





# REGIONAL EXCHANGE ON RIGHTS-BASED FISHERIES MANAGEMENT

**Program completion report** 

2023

This report is prepared by Ian Knuckey and Paul McShane (Fishwell Consulting) for The Arafura and Timor Seas Ecosystem Action Phase II (ATSEA-2) Project. July 2023



# REGIONAL EXCHANGE ON RIGHTS-BASED FISHERIES MANAGEMENT: Program completion report

Copyright © 2023 Arafura and Timor Seas Ecosystem Action Phase II (ATSEA-2) Project

Authors: Ian Knuckey and Paul McShane

#### Suggested Citation:

Knuckey, I and McShane, P. (2023). Regional exchange on rights-based fisheries management: Program completion report. Report to the Arafura and Timor Seas Ecosystem Action Phase II (ATSEA-2). Fishwell Consulting, Australia. 23p.

#### Disclaimer:

ATSEA-2 Project has published the information contained in this publication to assist public knowledge and discussion, and to help improve the sustainable management of the Arafura and Timor Seas (ATS) region. The contents of this publication do not necessarily reflect the views or policies of ATSEA-2 implementing partners and its other participating organizations. The designation employed and the presentation do not imply expression of opinion whatsoever on the part of ATSEA-2 concerning the legal status of any country or territory, its authority or the delimitation of its boundaries.

Published by: ATSEA-2 Regional Project Management Unit Jl. Mertasari No. 140 Sidakarya, Denpasar 80224, Bali, Indonesia Telephone: +62 361 448 4147 Email: infoatsea2@pemsea.org Website: https://atsea-program.com/

Cover Image: Paul McShane, Fishwell Consulting.

Printed in Denpasar, Bali, Indonesia

## **TABLE OF CONTENTS**

Table of Contentsiii
Table of Figuresiii
Program Aim1
Program Objectives1
Participants1
Program
Country Issues
Timor-Leste
Discussion topics9Marine Protected Areas9Commercial Fisheries9Indigenous Fishing Rights9Recreational Fisheries9Tropical Snapper10Straddling Stocks10IUU10Aquaculture11Seafood Handling11
Community Development
Community Development11

## **TABLE OF FIGURES**

discussion results with her group	Figure 1 – Participants and presenters at the Regional Exchange on Rights-Based Fisheries	
Figure 3 – Group work: Regional Exchange on Rights-Based Fisheries Management	Management, Darwin, Australia	5
Figure 4 – Sila Kartika Sari, a regional exchange participant from Indonesia, presents her discussion results with her group	Figure 2 – At the Darwin Aquaculture Centre1	1
discussion results with her group	Figure 3 – Group work: Regional Exchange on Rights-Based Fisheries Management 1	3
Figure 5 – At the Darwin Fisheries Wharf: unloading premium goldband snapper Australia Bay Fisheries	Figure 4 – Sila Kartika Sari, a regional exchange participant from Indonesia, presents her	
Fisheries	discussion results with her group 1	3
	Figure 5 – At the Darwin Fisheries Wharf: unloading premium goldband snapper Australia Bay	
Figure 6 – Freshly caught goldband snappers14	Fisheries14	1
	Figure 6 – Freshly caught goldband snappers14	1

## **PROGRAM AIM**

The regional exchange event aimed to facilitate participants to learn about the implementation of rights-based fisheries management in Australia, part of the Arafura and Timor seas region, including how to balance the needs of commercial and artisanal/community-based fisheries. It extended management frameworks for rights-based fisheries management currently undertaken in Australia to the broader region including Indonesia, Papua New Guinea and Timor-Leste. The program also provided a means for country representatives to network and build connections with like-minded authorities and stakeholders who share the same interests in rights-based management in the Arafura/Timor Sea region.

## **PROGRAM OBJECTIVES**

- 1. To understand the context and management of Australian fisheries, especially the implementation of rights-based fisheries management.
- 2. To discuss the lessons learned and challenges in managing both commercial and artisanal/community-based fisheries.
- 3. To explore the possibilities to adapt some best practices and lessons learned to be replicated in the other parts of the Arafura and Timor seas region.

