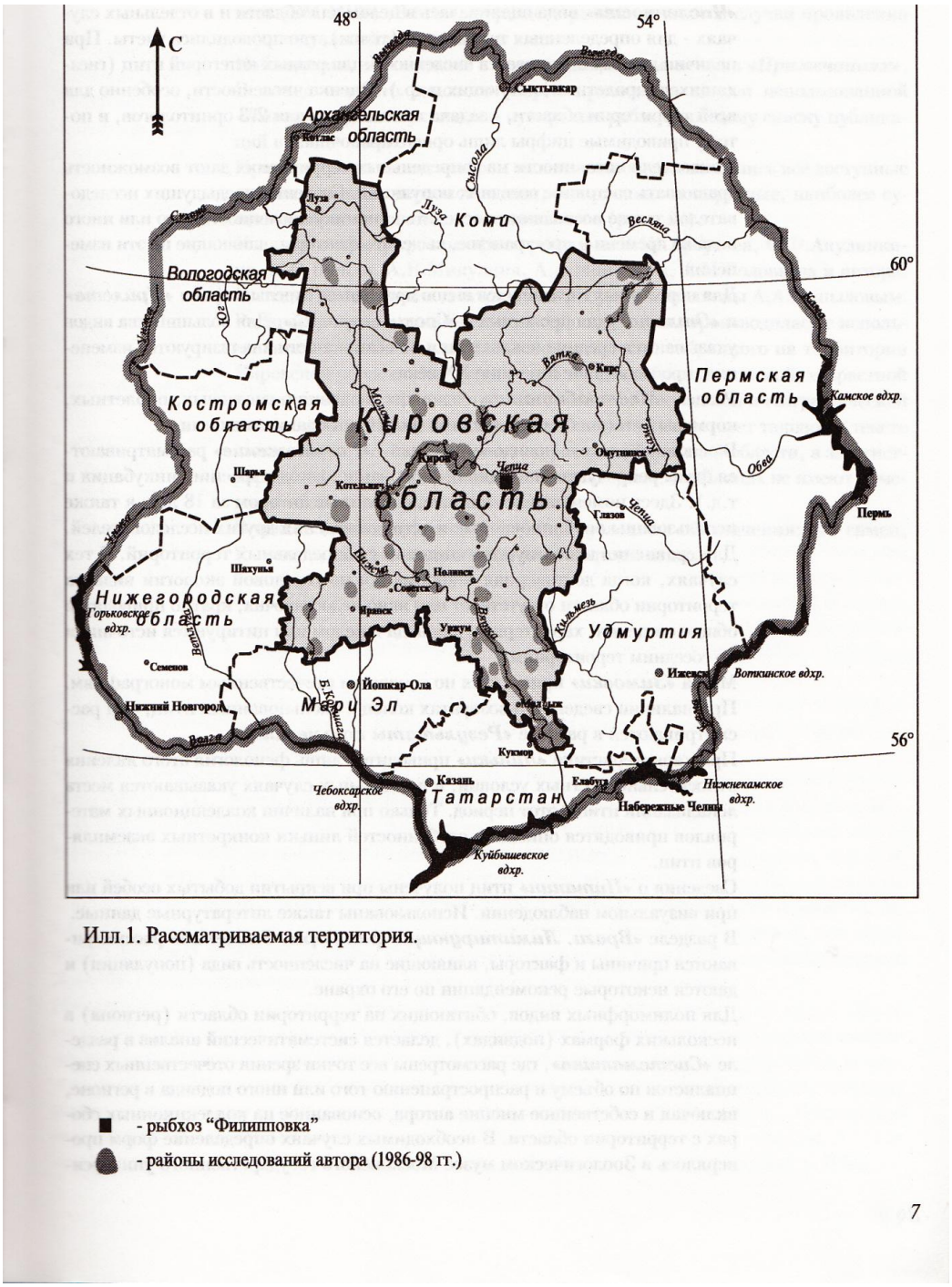
In the steppe zone, during the period of time when young birds are ready to fly, which happens at the same time as the male moulting period ends in July, ducks begin to change their habitats intensively. In fact, on the 2nd of August the late brood, consisted of 4 ducklings, which are not ready to fly yet, was registered there. The Shoveler aggregations appear in the second half of July – August on open bitter lakes (45 and 58 specimens per squared km), in flooded areas (193 and 255), in inundated areas, filled with bulrush, and which are located among the lake banks (52 and 154). Ducks migrate from the ephemerical lakes, filled with bulrush and sedge, to the large fresh-watered lakes (20 and 44). In the second half of summer the maximum number of the Shoveler is registered on flooded areas (181); this species is also a numerous one on bitter lakes, on large fresh-watered and bulrush inundated areas (from 19 to 74 specimens/ squared km).

At the beginning of August ducks appear in the wintering grounds, and its number decreases throughout the whole territory, by the end of the month it leaves the water bodies and swamps. In autumn, the Shoveler was registered in the steppe zone just on open reaches of the large lake in the natural reserve (1). The average autumn density of the Shoveler migration in the steppe zone was 2 specimens per squared km.
In the Ishim forest steppe the bird appearance on open foodless salty lakes, which shows that the migration was started, is recorded on the interfluve at the end of August (3), in the Tobol River valley it is recorded at the beginning of September (2). The increase in the Shoveler migration density on the interfluve, located in the southern sub-zone, is recorded at the end of August – at the beginning of September (5 and 4 specimens per squared km), on the interfluve of the northern sub-zone it is registered in the second half of September – at the beginning of October (0,8 and 3), in the southern region of the Tobol River valley it is recorded in the second half of the September (0, 9), whenever in its northern part it is registered in October (0,1). Thus, in the southern sub-zone the duck migrations are more intensive, which start earlier than in the northern part; on the interfluve the density passage is higher than in the Tobol River valley.

During the autumn migration the highest Shoveler number is recorded on open border lakes of the interfluve, located in the southern forest steppe with regime of the Game Reserve: 72 specimens are sighted (per squared km) in the first half of September, increasing up to 527 specimens in the second half of the month, and there is 675 specimens in October. On salty lakes of the Tobol River valley the migratory birds are stayed up to the second half of September (10), whenever in the river floodplains, located in the southern regions, the Shoveler is stayed up to the October (6).

4.7 Sotnikov, V.N. 1999. [Birds of the Kirov Region and adjacent territories].

Vol. 1. ''Triada-S'' Press, Kirov. 432 p. [In Russian].



Илл.1. Рассматриваемая территория.

