

## The Wildfowl Trust expedition to Spitsbergen, 1973

E. E. JACKSON, M. A. OGILVIE AND M. OWEN

Barnacle Geese *Branta leucopsis* winter in several places in the British Isles, principally on small islands off the west coast of Scotland and Ireland. Their main wintering haunt on the mainland is in the Solway Firth, on the borders of Scotland and England. Here the wintering flock, numbering two or three thousand before the last war, had been reduced to only a few hundreds after it. In 1954, the geese there were taken off the shooting list, and in 1957 a National Nature Reserve was created covering the merse and mudflats at Caerlaverock, Dumfries-shire. The birds responded well to this protection with an increase in numbers to around 4,000 by the mid-1960s. The history of the reserve and details of the numbers and habits of the geese has been given in a booklet edited by Harrison (1974).

Barnacle Geese breed in East Greenland, Spitsbergen, and on the coast and islands of western Siberia. Boyd (1961) suggested that the Solway wintering geese bred in Spitsbergen, while all the remaining birds wintering in the British Isles came from East Greenland. The Russian breeding geese were thought to winter in the Netherlands and Germany. His evidence came from a very few ringing recoveries plus counts of the proportion of young birds present in the flocks each winter. The adult/juvenile ratio in the Solway flock was often very different from those in other areas suggesting separate breeding grounds with differing summer conditions. Extensive marking subsequently proved Boyd to be entirely correct.

Two British expeditions to East Greenland, in 1955 and 1961, marked over 900 Barnacle Geese (Marris & Ogilvie, 1962), while a Norwegian expedition to Spitsbergen in 1962 caught and ringed nearly 700 (Larsen & Norderhaug, 1963). Simultaneously, the Dutch began to catch their wintering birds in clap nets. In February 1963 the Wildfowl Trust made a single catch with its rocket nets on Eastpark Farm, adjacent to the Caerlaverock Reserve. Of the 315 birds caught no less than ninety-four carried rings put on in Spitsbergen the previous summer but no Greenland- or Dutch-ringed bird was found (Boyd, 1964). In addition, the Greenland-marked birds, plus another 1,400 caught there in 1963, had been colour-marked, and these birds have since been sighted, as well as giving recoveries, at several of the Scottish

and Irish island haunts. Only one has ever been seen at Caerlaverock—a wind-blown vagrant.

Further work was done in Spitsbergen in subsequent years to map the breeding distribution and to investigate the breeding ecology of the geese (Norderhaug, Ogilvie & Taylor, 1965; Norderhaug, 1970). The next major stimulus to further study came in 1970 when the Wildfowl Trust took on the lease of Eastpark Farm, which includes 95 ha of arable and pasture as well as the 240 ha of merse forming part of the Reserve. The Trust's main aims were to reduce disturbance to the geese, increase facilities for bird watchers coming to see the geese, and improve the feeding for the geese. An extensive system of screen banks and observation hides and towers was constructed, stock grazing in winter was reduced, and fields reseeded (Matthews & Campbell in Harrison, 1974). Last winter (1973–1974) this policy paid off with a great increase in the time spent by the geese on the farmland, where they are much more easily seen, as opposed to the merse where they can be up to 3 km from the nearest observation point. Additionally the flock increased to over 5,000 (see p. 170).

Having embarked upon a study of what the geese eat in winter, an investigation of their summer foods and conditions became desirable. In addition, if a worthwhile sample of geese could be caught and ringed, with plastic rings having engraved letters large enough to be read in the field, individuals could be followed over succeeding years and their behaviour and breeding performance noted. The effect of conditions at the wintering haunt on subsequent breeding success has received some attention in North America but hitherto very little in Europe. Here was a relatively small, discrete and protected population of geese, readily observable in the field, and ideal, in fact, for such a study.

Planning therefore started for a Wildfowl Trust expedition to Spitsbergen in 1973. Thanks to a generous grant from Macmillan Ltd., and to Anglia Television agreeing to pay for two film cameramen to accompany the expedition, it got off the ground. The personnel were as follows: Ted Jackson, Chief Education Officer of the Wildfowl Trust (and leader); Myrlyn Owen, ecologist at the Trust and responsible for the study being done at Caerlaverock; Malcolm Ogil-

vie, Ringing Officer of the Trust; Mike D'Oyly, Assistant Regional Officer for Gloucestershire of the Nature Conservancy Council; Chris Knights and Terry Andrewartha, freelance film cameramen working on this occasion for Anglia Television. The area of Spitsbergen selected was around the fjord of Hornsund, where the Norwegians had caught their geese in 1962 (Figure 1). The party left Slimbridge on 4 July arriving in Spitsbergen on the 11th. It was there a month and was back in England on 18 August.

The following narrative is based largely on the diary kept by one of us (M.A.O.). A summary of the results will be found at the end.

### 5–11 July. The Journey

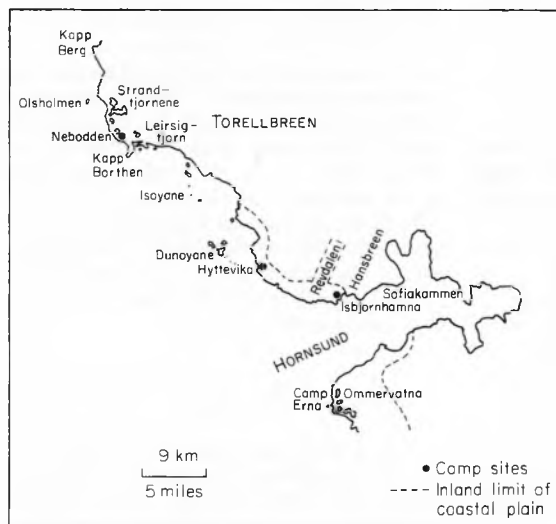
In theory all the rush, panic and bother of an expedition come in the planning and preparation stages, allowing for relaxation once it is on its way to its destination. However, some further problems were reserved for us on our journey. One of the North Sea ferries, running from Newcastle to Bergen, ran aground a month before we were due to leave, and our baggage, nearly two tons of it, was rescheduled on an earlier boat. We were flown with other passengers on a charter flight to Bergen.

