TAXOMONY WORKING GROUP REPORT TO THE SECOND ADVISORY COMMITTEE MEETING – ANNEX 5 TO AC2 MEETING REPORT

JUNE 2006

Summary

This report describes the decision-making guidelines (Attachment One) adopted by the Taxonomy Working Group and the application of these guidelines to three pairs of taxa:

1. Gibson's and Antipodean albatrosses (*Diomedea antipodensis/gibsoni*)
2. Buller's and Pacific albatrosses (*Thalassarche bulleri/platei*)
3. Shy and white-capped albatrosses (*Thalassarche cauta/steadi*)

We conclude that available data do not warrant the recognition of Gibson's and Antipodean albatrosses or Buller's and Pacific albatrosses at the specific level. We recommend the adoption of a subspecific nomenclature for these taxa (*cf.* Table One). In contrast, data suggest shy and white-capped albatrosses are divergent and diagnosable and therefore, following the taxonomic guidelines, warrant recognition at the specific level (*cf.* Table One).

We also outline future work for the Taxonomic Working Group and propose that ACAP establish a database to store primary morphometric and plumage data to facilitate the characterisation of biological diversity, the identification of bycatch specimens, the taxonomic process, and the long-term storage of valuable data.

Background

Article IX 6 (b) of the Agreement on the Conservation of Albatrosses and Petrels (ACAP) requires the Advisory Committee to "endorse a standard reference text listing the taxonomy and maintain a listing of taxonomic synonyms for all species covered by the Agreement". This reflects the current state of flux in the taxonomy of Procellariiformes and, in particular, of albatrosses.

Resolution 1.5 of the First Session of the Meeting of the Parties (MOP1) to ACAP provides for the establishment by the Advisory Committee of a Working Group on the taxonomy of albatross and petrel species covered by the Agreement.

The objective of the Working Group was to establish a transparent, defensible and

highly consultative taxonomic listing process. The Scientific Meeting that preceded the first meeting of Parties (MOP1; ScM1; Section 4.3) stated that "…given the importance that species lists have upon conservation policy and scientific communication, taxonomic decisions must be based on robust and defensible criteria. It is important to resolve differences in a scientific and transparent manner with appropriate use of peer-reviewed publications."

It was agreed at the Scientific Meeting (MOP1) that Dr. Michael Double (Australia) would chair the Working Group (WG).

The Scientific Meeting (MOP1; ScM1; Section 4.6) recommended, "…as a first step, this [Taxonomic] Working Group…should aim to reach consensus about the three main contentious albatross species splits; namely *Diomedea antipodensis/gibsoni, Thalassarche cauta/steadi* and *T. bulleri/platei*."

Introduction

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. Currently, species lists for albatrosses and petrels lack consensus and this highlights the need for the Parties to the Agreement for the Conservation of Albatrosses and Petrels (ACAP) to address this issue.

The taxonomy of albatrosses and petrels has always been problematic. Over 80 albatross taxa have been formally described since the mid 1700s (Robertson & Nunn 1998) often based on specimens collected at sea that could not be assigned to breeding locations. As knowledge of breeding locations and plumage maturation improved many of these 'new taxa' were recognised to be previously described species. This in turn led to prolonged debates over the number of species and the precedence of scientific and common names (e.g. Medway 1993; Robertson & Nunn 1998; Robertson & Gales 1998; Robertson 2002).

The identification of species boundaries among albatrosses and petrels is further confounded by three other factors. First, Procellariiformes 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 are lacking (Brooke 2004). Second, 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. Third, 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 & Stanley 1998). This inevitably reduces the power of genetic studies to delineate species boundaries among more closely-related taxa (Burg & Croxall 2001; Abbott & Double 2003b; Burg & Croxall 2004). But our understanding of 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.* 2003a; 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; González-Solís *et al.* 2002; Birdlife International 2004; Xavier *et al.* 2004), molecular genetic analyses (e.g. Burg & Croxall 2001; Abbott & Double 2003b; Abbott & Double 2003a; Burg & Croxall 2004) and morphometric analyses (e.g. Cuthbert *et al.* 2003b; Double *et al.* 2003) are all likely to influence the taxonomic decision-making process and potentially the content of species lists.

Much of the present taxonomic confusion surrounding albatrosses followed the publication of 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 Robertson & Nunn's publication there has been no consensus over the number of albatross species among scientists, governments or conservation organisations. For example, of the two most recent books that discuss albatross taxonomy, 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). Only recently Penhallurick and Wink (2004) reviewed the genetic data published by Nunn *et al.* (1996) and argued the data supported the recognition of only 13 albatross species. The scientific logic adopted by Penhallurick & Wink (2004) was criticised by Rheindt & Austin (2005) who argued that later genetic studies (e.g. Burg & Croxall 2001; Abbott & Double 2003a; Burg & Croxall 2004) not considered by Penhallurick & Wink (2004) support the recognition of at least some of the 'new species' proposed by Robertson & Nunn (1998).

Taxonomic consensus is probably an unachievable goal. However, we believe that the current taxonomic confusion primarily exists due to a combination of three factors. First, as explained earlier, the identification of species boundaries among albatrosses and petrels is very difficult. Second, the veracity of the peer review process is variable and the process itself is fallible. Thus, unfortunately, 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. Third, 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 inconsistency was recognised at the latest International Albatross and Petrels Conference held in Montevideo, Uruguay in 2004. Delegates to this conference endorsed 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.' Acting on recommendations in this submission, Resolution 1.5 of the First Session of the Meeting of the Parties (MOP1) to ACAP provided for the establishment of a Working Group (WG) to review the taxonomy of all current species listed by the Agreement (Annex 1). The current membership of this WG is presented in Attachment Three.

The first action for this WG was to agree on a set of guidelines for taxonomic decision-making (Attachment One). These guidelines are based on those described by Helbig *et al.* (2002) of the taxonomic sub-committee of the British Ornithologists' Union and justify the adoption of a particular species concept and make the decision-making process transparent. They facilitate the assessment and assimilation of potentially influential studies while guarding against poor science. The guidelines also consider the inevitable limitations of species lists and the benefits of taxonomic stability.

