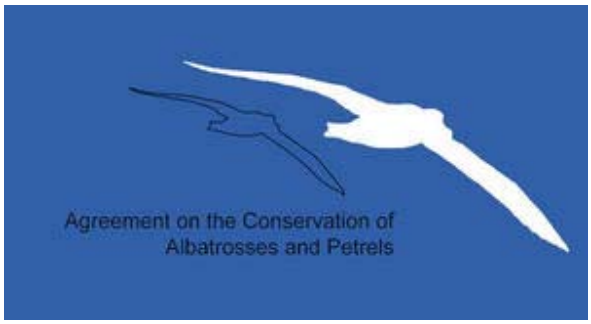

Secretariat provided by the Australian Government

Scientific Meeting

Hobart, Australia, 8-9 November 2004

Agenda Item No. 4
ACAP/ScM1/Doc.8
A paper by the Australian Delegation

The need for the Parties to the Agreement on Albatrosses and Petrels (ACAP) to establish a robust, defendable and transparent decision-making process for the construction and maintenance of their species lists

The need for the Parties to the Agreement on Albatrosses and Petrels (ACAP) to establish a robust, defendable and transparent decision-making process for the construction and maintenance of their species lists

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Purpose of Paper

Conservation policy and scientific communication depend heavily on species lists because such lists are considered accurate representations of contemporary biodiversity (Isaac *et al.* 2004). Species lists influence conservation policy and must therefore reflect robust, thoughtful and defendable taxonomic decisions that were based on a thorough assessment of all relevant data. In this brief paper we explain why current species lists for albatrosses and petrels lack consensus and highlight the need for the Parties to the Agreement for the Conservation of Albatrosses and Petrels (ACAP) to address this issue proactively.

Taxonomy of Albatrosses and Petrels

The taxonomy of albatrosses and petrels has always been problematic. Over 80 albatross taxa have been formally described since the mid 1700s (Robertson and Nunn 1998) often based on specimens collected at sea that could not be assigned to breeding locations. Later many of these 'new taxa' were found to be juvenile forms of previously described species and the at-sea collection also generated a very prolonged debate over the precedence of scientific and common names (e.g. Medway 1993; Robertson and Gales 1998; Robertson 2002).

In addition to the problem of ambiguous museum collections, the identification of species boundaries among albatrosses and petrels is further confounded by the several factors. Firstly, Procellariformes spend most of their time at sea and often breed in remote locations. Thus studies of these species are few and data on the breeding behaviour, at-sea distribution and foraging ecology of most species is often lacking (Brooke 2004). Secondly, strong natal philopatry is thought to be characteristic of most petrels (Warham 1990). This precludes the recognition of genuine physiological or behavioural barriers to gene flow because contact between individuals from disparate populations is rare. Finally, petrels (and albatrosses in particular) show unusually low levels of genetic divergence even between what appear to be very different species (Nunn *et al.* 1996; Nunn and Stanley 1998). This inevitably reduces the power of genetic studies to delineated species boundaries among more closely-related taxa (Burg and Croxall 2001; Abbott and Double 2003b; Burg and Croxall 2004). But,

it must be remembered that our understanding of many albatross and petrel species is constantly improving. New data from long-term demographic studies (e.g. Weimerskirch *et al.* 1997; Croxall *et al.* 1998; Cuthbert *et al.* 2003; Nel *et al.* 2003), from studies of foraging ecology through the application of satellite tracking technology (e.g. Weimerskirch *et al.* 2000; Hedd *et al.* 2001; Gonzalez-Solis *et al.* 2002; Xavier *et al.* 2004), and molecular genetic analyses (e.g. Burg and Croxall 2001; Abbott and Double 2003a; Abbott and Double 2003b; Burg and Croxall 2004) are all likely to influence taxonomic decision-making process and potentially the content of species lists.

Much of the present taxonomic confusion associated with albatrosses was initiated by a phylogenetic study by Nunn *et al.* (1996). Prior to this study the number of albatross species was considered to be 14. However, using data from Nunn *et al.* (1996) and other behavioural and morphometric data, Robertson & Nunn (1998) proposed a new 'interim' taxonomy which recognised 24 albatross species. Unfortunately the taxonomic decisions presented in their book chapter were not always supported by published, peer-reviewed scientific data and thus much controversy has surrounded the decisions therein. Following the Robertson & Nunn's publication there has been no consensus in the number of albatross species among scientists, governments or conservation organisations. For example of the two most recent books on albatrosses, one described 24 species (Shirihai 2002) whereas the other recognised only 21 (Brooke 2004). Similarly, Birdlife International lists 21 albatross species (www.birdlife.net) whereas the preliminary ACAP species lists are based on two taxonomies of 14 and 24 species (www.acap.aq). These inconsistencies reflect the lack of consensus in the scientific literature. Only recently a highly-questionable paper by Penhallurick and Wink (2004) has argued for lumping all of the species promoted by Robertson & Nunn (1998), whereas others support the recognition of at least some of these 'new species' (Burg and Croxall 2001; Abbott and Double 2003a; Burg and Croxall 2004).

Achieving Taxonomic Consensus

In our opinion, complete taxonomic consensus is an unachievable goal. However, we believe that the current taxonomic confusion primarily exists not because of a paucity of good biological data, but rather a combination of two other factors. First, a number of highly influential papers have either side-stepped rigorous peer-review through publication as books or book chapters, or in some cases the peer-review process has failed. Thus, less-than-robust taxonomic recommendations have been published in the scientific literature and been replicated in derivative secondary sources such as handbooks and field guides. Secondly, scientists, government departments and conservation bodies have adopted particular, and often very different taxonomies, without adequate justification.

This apparent lack of scientific rigour and taxonomic consistency was recognised by delegates at the recent International Albatross and Petrels Conference in Montevideo, Uruguay. At a meeting to discuss taxonomic issues chaired by MD, attendees wrote a submission encouraging ACAP to address these problems 'through the establishment of a transparent, scientifically

defendable and highly consultative listing process. The process must promote taxonomic stability but allow revision when robust peer-reviewed studies suggest that amendment is necessary.'

We too endorse this view and recommend a model similar in structure to that described by Helbig *et al.* (2002) of the taxonomic sub-committee of the British Ornithologists' Union. In their paper they not only publicly justify the adoption of a particular species concept but also detail the decision-making process applied by the sub-committee. This organisation therefore has a clear strategy and transparent process run by a panel of experts who can guard against poor science yet can quickly assimilate influential studies while considering the inevitable limitations of species lists (Isaac *et al.* 2004).

Recommendation

It seems highly likely that ACAP will drive international conservation policy in this high profile group of seabirds, and therefore other conservation and governmental organisations are likely to adopt the species lists constructed by ACAP. So to establish ACAP's taxonomic credibility and to promote good science and good conservation, we suggest that it is essential for ACAP to establish a working group or committee whose specific aim is to construct a consultative, transparent and scientifically justifiable listing process.

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