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BYCATCH MITIGATION INFORMATION SYSTEM

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L.Fitzsimmons¹, Sarah Bunce¹

¹ SPC-OFP, Noumea, New Caledonia.

The WCPFC Bycatch Mitigation Information System (BMIS)

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Executive Summary

Introduction

The Western and Central Pacific Fisheries Commission (WCPFC) Bycatch Mitigation Information System (BMIS) is an online resource for fisheries managers, scientists, fishers and the general public. The database is a repository of information on the mitigation and management of bycatch of special interest, including seabirds, sharks and marine turtles that are incidentally caught in Western and Central Pacific Ocean (WCPO) fisheries targeting highly migratory species, including tuna and billfish.

The BMIS is a valuable reference and educational tool that 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.

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

Initiated as a project of the WCPFC, the development of the BMIS can be followed through papers presented at previous WCPFC Scientific Committee (SC) meetings (see 'References'). These papers explain the structure and content of the BMIS.

Progress

Update of the BMIS has continued, with the collection, analysis and presentation of new bycatch mitigation and management literature, as well as the review and update of existing material such as, for example, descriptions of mitigation methods, Regional Fisheries Management Organisation (RFMO) regulations, and links to useful websites.

In October 2012, the BMIS coordinator travelled to the symposium 'Mitigating impacts of fishing on pelagic ecosystems: towards ecosystem-based management of tuna fisheries' in Montpellier, France. As a result, the BMIS is more widely known among researchers, contacts with bycatch species experts were established and detailed information from symposium presentations has enhanced the database.

The BMIS proved a useful resource this year for researchers writing the FAO Technical Report "Bycatch in tuna longline fisheries". The report will likely be published early 2014 - the draft mentions the BMIS. The synthesis of current bycatch literature contained in the report will be of great value in revising several BMIS mitigation method descriptions, in particular circle hooks.

Last year's BMIS SC paper (WCPFC-SC8-EB-IP-01, see 'References') discussed the development of the BMIS as a joint tuna RFMO resource, to support information sharing and collaboration globally. Funding to achieve this was sought under the Global Environment Facility Areas Beyond National Jurisdiction (ABNJ) Program. Latest advice is that this funding will be available under the "Sustainable Management of Tuna Fisheries and Biodiversity Conservation in ABNJ" project, though funding is unlikely to be available until 2014. WCPFC and the International Sustainable Seafood Foundation (ISSF) have funded the BMIS until 31st December 2013.

Background

1. In Brief - Database Description, Audience, Purpose

BMIS papers presented to WCPFC Scientific Committee meetings in 2010, 2011 and 2012 (see 'References' for links to these documents) provide an overview of the database. Consult these documents for a description of the different sections of the BMIS, i.e., References, Mitigation Methods, Decisions & Regulations, Target & Bycatch Species, Links and RSS feed.

The audience of the BMIS is broad, encompassing fisheries managers, scientists, fishers and the general public. The database is published via 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.

The audience of the BMIS is not, however, confined to the WCPO. While the database centralises information on the mitigation and management of bycatch in the WCPO, much of the information it contains applies to similar oceanic fisheries globally. This is the reason that development of the BMIS as a joint tuna RFMO resource has been considered (under the Kobe III process *) and commensurate funding sought under the Global Environment Facility - Areas Beyond National Jurisdiction (ABNJ) Program. Latest advice is that this funding will be available under the "Sustainable Management of Tuna Fisheries and Biodiversity Conservation in ABNJ" project, though funding is unlikely to be available until 2014. WCPFC and the International Sustainable Seafood Foundation (ISSF) have funded the BMIS until 31st December 2013..

*Refer to WCPFC-SC9-EB-WP-04 Progress on Kobe III bycatch specialist working group.

2. Progress since August 2012

2.1. Reference Management

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 almost 450).

New references entered over the past year:

- Line weighting regimes (and other factors affecting bait sink rate) and streamer line configurations were the focus of many seabird mitigation papers.
- With regard to sharks, there were a number of papers evaluating electrosensory repellents i.e., testing the use of magnets and rare earth metals to repel sharks from hooks, and one looking at semiochemical shark repellents.
- For both turtles and sharks, the debate around the use of circle hooks generated a significant body of literature.

