BANDING THICK-BILLED MURRE CHICKS

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Over the past 15 years, the Canadian Wildlife Service has banded approximately 40 000 Thick-billed Murre chicks in the eastern Canadian Arctic. During the course of this work, we have gained a lot of experience on when and how to do it. Obviously, as most Thick-billed Murres breed on steep cliffs, the banding usually involves the use of ropes and other safety devices. We do not want to pose as experts in that area and we strongly recommend that anyone attempting to band Thick-billed Murres employ experienced climbers. No amount of advice will replace experience in that department. This article deals only with the non-safety aspects of the work. We hope that other murre banders can benefit from our experiences.

The first thing that must be recognised about banding Thick-billed Murres is that, if it involves climbing within the colony, some egg or chick mortality will occur. This is something that has to be very seriously considered in any banding project, especially if the intention is to band hundreds, or thousands of chicks. The possible benefit of the information obtained must be weighed against the cost. Our strategy has been to minimize losses and to shift them as far as possible towards late-laid eggs, as these tend to have a lower chance of surviving than those laid earlier. In the best-run operations under ideal conditions one can achieve losses of only a few percent of eggs and chicks. If the timing or the weather is wrong, losses can be much higher. We regard 5% as the upper limit of acceptability.

Problems arise in banding murre chicks from the following sources: (1) eggs and chicks may become chilled during the course of banding; (2) they may be knocked off ledges; and (3) chicks may panic and initiate premature "fledging". The latter phenomenon can be the most harmful to the banding effort, as it involves the largest chicks and hence those most likely otherwise to survive to leave the colony. The loss of chicks after they have been banded affects any subsequent analyses that involve rates of recovery.

Premature fledging behaviour generally only occurs once chicks are 15 days or older. Chicks at younger ages tend to scuttle into cracks, or press themselves against the cliff with their necks tucked in, once their parent has left. Only a minority of chicks, even at more than 15 days, exhibit premature fledging behaviour, but once it begins, other chicks tend to be stimulated to follow suit and a mass jump-off can occur. Several chicks fledging prematurely within a short time is a clear signal that the operation must be abandoned.

A premature fledger will not face the cliff, but instead wanders about the ledge with its neck extended, looking alertly from side to side. It begins to give the typical "pee-pee-pee" fledging call and may then launch itself from the cliff within a few minutes. Once a chick has formed this determination to depart, it is extremely difficult to prevent it from doing so unless its parent returns. Hence, avoiding triggering this syndrome is a very important strategy in containing losses during banding.

Another class of chicks we call "panickers". Like the premature fledgers, these chicks will not huddle down once their parents have left, but run away from the bander, sometimes giving a scream of alarm when handled. These chicks do not attempt to jump from the ledge, but frequently fall off accidentally when fleeing in panic. They seem to form a relatively fixed proportion of chicks and their example is not followed by others to the same extent as that of the premature fledgers. Nevertheless, it is useful to keep them quiet if possible. Gently holding the mandibles closed while banding can help.

To combat the various problems posed in banding Thick-billed Murre chicks we have the following suggestions:

Rule #1: Get the timing right

We consider that the ideal "banding window" is only open for about 7 days. It begins when the first-hatched chicks are about 14 days old, which means that the chicks in the peak 80% of laying are roughly 2-12 days old, becoming 9-19 days old by the end of the window. If banding begins earlier than this, there will be many unhatched eggs present and some will be knocked off in the panic departures that inevitably result from a climber appearing on the ledges. If banding continues any later, some chicks will have begun to fledge naturally and the initiation of natural fledging seems to trigger the onset of premature fledging on a large scale.

The type of triangular bands that we use, from Lambournes of U.K., will stay on any chick other than one that is newly hatched. However, the standard U.S. Fish and Wildlife Service bands will have to be compressed to an oval shape to stay on chicks less than about 6 days old. The British style of "seabird pliers" are good for this.