No	Country	First Name	Last Name	Gender	Institution	Role
1	Indonesia	lwan	Kurniawan	М	UNDP Indonesia	Program Manager of the Natural Resources Management
2	Indonesia	Sila Kartika	Sari	F	National Coordination Unit of ATSEA-2/UNDP Indonesia	Field Facilitator of Aru Archipelago
3	Indonesia	Respaty Yudha	Putranto	М	BKKPN Kupang, Dobo Unit	Coordinator of Southeast Aru MPA
4	Indonesia	Selfrida Missmar	Horhoruw	F	Ministry of Marine and Fisheries Agency of Maluku Province	Marine Spatial Management Staff
5	Indonesia	Kamaluddin	Kasim	М	Ministry of Marine Affairs and Fisheries of Indonesia	Policy Analyst
6	Indonesia	Siti Amania	Raydesyana	F	Ministry of Marine Affairs and Fisheries of Indonesia	Public Relations Officer

## PARTICIPANTS

7	Papua New Guinea	Kiram	Parr	М	Western Provincial Administration	Provincial Fisheries Officer
8	Papua New Guinea	Amanda	Kunjip	F	National Coordination Unit of ATSEA- 2/PEMSEA	South Fly Site Mobilizer
9	Papua New Guinea	Kenneth	Yhuanje	Μ	National Coordination Unit of ATSEA- 2/PEMSEA	National Project Coordinator of PNG
10	Papua New Guinea	Rickson	Lis	Μ	National Fisheries Authority	Coastal Fisheries
11	Timor- Leste	Bendito	Trindade	Μ	Department for Fisheries, Viqueque Municipality	Chief
12	Timor- Leste	Lucas	Fernandes	Μ	Ministry of Agriculture and Fisheries	Chief of Department for Conservation, Directorate General for Fisheries
13	Timor- Leste	Expedito Roberto	Maria Belo	Μ	National Coordination Unit of ATSEA-2/UNDP Timor-Leste	National Project Coordinator of Timor- Leste
14	Indonesia	Handoko Adi	Susanto	Μ	Regional Project Management Unit of ATSEA-2	Regional Project Manager
15	Indonesia	Casandra	Tania	F	Regional Project Management Unit of ATSEA-2	Regional Biodiversity Specialist

## PROGRAM

The program ran from 19<sup>th</sup> June to 24<sup>th</sup> June 2023 and was conducted mainly at the Oaks Elan Hotel, Brooks Street, Darwin Australia. Field excursions were also included. A detailed program is presented below.

Tuesday 20 <sup>th</sup> June, 2023	Presenter	Торіс
1 pm	Elder Larrakia nation	Welcome to country from the traditional owners of the land on which we are meeting.
1.30 pm	Dr Ian Knuckey, Dr Handoko Adi Susanto	Official welcome. Outline of the program
2 pm	Participants	Introduction and background.
2.30 pm	Dr Ian Knuckey (Fishwell); Mr Kamaluddin Kasim (MMAF); Mr Rickson Lis (NFA, PNG); Mr Bendito Tridande (Department of Fisheries, Timor- Leste).	Rights-based fisheries management issues: country summary.
4.30 pm	Mr Iwan Kurniawan (UNDP Indonesia)	UNDP Strategy on marine and fisheries-based solutions for development.
Wednesday 21 <sup>st</sup> June	Presenter	Торіс
8.00 am	Frances Verrier, Assistant Director Marine Parks –North Network	North Marine Protected Areas
8.00 am 8.45 am	Assistant Director Marine Parks –North	
	Assistant Director Marine Parks –North Network Katherine Winchester (CEO NT seafood	Rights-based fisheries: an Industry perspective.
8.45 am	Assistant Director Marine Parks –North Network Katherine Winchester (CEO NT seafood council)	Rights-based fisheries: an Industry perspective. Participants Q&A.

