AGEING TECHNIQUES AND AGE STRUCTURE OF A MID-WINTER ROOST OF ANTARCTIC TERN

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The Antarctic Tern *Sterna vittata* is a winter visitor to South African shores occurring mainly in the southwestern Cape and around Algoa Bay in the Eastern Cape Province (Brooke *et al.* 1988). The origins of these visitors are not well established although two birds ringed at Dyer and Dassen Islands were recovered on Gough and Kerguelen Islands respectively (Williams 1997), suggesting that both nominate *vittata* and the race *tristanensis* visit South Africa (Murphy 1938). There is, however, a possibility that other southwest Atlantic races may also occur. Sporadic ringing of relatively small numbers of birds has taken place since 1951, but to date nothing appears to have been published on ageing and sexing techniques, biometrics or primary moult of Antarctic Terns in their winter quarters.

We visited Bird Island (33°50'S, 26°17'E), Eastern Cape Province, during the period 20-24 July 1998 and caught 67 birds from which sufficient information was gathered to establish tentative ageing techniques and hence enabling the age structure of the Bird Island population to be determined. The birds roosted at three sites on the island but only at the beach roost were birds captured, as the other two roosts were closely associated with a breeding colony of Roseate Tern *S. dougallii*. From careful field observations, this association was not considered to affect the age structure of the Antarctic Tern flocks in any way. First year birds are easily separated by their brown barred mantle and white underparts. We recorded wing length, where there was no breakage or abrasion of the outer primaries; bill length from the crown feathers; bill depth at the gonys; longest and shortest tail feathers to give tail fork, where tail was not in moult; body mass; a breeding crown index together with crown moult activity; underpart colour and primary moult. Bill colour appears to be useful only in distinguishing between first year or early second year birds and those older and needs to be used in conjunction with other features. From the plumage detail and primary moult, it was possible to separate birds into four age classifications, namely, first, second and third year and adult. The wing, bill and tail measurements will not be considered further here as they play a relatively minor role in ageing. At this stage the biometric data is too limited for adequate separation of the sexes which is also not possible on plumage detail. Two adult birds were classified as female, based on their widely parted pelvic bones but birds with narrow pelvic gaps could not be safely determined as to sex as the pelvic gap of the female usually closes some months after the breeding season. It is thought, however, that the pelvic gap of females closes less with age (AJT pers.obs).

SIGNIFICANT FEATURES

Bill colour

First year: black.

Second year: black, when underparts still white. Changing to varying degrees of red and black during the year; very occasional individuals have totally red bills.

Third year: various combinations of red and black.

Adult: usually red but birds with completely black bills with a hint of red on the edges do occur. This may or may not be seasonal.

Crown cap

First year: white frons to mid-crown, streaking slightly into remainder of grey-black rear crown and nape.

Second year: similar to first year but some more advanced birds may show a few dark spots on white fore crown.

Third year: usually showing a few or more darker spots in white forepart of crown. Variable amounts, well under 50% coverage.

Adult: full black cap but often with a scattering of small white feathers on fore crown. The cap does not appear to be completely moulted out during the winter.

Cheek stripe

First year: none.
Second year: none to gradual shading from white below cap to pale grey of sides of neck.
Third year: shading from white to medium to dark grey of sides of neck more rapid
Adult: clearly defined fairly narrow white cheek stripe between black cap and dark grey of neck.

Underparts

First year: white.
Second year: variable, from white through gradually increasing pale grey to mottled white, pale and medium grey.
Third year: mottled medium and dark grey.
Adult: dark grey, sometimes with a little medium grey mottling on upper breast (these latter may be fourth year birds).

Primary moult

First year: may drop first (inner) primary in July. Thereafter moulting from four to six (usually five) inner primaries before suspending moult for return migration. The outer primaries are then replaced in the breeding areas. The contrasting age of these inner primaries with the much newer/fresher outer primaries on second year birds leads to this conclusion.

