Progress Notes

Aussi disponible en français

No. 72, March 1977

Techniques used for the capture, handling and marking of Brant in the Canadian High Arctic

by L.S. Maltby[1]

Abstract

In July–August, 1973–1975, flightless moulting Brant (*Branta bernicla*) were caught and banded by members of the Canadian Wildlife Service on five islands in the high Arctic: Prince Patrick, Eglinton, Melville, Bathurst and Axel Heiberg. Brant occur in widely-scattered small flocks of 20–50 birds. To cover long distances in as short a time as possible and because of its effectiveness in rounding up geese, a helicopter was used to move the banding crew and equipment. Brant cannot legally be hunted over much of their summer and winter range. To supplement information from band recoveries by sightings of living birds, a light-weight individually coded neck-collar was made specially for adult Brant. This note comments on the capture and handling of Brant as well as describing the new light-weight neck-collar and its application.

Introduction

The Canadian Wildlife Service (CWS) began a banding program of Brant in the high Arctic Islands in 1973 in an attempt to monitor the migration patterns of the light-bellied and dark-bellied Brant which both occur in this circumpolar range of the species. No large scale banding of Brant had occurred in this area. With the application of neck-collars in 1974 and 1975, the results of this program yielded an exceptionally wide and unexpected distribution of recoveries which will be reported elsewhere (Maltby and Boyd, in prep.)

Brant were banded in late July and early August when they were moulting and, therefore, flightless flocks were small, and scattered over large areas of the Canadian High Arctic. The maximum number of flightless geese handled at one time has been 250 birds, including young of the year, although most flocks vary from 20 to 50 birds. The flocks are found along the coasts of the Arctic islands and are rarely separated by less than 30 km and often by much greater distances. For these reasons we used helicopters to reach as many flocks as possible.

This paper describes the banding techniques used in 1973–1975 and a new light-weight neck-collar designed especially for marking adult Brant.

Methods used in capturing flightless Brant

The ideal banding crew consisted of the helicopter pilot and three banders. When a group of flightless geese had been located, a suitable site of dry yet permeable soil was selected nearby for the trap. The banders and all the banding equipment were unloaded there. While the trap was being constructed, the helicopter kept the flock intact and close to the banding site by hovering near the geese, circling when necessary to keep them together.

Once the trap was built, the pilot drove the entire flock slowly toward the net, flying close to the ground and herding the geese *upwind*. When the birds were within 45 m of the net, the crew on the ground took over and drove the geese into the trap. The net was then modified to create a small enclosure in which the banders worked with only 10–15 birds at a time. This speeded up handling of the birds, so that they could be released quickly without any mortality or serious stress.

The geese were released singly when only non-breeders were banded. Young of the year and their parents were held in a separate pen of the trap and released together, to minimize family breakup. When released, the flock was driven to the water where the birds felt safer and had more opportunity to sort themselves out into family units.

Banding net

The banding net was 45 m long and stood 1.4 m high. The materials used were

(1) 45 x 1.5 m nylon fish net (3.8 cm mesh), tar-coated;
(2) 20 hollow aluminum poles, 1.5 m long and 1.9 cm outside diameter;
(3) 60 m multi-strand, plastic coated, flexible wire (army signal wire was excellent);
(4) 90 m nylon twine and;
(5) 20–35 lightweight tent pegs.

The poles were set along the net 2.4 m apart. Each pole had three holes drilled along its length: about 1.3 cm from the top, midway, and 20 cm from the bottom. The pole was worked through the netting and attached to it with cord strung through the drilled holes. Signal wire was strung through the top of the net between poles in order to supply vertical support to the net over its entire length (Fig. 1).[2]

On site the poles were planted in a key formation (Fig. 2) and the net pulled taut. The bowl of the net was supported by nylon cord running from the top of each pole to pegs on the exterior and to the tops of poles on the opposite side of the bowl for balance if the tundra was not deep enough to support the poles. The leads were supported only by guys to the exterior. The gate was *two sections of the net* stretched across the base of the bowl which could be pivoted back to give access to the bowl. The bottom of the net was folded towards the interior and held in place with pegs, small rocks or dirt.

[1]CWS, Ottawa K1A 0H3.

[2]The design of the banding net was developed by George Finney of Queen's University for use in the banding of Lesser Snow Geese at La Pérouse Bay, Manitoba.