We recommend starting to band as early as possible and accepting some losses of eggs if it ensures avoidance of premature fledging. If you do not start early and if rain or strong winds hold up banding for several days then you may be forced to choose between overrunning the window, or reducing the number of chicks banded. In our view, it is better not to band at all than to accept heavy losses. Apart from the ethical considerations, the interpretation of recovery rates or apparent survival rates are much complicated by significant losses during banding.

If you have a good knowledge of breeding schedules at the colony involved, it may be possible to take advantages of differences in timing of breeding among different parts of the colony. At Coats Island, we have found that one area is consistently later than other parts of the colony and we always leave this part until last. In any case, it is wise to determine chick ages in several areas before committing to large scale banding. A small sample of birds, especially close to the edge of the colony, may give an unrealistic impression of overall timing, causing banding to be delayed beyond the optimum date.

Rule #2: Don't waste time

The longer you spend on the cliff, the longer birds are kept away, the longer it will take them to return after your departure, and the more likely it is that chicks will chill or fall off. Be well organized, so that you do not spend a lot of time fiddling with your gear once on the cliff. Don't hang about taking photographs or admiring the view. Multi-pocket "fishermen's vests" are very effective in keeping your bands and tools in order.

Chilling can be reduced by avoiding ınding on cold days, and by timing the ınding period so that the sun is on the iffs. This is especially important in the igh Arctic, where air temperatures rarely ıceeded 10° C. Except when in the process ' hatching, murre eggs seem fairly resis- nt to chilling for periods of up to an hour, though this will depend on air tempera- re. Never band when it is raining; chicks ɔt chilled easily when wet. However, they equently crowd together in huddles which ɔep them much warmer than they would ɔ separately. Very young chicks, and es- ɔcially those that have just hatched, are ɔt mobile enough to join huddles and do ɔt orient well. It is best to put them in a ɔcket, or inside your jacket and replace ıem just before leaving the ledge. If there ɔe several very young chicks on the ledge ıen you probably should not be banding ıere yet.

Heat can also be a problem in certain ırcumstances. Older chicks become very ɔtive when it is warm (this is true even ithout disturbance). If you anticipate that ıost of the chicks that you will be banding ill be more than 10 days old, it may be referable to band when the sun is not on ıe cliff. At that age, chicks can easily ithstand temperatures down to 0° C. When is cold they are much more inclined to ɔrm a huddle once the adults have left. anickers can sometimes be contained in ıese circumstances by placing them in the iiddle of the huddle. The presence of other, on-panicking chicks helps to calm them.

ıule #3: keep the chicks together

When chicks can huddle together they ɔem to be most quiescent. They frequently o this of their own accord, piling on top of ne another up to half a dozen deep. On ɔlonies where the ledges are large, so that ıere are many chicks to a ledge, we adopt ıe following tactics. We carry with us 2 ırge (c. 30L) canvas bags (canvas day- acks are also good, but beware waterproof ɔrdura). On arrival at the ledge we collect p all of the chicks and place them in one ag. As each chick is banded, it is trans- ɔrred to the other bag. Once all are banded, ɔe release them onto the ledge, piling them ıto a corner on top of one another, all ıcing the cliff. Then we leave the ledge at ıe opposite end from the chicks. We have ɔt had any cases of chicks suffocating in ıe bags. The bags must be breathable, as otherwise the chicks' respiration condenses the inside and the chicks quickly get wet. It is amazing how swiftly the chicks sort themselves out once the adults return.

Rule #4: Watch out for well-meaning adults

Although many birds fly off when you arrive at a ledge, a few usually remain. Some of these may be exceptionally motivated brooders that remain on their site even when you sit right beside them. Others teeter at the edge of the ledge, hoping to return to their site, but ready to flee instantly. The chicks, once their own parent has left, actively seek out other adults in the hope of being brooded. It is not uncommon to see one motivated brooder vainly attempting to shelter a dozen or more chicks. Where the adults have remained at their site they can be useful in holding the chicks on the ledge; such birds should not be disturbed. However, the adults at the edge of the ledge can pose a hazard, as their presence lures chicks away from the cliff. If the ledge slopes away at the seaward edge, chicks approaching adults at the lip may be unable to retain their grip and end up sliding off. Also, in this area, many adults are constantly landing and taking off and these birds can easily knock chicks off the ledge. A good strategy is for the bander to get in position between the adults and the chicks, so that the chicks cannot see the adults. A chick hearing its parent will respond by trying to approach it, but other chicks appear to respond only to the sight of an adult.