■ - рыбхоз "Филипповка"

- районы исследований автора (1986-98 гг.)

7

The figure, placed above, represents the studied territory of the Kirov Region. Symbols: A square represents the fish-farm ''Filippovka''; The coloured territory represents the regions, studied by author (the Kirov Region) [1986-1998]. In the north of the map the Komi Republic is located, on the south there is the Tatarstan with the Kuybishev and the Nizhnekamsk (on the south-east) water reservoirs, on the west there is the Kostroma Region and on the east the Perm Region is located.

35. Garganey – *Anas querquedula* Linnaeus, 1758. Pp. 128-133

Status. This is a common breeding and migratory species.

Distribution. The whole Kirov Region is located within the limits (boundaries) of the Garganey breeding area. The trend, concerning the Garganey distribution throughout the region, is the following: those specimens, which arrived from the southern direction, are sighted in large numbers in the southern regions, whenever in the north these Garganeys appear rarely and sporadically. For example, in the forested area, near the Latyshskiy settlement (the Oparinskiy region) the species appears exceptionally rare (throughout the 5 year time it appears just once on its passage).

Numbers. In total, in the Kirov Region, the Garganey is a common bird, but in different regions its number is different, which depends on the presence of places, where it prefers to settle on (usually it breeds on open areas). In the south of the Kirov Region, especially in the large river floodplains (the Vyatka, Pizhma et al.), the Garganey is a common species, as well as in the central parts of this region (near the Kirov city, in the Kirov-Chepetsk Region). Somewhere it is the dominant species among the breeding ducks. Thus, in 1973-76, in the Cheptsi River (the Zuev District), its share of the duck number reached 48% [81]. In the fish-farm ''Filippovka'' (the Kirov-Chepetsk Region), in spring flocks usually 8-10 birds appear, in other days up to 20-30 pairs were recorded. Annually, 10-20 pairs arrive for breeding here. In autumn, on ponds, up to 150-200 specimens are aggregated. Further to the south, the Garganey becomes a rare bird, which is replaced by more ''forested'' species – the Teal.

Also, this trend is seen in the neighboring Perm Region. In the Nizhny Novgorod Region the Garganey is a numerous (common) bird in the Front-Volga, and it is rare in the Zavolzhye [122]. In the timber regions of the Mari El and Udmurtian Republics the Garganey is sighted rarely than the Teal [7]; in other regions it is a common bird, trailing only the Mallard Duck (the Mallard Duck number is higher than the Garganey one). In Tatarstan the Garganey is the most numerous species among ducks [7, 41, 28]. In the Kama River lower reaches (Tatarstan) its share in the water fowl number in in breeding period compiles 13-72%, whenever on its eastern passage its number reaches up to 68% [41].

Table 12. The table shows the Garganey number in the Kama River lower reaches (specimens per square km) [According to Gorshkov, Ayupov, 1989].

Water reservoir	**Spring migration**	**Breeding period**	**Pre-hunting period**		**Autumn migration**
			Specimens/ square km	Total (thousands)	
Kuybishev	24-84	7-273	25-285	1400-15700	0-1
Nizhnekamsk	92-107	65-192	3-313	500-48300	0,1-43

In the Unzhenskiy spur (part) of Gorkiy water reservoir the nest aggregation density of the Garganey (1960-1961) did not exceed 1 nest per squared km [92], but in the Kama River lower reaches its number varied in the limits between 14-38 to 63-78 nests per squared km, what in last case, in our opinion, is overstated.
Since the beginning of 1950-s, in some regions of the Western Europe, the decrease in the Garganey number is observed [89].

Arrival. The Garganey arrives later than the Mallard Duck, Pintail and Teal, because it winters further south than other species do (See '' Wintering''), that's why it can pass long-lasting migratory paths (extensive flight routes). According to P.V. Plesskiy (1957), the first Garganeys, near the Kirov city, in average appeared (n=10) on the 20th of April [108], according to our observations, taken place in the fish-farm ''Filippovka'', the average arrival date of the Garganey (n=6) was the 18th of April (14th of April 1990 - 20th of April 1994). In Kirov city the appearance of the first male in 1998 was recorded on the 15th of April (A.P. Savelyev`s communication).

In Tatarstan the Garganey appears in the second decade (since the 15th) of April [7, 41]. In 1960-1961, on the Gorkiy water reservoir first birds appeared, which took place on the 24th and 29th of April, whenever the massive passage was registered on the 1st-5th of May [92].

Habitats. During the migration the Garganey can be sighted on any water body (it can be pond, lake or a river). It avoids to settle on small rivers, which are located in the forested area. Its breeding places are the following: there are flooded meadows, forestless islands, located on water reservoirs, coasts of water bodies (which have tussock grassland on it), located among the meadows and fields, for which a Garganey earlier was called by hunters a ''field Teal''. The Garganey breeds on timber rivers, flowing through large hayfields.

Breeding. In spring, a part of Garganeys appears by pairs, but sometimes it is possible to observe how a female is followed by several males (this is a process of forming pairs) since it arrives, and it lasts up to the middle of May.

The Garganeys usually build their nests near water bodies (in the limits of 10-50m) and, as an exception, at 1,5 km from water [7]. The Garganey nests, found by us throughout the Kirov Region territory, were located on the flooded meadows of the Vyatka River (2); also the Garganey nests were located in the following places: in the fish-farm ''Filippovka", in the tuft of grass (mainly on tussocks), among the drained pond (1); on bare places of bur, meadowsweet and nettle (1), along the tussocked bank (mainly on the sedge tussocks) (2); on the Kirov city vicinity – near the stream in the field woodland (1). P.V. Plesskiy saw its nests on flooded meadows, near the inundated water bodies with thick aquatic vegetation [113].

Also, the Garganey breeds on neighbouring territories, but ornithologists of the Perm District state that this species quite often breeds in bushes and forest and sometimes on meadows [168]. In our opinion, this is very likely connected with the mistake, made in the identification of the species of nests (The Teal).

The Garganey nesting material is rich of flagging plant stems even on the open landscape with rare vegetation. In some pairs, the first eggs in nests appear after 6-10 days of its arrival. In the nest, which was found in the fish-farm on the 7th May (1995), the clutch, consisting of 11 eggs, was sighted before. According to the fact that the Garganey incubation compiles 1 egg per twenty four hours, it is possible to state that the first egg was incubated in this nest on the 27th of April. In the neighbouring nest the first egg appeared just on the 8th of May. Usually the Garganey completed egg laying takes place in the second decade of May. Probably, as a result of the highest mortality rate of the Garganey ducklings in its first egg clutches, the secondary egg laying (with newly arrived eggs) usually takes place in June. These kind of nests we found on the 6th and 13th of June (in 1992 and 1984), but in the nest, which was found on meadows of the Vyatka River and near the Kirov city on the 19th of June 1995, the incomplete egg production process of 4 newly arrived eggs was taken place.

