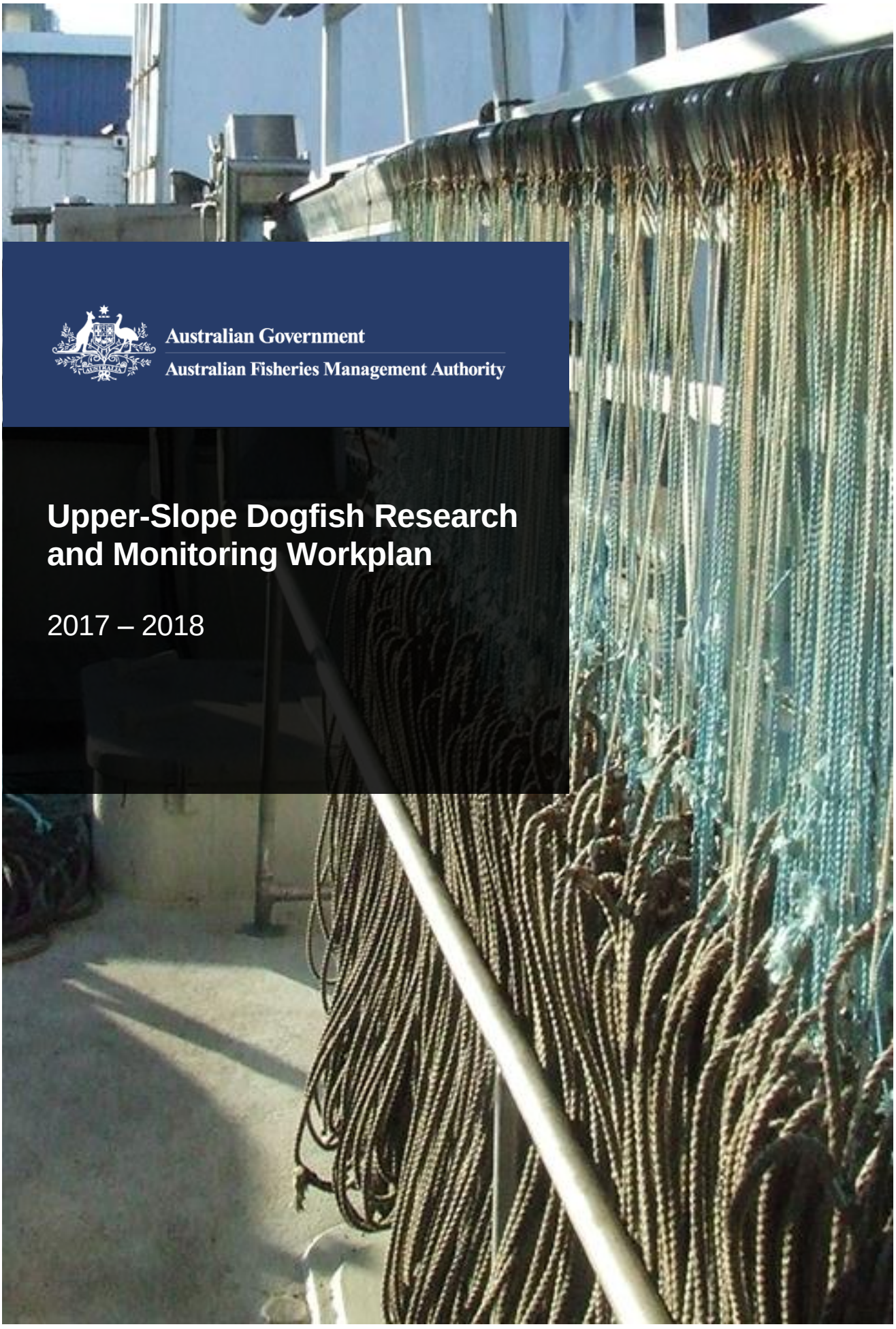

Australian Government
Australian Fisheries Management Authority

Upper-Slope Dogfish Research and Monitoring Workplan

2017 – 2018

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Introduction

The Upper-Slope Dogfish Management Strategy (the Strategy) was designed primarily to strengthen the Australian Fisheries Management Authority's (AFMA) management arrangements for two species of gulper sharks: Harrisson's Dogfish (*Centrophorus harrissoni*) and Southern Dogfish (*C. zeehaani*). The management actions outlined in the Strategy also provide some protection for other Gulper Shark and Dogfish species, such as the Endeavour Dogfish (*C. moluccensis*) and Greeneye Spurdog (*Squalus chloroculus*). The Strategy applies to Commonwealth waters in AFMA's jurisdiction, with New South Wales (NSW), Western Australia (WA) and other jurisdictions responsible for their own management arrangements.

