

Did You Know ?

1. Adelle Penguins mate for life or at least try to find the same mate every year.
2. Some Adelle Penguin colonies are increasing in size at a rate that can not be due to just the number of chicks raised each year.
3. Most Adelle Penguins return to their natal nesting site to raise their own chicks, but some move away.
4. Adelle Penguins live to be about 15-20 years.
5. Climate change is causing penguins to move their colonies.

Banding

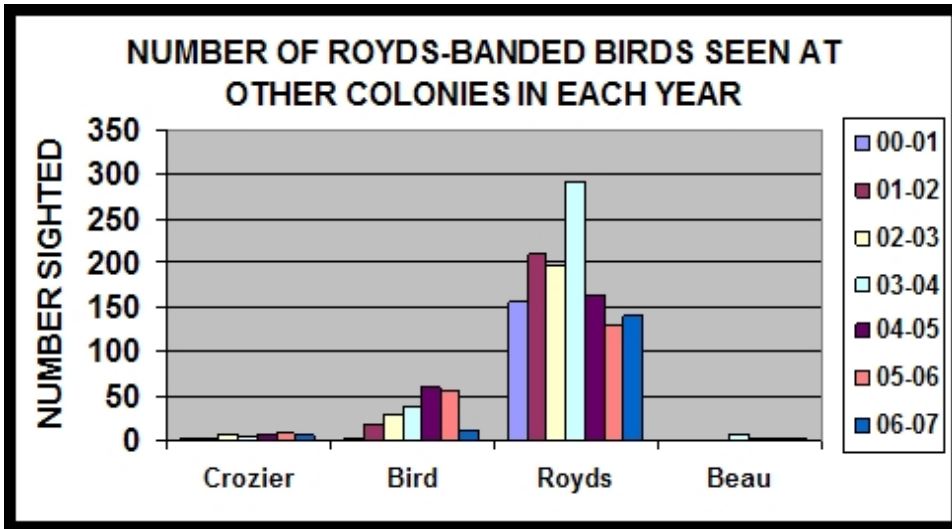
Banding is a very common method for marking birds. For Adélie Penguins, a small metal band is placed around the left wing at the shoulder of the bird. The band has a five digit number etched on it and is readable with field binoculars.



We work at 4 colonies in the Ross Sea: Capes Crozier, Bird and Royds on Ross Island, and the single colony on Beaufort Island. As an example, at the end of the 2006-07 summer we banded 400 chicks at Cape Royds. The bands had numbers 04561 to 04960. Our computer stored these numbers and when we see these birds again as adults we will know they hatched at Cape Royds during the 2006-07 season. The same would be true for chicks that we banded at the other colonies, which have a different set of numbers. These groups of birds become part of our sample population, including all the birds banded in previous years at this and other colonies. We use the data collected from these known groups to make assumptions about the entire population.

It may take 2-4 years before we will see a banded bird again, as that is how long it takes before Adelle Penguins come ashore to colonies after growing up at sea. For a long time it was thought that Adélie Penguins always return to their natal nesting ground. This idea was based on banding studies during a period of little climatic change. Since then, and because of rapidly changing climate, we have learned that sometimes penguins switch colonies to breed. For instance this year (2007-08), 50 penguins that were banded at Cape Royds are nesting at Cape Royds, but so are 12 Royds-banded penguins nesting at Cape Bird! Two birds from Cape Bird have visited Cape Royds, but neither stayed to nest. One bird banded at Cape Crozier is nesting at Cape Royds. Banding tells us how birds move between colonies and at what rate, whether the same number of penguins move every year or whether the rate changes.





Here are the results of searching for bands at Cape Royds for 7 different years beginning in the summer of 2000-01 (November 2000 to February 2001). You can see that most Royds-banded penguins were seen again at Cape Royds. Some, however, were seen at 3 other colonies, the most being seen at Cape Bird which is the closest other colony to Royds (25 km away).



It is not easy to keep track of penguins with bands. This person (arrow) is searching through all these penguins looking for banded ones. There are 20 banded penguins somewhere in this picture. We can not walk among the penguins, because that will disturb them; so the person has to remain at the edge of the penguin groups scanning with eyes and binoculars. It takes a lot of walking in a day to search for banded penguins.

When a bird shows up at a colony we use binoculars to read the band number; if it breeds (it or its mate lays eggs) we mark its nest with a plastic tag nailed into the permafrost. Checking with the computer records we know how old the bird is and where it hatched. These are "known-age-birds" and looking for them, and keeping records on what they are doing, is a large part of what we do. For instance a 12-year-old female (bottom of last page) has shown up this year at Royds at the same nest she has had for the last 5 years. With her mate, she has always successfully raised 2 chicks at this nest and was hatched close by herself. We would only know this story because we can identify her from the band. This is just one bird, but added to the stories of all the known-age birds, we can create a story for the entire population.

Using the band data from all the colonies, we piece together a picture, or model, of the entire population and from this information figure out why each colony is growing or declining. As with all populations, the four events that affect the size of the population are the number of chicks that fledge, deaths of adults between breeding seasons, immigration and emigration. These factors change with age, for instance, older parents tend to fledge more chicks



In this picture there are three penguins, each with a band on its wing or flipper. These were put on when these penguins were chicks in a previous year. The other 5 penguins in this picture do not have bands.

than younger ones, and younger penguins move to other colonies much more than do older penguins. This is why we need to know age. In addition to these factors, the number of chicks that fledge in a colony is determined by the number of adults who show up, the proportion who pair and produce eggs, and the number of nests that successfully raise chicks. Banding and detailed records of each banded birds' activities allow us to determine each one of these factors.



Be a field researcher. Can you count how many penguins there are in this photo? How many are lying on nests? Can you find the three banded penguins? Can you see the yellow nest tag by one of them?

We search and search and search for banded penguins every year: walking, walking, and walking. Then we keep very detailed records of what we find. Here are some examples of what our banding data has told us. Eight of every ten (80%) chicks that fledge in any year will not reach the age of 2 years. Most chicks that leave the colony will end up as food of leopard seals and only those who are lucky enough to escape learn to avoid these seals. We have never seen a penguin that is younger than 2-years-old at a colony. The youngest birds remain at sea learning about leopard seals, among other things.

This is important information in understanding growth and decline of a population. If 2 out of every 10 (20%) banded chicks return to Cape Royds every year and the same percentage of banded birds disappear from one year to the next, then the population should not be growing. If the population is growing, then other factors must be involved. It is worthy to find out what these other factors might be. In this case, a logical choice would be that birds are emigrating to other colonies. We would know this by banding and searching at the other colonies (which we do).

Climate change has been forcing penguins to move. We would then wonder why they are moving, which would lead to a bunch of other questions.....see sections on Climate Change and Colony History.