12.00	Melanie Brenton and Grant Johnson	Northern Territory Fisheries (tropical snapper)
01.15 pm	Brendan Rayner (AFMA)	IUU. Domestic and international compliance. Interactive discussion with participants.
2.00 pm	Dr Ian Knuckey	Group discussion on today's presentations
3.15 pm	Dr Paul McShane	International issues: straddling stock management. Participant country perspectives.
4.00 pm	Dr Ian Knuckey	Group work. What is needed to enable Rights- based management of Artisanal fishers and their communities? Issues and Solutions.
5.00 pm	Close Day 2	
6.30 pm		Course Dinner

Thursday 22 <sup>nd</sup> June	Location	Presenter	Торіс
9 am	Darwin Aquaculture Centre	Matthew Osborne, Program Leader Aquaculture	Aquaculture: Algae, Oysters, Barramundi.
1 pm	Duck Pond Darwin	Commercial fishers	Commercial fishing (shrimp, fish trap). By-catch reduction strategies. Seafood supply chain management. Informal engagement with commercial fishers.
4 pm	Close Day 3		

Friday 23 <sup>rd</sup> June	Location	Presenter	Торіс
8 am	Fisheries Wharf Darwin	Dr Ian Knuckey Australia Bay Fisheries Mike O'Brien	Tropical snapper commercial fishing and supply chain management. Fishery observer issues (Matt Dorter). Participant discussion.
11 am		Dr Paul McShane	Artisanal and community-based fisheries. Enterprise development. Role of women. Case study development and interactive discussion.

1 pm		Dr Ian Knuckey	Fisheries science, harvest strategy development, data- poor fisheries. Application to regional fisheries.
3.15 pm		Mr Iwan Kurniawan (moderator), Dr Ian Knuckey/Dr Paul McShane	Course feedback and reflection. Lessons learned. Follow up actions.
4 pm	Course close		

## **COUNTRY ISSUES**

#### AUSTRALIA



Figure 1 – Participants and presenters at the Regional Exchange on Rights-Based Fisheries Management, Darwin, Australia

Photo by Paul McShane (Fishwell Consulting)

Australia has three levels of government: Federal, State and Local. Fisheries out to 3nm offshore are managed by the States (or the Northern Territory) whereas the Federal (or Commonwealth) government manages fisheries out to the extent of the Exclusive Economic Zone (EEZ). Under Australia's offshore constitutional settlement (OCS), State and Commonwealth governments cooperate in the management and research of fish stocks that overlap state and Commonwealth boundaries. Even so, management arrangements for fish stocks can vary among states and fishers entitled to fish in Commonwealth waters may require to follow different management arrangements when fishing in state waters.

Australian fisheries have relatively low production (65,000 t, p.a.) when compared with other nations (e.g., Indonesia) which produce at least ten times more than this each year. Thus, the total volume of fish (fish, sharks, shellfish, crustaceans) is relatively low. However, Australian fisheries are valuable with high-value species such as Rock Lobster, Prawns, Abalone, and Tuna supporting export industries promoted by carefully-managed supply chains. As in other countries, aquaculture is increasing in production and value being worth nearly half of the total value of seafood produced each year. In particular, farmed Atlantic Salmon, is a major source of income from seafood production in Australia.

In the Arafura and Timor seas (ATS) region, Australian fisheries include prawns (shrimp), Spanish mackerels, tropical snapper, sea cucumber, mud crabs and Barramundi. These are managed by the Northern Territory, Western Australia, and Queensland with shared arrangements with the Commonwealth government for fish stocks overlapping State/Territory waters. Many of these species are important to other ATS countries with some stocks e.g., some tropical snapper species shared among countries.

Australia is working towards an access and allocation framework to provide for equitable resource sharing among the main user groups: commercial, recreational, indigenous/customary, and conservation. In particular, arrangements for recognition of the rights of indigenous people who have harvested seafood from coastal regions for millennia are being developed at State, Territory and Commonwealth level. Although more work remains to be done, frameworks for resource sharing consistent with principles of ecologically sustainable development (ESD) are being developed in concert with harvest strategies which mainly apply to commercial fishers. In some States and in the Northern Territory, indigenous fisheries have priority of access with formal allocation made for some fisheries.

In contrast to other ATS countries, Australia has limited entry for commercial fisheries i.e., only a relatively small number of licence holders are entitled to catch fish for commercial purposes. This allows output (catch) to be controlled each year consistent with maximum economic yield. In this way, management meets the objective of overriding fisheries legislation to deliver sustainable fisheries management while providing optimal benefits to the Australian community.

