VESSEL PLAN TO RE-USE & REDUCE PLASTIC WASTE TO THE SEA

船舶计划再利用并减少排入海洋的塑料废物

Prepared for the Indian Ocean Swordfish Fishery Improvement Project and the Eastern Pacific Ocean Swordfish Fishery Improvement Project by the Sustainability Incubator,

为可持续发展孵化器的印度洋剑鱼渔业改良项目和东太平洋剑鱼渔业改良项目做准备,

November 2022

Updated January 17, 2023

This is a plan for re-using and reducing the flow of plastic waste to the sea.

这是一项再利用和减少塑料垃圾流入大海的计划。

The plan is based on a Material Flow Analysis of plastics that was prepared for longline vessels participating in the Indian Ocean Swordfish Fishery Improvement Project (FIP) and the Eastern Pacific Ocean Swordfish FIP. Swordfish fished by these vessels is available to American families at Sprouts Farmers Market. Sprouts Farmers Market is committed to ocean sustainability and is a member of the Fishery Improvement Project. The project includes all actors in the two supply chains, including vessel companies Kha Yang and Asia Tank for the Indian Ocean and Star Trading for the Eastern Pacific, as well distributors Fong Hsiang Enterprise Co Pte Ltd, SYMPAC Inc..

该计划基于为参与印度洋剑鱼渔业改进项目 (FIP) 和东太平洋剑鱼 FIP 的延绳钓船只准备的塑料物质流分析。在新芽农贸市场，美国家庭可以买到用这些船捕捞的剑鱼。 Sprouts Farmers Market 致力于海洋可持续发展，是渔业改善项目的成员。该项目包括两条供应链中的所有参与者，包括印度洋的船舶公司 Kha Yang 和 Asia Tank 以及东太平洋的 Star Trading，以及分销商 Fong Hsiang Enterprise Co Pte Ltd 和 SYMPAC Inc.。

The longline vessel companies completed a gear disposal survey and provided key information about how they manage end-of-life microfilament longline gear including how they dispose of it. The results allowed for a material flow analysis and the preparation of this vessel plan.

延绳钓船公司完成了渔具处置调查，并提供了有关他们如何管理报废微丝延绳钓渔具（包括如何处置）的关键信息。结果允许进行材料流分析和准备该容器计划。

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1. MATERIAL FLOW SUMMARY
物料流概要

Current standing of the longline gear management by FIP vessels:
FIP 船只的延绳钓渔具管理现状：

Kha Yang 1, 3, 5, 7, 9 & 35

Kha Yang vessels mark their gear. The gear's operational life is 4+ years. The vessels return to port with 70-90% of the gear they had when leaving port for the fishing trip. End-of-life longline gear is passed to a supply vessel and carried back to Port for disposal. Damaged gear is brought back by a supply vessel and returned to Taiwan for maintenance or disposed in a waste bin if it cannot be repaired.

卡阳 1、3、5、7、9 和 35

Kha Yang 船在他们的装备上做标记。齿轮的使用寿命为 4 年以上。这些船只返回港口时所带的渔具是离开港口进行捕鱼时的 70-90%。报废的延绳钓渔具被送到补给船并运回港口进行处置。损坏的装备由补给船带回台湾进行维修，如果无法修复则丢弃在垃圾箱中。

Ibu Wira 1, 2, 3

Asia Tank vessels return to port with 70-90% of the gear they had when leaving port for the fishing trip. The gear's operational life is 2 years. End-of-life longline gear is stored on board and carried back to Port where it is disposed in a waste bin.

伊布维拉 1, 2, 3

亚洲油轮返回港口时，其装备是离开港口捕鱼时的 70-90%。齿轮的使用寿命为 2 年。报废的延绳钓渔具存放在船上，运回港口后放入垃圾箱处理。

Chung Kuo 67, 68, 81, 86, 91, 95, 96, 666, 686, 818, 828, 838, 858, 868, 888, 989, 999, Mega 711, 712, 811, 812, Ocean Star VI, 101, Minnie 511 and Pioneer

Star Trading vessels return to port with 70-90% of the gear they had when leaving port for the fishing trip. The gear's operational life is 1 year. End-of-life longline gear is stored on board and carried back to Port where it is disposed in a waste bin.

