

 <p>Agreement on the Conservation of Albatrosses and Petrels</p>	<p>Fourth Meeting of the Parties <i>Lima, Peru, 23 – 27 April 2012</i></p> <p>Completion of the ACAP At-Sea Prioritisation Framework - Advisory Committee Intersessional Paper <i>November 2011</i></p> <p><i>Spencer Clubb, Dr. Michael C. Double</i></p>
---	---

Executive summary

This paper briefly describes the development of the prioritisation framework for at-sea threats. It then explains final steps taken to complete the framework and presents preliminary results. The paper recommends adoption of the framework and provides a set of recommendations for future work. A draft MoP paper is also attached for comment.

Recommendations

The Advisory Committee is requested to:

- **note** that the at-sea prioritisation framework has now been completed but will require periodic review;
- **note** that the framework has generated a set of preliminary priority conservation actions to address at-sea threats;
- **note** that the framework has generated a set of potential research priorities to address significant data gaps;
- **note** that the framework can be used to assist with other Advisory Committee work programmes including reporting, the development of indicators of success of the Agreement and capacity building;
- **agree** that the framework can be used by the Advisory Committee and ACAP Parties as a tool to prioritise and address at-sea conservation actions, research priorities and to assist with other Advisory Committee work programmes, as appropriate; and
- **agree** to submit a paper to the Fourth Meeting of Parties (MOP4) seeking approval for the appropriate use of the framework by the Advisory Committee.

1. Background

Purpose of the framework

The primary purpose of the at-sea prioritisation framework is:

“To prioritise actions that are most likely to effectively reduce impacts that adversely influence the population status of ACAP-listed albatross and petrel species most at risk of extinction”¹

An example of a conservation action is the introduction of mitigation measures in a particular fishery to address threats to a particular seabird population.

Secondary objectives include the identification of research priorities, reporting frameworks, indicators of success of the Agreement, and capacity building initiatives.

Approach

A semi-quantitative assessment methodology is used to determine priorities. Scores are assigned to variables relating to the following three elements:

- the vulnerability of a particular seabird population (population size and trend);
- the severity of threat faced by that population (overlap with a fishery, amount of fishing effort, inherent risk of the fishing method to a species and use of effective mitigation); and
- whether any additional effective mitigation measures can be introduced to reduce mortalities, over and above those measures currently in place (if any) in a fishery

The scores of the individual components within these elements are then weighted according to an assessment of their importance and combined to give a total score for a particular conservation management action.

Management actions with similar scores are then grouped together and assigned a rank such as “Highest priority”.

Completion of the framework

At AC6 the Advisory Committee agreed to support intersessional work to complete the framework in order to report to MoP4 on those high priority conservation actions that are necessary to ensure the effective implementation of the Agreement.

AC6 noted that further work was necessary in the following three key areas:

1. identifying a suitable scoring and weighting regime;
2. agreeing upon a scheme to present the results using a simple categorical system;
and
3. providing recommendations for the use and maintenance of the framework.

The remainder of this paper describes the completion of these three areas of work.

¹ During the development of the framework the ad-hoc Priorities Working Group considered it beneficial to adopt this definition to guide and clarify thinking.

2. Identifying a suitable scoring and weighting regime

As noted above, conservation priorities are determined by scoring various attributes relating to vulnerability, threat and likelihood of success if additional mitigation measures are available and implemented. There are numerous combinations of weightings, both between variables, and within variables. Ultimately, a subjective expert judgement is required as to the most appropriate scoring and weighting regime to derive priorities.

To assist in determining an appropriate scoring and weighting regime, the Seabird Bycatch Working Group (SBWG) recommended that the following criteria be used to assess whether any proposed regime was effectively determining priorities:

- results correlate well with expert opinion;
- fisheries that use strong effective mitigation are not prioritised; and
- scoring and weightings are logically consistent and defensible.

Three additional criteria were considered useful and appropriate during the final testing phase; these were:

- fisheries that are a low threat to seabird populations are not prioritised;
- seabird populations that are known to be increasing are not prioritised; and
- fisheries where no effective conservation action is possible are not prioritised (though they may be subsequently identified as a research priority).

To meet the above criteria it was necessary to consider each variable separately, rather than treating all the variables under an aggregated heading such as “vulnerability” the same way. This was necessary because expert opinion was typically driven by individual variables, not groups of variables. The factors considered most important by experts, and those highlighted in the above criteria, were population trend and use and implementation of effective mitigation. Likelihood of success was also important in terms of differentiating strongly between when conservation action was or was not technically feasible. These factors were therefore the key variables for weighting more prominently.

