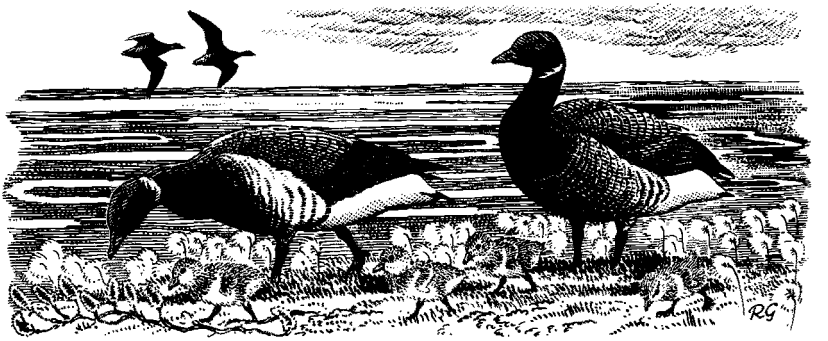

Status of Brent Goose in northwest Yakutia, East Siberia

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ABSTRACT During June-July 1997, five colonies of Brent Geese *Branta bernicla* were visited in northwest Yakutia, East Siberia: three (total about 132 pairs) in the Olenyok delta and two (22 pairs) in the western Lena delta. Colonies varied in size from ten to 90 pairs. At all sites, both the nominate race *bernicla* and the race *nigricans* were found, the proportion of nominate varying from 15% in the east to over 95% in the west; eight mixed pairs were located, with five individuals showing intermediate characters. Ringing recoveries confirm the presence of two populations, one migrating to the Pacific coast of America and the other to northwest Europe. Populations of nominate *bernicla* and American *nigricans* are increasing, the latter also expanding westwards in Eastern Siberia, whereas the small Asian-Pacific population of *nigricans* remains in decline as a result of hunting pressure on passage and in winter. The discovery of mixed colonies of the two races counters suggestions that these forms should be treated as different species.

During several recent expeditions to Eastern Siberia, the status of the Brent Goose *Branta bernicla* was investigated. Although the species was still considered to be threatened in the 1980s in Siberia (Pozdnyakov 1987), recent studies indicate that the race *nigricans* (known as the 'Black Brant') is expanding its range westwards and that the nominate dark-bellied Brent

Goose *B. b. bernicla* is spreading eastwards. The status of *nigricans* in Siberia has been unclear, and the status of its Asian-Pacific population, in particular, remains uncertain.

Most of the results of these expeditions will be published in a later thesis (Syroechkovski in prep.). Since the conservation status of geese in Eastern Siberia (e.g. Syroechkovski 1995a; Madsen *et al.* 1996) is of more topical interest, however, some of the findings of the 1997 expedition to northwest Yakutia are published here. Recent proposals that the Brent Goose should be 'split' into three species (Stepanyan 1990; Millington 1997; Sangster *et al.* 1997) have generated additional interest, including discussion on the 'European Bird Net' (EBN; e.g. Inskipp and Sangster in April 1997).

Breeding distribution and population

The Brent Goose has a circumpolar breeding distribution along the Arctic coast and on islands in the Arctic Ocean. Only small numbers breed inland, for example at Lake Taimyr (fig. 1).

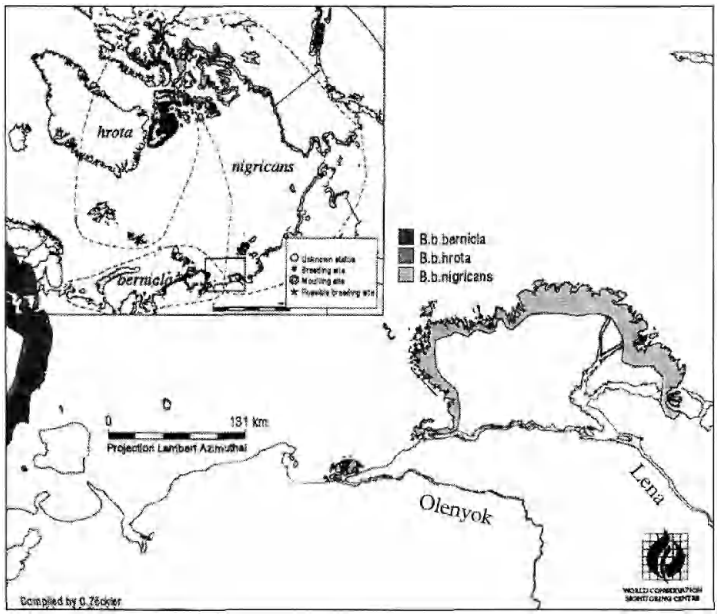

Fig. 1. Breeding distributions of races of Brent Goose *Branta bernicla* in Yakutia (with World ranges inset, study area marked by rectangle).