The Garganey pairs are sighted in the second decade of June (on the 14th of June 1985), but the persecution of females by males was recorded to 20th of June (1998).

In the Nizhni Novgorod Region the first eggs in the Garganey nests appear on the 6th-9th of May, in the clutches, where the repeated egg laying takes place, eggs appear on the 15th-27th of June [92]. In Tatarstan the egg laying starts in the

limits between the 3rd and 15th of May, whenever the full clutches were found from the 18th of May [7] till the end of month [41].
In the well-known Garganey nests, located in the Kirov Region (10), the full clutches consisted of 7-11 eggs, in the average (n=7) its number is 8,7; in the Nizhni Novgorod Region its number is 8 (6-11) [92]; in Tatarstan its number is 9 (the maximum number is 13) [7]. The egg weight (g) is 21,9-29,6, in the average (n=28) is 24,9 with the following dimensions (mm): 42,2-47,4 x 30,8-34,5, in the average (n=24) the dimensions are the following: 44,2 x 32,4.
In the Nizhni Novgorod Region these indices are higher: the average weight (n=21) is 28,3 (22,7-31,3), and the average measurements (dimensions) are the following: 47,4 x 31,4 (45,1-49,3 x 24,4-34,6 mm) [92].

The incubation is made by a female after she had been laying the last egg approximately for 23 (21-24) days [46, 92]. During the artificial incubation of 2 clutches the egg pipping was taken place on the 20th-21st day and after 1-2 days the egg hatching was taken place (21,5-23 days). The interval between the appearance of the first and second ducklings was 13 and 15 hours. The observations of one egg showed that for 21 days of the incubation period the egg decreased in weight at 1,4 g (6,1%), but the duckling, which was hatched, weighted 17,2 g (75,15 of the initial egg weight). During the artificial incubation of the earliest and latest clutches the dates of duckling arrival were stated. In the earliest clutch the egg pipping was taken place on the 29th of May, but the hatching was taken place on the 30th of May, whenever in the latest clutch the processes were taken place on the 9th and 11th of July respectively. In 1998, the broods of the 2nd-3rd day ducklings in the fish-farm ''Filippovka'' were sighted on the 26th of June.

In the Nizhniy Novgorod Region (the Unzhensk station) the Garganey ducklings in different nests appeared from the 7th of June up to 20th-21th of July [92].
Ducklings are ready to fly at the age of about a month. Ducklings of the earliest broods begin to fly at the beginning of July, but in the majority of broods this process takes place since the second decade of July (on the 18th of July 1944) [113]. In the fish-farm ''Filippovka'' the flying young Garganeys are usually sighted at the last decade of July – beginning of August. The ducklings from the latest (repeated) clutches start to fly just at the middle of August. Thus, on the 27th of July 1994, partly feathered ducklings (at the size smaller than female) were sighted there.
In the Nizhniy Novgorod Region young Garganeys, which began to fly, were sighted from the 6th of July to 11th-19th of August [92], but in the Kama River floodplain (Tatarstan) non-flying birds were sighted on the 20th of August [99].

Leaving. In the third decade of May the Garganey males begin to form flocks for their leaving during the moult period. In the first decade of June, they usually leave their habitats. The latest dates, when the males in its spawning dress may be sighted, are the period between the 17th of June (1994) and the 21st of June (1992), 22th of June (1997). On the 19th-20th of June 1998, in the Vyatka River lower reaches (the Vyatsko-Polyanskiy Region) the passage of small Garganey flocks, (mostly consisted of males) which were flying in the southern direction, were observed by us. The autumn migration is slightly expressed. Probably, the migration peak takes place in the second decade of September [113; our data]. On the 18th of September 1949, near the Kirov city the migrating flocks, consisting of 150-200 Garganeys, were recorded. On the 18th-19th of September 1987, in the fish-farm ''Filippovka'' the Garganey flock, consisting of approximately 200 specimens, was recorded. By the end of September – beginning of October the Garganey migration usually stops. The latest dates, when the single specimens are usually sighted, are the 19th of October 1990 (the fish-farm) and the 20th of October 1985 (near the Kirov city).

Wintering. As a whole, the Garganeys winter further south than another species of the genus *Anas* do. Somewhere, the Garganeys winter in Southern Europe (Spain, Italy, France) and the Mediterranean world. The main wintering grounds are in Africa (up to the equator, including Sahara). Within the boundaries of CIS the Garganeys do not winter at all, but very rarely they can be recorded on the Southern Caspian, in the Black Sea and Central Asia [46]. The material about the Vyatka Garganey wintering is presented in the chapter named ''Ringing results''.
To the wintering grounds the Garganeys of the studied region fly in the southern-west direction through the Caucasus, the Black Sea, the south of Ukraine and the Balkans (partly through the Arabian Peninsula). The young Garganey, which was ringed in the Malmyzhsk Region, having flown in the southern-west direction, appeared on the Tatarstan territory in the middle of September of the same year [Table 13; No. 9]. On their returning in spring, Garganeys fly in the northern direction – through Italy, the Balkans, France, Belgium and the Netherlands [89].

Moult. The data about the Garganey moult in the studied territory and region is not much. The larger number of the Garganeys fly for the moult to the delta of the Volga River (the chapter named ''Ringing results''). Probably, a part of males experiences a moult in hidden places of the studied territory. Thus, on the 9th of July 1995 in the fish-farm ''Filippovka'' some Garganey flocks, consisting of 3-6 specimens, were sighted, and a part of these birds was looked like males in their spawning dresses. In the same place, the flying males in summer dress were sighted by us on the 25th of July 1996 and the 8th of September 1997. In the Volga River delta males, flying for the moult, appear here at the beginning of June, but at the end of July part of them is ready to fly. Due to the fact that the incomplete Garganey moult in breeding period happens quite late (since October), it is not observed throughout the territory. The Garganey female, which was bagged on the 16th of May 1923, had very old feather throughout the whole body (this is the specimen, taken from P.V. Plesskiy collection).

Table 13 Ringing results. Just 10 ring recoveries, taken from the ringed Garganeys, are known. The table shows the recoveries of the ringed Garganeys (Anas querquedula) from the Kirov District territory.

