



Amendment 1
to Letter of Agreement dated between
The Pacific Community (SPC),
Cape Fisheries LLC, DeSilva Sea Encounter Corporation,
Pacific Princess Partnership Ltd, Western Pacific Fisheries Inc,
Freisland Fishing Company LLC, JM Fisheries LLC,
Tradition Mariner LLC, and AACH Holding Company LLC
(‘the Fishing Companies’),

Satlink, Marine Instruments, Zubinal
(‘FAD buoy and service providers’)
and
The Nature Conservancy (TNC)

THIS AMENDMENT is made this day 19th of November 2020.

WHEREAS

- A. The original Parties entered into Letter of Agreement (LOA) on the feasibility of retrieving drifting Fish Aggregating Devices (FADs) in the Pacific Ocean on 11 March 2020; and
- B. Results for the first phase of the project, involving scientific analyses of trajectories from satellite buoy data covering a 12-month period, identified some hotspots with higher rates of buoy deactivations and higher rates of beaching highlighting the potential for a FAD recovery programme. However, a longer time series is required to assess the spatial and temporal variability in these hotspots; as well as economic analyses of retrieval options to assess cost-effectiveness; and
- C. An additional Fishing Company, MARPESCA, wishes to join the agreement;

ACCORDINGLY THE PARTIES HAVE AGREED PURSUANT TO CLAUSE XI OF THE LOA TO AMEND THE LOA AS FOLLOWS:

- 1. Addition of new party to the agreement, MARPESCA.
- 2. A new ‘**Annex 2**’ is added to the LOA that describes the extension of the Project, attached as Annex A to this Amendment.
- 3. A new ‘**Annex 3**’ is added to the LOA that describes the second phase of the project: Economic analyses of retrieval options, attached as Annex B to this Amendment.

Annex A of the Amendment

2. All references to the Parties' rights and obligations to in relation to 'Annex 1' are extended to this new 'Annex 2' and 'Annex 3'.
4. **Clause III Timing of activities** is deleted and replaced as follows:

III. Timing of activities

The anticipated timing for the activities is set out in the following table. The timing of the activities can be varied by agreement between the parties.

<i>Date</i>	<i>Task</i>
<i>March 2020</i>	<i>Signing of LOA</i>
<i>March 2020</i>	<i>Project launch meeting (Conference call). Past FAD data released to SPC.</i>
<i>August 2020</i>	<i>Mid-Project meeting by teleconference</i>
<i>November</i>	<i>Signing amended LOA New dataset of past FAD data released to SPC Discussion about economic analyses</i>
<i>January</i>	<i>Project meeting by teleconference Start of economic analyses (if appropriate data provided)</i>
<i>May 2021</i>	<i>Final meeting by teleconference</i>

4. **Clause XII. Entry into force, termination and extension** is deleted and replaced as follows:

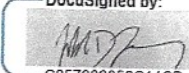
XII. Entry into force, termination and extension

This LOA will enter into force when signed by SPC, TNC, and at least one representative from both the FAD Buoy and Service Providers and the Fishing Companies. It will remain in force until 31 December 2021, unless agreed otherwise. The confidentiality requirements of Clause IV will extend beyond the expiration or termination of this LOA.

5. All other terms and conditions of the Agreement, except as amended above, shall remain unchanged and shall continue in full force and effect.

SPC

TNC

DocuSigned by:

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Cameron Diver
Deputy Director –General
SPC

Mark Zimring
Director, Indo Pacific Tuna
Program
TNC

Date:

Date:

FAD Buoy and Service Providers

<p>DocuSigned by: <i>Faustino Velasco</i> 1/2FD0D7EC2E461</p>	<p>DocuSigned by: <i>Greg Hammann</i> 57BDCD6750C54C4</p>	
<p>Faustino Velasco CEO Satlink</p>	<p>Greg Hammann Director, Strategic Business Development and Sustainability Marine Instruments</p>	<p>Amaia Ormaechea CEO Zunibal</p>
<p>Date:</p>	<p>Date:</p>	<p>Date:</p>