郭中 67, 68, 81, 86, 91, 95, 96, 666, 686, 818, 828, 838, 858, 868, 888, 989, 999, Mega 711, 712, 811, 812, 海洋之星 VI 、101、米妮 511 和先锋

Star Trading 的船只返回港口时，带着他们离开港口进行捕鱼旅行时所拥有的 70-90% 的装备。齿轮的使用寿命为 1 年。报废的延绳钓渔具存放在船上，运回港口后放入垃圾箱处理。

2. VESSEL PLAN

船舶计划

The purpose of this plan is to support efforts by the FIP vessels to prevent and reduce plastic waste to the sea from the proper disposal of monofilament gear.

该计划的目的是支持 FIP 船只防止和减少因妥善处置单丝渔具而排放到海洋中的塑料废物。

On a typical longline trip, plastic wastes are generated from household waste, bait bags and cartons, and monofilament longline gear. By some estimates, 60% of the waste dumped by fishing vessels is plastic (SPC 2015). The MARPOL convention does not allow vessels to dispose of the following wastes anywhere at sea: plastics, synthetic ropes, fishing gear, plastic garbage bags, incinerator ashes, clinkers, cooking oil, floating dunnage, lining and packing materials, paper, rags, glass, metal, bottles, crockery and similar refuse (MARPOL 2018).

在一次典型的延绳钓旅行中，生活垃圾、诱饵袋和纸箱以及单丝延绳钓具会产生塑料废物。据估计，渔船倾倒的垃圾中有 60% 是塑料（SPC 2015）。MARPOL 公约不允许船舶在海上任何地方处置以下废物：塑料、合成绳索、渔具、塑料垃圾袋、焚化炉灰烬、熟料、食用油、漂浮垫料、衬里和包装材料、纸张、碎布、玻璃、金属、瓶子、陶器和类似垃圾（MARPOL 2018）。

End-of-life longline gear disposal

MARPOL requires industrial fishing vessels operating on the high seas to retain damaged gear in properly marked bins on deck and then dispose it at Port. The plan is to use simple metrics and focus effort on a smaller number of key Port locations and starting with easier measures and lifting the bar over time. This complies with best practices to reduce plastic waste to the sea (FFA 2021).

报废延绳钓渔具处置

MARPOL 要求在公海作业的工业渔船将损坏的渔具存放在甲板上适当标记的箱子中，然后在港口进行处置。该计划是使用简单的指标，将精力集中在数量较少的关键港口位置，并从更简单的措施开始，并随着时间的推移提高标准。这符合减少向海洋排放塑料废物的最佳做法 (FFA 2021)。

Gear Disposal Plan

This plan has three elements:

1. Gear recovery from the sea and handling procedures
2. Offshore disposal to a carrier vessel
3. Gear marking

齿轮处置计划

该计划包含三个要素：

1. 渔具海上打捞及处理程序
2. 运输船的海上处置
3. 齿轮标记

All vessels should be returning some quantity of waste to Port or passing it to carrier or supply vessels. Fishing vessels have operational procedures for handling and stowing their wastes but dumping can occur when operating without physical waste handling systems and written procedures. Plastic waste needs to be managed with a plan to correct habits that are harmful to the sea. Dumping is normalized because it is easy and free but enforcement is increasing and the impacts to sea life are counterproductive.
所有船只都应将一定数量的废物返回港口或将其传递给承运人或补给船。渔船有处理和装载废物的操作程序，但在没有物理废物处理系统和书面程序的情况下可能会发生倾倒。塑料垃圾需要通过计划来管理，以纠正对海洋有害的习惯。倾倒是常态化的，因为它既简单又免费，但执法力度越来越大，对海洋生物的影响适得其反。

Simple steps are provided for FIP vessels to use to overcome challenges like irregular port schedules and making plastic waste management and disposal efficient.
为 FIP 船只提供了简单的步骤来克服不规则的港口时间表和提高塑料废物管理和处置效率等挑战。

1. *Gear recovery from the sea and handling procedures*

- Designate and clearly mark a bin for stowing damaged gear onboard.
- Add gear handling to the written procedures for crew members.
- Educate crew members to collect damaged gear from the water and dispose it in a clearly marked bin, and then empty the bins at port or to a supply vessel—instead of leaving it in the sea (FFA 2021).
- Retrieve and initially compact damaged gear in order to increase the density of the waste and minimize deck space (FFA 2021).
- Repair damaged gear whenever possible.
- Offload the waste at Port and deposit it in a designated bin for monofilament line.
- Log unretrievable gear as lost. MARPOL requires that lost fishing gear is reported to the Flag State (Malaysia) or in some instances the coastal state (Mauritius, where applicable).