Figure 1
Section of the banding net

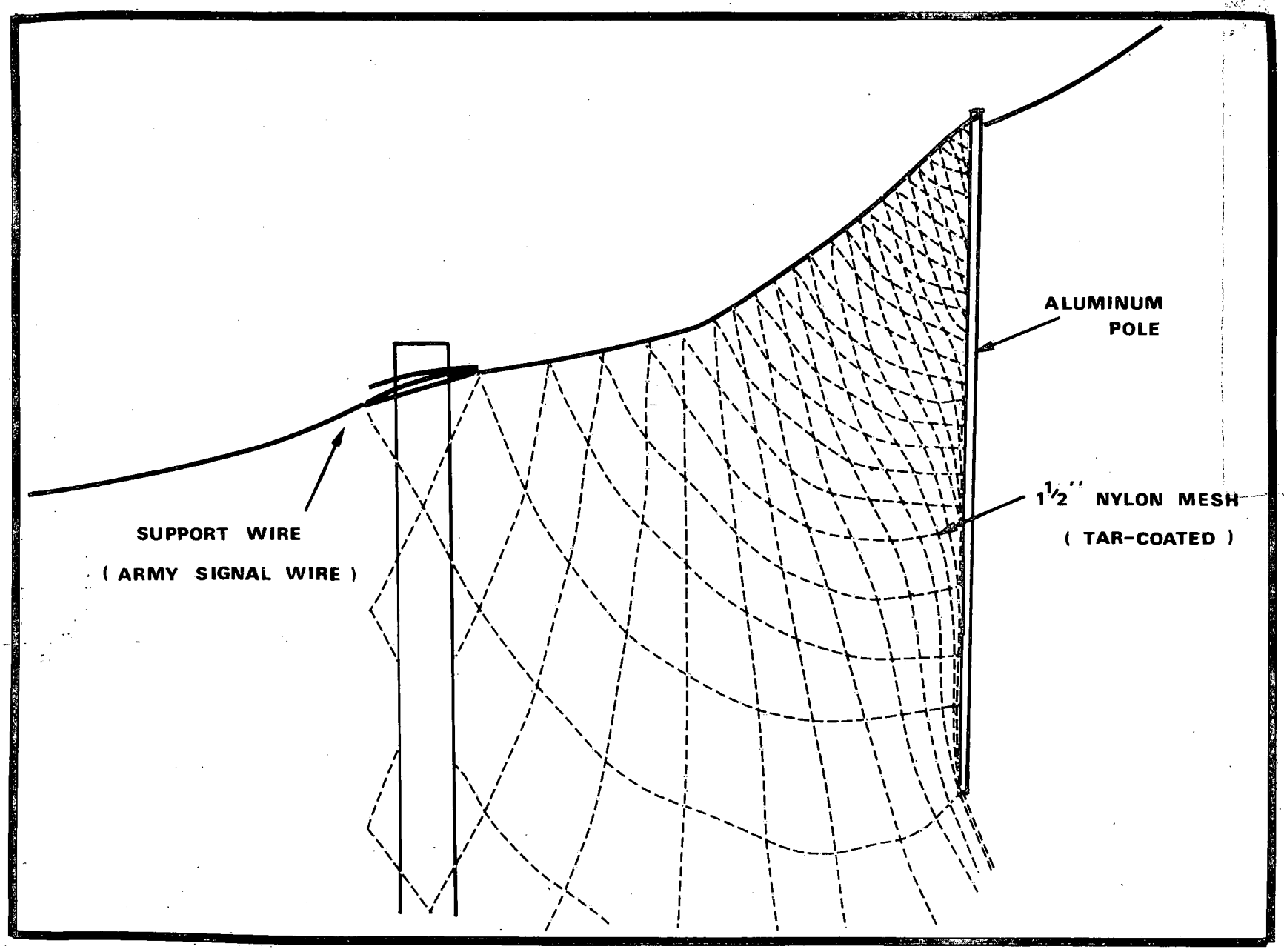
