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BYCATCH MITIGATION INFORMATION SYSTEM

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The WCPFC Bycatch Mitigation Information System (BMIS)

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1. Introduction

The Bycatch Mitigation Information System (BMIS) is an online resource for fisheries managers, scientists, fishers and the general public. It was conceived as a project of the Western and Central Pacific Fisheries Commission (WCPFC) to centralise information on the mitigation and management of bycatch in the Western and Central Pacific Ocean (WCPO) and make it readily available.

The BMIS can be accessed via the WCPFC website at: <http://bmis.wcpfc.int/index.php>

In 2012, the BMIS stands as a successful reference and educational tool supporting the Commission's responsibilities with regard to the sustainable management of non-target, or bycatch, species in WCPO fisheries - those fisheries targeting highly migratory species, including tuna and billfish. The history of the development of the BMIS can be followed through papers presented at previous WCPFC Scientific Committee (SC) meetings. Specifications for a database system were first presented in an information paper at the WCPFC Scientific Committee (SC) meeting in 2007 (Williams 2007, SC3-EB-IP-02). Updates on BMIS progress were presented in information papers at SC6 in 2010 (Fitzsimmons 2010, SC6-EB-IP-06) and SC7 in 2011 (Fitzsimmons 2011, SC7-EB-IP-03).

The following report gives a brief description of the BMIS and provides an update on progress in the population and development of the database. An overview of plans to expand the scope of the BMIS and the impetus behind this system enhancement is detailed.

2. Database Description

Audience and purpose

As described above, the WCPFC BMIS is a resource for fisheries managers, scientists, fishers and the general public. It is a central repository of information on the mitigation and management of bycatch in the WCPO. The BMIS is published on the WCPFC website so that its content may be easily shared among Cooperating Commission Members, cooperating non-members and participating territories (collectively known as CCMs) and other stakeholders. Its content is continually updated.

In the context of the BMIS, "bycatch" mainly refers to those species of special interest**, such as seabirds, sharks and marine turtles, that are incidentally caught in WCPO fisheries targeting highly migratory species, including tuna and billfish. Much of the information in the BMIS is relevant to bycatch mitigation in similar oceanic fisheries around the world.

Guided by the WCPFC Conservation and Management Measures (CMMs), fisheries in the WCPFC Convention Area are required to "...minimise...catch of non-target species, both fish and non-fish species...and promote the development and use of selective, environmentally safe and cost-effective fishing gear and techniques" and to "protect biodiversity in the marine environment".

The BMIS is a valuable reference and educational tool which has the potential to build understanding of bycatch issues among those involved in tuna fisheries and thereby assist in the adoption of WCPFC Conservation and Management Measures.

*** Following the recent adoption of CMM 2011-03 Conservation and Management Measure to Address the Impact of Purse Seine Activity on Cetaceans, information about cetaceans will be added to the BMIS as resources allow.*

Content

There are several sections to the BMIS. These include **references** (scientific and technical literature), technical **mitigation methods**, **decisions** by WCPFC and other management bodies, and a **list of target and bycatch species**. **Links** to other websites and documents of interest and an **RSS feed** are also features of the database.

The **references** section focuses on seabird, shark and turtle bycatch mitigation methods relevant to the longline, purse seine, pole and line and troll tuna fisheries of the WCPO.

Reference types include peer-reviewed papers in scientific journals, meeting papers (including papers submitted to meetings of the WCPFC and its subsidiary bodies), project reports, fact sheets, and official guidelines from the WCPFC, CCMs, or other Regional Fisheries Management Organisations (RFMOs). The full citation and abstract are listed for each reference.

BMIS descriptions of **mitigation methods** summarize the latest knowledge on bycatch reduction methods. For example, there is a discussion of circle hooks and how they affect turtle and shark bycatch. Descriptions may contain notes on cost, ease of deployment, need for further research and compliance issues.

The BMIS also houses links to WCPFC **decisions** (Resolutions and Conservation and Management Measures) and those of other tuna RFMOs that refer to and/or require the use of particular mitigation methods to protect seabirds, sea turtles or sharks.