1．渔具海上打捞及处理程序

• 指定并清楚地标记一个箱子，用于存放船上损坏的装备。

• 在船员的书面程序中增加起落架操作。

• 教育船员从水中收集损坏的装备并将其丢弃在标记清晰的垃圾箱中，然后在港口或补给船上清空垃圾箱——而不是将其留在海中（FFA 2021）。

• 回收并初步压实损坏的渔具，以增加废物密度并尽量减少甲板空间（FFA 2021）。

• 尽可能修理损坏的齿轮。

• 在港口卸载废物并将其存放在指定的单丝线垃圾箱中。

• 将无法找回的装备记录为丢失。MARPOL 要求向船旗国（马来西亚）或在某些情况下向沿海国（毛里求斯，如适用）报告丢失的渔具。

2. *Offshore disposal to a carrier vessel*

2．运输船的海上处置

- Pay the supply or carrier vessel to take the plastic waste and dispose of it properly.
  - 付钱给供应商或运输船以接收塑料垃圾并妥善处理。

The easiest, cleanest, and most effective way to manage the waste stream for vessels engaged in trans-shipment activities is to trans-ship waste alongside fish and return it to mainland ports with proper waste disposal facilities (FFA 2021).
管理从事转运活动的船只的废物流的最简单、最清洁和最有效的方法是将废物与鱼类一起转运，然后将其返回到拥有适当废物处理设施的大陆港口（FFA 2021）。

This recommendation is for Asia Tank and Star Trading vessels. Kha Yang vessels pass their waste to supply vessels already.
管理从事转运活动的船只的废物流的最简单、最清洁和最有效的方法是将废物与鱼类一起转运，然后将其返回到拥有适当废物处理设施的大陆港口（FFA 2021）。

3. Gear marking
   3.齿轮标记
- Mark all longline gear used by the vessels.
- 标记船只使用的所有延绳钓装置。

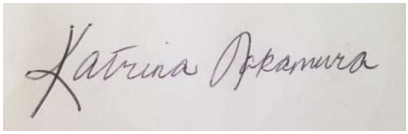
MARPOL is developing policy to require industrial vessels to mark fishing gear with the vessel number. The purpose of marking fishing gear is to identify ownership for maritime authorities.
MARPOL 正在制定政策，要求工业船舶在渔具上标记船号。标记渔具的目的是为海事当局确定所有权。

This recommendation is for Asia Tank and Star Trading vessels. Kha Yang vessels mark their gear already.
此建议适用于 Asia Tank 和 Star Trading 船只。Kha Yang 船只已经在他们的装备上做了标记。

The value of this plan is to avoid harming the sea and financial penalties. MARPOL has defined what constitutes reasonable losses of gear and soon will be lowering the limit of lost gear by vessels. Maritime authorities will be enforcing this policy in the near-term.
这个计划的价值在于避免伤害海洋和经济处罚。MARPOL 已经定义了什么构成合理的渔具损失，并将很快降低船舶损失渔具的限额。海事当局将在近期执行这项政策。

Signatures to the Plan:

_____ Ms. Jochanan Liew
Fong Hsiang Enterprise Co Pte Ltd, Singapore – FIP Host
Date: January 24, 2023


_ Katrina Nakamura, PhD
Sustainability Incubator, Honolulu – FIP Science & Secretariat
January 17, 2023

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4. COMPLETED SURVEYS

KHA YANG VESSELS

SURVEY ON PLASTICS IN LONGLINE FISHING GEAR

This survey asks questions about plastic use in longline fishing with the intent of preparing a plan for reducing the plastics landing in the sea. It has been estimated that 4% to 7% of longlines end up in the ocean every year (Deshpande et al. 2020) harming wildlife and are a major contributor of plastics to beach litter. Your answers will help to inventory the plastics in use and ultimately reduce the flow of plastics into the sea.

