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### 3.2. Social elements in non-colonial birds behaviour.

#### 3.2.1. Foraging range and territory.

Yellow-billed Loons in Arctic Alaska (Sage, 1971) often feed outside their territories, gathering in groups of several individuals, during incubation period as well as when with chicks. Red-throated Loons on Sem' Ostrovov (Seven Islands) were feeding in the sea, leaving their nesting lakes, and hence, their territories (Kaftanovskiy, Shimbireva, 1967), we recorded this in Yamal Peninsula (Danilov et al., 1984; Reybitsev, 1986b). Probably, that is typical for the Red-throated Loons everywhere.

### 3.3. Obligatory and optional coloniality.

#### 3.3.1. Optional coloniality in subarctic birds.

Loons – territorial birds, settle by individual pairs. However there is a communication on a real colony consisting of 50 pairs of the Red-throated Loons, found on a small fishless lake in Norway (Naumann, 1905, cit. by: Kaftanovskiy, Shimbireva, 1967).

### 4.1. Systematic review.

Loons and *Anseriformes*. In these birds the cases of polygamy are not revealed. Participation of males of different species in the reproductive process varies. In loons a male and a female take turns incubating the clutch, and together lead and feed the chicks.

### 6.1. Systematic review.

#### 6.1.1. Loons.

According to observations on Chukotka (Sorokin, 1977; Kishchinskiy et al., 1983), the Black-throated, Arctic and Red-throated Loons, that lost clutches or those that did not breed due to late spring, stayed in (resident) pairs. In the west of Alaska the slightly-incubated clutches were taken from 4 pairs of the marked Red-throated Loons, three pairs renested, and one flew away from the region of observations (Schamel, Tracy, 1985).

Concerning Red-throated Loons in the Gulf of Kandalaksha Sleptsov (1948) wrote, that robbed birds “in spite of persecution by hunters, each time returned to the lake and stayed until the time, when young could fly (take off). If one specimen is killed, the rest of the loons don't leave the nesting territory” (p.127). In the Nature Reserve Sem' Ostrovov (Seven Islands) in Murman among 11 pairs of the Red-throated Loons two have nested repeatedly on the same lake (Kaftanovskiy, Shimbireva, 1967).

8.1. Non-breeding and temporary territories. Role of territory in pair formation. Mate fidelity in geese and swans is well known. We suggest, that pairs are faithful in skuas (jaegers), probably, in all three species, and also in the Arctic Terns, Black-throated and Red-throated Loons. According to our observations, many birds of these species still remain in pairs on the spring migration.

### 9.2. Terminology.

#### 9.2.1. Review: site tenacity, philopatry, and dispersal in subarctic birds.

According to numerous existing literature sources, all Loons are faithful to their nesting sites and return to the same site every year, for example, the Red-throated Loon (Bergman, Derksen,

1977) and Yellow-billed Loon (Sauge, 1971) from the northern Alaska. It is recognized that Black-throated Loon has high territorial fidelity in the central Finland (Lehtonen, 1970) and in the northern Alaska (Bergman, Derksen, 1977). We did not mark the Loons, but we can judge their return to our control site not only by means of striking constancy of nesting sites, but also by the fact, that in general these wary birds each year adopted more and more to our presence and became more and more trustful. One of the Black-throated Loons in the fifth year of study became so “tame” that it allowed us to take a photo on the nest from the distance of 7 m without a blind.

### 10.3. Review: interspecific territoriality in birds of Subarctic.

#### 10.3.1. Loons (Loons).

Loons' appearance is quite well distinguished therefore there is small probability of inter-species conflicts due to errors in recognition. Probably, the mutual territorial exclusion, discovered in them is similar to adaptive interspecific territoriality in those situations, when representatives of different species are situated in one habitat. The bigger species dominates, as far as it is known in Loons *Gavia adamsii* – *G. arctica* (Sage, 1971) and *G. immer* – *G. stellata* (Reimchen, Douglas, 1980). In both pairs the crowding out of one species by the other is registered in all habitats.

The biggest similarity, in appearance as well as in vocalization, exists between *G. arctica* and *G. pacifica*. It is so great, that these Loons are considered as sibling species (twin-species), which, by Stepanyan (1983), are distinct by origin and at the present time in the north of the Far East have a wide zone of the secondary sympatry. Kishchinskiy and Flint (1983) have carried out an analysis of these species and confirmed the species rank of distinctions, revealing also incomplete biotopical (habitat) variation and territorial mutual exclusion during symbiotopy. The mechanism of the territorial mutual exclusion (to say more accurately – rankness) remains unstudied. Probably, just in this couple of species there is rankness due to great similarity in outer appearance, behavioural habits, and mainly – due to similarity in sizes. Mostly, in the *G. arctica*-*G. pacifica* we saw one of numerous examples of the real interspecies territorialism among birds of Subarctic.

In the pair *G. arctica* – *G. stellata* there is a huge region of sympatry, occupying almost all of Subarctic. The biotopic preferendum of these species is different: Red-throated Loon – species, gravitating to the seashore or to other great water bodies; Black-throated Loon – inhabitant mainly of inner water bodies with standing water. Both of these species breed on the lakes of the coastal tundra. And as far as we could tell, in reality, on one lake only one species of loons nested. But we did not conduct the extensive research of the interspecies interrelations.

Table 23. Bird population (number of pairs, nests) in continuous observation site Yaibari in different years.

Red-throated Loon.

Control area – 25 sq km. 1988 – did not breed; 1989 – 1; 1990 – 1; 1991 – 1.

Density, pairs (nests)  $\lim - - M \pm m = 0.04$ .