The final scoring and weighting regime chosen satisfied all of the assessment criteria and was therefore considered to be fit for purpose as a tool for helping to determine ACAP at-sea priorities.

An analysis of how the scoring and weighting regime satisfied the assessment criteria can be found in **Appendix 1**. Details of the final weighting and scoring of each variable are set out in **Appendix 2**.

3. Presenting the results of the analysis

Conservation priorities

Because the framework attributes a numerical score for conservation actions relating to every fishery/seabird interaction within the framework (about 1,200), a key outstanding task was to determine how best to present the outcomes of the prioritisation process using a simple categorical system.

There are some unavoidable drawbacks to this approach, as allocating scores into categories can be seen as a somewhat arbitrary process. It is therefore important to recognise that some conservation actions that score just lower than any cut-off will not feature in any list of priorities but should not be ignored – therefore this prioritisation framework should always be considered a guidance tool and not the last word. As such, for any specific research or management question the framework should be considered as a whole. Careful consideration should be given to those priorities falling just below the cut-off, as well as to other relevant information, tools and analyses.

Initially it was considered that a “high/medium/low priority” approach might work best. However, ultimately, it was decided that there was little rationale for differentiating between categories that were clearly not a high priority (such as between medium and low priority). We therefore propose to present detailed results only for a ‘highest priority’ category in this paper. This category was delineated based simply on the top 10% of prioritised records; 10% will produce a manageable number of records for reporting and prioritisation purposes and, notwithstanding the need for more detailed analysis, will identify the most urgently required conservation actions. The conservation resources needed to address even this number is likely well beyond that available to ACAP in the next triennium. In the framework, the top 10% equates to records with a score of 42 points or more (the highest possible score is 50). In total 111 records scored 42 or more, representing 33 seabird populations and 25 fisheries.

A preliminary list of priority fisheries and species populations for conservation action can be seen in **Appendix 3**².

Research priorities

Research priorities were determined by identifying key data gaps in the highest priority conservation actions where scores for particular variables in the dataset were listed as “unknown”.

For mitigation research priorities, scores of “low or unknown” for “likelihood of success” were identified and considered to be a research priority for any species/fishery combination that would have been a high priority conservation action had effective mitigation been possible.

A set of preliminary research priorities is set out in **Appendix 4**².

4. Recommendations for use of the framework

Conservation priorities

The framework presents a simple global analysis of at-sea conservation priorities for ACAP listed species of albatrosses and petrels. As such, it can be considered analogous to a “level 1” risk assessment, tailored to identifying where conservation action will effectively address the most pressing threats to the most vulnerable species and populations.

For some fishery-seabird interactions, better information will be available on the nature and extent of the threat, such as where a “level 2” risk assessment has been conducted, or where

² The preliminary list is based on data currently held in the framework. However, some Parties have signalled that they wish to further review the data related to a number of fisheries to ensure that the results use the best available information.

a fishery has very good observer coverage. In such cases, the more detailed information should be used to adjust or derive priorities and can be referenced next to the particular fishery or seabird population in question.

Where more detailed information does not exist, the Advisory Committee and ACAP Parties can use the framework as a tool to effectively prioritise allocation of its scarce resources, first and foremost, for taking, or advocating for, conservation actions.

Appendix 3 presents the results by species population and by fishery, to reflect the likelihood that the Advisory Committee and ACAP Parties may be interested in both the cumulative effects on a species, and the cumulative benefits of taking conservation action in a fishery.

Research priorities

Data gaps for high priority fishery-seabird interactions should be considered by the relevant working groups when determining research priorities. These can be examined by category such as “mitigation research priorities” or “population trend research priorities”.

Research already prioritised for population data matches well with a number of priorities for population trend identified in the framework.

Reporting frameworks and indicators of success

If desired, Parties’ activities in relation to conservation and research priorities can be included in the reporting framework.

The number of highest priority conservation actions outstanding could also be used as an indicator of success of the Agreement. As effective conservation actions are taken, the number of highest priority actions originally identified will reduce (though noting that, where necessary, conservation efforts would move to the next highest priorities, or to emerging priorities).