Again, in contrast to other ATS countries, Australia has an important recreational fisheries sector with more than 2 million Australians actively engaging in fishing for recreational purposes. Although outputs are not controlled and participation is effectively unlimited, recreational fishers follow daily catch limits, size limits applicable to certain species and are responsive to closures (spatial and temporal).

#### **TIMOR-LESTE**

Commercial fisheries in Timor-Leste are relatively underdeveloped when compared with neighbouring Indonesia. This is because residents of Timor-Leste derive protein from land-based resources particularly poultry. Nonetheless, the government of Timor-Leste recognizes the benefits of sustainable fisheries management in terms of sustainable livelihoods and opportunities for economic development. Fisheries development is currently limited by a lack of skilled practitioners, infrastructure and market supply chains.

As in other ATS countries, Timor-Leste is introducing marine protected areas (MPAs) including no-take (or sanctuary) zones. MPAs can assist in protecting habitats and vulnerable species. This aligns to current goal and plans for developing fisheries. Together with aspirations for sustainable fisheries management, the government of Timor-Leste seeks to increase human resource capacity (fishing, research/development, seafood supply chain management, marketing) to improve social and economic opportunities from commercial fishing.

#### **PAPUA NEW GUINEA**

Papua New Guinea has only a small overlap with the Arafura and Timor seas restricted to the South Fly region of the Western Province. The National Fisheries Authority (NFA) of Papua New Guinea is a non-commercial statutory authority established and operated under the *Fisheries Management* Act and related regulations. The NFA is responsible for the development and application of fisheries management plans for commercial fisheries including: Barramundi, Sea Cucumber, Lobster, and Mud crab. These fisheries target species shared among ATS countries. Of these fisheries, total allowable catches (TACs) apply to Sea Cucumber and Mud crab. As in neighbouring ATS countries, Indonesia and Timor-Leste, Papua New Guinea fisheries are mainly small-scale artisanal responsive to customary marine tenure rights. Such small-scale fishers fall outside the scope of management plans and controls such as TACs. Similarly, compliance to any applicable fisheries regulations is effectively unenforceable, and monitoring of catches is elusive. Thus, adherence to the principles of an ecosystem approach to fisheries management (EAFM) is difficult. A government aim is to strengthen links between community-level fisheries management and provincial/national fisheries management.

#### **INDONESIA**

Indonesia has an ambitious program of developing its fisheries including: extending marine protected areas; introduction of output controls for capture fisheries; development of sustainable marine, coastal and freshwater aquaculture; monitoring and management of coastal regions and small islands; and reduction of plastic waste. The introduction of quota-based management is problematic particularly in the ATS region where there are more than 200,000 artisanal fishers acting outside applicable regulations. Plans to implement catch quota (for licenced vessels) i.e., pengangkapan ikan terukur (PIT) include allocation of catch limits by open auction. These plans follow the overfished status of many fisheries including in the ATS region of Indonesia. PIT requires introduction and application of improved monitoring, control and surveillance (MCS), mechanisms for determination of allowable fish catches (e.g., harvest strategies), and spatial management within designated fishing zones. This is challenging for a large archipelagic nation with limited resources to cover large coastal areas with effectively unregulated fisheries, a lack of data on fish stock status, and the need to support coastal communities dependent on subsistence fishing for livelihoods. Traditional conservative approaches to fisheries management e.g., sasi can complement evidence-based approaches to fisheries stock assessment and management.

#### **UNDP PERSPECTIVES**

The UNDP strategy on marine and fisheries-based solutions for development aligns to sustainable development goals, particularly Goal 14: sustainably manage marine ecosystems; end overfishing and illegal fishing' conserve 10% of coastal areas; elimination of destructive fishing subsidies. Goal 14 also aims to reduce (or eliminate marine pollution). To date, none of these targets have been achieved and progress on most has been limited. Importantly, for the ATS regions, UNDP is committed to advancing co-management of fisheries with indigenous peoples and local communities, empowering women, adoption of technology, and innovative financing approaches for fisheries development.