The Scientific Meeting (MOP1; ScM1; Section 4.6) recommended, "…as a first step, [the Taxonomic] Working Group…should aim to reach consensus about the three main contentious albatross species splits; namely *Diomedea antipodensis/gibsoni*, *Thalassarche cauta/steadi* and *T. bulleri/platei*." In this report we summarise and assess

the scientific data relevant to these three taxa groups and suggest that data does not currently support the recognition of Gibson's and Antipodean albatrosses (*Diomedea antipodensis/gibsoni*) or Buller's and Pacific albatrosses (*Thalassarche bulleri/platei*) at the specific level. We do however recognise that data suggest shy and white-capped albatrosses are divergent and diagnosable and therefore, following the taxonomic guidelines, warrant recognition at the specific level. The justification for these decisions is presented below. The updated list of taxa recognised by the ACAP Taxonomy Working Group is presented in Table One.

Justification of taxonomic decisions:

Antipodean and Gibson's Albatrosses

For convenience Antipodean and gibson's albatrosses are sometimes referred to simply as *antipodensis* and *gibsoni* respectively.

Recent taxonomic history

Taxonomic debate has long surrounded the wandering albatross (exulans-type) group. In 1983 Roux et al. (1983) proposed that the exulans-type albatross breeding on Amsterdam Island in the Indian Ocean was a separate species (*Diomedea amsterdamensis*). Later Warham (1990), in his seminal work on petrels, relegated *amsterdamensis* to a subspecies and recognised four others: *Diomedea exulans exulans*, *D. e. chionoptera*, plus two others later described as *D. e. antipodensis* and *D. e. gibsoni* by Robertson & Warham (1992). Following rules of taxonomic precedence Medway (1993) argued that the large, high latitude forms should be named *D. e. exulans* (replacing *chionoptera*) while the smaller birds of the Tristan-Gough group be called *D .e. dabbenena (*replacing *exulans)*. Robertson & Nunn (1998) did not adopt this nomenclature when they recognised five species of wandering albatross (*Diomedea exulans*; *D. chionoptera*; *D. amsterdamensis*; *D. antipodensis* and *D. gibsoni*) but in the same book (Robertson & Gales 1998), Gales (1998) and Croxall & Gales (1998) follow Medway's (1993) nomenclature but also recognised five species (*Diomedea exulans*; *D. dabbenena*; *D. amsterdamensis*; *D. antipodensis* and *D. gibsoni*). Most relevant organisations and recent publications now recognise *Diomedea exulans*, *D. dabbenena* and *D. amsterdamensis* as full species (e.g. Shirihai 2002; Birdlife International 2004; Brooke 2004; but see Penhallurick & Wink 2004), however, the treatment of *D. antipodensis* and *D. gibsoni* currently varies between conspecifics, subspecies, allospecies and species (e.g. Holdaway *et al.* 2001; Shirihai 2002; Brooke 2004; Elliott & Walker 2005) .

Primary publications or reviews of data relevant to the taxonomy of Gibson's and Antipodean albatrosses

1. **Robertson & Warham (1992)** first proposed *Diomedea exulans gibsoni* (Auckland Islands) and *D. e. antipodensis* (Antipodes and Campbell Islands) as subspecies and provided descriptions of type specimens. They also presented a summary of Gibson Plumage Scores (Gibson 1967) for *antipodensis* (male: mean = 8.7 ± 1.6 (5.5 – 11.5), N = 43; female: mean = 4.4 ± 0.5 (4 – 6), N = 45) and *gibsoni* (male: mean = 14.2 ± 2.4 (10.5 – 19), N=12; female: mean = 10.2, ± 1.5 (7.5 – 12), N = 9) taken from birds on their breeding islands.
2. **Robertson & Warham (1994)** presented morphometric data from *antipodensis* and *gibsoni* sampled at their breeding locations. No formal statistical analysis was provided but measures from each taxon overlapped considerably within sexes for each body part.
3. **Nunn *et al.* (1996)** did not include DNA sequence data from either *antipodensis* or *gibsoni* in their analyses but provided convincing justification for splitting the genus *Diomedea* into *Diomedea*, *Thalassarche* and *Phoebastria*.
4. **Robertson & Nunn (1998)**, the highly influential book chapter proposing 24 albatross species, stated "the New Zealand Wandering albatrosses are diagnosable morphologically and ecologically as two distinct taxa (*gibsoni* and *antipodensis*)…". No evidence was provided to justify this statement or why these taxa should be recognised as species rather than subspecies.
5. **Nunn & Stanley (1998)** found a single base difference in 1143 base pairs of mitochondrial cytochrome b gene DNA sequence. Only one *gibsoni* and one

antipodensis sequences were examined. Given the level of divergence and the number of samples examined, this study provides little taxonomic information.

6. **Walker & Elliott (1999)** presented detailed morphometric data for *gibsoni* sampled at the breeding sites but no comparison was made to data from other *Diomedea*. They also summarised the laying period of *gibsoni* (29th Dec – 5th Feb; median 4th – 7th Jan) which they stated is "three weeks later than its near neighbour *D. e. antipodensis*". Data for *antipodensis* were not provided but this appears to be a mistake. Walker & Elliott (2005) report the median laying date of *gibsoni* to be three weeks earlier than *antipodensis* (see below).

7. **Cuthbert *et al.* (2003b)** primarily considered morphometric data from Tristan albatross (*Diomedea dabbenena*) and show they are distinct from high latitude *Diomedea exulans*. They also provided a simple summary of morphometric data for these taxa plus those for *gibsoni* and *antipodensis* from Onley & Bartle (1999) and Walker & Elliott (1999). Measurements for *gibsoni* and *antipodensis* were similar but difficult to assess without formal statistical analyses.

8. **Burg & Croxall (2004)**, in a study of mitochondrial control region DNA sequences, detected three distinct lineages within the Wandering albatross group. These lineages were concordant with *Diomedea exulans*, *D. dabbenena* and the New Zealand *Diomedea* (*gibsoni* and *antipodensis*). The Amsterdam albatross (*D. amsterdamensis*) was not included in this study. No fixed differences in the mtDNA sequences between *gibsoni* and *antipodensis* were found, but significant differentiation was discovered in population genetic analyses using microsatellite-based analyses. No structure was found among the disparate populations of *D. exulans* although not all island populations were included in this study. Based on these data, Burg and Croxall suggested *gibsoni* and *antipodensis* should be considered conspecifics.

