

ANTARCTIC FISHERIES STRATEGIC RESEARCH PLAN

2014/5 – 2018/9

This Antarctic Fisheries Strategic Research Plan was developed by the Sub-Antarctic Resource Assessment Group (SARAG) and identifies areas of high priority research for Sub-Antarctic Fisheries for the period 2014/5 – 2018/9 financial years. The current membership of SARAG comprises:

Name	Position
Professor John Buckeridge	SARAG Chairman
Dr Malcolm Haddon	CSIRO
Dr Richard Hillary	CSIRO
Dr Jemery Day	CSIRO
Mr Martin Exel	Industry
Mr Les Scott	Industry
Dr Dirk Welsford	Australian Antarctic Division
Dr Philippe Ziegler	Australian Antarctic Division
Dr Heather Patterson	ABARES
Ms Jo Fisher	AFMA
Ms Sarah Kirkaldie	AFMA

A Five Year Strategic Research Plan is a requirement of the *Heard Island and McDonald Islands Fishery Management Plan 2002* and the *Macquarie Island Toothfish Fishery Management Plan 2006*. Both management plans also require that in developing and implementing a fishery assessment plan (FAP) AFMA must have regard to the Five Year Strategic Research Plan. Therefore the Five Year Strategic Research Plan will be used in developing the FAPs for each fishery. It is important to note that, given that a range of research needs to be addressed during the 2014/15 year, an Antarctic Fisheries 2014/15 Annual Work Plan will be developed. The annual work plan will include specific research that may not have been identified in the Strategic Research Plan 2014/15 – 2018/19.

Only projects which are considered to be of high priority are included in the Strategic Research Plan. The numbering is for ease of reference but does not necessarily reflect any order of merit or priority.

SARAG recognises that it will require significant resources and funding to complete all the items on the Strategic Research Plan. Given the current funding environment it is possible that not all of these will be completed within the 5-year timeframe of this Plan. However, in preparing this Plan SARAG has tried to present a picture of the level of work required to address issues in relation to the management of the fisheries.

Projects identified can either be carried out for the Macquarie Island Toothfish Fishery (MITF), the Heard Island and McDonald Islands (HIMI) Fishery, Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) New and Exploratory fisheries or a combination of these fisheries. Where projects are identified to be carried out for only one of the fisheries, the manner in which any results can be extended to cover other fisheries should be clearly indicated.

NOTES

	Indicates that the project has been funded
	Indicates that the project has not been funded
	Indicates no further work contemplated

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OBJECTIVE	PURPOSE	PROJECTS	TIMEFRAME					Project U'way? Yes/No	Details
			14/15	15/16	16/17	17/18	18/19		
A	1. Develop and review appropriate stock assessment models for toothfish and icefish and also bycatch species (particularly skates and grenadiers) which are not retained for commercial use.	a) SARAG stock assessment - MITF	■	■	■	■	■	Yes	CSIRO funded by AFMA Research Fund (ARF) until June 2016. Required annually until 2015/16, and then biennially from 2016/17
		b) Review of MITF biennial assessment						No	Biennial assessment to be reviewed a few years after biennial assessment approach begins in 2016/17. Review to occur in non-assessment year. Required after biennial assessment has been underway for several years.
		c) CCAMLR stock assessment – HIMI	■	■	■	■	■	Yes	AAD core funding. Includes updating model data and parameter estimates (for example growth, survey <i>q</i>) and sensitivity analyses (eg use of survey index) Required biennially
		d) Stock assessment for mackerel icefish	■	■	■	■	■	Yes	Required annually or after each RSTS
		e) Stock assessment of Unicorn Icefish	■					Yes	An urgent priority given industry came close to triggering the CCAMLR bycatch limit during the 2013/14 fishing season. Required to be completed during 2014/15; industry funded.
		f) Stock/risk assessments for key bycatch (skates and grenadiers)	■					Yes	With the increased HIMI TAC, skate and grenadier bycatches are likely to increase. Recognising other research priorities, this work will need to be commenced in 2014/15 for completion by CCAMLR in October 2015. (Note interacts with ERAEF) Required for CCAMLR 2015. Industry funded.
		g) Stock assessment for grey rock cod	■					Yes	
	2. Spatial stock structure and movement dynamics of toothfish	a) Evaluate importance of spatial toothfish and fishery dynamics for HIMI assessment	■	■	■	■	■	Yes	Development of robust assessment methods and harvest strategies for spatially complex, multi-jurisdictional toothfish fisheries in the Southern Ocean (Kerguelen Plateau project) supported by FRDC, IMAS and Industry and in collaboration with France 2014-2017.

