



puzzling prions

One of the more surprising sea-bird discoveries in the past decade, at least in this part of the world, was the revelation that two species of prions breed on Gough Island (Ryan 2014, *African Birdlife* 2(4): 10–11). Until 2011, we thought that the Broad-billed Prion *Pachyptila vittata* was the only prion that bred on the island, as is the case at the Tristan da Cunha archipelago, 380 kilometres farther north.

Sylvain Dromzée and Karen Bourgeois, who spent a year on Gough from September 2011 to October 2012, noticed that birds breeding in some parts of the island had narrower bills than the birds breeding around the weather

above Prion identification at sea is extremely tricky. The bird on the left shows the steep, bulbous forehead and large bill typical of a Broad-billed Prion. The centre bird also has a blackish bill, contrasting with the blue lower mandible – a supposed character of Broad-billed Prion. It appears to have a paler head than the bird on the left, but this could just be a result of different lighting. However, when it turns towards the camera (on the right), the bill can be seen to be narrower and the bill sides and tip are actually blue-grey. I think that this is a MacGillivray's Prion, but there remains some uncertainty.

station. Subsequent observations confirmed that these 'medium-billed' prions bred three months later than Broad-billed Prions at Gough, providing a plausible mechanism for two such similar species to co-occur.

The new species is very similar in terms of bill structure to the St Paul Prion *P. macgillivrayi*. This species, which was once abundant at Amsterdam and St Paul islands in the south-central Indian Ocean, has been hard hit by introduced rats and is now largely confined to a small stack off St Paul. Its taxonomy has been much debated, being bounced back and forth between being a large race of Salvin's Prion *P. salvini* or a small race of Broad-billed Prion.

Genetic evidence confirms that the birds on Gough are closely related to the St Paul birds (and the extinct population on Amsterdam) and both are sister to the Broad-billed Prion, whereas Salvin's Prion is closer to Antarctic Prion *P. desolata*. Indeed, a recent paper by Juan Masello and colleagues (2019, *Molecular Biology and Evolution* 36: 1671–1685) suggests that Salvin's Prion evolved as a result of hybridisation between Antarctic and Broad-billed prions. The Gough birds are now treated as part of MacGillivray's Prion, which

is listed as Endangered because almost all chicks hatched on Gough are killed by introduced house mice. This unhappy situation will change if the planned eradication attempt succeeds in removing mice from Gough Island.

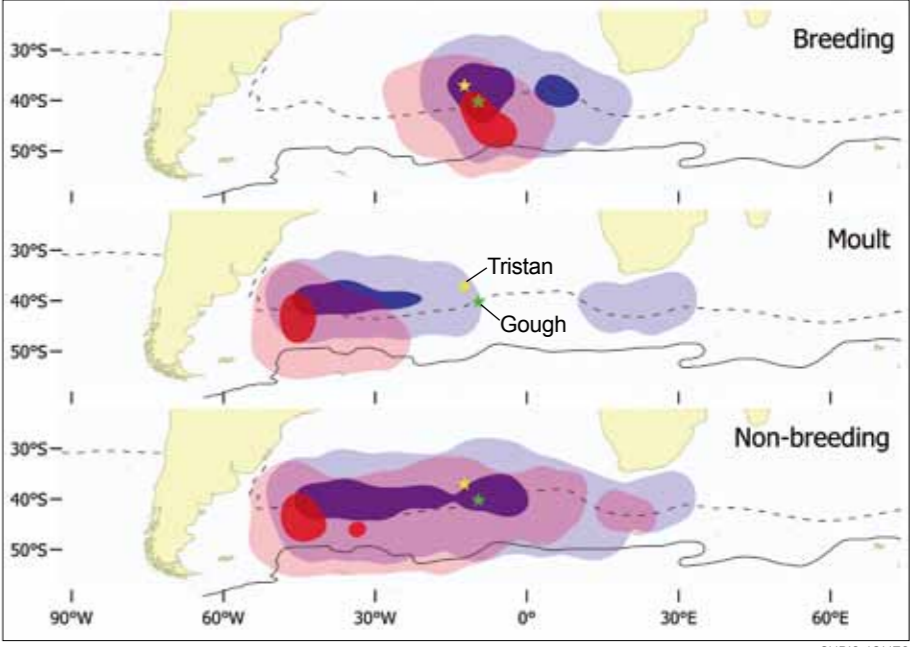
Most prions are notoriously difficult to identify at sea and so the recognition of yet another species in the Slender-billed–Antarctic–Broad-billed continuum is bound to challenge birders in the South Atlantic and Indian oceans. The conventional wisdom is that Broad-billed Prions can be distinguished from smaller species by their blackish bill, but many of the birds breeding at Tristan and Gough have bluish sides to the upper mandible. At present, probably the only way to tell them apart is to get really good images of birds showing bill width, which might allow 'typical' individuals to be identified. But with the overlap in bill width between the largest MacGillivray's and smallest Broad-billed Prions, some individuals will be impossible to identify.

A new study by Chris Jones and colleagues (2020, *Marine Biology* 167: 45) helps birders by giving some idea of where they are most likely to encounter the two species. Chris's team deployed miniature geolocator loggers attached

to leg rings onto prions breeding at Gough and Tristan in 2014/15. The records of light levels the loggers store allow us to estimate where the birds spend the year – provided we can catch them again the following breeding season to recover the loggers. This is easier said than done at Gough, where there are still several million prions, many of which share burrows.

In the end, the team recovered loggers from eight MacGillivray's Prions and 13 Broad-billed Prions (nine from Gough and four from Tristan). They found that MacGillivray's Prions tend to forage farther south and west than Broad-billed Prions. As might be expected, both species were confined to areas close to the breeding colonies during the summer breeding season, although a few Broad-billed Prions did range east as far as the waters south of Africa at this time (possibly after failed breeding attempts).

Soon after breeding, both species undergo a three- to four-month wing moult, when they spend roughly half the amount of time in flight than when they are not moulting. Most individuals of both species moult in the southwest Atlantic, between 30 and 50 °W, although a few Broad-billed Prions moult south of Africa. After moulting, they range widely throughout the South Atlantic, but only Broad-billed Prions enter African waters. However, one MacGillivray's Prion ventured south of Africa.



CHRIS JONES

Broad-billed Prions breed from August to November and moult from November to February, whereas MacGillivray's Prions breed from November to February and moult from February to May. Perhaps the most interesting finding of Chris's study was to confirm that the annual cycle of Broad-billed Prions on Gough Island is two to three weeks earlier than the birds at Tristan. This is probably a way to reduce competition between the two species where they breed together.

Chris tracked only a small number of adult birds; increasing the sample size will doubtless increase their known range. And juveniles and immatures most probably disperse more widely than adults. But at this stage we have no definite evidence of MacGillivray's Prions entering southern African waters (within 200 nautical miles of the continent). Claiming one based on observations at sea will be very difficult, because south of Africa you not only have to make the case that the bill is too narrow for a Broad-billed Prion but also too broad for a Salvin's Prion! To confirm the species for the southern African region we'll either have to track more birds or confirm the identity of a beached bird using genetic markers.

PETER RYAN



PETER RYAN (4)

top Distribution of Broad-billed Prions (from Gough and Tristan, blue) and MacGillivray's Prions (from Gough, red) during their breeding, moult and non-breeding periods. Dark shading shows core ranges; pale shading reflects the total ranges.

above Although Broad-billed Prions are supposed to have blackish bills, this pair breeding on Inaccessible Island both show pale sides to the bill.