In addition, it is possible to search a list of target and bycatch **species** recorded in the WCPO Observer Database. Only those species that have been noted as 'caught by gear' are included. Scientific and common names, as well as Species Identification Codes, are tabulated.

The **links** tab is the place to find useful websites and documents. Links are grouped by theme - Seabirds, Sharks, Turtles, Gear, General, Identification and Handling Guides, Other Bycatch Databases, Asia Pacific, Research, RFMOs and Videos. For example, under 'Identification and Handling Guides' you will find a long list of resources to help you identify seabirds, turtles or sharks, and ways to handle them. Other documents you can find include International Plans of Actions for seabirds and sharks, SPC's Longline terminal gear identification guide and FAO's guidelines to reduce sea turtle mortality in fishing operations.

An **RSS** feed has been added. Subscribers are notified of significant changes to the BMIS (such as updates to CMMs) and bycatch mitigation news.

3. Progress since August 2011

References

The number of references in the database has continued to grow, with around 100 new documents added in the past year (bringing the total to around 350). With the recent adoption of CMM 2011-03 Conservation and Management Measure to Address the Impact of Purse Seine Activity on Cetaceans, it would be useful to add information about mitigation and management of cetaceans to the BMIS. This will be given consideration in the next few months.

Since the start of June 2012, a volunteer has been working a few hours a week with the BMIS. She is collating and entering reference material, as well as evaluating a new reference management system based on the open source (free) software 'Zotero' (see below for details). We are extremely grateful for the assistance.

Zotero reference management software is being evaluated for its potential to support information sharing and collaboration among the BMIS target audience - oceanic tuna fisheries managers (from country level to RFMO level), scientists, industry and other stakeholders. Through its 'Groups' facility, Zotero has the potential to enable an interactive user experience, where the user can not only look at but add references - in many formats - to a general library.

Issues under consideration include copyright and the ability to provide improved access to 'pay-to-view' journal articles; administrator and user access; and the development of protocols for multi-user contributions. Importantly, Zotero may provide a faster way to collect, collate and share literature (bycatch mitigation and management, bycatch species risk assessments, economic analyses of mitigation measures) with BMIS users.

Website traffic analysis and translation

A traffic analysis tool is embedded in the website. Different statistics can be reviewed, including:

- number of visits to the site - total and by country
- number of individual visitors to the site - total and by country
- cities from which visit originate
- the number of return visits
- how often different pages within the site are viewed
- how long (on average) visitors stay at the site
- how visitors found the site, e.g. whether by organic Google search (including what search terms they used), referral from the WCPFC or SPC websites, or directly to the web address

However, we cannot see who or which organisations have visited the site, due to privacy laws.

In the last 12 months, from 1st July 2011 - 30 June 2012, there have been 1365 individual visitors to the website, with 2459 visits overall (i.e. people come back to the site), or around 230 visits per month. Visitors came from 97 different countries/territories, including 30 countries in the WCPO.