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			b) Evaluate importance of spatial toothfish and fishery dynamics for stock assessments across the entire Kerguelen Plateau	■					Yes	Development of robust assessment methods & harvest strategies for spatially complex, multi-jurisdictional toothfish fisheries in the Southern Ocean (Kerguelen Plateau project) supported by FRDC, IMAS and Industry and in collaboration with France 2014-2017. Also an MSC requirement. Required by mid 2016
			c) Movement and recruitment of toothfish between areas at Macquarie Island, including size and habitat based movement	■	■	■	■	■	No	Future research
			d) Strategic Review of Spatial Management in MITF	■	■	■	■	■	No	Future research
		3. Estimation of parameters	a) Natural mortality of toothfish in HIMI Fishery		■				No	
			b) Estimate M inside and outside of spawning stock at Macquarie	■	■	■	■	■	No	Future research
		4. Investigate spawning dynamics of toothfish	a) Quantifying level of spawning in MITF		■				No	
B	Management procedures for setting fishing controls	1. Development of Management Strategy Evaluation (MSE) approach for MITF and HIMI	a) Development of MSE model for toothfish in MITF	■					Yes	Funded by AFMA Research Fund (ARF) until June 2016 (same project as 1(a) above). Required for 2014/15 & 2015/16
			b) Development of MSE model for toothfish in HIMI	■	■				Yes	AAD core funding, and also part of Kerguelen work. Required for 2016/17
			c) Development of management procedure for Unicorn Icefish, including baseline stock assessment.	■					Yes	SARAG and SouthMAC input to management required; stock assessment funded and underway. Required for CCAMLR 2015.
			d) Development of management procedure for skates and rays		■				No	With the increased HIMI TAC, skate and ray catches are likely to increase. Recognising other research priorities, this work will need to be completed by CCAMLR 2016.
			e) Development of management procedure grey rock cod	■					Yes	Student project with UTAS near completion (at February 2015).
			f) Evaluation of management procedure for CCAMLR Exploratory fisheries	■					No	Required to commence by 2014/15 as part of Ross Sea MSC Client Group, Strategic Assessment and CCAMLR obligations.

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C	Collect fisheries and biological data	1. Provide data for stock assessment of toothfish and icefish	a) Random stratified trawl surveys at HIMI						Yes	Industry based project supported by industry and core AAD funding. Required biennially for Patagonian toothfish and annually for mackerel icefish
			b) Otolith collection (HIMI, MITF, Exploratory Fisheries)						Yes	Ongoing observer program with core AAD support. Required annually
			c) Otolith reading/age analysis for HIMI						Yes	AAD funded through FRDC/IMAS/Industry. Required for 2014/15 and 2015/16
			d) Otolith reading/age analysis for MITF						Yes	Required for 2015/16
			e) Otolith reading/age analysis for Ross Sea						No	Required to commence by 2014/15 as part of Ross Sea MSC Client Group, Strategic Assessment and CCAMLR obligations.
			f) Catch and effort data in all fisheries						Yes	Compulsory completion of logs AAD & SARAG analysis Required annually
			g) Collection of tagging data						Yes	Ongoing project with core AAD/CSIRO/industry support Required annually
			f) Quantify the amount of illegal and non-reported catches of both target species and ecologically related species						Yes	AFMA surveillance program and input from Coalition of Legal Toothfish Operators (COLTO) Required annually

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D	Ecological assessment of the fishery	<p>1. Assess and determine a wide range of ecological impacts including but not limited to:</p> <ul style="list-style-type: none"> ▪ assessment of the ecological impacts of trawl fishing for toothfish and icefish ▪ examine the robustness of the toothfish TAC from an ecological perspective including ecological effect on the non-target species (eg bycatch, ecologically related species); ▪ impacts of longlining; and ▪ role and assessment of refuge areas 	a) Ecology of the HIMI marine ecosystem						No	Study to address predator prey interactions, benthic ecology and biological oceanography.
			b) Ecology of Exploratory Fisheries marine ecosystem, Ross Sea						No	Study to address predator prey interactions, benthic ecology and biological oceanography Required to commence by 2014/15 as part of Ross Sea MSC Client Group, Strategic Assessment and CCAMLR obligations.
			c) Monitoring by observer program						Yes	Industry funded Required annually
			d) Use the HIMI Benthic Impacts study to inform and undertake an ERA for MITF, and identify changes required to ensure additional protection of benthic habitats at MITF						No	MSC requirements, AFMA ERM requirements. Core SARAG and SouthMAC inputs required. Required by mid 2015 (MSC). Awaiting results of AFMA ERA/ERM project, which is dependent on review of Commonwealth Bycatch Policy.
			e) Application of HIMI Benthic Impacts study to new and exploratory fisheries in CCAMLR						No	MSC and CCAMLR requirements Required by mid 2015 (MSC)
			f) Effects of longline fishing on benthic ecosystems in the MITF fishery for ERA & MSC						No	Required to be completed during 2016/17
		2. Risk assessment of incidental bycatch species and informal review of observer coverage (in particular sleeper sharks)	a) Apply risk assessment to skates and rays					No	Tagging project funded by AAD and Industry. Need for additional funding to undertake Risk Assessment in 15/16. Required to be completed during 2015/16	
			b) Bycatch monitoring					Yes	Monitoring by observer program. Required annually.	

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		3. Identification and analysis of bycatch	c) Bird and mammal interactions including cetacean deprecation						Yes	Monitoring by observer program. Required annually.
E	Data to support Australian and CCAMLR fishery compliance		a) Genetics work of otoliths						Yes	Possibly part of a broader CCAMLR international genetics survey to determine provenance of toothfish in the market or inspected in port. Student project in collaboration with IMAS in 2015/16. Low priority