

Southwest Atlantic Argentine Shortfin Squid (TSSA) Fishery Improvement Project (FIP) Workplan

Introduction

導言

The fishery being assessed is the Taiwan Squid and Saury Fisheries Association's squid-jigging fishery. The fishery targets Argentine shortfin squid (*Illex argentinus*) in the southwestern Atlantic. Those squid-jigging fishing vessels are flying Taiwanese flag and engage in fishing activities on the high seas of the southwestern Atlantic and within the exclusive economic zone (EEZ) of the Falkland Islands. The Argentine shortfin squid Fishery in southwest Atlantic oceans was once managed by the South Atlantic Fisheries Commission (SAFC) between 1990 to 2005, which is a bilateral commission established by the United Kingdom and Argentina. The Commission used to conduct scientific researches based on the information provided by its members, and set a catch limit of the squid based on the assessment result. However, relevant joint scientific research projects came to a halt after Argentina's withdrawal from the Commission, making it no longer possible to obtain basic scientific information of the species to form a management decision. This fishery therefore is not managed by any organization.

被評估的漁業為台灣區遠洋魷魚暨秋刀魚漁船魚類輸出業同業公會之魷釣漁業。該漁業的目標魚種為西南大西洋的「阿根廷魷(*Illex argentinus*)」。該等魷釣漁船懸掛台灣船旗，並在西南大西洋公海與福克蘭群島專屬經濟區域內作業。西南大西洋之阿根廷魷漁業於 1990 年至 2005 年間曾受到南大西洋漁業委員會 (South Atlantic Fisheries Commission, SAFC) 管理，該組織為英國及阿根廷所組成之雙邊委員會，該委員會會依據會員提供之資訊進行科學調查，再根據評估結果去設定魷魚的捕撈限制管理，然該組織隨著阿根廷之退出，導致相關聯合科學調查停擺，以致無法更進一步取得基礎科學資訊作為管理依據，故該漁業目前可謂並未受任何組織或單位管理。

This workplan is to respond the challenges identified by the needs assessment report and scoping document, with an aim to assisting this fishery toward more sustainable development.

本工作計畫係回應需求評估報告籍範疇文件中所點出之挑戰，目的是協助該漁業朝向更永續的發展邁進。

Table 1: Workplan Overview

表一:工作計畫概述

Workplan Version and Date 工作計畫版本及日期	Version 1, November 2022 2022 年 11 月，第一版
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Start date (expected) 開始日期(預計)	End date (anticipated month/year) 結束日期(預期之年/月)
December 2022 2022 年 12 月	December 2027 2027 年 12 月
FIP Lead (organization/individual responsible for Action Plan) FIP 領導者(負責行動計畫的組織或個人)	Improvements recommended by (meeting/group that supported the development) 提出改進建議者(支持發展的會議或團體)
Taiwan Squid and Saury Fisheries Association 台灣區遠洋魷魚暨秋刀魚漁船魚類輸出業同業公會 Overseas Fisheries Development Council 財團法人中華民國對外漁業合作發展協會	Evaluation team organized by Overseas Fisheries Development Council 由財團法人中華民國對外漁業合作發展協會所組織之評估團隊
FIP Coordinator (organization/individual responsible for reporting on FisheryProgress) FIP 協調者(負責向 FisheryProgress 報告的組織或個人)	Workplan developed by (consultant or person) 發展工作計畫者(顧問或個人)
Overseas Fisheries Development Council 財團法人中華民國對外漁業合作發展協會	Hui-Shan Ma 馬慧珊

Acronyms

ERA	Environmental risk assessment 環境風險評估
EEZ	Exclusive economic zone 專屬經濟區域
FA	The Fisheries Agency of Taiwan 台灣漁業署
FIP	Fishery Improvement Project 漁業改進計畫
HCRs	Harvest control rules 漁獲管控規則
OFDC	Overseas Fisheries Development Council 對外漁業合作發展協會
SAFC	South Atlantic Fisheries Commission 南大西洋漁業委員會
TSSFA	Taiwan Squid and Saury Fisheries Association 台灣區遠洋魷魚暨秋刀魚漁船魚類輸出業同業公會
UoA	Units of Assessment 評估單位