9. **Walker & Elliott (2005)** reported the median lay date for *antipodensis* was between the 23rd and 26th Jan (range: 7th Jan – 17th Feb), three weeks later than *gibsoni* (Walker & Elliott 1999).

Assessment of diagnosibility (cf. Attachment One; Section3)

Based on data provided in the studies described above:

A. Same age/sex individuals of *gibsoni* and *antipodensis* **cannot** be distinguished by one or more qualitative differences.
B. Same age/sex individuals of *gibsoni* and *antipodensis* **cannot** be distinguished by a complete discontinuity in one or more continuously varying characters.
C. Same age/sex individuals of *gibsoni* and *antipodensis* **cannot** be distinguished by a combination of two or three functionally independent characters.

Decision

These taxa fail to meet any of the diagnosibility criteria described in Attachment One. We therefore recommend that these taxa do not warrant specific status. We do, however, recognise that: 1) little or no gene flow occurs between *gibsoni* and *antipodensis* (Burg & Croxall 2004), 2) that *antipodensis* tend to be darker than *gibsoni* (Robertson & Warham 1992) and 3) that it is likely *antipodensis* forage more frequently in the eastern Pacific whereas *gibsoni* tend to forage in the Tasman Sea (Walker *et al.* 1995; Nicholls *et al.* 1996; Birdlife International 2004).To acknowledge these biological characteristics and provide ACAP with a practical list of taxa that can facilitate the presentation of taxon-specific information we recommend that these taxa are recognised as subspecies (*cf.* Table One):

Diomedea antipodensis antipodensis (Antipodean albatross)
Diomedea antipodensis gibsoni (Gibson's albatross)

This nomenclature is justified by Burg & Croxall (2004) and Brooke (2004).

Comments

We acknowledge that those scientists who have worked most closely with these taxa advocate that they are treated as either subspecies (Walker & Elliott 1999) or, most recently, as species (Elliott & Walker 2005; Walker & Elliott 2005). The ACAP Taxonomy Working Group will carefully consider all future publications that describe the biology of these taxa and will revisit this decision when appropriate. To facilitate taxonomic decisions and, importantly, the identification of bycatch specimens or albatrosses at-sea, a detailed quantitative comparative analysis of morphometric and plumage (adult and subadult) data for these taxa would be highly valuable as would a detailed presentation of their foraging distribution.

Buller's and Pacific Albatrosses

For convenience Buller's and Pacific albatrosses are sometimes referred to simply as *bulleri* and *platei* respectively.

Recent taxonomic history

Robertson & Nunn (1998) proposed that the subspecies *Thalassarche bulleri platei* (Murphy 1936) breeding on the Chatham and Three Kings Islands and those breeding on the Solander and Snares Islands (*T. bulleri bulleri*) should be treated as distinct species (*T. platei* and *T. bulleri* respectively). *T. platei* is also referred to as *T. sp. nov.* because Robertson & Nunn (1998) suggested the type specimen for *T. platei* is in fact a juvenile *T. bulleri.*

Primary publications or reviews of data relevant to the taxonomy of Buller's and Pacific Albatrosses

1. **Nunn *et al.* (1996)** only included DNA sequence data from *bulleri* but provided convincing justification for the placement of Buller's Albatrosses in the genus *Thalassarche*. Similarly, no molecular data for *platei* were presented in Nunn & Stanley (1998)**.**
2. **Robertson & Nunn (1998)**, in justification for the recognition of two species, state "In the case of *T. bulleri* breeding is two months later at The Snares and Solander Islands than at the Chatham Islands (*T. platei*) and incubation stints are about three times the length." No primary data sources were cited to justify these assertions.
3. **Tickell (2000)** summarised data available for *bulleri* and *platei* (but no primary sources were cited) and showed that all measurements overlap considerably. To our knowledge no statistical analyses of morphometric data have been published for these taxa.

Assessment of diagnosibility (cf. Attachment One; Section3)

Based on data provided in the studies described above:

A. Same age/sex individuals of *bulleri* and *platei* **cannot** be distinguished by one or more qualitative differences.
B. Same age/sex individuals of *bulleri* and *platei* **cannot** be distinguished by a complete discontinuity in one or more continuously varying characters.
C. Same age/sex individuals of *bulleri* and *platei* **cannot** be distinguished by a combination of two or three functionally independent characters.

Decision

These taxa fail to meet any of the diagnosibility criteria described in Attachment One. We therefore recommend that these taxa do not warrant specific status. Very few data are

available for *T. platei* and currently there is little justification for recognition even at the subspecific level, however, appear widely accepted in the scientific literature (e.g. Marchant & Higgins 1990; Holdaway *et al.* 2001; Brooke 2004). At this stage we recommend that these taxa are recognised as subspecies (*cf.* Table One). We concede that this decision is highly questionable. However, genetic research currently being conducted at Victoria University, Wellington, N.Z. may shed light on the taxonomic standing of these taxa. Once published, we will consider the implications of this research and review these taxa again prior to the next Meeting of Parties. In he meantime we recommend they are listed as follows:

> *Thalassarche bulleri bulleri* (Buller's albatross)
> *Thalassarche bulleri platei* (Pacific albatross)

This nomenclature follows Brooke (2004). The nomenclature for *T. b. platei* is likely to change when an appropriate type specimen is formally described.

Comments

Very few comparative data are available for these taxa and there is a misconception that molecular data exists that justifies the recognition of these taxa as species (Shirihai 2002). To our knowledge no comparative molecular data, morphometric data and quantitative plumage descriptions are currently available. To facilitate taxonomic decisions and, importantly, the identification of bycatch specimens or albatrosses at-sea, a detailed quantitative comparative analysis of genetic, morphometric and plumage (adult and subadult) data for these taxa would be highly valuable as would a detailed presentation of their foraging distribution.

Shy and White-capped Albatrosses

For convenience shy and white-capped albatrosses are sometimes referred to simply as *cauta* and *steadi* respectively.