Number	Ringing place	Sex/Age	Ringing date	The Administrative unit, where it was found	The date, when it was found
1	Mali (Africa). Mopti	M/ad	30.01.1978	Nolinsk	30.04.1983
2	----	M/ad	01.03.1977	Orlov	26.04.1978
3	The Netherlands	F/ad	24.07.1967	Orlov	05.05.1968
4	Belgium	M	17.08.1966	Afanasyev	26.09.1971
5	France	M	20.03.1967	Malmyzhsk	04.05.1968
6	The Astrakhan Distrist. The Northern Caspian	F/ad	24.07.1983	Orlov	07.09.1985
7	----	F/ad	20.07.1978	Nagor	11.05.1979
8	The Malmyzhsk Region of the Kirov District	Juv	26.07.1958	Malmyzhsk	16.08.1958
9	----	Juv	14.07.1960	Tatarstan. Kuybishev city	16.09.1960
10	The Urzhumsk Region of the Kirov District	M/ad	03.08.1962	Urzhumsk	01.09.1962

Conclusion:

The Garganey males, which winter in Africa (Mali) and on the south of Europe (France), are sighted throughout the territory of the region and bagged during the spring hunting (No. 1, 2, 5). The adult Garganey female (No. 3), which was ringed in July 1967 in the Netherlands, and, perhaps, which was breeding there at that period of time, was found on the territory of the Kirov Region. This means that she changed her breeding place. The one-yeared male, which was ringed in Belgium in August 1966 (No. 4), but 5 years later he was found in the Afanasyev Region of the Kirov District, where, perhaps, he arrived since one female attracted him.

Furthermore, this male (No. 4), could have experienced a moult throughout the territory of the studied region or a district.

Perhaps, a part of the Garganeys migrate for a moult from the Kirov region to the Volga River lower reaches. The female and a male, which usually have a moult in the Volga River lower reaches, were later registered throughout the Kirov Region territory. Young Garganeys (especially males) may be sighted far from the place they are ringed, which shows the wide dispersion of the species. Thus, the Garganeys, ringed in the Ryazan Region, later (in the following years) were sighted throughout the territory of the Nizhni Novgorod Region and the Komi Republic [89].

Feeding. The Garganey food ration is animal food, especially molluscs. In these bird stomachs the Viviparidae, Planorbidae [113], chironomids, caddisworms, maggots of dragonflies, water bugs and common bugs were present. Much rarely the seeds, spindles, rootstocks and bulbs of aquatic plants (bulrush, pondweed and duckweed) are present in the species food ration. The animal food is the dominant one in adult birds and downy chicks (up to 90% of the whole volume) [46, 7, 41].

Enemies, limiting factors and their meaning. The Garganey nests are often destroyed by the Hooded Crow. Once, 2 of 7 nests (found by us) were destroyed by them. During the one-time flushing from the nest, especially at the beginning of the egg laying, some females leave their nests. The latest nests, which are located on meadows, are subjected to death as a result of haying.

On the banks of water bodies the Garganey nests die due to the upwelling. Thus, due to this reason, on the Kuibyshev water basin 62-93% of the Garganeys nests die, whenever on the Nizhnekamsk water basin 65-79% of the Garganey nests are destroyed. The embryonical mortality reaches 8% [92]. Before the period of time when birds are ready to fly, from 30 to 50% of ducklings, which were hatched, usually die. On the water bodies, located near the Kama River lower reaches, the number of downy chicks in broods compiled 4,4 – 5,6 [41], whenever on the Gorky water basin its number was 5,8 – 6,4 [92].

As an object, attracted by amateur hunters, the Garganey is bagged very often, especially in autumn.

Note. Once (on the 28th of May 1983), the unusual behavior of the Garganey male near the Kirov city, mainly, in the Vyatka River floodplain, was noticed by us. This was the male, scared up from the puddle, which having flown 2 meters, fell in the bushes, without showing any traces of life (he was not moving, just spread his wings and tilted backwards). When a person tried to approach him at a distance of two meters, the Garganey suddenly flew away. Probably, the bird experienced a transient loss of consciousness.

Literature. Artemyev, Popov, 1977 [7]; Brandukov, 1993 [28]; Gorshkov, Ayupov, 1989 [41]; Krulikovskiy, 1913 [72]; Litun, 1982 [81]; Molodovskiy, 1976 [92]; Pershakov, 1930 [99]; Plesskiy, 1955 [106], 1957 [108], 1969 [113], 1976 [115]; Ptushenko, 1952 [46]; Puzanov et al.,1955 [122]; [89]; [168].

36. Shoveler – *Anas clypeata* Linnaeus, 1758. Pp. 133-137

Status. This is not a numerous breeding and migratory species.

Distribution. The territory of the Kirov Region is situated inside the Shoveler's range. This species prefers to settle on large river valleys and therefore on watersheds it does not appear at all (for example, on the largest past of the Oparinskiy District). In the Kama River upper reaches the Shoveler appeared in 1930-s [52], appeared there now as well.

Numbers. The Shoveler is one of the rarest breeding water fowl of the Kirov Region, just the Hooded Crow number is lower than the Shoveler number. The Shoveler is a relatively common bird on the territory of the fish-farm ''Filippovka'' (the Kirovo-Chepetskiy Region), where in some years (1989, 1997) up to 25-35 pairs were sighted, but usually their number does not exceed 8-12 pairs. At the beginning of 1990, on the square of 450-500 squared m of the shallow part of the pond 10 pairs were recorded. In the migratory flocks more than 5-8 Shovelers are rarely seen. Somewhere in the Vyatka River floodplain the Shovelers are annually observed, and the bird number is low.

In the Perm and Nizhni Novgorod Districts, the Udmurtian Republic and Mary El the Shoveler is a rare bird [168, 59, 60, 122]. All research workers considered this species to be very rare throughout the territory of Tatarstan. During the autumn passage its share compiles less than 1% of the water fowl population, but in breeding period their number does not exceed 5-6% (1,6 – 4,5 nests per squared km) [7]. On the Nizhnekamsk water reservoir the Shoveler share increases up to 10% [41]

Table 14. The table shows the Shoveler breeding density in the Kama River lower reaches (specimens/squared km) [According to Gorshkov, Ayupov, 1989].