Fishing companies

<p>DocuSigned by: <i>[Signature]</i> BB1179D3E47B485</p>	<p>DocuSigned by: <i>[Signature]</i> 972D8C5CB26847E</p>	<p>DocuSigned by: <i>Ricardo da Rosa</i> 3D8F777E08844A6</p>
<p>Renato Curto President Cape Fisheries LLC</p>	<p>Randall DeSilva President DeSilva Sea Encounter</p>	<p>Ricardo da Rosa General manager Pacific Princess Partnership Ltd</p>
<p>Date:</p>	<p>Date:</p>	<p>Date:</p>

<p>DocuSigned by: <i>Stuart Chikami</i> 456D484A24444D0</p>	<p>DocuSigned by: <i>Jim Souza</i> FACD882B747A4A1</p>	<p>DocuSigned by: <i>Jim Souza</i> FACD882B747A4A1</p>
<p>Stuart Chikami Managing owner Western Pacific Fisheries Inc</p>	<p>Jim Souza Director Freisland Fishing Company LLC</p>	<p>Jim Souza Director JM Fisheries LLC</p>
<p>Date: 11/30/2020</p>	<p>Date:</p>	<p>Date:</p>

<p>DocuSigned by: <i>Larry Da Rosa</i> F321C59C7C104B7</p>	<p><i>[Signature]</i></p>	<p><i>[Signature]</i></p>
<p>Larry Da Rosa Fleet Manager Tradition Mariner LLC</p>	<p>Antonio Alvarez Director AACH Holding Company LLC</p>	<p>Antonio Alvarez Director AACH Holding Company, No 2, LLC</p>
<p>Date:</p>	<p>Date:</p>	<p>Date: 12/2/2020</p>

Annex A of the Amendment

FAD Buoy and Service Providers

DocuSigned by:
Faustino Velasco
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Faustino Velasco
CEO
Satlink

Date:

DocuSigned by:
Greg Hammann
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Greg Hammann
Director, Strategic Business
Development and
Sustainability
Marine Instruments

Date:

Amaia Ormaechea
CEO
Zunibal

Date:

Fishing companies

DocuSigned by:
[Signature]
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Renato Curto
President
Cape Fisheries LLC

Date:

DocuSigned by:
[Signature]
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Randall DeSilva
President
DeSilva Sea Encounter

Date:

DocuSigned by:
Ricardo da Rosa
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Ricardo da Rosa
General manager
Pacific Princess Partnership
Ltd

Date:

DocuSigned by:
Stuart Chikami
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Stuart Chikami
Managing owner
Western Pacific Fisheries Inc

Date: 11/30/2020

DocuSigned by:
Jim Souza
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Jim Souza
Director
Freisland Fishing Company
LLC

Date:

DocuSigned by:
Jim Souza
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Jim Souza
Director
JM Fisheries LLC

Date

DocuSigned by:
Larry Da Rosa
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Larry Da Rosa
Fleet Manager
Tradition Mariner LLC

Date:

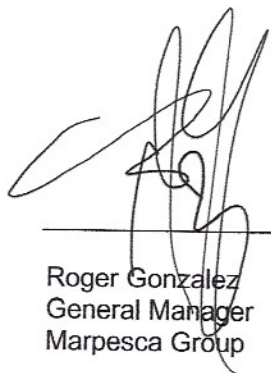
Antonio Alvarez
Director
AACH Holding Company LLC

Date:

Antonio Alvarez
Director
AACH Holding Company, No
2, LLC

Date: 12/2/2020

Annex A of the Amendment



Roger Gonzalez
General Manager
Marpesca Group

ROSEMARY GONZALEZ

Date: *Nov. 2020*

Annex 2: Extended research plan for Pacific FAD Retrieval Feasibility Study

The research activities under the first phase of the project will be the same as described in Annex 1 of the LOA.