Recent taxonomic history

Prior to Robertson & Nunn (1998) these taxa were classified as either separate subspecies (*T. c. cauta* and *T. c. steadi*) or pooled as single subspecies (*T. cauta cauta*) within the shy albatross (*Thalassarche cauta*) complex (e.g. Marchant & Higgins 1990). Chatham albatrosses (*Thalassarche cauta eremita*) and Salvin's albatrosses (*T. c. salvini*) were also included in this complex. Robertson & Nunn (1998) elevated all four subspecies to specific status.

Primary publications or reviews of data relevant to the taxonomy of shy and white-capped albatrosses

1. **Nunn *et al.* (1996)** only included DNA sequence data from a *T. cauta* but provided convincing justification for the placement of shy albatrosses in the genus *Thalassarche*. Similarly, no molecular data for *steadi* were presented in Nunn & Stanley (1998)**.**
2. **Brothers *et al.* (1997)** used band recoveries and sighting of colour marked birds to show subadult (< five years old) *cauta* can venture as far as South African waters but adults were always recovered in Australian waters.
3. **Brothers *et al.* (1998)** used satellite telemetry to show adult *cauta* remain in southern Australian waters close to their breeding islands both inside and outside the breeding season (see also Hedd *et al.* 2001).
4. **Robertson & Nunn (1998)** justified the recognition of shy and white-capped albatrosses as follows: "*T. cauta* and *T. steadi* can be differentiated by wing morphometrics which do not overlap, though other differences are less clear cut." No

primary data sources were cited to justify this statement and was later shown to be false by Double *et al.* (2003).

5. **Ryan et al. (2002)** reported that of an estimated 19 – 30,000 seabirds killed by longliners in South African waters, 69% were albatrosses. Of these, approximately 64% were shy-type albatrosses. Equal numbers of adult and subadult shy-type albatrosses were present among those birds returned to port for identification. Later genetic analyses suggested that *steadi* dominate the shy-type albatrosses killed by longline fisheries operating in South African waters (100% *steadi*, N= 24, Abbott *et al.* in press).

6. **Double *et al.* (2003)** presented within-sex comparisons of morphometric data from *T. cauta* and *T. steadi* bycatch specimens identified using a DNA-based test (Abbott & Double 2003b). Of 10 body measurements, 6 were significantly different between *cauta* and *steadi* for both sexes. All measurements overlapped but in combination could be used to correctly identify approximately 90% (N=70) of specimens. Also yellow colouration at the base of the culmen was found in 86% of adult *cauta* specimens but was never recorded among adult *steadi*.

7. **Abbott & Double (2003a),** based on a study of microsatellite allele frequencies, report very strong population differentiation between *cauta* and *steadi* and suggest contemporary gene flow does not occur or is extremely rare.

8. **Abbott & Double (2003b)** used DNA sequencing of the mitochondrial control region to show *cauta* and *steadi* are very closely related. However, *cauta* and *steadi* did not share any of the 37 haplotypes (sequence types) recovered.

9. **Abbott *et al.* (in press)** used a DNA-based test to identify shy-type (*cauta* or *steadi*) bycatch specimens returned from Australian, South African and New Zealand fisheries. No *cauta* were detected outside Australian waters. Adult and subadult *T. steadi* were identified from Australian waters and all adult and subadults recovered from South African and New Zealand waters were *steadi*.

Assessment of diagnosibility (cf. Attachment One; Section3)

Based on data provided in the studies described above:

A. Same age/sex individuals of *T. cauta* and *T. steadi* **can** be distinguished by one or more qualitative differences.

B. Same age/sex individuals of *T. cauta* and *T. steadi* **cannot** be distinguished by a complete discontinuity in one or more continuously varying characters.

C. Same age/sex individuals of *T. cauta* and *T. steadi* **can** be distinguished by a combination of two or three functionally independent characters.

Decision

These taxa satisfy two of the diagnosibility criteria described in Attachment One: Section 3, Criterion A: taxa can be separated by a single qualitative trait (mitochondrial sequences); Section 3, Criterion C: using a combination of two independent traits (morphometric measurements and bill coloration) all adults can be accurately diagnosed. We also recognise that taxa have been shown to be genetically distinct and behave differently. Adult *steadi* disperse widely outside the breeding season and frequently reach South African waters. In contrast, adult *cauta* always remain close to their breeding islands. Also despite *steadi* being very common in the Australian waters close to the breeding colonies of *cauta*, no gene flow is detectable. We therefore recommend that these taxa warrant specific status. These taxa are recognised as follows (*cf.* Table One):

> *Thalassarche cauta* (shy albatross)
> *Thalassarche steadi* (white-capped albatross)

This nomenclature follows Robertson & Nunn (1998).

Comments

These studies clearly show that *T. cauta* and *T. steadi* have diverged recently in evolutionary terms but the fact that they are divergent is indisputable. This divergence, however, has not been manifested in a plumage difference immediately apparent to a human observer. This is, in our opinion, the primary reason why many are reluctant to recognise *cauta* and *steadi* either at the subspecific or specific level. In contrast, Chatham and Salvin's albatrosses (*T. eremita* and *T. salvini*) show a similar level of genetic divergence (Abbott & Double 2003b) to *cauta* and *steadi* but because plumage differences between adult are immediately apparent they are more commonly recognised as 'good species'. In our opinion this approach is inconsistent, anthropocentric, and will underestimate biological diversity. To facilitate later taxonomic assessments and, importantly, the identification of bycatch specimens or albatrosses at-sea, a detailed quantitative comparative analysis of subadult plumage for these taxa would be highly valuable as would a more detailed study of the foraging distribution of adult *steadi* and of subadults of both species.

Future work for the ACAP Taxonomy Group

No species list should necessarily be static and the ACAP Taxonomy Working Group will carefully consider all future publications that describe the biology of albatrosses and petrels and will revisit all decisions when appropriate.

This taxonomic process is not only useful for producing a practical, defendable and consistent list of species for ACAP but also to summarise available data and highlight gaps in our current biological knowledge. We therefore think that the WG should review the evidence supporting the specific status of all the following pairs of taxa before the next AC meeting (this list is not presented in any specific order):

1. Buller's and Pacific albatrosses
2. Northern royal albatrosses and southern royal albatrosses
3. Indian yellow-nosed albatrosses and Atlantic yellow-nosed albatrosses
4. Chatham albatrosses and Salvin's albatrosses
5. Northern giant-petrels and southern giant-petrels
6. Black petrels and Westland petrels
7. White-chinned petrels and spectacled petrels

These taxa were chosen from those taxa listed by ACAP because they are thought to be the most closely related taxon pairs not yet reviewed by the Taxonomy WG. Inclusion on this list does not imply that the WG suspects their current taxonomic status should be amended. However, the taxonomic status of these taxa has been questioned by others (e.g. Penhallurick & Wink 2004) and therefore it is prudent for the WG to review the taxonomic literature pertinent to these taxa so that ACAP's current species list is justifiable.