For a detailed background on the Strategy refer to the Upper-Slope Dogfish Management Strategy (AFMA 2012) http://www.afma.gov.au/wp-content/uploads/2012/12/Upper-slope-Dogfish-Management-Strategy-14December-2012-FINAL.pdf.

As part of the Strategy, AFMA committed to developing a research and monitoring workplan within 12 months of the Strategy's implementation. This Upper-Slope Dogfish Research and Monitoring Workplan 2014-16 was developed by AFMA in consultation with the Upper-Slope Dogfish Research Plan Working Group (a SESSF RAG sub-committee). This Upper-Slope Dogfish Research and Monitoring Workplan 2017-18 (the Workplan) is the second developed in response to the Strategy and builds on progress made against the 2014-16 Workplan.

Purpose and Scope

The purpose of the Workplan is to outline how information will be gathered to assess the effectiveness of the Strategy in meeting its primary objective: to promote the rebuilding of Southern Dogfish and Harrisson's Dogfish (henceforth referred to as Gulper Sharks). Ongoing research will provide AFMA and its stakeholders with information to on how to improve the implementation and ongoing effectiveness of the Strategy. Mechanisms for regular reporting on project progress to the relevant stakeholder groups are outlined below. Key stakeholders include AFMA, the Department of Agriculture, Australian Bureau of Agricultural and Resource Economics and Science (ABARES), the Department of the Environment and industry members.

The objective hierarchy (Table 1) outlines the information needs and performance criteria. The aim of the initial Workplan was to develop a cost effective methodology for measuring baseline relative abundance of Gulper Sharks. This workplan will focus on further developing this methodology, and subsequent workplans will focus on obtaining estimates of baseline relative abundance and measuring any recovery (increase in relative abundance) over time. The effectiveness of the Strategy will be assessed by reviewing the outcomes of research in the Workplans, which outline any recovery of Gulper Sharks.

Periodic reviews of research outcomes will provide a feedback loop whereby management arrangements in the Strategy can be adapted as necessary to meet developments in the fishery and the improved understanding of Gulper Shark biology and stock structure.

Table 1. Information Needs and Performance Indicators (P.I).

Objective Hierarchy	Performance Questions and Indicators	Monitoring Mechanisms	Proposed Timeframe
Objective: To assess the effectiveness of the Upper-Slope Dogfish Management Strategy in promoting recovery of Southern Dogfish and Harrisson's Dogfish.	Has the Strategy been effective at promoting recovery of Southern and Harrisson's Dogfish? **P.I:** Level of recovery of Southern Dogfish and Harrisson's Dogfish over time.	Performance against the key objective will be measured at the conclusion of the fourth Workplan, and every Workplan thereafter. This will provide sufficient time for: a) management arrangements in the Strategy to have an effect; and b) recovery of Southern and Harrisson's Dogfish to be measured.	2025 onwards
Outcome: Estimated recovery of Southern Dogfish and Harrisson's Dogfish.	Has recovery been measured? **P.I:** Recovery of Southern Dogfish and Harrisson's Dogfish has been quantified.	This will be assessed at the conclusion of the fourth Research and Monitoring Workplan, and every Workplan thereafter.	2025 onwards
Outputs: **Workplans 1 and 2** – Cost effective methodology for measuring baseline relative abundance and recovery of Southern Dogfish and Harrisson's Dogfish.	Has a cost effective methodology for measuring baseline relative abundance and recovery over time been developed? **P.I:** Cost effective Methodology developed.	This output was assessed as part of the Research and Monitoring Workplan 2014–16 and will be further assessed as part of the Research and Monitoring Workplan 2017–2018.	July 2014- Dec 2018