On arrival in Bergen we quickly located our baggage, fortunately intact, but also found to our astonishment not one, but both, of the 5-m fibre-glass boats that we were taking with us. One had come as arranged with the baggage from Newcastle, but the

other had had to be sent on 3 weeks beforehand and was supposed to be awaiting collection at a radio station some 130 km north of our destination in Spitsbergen. We had made elaborate plans for two of the party to collect it and come south to meet up with the rest of us. And now here was the boat still sitting in Bergen. It took a lot of hard work to arrange that both boats could accompany us, saving the time, trouble and petrol involved in the original plan. Out of some administrative muddle by the shipping agents, plus the luck of our spotting the boat on the dockside in Bergen, had come a positive gain to the expedition.

At last we were all on board the 1,600 ton 'Nordnorge', one of the fleet of passenger and cargo boats making the daily express run up the Norwegian coast. Once a week during the summer the ship leaves the northern tip of Norway and heads north the 700 km to Spitsbergen for a 5-day diversion, before returning to Bergen. Because we could only be landed if the weather conditions were good and there could be no hanging about waiting for an improvement, we remained in a mild state of tension throughout the otherwise delightful 4-day journey up the Norwegian coast. We lazed away our time on deck bird watching, as the ship cruised along narrow fjords and between innumerable islands. The 'best' bird we saw was undoubtedly the Sea Eagle of which we spotted five on the journey, one being dive-bombed by a Peregrine.

Leaving North Cape, the northern tip of mainland Europe, at midnight with the sun



**Figure 1.** Map of Hornsund area of Spitsbergen, whole country in inset. Note that whole archipelago is now called Svalbard, while Spitsbergen remains the name of the main island.

well above the horizon, we next called in at Bear Island, roughly half-way to Spitsbergen. Here the ship steamed slowly past the towering bird cliffs of the south end of the island where countless auks and other seabirds breed in screaming confusion. A brief stop was made at the flatter north end of the island to drop supplies to the Meteorological Station there. And then north again to Spitsbergen.

### **12 July. Arrival**

We were due to arrive at Hornsund, the 8-km wide fjord on the south-west corner of Spitsbergen, at about 05.00 hours. Some of us stayed up all night, taking advantage of the duty-free drinks, a party and the almost non-existent hours of closing of the ship's bars, others tried to sleep and couldn't, and one slept soundly despite it all. By 04.00 hours the ship was moving slowly into the mouth of the fjord, with little or no wind blowing, just a long lazy swell rolling her gently. The prospects for landing could hardly have been better.

We were all a little tense because we could muster very little experience of being dropped over the side of a large ship into very small boats and ferrying a lot of heavy baggage and equipment ashore on to an open beach. However, it all went fairly well, if rather slowly. The ship's crew left us to our own devices, just working the winch to get our boats from the deck down on to the water, and then lowering slings of rucksacks, food boxes and jerrycans down into them. Standing in a small boat, which was rising and falling on the swell, trying to prevent it banging too hard into the ship's side, and simultaneously attempting to receive cargo neatly into, but not through, the bottom of the boat without being knocked into the water, was an experience that one was glad not to have too often. However, no-one and nothing was dropped into the water and after 2 hours and five journeys all our things were ferried the 2 km to land.

The most prominent object, a couple of hundred metres back from the shelving shingle beach on which we had landed, was a large, yellow wooden hut. We had learnt on the ship that some Polish glaciologists and geologists were in residence and that the hut had been erected in 1957 when a party of Poles overwintered during the International Geophysical Year. Now it was only in casual use during the summer months.

We were warmly welcomed by Stanisław Baranowski, the leader of the ten-man Polish

expedition, invited into the hut, sat down at a table and plied with coffee, porridge, bread and jam, and plum vodka. Baranowski spoke good English, while another Pole had spent 2 years in Canada and was quite fluent, and a third spoke excellent French, so conversation was not too difficult. They had heard of our impending arrival from the Governor of Svalbard who had been to visit them a couple of weeks before. We were offered the full run of the hut, including a large room cleared for sleeping, a kitchen complete with coal stove and cold running water, and tables and chairs. It all seemed luxurious in contrast to the tents and primus stoves that we had brought with us. For these and other kindnesses we are extremely grateful to the Polish expedition.

Our base was at a place called Isbjørnhamna (Polar Bear Bay); the bears are only there in the winter. It lies on the north side of the 15-km long Hornsund, about 3 km inside its mouth. Here there is a narrow coastal plain, nowhere more than 2 km wide, consisting of bog, pools, rocky outcrops, and low gravel ridges. It rises gently inland to the foot of steep scree slopes that run up into a line of jagged peaks and ridges about 500–700 m in height—a mountain wall separating the coastal strip from the permanent ice inland. Where there is a gap the ice flows through as a glacier to debouch into the sea. Hansbreen, nearly 3 km across, did so just to the east of our landing bay (Figure 2), while beyond it more peaks rose, culminating in the 700-m sheer cliff of Sofiakammen, the site of an enormous seabird colony. Beyond that again, several more glaciers flowed into the fjord; the ice calving incessantly from them was to prove a hazard to some of our boat journeys. Across the fjord the scene was dominated by the peak of Hornsundtind, at 1,400 m the second highest mountain in the country. We never tired of watching and photographing it in the endless variety of light, cloud and mist (Figure 3).