Question 1: Operational life of fishing gear

What is the operational life of your longline gear? Select from:
1 year
2 years
3 years
4+ years

Question 2: Gear marking

Is the longline gear you use marked in any way that helps you to keep track of it?
Yes
No

Question 3: Disposal

Is end-of-life longline gear carried back to Port for disposal? Select from:
No
Yes, it is passed to a supply vessel
Yes, we carry it back to the Port
Yes, and we also pick up ghost gear that we encounter

Question 4: Monofilament line

How much monofilament line is onboard the vessels at the start of a trip? I have no idea

How much is onboard when you return to port? Select from:
Over 90%
70-90%
50-70%
Below 50%

Question 5: Loss at sea

Losing some longline gear at sea is unavoidable. What proportion of longline gear is lost at sea? Select from:
0-33%
34-66%
67-100%

NEW Question 6: Disposal at the Port

Please describe how the fishing crew stow damaged gear onboard and also how damaged gear is disposed of at the Port or by a supply vessel at the Port. For example, do crew follow a particular procedure that you can describe? Does the damaged gear go into a waste bin at the Port? Can you find out whether the damaged gear goes next to a landfill? Does any of the gear go to a recycling facility?

Damaged gear will be brought back by supply vessel and straight to waste bin.
If still can be repair will send back to Taiwan for maintenance

STAR TRADING VESSELS
SURVEY ON PLASTICS IN LONGLINE FISHING GEAR

This survey asks questions about plastic use in longline fishing with the intent of preparing a plan for reducing the plastics landing in the sea. It has been estimated that 4% to 7% of longlines end up in the ocean every year (Deshpande et al. 2020) harming wildlife and are a major contributor of plastics to beach litter. Your answers will help to inventory the plastics in use and ultimately reduce the flow of plastics into the sea.

Question 1: Operational life of fishing gear

What is the operational life of your longline gear? Select from:
1 year - hooks and Monofilament line
2 years
3 years
4+ years

Question 2: Gear marking

Is the longline gear you use marked in any way that helps you to keep track of it?
Yes
No

Question 3: Disposal

Is end-of-life longline gear carried back to Port for disposal? Select from:
No
Yes, it is passed to a supply vessel
Yes, we carry it back to the Port
Yes, and we also pick up ghost gear that we encounter

Question 4: Monofilament line

How much monofilament line is onboard the vessels at the start of a trip? It varies.

How much is onboard when you return to port? Select from:
Over 90%
70-90%
50-70%
Below 50%

Question 5: Loss at sea

Losing some longline gear at sea is unavoidable. What proportion of longline gear is lost at sea? Select from:
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It has been told to the Captains and crews that they would require to collect the disposed equipment, gears, oils, plastic to dispose in Port. Usually there are waste bins and waste oil areas in the Port area.

ASIA TANK VESSELS
SURVEY ON PLASTICS IN LONGLINE FISHING GEAR

This survey asks questions about plastic use in longline fishing with the intent of preparing a plan for reducing the plastics landing in the sea. It has been estimated that 4% to 7% of longlines end up in the ocean every year (Deshpande et al. 2020) harming wildlife and are a major contributor of plastics to beach litter. Your answers will help to inventory the plastics in use and ultimately reduce the flow of plastics into the sea.

Question 1: Operational life of fishing gear

What is the operational life of your longline gear? Select from:
1 year
2 years
3 years
4+ years

Question 2: Gear marking

Is the longline gear you use marked in any way that helps you to keep track of it?

Yes
No

Question 3: Disposal

Is end-of-life longline gear carried back to Port for disposal? Select from:
No
Yes, it is passed to a supply vessel
Yes, we carry it back to the Port
Yes, and we also pick up ghost gear that we encounter

Question 4: Monofilament line

How much monofilament line is onboard the vessels at the start of a trip? _____

How much is onboard when you return to port? Select from:
Over 90%
70-90%
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Below 50%

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Losing some longline gear at sea is unavoidable. What proportion of longline gear is lost at sea? Select from:
0-33%
34-66%
67-100%

NEW Question 6: Disposal at the Port

Please describe how the fishing crew stow damaged gear onboard and also how damaged gear is disposed of at the Port or by a supply vessel at the Port. For example, do crew follow a particular procedure that you can describe?
Please refer to the next question.

Does the damaged gear go into a waste bin at the Port?
Yes

Can you find out whether the damaged gear goes next to a landfill?
No idea

Does any of the gear go to a recycling facility?
No idea