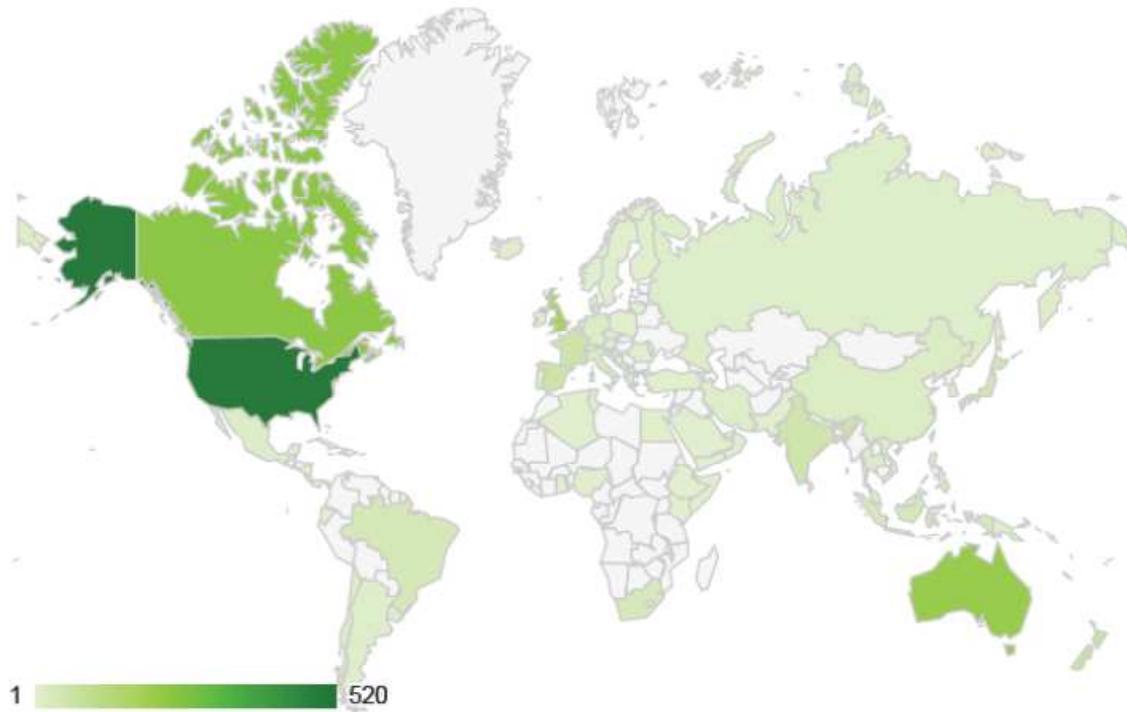
Map One (below) illustrates visitor numbers by country, with the darker shading representing heavier use of the website.

Site bounce rates have improved over the past year. This means that visitors, after arriving at the site, are looking at more pages before they leave.

A new feature of the website is "Google Translate". This allows users to translate text into a broad range of different languages. From traffic analysis data for May-June 2012, users translated BMIS pages into 29 different languages, though pages were predominantly read in English. Most popular languages for translation were Spanish, French, Portuguese, Japanese, Chinese, Italian and German.

Site traffic will continue to be reviewed at regular intervals.

Map One - The BMIS website was visited by users from these countries, 1st July 2011 - 30 June 2012.



Descriptions of mitigation methods

The list of mitigation methods was revised during the year, with two obsolete methods deleted and two new added - the Yamazaki double-weight branchline and the hook/bait pod. The former won the International Smart Gear competition and the latter is an experimental technology, both are aimed at mitigating seabird bycatch.

Several descriptions were revised, including those for corrodible hooks, decoys and fishing gear management. Descriptions were added for stealth fishing gear, lightsticks, deep setting (brief), underwater setting techniques, gear configuration -other, fish not squid bait (brief), safe handling and release (brief) and vessel specific management. The description for circle hooks would benefit from being revised. Outcomes from a circle hook symposium held in 2011 are due to be published in an upcoming issue of the Marine Science Bulletin and will inform the revision. Descriptions have been drafted for soak duration, safe handling and release (detailed version), and sensory deterrent - other.

Birdlife International have recently revised their Seabird Bycatch Mitigation factsheets. They are expected to be published in September 2012 and the BMIS will be updated accordingly. The new factsheets have also been translated into several languages, including Japanese, Spanish and Mandarin Chinese. It is hoped the translated versions will also be available this year.

A list of mitigation methods relevant to mitigation and management of marine mammals needs to be compiled (in response to the adoption of WCPFC CMM 2011-03). The development of descriptions of these mitigation methods would need to be resourced for 2013.

Decisions

Many of the links in the Decisions section have been updated so that the user is taken to a pdf of the regulation, rather than to a link on the RFMO website. We will gradually update all decisions in this way as it improves the reliability of accessing them. New regulations have been added and several superseded regulations removed. A link to the new decisions database of the International Sustainable Seafood (ISSF) website has been added. The ISSF website is useful because it stores a broader range of decisions (i.e. not limited to bycatch of sharks, marine turtles, seabirds and marine mammals), however, fewer RFMOs are covered.

Due to the addition of the WCPFC CMM 2011-03 Conservation and Management Measure to Address the Impact of Purse Seine Activity on Cetaceans, the option to search for decisions relating to marine mammals has been added. At this stage, decisions of other tuna RFMOs relating to marine mammals have not been added.