Marine mammal literature has been collected on an 'ad hoc' basis. Resources to complete a detailed search for relevant marine mammal mitigation and management literature, entry of references, collection and entry of RFMO regulations etc were not available. Completion of this project would support the adoption of CMM 2011-03 *Conservation and Management Measure to Address the Impact of Purse Seine Activity on Cetaceans*.

From June 2012 until March 2013 a volunteer worked a few hours a week with the BMIS, collating and entering reference material (and working on Zotero, see below). The volunteer made a 'spring clean' of the BMIS, updating broken links and removing errors. New links were added and others updated.

2.1.1. Zotero

A volunteer working on the BMIS evaluated reference management software, the open source (free) 'Zotero'. There were a number of outcomes from this work:

- Zotero was evaluated in comparison with Endnote and deemed suitable for the purposes of the BMIS. #
- Draft User and Administration Guides were developed (including protocols for multi-user contributions).
- Zotero is now used to capture all new reference material prior entry in the BMIS.

Zotero was 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 can enable an interactive user experience, where the user can view and add references - in many formats - to a general library. There is still an issue of copyright, but through Zotero settings, users can be restricted to viewing citation details while excluding pdfs.

Ultimately, Zotero should provide a faster way to collect, collate and share an expanded range of bycatch mitigation related literature (bycatch mitigation and management, bycatch species risk assessments, economic analyses of mitigation measures) with BMIS users. Work remains to be completed, however, it is hoped that this can be dealt with under the GEF funding.

2.2. Descriptions of mitigation methods

The BMIS proved a useful resource this year for researchers writing the FAO Technical Report "Bycatch in tuna longline fisheries". The report will likely be published early 2014 – the draft makes reference to the BMIS. The synthesis of current bycatch mitigation and management literature in the report will be of great value in revising several BMIS mitigation method descriptions, in particular 'circle hooks', but also 'fish not squid bait', 'night/day line setting', 'magnetic, E+, electrical deterrents', 'monofilament', 'soak duration', 'spatial and temporal measures'.

The list of mitigation methods was revised during the year, with the names of two methods updated. Developers of the 'Smart Hook' renamed it the 'Smart Tuna Hook' to differentiate it from a similarly named shark-repelling hook). 'Olfactory deterrents or attractants' was simplified to 'Chemical deterrents or attractants'.

'Safe Leads' was revised to incorporate a new variant, the 'Lumo Lead'. A number of revised Birdlife International seabird bycatch mitigation factsheets were added to the database.

'Artificial baits' has been completely revised and the draft sent for expert review. A detailed version of 'Safe handling and release' is near completion. Work on 'spatial and temporal measures' was progressed.

With regard to the development of a list of marine mammal bycatch mitigation and management methods and their description, a recently published review paper will be of great use to this end (as resources become available).

In October 2012, the BMIS coordinator travelled to the symposium 'Mitigating impacts of fishing on pelagic ecosystems: towards ecosystem-based management of tuna fisheries' in Montpellier, France. Detailed information from symposium presentations has enhanced the database, in particular mitigation method descriptions.

2.3. Decisions

Commission for the Conservation of Southern Bluefin Tuna (CCSBT) bycatch Decisions (binding and non-binding measures) are now available in the BMIS. Their addition was accompanied by an explanatory RSS feed. For other RFMOs, new or revised decisions have been added.

Individual country shark regulations for WCPFC CCMs are being collected by SPC staff. This project will be followed to determine if and how it might be useful for the BMIS.

2.4. Website Interface

The website search interface for the References and Mitigation Methods sections of the BMIS was extensively reorganised. More detailed explanatory text was added to help users search more efficiently.

The problem of copyright protected references not being accessible in full via the BMIS (only their citation is available) was addressed by explaining how to use [Google Scholar](#) to find free PDFs online. It was also made clear that authors may publish PDFs of journal articles on personal websites or provide PDFs on request.

The Links tab was also redesigned and new sections added e.g. 'Identification and Handling Guides'. This particular section has subsequently been redesigned to include sub-categories; the changes will show shortly.

All technical aspects of the web interface changes to the BMIS were implemented by SPC IT support.

A new policy has been implemented to improve consistency of access to references and decisions in the BMIS by reducing the problem of obsolete web links. Whenever a document is freely available, not copyright protected, it is converted to pdf format and made available as a pdf rather than via a link. While all new reference material is treated this way, retrospective work will take some time.

2.5. Website traffic analysis

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.