These will be performed again using a longer and more complete dataset comprising 10-year period (2010–2019) of historical satellite buoy positions from deactivated FADs.

These data will be limited to time stamped locational data and shall not include sensitive information (e.g. echo-sounder readings). Data will also be anonymously recorded so that owners and vessels will not be disclosed by buoy data providers. Information transferred and used during the research programme will include for each buoy their locations and date/time at location.

In addition, data will also include for each buoy; i) the date of manual switch off (if it occurs); and ii) the date of deactivation.

This will allow the investigation of the spatial and temporal variability in the hotspots previously identified, in particular in view of varying oceanographic conditions (e.g. El Nino-Southern Oscillation phases). The two new variables included will potentially help identify voluntary deactivation from buoys that have been stolen.

Annex 3: Economic analyses of retrieval options

Project objective

This project aims to identify, from a broadly scoped suite of options, the most cost-effective dFAD recovery program that could be implemented by the project industry partners to reduce the environmental and economic damage associated with lost and abandoned drifting Fish Aggregating Devices (dFADs).

Background

Lost and abandoned drifting Fish Aggregating Devices (dFADs) represent a negative economic externality imposed by the purse seine fishery on the environment and local communities. Negative outcomes associated with beached dFADs and their associated satellite buoys include damage to ecosystems, potential for interaction with coastal and artisanal fisheries, and aesthetic impacts that may diminish cultural and tourism values. The social licence of fishing companies and their credibility in environmental sustainability can be eroded if they are viewed to be contributing to marine litter and pollution. There is clearly a range of beneficiaries from reduction of the incidence of lost and abandoned FADs.

A number of US fishing companies have expressed their desire to improve their environmental and social performance by introducing better lifecycle management of the dFADs deployed in purse seine fishing operations. This has led to the development of a Pacific dFAD retrieval feasibility study, which is being undertaken as a collaboration between industry, SPC, the main dFAD buoy and service providers (Satlink, Zunibal and Marine Instrument) and The Nature Conservancy (TNC). The first phase of this collaboration involved scientific analyses of trajectories from satellite buoy data and highlighted the presence of hotspot areas that are subject to higher rates of deactivation and beaching. The analysis is likely going to be extended to include additional years of data in order to investigate the temporal stability of the hotspots identified. The second phase of the collaboration, comprising the project outlined in this document, will focus on getting a better understanding of the economics of dFAD use and recovery. Specifically, it will focus on identifying systems or programs that can help reduce the number of dFADs discarded or lost at sea, and assessing their cost-effectiveness.

A range of options for the recovery of discarded dFADs have been identified by industry and managers and are presented in Banks & Zaharia (2020) and Davies et al. (2017). These include:

- A greater emphasis on owner collection before dFAD abandonment
- Owner-funded charter of local vessels for at-sea collection of lost or abandoned dFADs
- A 'FAD watch' system that enables community collection of dFADs prior to or immediately following beaching in sensitive areas (as is currently operating in the Seychelles)
- Modification of the deployment area to limit dFAD losses.

Other systems or solutions to address the issue of lost and discarded dFADs can also be envisaged and could be developed and refined through consultation with industry, fisheries managers, regional institutions and local communities.

This project would seek to assess the feasibility and cost-effectiveness of a range of different dFAD recovery options. Consideration would be given to:

- The nature and distribution of costs and benefits
- Administrative and financial considerations
- Overall economic outcomes and rationale for participation by industry, NGOs and communities.

The key pieces of data and the analyses required to address these issues are outlined below.

Understanding the nature and distribution of costs and benefits

Cost surveys would be required to provide an accurate understanding of the financial costs that would be incurred by industry in association with different recovery options (e.g. fuel for FAD recovery per type of vessel, storage facilities, satellite transmission costs). Costing data would be the basis of all economic feasibility and cost-effectiveness assessments, so this project would be reliant on the participating industry partners providing comprehensive information regarding the cost of any potential dFAD retrieval activities.