Links

From the BMIS home page you can select a 'Links' tab. Examples of new links added in the past year are included here:

- Good practices to reduce the mortality of sharks and rays caught incidentally by the tropical purse seiners - ID and handling information;
- How to handle a hooked live bird - factsheet from Birdlife International South Africa;
- Performance assessment of bycatch and discards governance by regional fisheries management organizations (IUCN);
- SEAFDEC - the Southeast Asian Fisheries Development Centre promotes sustainable fisheries development.

RSS feed

Each month two or three RSS news feeds are published via the BMIS. Subscribers to the feed are advised of significant updates to the BMIS, e.g. revised Decisions or Regulations, and bycatch news, e.g. 'The economic cost of seabird bycatch in Argentinean longline fisheries'. One-off visitors to the BMIS website can click on the RSS icon to view a list of recent feeds.

Promotion and Feedback

The BMIS would benefit from more promotion. The trade-off (in resources) between keeping the site up-to-date and making it well-known is challenging. When promotional activities do occur, it is accompanied by a surge of interest in the site.

One way to improve the visibility of the BMIS is to provide links to it from other websites. A link to the BMIS was added to Wikipedia and the Observer pages of the SPC Oceanic Fisheries website. Most websites require the permission of the site owners before a link can be added. Requests to add a link to the BMIS were approved for the NOAA Alaska (seabird research) and the ACAP (Agreement on the Conservation of Albatrosses and Petrels) websites.

Another avenue for promotion is to submit information papers to bycatch working groups. It has been suggested that a paper be submitted to the next ACAP Seabird Working Group meeting to discuss issues relevant to the BMIS, such as obtaining species expert input to mitigation method descriptions.

A factsheet has been drafted but publishing held back. We are waiting on a significant modification to website functionality which will assist users to find free pdfs of otherwise 'pay-to-view' documents. Instructions for using this function need to be included in the factsheet.

Feedback - your input would be appreciated, it will help us to improve the BMIS. Please take a look at the website and use the contact facility provided or email larissaf@spc.int.

International Recognition

The BMIS gained recognition through the Kobe III process, with the Bycatch Joint Technical Working Group recommending that it meet *"to develop a centralized bibliographic bycatch database that includes information on mitigation, bycatch conservation and management measures adopted by the RFMOs and past assessments undertaken by RFMOs". "BMIS to be modified to accommodate additional RFMO information. Existing Bibliographies (BMIS/ICCAT) to be synchronised."*

Implications of this recognition are discussed below (Section 5).

4. Work to be completed by January 2013

Development of the BMIS is funded until 31st December 2012. Work will be directed at the ongoing update of the database and the completion of specific tasks, as follows:

- Review and revision of the list of mitigation methods (in particular, cataloguing those methods relevant to mitigating marine mammal bycatch)
- Collection and collation of reference material concerning the methods listed above, population of the database with new citations and links
- Synthesis of collected literature to develop new descriptions of mitigation methods and to revise existing descriptions as appropriate
- Assessment of Zotero reference management software as a means of updating the current literature management system
- Monitoring of tuna RFMO Decisions relevant to seabird, shark, marine turtle and marine mammal bycatch (add new IOTC regulations)
- Update of administration guides and user help guide
- Progress factsheet
- Establishment of links to the BMIS from other websites
- Initiation of planning of redesign of user interface (more appealing and professional interface)
- Contribute to Global Environment Fund bid process
- Website traffic analysis

5. Further development of the BMIS

Initial development of the BMIS has focused on the collection, collation and sharing of appropriate information (i.e. references, regulations, descriptions of mitigation methods, useful weblinks) and the ongoing update of content. Subsequently other development options have been identified. This shift in focus is due in part to our understanding of what would be useful to provide our intended audience, but also from support garnered from other quarters. The Kobe III Bycatch Joint Technical Working Group, which met in La Jolla in July 2012, gave in-principle support to the BMIS as a joint tuna RFMO resource (see Section 3 - International Recognition, above). In summary, it has been proposed that the BMIS broaden its scope to better serve a global audience.