Unit of Assessment(s)

評估單位

Table 2. Unit(s) of Assessment (UoA)

表二:評估單位(UoA)

UoA 1 評估單位 1	Description 描述
Target species (common and scientific name) 目標物種	Argentine shortfin squid (<i>Illex argentinus</i>) 阿根廷魷
Stock 系群	Atlantic squid 大西洋魷

UoA 1 評估單位 1	Description 描述
Geographical area 地理區域	Southwest Atlantic Oceans and the Falkland Islands' EEZ 西南大西洋及福克蘭群島專屬經濟區域
Fishing method or gear type 漁法或漁具種類	Jigging 滾鈎擬餌釣
Fishing fleet or group of vessels, or individuals fishing operators pursuing stock 捕撈此系群之船隊或船團、或個別漁業經營者	Large distant water squid-jigging vessels of Taiwan 台灣大型遠洋魷釣漁船

FIP Actions

FIP 行動

Table 3. Performance Indicator Action Plan Table for Action 1

表三:行動 1 之表現指標行動計畫表

Action Number and Name 行動編號及名稱 (One sentence description) (用一句話描述)	1.1 Develop a well-managed harvest strategy for Argentine shortfin squid of southwestern Atlantic Ocean. 1.1 發展一健全之西南大西洋阿根廷魷漁獲管控策略
Action Goal 行動目標 (One sentence that describe the result of the action) (用一句話描述行動的結果)	Develop a harvest strategy and harvest control rule for the Argentine shortfin squid of southwestern Atlantic Ocean. 為西南大西洋的阿根廷魷發展漁獲策略和漁獲管控規則

<p>Action Description 行動描述 (Brief summary of the steps involved in the action and importance of the action in achieving the FIP objectives) (簡短摘要行動所涉及的步驟，以及此行動對達成 FIP 目標之重要性)</p>	<p>According to the requirement of PI 1.2.1 harvest strategy within the environmental risk assessment (ERA) that harvest strategy should includes all necessary components, such as monitoring, stock assessment, harvest control rules (HCRs) or some other science-based mechanism to limit harvest, and management actions to maintain sustainability. 根據環境風險評估(ERA)對 PI 1.2.1 漁獲策略的要求，漁獲策略必須包含所有必要要素，例如監控、資源評估、漁獲管控規則(HCRs)或其他以科學為基礎用以限制漁獲量之機制，以及為維持永續所採去之管理行動。 To achieve the goals mentioned above, the action at this part includes searching the practical practice of Fisheries Harvest Strategy and Control rule on squid and developing the methodology of Harvest Strategy which applicable for squid. 為達上述目標，此部分之行動包括了解魷魚業漁獲策略與管控規則之實踐及發展一套適用魷魚之可行的漁獲策略方法論</p>
<p>Expected Completion Date 預期完成日期</p>	<p>December 2027 2027 年 12 月</p>
<p>Priority 優先程度 (Based on the implementers criteria: e.g., lowest scoring issues are high priority or actions that are necessary to complete before beginning other actions are high priority) (根據實施者的標準，例如積分最低者為高度優先，或必須在其他行動開始前完成之行動列為高度優先)</p>	<p>High 高</p>
<p>Estimated Cost 預估成本 (An estimate of the budget needed to complete the action) (預估完成此行動所需要之預算)</p>	<p>Year1: \$ 33,000USD Year2: \$ 55,000USD Year3: \$ 55,000USD Year4: \$ 55,000 USD Year5: \$ 55,000 USD</p>

Responsible Parties 負責方 (List of participants) (參與者名單)	TSSFA、FA、OFDC、invited experts (to be decided)
MSC PI(s) Addressed by the Action 本行動解決的 MSC 表現指標	1.2.1 Harvest strategy 1.2.1 漁獲策略 1.2.2 Harvest control rules 1.2.2 漁獲管控規則