We had scarcely arrived before Myrfyn headed for the nearest prominence with a pair of binoculars and came hurrying back to report the first sighting of Barnacle Geese by a pool not far away.

### **13–20 July. Reconnaissance**

Our first week was spent in exploring the area, locating Barnacle Geese for subsequent capture, and making a start on the scientific programme. This included finding what the geese were eating and in what quantities, collecting lichens for the British Museum,



**Figure 2.** Hansbreen glacier. The ice-cliff is about 30 m high.

*E. E. Jackson*

and identifying plants for a proposed atlas of European flora.

Exploratory trips were made first to the Dunoyane islands, lying about 25 km north up the coast, and about 4 km offshore. There are three flat islands about 40–100 ha in extent, each with one or more freshwater pools. It was on them that the Norwegians had caught their geese in 1962. That year had been a very cold one and hardly any geese had bred, but in the 2 following years plenty of breeding birds had been found. Our first

visit produced something of a shock because the eighty or so breeding pairs had by no means all hatched their eggs, although we had expected hatching in the first week of July. The 350 non-breeding birds that were present were only just beginning their flightless period. We had tried to time our expedition so that we would arrive after the hatch and be able to start rounding up the flightless birds immediately without disturbing the breeding birds. However, Chris and Terry were able to get some unexpected film

**Figure 3.** Hornsundtind seen across Hornsund. A small freshwater pool lies on the near shore.

*E. E. Jackson*



of the geese at the nest, and of the eggs hatching.

A second trip was south across Hornsund to the further shore and then on foot southwards for a considerable distance. Nearly 150 geese were located on large pools near the shore, including a few family parties, the first definite breeding record for that locality. On one of the pools was a wonderful flock of about 180 King Eiders.

Close to our base a hide was erected beside a small pool, surrounded by a mossy bog. Here, five family parties of Barnacle Geese were living and Myrfyn spent hours checking on their feeding rates and collecting droppings for subsequent analysis. The rest of us spent some time in this hide because it not only gave close up views of the geese, but was less than 3 m from the nest of a Grey Phalarope.

The weather in this first week was mixed, fog interfering both with the filming and with some of our boat trips, and quite strong winds kept us confined to the land for 2 days. On one of these, the wind was from the east and it brought with it large quantities of ice, calved from the several glaciers. The bay where we kept our boats, hauled well up the

beach, became choked, and even when the wind changed a belt of ice about 10 m wide was left stranded on the shore. The largest pieces were 2 or 3 metres across and 1 m thick, presenting quite an obstacle when we next wanted to launch our boats (Figure 4). To do so, we first had to cut a patch through with ice-axes and a borrowed crowbar. Larger icebergs fortunately never drifted into the bay; up to 60 m long and 20 m high, they made a steady procession out of the fjord, castles of ice, turrets gleaming in the sun, or ghostly aircraft-carriers, looming weirdly through the fog.

It was clear from these first trips that the Barnacle Geese were only breeding on off-shore stacks and islets. Where these were large and vegetated, as were the Dunoyane group, the goslings would be reared there, but elsewhere the parents took the young in the first few days to the nearest suitable mainland. Much of the coastal plain was bare stones and rock, or covered with lichens and mosses. It was only around pools, along the banks of the small streams, and beneath the scree slopes that the vegetation became at all lush, and included grasses and flowering plants. The water that flowed down from

**Figure 4.** The expedition's boats blockaded by ice floes.

*E. E. Jackson*



the screes was greatly enriched by the droppings of the countless thousands of Little Auks breeding among the rocks. The lower slopes of the mountain wall, that ran for over 20 km from Isbjornhamna northwards to a point opposite the Dunoyane, was one continuous Little Auk colony. We tried making rough estimates of how many birds there were, and never got lower than 3 or 4 million. The air overhead was filled with wheeling flocks of thousands; their high-pitched laughing calls dinned into our ears. They feed on plankton, which abounds in the shallow arctic seas, and must bring in a very considerable weight of it during a breeding season. The waste and droppings are washed down by the melting snow, itself often stained red, into the many small streams and pools of the coastal plain. The bright green of the plants growing by the pools contrasted with the dull browns and greys of the stony and lichen-covered ground.

On such green patches we found most of the geese. The pools offered them some security, though when they saw us the birds would often run down to the sea, waiting there until we had passed. There were only a handful of family parties on the mainland between our base and the Dunoyane, none worth a catching attempt this early in the season, when the young were still too small to ring and the parents not yet all flightless. We therefore kept to our original schedule of catching the non-breeding birds on the Dunoyane first, though delayed by the lateness of the season.

#### 21–24 July. Goose catching on the Dunoyane

After a false start on the 20th when the engine of one of the boats played up and then the sea became too rough to go, we finally left base camp late in the evening of the 21st for Hyttevika. This was a point on the mainland immediately opposite the Dunoyane islands, and almost the furthest point north on the coastal plain before the way was blocked by the huge Torell glacier. We took with us sufficient food and petrol to last a fortnight, as we hoped to go further north when we had finished catching on the Dunoyane. We had to give up the comfort of the large hut at Isbjornhamna for small three-man tents, and cooking on primuses.

This camp site was very close to a part of the continuous Little Auk colony. Here the coastal strip narrowed to a few hundred metres, and was partly taken up by a vast lateral moraine. In it the Little Auks were breeding in greater density than we had seen

before. The only avian predator on Little Auks is the Glaucous Gull and a number of these were constantly patrolling along the boulder slopes. As each gull flew by, the auks sitting on the scree beneath would rise in a cloud and stream out, turning and flying back as the gull went past, their droppings adding a camouflage of whitewash to the previously pristine orange of our tents.