Water reservoir	**Spring migration**	**Breeding period**	**Pre-hunting period**		**Autumn migration**
			Specimens/squared km	Total	
Nizhnekamsk	12-32	4-21	10-209	1400-31300	1-2
Kuybishev	3-5	1-6	0,1-26	1400	0

The zone of the highest Shoveler number during its breeding period is situated southern than the studied region is located (the Middle and Nizhnee Povolzhye (the Lower Volga Region),

Western Siberia) [46].

Arrival. The Shovelers arrive later than other species of water fowl do. According to P.V. Plesskiy, in the middle of XX century (1957, 1969), near the Kirov city the Shovelers were in average sighted (n=20) on the 5th of May. According to our observation, in the end of XX century, in the fish-farm ''Filippovka'', the average date of the Shoveler arrival (n=6) is on the 22th of April (13th (1995) - 29th (1993).

In the Kama River lower reaches the Shoveler usually appears in the second – third decade of April, in 1983 it appears on the 9th of April, in the Nizhniy Novgorod Region it appears from the end of April [32], in the Perm Region it appears in the middle of May [168].

The Shoveler migration lasts for 2-3 weeks and ends by the middle of May, during the years, when spring comes early there (1990) the species arrives in the first decade of May.

Habitats. The Shoveler breeding stations are the water bodies in open landscapes: the multitudinous river floodplains, banks and islands of water reservoirs, large ponds and lakes. This species prefers to breed especially on old dead floated vegetation and partly flooded stiff and tussock terrains. It also appears on inner lakes among the moss bogs, it avoids to settle on water bodies, located in the forested inlands. The Shoveler does not stay on a river during its migration period.

Breeding. There is no much facts about the Shoveler breeding life (or situation) within the boundaries of this territory. P.V. Plesskiy did not observe any Shoveler nests in the Kirov Region [113]; in the Nizhniy Novgorod Region the breeding stations are not known [122], and E.M. Vorontsov considered the Shoveler to be a migratory species of this territory [32]; throughout the territory of Tatarstan there was no Shoveler nest found before [7], and just later the Shovelers were registered on artificially impounded bodies [41]; in the Perm Region the Shoveler nests were not found by him at all [168].

Our material was collected in 1987-1997 mainly in the fish-farm ''Filippovka'', where 8 nests were found; one nest is found in the Vyatka River floodplain near the Kirov city (1984).
The large numbers of Shovelers arrive by pairs, but, apparently, some pairs form in their breeding places. Once, even in the middle of May we observed how simultaneously the female was chased by 3, 7 and 11 males.

The first eggs in the Shoveler nests appear since the second decade of May. Thus, on the 23rd of May 1989, the nest with full clutch, consisting of 9 eggs, which was hatched by the female before, was sighted by us. In the largest part of nests the egg laying takes place in the end of second – third decade of May. The female started to prepare her nest (the nest hole) for incubation on the 21st of May (1992), the first egg appeared in nest on the 18th of May (1990), i.e. this happened shortly after the raise (lifting up) of near-water vegetation. In the end of May – beginning of June eggs in nests are slightly incubated. In the river floodplains the Shoveler breeds later – after the water escape (water disappearance). The clutch with slightly hatched eggs, found on the 22th of June 1991, probably, was the repeated one after the first clutch with the eggs inside of it died. The Shoveler flying pairs were sighted even in the first half of June: in 1994 the birds were sighted on the 17th of June, in 1997 – on the 22th of June, in 1998 – on the 26th of June. The discovered eggs were located on dams, bottoms of the drained ponds, islands and on the flowing aquatic dead grass among the shallow water. The overhanging grass culms are always used well for the Shoveler nesting material (Ill. 42). The full clutches consist of 8-10 eggs, in average (n=7) their number is 8,5. Their weight (g) is the following: 35,9 – 44,2, in average (n=43) – 38,8, with dimensions (mm) 48,6 – 55,6 x 35,3 – 39,2, in average (n=43) 52,2 x 37,1.

On the territory of Tatarstan females start egg laying usually in the third decade of May, whenever the full clutch consists of 5-10 eggs [41].

The eggs are hatched by a female during 22-23 days [46]. The ducklings from the earliest clutches appear in the end of the first decade of June. In the nest, found on the 1st of June

1994, ducklings appeared on the 15th of June. From the time when the pipped eggs are appearing until the time when ducklings from these eggs are being hatched 3-15 hours pass away, all ducklings (10) were being hatched for 18 hours. The ducklings, which became dry, weigh 25,5 – 26,5 g. In the latest (repeated) clutches the ducklings appear just in the beginning of the second decade of July. The broods with small ducklings were observed by us on the 2nd of July, the growing ones – on the 20th-21st of July, the birds, which were covering with feather and almost reaching the size of the adult female, were recorded on the 31th of July. The female distracted attention (led away) from the similar not flying yet ducklings on the 18th of August (1989). The flying young birds were observed in the fish-farm on the 27th of July (1994) – on the 7th of August (1992). The fully feathered flying young male was bagged here on the 23rd of July 1988.

Leaving. The earliest birds, which leave their habitats, are the Shoveler males: they do this after their role in breeding is accomplished. At the end of May they unit into flocks, and, usually by the end of the first decade of June they disappear. In 1994, 1997 the last males stayed in the fish-farm till the 17th-22nd of June. Sometimes, at the end of July – beginning of August the large Shoveler number is observed here; perhaps, it happens due to the increased number of the young birds, which now are ready to fly, as well as due to the high bird aggregation, where birds come from the neighbouring territories.
The autumn Shoveler migration is slightly expressed. The stay in small groups of another ducks and can be sighted up to the end of September (the 24th of September 1993), sometimes they are sighted up to the beginning of October (the 9th of October 1995).
In Tatarstan the main migration ends by the beginning of October [12], whenever later single specimens are sighted there (the 10th-18th of October) [7]. In the Perm Region the Shovelers were bagged on the 13th of October 1924 [49].

Wintering, ringing results. The Shovelers leave the northern part of the areal (the territory of the Komi Republic) and fly for wintering to Western Europe (England, Belgium, Holland). A part of birds fly from the Kirov Region in the same direction. Thus, the Shovelers, which were ringed during their wintering period (December, February) in Spain and France, later (in August) were bagged on the territory of the Kirov Region (Table 15).
Males in their moulting period fly in the southern direction (See ''Moult'') and later fly for wintering to Southern Europe, the Mediterranean world, Africa (up to the equator), to the Black, Azov, Caspian Seas and the Middle Asia [46], following mainly in the southern-west direction.

Table 15. The table shows the recoveries of the ringed Garganeys (Anas querquedula) from the Kirov Region territory.