Action 行動	Tasks/ Milestones 任務/里程碑	Responsible (lead) 負責方(主要)	Responsible (supporting role) 負責方(擔任支援角色)	Starting date 開始日期	Expected completion date 預期完成日期	Evidence of completion / results 完成之證據/成果
1.1 Undertake the relevant research on target stock 進行目標物種相關之研究	Decide and invite the expert. 決定並邀請相關研究專家	OFDC、TSSFA	stakeholders	January 2023	March 2023	
	Conduct a pilot program, which includes reviewing biological data, squid's biological reference point treaties, and relevant scientific literature, to develop the subsequent research roadmap. 執行先行計畫，	Invited experts 受邀專家	OFDC、FA	April 2023	April 2024	

	<p>檢視目前可取得之生物資料、文獻，以發展後續合適之研究計畫。</p>					
	<p>(Tentative, subject to change according to the result of the pilot program, if necessary) Conduct initial desktop research/interviews on UoA species, life span, reproduction, spawning area, spawning aggregation, size frequency and migration. 對 UoA 物種、壽命、生殖、產卵區、產卵群之聚集、體長頻度及洄游進行初步書面研究及調查。 (倘必要，視先行計畫結果進行修改)</p>	<p>Invited experts 受邀專家</p>	<p>OFDC、FA</p>	<p>May 2024</p>	<p>April 2025</p>	<p>Conduct research 進行研究 (1) Report on UoA specie (biology structure, population connectivity, characteristics, food chain, habitat) UoA 物種報告(生物學、結構、族群連結、特徵、食物鏈、棲地等) (2) Report on UoA species, life span, reproduction, spawning area, spawning aggregation, size frequency, seasonality and migration. UoA 物種之壽命、生殖、產卵區、產卵群之聚集、體長頻度及季節性洄游等報告</p>

						<p>(3) UoA species mapping – GIS analysis. UoA 物種分布圖- GIS 分析</p> <p>(a) Breeding and spawning areas. 繁殖及產卵區</p> <p>(b) Nursery grounds. 孵育場</p> <p>(c) Migration patterns. 洄游路徑</p> <p>(d) Fishing/catch areas. 作業/捕撈區域</p>
	Data collection and analysis in accordance with the result of the pilot program. 根據先行進化之結果進行資料之蒐集與分析	FIP Participants, Invited experts FIP 參與者、受邀專家	OFDC、FA	May 2024	December 2027	
	(Tentative, subject to change according to the result of the pilot program, if necessary) Conduct UoA dynamic population research	Invited experts 受邀專家	OFDC、FA	July 2024	June 2025	Report on UoA's dynamic population (growth, mortality, survival, gender, risk, issues, exploitation). UoA 的族群動態報告 (成長、死亡率、活存、性別、風險、開

	(growth, mortality, survival, gender, risk, exploitation). 進行 UoA 族群動態研究(成長、死亡率、活存率、性別、風險、開發)(倘必要，視先行計畫結果進行修改)					發)
1.2 Stock assessment	(Tentative, subject to change according to the result of the pilot program, if necessary) Consider the uncertainties of the UoA stock assessment model according to the available information. 根據可得資訊考量 UoA 系群評估模式的不確定性(倘必要，視先行計畫結果進行修改)	Invited experts 受邀專家	OFDC、FA	July 2025	October 2025	
	(Tentative, subject to change according to the result of the pilot	Invited experts 受邀專家	OFDC、FA	November 2025	March 2026	

	<p>program, if necessary) Proposal for a stock assessment framework and Biological Reference Point definition appropriate to the UoA. 有關適合 UoA 的資源評估框架及生物參考點定義 (倘必要，視先行計畫結果進行修改)</p>					
	<p>(Tentative, subject to change according to the result of the pilot program, if necessary) Stock assessment and BRP establishment of the UoA UoA 的資源評估及生物參考點建立 (倘必要，視先行計畫結果進行修改)</p>	<p>Invited experts 受邀專家</p>	<p>OFDC、FA</p>	<p>April 2026</p>	<p>April 2027</p>	