Terms of Reference for Funding Support

In late 2011 a document, "Bycatch Mitigation Information System (BMIS) - Terms of Reference for Funding Support" was drafted (see Attachment One). This document provides a rationale for the enhancement of the BMIS and presents options for its further development. In brief, these options include improvement of the website appearance, incorporation of specific regional information for each tuna RFMO, translation and expansion of the type of information included (e.g. expand to include species risk assessments, economic analyses of bycatch mitigation methods). Many of these options were discussed in last year's BMIS progress report (Fitzsimmons, 2011). The 'Terms of Reference' was also drafted with the aim of securing additional, longterm funding for the BMIS.

Bycatch Wiki

One development option not discussed in the 'Terms of Reference', but which should be carefully considered, is the creation of a tuna bycatch 'wiki'. A bycatch wiki would serve several purposes. It would facilitate the dissemination of practical experience and insight of fishers and fisheries researchers e.g. describe inexpensive ways to make line cutters, dehookers and gaffs, or explain onboard practicalities of using one line weighting system over another. It also has the potential to improve the quality of mitigation method descriptions, if species experts can be encouraged to participate (and comment on one another's research). It would also provide an interactive user experience, which is a way to encourage engagement in the bycatch mitigation and management issue.

Global Environment Fund Bid

The 'Terms of Reference' described above articulates the need to seek additional, long-term funding solutions for the BMIS. Ideally, other tuna RFMOs would contribute, however, this is not likely in the short term. Consequently funding for the BMIS has also been sought through other avenues. At present, the BMIS is contending for funds under a Global Environment Fund project with the stated objective of "mitigating adverse impacts of tuna fishing on biodiversity". The outcome will be known later in 2012 but, if successful, funds would not be available until at least mid-2013.

6. The Last Word

Over the past few years, the BMIS has evolved into a valuable reference and educational tool supporting WCPFC management responsibilities. A primary objective of further development of the BMIS is to support information sharing and collaboration globally, among oceanic tuna fisheries managers (from country level to RFMO level), scientists, industry and other stakeholders. Such an outcome would benefit the Commission and CCMs.

In the BMIS report to SC7, it was stated that the BMIS is a 'living document' which requires active management to keep content current. Information needs to be collected, analysed and integrated on a regular basis. Staff need to be available to respond to user enquiries and contributions, and make technical changes to the database and user interface where necessary. In short, regardless of whether further development proceeds, the BMIS requires ongoing resources to retain its relevance and usefulness and thus needs your support.

7. References

Williams, P.G. 2007. Specification of a database system to manage and facilitate access of information covering (i) by-catch and (ii) by-catch mitigation on behalf of the Western and Central Pacific Fisheries Commission (WCPFC). WCPFC-SC3-EB-IP-2.

<http://www.wcpfc.int/doc/eb-ip-2/specification-a-database-system-manage-and-facilitate-access-information-covering-i-catc>

Fitzsimmons, L. 2010. WCPFC Bycatch Mitigation Information System (BMIS). WCPFC-SC6-EB-IP-06.
<http://www.wcpfc.int/node/2926>

Fitzsimmons, L. 2011. Bycatch Mitigation Information System. WCPFC-SC7-EB-IP-03.
<http://www.wcpfc.int/doc/eb-ip-03/bycatch-mitigation-information-system>

8. ATTACHMENT 1

Bycatch Mitigation Information System (BMIS) Terms of Reference for Funding Support

Purpose of this Document

The purpose of this document is to:

- a. describe the Bycatch Mitigation Information System (BMIS);
- b. explain what resources and benefits it offers other tuna Regional Fisheries Management Organisations (tuna RFMOs);
- c. describe functionalities that will be added to the database;
- d. outline work required to maintain and develop the database;
- e. detail budgetary requirements to ensure the longterm survival of the BMIS; and
- f. request assistance in financing the BMIS.