Rule #5: Do everything steadily, without sudden movements

The murres are alarmed by things that move and especially by things that are moving above them. A bander approaching from below usually causes less disturbance than one coming from above. In particular, throwing down a coil of rope causes what seems like an inordinate panic. Ropes should be lowered down gradually, or carried in a bag and paid out en route. Rappelling by means of spectacular leaps would probably have an even worse effect, so it is necessary to deny oneself the fun (fast rappelling is also bad for the rope). Inch down gradually, keeping firmly balanced so that no large jerks occur. If there is a good, broad ledge where you can rest somewhat away from the birds, give them time to settle on their chicks again before commencing banding.

If the colony is accessible from below, a good plan of attack would be to lower a rope from above, then begin from the bottom and climb up. If that is not possible, climb to the bottom of the intended pitch and then band up from below. This has the advantage that, if you do not complete the section, you will not have to descend past banded birds the next day to finish it off.

Rule #6: Broad ledges are not necessarily better than narrow ones

At first sight, a big ledge with 50 or 100 chicks, seems like a perfect banding site. However, big ledges suffer from several disadvantages. If they are uneven, they may retain puddles of water. These become puddles of liquid excrement and if the chicks run into them they can get hideously mired. Those who have climbed on murre cliffs know this to be the most tragic of all sights. Also, the chicks have a lot of space in which to run about and this, along with the social facilitation, tends to promote panic behaviour. On a large ledge many adults will return and call to the chicks from the edge of the ledge, making it hard for the bander to control the situation. On a small ledge, the bander can hang in his or her harness, facing the ledge, blocking it from the adults, and facing the chicks so that any attempting to jump can be intercepted.

Rule #7: Be hard-hearted

If a chick falls or jumps, for whatever reason, there is an immediate desire to remedy the situation. This is a natural impulse, but such action needs to be carefully considered. If the chick has fallen accidentally and if the retrieval will not involve disturbing many other birds, it should be done as quickly as possible. If the chick has clearly panicked and if it continues to show this behaviour, retrieval is probably pointless, as the chick will run off the ledge again as soon as replaced. Likewise, a chick that has exhibited premature fledging behaviour and deliberately launched itself will rarely settle down. It appears that once the fledging behaviour is "switched on" only reunion with the parent will turn it off. Some of these chicks may eventually find their parents on the sea.

If you decide to climb down to fetch a chick, you may find it hard to identify once you get there, unless it is banded. Also, it may have been taken by a gull before you reach it, making the disturbance you caused

in the process pointless. If you are climbing down to the lower ledge in any case, it is better to finish the ledge you are on, then climb down and gently lob the chick back to where it originated. This technique has frequently worked. By the time you reach the lower ledge, sufficient adults may have returned to the first ledge to keep the chick in place.

Sometimes you arrive at a ledge to find that one of the chicks is already banded. Such chicks probably fell from above without being observed. We carry a slip of waterproof paper and a pencil stub and keep rough notes of the band numbers used on each ledge, so that chicks can be returned to the right ledges.

Regrettably, saving fallen chicks with an immediate mercy dash is rarely the right policy, because it may make things worse, rather than better. It is worth bearing in mind that some chicks displaced accidentally are adopted by failed breeders (we have had several examples), so a chick not retrieved is not necessarily doomed. Also, chicks or eggs taken by gulls during the disturbance caused by banding may be compensated by lower predation on other sites. Glaucous Gull chicks are not insatiable and parents only forage when they have to.