Workplan 3 – Baseline relative abundance of Southern and Harrisson's Dogfish	Has a baseline relative abundance been determined for Southern and Harrisson's Dogfish? **P.I:** Baseline relative abundance determined.	This output will be assessed as part of the 2019–20 Research and Monitoring Workplan review.	Dec 2018-Dec 2019
Ongoing Workplans – Estimates of Southern Dogfish and Harrisson's Dogfish recovery.	Has the recovery of Southern and Harrisson's Dogfish been measured? **P.I:** - Estimates of relative abundance measured over time. - Estimates of recovery measured over time.	This output will be assessed as part of the third Research and Monitoring Workplan review, and every Workplan thereafter.	Five yearly Workplans from 2020
Activities Action items to achieve the outputs above will be described in Workplans.	Performance indicators will be described in each Workplan.	Periodical review of Research and Monitoring Workplans to assess progress of action items and achieved outputs.	

Research and Monitoring Workplan Review Process

The Workplan for the period 2017-2018 (Table 2) outlines the need to complete the analysis of possible methodologies for measuring the baseline relative abundance of Gulper sharks, and recovery over time. Subsequent Workplans will focus on obtaining estimates of baseline relative abundance and recovery using the proposed methodology.

AFMA will review the 2017-2018 workplan by:

- Coordinating a full review at 24 months, or as called upon by SESSFRAG, to:
    - Ensure that action items have been completed;
    - Assess the success of outputs against performance indicators; and
    - Propose additional action items for the subsequent Workplan.

The Workplan review will be presented as a final report to the Southern and Eastern Scalefish and Shark Fishery Resource Assessment Group (SESSFRAG). Outcomes of the 2017–18 Workplan will inform the approach to measuring relative abundance and recovery in future Workplans. The timeframe of future Workplans will depend largely on the outcomes of the design study, and the proposed frequency of assessments.

Upper-Slope Dogfish Management Strategy Review Process

The outcomes of future Workplans, i.e. estimates of Southern Dogfish and Harrisson's Dogfish recovery, will be used to assess the effectiveness of the management arrangements in the Strategy. AFMA will coordinate a review at the conclusion of the third Workplan, and every Workplan thereafter.

Key questions should include:

- Have the management actions described in the Strategy been effective in promoting recovery of Harrisson's Dogfish and Southern Dogfish populations?
- Do the management actions in the Strategy need to be amended in light of the Workplan review?
- Is any additional research required?

AFMA, in consultation with SESSFRAG and the Upper-Slope Dogfish Research and Monitoring Working Group, will adjust and modify measures under the Strategy as necessary to meet developments in the fishery and understanding of Gulper Shark biology and stock structure.

Table 2. Research and Monitoring Workplan 2017-2018

Action Item	Indicators		Timeframe	Cost	Milestones	Responsible Party
	Output	Performance Indicators				
1. Develop a cost effective methodology for measuring baseline relative abundance and recovery over time, Consider: - the suitability and minimum number of reference sites to be sampled through time to achieve the objectives - appropriate abundance indices - cost effective and practical techniques for sampling gulper shark populations - the minimum level and frequency of sampling needed to detect changes in population over time	Cost effective methodology for measuring baseline relative abundance of Gulper Sharks, and recovery over time.	Number of reference sites determined. Abundance indices determined. Cost effective technique for sampling Gulper Sharks determined. Sampling design for recovery of Gulper sharks determined.	May 2017	$15,180	Initial payment on signing of contract	AFMA, CSIRO O&A, Fishwell Consulting
			September 2017	$42,000	Workshops	CSIRO O&A, Fishwell Consulting
			May 2018	$55,000	Draft final report	CSIRO O&A, Fishwell Consulting
			June 2018	$3,000	Final report	CSIRO O&A, Fishwell Consulting

Action Item	Indicators		Timeframe	Cost	Milestones	Responsible Party
	Output	Performance Indicators				
2. Conduct a cost analysis and feasibility study for measuring baseline relative abundance and recovery over time using the methodology above.	Cost and feasibility analysis	Cost and feasibility analysis completed	June 2018	TBC	Analysis Completed Final Report	AFMA, CSIRO O&A, Fishwell Consulting