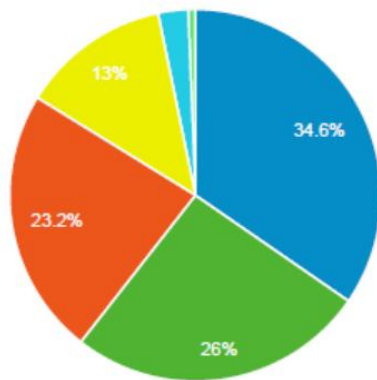
In the last 12 months, from 1st July 2012 - 30 June 2013, there have been 1348 individual visitors to the website, with 2381 visits overall (i.e. people come back to the site), or around 200 visits per month (similar to the past two years). Visitors came from 97 different countries/territories, with around a third of these from Oceania (**Graph One**). **Map One** (below) illustrates visitor numbers by country, with the darker shading representing heavier use of the website.

"Google Translate" is embedded in the website, allowing users to translate text into a broad range of languages. Pages were predominantly read in English; the translation facility is not used very much. Most popular languages for translation were French, Japanese, Chinese, Spanish and Portuguese.

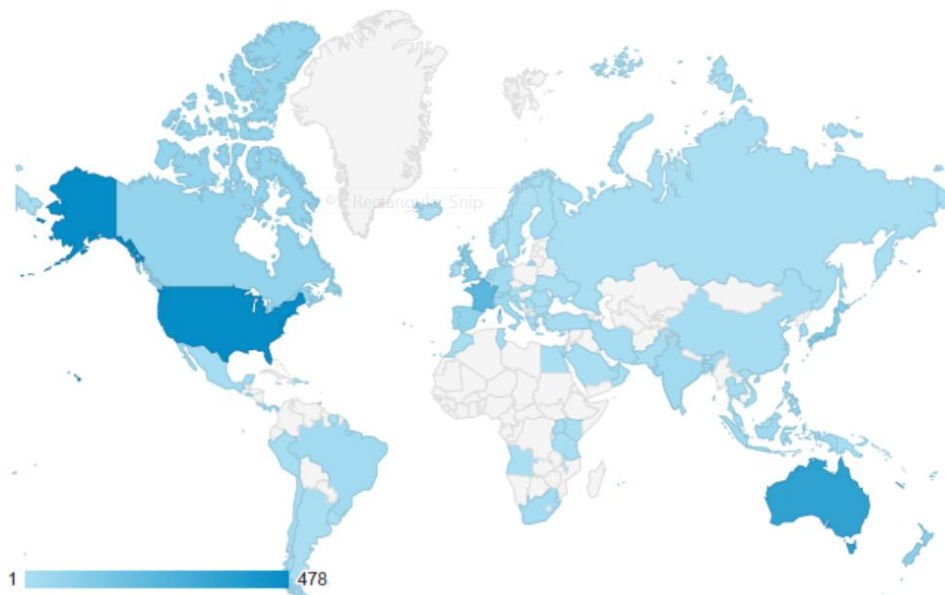
Site traffic is reviewed monthly.

Graph One - Proportion of visits by continent

Visits by Continent



Map One - The BMIS website was visited by users from these countries, 1st July 2012 - 30 June 2013.



2.6. Miscellaneous

A paper describing the BMIS was submitted to the ACAP Seabird Working Group 5 held in La Rochelle, France, May 2013.

Funding for the Zotero and marine mammal bycatch mitigation and management projects was sought from the World Wildlife Fund (WWF). Interest in the projects was positive, however, funds were not available.

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., "[Toothed whale depredation and bycatch](#)", and "[Linking sensory biology and fisheries bycatch reduction in elasmobranch fishes: a review with new directions for research](#)". One-off visitors to the BMIS website can click on the RSS icon to view a list of recent feeds.

3. Work to be completed by January 2013

Development of the BMIS is funded until 31st December 2013. Work will be directed at the ongoing update of the database and the completion of specific tasks, as follows:

- Synthesis of collected literature to develop new descriptions of mitigation methods and to revise existing descriptions as appropriate (line weighting, streamer lines, circle hooks, safe handling)
- Review and revision of the list of mitigation methods
- Monitoring of tuna RFMO Decisions relevant to seabird, shark, marine turtle and marine mammal bycatch
- Review and update of information available under the Links tab
- Update of administration guides and user help guide
- Establishment of links to the BMIS from other websites
- Website traffic analysis

As time allows:

- Collection and collation of reference material concerning marine mammals
- Use of Zotero as a BMIS tool

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