We made out first catching attempt on 22 July, and it was a complete failure. We copied the technique used by the Norwegians when they caught on the Dunoyane islands in 1962. The idea was to approach the chosen island without being detected by the geese, to land, and then spread out and creep along the shore below the storm beaches and low cliffs, hidden from the geese feeding on the flat top of the island. We therefore cut our engines when over a kilometre from the island, and rowed the remaining distance in boats that were very evidently not designed for rowing. However, we made it, landed quietly and crept along the beach. On rounding a corner, a sizeable flock of geese was seen swimming on the sea well offshore, and our simultaneous emergence over the brow of the storm beaches produced only six evenly spaced goose catchers with just two geese in the middle; both quickly demonstrated that they could fly.

Only slightly daunted by this fiasco we moved on to the next island but again the geese were not to be surprised. We therefore withdrew and laid our plans for the following day. We decided not to attempt to surround the geese but to move straight on to an island and while four of the team stayed out of sight around a convenient pool close to a good landing beach, the other two would use a boat to try to herd the geese, by then on the sea, back to land.

On 23 July this plan worked. The geese were comparatively easy to shepherd, with the boat, manned by Ted and Malcolm, manoeuvring slowly and quietly some distance from them, zig-zagging to and fro keeping the birds on the correct heading (Figure 5). The only problem encountered was that the sea close to the island was littered with rocks. Fortunately neither the fibre-glass of the boat, nor the propellor guard of the outboard suffered more than minor scratches.

This first drive was made more exciting by the presence in the flock of about 120 birds, of two white Barnacle Geese. They stuck very close together and we assumed that they were the two young birds, hatched in 1972, that had been at Caerlaverock all the previous winter. Soon the geese were landing on the right beach and hurrying up





*E. E. Jackson*

**Figure 5.** A flock of about 100 flightless Barnacle Geese being driven on the sea towards a landing beach on one of the Dunoyane islands.

the bank beyond. The boat landed hard on their heels and the two people manning it were just in time to plug the gap round the pool on to which the birds were running. The other four had risen to their feet as the geese came on to the water, and there the birds were, neatly surrounded.

A horse-shoe-shaped pen of 1.3-m high netting was erected at one end of the pool and two wings led out to guide the birds in. The pond was about 100 m long and 40 m wide, and up to 2 m deep. With two, one-man plastic dinghies in the water, paddled gingerly by Mike and Malcolm, and the rest walking up the banks we moved the flock slowly towards the pen. The drive went very well but the pressure of so many birds in the pen caused a side wall to collapse and we had the mortification of seeing nearly three-quarters of the geese stream out, including the two white ones. A quick rush, and the pen was secured but with only thirty-two inside. However, not all the rest were lost as twenty-nine went back on to the pond instead of choosing the obvious escape route to the sea. They were held by two of the party while the ringing, weighing and measuring of the captured birds went ahead. Two rings were put on each bird, a metal one on which was stamped a serial number and the address of the Stavanger Museum, from which the Norwegian ringing scheme is administered, and a yellow plastic one on which was engraved three black letters repeated three times round the ring. These letters can be read at up to 300 m with a telescope, enabling in-

dividual identification of the geese in the field.

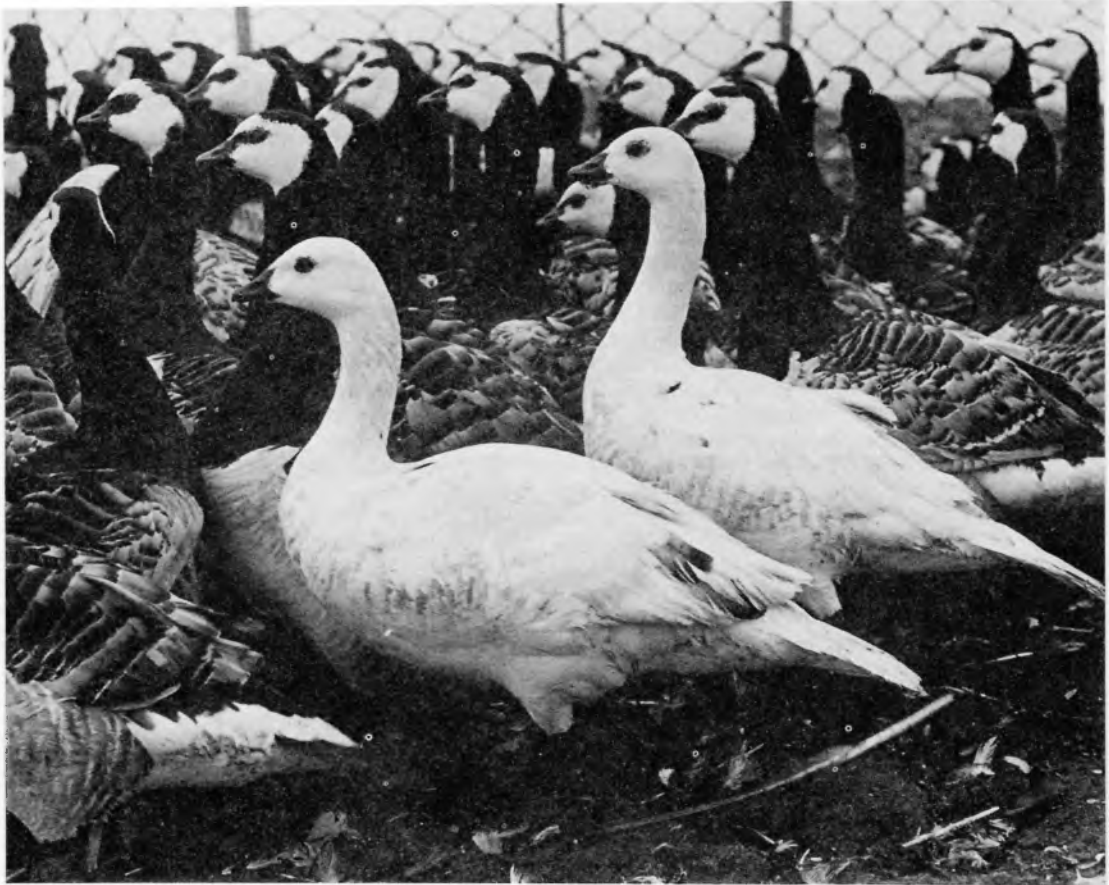
A second drive of the pond caught the twenty-nine remaining birds. Of the total catch of sixty-one, three carried Norwegian rings put on at the same locality in the years 1962–1964.