Capacity building

Conservation and research priorities should be viewed as the collective responsibility of ACAP and its Parties. Sometimes it may be necessary or beneficial to share knowledge, information and resources to address priorities. In these cases, the results of the framework can be used to guide future capacity building initiatives.

5. Recommendations for the maintenance of the framework

Updating and storage of information

We recommend that the framework be updated every three years, to be reviewed by the Advisory Committee at each meeting immediately prior to each session of the Meeting of Parties. Three years is a long enough time to make progress on priorities and for new information to be brought to bear that may affect the scoring of each conservation action. As each update is completed, a new version should be created, with the previous version retained for historic comparison and analysis

We recommend that a record be kept of new information that comes to light during each three-year period, such as new tracking data, population trends, or analysis, to allow for the framework to be more easily updated.

Following discussions with the ACAP Secretariat we recommend that a standalone database be established by the Secretariat that can be linked to other ACAP databases when the framework needs updating. It is not considered necessary to invest in a more dynamic framework that updates automatically. This will significantly reduce the costs associated with maintenance of the framework.

The framework is only as good as the data within in. It is essential that Parties commit to ensuring that records relating to fisheries and breeding populations are accurate. Indeed, the results of the framework may provide an impetus to peer review any records that may appear erroneously as priorities. Adding an additional column relating to “relevant Party/Parties” may help to streamline this process.

Should any Parties wish to provide updated data prior to MOP4 it may be possible to amend the set of preliminary results to reflect any updated information. Parties should also consider whether it is necessary to update information prior to the next Advisory Committee meeting.

One improvement that could be made upon updating the information is to include a short description of each fishery, such as target species, to allow for the information to be more easily interpreted, updated and, where necessary, corrected. This is particularly the case where a Party may have a number of target fisheries that fall under a more generic method description such as “demersal longline” or “pelagic trawl”.

Another recommended improvement is to ensure that the names of experts entering or updating data are recorded, to ensure greater traceability and allow for discussion of results in the future.

Standardisation of input

Improvements can be made in the way that the two important variables of “likelihood of success” and “population trend” are coded.

During the testing phase it became evident that the instructions for data entry had not been clear enough around the variable “likelihood of success”. For example, many fisheries with effective mitigation were being scored “high” for likelihood of success, even though no additional measures could be taken.

We corrected these obvious ‘mistakes’ and looked at how this variable should best be considered in the future. We determined that the purpose of the variable was to ascertain whether there were any additional best practice mitigation measures that could be applied and that would effectively reduce bycatch. Ultimately, such a reduction should also have a biologically meaningful benefit to the species/population. It is perhaps this last component that is not yet easily captured in the scoring for this variable.

“Population trend” was considered by experts to be a key driver of priorities for conservation action at a fishery level. To reflect this level of interest, the framework doubles the weighting given to this variable, as well as differentiating strongly within it. However, there is a lot of uncertainty over the reliability of population trends. Additionally, a trend can be up, down,

fluctuating (without obvious trend), stable or unknown for the same population depending on the time period used to calculate it.

ACAP is currently working with BirdLife to standardise the way that population trend is calculated. Once this work is complete, we recommend that the revised population trends be applied to the prioritisation framework. This will increase the robustness and consistency of the framework and standardise another component of the data used in it.

Consideration should be given to differentiating between population trends that are “unknown”, due to not being sufficiently researched, and population trends that are “uncertain” due to no clear picture emerging. Currently, some “uncertain” populations may be classed as “unknown”, resulting in potentially elevated scores and possibly being included as research priorities.

Finally, it should be noted that in some cases population trends may be driven by land-based threats or, potentially, a stable population may be at carrying capacity. Factors such as these should be taken into account when considering conservation actions to address threats to such populations.

Artisanal fisheries

At the present time the framework does not include a large number of artisanal fisheries. Work is currently underway to improve knowledge and understanding of seabird interactions with artisanal fisheries and this may provide an opportunity to expand the framework to include full coverage of these fisheries at some point in the future.

Appendix 1: Testing the scoring and weighting regime

The following is an assessment of how the final scoring and weighting regime matched up to six criteria identified by the SBWG and by the authors of this paper.