## **DISCUSSION TOPICS**

#### MARINE PROTECTED AREAS

Australia takes a bioregional approach to establishing a national representative system of marine protected areas (MPAs) to conserve biodiversity. The Commonwealth has established marine parks beyond 3 nm from the coast and the states/territories have established MPAs within 3 nm of the coast. MPAs include sanctuary (i.e., no take) zones consistent with IUCN categories of marine protection. This affects access (by commercial and recreational fishers) to MPAs.

#### **COMMERCIAL FISHERIES**

Commercial fisheries in Australia are subject to a social licence given perceptions among the Australian public that commercial fishing is detrimental to the environment. Bodies representing the commercial fishing sector engage in awareness raising to present sustainability credentials linked to conservative fishing practices. An important component is to promote locally-caught seafood including "clean green" practices employed by the commercial fishing sector linked to high quality seafood product. Commercial fishing in Australia is becoming increasingly difficult because of closures, restrictive fishing practices, and general economic issues. However, in contrast to other ATS countries, there are a relatively small number of commercial fishers with statutory fishing rights. This promotes investment in fishing infrastructure to capture premium prices on local and international markets.

#### **INDIGENOUS FISHING RIGHTS**

Australian Aborigines and Torres Strait Islanders have utilized living sea resources for millennia. Until recently, they have had no priority access or allocation for fish stocks traditionally harvested by indigenous people. Many states are now prioritizing Indigenous access and making formal allocation of fish stocks. In particular, in the Northern Territory, Indigenous people now have priority access and allocation to sea resources along 85% of the coastline. Commercial and recreational fishers must obtain permits from traditional owners in order to fish in controlled waters. Even so, there is more work to do in Australia to formally recognize Indigenous access and allocation to sea resources traditionally harvested.

#### **RECREATIONAL FISHERIES**

Recreational fishing is an important (and economically-valuable) pastime in Australia with more than 2 million fishers participating each year. Recreational fishing is regulated but regulations vary among states and territories with some states requiring licences for recreational fishers to access fish stocks. Other measures include daily catch limits (numbers of each species that can be caught by an individual each day) and size limits. Although such regulations have a high voluntary compliance (through targeted awareness-raising campaigns), extraction of fish is virtually unlimited because participation is unlimited. Representative bodies such as the Amateur Fishing Association of the Northern Territory, aim to promote sustainable recreational fishing practices and attract recreational fishers to the Northern Territory. This provides economic and social benefits. Voluntary compliance success offers lessons for awareness raising among artisanal fishers in other ATS countries.

#### **TROPICAL SNAPPER**

Tropical snapper, including Crimson Snapper, Saddletail Snapper, and Goldband Snapper, are caught off the Northern Territory, Queensland, and Western Australia. These fish stocks are shared with Indonesia (and also Papua New Guinea, and Timor-Leste). Australian fisheries for tropical snapper are generally subject to input controls (e.g., closures, effort and gear restrictions) and output controls (e.g., catch quotas). However, to date, tropical snapper are managed collectively as Red Snapper or Goldband Snapper rather than as individual species. These are responsive to harvest strategies based on quantitative assessments (through monitoring of catch and effort, and size composition data from commercial fisheries) and fisheryindependent surveys. Unlike other ATS countries, Australia allows trawling for tropical snapper although snapper are also caught in traps. Tropical snapper are also targeted by recreational fishers in Australia.

#### STRADDLING STOCKS

Tropical snapper stocks are shared among Australia, Indonesia, Timor-Leste and Papua New Guinea. Within Australian waters, these same stocks are shared among states and territories. Australia manages data exchange and general stock assessment through shared arrangements with the states, territories and the Commonwealth. However, management arrangements among countries, given extractions of tropical snapper from shared stocks, are under developed. ATSEA offers a coordinated approach to sustainable management of tropical snapper. This is important given the overfished status of several species in Indonesian management areas of the ATS.