On 24 July we repeated the catching operation, this time with complete success. The pen was reinforced and the poles more securely guyed. Our catch on this occasion totalled 159, including the two white ones (Figure 6), which proved to be brother and sister, sixteen repeats from the previous day's catch, seven with old Norwegian rings and five from the 1963 catch at Caerlaverock.

#### **25 July–1 August. Goose catching north of Torellbreen**

We had now made two good catches on the Dunoyane, totalling 220. We had agreed with the Norwegian Ministry of the Environment, who are responsible for some newly promulgated conservation laws for Spitsbergen, that we would minimize catching on the Dunoyane so as to reduce disturbance. We were permitted not more than one catch on each island during the first part of our stay followed by repeat catches towards the end.

We now wanted to move about 25 km to the north past the uncompromising 15-km face of Torellbreen. Beyond it the coastal plain began again, quite wide and with



**Figure 6.** Two white Barnacle Geese rounded up with normal birds.

*M. Owen*

numerous large shallow pools. There had been several hundred geese there in 1964, the last time the area was surveyed in detail, probably breeding on some small offshore islets.

The expedition members became very used

**Figure 7.** Inquisitive Little Auks.



to making plans which had then to be changed. On 25 July we were ready to move north, but we awoke to find thick fog obscuring everything and visibility no more than 300 m, occasionally lifting to 2 or 3 km. This was not nearly good enough weather for our projected journey. We needed to keep sufficiently far away from the glacier and yet still be inside a group of small islands and rocks, and also avoid some complicated shallow areas near our intended landfall.

July 26 was an equally wasted day. Visibility gradually improved but the wind rose to be a fairly steady force 3-4 from the west, the worst possible direction as we would be exposed to it almost throughout the journey. With heavily laden boats we were not in the mood for taking risks. At least there was a little sunshine in the afternoon and Terry and Christ got their cameras busy on the Little Auks (Figure 7).

On the 27th we made it. The wind dropped, the visibility was fair, though never good, and the sea was down to a long swell. We were off about 10.00 hours cramming everything into the two boats. We passed quite close by the Isoyane islands on the way, where breeding Barnacle Geese had been reported by the Norwegians 10 years previously. We saw



adults with young on at least one of the islands. Most of the journey was steady chugging along at 7–8 knots with the two boats never far apart. Even with masses of clothing on, topped off by waterproofs and a life jacket, sitting still in a small boat is not a warm occupation and we were all of us relieved when, at about 12.30 hours, we landed at Kapp Borthen. Our intention was to round the point and find a camp site a few kilometres to the north, close to some of the pools. The charts suggested a clear channel 100 m or more in width between the point and a chain of offshore rocks. At close range there appeared to be broken water right across the channel, so we decided to land before the point.

From the land there seemed to be a tide race through the channel, so we waited about 2 hours until the steep confused seas had subsided somewhat. We eventually went through without any trouble but it was only too clear that the channel was nothing like as wide or free of rocks as the charts showed. We had been encouraged to see about 100 Barnacle Geese, including some goslings, close to the point.

A short, choppy boat ride took us another 3 km north of Kapp Borthen, to a sheltered shelving beach beside another small point, Nebodden. We quickly selected a camp site in a slight hollow between some rocky hummocks. We erected our conventional tents, and also made an interesting structure out of driftwood, which was very plentiful here. Over it we stretched a large polythene tarpaulin to make a cooking and general purpose shelter. All Terry's building skills were called into play to construct a robust framework out of pitprops, tree trunks and planks, held together with 6-inch nails that just happened to be part of the expedition equipment.

The evening allowed for short exploratory walks during one of which we found a whale's rib half buried in the sand of a storm ridge. On digging it out we found that it measured 6.1 m (19 feet). We also located some geese on two nearby ponds.

Our first catching attempt on 28 July was rapidly terminated when the geese, about thirty of them, spotted us and ran on to the sea. We therefore proceeded straight to the next pool, rather further inland where about fifty birds, adults and goslings, had been seen the night before. This time the surrounding of the pond went very well and the birds had no choice but to swim on to the water and stay there while the catching pen was erected. We lost five adults right at the last minute, all fliers, but several other full-winged birds entered the pen. Our catch consisted of

twenty-three adults and twenty-three goslings, most of the latter about 2½ to 3 weeks old. Their legs were large enough to take the metal rings but not yet long enough for the tall plastic rings. There were two quite small goslings, only about a week old. They ran up and down the pen cheeping loudly, while one of the full-winged adults that had escaped at the last minute was honking on the pond equally loudly. We therefore caught up the goslings, and having marked them, released them on to the pond. They swam vigorously away and before they had gone 30 m the adult took off, and landed close alongside. As they continued to swim away a second adult flew in and landed with them to the accompaniment of much calling and greeting display.

The following day was wet and foggy. In the late evening the weather cleared enough for us to undertake a reconnaissance of some more pools about 5 km up the coast, where we located nearly 200 birds.

Terry and Malcolm walked north on the morning of the 30th and managed to persuade a flock of just over 100 geese to go on to a small pond. The boat was rather behind schedule in arriving and there were some fairly frantic moments during the wait when only Terry's fleetness of foot prevented the flock from getting away. Eventually the boat party arrived and soon four people were guarding the geese while the other two erected the pen. The drive through the pond, which was barely knee-deep, went very well and we were soon processing a catch of fifty-eight adults and forty-three goslings. There were two British- and four Norwegian-ringed geese in the catch, in an area where none had previously been caught. We left the nets in position and returned to our camp, intending to try again at the same place at least once more.