Correlates well with expert opinion

A random sample of 20 records from the framework was ranked in order of priority by two experts as described in SBWG-4 DOC 29. By applying carefully considered scores and weightings (see Appendix 2) to the framework it was possible for the framework to rank the same records in a very similar order (correlation coefficient = 0.85). However, in doing so, not all of the remaining five criteria were met, as the two experts in some circumstances were heavily influenced by population trend even when there was highly effective mitigation in place within the fishery. Therefore it was decided to deliberately diverge from expert opinion under certain specific circumstances to ensure that fisheries with high use of effective mitigation could not be ranked highly within the framework. As such the final scoring and weighting regime still generated records that correlated moderately well with experts (0.61 and 0.78) but it also met the remaining five performance criteria.

Priorities were also largely consistent with the suite of interim priority populations agreed to at AC6. Four out of the five interim priority populations are also prioritised through this process, though Sooty albatross at Prince Edward did not feature, primarily because its population trend is not currently classified in the framework as decreasing³, reducing its overall score.

Conclusion: The framework correlates well with expert opinion, as far as practicable given other criteria.

Does not prioritise fisheries with strong effective mitigation

Following the revisions described above, there were no fisheries with strong, effective mitigation in the list of highest priority conservation actions. The highest ranking interaction between a seabird population and a fishery with effective mitigation was ranked at 945 of around 1,200 records.

Conclusion: The framework does not prioritise fisheries with effective mitigation.

Scoring and weightings are logically consistent and defensible

All scoring and weighting regimes followed a logical order and were internally consistent. No single variables dominated the scoring. Greatest weight was placed on population trend (double the weighting of other variables), and use (or otherwise) of effective mitigation (treble the weighting of other variables), which was considered appropriate given the importance of these two factors.

Conclusion: Scoring and weighting are logically consistent and defensible.

³ The population trend for Sooty Albatross at Prince Edward was considered by experts to be decreasing when interim priority populations were being identified immediately prior to AC6. This population should therefore still be carefully considered when determining priorities for conservation action.

Does not prioritise fisheries that are a low threat to seabird populations

There is no simple ‘test’ for this criterion. An arbitrary rule was applied to test the highest priority conservation actions to assess whether any component of their threat score⁴ was ranked as “low”. In all but two cases a ranking of “low” was always accompanied by “high” rankings for the other “threat” variables, suggesting sufficient cause for concern.

On two occasions, a “low” ranking was accompanied by a “medium” ranking in another component. On balance, these particular records were still considered to be credible threats as the seabird population they related to was in steep decline, meaning that relatively low threats could still be significant and it could be a priority for addressing them. No other records in the top 200 records failed this test.

Conclusion: the framework does not prioritise fisheries that are a low threat to seabird populations

Seabird populations that are known to be increasing

There were no priority conservation actions relating to seabird populations that are known to be increasing. The highest ranking interaction occurring with an increasing population was at 336 (i.e. just below the top quartile).

Conclusion: the framework does not prioritise seabird populations that are known to be increasing.

Fisheries where no effective conservation action is possible

Two fisheries where no effective conservation action was possible, or where the success of any conservation action was unknown, ranked highly enough to make it into the list of conservation priorities.

The two fishery/seabird interactions in question were clearly of considerable interest due to their high vulnerability and high threat scores, despite scoring zero for being unable (or very uncertain about how) to effectively address the problem. Because of this it was considered that there would be benefits in at least considering attempting conservation action in these fisheries despite uncertainty about the likely effectiveness. While it was possible to do so with relative ease, it was not considered appropriate to weight this variable any greater, in order to drive these two records further down the list of priorities.

These two fishery/seabird interactions would also top the list of priorities for fishery-specific mitigation research (see below).

Conclusion: the framework does not generally prioritise fisheries where no effective conservation action is possible.

⁴ The three components examined were “overlap of population with a fishery”, “amount of effort within overlap area” and “inherent risk of capture from a particular method”

Appendix 2: Final scoring and weighting regime

The final score for an interaction is the sum of scores for the variables, each multiplied by their respective weights

<u>Variable</u>	<u>Score</u>	<u>Weighting</u>
Size of global population of species		
0-99	5	1
100-999	4	
1,000-9,999	3	
10,000-99,000	2	
100,000+	1	
Proportion of global population at island / archipelago		
0-10%	-	Not used in final scoring and weighting regime
11-15%	-	
51-100%	-	
Trend of population at island / archipelago		
Steep decline (>2%pa)	5	2
Decline	4	
Stable	2	
Increase	0	
Steep increase (>2%pa)	-1	
Unknown	3	
Overlap of population with fishery		
High	5	1
Medium	3	
Low	1	
Unknown	3	
Amount of fishing effort within overlap time/area		
High	5	1
Medium	3	
Low	1	
Unknown	3	