#### IUU

Australia, with a large EEZ, carefully manages illegal, unreported and unregulated (IUU) fishing. Illegal fishing from boats sourced from other nations, particularly Indonesia and Vietnam, is an ongoing problem in ATS waters controlled by Australia. Aircraft surveillance is an important deterrent as are awareness-raising campaigns in country. Draconian penalties including seizure of boats and gear have resulted in decreased illegal fishing but IUU remains a problem for Australia particularly in northern waters.

#### AQUACULTURE



Figure 2 – At the Darwin Aquaculture Centre Photo by Paul McShane (Fishwell Consulting)

A visit to the Darwin Aquaculture Centre provided an opportunity for participants to experience tropical aquaculture research and development including species shared among ATS countries e.g., Barramundi. Aquaculture is a very important industry in Indonesia and an emerging opportunity for Timor-Leste and Papua New Guinea. Aquaculture offers food security for communities traditionally dependent on capture fisheries but increasingly vulnerable to overfishing and habitat degradation.

#### **SEAFOOD HANDLING**

Participants were able to observe unloading of tropical snapper from a commercial fishing vessel at the Darwin Fisheries wharf. They also had the opportunity to discuss fisheries issues with an observer engaged on Australian commercial fishing vessels (Mr Matt Dorter). Importantly, participants learnt of premium product handling techniques yielding high-quality fish product commanding high prices on local and international seafood markets. This is an important opportunity for ATS countries outside Australia which have high volume but low value fisheries.

#### **COMMUNITY DEVELOPMENT**

Communities, particularly in Eastern Indonesia, are traditionally dependent on small-scale fishing for livelihoods and food security. Increasingly, these livelihoods and food supplies are being threatened by overfishing and habitat degradation. Fishing is mostly small-scale (single operator)

with rudimentary fishing gear and no facilities for processing and storing seafood. Fish are generally sold on the day of capture on road-side markets as there is a general lack of cold chain infrastructure to allow product to be sent to distant markets (including international markets). Alternatively, fish are dried or salted and sold for comparatively low prices. There is an opportunity to capture economies of scale with small to medium enterprises (SMEs) investing in cold chain and processing infrastructure to improve product quality and economic returns from premium markets. In Indonesia, relationships of dependency promoted through kinship groups restrict SME development. This locks in low prices and low economic returns with consequences for community development. Women play an important role in seafood post-harvest (including processing and sales) and such roles could be extended to SME development to improve economic returns to communities.

#### FISHERIES SCIENCE AND HARVEST STRATEGIES

Many Australian fish stocks are subject to harvest strategies. Harvest strategies link quantitative assessments (of stock status) to decision rules which influence harvests. Fisheries are generally managed to the maximum sustainable yield (catches equal the surplus of growth and reproduction produced by an individual fish stock) or maximum economic yield (catches are managed to provide the maximum rent from a fishing operation). These targets are reached through controlling output (e.g., catches) or input (e.g., fishing effort, gear, areal closures). Indicators (e.g., catch rates, or estimated biomass) relate to reference points which determine management action. Typically, limit reference points (usually equivalent to 20% of unfished biomass) trigger management response (e.g., decreased catch allowances, areal closures). Notably, harvest strategies require a stock assessment. For ATS countries outside Australia, harvest strategies and fisheries stock assessments are underdeveloped. For Indonesia's aspirations for quota-managed fisheries (e.g., PIT), harvest strategies will be an important component of this development.

## **ENABLING RIGHTS-BASED FISHERIES MANAGEMENT IN THE ATS**

Collective input from participants yielded the following issues that remain to be resolved for rights-based fisheries management in the ATS:

- A large number of small-scale fishers acting outside of a formal regulatory environment;
- Overfishing, particularly in Indonesian waters.
- Illegal, unreported and unregulated (IUU) fishing. This includes, encroachment of illegal foreign fishers, destructive fishing practices (e.g., bombing and poisoning of near-shore habitat), and under reporting of catches from small-scale fishers.
- Habitat loss: e.g., mangrove loss in Timor-Leste (fuel wood), Indonesia (shrimp farming); coastal development/pollution (sea grasses); and destructive fishing practices (coral reefs).
- Centralised management (particularly in Indonesia) with little attention to regional fisheries (Eastern Indonesia).
- Poorly developed community engagement. Remote communities are poorly connected to plans for sustainable fisheries management.