Data relating to any potential costs and benefits accruing to other participants (e.g. charter FAD collection vessels or local community participants, port storage and recycling facilities) would also be required. This would be collected through engagement with local communities and fisheries agencies (if and as agreed by the project partners). Engagement would incorporate discussions around the acceptability and feasibility of any proposed retrieval initiatives within the local context, as recommended in Herrera et al. (2019) based on lessons learnt from the 'FAD-Watch' program in the Seychelles, and an investigation of relevant payment levels (if any) required to achieve desired levels of participation. Engagement and consultation activities will be focussed in the dFAD beaching hotspots that were identified in the first phase of the Pacific dFAD retrieval feasibility study.

As travel distances and associated fuel costs are likely to be a major component of any program designed to recover FADs at sea, a more detailed assessment of discarded FAD trajectories and beaching hotspots, based on multi-year data, is required and is currently being discussed. This would allow a probabilistic assessment of likely costs associated with at-sea retrieval options in any given year. It would also provide clarity around the appropriate geographic extent of a FAD retrieval project (and associated training and engagement activities).

Administrative and financial considerations

Industry norms and the effect of any new transaction costs (including time-costs) associated with administrative aspects of the proposed recovery schemes will be investigated. Industry participant perspectives and likely adoption or adaptation behaviours in the event of new FAD management schemes, including any interaction with the rate of transition to FADs with lower entanglement risk, will also need to be considered. This would require meeting and discussion with target participants (industry project partners and others) via online workshops or similar.

The project will also explore the potential for any unintended (positive or negative) outcomes from dFAD recovery programmes, including safety considerations for communities involved in at-sea collection options. The costs associated with mitigating any unintended outcomes would be assessed. For example, in the case of the safety concerns identified above, this might include costing of appropriate training and equipment.

Activities and preliminary costing

Activity
1. Scoping of options – via discussion with industry and NGO partners
2. Cost surveys – participating industry and NGO partners

Annex A of the Amendment

3. Cost and attitudinal surveys – other participants e.g. potential charter boats (artisanal and longline fleets?), port logistics, working through industry and fishery agency contacts
4. Attitudinal surveys – other participants e.g. local communities or NGOs, other stakeholders as relevant
5. Assessment of logistics and transaction costs – industry participant workshop(s)
6. Economic analysis and reporting: Financial and economic analyses, scheme ranking and assessment

This project will take approximately 3 months (spread over a 6 month period) of an SPC staff to complete.

Total SPC staff salaries cost (approximately): \$35,000 USD

Some operating budget for supporting local NGOs or fisheries agencies in the proposed data collection activities will also likely be required (approximately): \$5,000 USD.

Total budget (approximate): \$40,000 USD

Project dependencies

This project will require inputs from the industry and NGO partners in order to be completed successfully. Required inputs include:

- Participation in scoping and logistics workshops (anticipated 2 half day workshops in total)
- Provision of relevant cost data to support the economic analyses
- Identification of, and effective liaison with, potential charter providers and/or port facilities so that appropriate participation rates in cost and attitudinal surveys of other stakeholder groups can be achieved.

References

Banks, R. and Zaharia M. (2020). Characterization of the costs and benefits related to lost and/or abandoned Fish Aggregating Devices in the Western and Central Pacific Ocean. Report produced by Poseidon Aquatic Resources Management Ltd for The Pew Charitable Trusts.

Davies, T., Curnick, D., Barde, J., & Chassot, E. (2017). Potential environmental impacts caused by beaching of drifting fish aggregating devices and identification of management solutions and uncertainties. In *A paper submitted to the 1st meeting of the joint t-RFMO FAD Working Group, Madrid, Spain.*

Herrera, M., Adam, P. A., Beetle, N., Santiago, J., Murua, H., Zudaire, I., ... & Staff, I. F. (2019). FAD-Watch: turning the tide on FAD-beaching. *JT-RFMO FAD WG_Herrera_S, 11.*