On the 31st we made two more catches at the same pool. With Chris and Ted in the boat and the other four walking, we arrived more or less together and then the boat party went looking for geese on the sea while the rest of us took up position round the pool. The drive went very smoothly, the geese landed in the right place, ran up the beach, across a wide stretch of tundra, and on to the pool. We wasted little time in moving the geese into the pen and found that we had caught thirty-nine new adults plus one repeat from the previous day.

As there were still unringed geese in the area the boat put to sea again and the whole operation was repeated. It did not go quite as smoothly as the time before because as the geese neared the entrance to the pen they

became increasingly reluctant to go any further. However we pressed forward and although a number of birds broke back and escaped between us, thirty-six finally entered the pen of which twenty-six were new. We had caught a total of 166 birds at this one site.

On 1 August we attempted to make our way south, back to Hyttevika. But, as before, the weather dictated otherwise. It was a glorious sunny day but also quite windy and the sea was covered with white horses, too rough for well-laden boats. We therefore spent the day in a variety of ways. Ted and Myrfyn scaled the nearest scree slopes in search of seabirds, getting some spectacular views across Torellbreen in the process. Chris and Terry went filming Red-throated Divers on a nearby pool, while Mike and Malcolm walked south towards Kapp Borthen, botanizing, and watching the sea for signs of calming.

The next morning the wind had dropped and we set off. We had hoped to call in on the Isoyane islands but a heavy swell was running and with an east wind beginning to rise there was nowhere very sheltered to land, and driving birds off the sea would have been next to impossible. We arrived back at Hyttevika after a 3-hour trip and while Chris, Terry and Myrfyn stayed there, Ted, Mike and Malcolm continued on to base camp at Isbjørnhamna.

## 2-10 August. Frustration

On the morning of 2 August, Ted, Mike and Malcolm returned to Hyttevika to join the others in further catching on the Dunoyane.

Figure 8. Arctic Fox.

*E. E. Jackson*



It was, however, to be a week of increasing frustration. We thought that one if not two catches would be made on the islands without difficulty. As Ted and Malcolm went out in the boat to bring geese back to the island where the other four were waiting, the wind and sea got up until those in the boat were having to concentrate more on watching the waves than the geese, and the latter were obviously also beginning to find the conditions unpleasant. So we called off the drive and returned to Hyttevika, where we packed up the camp there. Then as conditions had not worsened any further and the wind would be behind us, we went back to base.

The next morning we set out to catch the geese on the pools on the south side of Hornsund. Chris stayed at base to do some filming. We landed to the north of the pool and were diverted by a flock of geese sitting beside a marshy area quite close to us. At first we wondered why they did not start running away, as flightless geese usually did, but on closer approach they flew. Unfortunately the geese we had come to catch were mostly on a small offshore island and although we had crossed Hornsund without difficulty, the beach where we wanted to land the birds was exposed to the sea that was running and therefore driving the birds was not practical.

We tried again the next day, 5 August. The area of the base camp was comparatively calm with little wind. However, before we had gone very far across the fjord it was much windier and we were soon battling with a steep choppy sea. We therefore turned tail and came back to spend a day botanizing, filming, photographing and other activities.

All plans for the next day went out of the window when we woke to a strong easterly wind, increasing slowly during the day. Despite not being able to catch, the cameramen in particular had a good day, managing to get some footage of a flock of flying Barnacles around a small pool a few kilometres to the west. The geese briefly visited the pool near the base while Myrfyn was in the hide and he managed to read several rings on birds we had caught on the Dunoyane. That evening two Arctic Foxes came round the hut and Chris and Terry were soon out there with their cameras, providing a certain amount of entertainment for the rest of us. The foxes seemed particularly skilled at moving off just when the button was about to be pressed.

August 7 was even worse. Not only was it still very windy, but it rained heavily for most of the day. A rather late nest of Purple Sandpiper was found; almost the only bright

spot of the day. The incubating bird allowed photography from within a few centimetres without concern. Another example of tameness was an Arctic Fox (Figure 8), well away from the hut, which accepted a piece of chocolate from Ted's fingers.

The wind dropped late in the evening but during the next morning it increased rapidly back to a full gale, gusting force 9, and goose catching never seemed more remote. Further rain fell, turning to snow by evening and lying almost down to sea-level. The summer seemed nearly over and winter pressing upon us. We managed some more filming and botanizing, but little else.

August 9 was much the same. By now we were less concerned with whether the wind would moderate sufficiently for goose catching and more with whether it would drop enough for us to be picked up on the 11th. If the ship could not get in, or we out to the ship, we were there for another week. On the 10th the wind dropped, though a heavy swell continued to run. We started to pack and organize our gear into boatloads.

### 11 August. Departure

The day was fine and sunny, with little or no wind. The visibility was perfect and the air positively warm. There was little doubt that we would be able to leave as scheduled, but how we wished we had had this sort of weather for the past week.

The ship was due in the late evening so we had plenty of time to get packed and down to the shore. Chris and Terry even managed to film a couple of family parties of geese swimming in sheltered water at the end of the bay. They were filmed standing on the rocks or feeding on the seaweed, backed by the swell crashing down in clouds of spray.

Just before midnight the ship was spotted heading into the fjord, and within half an hour she was close inshore. She came in much further than had the ship which brought us, making boarding much easier. The first boat pulled alongside the companion ladder and Ted went aboard to see the captain and tell him there were going to be three boatloads. The first was unloaded item by item into a door in the side of the ship and then the boat headed back to the shore for the remainder of the baggage. The second boat, fully laden, was tied into a sling let down on the derrick and then lifted bodily out of the water and on to the foredeck. The first boat was soon back, lifted out and placed gently alongside. It had all taken less than half an hour and

contrasted strongly with the operation when we arrived a month before.