The Bycatch Mitigation Information System (BMIS)

Overview

The Bycatch Mitigation Information System (BMIS) is a fully functional, online database. It is the result of a Western and Central Pacific Fisheries Commission (WCPFC) project to centralise and make readily available, information on the mitigation and management of bycatch in the Western and Central Pacific Ocean (WCPO). The database is a reference and educational tool that supports the Commission's Conservation and Management Measures (CMMs) regarding the sustainable management of bycatch species of special interest, such as sharks, seabirds and sea turtles.

The BMIS can be accessed at: <http://bmis.wcpfc.int/index.php>

Much of the information in the BMIS is relevant to bycatch mitigation and management in similar oceanic fisheries around the world (those dealing with tuna and billfish caught on longline, purse seine, troll or pole and line fishing gear). Research into these issues is conducted not only in the WCPO, but around the globe in the management areas of other tuna RFMOs.

The BMIS gained in principle support from other tuna RFMOs at the first Kobe Process Bycatch Joint Technical Working Group meeting in La Jolla, July 2011. Two recommendations concerned the BMIS (see Appendix 1). The first supported development of a centralized bibliographic bycatch database, with the BMIS to be modified to accommodate additional RFMO information. The second involved modifying the BMIS to include a provisional list of tuna RFMO supported research activities.

A Unique Database

The BMIS is different from other bycatch databases (see Appendix 2 for links to other bycatch databases). This is a matter of focus. The design of the database and the delineation of material included in it are based on particular objectives. These include that the BMIS act as a repository of information about:

- a) bycatch mitigation and management in oceanic tuna and billfish fisheries in the WCPO
- b) mitigation methods relevant to longline, purse seine, pole and line, and troll fishing (in the fisheries mentioned above) shown to reduce, or with the potential to reduce, bycatch of seabirds, sea turtles and sharks.

Thus the BMIS does not deal with traps, trawl, dredge, gillnet or surrounding net fishing gear, nor recreational fisheries. It does not (as yet) include literature about marine mammals. While it focuses on oceanic fisheries, information in the BMIS is frequently applicable to nearshore fisheries as well, e.g., circle hooks are useful in both.

References are selected with objectives a) and b) in mind. Additionally, the BMIS has a charter to make available Decisions (regulations, resolutions, conservation and management measures etc) of tuna RFMOs that mention or require the use of mitigation methods as described above.

These RFMOs include:

CCAMLR - Commission for the Conservation of Antarctic Marine Living Resources

IOTC - Indian Ocean Tuna Commission

IATTC - Inter-American Tropical Tuna Commission

ICCAT - International Commission for the Conservation of Atlantic Tunas

NAFO - Northwest Atlantic Fisheries Organisation

SEAFO - South East Atlantic Fisheries Organisation

IOSEA (Indian Ocean South East Asian Marine Turtle Memorandum of Understanding) is also included.

It is also possible to use the BMIS to search a list of target and bycatch species derived from the WCPO Observer Database.

The Links section facilitates the inclusion of useful information which might not otherwise fit in the References section of the database, for example, species identification guides or lists of bycatch mitigation research institutions or details of the annual Smart Gear competition.

Reasons for a Global Tuna RFMO Bycatch Mitigation Database

There are significant benefits and efficiencies to be gained from the development of a single bycatch mitigation and management database for tuna RFMOs.

- a. Support for Decisions/Regulations - A bycatch database consolidates information useful for demonstrating the science behind regulations. The BMIS includes reviews of existing knowledge (including differing viewpoints) about mitigation methods and their application. 'Virtual links' are made between these reviews and regulations. Compiling useful information is time consuming and often difficult, which leads to point b) below.
- b. Avoid duplication - It saves time and money to centralise information that supports the bycatch mitigation and management responsibilities of tuna RFMOs.
- c. Avoid confusion - With a 'one-stop-information-shop' for bycatch mitigation and management in oceanic tuna/billfish fisheries, it is easier for potential users of this information to find what they are looking for.
- d. Coordination - A central database provides another avenue for tuna RFMOs to coordinate on bycatch issues, including research into bycatch mitigation measures.
- e. Cost - Substantial resources are required to maintain a bycatch database. Costs can be shared among tuna RFMOs.

Expanding the BMIS - Additional Functionalities

Existing sections of the BMIS include:

- a. References
- b. Decisions/Regulations
- c. Descriptions of Mitigation Methods
- d. List of Target and Bycatch species

e. Other Information - Links.