Inherent risk of this fishing method for this species of bird		
High	5	1
Medium	4	
Low	2	
No	1	
Unknown	3	
Use and implementation of effective mitigation		
High	-5	3
Medium	3	
Low	5	
Likelihood of success if best practice mitigation used		
High	5	1
Medium	5	
Low or unknown	0	

Appendix 3: Preliminary list of conservation priorities

By fishery:

Fishery	Species population
Angola Demersal trawl	Atlantic Yellow-nosed Albatross Gough Island
	Atlantic Yellow-nosed Albatross Tristan da Cunha
Angola Pelagic LL	Atlantic Yellow-nosed Albatross Gough Island
	Atlantic Yellow-nosed Albatross Tristan da Cunha
	Tristan Albatross Gough Island
Argentina Demersal LL	Black-browed Albatross Falkland Islands (Islas Malvinas) ⁵
	Wandering Albatross South Georgia (Islas Georgias del Sur) ⁵
Argentina Demersal trawl	Black-browed Albatross Falkland Islands (Islas Malvinas) ⁵
	Grey-headed Albatross South Georgia (Islas Georgias del Sur) ⁵
	Northern Giant Petrel South Georgia (Islas Georgias del Sur) ⁵
	Wandering Albatross South Georgia (Islas Georgias del Sur) ⁵
Australia Demersal LL	Shy Albatross Pedra Branca
Australia Demersal trawl	Indian yellow-nosed Albatross Amsterdam Island
Australia Trawl	Shy Albatross Pedra Branca
Brazil Demersal trawl	Wandering Albatross South Georgia (Islas Georgias del Sur) ⁵
Brazil Pelagic LL	Atlantic Yellow-nosed Albatross Gough Island
	Atlantic Yellow-nosed Albatross Tristan da Cunha
	Black-browed Albatross Falkland Islands (Islas Malvinas) ⁵
	Tristan Albatross Gough Island
	Tristan Albatross Gough Island
	Wandering Albatross South Georgia (Islas Georgias del Sur) ⁵
	Wandering Albatross South Georgia (Islas Georgias del Sur) ⁵
	White-chinned Petrel South Georgia (Islas Georgias del Sur) ⁵
CCSBT Pelagic LL	Amsterdam Albatross Amsterdam Island
	Atlantic Yellow-nosed Albatross Gough Island
	Atlantic Yellow-nosed Albatross Tristan da Cunha
	Black-browed Albatross Antipodes Islands
	Black-browed Albatross Campbell Island
	Black-browed Albatross Iles Crozet
	Black browed Albatross South Georgia (Islas Georgias del Sur) ⁵
	Black Petrel Great and Little Barrier Islands
	Campbell Albatross Campbell Island
	Chatham Albatross Chatham Islands
	Grey-headed Albatross Prince Edward Islands

	Grey-headed Albatross South Georgia (Islas Georgias del Sur) ⁵
	Grey Petrel All sites
	Indian yellow-nosed Albatross Amsterdam Island
	Indian yellow-nosed Albatross Iles Crozet
	Northern Giant Petrel Iles Crozet
	Northern Royal Albatross Chatham Islands
	Sooty Albatross Iles Crozet
	Tristan Albatross Gough Island
	Wandering Albatross Iles Kerguelen
	Wandering Albatross Macquarie Island
	Wandering Albatross Prince Edward Islands
	Wandering Albatross South Georgia (Islas Georgias del Sur) ⁵
	Westland Petrel South Island
	White-chinned Petrel South Georgia (Islas Georgias del Sur) ⁵
IATTC Pelagic LL	Black-footed Albatross Central Pacific - Laysan
	Laysan Albatross Central Pacific - Laysan
	Waved Albatross Islas Galapagos
ICCAT Pelagic LL	Atlantic Yellow-nosed Albatross Gough Island
	Atlantic Yellow-nosed Albatross Tristan da Cunha
	Black-browed Albatross Falkland Islands (Islas Malvinas) ⁵
	Black browed Albatross South Georgia (Islas Georgias del Sur) ⁵
	Grey-headed Albatross South Georgia (Islas Georgias del Sur) ⁵
	Grey Petrel All sites
	Northern Royal Albatross Chatham Islands
	Tristan Albatross Gough Island
	Wandering Albatross South Georgia (Islas Georgias del Sur) ⁵
	White-chinned Petrel South Georgia (Islas Georgias del Sur) ⁵
IOTC Pelagic LL	Amsterdam Albatross Amsterdam Island
	Grey-headed Albatross Prince Edward Islands
	Grey-headed Albatross South Georgia (Islas Georgias del Sur) ⁵
	Grey Petrel All sites
	Indian yellow-nosed Albatross Amsterdam Island
	Indian yellow-nosed Albatross Iles Crozet
	Indian yellow-nosed Albatross Prince Edward Island
	Northern Giant Petrel Iles Crozet
	Shy Albatross Pedra Branca
	Sooty Albatross Iles Crozet
	Tristan Albatross Gough Island
	Wandering Albatross Iles Kerguelen