The Working Group will also question whether the rank of subspecies reflects genetic diversity in procellariiform seabirds (see review by Phillimore & Owens 2006) and, if so, develop taxonomic guidelines for the recognition of subspecific status.

This taxonomic process has also highlighted the benefits of access to primary data. In genetics, almost all published DNA sequences are submitted to a web-based, public, searchable database (e.g. www.ncbi.nih.gov). This approach allows data to be permanently available for review and re-analysis (e.g. Penhallurick & Wink 2004; Alderman *et al.* 2005), and no information is lost when researchers retire or data storage mechanisms become obsolete. A similar approach has been adopted by Birdlife

International who now archives extremely valuable satellite tracking data of procellariiform seabirds collected by 18 research groups from nine countries. We believe a similar approach is necessary for morphometric and plumage data. Such data cannot be fully presented in scientific presentations and information is inevitably lost when data are summarised. The Taxonomy Working Group suggest that ACAP should consider the development an archival database for morphometric and plumage characteristics of listed species and approach researchers to submit their data to this database. Such a resource will facilitate the characterisation of biological diversity, the identification of bycatch specimens, the taxonomic process, and the long-term storage of valuable data.

Attachments Two and Three include a revised TOR and WG workplan to be considered by the AC should the AC endorse the future work outlined above.

Table

TABLE ONE. PROPOSED STANDARD LIST OF TAXA TO BE RECOGNISED BY PARTIES TO THE AGREEMENT ON THE CONSERVATION OF ALBATROSSES AND PETRELS (ACAP)

FAMILY DIOMEDEIDAE ALBATROSSES

1	*Diomedea exulans*	Wandering Albatross
2	*Diomedea dabbenena*	Tristan Albatross
3	*Diomedea antipodensis antipodensis*	Antipodean Albatross
4	*Diomedea antipodensis gibsoni*	Gibson's Albatross
5	*Diomedea amsterdamensis*	Amsterdam Albatross
6	*Diomedea epomophora*	Southern Royal Albatross
7	*Diomedea sanfordi*	Northern Royal Albatross
8	*Phoebastria irrorata*	Waved Albatross
9	*Thalassarche cauta*	Shy Albatross
10	*Thalassarche steadi*	White-capped Albatross
11	*Thalassarche salvini*	Salvin's Albatross
12	*Thalassarche eremita*	Chatham Albatross
13	*Thalassarche bulleri bulleri*	Buller's Albatross
14	*Thalassarche bulleri platei*	Pacific Albatross
15	*Thalassarche chrysostoma*	Grey-headed Albatross
16	*Thalassarche melanophrys*	Black-browed Albatross
17	*Thalassarche impavida*	Campbell Albatross
18	*Thalassarche carteri*	Indian Yellow-nosed Albatross
19	*Thalassarche chlororhynchos*	Atlantic Yellow-nosed Albatross
20	*Phoebetria fusca*	Sooty Albatross
21	*Phoebetria palpebrata*	Light-mantled Albatross

FAMILY PROCELLARIIDAE - PETRELS

22	*Macronectes giganteus*	Southern Giant-petrel
23	*Macronectes halli*	Northern Giant-petrel
24	*Procellaria aequinoctialis*	White-chinned Petrel
25	*Procellaria conspicillata*	Spectacled Petrel
26	*Procellaria parkinsoni*	Black Petrel
27	*Procellaria westlandica*	Westland Petrel
28	*Procellaria cinerea*	Grey Petrel

Taxa considered in this report are shaded in grey.

References

Abbott, C. A., Double, M. C., Baker, G. B., Gales, R., Lashko, A., Robertson, C. J. R. & Ryan, P. G. (in press). Molecular provenance analysis for shy and white-capped albatrosses killed by fisheries interactions in Australia, New Zealand and South Africa. *Conservation Genetics*.

Abbott, C. L. & Double, M. C. (2003a). Genetic structure, conservation genetics, and evidence of speciation by range expansion in shy and white-capped albatrosses. *Molecular Ecology* **12**:2953-2962.

Abbott, C. L. & Double, M. C. (2003b). Phylogeography of shy and white-capped albatrosses inferred from mitochondrial DNA sequences: implications for population history and taxonomy. *Molecular Ecology* **12**:2747-2758.

Alderman, R., Double, M. C., Valencia, J. & Gales, R. P. (2005). Genetic affinities of newly sampled populations of wandering and black-browed albatross. *EMU* **105**:169-179.

Birdlife International (2004). 'Tracking Ocean Wanderers: the global distribution of albatrosses and petrels. Results from the Global Procellariiform Tracking Workshop, 1-5 September, 2003, Gordon's Bay, South Africa.' (Birdlife International: Cambridge UK).

Brooke, M. (2004). 'Albatrosses and petrels across the world.' (Oxford University Press: Oxford).

Brothers, N., Gales, R., Hedd, A. & Robertson, G. (1998). Foraging movements of the shy albatross *Diomedea cauta* breeding in Australia - implications for interactions with longline fisheries. *Ibis* **140**:446-457.

Brothers, N. P., Reid, T. A. & Gales, R. P. (1997). At-sea distribution of shy albatrosses *Diomedea cauta cauta* derived from records of band recoveries and colour-marked birds. *Emu* **97**:231-239.

Burg, T. M. & Croxall, J. P. (2001). Global relationships amongst black-browed and grey-headed albatrosses: analysis of population structure using mitochondrial DNA and microsatellites. *Molecular Ecology* **10**:2647-2660.

Burg, T. M. & Croxall, J. P. (2004). Global population structure and taxonomy of the wandering albatross species complex. *Molecular Ecology* **13**:2345-2355.

Croxall, J. P. & Gales, R. (1998). An assessment of the conservation status of albatrosses. In: 'Albatross Biology and Conservation' (Ed. G. Robertson & R. Gales.) pp. 46-65. Surrey Beatty & Sons: Chipping Norton.