Additional functionalities will enhance the BMIS as follows:

a. References

Species - Literature in the BMIS currently deals with seabirds, sharks and marine turtles. Marine mammals are an issue for most tuna RFMOs and will be added in. Reference collection, collation and database entry for new species groups represents a significant workload.

Language - Tuna RFMOs operate in English, but also in other languages. The BMIS will be modified to accommodate non-English literature with the addition of filters to enable searching by language.

To establish and keep current the non-English literature component of the BMIS, individual tuna RFMOs need to nominate a staff member to be responsible for collating and forwarding non-English technical reports and other reference material to the BMIS coordinator.

"Google translate" will be investigated to gauge how successfully it can be used in the BMIS (For example, it is used on the International Sustainable Seafood Foundation [ISSF] website at <http://issf-foundation.org/science/projects/bycatch-reduction/fieldwork/> and look for the software at the bottom of the page).

ICCAT bycatch database - Relevant references from the ICCAT database will be loaded into the BMIS (as approved by ICCAT).

b. Decisions/Regulations

These will be kept up to date for all tuna RFMOs as well as some other organisations e.g. IOSEA.

c. Descriptions of Mitigation Methods

These explain how a mitigation method works and provide a summary of recent research. Existing descriptions will be revised in light of new research and new methods and descriptions added as necessary.

d. List of Target and Bycatch species.

A filter will be added to enable the list of target and bycatch species to be searched by RFMO management area. Target and bycatch species data for other tuna RFMOs will be integrated as it is received .

e. Other information

Other bycatch mitigation information is accessible via the BMIS. We will build upon existing sections, which include Seabirds, Sharks, Turtles, Gear, General, Identification and Handling Guides, Other Bycatch Databases, Pacific Island Fisheries, Research, RFMOs and Videos.

With regard to Research, we will add further links to organisations involved in bycatch mitigation research. However, we will also create a summary of bycatch mitigation and management research projects that tuna RFMO and other institutions are involved in. The success of this will depend upon the input of other RFMOs.

New sections will be investigated and information added as appropriate:

- i. Ecological risk assessments
- ii. Economic benefits of bycatch reduction techniques
- iii. Meeting reports of ecosystem working groups and symposium
- iv. Country reporting on bycatch reduction measures

Re 'Country reporting on bycatch reduction measures', it was proposed in an information paper submitted to the August 2011 WCPFC Scientific Committee meeting (<http://www.wcpfc.int/doc/eb-ip-03/bycatch-mitigation-information-system>), that the BMIS provide access to a summary of CCM* annual reports which demonstrate how Conservation and Management Measures (CMMs) for bycatch species have been addressed (this would make it easy to see, for example, what countries adopted line weighting as a mitigation measure and for what period of years).

Tuna RFMOs other than WCPFC will have their own bycatch reduction measure reporting arrangements, but these could be similarly summarised in the BMIS. Original reports will be included in the Reference section of the database.

** Cooperating Commission Members, cooperating non-members and participating territories, collectively known as CCMs*

BMIS Administration

a. Location

The BMIS is currently accessible via the WCPFC website. Agreement will be needed to keep it thus located, at least in the interim. Support will be recognised through the use of text and logos. RFMOs can create a link to the BMIS from their websites.

b. Access database changes

The Access database behind the BMIS will be modified to accommodate changes, including the addition of marine mammals, integration of non-English literature and new lists of target and bycatch species.

c. Website reorganisation

Reorganisation and some redevelopment of the website will occur to accommodate the outlined changes to the BMIS. Text and appearance (e.g. logos) changes will be made. Changes will be made to accommodate and meet specific regional needs, i.e., to ensure there are areas devoted to idiosyncratic issues of each oceanographic region/ tuna RFMO management area.

d. Other

Administration guides and the online User Help guide will be updated.