Number	Ringing place	Sex/Age	Ringing date	The Administrative unit, where it was found	The date, when it was found
1	France	M	12.02.1959	Oparinsk	15.08.1962
2	Spain	F	25.12.1969	Verkhnekamsk	15.08.1970
3	Poland	M/ad	12.07.1977	Pizhansk	10.09.1979
4	The Astrakhan Nature Reserve	M/ad	21.07.1934	Sanchursk	06.05.1940

Moult. A part of the Shoveler males fly for the moult to the Volga River delta. The adult male, which is experiencing the moult, was ringed in the Astrakhan Natural Park on the 21st of July 1934 and bagged near the Sanchursk city on the 6th of May 1940 [147].

The similar facts are known due to the studying of the Udmurtian and Perm Regions [147]. The males, bagged there, were ringed before (during their breeding period at the end of July – beginning of August) in the Volga River lower reaches.

Probably, a small part of the Shoveler birds have a moult throughout the studied territory, that we have known due to the adult males, ringed in Poland and France, which were sighted in August-September on the region territory (Table 14). So, during the summer the birds stayed in our territories (within our latitudes), without flying to the south.
The second, incomplete pre-breeding moult of males, connected with wearing spawning dress, begins in August, but in birds, recorded by us in autumn, it was not sighted at all. In the adult female, which was observed on the 27th of July (1994), the remiges have been changed, but the old contour feather was strongly used (worn).

Feeding. In spring and at the beginning of summer the Shovelers eat different seeds of aquatic vegetation, different molluscs, maggots of aquatic invertebrates. In summer in the Shoveler feeding ration the small shellfishes (*Crustacea*), mainly daphnias, molluscs, the confervoid algae, which birds filter to their “filter” (this is the special grid of plates, located on the edge of mandible and maxilla) from the water and dabbing from the surface of plants). Except of another ducks, the Shovelers feed on shallow water, without taking vertical position, just dipping their head to the water [7, 167, 41, 46, 106]. The ducklings, observed by us at the end of June (1992), were mainly eating the young pond snails.

Enemies, limiting factors and its meaning. Considering the fact that the Hooded Crow destroys the duck nests, the Shoveler nests are suffered from her as well. The suffering ones are especially those nests, which are located on pond dams, where the hatching females are distracted by people. Hunters do not usually bag them as they appear here in small number and arrive quite late. The Shovelers may be shot in autumn during their migration for appropriate food.

Literature. Artemyev, Popov, 1977 [7]; Ayupov et al., 1980 [12]; Brandukov, 1993 [28]; Vorontsov, 1967 [32]; Gorshkov, Ayupov, 1989 [41]; Eremchenko, 1990 [49]; Efremov, 1935 [52]; Zubtsovskiy et al, 1997 [59]; Ivanov, 1983 [60]; Plesskiy, 1955 [106], 1957 [108], 1969 [113], 1976 [115]; Ptushenko, 1952 [46]; Puzanov et al., 1955 [122]; Treus, 1957 [147]; [168].

4.8 Gulai, V.I. 1998. [Ecology of the Garganey in the Upper South Bug].

// **[Modern Ornithology 1998]. Moscow. Collection of papers of the Menzbier Ornithological Society. Russian Academy of Sciences. Editor in-chief – E.N. Kurochkin. 352 p. (In Russian)**

The Garganey feeding in the Southern Bug upper reaches

The table shows the occurrence of different food types in the Garganey stomachs.

The food type	**Occurrence**	
	The number of stomachs (which contain a wide variety of food)	**%**
The plant seeds		
Potamogeton natans	42	45,6
P. perfoliatus	10	10,8
P. lucens	26	28,2
Scirpus lacustris	15	16,3
Alisma plantago	16	17,4
Polygonum amphibium	31	33,7
Myositis palustris	10	10,8
Sparganium simplex	26	28,2
Glyceria aquatica	23	24,8
Juncus effusus	5	5,4
Menyanthes trifoliata	4	4,3
Nymphaea alba	4	4,3
Myriophyllum verticillatum	4	4,3
Geum rivale	2	2,2
Comarum palustre	2	2,2
Carex sp.	8	8,7
Undetermined seeds	92	100,0
The vegetative plant seeds		
Potamogéton nátans	26	28,2
Potamogeton lucens	12	13,1
Saggitaria sagittifolia	30	32,6
Lemna minor	13	14,1
Elodea canadensis	8	8,7
Myriophyllum verticillatum	7	7,6
Alisma plantago-aquatica	7	7,6
Hydrocharis morsusranae	5	5,4
Hippuris vulgaris	4	4,3
Equisetum fluviatile	4	4,3
Spirodela polyrhiza	3	3,3
Polygonum amphibium	2	2,2
Scirpus lacustris	2	2,2
Typha angustifolia	1,1	1,1
Glyceria maxima	1	1,1
Undetermined vegetative parts	92	100,0
Molluscs		
Planorbis carinatus	5	5,4
Insects		
Chironomus sp.	7	7,6
Coleoptera (undetermined)	5	5,4
Undetermined animal food	13	14,1

From our point of view, the Garganey is the bird with the mixed food preferences, because its character of feeding can vary from the vegetative food to the animal food depending on the presence of particular type of food and its accessibility.

The Garganey preference in vegetative food in the Southern Bug upper reaches can be explained by the fact that the large number of water bodies in this region has high level of eutrophication, so it has exceptionally rich resources of food for water fowl and waders.
Because of the fact that the Garganey feeding base in the Southern Bug upper reaches is related to the high-calorie seeds of the marsh and aquatic plants, the requirement in animal food, as the source of protein and fat components, is decreased. The share of animal types of food, studied in the Garganey oesophaguses (food pipes) and stomachs is low.

The dynamics of the Garganey numbers and the population structure.