We repaired to the ship's cafeteria and sat far into the night talking and drinking and watching the receding coastline. There was a final moment of interest when Ted spotted two Storm Petrels fluttering over the sea when we were still only a few kilometres out of Hornsund. We think these are the first recorded in Spitsbergen.

The expedition was virtually over. The days south down the coast of Norway passed rather too slowly while we got used to more civilized living and hours of darkness, but Bergen was finally reached on a really scorching day. We transferred to the North Sea ferry to reach Newcastle on the 18th. We left Spitsbergen with its summer almost over and probably the highest temperature we had there was about 50°F. The day we returned the thermometer in London reached 90°F.

### Results

We caught and ringed a total of 416 Barnacle Geese, including sixty-six goslings (Table 1). All the 350 adults were marked with the plastic rings with engraved letters, scaled down versions of those originally designed for swans (Ogilvie, 1973). Had it not been for the adverse weather in the last week we would certainly have ringed more. We weighed and measured virtually all the geese and collected data on the growth of the goslings (Tables 2 and 3). We had located, in all, just over 1,400 Barnacle Geese (details in bird list in the Appendix), and that in an area thought to be the headquarters of the population in Spitsbergen. This it was clearly not, at least in 1973, as subsequent counts at Caerlaverock showed the population to number 5,100.

The botanical studies had revealed a lot of new information about the food and feeding preferences of the geese in summer. A considerable list of flowering plants (forty-five species) and a collection of lichens (over eighty species including one new record for Spitsbergen) were compiled, and these have added considerably to the knowledge of this little-covered area.

The cameramen shot over 7,000 feet of film of Barnacle Geese and of other birds. Selections from this are to be combined with material from Caerlaverock to make a television film.

It was with considerable anticipation that we awaited the arrival back at Caerlaverock of the geese. They duly came in late September and Colin Campbell reported seeing many yellow rings. In early November,

Table 1. Catches of Barnacle Geese and brief details of recaptures

Date	Locality	New ringed		Recaptures			Total
		Adult	Pullus	Norwegian	British	Repeats	
23 July	Dunoyane islands	58	0	3	0	0	61
24 July	Dunoyane islands	131	0	8	4*	16	159
28 July	Leirsigtjorn	21	23	2	0	0	46
30 July	Strandtjornene	52	43	4	2	0	101
31 July	Strandtjornene	39	0	0	0	1	40
31 July	Strandtjornene	26	0	0	0	10	36
Totals		327	66	17	6	27	443
Total ringed 416.							

\* One of these also carried a Norwegian ring

Details of recaptures:

Ringed Dunoyane 1962—caught Dunoyane 1973	8
Ringed Dunoyane 1962—caught Caerlaverock 1963—caught Dunoyane 1973	1
Ringed Dunoyane 1962—caught north of Torellbreen 1973	4
Ringed Caerlaverock 1963—caught Dunoyane 1973	4
Ringed Caerlaverock 1963—caught north of Torellbreen 1973	1
Ringed Dunoyane 1964—caught Dunoyane 1973	2
Ringed Dunoyane 1964—caught north of Torellbreen 1973	2
Ringed Caerlaverock 1966—caught north of Torellbreen 1973	1
	23

Figure 9. Barnacle Geese ringed in Spitsbergen photographed at Caerlaverock.

M. Owen



**Table 2.** Weights and measurements of adult Barnacle Geese

Sex	Total caught	Mean weight		Mean sternum length		Mean wing length	
		g	Sample	mm	Sample	mm	Sample
Male	176	1756	175	137.9	144	229	113
Female	174	1505	173	128.6	144	214	118

Wing length only gives an indication of the stage of moult. Non-breeders were further advanced than birds caught with goslings.

Weights are 75–80% of mean winter weights.

**Table 3.** Weights and measurements of gosling Barnacle Geese

Feathering		Number caught	Mean weight (g)	Mean wing length	
Class	Description			mm	sample
A	Downy	2	166	—	—
B	Tail feathers showing	1	(410)	—	—
C	Scapulars + tail feathers	2	470	—	—
D1	Primary quill stubs showing	23	637	80	12
D2	Primary feathers emerging	37	749	115	30
D3	Well-developed primaries	1	(710)	—	—

Sexes: twenty-eight male, thirty-six female, two undetermined.

Myrfyn went to Caerlaverock for a few days and the results began to flow in. In 4 days he read the letters of over 200 marked birds, discovering which was paired to which, how many goslings they had, who was unpaired, whether there had been any mixing between birds caught in different areas, the spread of ringed birds through the flock, and so on (Figure 9). He found that with a telescope and in good light it was possible to read the letters at distances of up to 300 m. So successful is the technique that by the end of March no less than 329 of the birds had been checked. We know that one of them is dead, picked up on the merse in the autumn, so about 94% of the rings put on in Spitsbergen have now been read. This particular technique of individual identification has thus been transferred from swans to geese with complete

success. It should be possible to follow the fortunes of known pairs and families for years to come, checking on their annual breeding success, behaviour and other aspects whilst they go about their normal everyday routine.

### Summary

An expedition to Spitsbergen in summer 1973 to study and ring Barnacle Geese *Branta leucopsis* is described. 416 geese were ringed, and weights and measurements taken. Other studies involved food and feeding behaviour of the geese, general botanical recording and filming. 94% of the 350 geese marked with large lettered plastic rings have been identified back on the wintering grounds in Scotland.

### Appendix. List of birds seen and details of Barnacle Goose distribution

Red-throated Diver *Gavia stellata*. Found breeding on most larger pools.