Resources

a. Maintenance and Development

The BMIS can be regarded as a 'living document', one which requires continual updating. The tasks which must be completed for basic maintenance include:

- new reference material collected and added to the database;
- mitigation method descriptions revised to reflect new research findings; new methods added as appropriate;

- decisions/regulations monitored to ensure new and updated tuna RFMO decisions are included;
- links managed to provide useful, up-to-date information to BMIS users, e.g. species identification and handling guides, National Plans of Action for seabirds and sharks;
- website traffic analysis;
- ongoing promotion (newsletter articles, links to BMIS from other websites, RSS feeds)
- update of administration guides;
- IT updates of website - links, new references, revised or new decisions etc; and
- creation/revision of explanatory material e.g. factsheets.

The development of additional functionalities, such as inclusion of marine mammals, requires resources over and above what is required for maintenance.

b. Staff

- BMIS coordinator (currently Secretariat of the Pacific Community - SPC)
- BMIS Information Technology officer (currently SPC)
- Tuna RFMOs. Each RFMO would need to nominate a staff member to liaise with the BMIS coordinator. The duties of this role include:
 - articulating the needs of each RFMO re the BMIS
 - collecting and forwarding RFMO reference material (e.g. Bycatch Working Group meeting papers), particularly non-English language documents that are not easily sourced through journals
 - forwarding details of RFMO research programmes
 - advising the BMIS coordinator of updates to RFMO Decisions/ Regulations
 - advising the BMIS coordinator of changes to RFMO websites

Budget

This budget covers 12 months of a full time position and Information Technology support.

Technical Assistance	Unit	Quantity	Unit Cost*#	Total/yr
Data Sourcing & Synthesis	person-month	1	7,000	7,000
Data Analysis	person-month	4	7,000	28,000
Database Population	person-month	2	7,000	14,000
Database Review & Moderation	person-month	2	7,000	14,000
Database Design	person-month	8	7,000	56,000
Web Access & Maintenance	person-month	4	7,000	28,000
Sub-total				147,000
Technical Services				
Translation	person-day	50	400	20,000
Sub-total				20,000
TOTAL				167,000

* technical Assistance based on Band 8 CROP salaries, # based on current SPC translation rates

Appendix 1 - Recommendations of the first meeting of the Bycatch Joint Technical Working Group

1. Progress BMIS information sharing website

The Working Group agreed to meet to develop a centralized bibliographic bycatch database that includes information on mitigation, bycatch conservation and management measures adopted by the RFMOs and past assessments undertaken by RFMOs; with the effort led by ICCAT, IOTC, and WCPFC.

WCPFC Requirement: BMIS to be modified to accommodate additional RFMO information. Existing Bibliographies (BMIS/ICCAT) to be synchronised.

2. Identify and recommend research priorities and prioritization of collaborative work

Provisional list of research activities has been identified. All RFMOs to review and revise the draft list. The BMIS to be modified to include this list. The list should also include current and upcoming research conducted or supported by tuna RFMOs. This would help to avoid overlap and ensure the efficient use of limited research resources. The list might include an outline, timetable and contacts for the research program, i.e. who is doing what, where and when. Such information would also be useful for scientists in government and academia, as well as NGOs.

WCPFC Requirement: BMIS to be modified. WCPFC secretariat to provide list to working group chairs. WCPFC to designate/employ a dedicated bycatch staff person to work collaboratively with other RFMOs to promote bycatch related work.

Appendix 2 - Other Bycatch Databases

The following databases can be accessed by going to the BMIS at <http://bmis.wcpfc.int/index.php>, clicking on the 'Links' tab, then selecting the 'Other Bycatch Databases' sub-tab.

- [Consortium for Wildlife Bycatch Reduction](#) - Bycatch Reduction Database
- [IOSEA Marine Turtle Bibliography Resource](#) - a comprehensive collection of reference material on marine turtles of the Western and Northern Indian Ocean
- [Project GLOBAL Bycatch and Mitigation Bibliography](#)
- [Sea Turtle Online Bibliography](#) - This online bibliography includes all aspects of sea turtle biology, conservation and management. Citations are from recognized bibliographic sources as well as grey literature. Archie Carr Sea Turtle Research Centre.
- [WWF Bycatch Solutions Database](#) - searchable by gear, bycatch type, and region/target species - TEMPORARILY UNAVAILABLE