Exceptionally, a few stragglers of the dark-bellied nominate subspecies have been seen as far east as Faddeevskiy Island in the New Siberian Islands, at 75°50'N 142°30'E, but as yet with no proof of breeding (Syroechkovski 1995b). Until summer 1997, Taimyr was thought to be the eastern limit of the majority of this subspecies.

The race *nigricans* breeds throughout Eastern Siberia as far west as Olenyoksky Bay, at 73°22'N 118°25'E (Syroechkovski 1996). Two

populations of this race can be distinguished. One migrates to the Pacific coast of North America south to Mexico, where the wintering population is considered stable, and variously estimated at 114,000 (Madsen *et al.* 1996), 124,000 (Kokarev 1996) or 184,000 individuals (Rose & Scott 1994); the proportion of Siberian birds is unknown, but their numbers are probably increasing or stable. The second population is known to winter in Japan, China and Korea (Miyabayashi 1995), where it is estimated to number fewer than 7,000 birds, and is showing a trend of decline (Rose & Scott 1994; Syroechkovski 1995b; Madsen *et al.* 1996). The breeding area of this latter population is unknown, but colour-ringing at three different localities in the Olenyok and Lena deltas may help to shed light on its whereabouts.

The light-bellied race *hrota* breeds in northeast Canada, Greenland, Svalbard and Franz Josef Land, wintering on the Atlantic coast of the United States and locally in western Europe. It is not considered further here.

Study area and methods

The Olenyok, at 2,270 km Russia's twelfth-longest river, is not well known in the West and until quite recently had never been visited by ornithologists (Ilicev & Flint 1985). Müller and Chekanovski, who visited the river in 1873, focused mainly on botanical and geological features and did not publish any detailed information on birds (Müller 1882). The small delta of the Olenyok is situated between Taimyr and the Lena delta. Owing to its size, situation and habitat, Brent Goose colonies were expected (see fig. 1).

At the end of June 1997, we arrived at the Olenyok delta, and, in early July, proceeded east to the western Lena delta. Since access to most parts of both deltas is limited, only five colonies were visited. We counted the number of nesting Brent Geese and estimated the number of non-breeders. A special check was made on the status of the two subspecies, using published criteria for field identification (e.g. Millington 1997). Breeding Brent Geese were caught at the nest and colour-ringed. In addition, we gathered questionnaire data from local hunters and collected rings from geese shot in the area.

Results

In the entire Olenyok delta, we found three colonies on different islands, while local hunters and fishermen reported the existence of at least two more. All held breeding individuals of both nominate *bernicla* and *nigricans*. Sightings of geese in flight, along with a couple of recently preyed-on nests, indicated a wider distribution in the Olenyok delta. A further two colonies were found on the western Lena delta.

Colonies varied in size from ten to 90 pairs. All were situated in mixed colonies of Herring Gulls *Larus argentatus* (of the race *vegae*) and Glaucous Gulls *L. hyperboreus*. Although predation by gulls was noted, the Brent Goose seems to benefit from the gulls' defence against Arctic Foxes *Alopex lagopus*.

In the five colonies visited, we found a total of 154 pairs: about 132 pairs in the Olenyok and 22 pairs in the western Lena delta. The proportion of

nominate *bernicla* varied from 15% in the most easterly colonies to 95% in the westernmost; one colony consisted solely of nominate *bernicla*, but non-breeding *nigricans* were also present. The biggest colony in the Olenyok, with about 90 pairs, held both subspecies in about equal numbers. As a check on racial identification, particularly detailed observation was made of 87 pairs: of these, 43 (49%) were of the dark-bellied nominate race *bernicla* (plate 163), 36 (41%) were *nigricans* (plate 164), and eight (9%) were mixed pairs (plate 165) or pairs containing individuals with intermediate plumage.

Six American colour-rings and one Dutch ring collected from local hunters revealed the presence of two flyways and two populations mixing in the Olenyok-western Lena delta region. In addition, we marked 22 individuals (three *bernicla* and 19 *nigricans*) with two rings (green above white) on one leg and took their blood samples. On 17th October 1997, a Brent Goose of the nominate subspecies with this ring combination was controlled on Vlieland in The Netherlands (Spaans *in litt.*); it had been ringed on 5th July 1997, on a nest with five eggs, on the island of Maly Petrushka in the western Lena delta (73°03'N 122°21'E), and had therefore travelled more than 5,500 km farther than the longest distance previously known for migrating dark-bellied Brent Geese. It was accompanied in The Netherlands by another adult (presumably its mate) and a single juvenile, indicating a breeding success of 20%. Western European and American birdwatchers are requested to look out for this ring combination and carefully to check the subspecies on wintering grounds.