	Wandering Albatross Prince Edward Islands
Namibia Demersal LL	Atlantic Yellow-nosed Albatross Gough Island
	Atlantic Yellow-nosed Albatross Tristan da Cunha
	Black browed Albatross South Georgia (Islas Georgias del Sur) ⁵
	Shy Albatross Pedra Branca
	Tristan Albatross Gough Island
Namibia Demersal trawl	Atlantic Yellow-nosed Albatross Gough Island
	Atlantic Yellow-nosed Albatross Tristan da Cunha
Namibia Pelagic LL	Atlantic Yellow-nosed Albatross Gough Island
	Atlantic Yellow-nosed Albatross Tristan da Cunha
	Shy Albatross Pedra Branca
Namibia Pelagic trawl	Atlantic Yellow-nosed Albatross Gough Island
	Atlantic Yellow-nosed Albatross Tristan da Cunha
	Shy Albatross Pedra Branca
New Zealand Pelagic trawl	Grey Petrel All sites
	Northern Royal Albatross Chatham Islands
	Salvin's Albatross Bounty Islands
	Westland Petrel South Island
Peru Pelagic LL	Chatham Albatross Chatham Islands
SEAFO Demersal trawl	Atlantic Yellow-nosed Albatross Gough Island
	Atlantic Yellow-nosed Albatross Tristan da Cunha
	Black browed Albatross South Georgia (Islas Georgias del Sur) ⁵
SIOFA Demersal trawl	Northern Giant Petrel Iles Crozet
UK (OT) Pelagic LL	Atlantic Yellow-nosed Albatross Gough Island
	Atlantic Yellow-nosed Albatross Tristan da Cunha
Uruguay Demersal trawl	Black-browed Albatross Falkland Islands (Islas Malvinas) ⁵
Uruguay Pelagic LL	Atlantic Yellow-nosed Albatross Tristan da Cunha
WCPFC Pelagic LL	Black-browed Albatross Antipodes Islands
	Black-browed Albatross Campbell Island
	Black-footed Albatross Central Pacific - Laysan
	Black Petrel Great and Little Barrier Islands
	Campbell Albatross Campbell Island
	Chatham Albatross Chatham Islands
	Grey Petrel All sites
	Laysan Albatross Central Pacific - Laysan
	Northern Royal Albatross Chatham Islands
	Wandering Albatross Macquarie Island
	Westland Petrel South Island

By species population:

Species population	Fishery
Amsterdam Albatross Amsterdam Island	IOTC Pelagic LL
	CCSBT Pelagic LL
Atlantic Yellow-nosed Albatross Gough Island	Namibia Demersal LL
	Namibia Demersal trawl
	ICCAT Pelagic LL
	Brazil Pelagic LL
	SEAFO Demersal trawl
	Angola Demersal trawl
	Namibia Pelagic trawl
	UK (OT) Pelagic LL
	CCSBT Pelagic LL
	Angola Pelagic LL
	Namibia Pelagic LL
Atlantic Yellow-nosed Albatross Tristan da Cunha	Brazil Pelagic LL
	Namibia Demersal LL
	Namibia Demersal trawl
	ICCAT Pelagic LL
	Uruguay Pelagic LL
	SEAFO Demersal trawl
	Angola Demersal trawl
	Namibia Pelagic trawl
	UK (OT) Pelagic LL
	CCSBT Pelagic LL
	Angola Pelagic LL
Namibia Pelagic LL	
Black-browed Albatross Antipodes Islands	WCPFC Pelagic LL
	CCSBT Pelagic LL
Black-browed Albatross Campbell Island	WCPFC Pelagic LL
	CCSBT Pelagic LL
Black-browed Albatross Falkland Islands (Islas Malvinas) ⁵	Argentina Demersal trawl
	Uruguay Demersal trawl
	Brazil Pelagic LL