1.3 Create Draft UoA's Harvest Strategy And Control Rule 建立 UoA 漁獲策略及管控規則	Search the practical practice of Fisheries Harvest Strategy and Control rule on squid 了解魷漁業漁獲策略與管控規則之實踐	Invited experts 受邀專家	OFDC、FA	April 2023	May 2024	
	(Tentative, subject to change according to the result of the pilot program, if necessary) Develop the methodology of Harvest Strategy of UoA 發展 UoA 的漁獲策略方法論(倘必要，視先行計畫結果進行修改)	Invited experts 受邀專家	OFDC、FA	June 2026	December 2027	

Table 4. Performance Indicator Action Plan Table for Action 2

表四：行動 2 之表現指標行動計畫表

Action Number and Name 行動編號及名稱 (One sentence description) (用一句話描述)	2.1 Improve information collection on ETP species and evaluate the effectiveness of conservation measures 2.1 改善 ETP 物種之資訊蒐集，以及評估養護管理措施之有效性
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<p>Action Goal 行動目標 (One sentence that describe the result of the action) (用一句話描述行動的結果)</p>	<p>Support ETP species data collection and reporting and keep tracking the status of the relevant stocks and understand the impact of the squid jigging fishery on these species. 支持 ETP 物種資料的蒐集與回報，並持續追蹤了解相關系群之狀態，以了解魷釣漁業對該等物種之影響</p>
<p>Action Description 行動描述 (Brief summary of the steps involved in the action and importance of the action in achieving the FIP objectives) (簡短摘要行動所涉及的步驟，以及此行動對達成 FIP 目標之重要性)</p>	<p>To strengthen ETP species data collection, it is recommended that to deliver skipper training to enhance the ability to fill in the logbook correctly and safe handling and release ETP species. Besides, to implement observer program, to collect the catch data, discard and interaction data from fisheries. 強化 ETP 物種的資料蒐集，建議舉辦船長訓練，以提升漁獲報表正確填報、安全處理及釋放 ETP 物種等能力。此外，實施觀察員計畫，蒐集漁業之漁獲、丟棄及互動資料。</p>
<p>Expected Completion Date 預期完成日期</p>	<p>December 2027 2027 年 12 月</p>
<p>Priority 優先程度 (Based on the implementers criteria: e.g., lowest scoring issues are high priority or actions that are necessary to complete before beginning other actions are high priority) (根據實施者的標準，例如積分最低者為高度優先，或必須在其他行動開始前完成之行動列為高度優先)</p>	<p>Medium 中</p>
<p>Estimated Cost 預估成本 (An estimate of the budget needed to complete the action) (預估完成此行動所需要之預算)</p>	<p>Year1: \$ 60,000 USD Year2: \$ 60,000 USD Year3: \$ 60,000 USD Year4: \$ 60,000 USD Year5: \$ 60,000 USD</p>

Responsible Parties 負責方 (List of participants) (參與者名單)	TSSFA、OFDC、FA、FIP Participants & invited experts(to be decided)
MSC PI(s) Addressed by the Action 本行動解決的 MSC 表現指標	2.3.2 ETP species management 2.3.3 ETP species information

Action 行動	Tasks/ Milestones 任務/里程碑	Responsible (lead) 負責方(主要)	Responsible (supporting role) 負責方(擔任支援 角色)	Starting date 開始日期	Expected completion date 預期完成日期	Evidence of completion / results 完成之證據/成果
2.1 Improve information collection on other and ETP species 改善其他及 ETP 物種資料蒐集	Deliver skipper training to enhance the ability of filling in the logbook. 辦理提升船長報表填寫能力之訓練課程	TSSFA and OFDC	FIP Participants	January 2023	June 2024	
	Deliver skipper training to teach best practices on safe handling and release. 辦理船長有關處理及釋放最佳實踐訓練課程	TSSFA and OFDC	FIP Participants and related experts	July 2023	December 2024	