Second year: although moulting inner primaries, this age class is identifiable by freshish outer primaries and, where these are still visible, by contrasting older inner primaries. When no contrasting feathers are present, there is a problem in distinguishing some possibly "precocious" second year birds from possibly "retarded" third year birds, as some apparent third year birds on other features have fairly fresh outer primaries.

Third year: usually a little more advanced in their primary moult and usually have many more abraded or broken outer primaries (but see comments under second year).

Adults: variable; some birds have ten fresh primaries whilst others are replacing two to five inner feathers again.

Two birds showed a contrast between newer outer feathers and preceding middle feathers indicating a previous suspended moult. This variability may be individual or age related.

At this stage the above must be treated as tentative although our results do show that it appears to be possible to age the Antarctic Tern with a fair degree of certainty provided all of the above factors are taken into consideration. Much further detailed work will be carried out, hopefully from 1999, throughout the season in an attempt to clarify certain ambiguities. Unfortunately this is a difficult bird to study as it is very likely that the populations are highly nomadic in winter quarters and it is suggested that only a small proportion ever visit inshore roost sites at any one time (Brooke *et al.* 1988), therefore retraps within and between seasons are likely to be very few.

Using the above as a guideline, the age structure of the sample catch made in July appears as follows:

First year: 1
Second year: 16
Second/third year: 4
Third year: 38
Adult: 8

A very clear bias towards the immature age groups is obvious here, while the very low number of first year (juvenile) birds was also reflected in a count made on the 24th when some 18 000 birds were carefully scanned with the aid of a telescope and only seven of this conspicuous age class seen. Brooke *et al.* (1988) made mention of the fact that few juveniles were seen in the southwestern Cape, although ringing studies at Cape Recife outside Port Elizabeth in 1971 by AJT, showed a high proportion of first years (43%) captured during the period August to November. Clearly much more work needs to be carried out throughout the season both in the Eastern and Western Cape Provinces.

Further, it is highly likely that some birds may start to breed in their third year (do these assume full adult plumage?) while the majority probably do not breed until their fourth year or even older, as is the case with the Arctic Tern *S. paradisaea* (Roselaar *In* Cramp 1985). Thus the potential variability of the age at which breeding may

commence, may lead to some of the plumage ambiguities noted above.

Further work needs to be done on the timing and occurrence of the various races in our waters, but the careful use of a suitable grey colour chart will be necessary for use on birds in the hand. Certainly, dark birds of the nominate race were present on Bird Island and, subsequently, a very pale bird was seen at Cape Recife, possibly relating to the South Shetlands form *gaini*.

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IN PURSUIT OF MY LICENCE

Sandra Dantu
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"Need someone to help you with the walk-in traps, Mark? Ask Sandra, she's already offered to help," says Rod Braby, Nature Conservation Officer.

So there I was – in the company of a long-haired ex-hippie from Gauteng, in a beat-up old Landie, off to my first exposure to this disease called bird ringing.

At the Saltworks there were waders in the traps, but there was mud between us and them, and this mud was already oozing between my toes. The next obstacle was putting my hand into the trap and actually touching a bird! "Don't they bite," I squeaked.

The reward for extracting my first wader from a walk-in trap was a palm full of wader poo. The next deposit was on my clothes. So that's what a Curlew Sandpiper looks like when it's not enshrouded in Atlantic Ocean mist.

Watching Mark process that first group of waders, I felt the disease take hold. Suddenly it didn't matter about my dirty hands, feet and clothes. I wanted to learn this skill too. Little did I know what I was getting myself into ....

Ankle-deep in mud, knee-deep in sludgy salt crystals, rubber-duck trips on Walvis Bay lagoon, enduring the heat at the Spitzekoppe to be able to mistnet a few birds in the early morning and late afternoon. Dirty hands were the least of my problems! "Look Mark, a Pied Barbet – *EINA*!" "Careful, they bite."

With the end of my training almost in sight, we attended the Cintsa workshop. I then realised that my case of this disease is relatively mild. It can become terminal! At about the same time, I met James Harrison and developed a complication: NERCS. Yet more skills to learn, along with all the theory.

And now, many months down the line, I am a Stone Chat in SAFRING terms.

Thank you Mark.