The most negative influence on the local Garganey population is related to the *Corvus corone* (it is the natural enemy), who destroyed 16,1 % of nests, which were being under observation at that period of time. The significant factor, which affects the Garganey population, is the anthropogenic factor (human influence), which led to the 16,6 % of clutches being destroyed. There was possible to find the large number of nests, which were left by females due to decamouflage and discovery of the place, where nests were located during the early (the end of May – beginning of June) haying. However, the most considerable harm to the Garganey population as well as other water fowl and waders was done at the middle of 60-s due to the large-scale drainage of water bodies, that led to the to the considerable reduction of breeding, feeding or protective stations and the significant decrease in the bird population. In spite of this, the Garganey does not experience any problems with the adaptation to the anthropogenic changes, which were taken place in their habitats, and in some cases (the eutrophication of water bodies) it obtains some benefit from it (the number of easily accessible food is increased). As a whole, the Garganey number in the Southern Bug upper reaches stays among the considerably high values, and its dynamics has the following values:

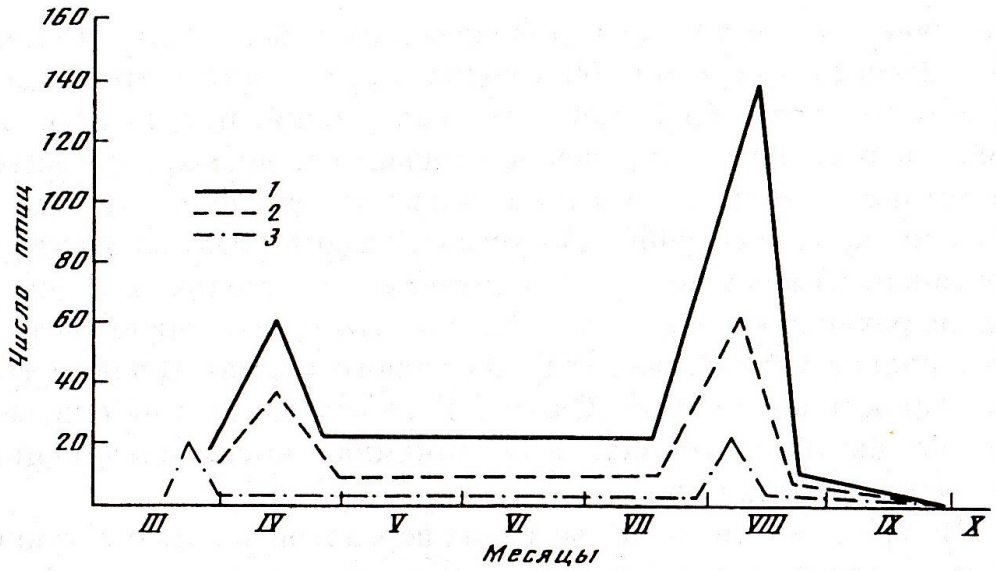


Рис. 1. Сезонная динамика численности чирка-трескунка в верховьях Южного Буга в 1972–1988 гг. (на 100 га угодий)

1 – угодья I бонитета (крупные полуоткрытые водоемы); *2* – угодья II бонитета (крупные закрытые водоемы); *3* – угодья III бонитета (поймы рек и ручьев)

The seasonal dynamics of the Garganey numbers in upper course of the South Bug, 1972–1988 (specimens/100 hectares of water body)

1 – water bodies of I bonitet (large semiopen reservoirs); *2* – water bodies of II bonitet (large reservoirs covered by water plants); *3* – water bodies of III bonitet (flood-lands of rivers and rills). On vertical – a number of Garganey specimens of 100 hectares of water body, on horizontal – months

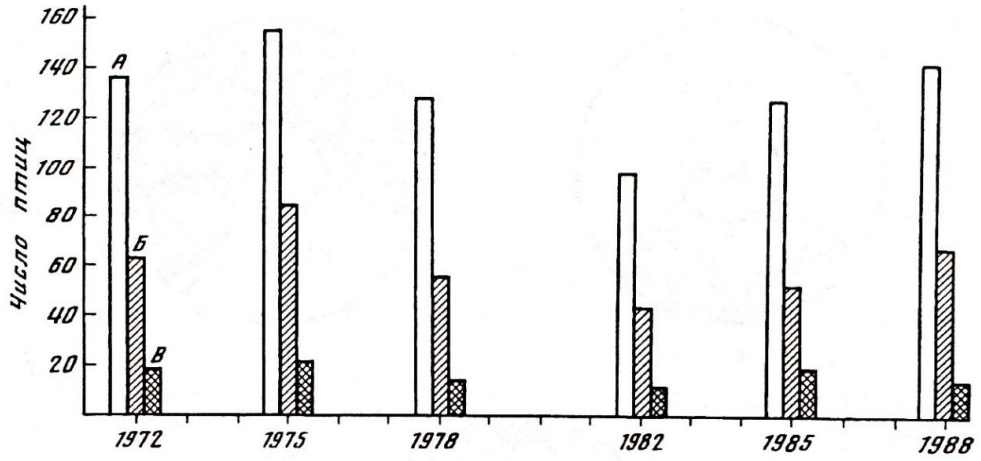


Рис. 2. Многолетняя динамика плотности населения чирка-трескунка в верховьях Южного Буга (на 100 га угодий)

А – угодья I бонитета (крупные полуоткрытые водоемы); *Б* – угодья II бонитета (крупные закрытые водоемы); *В* – угодья III бонитета (поймы рек и ручьев)

Long-term dynamics of Garganey population in upper course of the South Bug (for 100 hectares of water body)

A – water bodies of I bonitet (large semiopen reservoirs); *Б* – water bodies of II bonitet (large reservoirs covered by vegetation); *B* – water bodies of III bonitet (flood-lands of rivers and rills). On vertical – a number of Garganey specimens for 100 hectares of water body, on horizontal – years

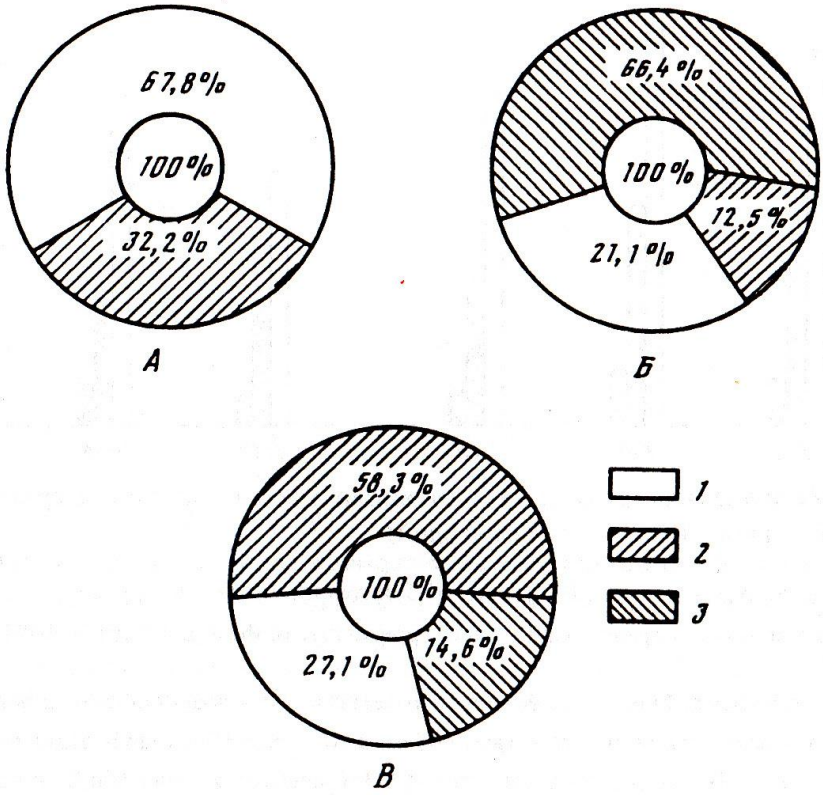


Рис. 3. Сезонная динамика структуры популяции чирка-трескунка в верховьях Южного Буга в 1972–1988 гг.