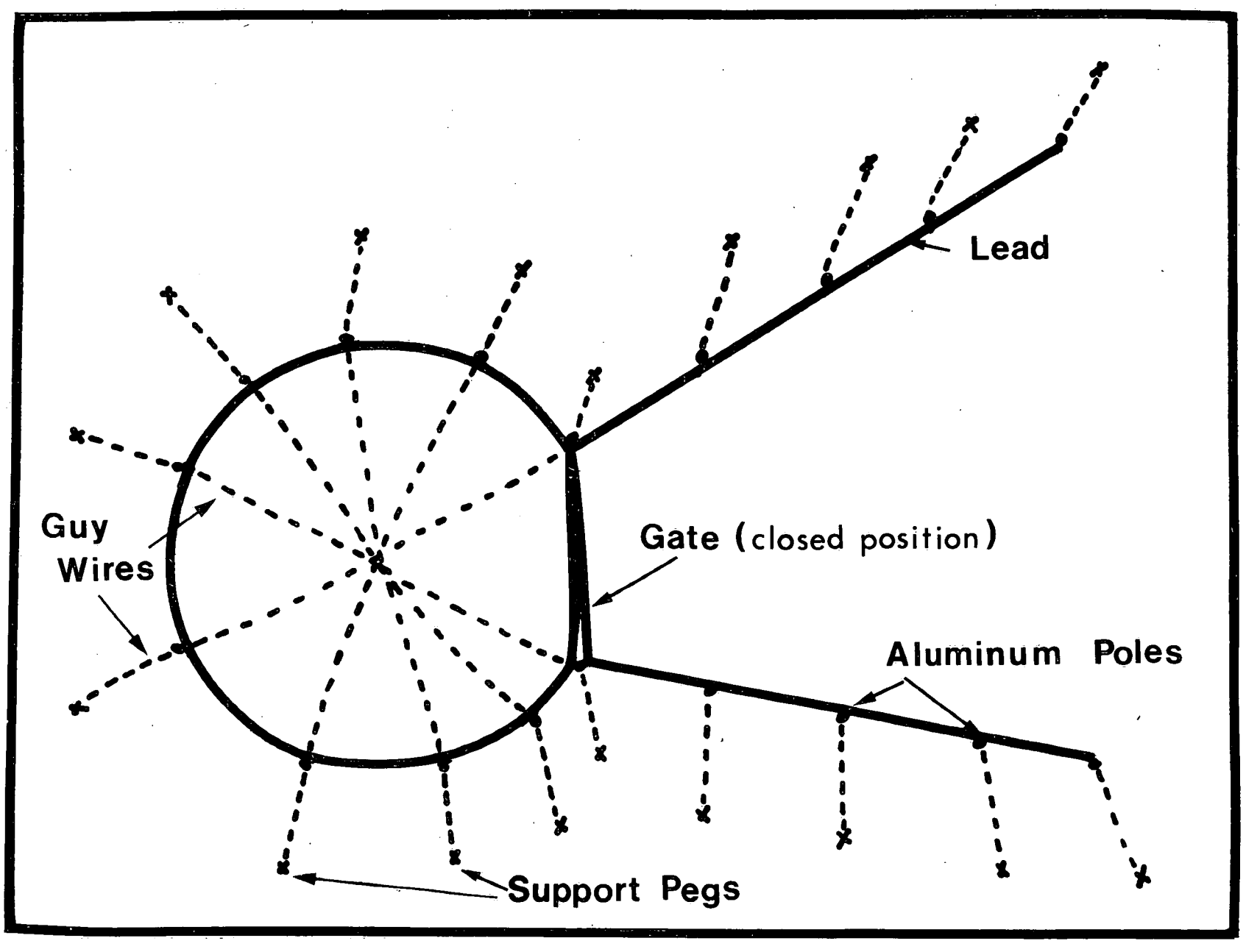