	Conduct observer program. 執行觀察員計畫	TSSFA and OFDC	FIP Participants, related expert, and FA	January 2023	December 2027	
	Through the implementation of the observer schemes, to ensure to collect catch data, discard and interaction data from the fishery. 透過觀察員計畫實施，以確保對漁獲、丟棄及漁業互動之資料蒐集。	TSSFA and OFDC	FIP Participants, related expert, and FA	January 2025	December 2026	
2.2 Evaluate the effectiveness of conservation measures 評估養護措施之有效性	Evaluate the effectiveness of conservation measures, and modify the conservation measures which are adopted, if needed. 評估養護措施之有效性，並視需要，修改已通過之養護措施。	Invited expert and Fisheries Agency of Taiwan 受邀專家及漁業署	FIP Participants, TSSFA	January 2027	December 2027	

Table 5. Performance Indicator Action Plan Table for Action 3

表五.行動 3 之表現指標行動計畫表

Action Number and Name 行動編號及名稱 (One sentence description) (用一句話描述)	3.2 Monitoring and Management Performance Evaluation 3.2 進行台灣績效評估之監控及管理
Action Goal 行動目標 (One sentence that describe the result of the action) (用一句話描述行動的結果)	Conduct the external evaluation of the management system for Taiwan 為台灣管理系統進行外部評估
Action Description 行動描述 (Brief summary of the steps involved in the action and importance of the action in achieving the FIP objectives) (簡短摘要行動所涉及的步驟，以及此行動對達成 FIP 目標之重要性)	As currently there is no specialized international fisheries management organization for the Atlantic Argentine shortfin squid fishery, no similar mechanism can be applied as external review. 由於目前沒有專責之國際漁業管理組織對大西洋阿根廷魷魚業進行管理，因此沒有類似的機制可做為外部審查機制。 Therefore, it should be conducting the external review of the management system. 因此，應該對管理機制進行一個外部審查
Expected Completion Date 預期完成日期	December 2027 2027 年 12 月

<p>Priority 優先程度</p> <p>(Based on the implementers criteria: e.g., lowest scoring issues are high priority or actions that are necessary to complete before beginning other actions are high priority)</p> <p>(根據實施者的標準，例如積分最低者為高度優先，或必須在其他行動開始前完成之行動列為高度優先)</p>	<p>Medium 中等</p>
<p>Estimated Cost 預估成本</p> <p>(An estimate of the budget needed to complete the action)</p> <p>(預估完成此行動所需要之預算)</p>	<p>\$ 5,000 USD \$ 5,000 美元</p>
<p>Responsible Parties 負責方</p> <p>(List of participants)</p> <p>(參與者名單)</p>	<p>TSSFA, OFDC, FIP participants 鮭秋公會、對外漁協、FIP 參與者</p>
<p>MSC PI(s) Addressed by the Action 本行動解決的 MSC 表現指標</p>	<p>3.2.4 Monitoring and Management Performance Evaluation 3.2.4 監控及管理績效評估</p>

<p>Action 行動</p>	<p>Tasks/ Milestones 任務/里程碑</p>	<p>Responsible (lead) 負責方(主要)</p>	<p>Responsible (supporting role) 負責方(擔任支援 角色)</p>	<p>Starting date 開始日期</p>	<p>Expected completion date 預期完成日期</p>	<p>Evidence of completion / results 完成之證據/成果</p>
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<p>3.1 Conduct the external evaluation of the management system</p> <p>3.1 進行管理系統之外部審查</p>	<p>Conduct the external evaluation to monitor and evaluate the performance of the Taiwan fishery-specific management system.</p> <p>進行外部審查，以監控並評估特定漁業管理系統之績效</p>	<p>Professional third party</p> <p>專業第三方</p>	<p>TSSFA, OFDC</p> <p>鮎秋公會、對外漁協</p>	<p>January 2025</p> <p>2025 年 1 月</p>	<p>December 2027</p> <p>2027 年 12 月</p>	
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