Croxall, J. P., Prince, P. A., Rothery, P. & Wood, A. G. (1998). Population changes in albatrosses at South Georgia. In: 'Albatross Biology and Conservation' (Ed. G. Robertson & R. Gales.) pp. 69-83. Surrey Beatty & Sons: Chipping Norton.

Cuthbert, R., Ryan, P. G., Cooper, J. & Hilton, G. (2003a). Demography and population trends of the Atlantic yellow-nosed albatross. *Condor* **105**:439-452.

Cuthbert, R. J., Phillips, R. A. & Ryan, P. G. (2003b). Separating the Tristan albatross and the wandering albatross using morphometric measurements. *Waterbirds* **26**:338-344.

Double, M. C., Gales, R., Reid, T., Brothers, N. & Abbott, C. L. (2003). Morphometric comparison of Australian shy and New Zealand white-capped albatrosses. *Emu* **103**:287-294.

Elliott, G. & Walker, K. (2005). Detecting population trends of Gibson's and antipodean albatrosses. *Notornis* **52**:215-222.

Gales, R. (1998). Albatross populations: status and threats. In: 'Albatross Biology and Conservation' (Ed. G. Robertson & R. Gales.) pp. 20-45. Surrey Beatty & Sons: Chipping Norton.

Gibson, J. D. (1967). The wandering albatross (*Diomedea exulans*): Results of banding and observations in New South Wales coastal waters and the Tasman Sea. *Notornis* **14**:47-57.

González-Solís, J., Croxall, J. P. & Briggs, D. R. (2002). Activity patterns of giant petrels, *Macronectes* spp., using different foraging strategies. *Marine Biology* **140**:197-204.

Hedd, A., Gales, R. & Brothers, N. (2001). Foraging strategies of shy albatross *Thalassarche cauta* breeding at Albatross Island, Tasmania, Australia. *Marine Ecology Progress Series* **224**:267-282.

Helbig, A. J., Knox, A. K., Parkin, D. T., Sangster, G. & Collinson, M. (2002). Guidelines for assigning species rank. *Ibis* **144**:518-525.

Holdaway, R. N., Worthy, T. H. & Tennyson, A. J. D. (2001). A working list of breeding bird species of the New Zealand region at first human contact [Review]. *New Zealand Journal of Zoology* **28**:119-187.

Isaac, N. J. B., Mallet, J. & Mace, G. M. (2004). Taxonomic inflation: its influence on macroecology and conservation. *Trends in Ecology & Evolution* **19**:464-469.

Marchant, S. & Higgins, P. J. (1990). 'Handbook of Australia, New Zealand and Antarctic birds.' (Oxford University Press: Melbourne).

Medway, D. G. (1993). The identity of the Chocolate Albatross *Diomedea spadicea* of Gmelin, 1789 and of the Wandering Albatross *Diomedea exulans* of Linnaeus, 1758. *Notornis* **40**:145-162.

Murphy, R. C. 1936. Oceanic birds of South America. American Museum of Natural History: New York.

Nel, D. C., Taylor, F., Ryan, P. G. & Cooper, J. (2003). Population dynamics of the wandering albatross *Diomedea exulans* at Marion Island: Longline fishing and environmental influences. *African Journal of Marine Science* **25**:503-517.

Nicholls, D. G., Murray, M. D., Elliott, G. P. & Walker, K. J. (1996). Satellite tracking of a wandering albatross from the Antipodes Islands, New Zealand to South America. *Corella* **20**:28.

Nunn, G. B., Cooper, J., Jouventin, P., Robertson, C. J. R. & Robertson, G. G. (1996). Evolutionary relationships among extant albatrosses (Procellariiformes: Diomedeidae) established from complete cytochrome-b gene sequences. *Auk* **113**:784-801.

Nunn, G. B. & Stanley, S. E. (1998). Body size effects and rates of cytochrome b evolution in tube-nosed seabirds. *Molecular Biology & Evolution* **15**:1360-1371.

Onley, D. & Bartle, S. (1999). 'Identification of seabirds of the Southern Ocean: a guide for scientific observers aboard fishing vessels.' (Te Papa Press: Wellington, New Zealand).

Penhallurick, J. & Wink, M. (2004). Analysis of the taxonomy and nomenclature of the Procellariiformes based on complete nucleotide sequences of the mitochondrial cytochrome *b* gene. *Emu* **104**:125-147.

Phillimore, A. B. & Owens, I. P. F. (2006). Are subspecies useful in evolutionary and conservation biology. *Proceedings of the Royal Society Biological Sciences Series B* **273**:1049-1053.

Rheindt, F. E. & Austin, J. J. (2005). Major analytical and conceptual shortcomings in a recent taxonomic revision of the Procellariiformes - a reply to Penhallurick and Wink (2004). *Emu* **105**:181-186.

Robertson, C. J. & Nunn, G. B. (1998). Towards a new taxonomy for albatrosses. In: 'Albatross biology and conservation' (Ed. G. Robertson & R. Gales.) pp. 13-19. Surrey Beatty & Sons: Chipping Norton.

Robertson, C. J. R. (2002). The scientific name of the Indian yellow-nosed albatross *Thalassarche carteri*. *Marine Ornithology* **30**:48-49.

Robertson, C. J. R. & Warham, J. (1992). Nomenclature of the New Zealand Wandering Albatrosses *Diomedea exulans*. *Bulletin of the British Ornithologists' Club* **112**:74-81.

Robertson, C. J. R. & Warham, J. (1994). Measurements of *Diomedea exulans antipodensis* and *D. e. gibsoni*. *Bulletin of the British Ornithologists' Club* **114**:132-134.

Robertson, G. & Gales, R. (1998). 'Albatross biology and conservation.' (Surrey Beatty: Chipping Norton).

Roux, J.-P., Jouventin, P., Mougin, J.-L., Stahl, J.-C. & Weimerskirch, H. (1983). Un nouvelle albatros *Diomedea amsterdamensis* n. sp. decouvert sur l'Ile Amsterdam (37°ʼ 50'S, 77°35'E). *Oiseau Revue fr. Orn.* **53**:1-11.