Fulmar *Fulmarus glacialis*. Abundant on several seabird cliffs.

Storm Petrel *Hydrobates pelagicus*. Two seen from ship near mouth of Hornsund. Believed to be first record for Spitsbergen.

Pink-footed Goose *Anser brachyrhynchus*. Only small numbers seen and no goslings, though used nests found in Revdalen. Totals of twenty-

seven south of Hornsund, thirty between Hornsund and Torellbreen, and twenty north of Torellbreen, all less than found in same areas in 1964 when they bred in all three (Norderhaug, Ogilvie & Taylor, 1965).

Barnacle Goose *Branta leucopsis*. The Table below gives the maximum number of geese seen at each site. Possible duplication because of movement by birds has been avoided where possible.

Area	Adults	Goslings	Total	% young
Camp Erna—Ommervatna	110	21	131	16.0
Isbjørnhamna—Hyttevika	29	23	52	19.4
Dunoyane islands	480	100	580	
Isoyane islands	135 +	some	135 +	?
Kapp Borthen and islets	145	26	171	18.4
Kapp Borthen to Kapp Berg	315	73	388	
Totals	1214 +	243 +	1457 +	18.4

The overall percentage young excludes Isoyane as those islands were only observed from the boats and the true total of goslings could not be determined. Barnacle Geese have not hitherto been recorded as breeding south of Hornsund (ponds near Camp Erna), a relatively little-surveyed area; indeed in 1964 none were seen there (Norderhaug, Ogilvie & Taylor, 1965). Other comparisons with the 1964 survey show an overall decrease in the number of geese in the whole area covered of about 100 despite an increase in the total population from about 4,000 to 5,100.

Brood size was recorded as follows: 5 goslings — 1 brood; 4 — 11; 3 — 13; 2 — 19; 1 — 13; total 57, mean 2.4.

Light-bellied Brent Goose *Branta bernicla hrota*.

The only record is of three seen on the Dunoyane on 13 July. This contrasts with six used nests found and seventy birds seen on the islands in 1964.

Mallard *Anas platyrhynchos*. A female was seen on a small pond west of Isbjørnhamna on 13 July.

There are less than ten records for Spitsbergen.

Eider *Somateria mollissima*. Breeding plentifully on all the islands. Many young seen.

King Eider *Somateria spectabilis*. No breeding proved. Flock of 180 on pool, Camp Erna, 14 July. Flocks of up to twenty-five seen, Dunoyane and north of Torellbreen.

Long-tailed Duck *Clangula hyemalis*. No breeding proved. Flock of 100 moulting on pond on Nordre Dunoy island, 23 July. About 350 on sea off Nebodden, 27–31 July. Smaller numbers seen on other pools.

Ptarmigan *Lagopus mutus*. None seen but reported as present on nunataks in Hansbreen by Polish glaciologist.

Ringed Plover *Charadrius hiaticula*. One seen on Store Dunoy island, 22 July.

Purple Sandpiper *Calidris maritima* (Figure 10). Breeding in all areas, though not common. Flocks of up to 100 on Dunoyane, mid-July, and on shore north of Nebodden in late July.

Whimbrel *Numenius phaeopus*. Singles seen Dunoyane 13 and 22 July, near Camp Erna 15 July, Revdalen 15 July, four together Isbjørnhamna 17 July. This is only a vagrant to Spitsbergen.

Turnstone *Arenaria interpres*. Two on Dunoyane

19 and 23 July, three on the 22nd. One Camp Erna 4 August.

Grey Phalarope *Phalaropus fulicarius*. Only one nest found, at Isbjørnhamna. Seen in small numbers in other areas.

Pomarine Skua *Stercorarius pomarinus*. One near Isbjørnhamna every day from 2 to 11 August. Three, Camp Erna, 4 August and apparently holding territory. Has not been proved to breed in Spitsbergen.

Arctic Skua *Stercorarius parasiticus*. Breeding widely in every area.

Long-tailed Skua *Stercorarius longicaudus*. One, Nebodden, 27 July.

Great Skua *Stercorarius skua*. Two, Hyttevika, 20 July. Six in Nebodden area, including at least one pair holding territory. One, Camp Erna, 4 August. Has not been proved to breed Spitsbergen, though has bred Bear Island since 1966.

Glaucous Gull *Larus hyperboreus*. Breeding commonly on all suitable islands and rocks.

Great Black-backed Gull *Larus marinus*. Four seen Dunoyane.

Kittiwake *Rissa tridactyla*. Abundant at seabird colonies.

Ivory Gull *Pagophila eburnea*. Singles seen Isbjørnhamna, 17 and 19 July. Presumably on feeding flights from known colonies on nunataks north of Hornsund.

Arctic Tern *Sterna paradisaea*. Breeding singly and in small colonies in several localities.

Brunnich's Guillemot *Uria lomvia*. Abundant in seabird colonies.

Razorbill *Alca torda*. Small numbers seen among other seabirds at colonies and on feeding flights.

Black Guillemot *Cephus grylle*. Widely distributed round coasts, with flocks up to fifty around Dunoyane.

Little Auk *Alle alle*. Bred in all available scree slopes.

Puffin *Fratercula arctica*. Very small numbers seen among other seabirds.

Wheatear *Oenanthe oenanthe*. Pair feeding three young in rock crevice, Hyttevika. Young ringed on 19 July. First breeding record away from Longyearbyen, 130 km north.

Snow Bunting *Plectrophenax nivalis*. Breeding commonly around Isbjørnhamna; less frequently north of Torellbreen.



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E. E. Jackson, M. A. Ogilvie and Dr M. Owen, The Wildfowl Trust, Slimbridge, Gloucester GL2 7BT, England.

Figure 10. Purple Sandpiper on its nest.

M. A. Ogilvie