Of 58 nests examined, about 40% had already been preyed on. The manner in which down feathers had been left behind led us to believe that most were destroyed by human activity during egg-collecting. Owing to a peak in lemming numbers, there were fewer disturbances by foxes, hardly any of which were seen.

Discussion

Conservation

In the 1940s, the race *nigricans* of the Brent Goose was known to breed as far west as the east coast of Taimyr (Uspenski 1960), but expeditions in the 1990s reported no evidence of its still breeding in this area (Syroechkovski 1995b). Ringing recoveries from recent expeditions, including that in 1997, indicate a westward expansion of the range of this race and possibly an increase in its numbers. Both the dark-bellied nominate race and the American population of *nigricans* are increasing, whereas the small Asian-Pacific population of *nigricans* remains in decline. It is highly likely that the formerly more widely distributed Asian *nigricans* met and possibly overlapped with the nominate race in Taimyr, but that, during the 1940s, it declined and was reduced to a small population of fewer than 7,000 individuals in an as yet unknown part of East Siberia. At about the same time, the nominate race underwent a severe decline in numbers and for various reasons did not recover until the 1970s (e.g. Ogilvie & St Joseph 1976; Prokosch 1984; Nowak 1995).

The *nigricans* population which migrates to China, Korea and Japan along

the Lena and Yana rivers (Syroechkovski 1995b; Pozdnyakov *et al.* 1996) faces the same conservation problems as all other goose species of Eastern Siberia, the numbers of which are declining severely (Madsen *et al.* 1996). The principal reason for this has been described as overexploitation, mainly in China, where intensive hunting rapidly reduces the numbers of all geese (Xiaomin & Yongqing 1996). Ringing recoveries indicate that the recent westward expansion of *nigricans* in Siberia is probably due to North American 'Black Brants' migrating back along the routes by which they originally colonised the region. On these routes, they do not encounter the same threats prevalent in southern-central Asia, and so, despite the trend of other East Siberian geese (Madsen *et al.* 1996), this population of nigricans is increasing in numbers and range.

Although *nigricans* colonised the area probably over the last 25-30 years, it remains vulnerable in northern Yakutia. Increasing hunting pressure on arrival in spring and improved methods of egg-collecting are significant threats to this breeding population.

▲ **163. Female Brent Goose** *Branta bernicla* **of the nominate race near her nest in mixed colony of Herring Gulls** *Larus argentatus vegae* **and Glaucous Gulls** *L. hyperboreus*, **Olenyok Delta, June 1997** (*Christoph Zöckler*)

▲ **164. Male Brent Goose** *Branta bernicla* **of dark-bellied race** *nigricans* **defending nearby nest, with Glaucous Gull** *Larus hyperboreus*, **Olenyok Delta, June 1997** (*Christoph Zöckler*)

▲ 165. **Pair of Brent Geese** *Branta bernicla*, **male showing characters of** *nigricans* **and female those of** *bernicla*, **Olenyok Delta, June 1997** (*Christoph Zöckler*)

▲ 166. **Nest of Brent Goose** *Branta bernicla*, **as usual preferably placed near driftwood, Olenyok Delta, June 1997** (*Christoph Zöckler*)

Taxonomy

Despite some recent statements (Stepanyan 1990; Millington 1997; Sangster *et al.* 1997), the discovery of several mixed colonies of nominate *bernicla* and *nigricans* in northwest Yakutia casts considerable doubt over the validity of separating these forms into two different species.

The Biological Species Concept (e.g. Mayr 1996) is based on reproductive isolation of populations from others and a consequent absence of interbreeding. As pair-formation and mating among Brent Geese take place in the wintering area (Bergmann *et al.* 1994), however, it is not easy for different populations to mix, since they winter in largely separate areas (e.g. Western Europe and Pacific America). Interbreeding occurs only when immatures of different subspecies meet in the breeding area and subsequently migrate together to the

same wintering sites and form pairs. The situation at the Olenyok, with mixed pairs and intermediates forming less than 10% of the total, represents possibly a very recent stage of re-overlapping, re-mixing and re-interbreeding. Increased sightings of *nigricans* in Western Europe (van den Berg *et al.* 1984; Berrevoets & Erkman 1993; Millington 1997; van Dongen *et al.* 1997; Rogers *et al.* 1998) support the theory that more and more individuals of this subspecies are tending to change their migration route where they meet with Brent Geese of the nominate race. At least one observation of a hybrid, in The Netherlands, has been documented (Berrevoets & Erkman 1993).

During the history of the species, this overlapping of ranges and subsequent separation must have occurred many times as a result of glaciation or, more recently, hunting pressure or other factors, leading to the development of the present subspecies. The evolution of the Brent Goose into three species, even if at all incipient, is certainly not yet complete.

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