Ryan, P. G., Keith, D. G. & Kroese, M. (2002). Seabird bycatch by longline fisheries off southern Africa, 1998-2000. *South African Journal of Marine Science* **24**:103-110.

Shirihai, H. (2002). 'A complete guide to Antarctic wildlife.' (Alula Press: Degerby, Finland).

Tickell, W. L. N. (2000). 'Albatrosses.' (Pica Press: Sussex, UK).

Walker, K. & Elliott, G. (1999). Population changes and biology of the Wandering Albatross Diomedea exulans gibsoni at the Auckland Islands. *Emu* **99**:239-247.

Walker, K. & Elliott, G. (2005). Population changes and biology of the Antipodean wandering albatross (*Diomedea antipodensis*). *Notornis* **52**:206-214.

Walker, K., Elliott, G., Nicholls, D., Murray, D. & Dilks, P. (1995). Satellite tracking of wandering albatross (*Diomedea exulans*) from the Auckland Islands: preliminary results. *Notornis* **42**:127-137.

Warham, J. (1990). 'The petrels - their ecology and breeding systems.' (Academic Press: London).

Weimerskirch, H., Brothers, N. & Jouventin, P. (1997). Population dynamics of wandering albatross *Diomedea exulans* and Amsterdam albatross *D. amsterdamensis* in the Indian Ocean and their relationships with long-line fisheries - conservation implications. *Biological Conservation* **79**:257-270.

Weimerskirch, H., Guionnet, T., Martin, J., Shaffer, S. A. & Costa, D. P. (2000). Fast and fuel efficient? Optimal use of wind by flying albatrosses. *Proceedings of the Royal Society of London Series B-Biological Sciences* **267**:1869-1874.

Xavier, J. C., Trathan, P. N., Croxall, J. P., Wood, A. G., Podesta, G. & Rodhouse, P. G. (2004). Foraging ecology and interactions with fisheries of wandering albatrosses (*Diomedea exulans*) breeding at South Georgia. *Fisheries Oceanography* **13**:324-344.

ATTACHMENT ONE

GUIDELINES FOR THE IDENTIFICATION OF SPECIES BOUNDARIES AMONG TAXA LISTED BY THE AGREEMENT ON THE CONSERVATION OF ALBATROSSES AND PETRELS (ACAP)

TAXONOMIC WORKING GROUP OF ACAP

Introduction

Resolution 1.5 of the First Session of the Meeting of the Parties (MOP1) to ACAP provides for the establishment by the Advisory Committee of a Working Group on the taxonomy of albatross and petrel species covered by the Agreement.

The objective of this Working Group (WG) is to establish a transparent, defensible and highly consultative taxonomic listing process. The Scientific Meeting (MOP1; ScM1; Section 4.3) stated that "…given the importance that species lists have upon conservation policy and scientific communication, taxonomic decisions must be based on robust and defensible criteria. It is important to resolve differences in a scientific and transparent manner with appropriate use of peer-reviewed publications."

The guidelines to identify species boundaries among taxa listed by ACAP are listed below. These guidelines are largely based on those presented by Helbig *et al.* (2002). This document should not be considered an original piece of work but an adaptation of the guidelines presented by Helbig *et al.* (2002).

It is worth recalling the following paragraph written by Helbig *et al.* (2002) when reading these guidelines:

> *"No species concept so far proposed is completely objective or can be used without the application of judgement in borderline cases. This is an inevitable consequence of the artificial partitioning of the continuous processes of evolution and speciation into discrete steps. It would be a mistake to believe that the adoption of any particular species concept will eliminate subjectivity in reaching decisions."*

Species concepts

Helbig *et al.* (2002) adopt the General Lineage Concept (GLC: de Queiroz 1998; de Queiroz 1999) a concept very similar to the Evolutionary Species Concept (ESC: Mayden 1997) but stresses that "differences between concepts are largely a matter of emphasis" and that the tenets of other common concepts such as the Biological Species Concept, the Phylogenetic Species Concept (PSC: Cracraft 1983) and the Recognition Species Concept are largely encompassed by the GLC.

The General Lineage Concept defines species as:

> *"…population lineages maintaining their integrity with respect to other lineages through time and space; this means the species are diagnosably different (otherwise we could not recognize them), reproductively isolated (otherwise they would not maintain their integrity on contact) and members of each (sexual) species share a common mate recognition and fertilization system (otherwise they would not be able to reproduce)."* (Helbig *et al.* 2002)

Helbig *et al.* (2002) state that to produce a practical taxonomy for West Palaearctic birds the species definition must only include taxa "for which we are reasonably certain that they will retain their integrity no matter what other taxa they encounter in the future."

The WG considers this criterion difficult or impossible to apply to predominantly allopatric taxa such as procellariiform seabirds. The WG therefore restrict its considerations to only the first of the two questions posed by Helbig *et al.* (2002) in order to delimit species. They were:

1. Are the taxa diagnosable?

2. Are they likely to retain their genetic and phenotypic integrity in the future?

By adopting this strategy the WG applies the less stringent GLC (de Queiroz 1998; de Queiroz 1999) and ESC (Wiley 1978) which recognise species that are currently maintaining their integrity but "do not require species to maintain their integrity in the future" (Helbig *et al.* 2002).

Below we list a set of guidelines the WG will use to decide if taxa are diagnosable and if they therefore warrant specific status.

Guidelines to identify species (Diagnosibility)

Taxon diagnosis is based on characters or character states. Characters used in diagnosis must be considered, or preferably shown to have a strong genetic (heritable) component and not likely to be the product of environmental differences. Characters known to evolve rapidly in response to latitude must be considered less informative e.g. morphometrics, timing of breeding and moult patterns.

In the assessment of diagnostic characters the WG, whenever possible, will only consider primary data published in peer reviewed journals. Conclusions drawn by such studies must be supported by appropriate statistical analyses. Once established the Taxonomy WG will aim to maintain the stability of the ACAP List of Taxa. Modifications to the List will only be considered when a study published in a peer-reviewed journal suggests change.

As stated by Helbig *et al.* (2002), taxa are diagnosable if:

A) "Individuals of at least one age/sex can be distinguished from the same age/sex class of all other taxa by at least one qualitative difference. This means that the individuals will possess one or more discrete characters that members of the other taxa lack. Qualitative differences refer to presence/absence of a feature (as opposed to a discontinuity in a continuously varying character)."