• Poorly developed supply chains. This is particularly problematic in Timor-Leste and in the Indonesian region of the ATS where cold chain management is underdeveloped and seafood quality is affected by a lack of ice making facilities and general remoteness from seafood markets. This has a substantial economic impact.

Participants identified the following potential solutions to the issues above:



Figure 3 – Group work: Regional Exchange on Rights-Based Fisheries Management Photo by Paul McShane (Fishwell Consulting)



Figure 4 – Sila Kartika Sari, a regional exchange participant from Indonesia, presents her discussion results with her group Photo by Paul McShane (Fishwell Consulting)

- Marine protected areas (MPAs) including sustainable fishing zones (e.g., Indonesia) embracing traditional approaches to fisheries conservation (e.g., sasi, tara bandu).
- Application of fisheries regulations (e.g., TACs, and improved monitoring, control, and surveillance (MCS)). This remains problematic given the vastness of coastal regions in Indonesia, remoteness from major population centres, and a general lack of resources. Application of electronic monitoring e.g., VMS, is only realistic and economic for larger vessels (> 30 GT). Innovative approaches to electronic monitoring and data collection for fisheries e.g., Peskas in Timor-Leste offer promising potential solutions to data gathering to assess fish stocks, but such measures are not currently widely applied in the ATS.
- Community engagement. Awareness raising linked to traditional fisheries conservation measures may yield voluntary delivery of sustainable fisheries management. Such approaches have been successful in application to recreational fisheries in Australia which show high levels of voluntary compliance. Empowerment of women (traditionally engaged in post-harvest activities linked to fisheries) is important in raising awareness, particularly among children, of conservative fisheries management in the ATS region.



Figure 5 – At the Darwin Fisheries Wharf: unloading premium goldband snapper Australia Bay Fisheries

Photo by Paul McShane (Fishwell Consulting)

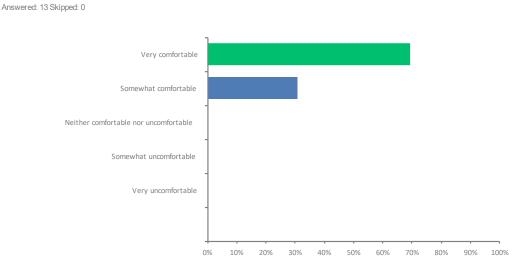


Figure 6 – Freshly caught goldband snappers Photo by Paul McShane (Fishwell Consulting)

- Capacity building. Human resource development including training and education in fisheries management and fisheries science is important to extend capacity across the ATS region particularly Indonesia where capacity tends to be centralised within the Ministry of Marine Affairs and Fisheries in Jakarta with capacity lacking elsewhere in the archipelago. Capacity building is also important in Timor-Leste, particularly fish gear technology, cold-chain management, and market development necessary to yield economic benefits from commercial fisheries.
- Infrastructure development. Linked to capacity building, there is a general lack of supporting infrastructure across the ATS (other than Australia) including cold-chain management e.g., ice-making, freezers, appropriate transport, processing facilities. This hampers economic development and attendant social benefits as economic yields decrease with seafood quality.
- Decentralise management. There is a need to extend ecosystem-based approaches to fisheries management (EAFM) to the regions to capture benefits from sustainable fisheries management and improved product quality.
- Lessons from Australian fisheries show that economic benefits can increase with reduced catches by improving product quality, market development and empowering fishers for sustainable fisheries management.

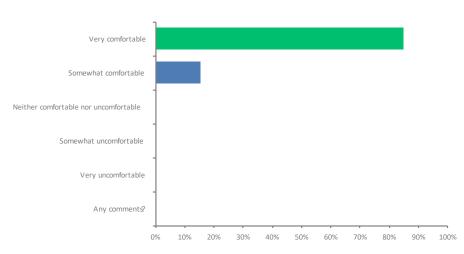
## **PROGRAM MONITORING AND EVALUATION.**

Overall, the response from program participants (13 responses received) was very positive. Responses to survey questions are shown below. Notably, most participants were very comfortable with the accommodation and location (Questions 1 to 4). Participants were able to share their opinions and contribute to the workshop (Question 5). They also rated the daily sessions (and content) highly (>9/10). Comments on aspects of the program are also included (Questions 6 -9). Most participants considered the workshop to be productive (Question 10).