Figure 2
Initial configuration of trap



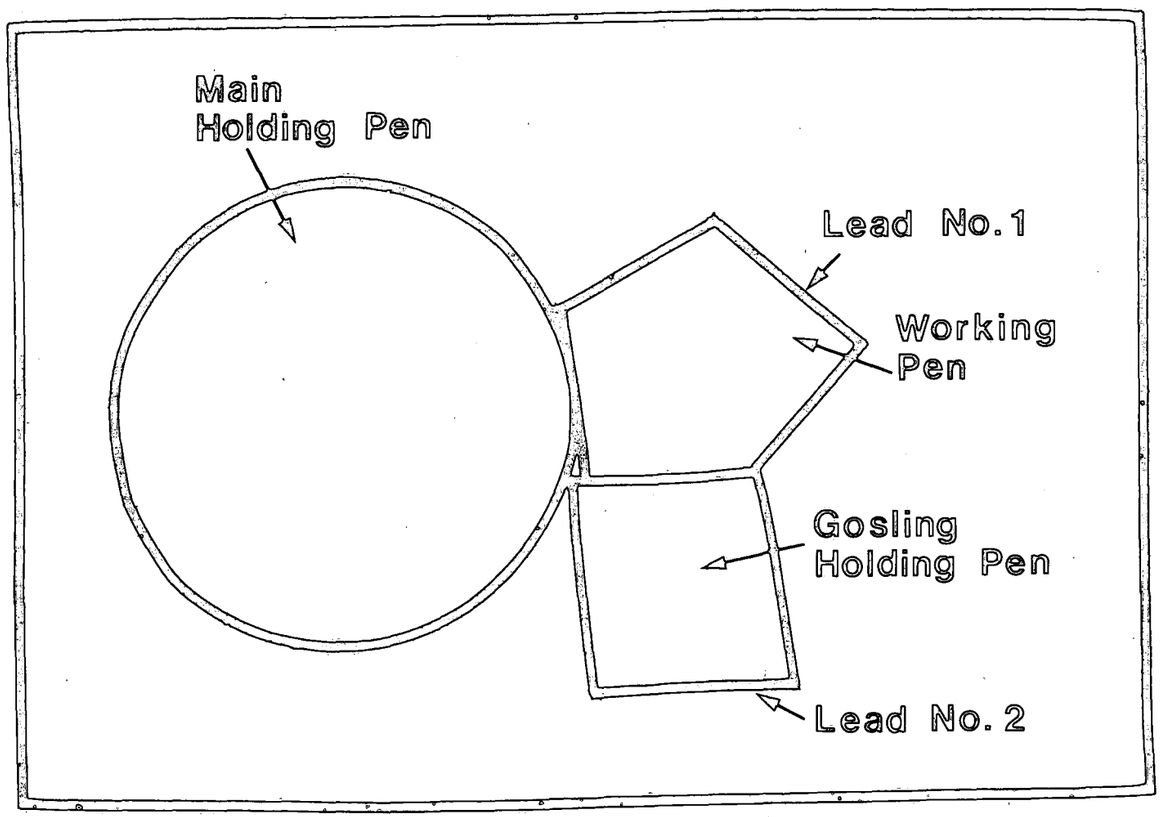
Once the birds had been captured the leads were curled back to form two additional pens, one the work area, the other a holding pen for birds already processed (Fig. 3). The birds were then herded in small groups from the bowl through the gate and into the working pen.

On the average it took 30 min for the entire process from locating a flock to applying the first band. No birds escaped or were injured due to trap design.

Helicopters are essential to any banding operation involving scattered numbers of Brant in the Canadian High Arctic. During the course of this project, both the Jet Ranger 206 and the Hughes 500 C helicopters were used. The Jet Ranger has more storage space for equipment, can carry more passengers more comfortably and has 30 min more flying time than the Hughes 500 C. The charter rate for the Hughes 500 C, however, was lower than that for the Jet Ranger. Both helicopters have adequate manœuvrability for driving the geese into the net.

Helicopters have an important advantage over other methods used in driving geese off the sea or ashore from a lake. By slowly bringing in the birds and keeping them together as one group, scattering is prevented. Thus, family groups are maintained and no goslings are orphaned. No other method of moving Brant from water back to dry land is known to be as effective.

Figure 3
Trap configuration for processing after capture



A neck-collar for Brant

Neck-collars have been used on a variety of geese for behaviour studies that required the recognition of individual birds. Sherwood (1966) and Ballou and Martin (1964) developed a plastic neck-collar with some minor disadvantages (MacInnes *et al.* 1969). Lensink (1968) suggested that neck-collars interfered with the nesting success of Black Brant. He used the knotted plastic collar designed by Craighead and Stockstad (1956). An aluminum neck-collar with symbols of plastic film tape, introduced by MacInnes (*loc. cit.*), proved more satisfactory, but it too had some major drawbacks.

The collars became badly mutilated because the geese continually picked and scratched at them.

In July–August 1973 we put legbands on 689 Brant. In July–August 1974, we fitted 296 Brant with neck-collars on Prince Patrick, Eglinton, Melville and Axel Heiberg islands.

The collar used was aluminum like the one designed for small Canada Geese and Lesser Snow Geese (MacInnes *et al.* 1969) except that symbols on the neck collar were machine engraved by personnel of the Ministry of Natural Resources at Maple, Ontario, and later a zinc chromate primer and yellow metal paint were applied in the field at ambient temperatures (below 5°C). The paint could not be baked in the field and, as a result, most came off within two months. Although the engraving procedure was very time consuming it was useful because the engraved shapes could sometimes still be deciphered after the paint was chipped off.

The collar had other drawbacks. Hours were spent shaping it at Maple with a forming die because the aluminum was too heavy to be formed in the field by hand. The preshaped collars were bulky, a disadvantage when space is at a premium in the helicopter, and were hard to keep in sequence.