B) "At least one age/sex class is separated by a complete discontinuity in at least one continuously varying character (e.g. wing length) from the same age/sex class of otherwise similar taxa. By complete discontinuity we mean that there is no overlap with regard to the character in question between two taxa." To detect a discontinuity the number of individuals compared should be based on sound judgement.

C) "If there is no single diagnostic character we regard a taxon as statistically diagnosable if individuals of at least one age/sex class can be clearly distinguished from

individuals of all other taxa by a combination of two or three functionally independent characters." Body measurements are not considered independent characters.

A useful example here is the one presented by Helbig *et al.* (2002). *Larus michahellis* and *L. armenicus* "can be distinguished by a combination of wing-tip pattern, darkness of mantle and mtDNA haplotypes, although none of these characters is diagnostic on its own."

Because of the difficulties assessing reproductive isolation in allopatric taxa Helbig *et al.* (2002) apply more stringent criteria to allopatric than sympatric taxa. They suggest that allopatric taxa should be recognised as species only if "they are fully diagnosable in each of *several* discrete or continuously variable characters relating to different function contexts, e.g. structural features, plumage colours, vocalisations, DNA sequences, and the sum of the character differences corresponds to or exceeds the level of divergence seen in related species that exist in sympatry."

References

Amadon, D. (1966). The superspecies concept. *Systematic Zoology* **15**:245-249.

Cracraft, J. (1983). Species concepts and speciation analysis. *Current Ornithology* **1**:159-187.

de Queiroz, K. (1998). The general lineage concept of species, species criteria, and the process of speciation. In: 'Endless forms: species and speciation' (Ed. D. J. Howard & ,S. H. Berlocher) Oxford University Press, New York.

de Queiroz, K. (1999). The general lineage concept of species and the defining properties of the species category. In: 'Species: New Interdisciplinary Essays' (Ed. R. A. Wilson.) pp. 49-89. MIT Press: Cambridge, Massachusetts.

Helbig, A. J., Knox, A. K., Parkin, D. T., Sangster, G. & Collinson, M. (2002). Guidelines for assigning species rank. *Ibis* **144**:518-525.

Mayden, R. L. (1997). A hierarchy of species concepts: the denouement in the saga of the species problem. In: 'Species: the Units of Biodiversity' (Ed. M. F. Claridge, H. A. Dawah & M. R. Wilson.) Chapman & Hall Ltd: London.

Shirihai, H. (2002). 'A complete guide to Antarctic wildlife.' (Alula Press: Degerby, Finland).

Short, L. L. (1969). Taxonomic aspects of avian hybridization. *Auk* **86**:84-105.

Sibley, C. G. & Monroe, B. L. (1990). 'Distribution and Taxonomy of Birds of the World.' (Yale University Press: New Haven & London).

Wiley, E. O. (1978). The evolutionary species concept reconsidered. *Systematic Zoology* **27**:17-26.

ATTACHMENT TWO

WORKING GROUP TO REVIEW THE TAXONOMY OF ALBATROSSES AND PETRELS LISTED ON ANNEX I OF THE AGREEMENT

TERMS OF REFERENCE (REVISED FOR CONSIDERATION BY AC)

Article IX 6 (b) of the Agreement on the Conservation of Albatrosses and Petrels (ACAP) requires the Advisory Committee to "endorse a standard reference text listing the taxonomy and maintain a listing of taxonomic synonyms for all species covered by the Agreement". This reflects the current state of flux in the taxonomy of Procellariiformes and, in particular, of albatrosses.

Resolution 1.5 of the First Session of the Meeting of the Parties (MOP1) to ACAP provides for the establishment by the Advisory Committee of a Working Group on the Taxonomy of albatross and petrel species covered by the Agreement.

The terms of reference for the group are to:
1. establish a transparent, defensible and highly consultative listing process for the recognition of taxa of albatrosses and petrels listed under Annex 1 of the Agreement.
2. review the specific status of all taxa of albatrosses and petrels listed under Annex 1 of the Agreement;
3. collate and maintain a bibliographic database for published scientific papers relevant to the taxonomy of ACAP listed species;
4. develop and maintain a morphometric database of albatrosses and petrels to assist in taxonomic assessments and ensure long-term storage of valuable data in accordance with agreed data confidentiality arrangements;
5. report to the Meeting of Parties through the Advisory Committee on taxonomic assessments as appropriate.

ATTACHMENT THREE

WORKING GROUP TO REVIEW THE TAXONOMY OF ALBATROSSES AND PETRELS LISTED ON ANNEX I OF THE AGREEMENT

WORK PROGRAM

Membership of Working Group

Party / Signatory/ Observer	Member	Organisation / position
Australia	Mike Double, CHAIR	Australian National University
New Zealand	Geoff Chambers	University of Wellington
South Africa	Peter Ryan	University of Cape Town
United Kingdom	Mark Tasker	Joint Nature Conservation Committee
Birdlife International	Michael Brooke	Birdlife International

Timetable of progress

Action	Completed by	Responsibility
Review the evidence supporting the specific status of the following taxa: • Buller's and Pacific albatrosses • Northern royal albatrosses and southern royal albatrosses • Indian yellow-nosed albatrosses & Atlantic yellow-nosed albatrosses • Chatham albatrosses & Salvin's albatrosses • Northern giant-petrels & southern giant-petrels • Black petrels & Westland petrels • White-chinned petrels & spectacled petrels	2006/2007	WG Chair
To migrate the WG's web site to ACAP Secretariat	2006/2007	WG Chair
Assess the utility of the subspecies rank for ACAP purposes and if appropriate develop guidelines for the recognition of subspecific status	2006/2007	WG Chair
To construct a morphological and plumage database, then canvas for, collate, archive and summarise available data	Ongoing	WG Chair
Maintain the WG's bibliographic database of published scientific papers relevant to the taxonomic status of ACAP listed taxa	Ongoing	WG Chair
Develop and provide advice to AC on the construction and maintenance of species lists as appropriate	Ongoing	WG
Provide annual reports to AC on WG activities	Ongoing	WG Chair
To draft resolutions (when necessary) for amendments to the species list in Annex 1 of the Agreement	Ongoing	AC