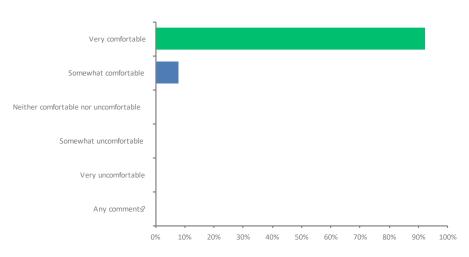
### Q1: How comfortable did you feel with the preparations and coming to Australia?

#### Q2: How comfortable did you feel around Darwin?

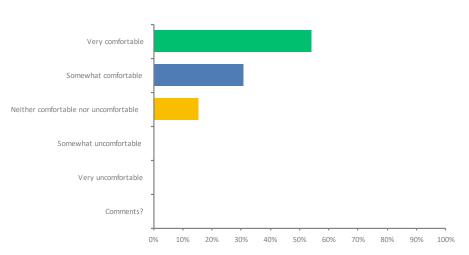


#### Q3: How comfortable did you feel with your accommodation?

Answered: 13 Skipped: 0

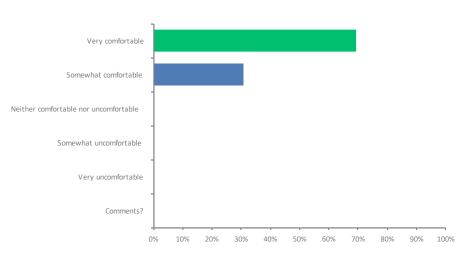


#### Q4: How satisfied were you with the type/quality of the food?



#### Q5: How comfortable did you feel sharing your opinions in the workshop?

Answered: 13 Skipped: 0



#### Q6: Day 1 - introductions and presentations

Answered: 13 Skipped: 0

How would you rate your exerience of Day 1 - introductions and presentations Answered: 13 Skipped: 0



All is good, energized the participants. We from Timor Leste recommend that in a future workshop you should involve local fishermen who are in Darwin Australia

#### Q7: Day 2 - external presentations

Answered: 13 Skipped: 0

How would you rate your exerience of Day 2 - external presentations



A lot of new information and knowledge but limited time for discussion. They presented excellent lessons for the countries. All presentations where well explained and was understood.

**Q8: Day 3 - field visit** Answered: 13 Skipped: 0

How would you rate your exerience of Day 3 - field visit



#### Q8: Day 3 - field visit

Answered: 13 Skipped: 0

Great place. High technology

Good to learn new things on aquaculture

Sometimes the instructors speak too fast and call follow technical terms. In general, it is a good experience.

Potential replicability at each country should be explored particularly to mobilize committed investment/resources.

The field trip was awesome I had the chance to physically see some of the highly technical aquaculture system and grab some feedbacks especially to know how Jewfish is introduced into the aquaculture industryl hope that we can be able to strike a training program with the NT aquaculture programs in the future with the officers with Western Province

Went very well, all the guides that showed us around and explained the processes were very helpful

Great to know the DAC and how vessel unloaded their premium snapper

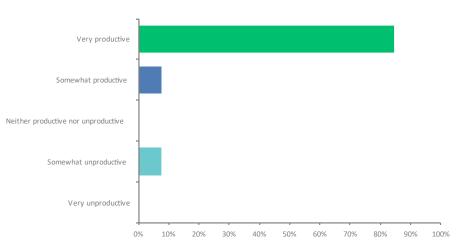
#### Q9: Day 4 - presentations and wrap up

Answered: 13 Skipped: 0

How would you rate your exerience of Day 4 - presentations and wrap up



#### Q10: Overall, how productive do you think the workshop was?





## ATSEA-2 Regional Project Management Unit

Jl. Mertasari No.140 Sidakarya, Denpasar 80224, Bali, Indonesia

P: +62 361 448 4147 E: infoatsea2@pemsea.org W: https://atsea-program.com/