	ICCAT Pelagic LL
	Argentina Demersal LL
Black-browed Albatross Iles Crozet	CCSBT Pelagic LL
Black-footed Albatross Central Pacific - Laysan	WCPFC Pelagic LL
	IATTC Pelagic LL
Black browed Albatross South Georgia (Islas Georgias del Sur) ⁵	ICCAT Pelagic LL
	SEAFO Demersal trawl
	Namibia Demersal LL
	CCSBT Pelagic LL
Black Petrel Great and Little Barrier Islands	WCPFC Pelagic LL
	CCSBT Pelagic LL
Campbell Albatross Campbell Island	CCSBT Pelagic LL
	WCPFC Pelagic LL
Chatham Albatross Chatham Islands	WCPFC Pelagic LL
	CCSBT Pelagic LL
	Peru Pelagic LL
Grey-headed Albatross Prince Edward Islands	CCSBT Pelagic LL
	IOTC Pelagic LL
Grey-headed Albatross South Georgia (Islas Georgias del Sur) ⁵	Argentina Demersal trawl
	CCSBT Pelagic LL
	ICCAT Pelagic LL
	IOTC Pelagic LL
Grey Petrel All sites	New Zealand Pelagic trawl
	CCSBT Pelagic LL
	ICCAT Pelagic LL
	IOTC Pelagic LL
	WCPFC Pelagic LL
Indian yellow-nosed Albatross Amsterdam Island	IOTC Pelagic LL
	CCSBT Pelagic LL
	Australia Demersal trawl
Indian yellow-nosed Albatross Iles Crozet	IOTC Pelagic LL
	CCSBT Pelagic LL
Indian yellow-nosed Albatross Prince Edward Island	IOTC Pelagic LL
Laysan Albatross Central Pacific - Laysan	WCPFC Pelagic LL
	IATTC Pelagic LL

Northern Giant Petrel Iles Crozet	CCSBT Pelagic LL
	IOTC Pelagic LL
	SIOFA Demersal trawl
Northern Giant Petrel South Georgia (Islas Georgias del Sur) ⁵	Argentina Demersal trawl
Northern Royal Albatross Chatham Islands	New Zealand Pelagic trawl
	CCSBT Pelagic LL
	WCPFC Pelagic LL
	ICCAT Pelagic LL
Salvin's Albatross Bounty Islands	New Zealand Pelagic trawl
Shy Albatross Pedra Branca	Australia Trawl
	Australia Demersal LL
	Namibia Pelagic trawl
	Namibia Demersal LL
	Namibia Pelagic LL
	IOTC Pelagic LL
Sooty Albatross Iles Crozet	CCSBT Pelagic LL
	IOTC Pelagic LL
Tristan Albatross Gough Island	Brazil Pelagic LL
	Brazil Pelagic LL
	CCSBT Pelagic LL
	IOTC Pelagic LL
	ICCAT Pelagic LL
	Namibia Demersal LL
	Angola Pelagic LL
Wandering Albatross Iles Kerguelen	CCSBT Pelagic LL
	IOTC Pelagic LL
Wandering Albatross Macquarie Island	WCPFC Pelagic LL
	CCSBT Pelagic LL
Wandering Albatross Prince Edward Islands	CCSBT Pelagic LL
	IOTC Pelagic LL
Wandering Albatross South Georgia (Islas Georgias del Sur) ⁵	ICCAT Pelagic LL
	CCSBT Pelagic LL
	Brazil Pelagic LL

	Brazil Pelagic LL
	Brazil Demersal trawl
	Argentina Demersal LL
	Argentina Demersal trawl
Waved Albatross Islas Galapagos	IATTC Pelagic LL
Westland Petrel South Island	New Zealand Pelagic trawl
	WCPFC Pelagic LL
	CCSBT Pelagic LL
White-chinned Petrel South Georgia (Islas Georgias del Sur) ⁵	ICCAT Pelagic LL
	CCSBT Pelagic LL
	Brazil Pelagic LL

Appendix 4: Preliminary list of research priorities

Population trend:

Species	Population
Black Petrel	Great and Little Barrier Islands
Campbell Albatross	Campbell Island
Grey Petrel	All sites
Northern Royal Albatross	Chatham Islands
Salvin's Albatross	Bounty Islands
Westland Petrel	South Island
Indian yellow-nosed Albatross	Prince Edward Island
Northern Giant Petrel	South Georgia (Islas Georgias del Sur) ⁵
Chatham Albatross	Chatham Islands
White-chinned Petrel	South Georgia (Islas Georgias del Sur) ⁵
Indian yellow-nosed Albatross	Iles Crozet
Black-browed Albatross	Iles Crozet
Black-browed Albatross	Antipodes Islands
Black-browed Albatross	Campbell Island
Wandering Albatross	Macquarie Island

Overlap of population with fishery:

Species	Population	Fishery	Method
Shy Albatross	Pedra Branca	Namibia	Pelagic trawl
Shy Albatross	Pedra Branca	Namibia	Demersal LL
Shy Albatross	Pedra Branca	Namibia	Pelagic LL
Shy Albatross	Pedra Branca	IOTC	Pelagic LL
Tristan Albatross	Gough Island	Namibia	Demersal LL
Northern Giant Petrel	Iles Crozet	SIOFA	Demersal trawl

Fishing effort within overlap of population with fishery:

Species	Population	Fishery	Method
Black browed Albatross	South Georgia (Islas Georgias del Sur) ⁵	SEAFO	Demersal trawl
Shy Albatross	Pedra Branca	Namibia	Pelagic trawl
Shy Albatross	Pedra Branca	Namibia	Demersal LL
Shy Albatross	Pedra Branca	Namibia	Pelagic LL
Shy Albatross	Pedra Branca	IOTC	Pelagic LL
Atlantic Yellow-nosed Albatross	Tristan da Cunha	SEAFO	Demersal trawl
Atlantic Yellow-nosed Albatross	Tristan da Cunha	Angola	Demersal trawl
Atlantic Yellow-nosed Albatross	Gough Island	SEAFO	Demersal trawl
Atlantic Yellow-nosed Albatross	Gough Island	Angola	Demersal trawl
Tristan Albatross	Gough Island	Namibia	Demersal LL
Atlantic Yellow-nosed Albatross	Tristan da Cunha	Angola	Pelagic LL
Northern Giant Petrel	Iles Crozet	SIOFA	Demersal trawl
Atlantic Yellow-nosed Albatross	Gough Island	Angola	Pelagic LL
Tristan Albatross	Gough Island	Angola	Pelagic LL

Mitigation efficacy:

Species	Population	Fishery	Method
Tristan Albatross	Gough Island	ICCAT	Pelagic LL
Wandering Albatross	South Georgia (Islas Georgias del Sur) ⁵	Brazil	Pelagic LL
Black browed Albatross	South Georgia (Islas Georgias del Sur) ⁵	S Africa	Pelagic LL
Black-browed Albatross	Falkland Islands (Islas Malvinas) ⁵	Brazil	Pelagic LL
Black browed Albatross	South Georgia (Islas Georgias del Sur) ⁵	Namibia	Pelagic LL
Atlantic Yellow-nosed Albatross	Tristan da Cunha	Brazil	Handlining
Atlantic Yellow-nosed Albatross	Tristan da Cunha	Brazil	Pelagic LL
Atlantic Yellow-nosed Albatross	Tristan da Cunha	Brazil	Troll
Atlantic Yellow-nosed Albatross	Gough Island	Brazil	Handlining
Atlantic Yellow-nosed Albatross	Gough Island	Brazil	Pelagic LL
Atlantic Yellow-nosed Albatross	Gough Island	Brazil	Troll
Tristan Albatross	Gough Island	S Africa	Pelagic LL
Tristan Albatross	Gough Island	Namibia	Pelagic LL
Shy Albatross	Pedra Branca	S Africa	Pelagic LL
White-chinned Petrel	South Georgia (Islas Georgias del Sur) ⁵	Brazil	Handlining
White-chinned Petrel	South Georgia (Islas Georgias del Sur) ⁵	Brazil	Pelagic LL
White-chinned Petrel	South Georgia (Islas Georgias del Sur) ⁵	Brazil	Troll
Indian yellow-nosed Albatross	Amsterdam Island	S Africa	Pelagic LL

⁵ "A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty of the Falkland Islands (Islas Malvinas), South Georgia and the South Sandwich Islands (Islas Georgias del Sur e Islas Sandwich del Sur) and the surrounding maritime areas".