Conclusions

Banding Thick-billed Murres is not for the faint of heart. The smell, the noise, the anxiety caused by wayward chicks and the physical exertion involved, combine to make it a less than relaxing experience. However, you do learn things about the birds that you can never appreciate at a distance and this can make it rewarding even before the recoveries begin to arrive.

It really pays to know your colony, so that you know where to go first, which area to leave to last, what the best approach routes are and when the sun is on different areas. Tactics appropriate at one colony may be less so at others and a lot will depend on the temperature and the relative tameness of the breeders. Overall, identifying and using the "banding window" is probably the most vital ingredient of a successful banding campaign.

One last piece of advice. If a loud "pop" signals the explosion of a last-season's egg, stop breathing and move away as quickly as possible. Military mustard gas is tame in comparison with a year-old murre egg at close range.

Were G. N. Lawrence's "Californian" Seabirds Collected During the Gold Rush?

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In a recent contribution to the *Auk* Dave Lee (1993) summarizes the information available about specimens of the Cape Petrel *Daption capense*, Grey Petrel *Procellaria cinerea*, Brown Skua *Catbaracta (skua) lonnbergi* and moulting Arctic Tern *Sterna paradisaea* reported by Lawrence (1851, 1853) from California "in the cabinet" of Nicolas Pike, and suggests that they may have been collected in the Indo-Pacific subantarctic islands instead. While I have also speculated in the past that the two petrels and specimens of *Fregetta grallaria* also said by Lawrence (1851-53) to come from Florida probably originated in the southern hemisphere (Bourne 1964, 1967), I was unable to suggest why they were attributed to Monterey. It is now possible after more personal experience of procedures on ships to suggest some other possibilities.

While some or all of these birds could indeed have come from the subantarctic islands, this seems rather unlikely. Although at the beginning of the last century many sealers visited them (Richards 1984), the seals soon became severely reduced, and did not increase again to the extent that led to more visits by sealers including the collector George Comer until later in the century (Verrill 1895). While the islands were subsequently also visited by American whalers up to the United States Civil War, these normally came from New England, and like the warships and exploring expeditions of several nations active at that time, and the growing number of ships trading between the northern hemisphere and Australia which called there for fresh food and water, seem unlikely to have brought any birds collected back to California.

On the other hand, there was also another, much larger, group of ships regularly plying between California, where the birds were said to originate, through their normal range to New York, where they were reported, at this time, carrying the "forty-niners" from the east coast of the United States around Cape Horn to join the Californian gold rush. Judging by recent experience off South America many seabirds are likely to have struck the rigging of these ships or come to their lights at night, while bored seamen and passengers were then also accustomed to "fish" for birds, or put a boat down and shoot them, when the ship became becalmed. The naturalists on Cook's expeditions (Lysaght 1959) and John Gould (1844) among others obtained scores of similar birds in such ways. Unfortunately, the collectors of those days seem to have been remarkably casual about labelling their specimens, until for example it caused serious problems for Charles Darwin in the Galapagos (Sulloway 1982).

The most likely sequence of events to explain why birds from the Southern Ocean should have been said to originate "off Monterey" therefore appears to be as follows. Lawrence may have asked Pike who was leaving for California, or Pike may have asked some correspondent who was going there, to collect some birds. Whoever collected the birds preserved some stray specimens at unrecorded places during the passage around South America, and then packed them up off Monterey shortly before the ship arrived in California where they were likely to be busy, and left them on board to be brought back on the return voyage with a hasty covering note headed "off Monterey." In consequence, as with the *F. grallaria* said to come from Florida, Lawrence assumed that they must actually have been collected off Monterey.

A similar sequence of events may also explain a number of other old records of seabirds from unlikely places, including the similar attribution to Monterey of the type of the Swallow-tailed Gull *Creagrus furcatus* collected on a vessel coming from the Galapagos (Néboux 1840), the Yellow-nosed *Diomedea chlororhynchos* and Sooty *Phoebetria fusca* Albatrosses, Giant Petrel