They were too large (5 cm high, 4.35 cm internal diameter) and too heavy (15.5 g) and could not be butted properly when closed. Some sprang apart after application and were lost. Some of those that did not come off had a gap between the two ends which caused excessive preening around the collar which tended in turn to isolate these birds from the rest of the flock. Inspection of some shot Brant showed much featherwear and some oozing sores on the neck. A smaller and lighter collar was imperative if behavioural studies on the high Arctic Island Brant were to continue.

Improved design of neck-collar

The design dimensions of an improved aluminum neck-collar are shown in Figure 4. The materials, type of paint and method of construction were selected by Brian Gilliam, of Ketchum's Manufacturing Ltd., Ottawa, Ontario in consultation with the author.

The metal used was non-anodized Alcan aluminum alloy H3003. The edges of the collars were flared before the paint was administered. The cold band was dipped in an iridium solution to make adhesion of the paint possible. The symbols were silk-screened on with a top quality commercial screening enamel. The collars were then overscreened with a polyurethane lacquer.

The collar (3.8 cm high and with an internal diameter 4.35 cm) weighed only 4.0 g and was easily shaped in the field around a steel bar of 3 cm diameter. Thus the neck-collars were stored flat and took up very little space. To eliminate the problem of the collar springing apart the ends were overlapped and a small pop rivet was inserted at the ends, thus lessening the chance of featherwear or of the collar falling off. The total cost was $3.00 per collar.

In 1975 we placed the new, lighter model of neck-collar on 367 Brant. To date (January 1977), there have been no complaints about featherwear, isolation of Brant from the rest of the flock, loss of body weight or condition, or of illegibility of symbols due to the paint chipping off. The Brant appear unaffected by the collar. The symbols are still intact and can be read with ease using 20 X spotting scope at distances of 200 m. Because the collars were pop riveted together, none has been lost and featherwear has been much reduced.

Conclusion

The use of neck-collars has added greatly to our knowledge of Brant distribution in staging and wintering areas. Of the birds legbanded in 1973, only 5% have been recovered (shot, found dead or captured alive). Since the application of the neck-collars 35% have been either recovered or sighted. Repeated observations of individual birds at the same localities and in different countries have also been obtained. For geese as scarce as these it is almost imperative to use visible marking, particularly as there is no legal hunting season in several of the countries they frequent. It is, of course, important to ensure that the markers used do not damage the birds or cause them to behave abnormally. The collars used in 1975 appear to have met those requirements.

Acknowledgements

This study was funded by the CWS. It began as part of an integrated landscape survey program involving the Geological Survey of Canada, Department of Energy, Mines and Resources, and the Forestry Management Institute, Department of the Environment. In 1973 Dr. Herman Dirschl of the Environmental Social Program – Northern Pipelines, Department of Indian and Northern Affairs co-ordinated the work. Dr. D. Martin Barnet (1973 at Sherard Bay) and Patrick McLaren (1974 at Consett Head), both of the Geological Survey of Canada, supported me logistically and for this I am grateful. All the patient aid received from the personnel of the Polar Continental Shelf Project in Resolute, co-ordinated by Mr. Fred Alt, is greatly appreciated.

Field assistants, George Finney in 1973, Sandra Dodd and Andrew St. Joseph in 1974, were extremely helpful. Special thanks go to Lynn Allen and Barbara Campbell for their assistance in 1975.

I thank the aircrews for their support and co-operation. Grant Wyatt (Klondike Helicopters) deserves special mention for his genuine interest and help in all aspects of the surveys and banding.

Lastly, sincere thanks go to Hugh Boyd for his support throughout all phases of the study and to Mr. J.E. Bryant for his constructive criticism of the manuscript.

References

Ballou, R.M., and F.W. Martin. 1964. Rigid plastic collars for marking geese. J. Wildl. Mgmt. 28 (4):846–847.

Craighead, J.J., and D.S. Stockstad. 1956. A colored neck band for marking birds. J. Wildl. Mgmt. 20 (3):331–332.

Lensink, C.J. 1968. Neckbands as an inhibitor of reproduction in Black Brant. J. Wildl. Mgmt. 32 (2):418–420.

MacInnes, C.D., J.P. Prevett and H.A. Edney. 1969. A versatile collar for individual identification of geese. J. Wildl. Mgmt. 33 (2):330–335.

Sherwood, G.A. 1966. Flexible plastic collars compared to nasal discs for marking geese. J. Wildl. Mgmt. 30 (4):853–855.

Figure 4
New neck-collar for Brant