А – весенний прилет; *Б* – после завершения размножения; *В* – конец отлета; *1* – взрослые самцы; *2* – взрослые самки; *3* – молодые птицы

The seasonal dynamics of the population structure of Garganey in upper course of the South Bug, 1972–1988

A – spring; *Б* – after breeding; *B* – end of migration; *1* – males; *2* – females; *3* – juveniles

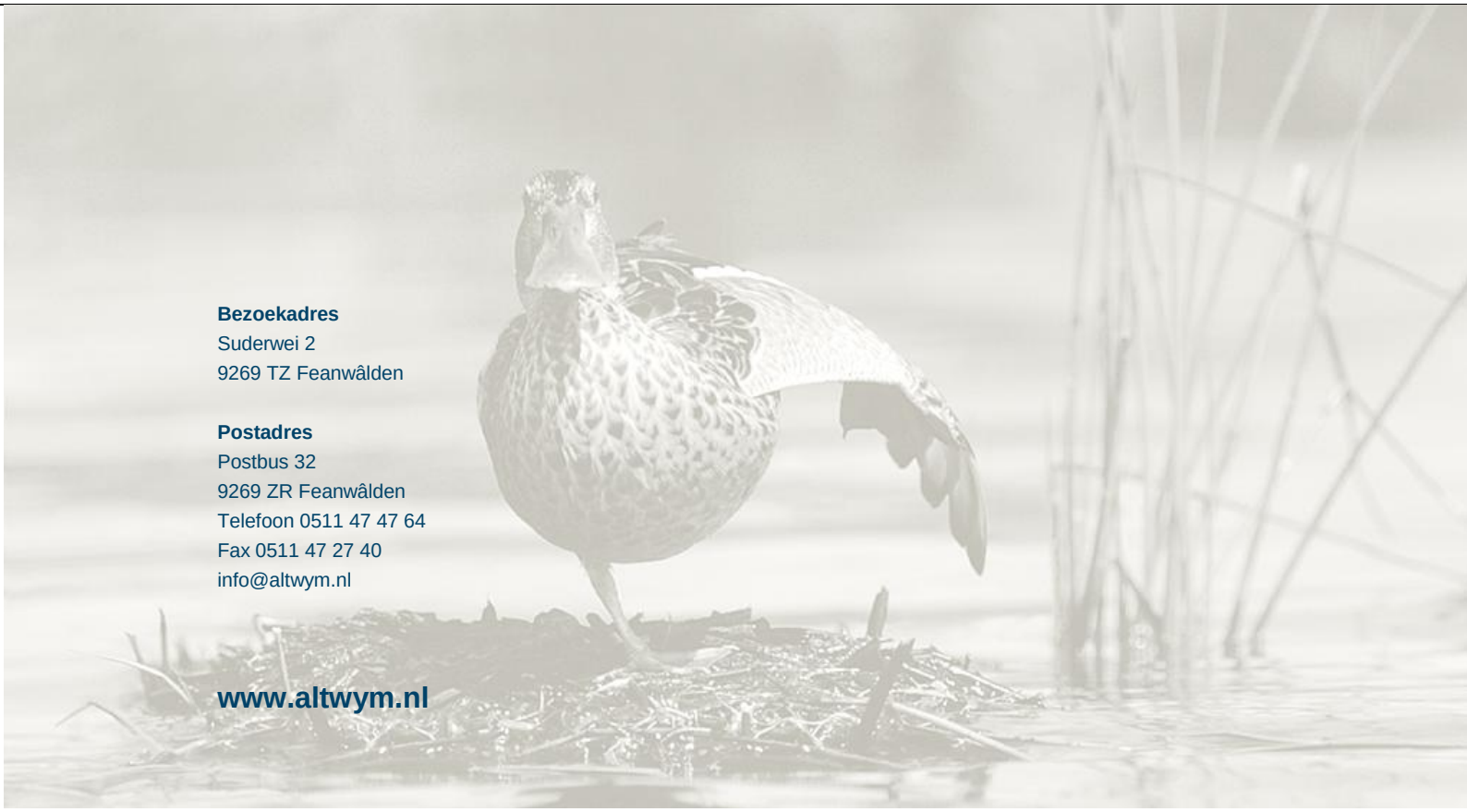
Practical meaning and hunting

Considering the present situation and the character of the Garganey population and its long-term dynamics in the Southern Bug upper reaches, we can state that its local population does not need any drastic methods of protection, so this species can be one of the objects, from time to time subjected to the amateur hunting. However, with the view of optimization of sex and age structure in the Garganey population and improvement of population growth we should restrict the Garganey hunting during the first 2-3 weeks of the summer and autumn hunting seasons and allow the shooting of the Garganey males in spring. Also, we need to improve the protection of the species habitats as well as stop the poaching at all.

Summary

Data on the habitat attachment, feeding patterns, seasonal and long-term dynamics of number, sex and age ratio in population of Garganey were collected in 1972-1988 in the Upper South Bug (the Ukraine). The largest number was registered in 1975, the smallest – in 1982. Number

restored to the level of 1975 in 1988. It became 130-150 birds/100 ha in the best habitats. Number of males in the spring migrating flocks is 2 times larger than the number of females. Number of juveniles after the end of breeding period is 66,4 % of general number, of adult males – 21,1 %, of females 12,5 %, 35-40% of local population of Garganey are eliminated by the hunters.



Bezoekadres
Suderwei 2
9269 TZ Feanwâlden

Postadres
Postbus 32
9269 ZR Feanwâlden
Telefoon 0511 47 47 64
Fax 0511 47 27 40
info@altwym.nl

www.altwym.nl