



SOCIAL BENEFITS OF ONE-BY-ONE TUNA FISHERIES

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About the International Pole & Line Foundation

The International Pole & Line Foundation (IPNLF) works to develop, support and promote socially and environmentally responsible pole-and-line and handline and troll tuna fisheries around the world. IPNLF's ambition is to contribute to thriving coastal fisheries, including the people, communities, businesses and seas connected with them. As a hub for sustainably-minded organisations, we use the influence of the market to forge change through practical fishery projects and stakeholder cooperation. IPNLF membership is open to organisations involved in the one-by-one caught tuna supply chain. Allied with our Members, IPNLF demonstrates the value of one-by-one caught tuna to consumers, policymakers and throughout the supply chain. We work across science, policy and the seafood sector, using an evidence-based, solutions-focused approach with guidance from our Scientific & Technical Advisory Committee and Board of Trustees.

IPNLF was officially registered in the United Kingdom in 2012 (Charity 1145586), with branch offices in London and the Maldives, and a staff presence in Indonesia

Cover image: Pole-and-line tuna fishing in Indonesia © Paul Hilton & IPNLF

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ABBREVIATIONS

AAFA – American Albacore Fishing Association

AP2HI – Asosiasi Perikanan Pole & Line dan Handline Indonesia

FAO – Food & Agriculture Organisation

FIP – Fishery Improvements Project

ICCAT – International Commission for the Conservation of Atlantic Tuna

IPNLF – International Pole & Line Foundation

IUU – Illegal, Unregulated and Unreported

MSC – Marine Stewardship Council

NGO – Non Governmental Organisation

RFMO – Regional Fisheries Management Organisation

RFS – Responsible Fishing Scheme

VIP – Vessel Improver Programme

WFOA – Western Fishboat Owners Association

INTRODUCTION

The International Pole & Line Foundation's (IPNLF) vision is to see coastal tuna fisheries, and the communities and seas that they are part of, thrive. In this, equal emphasis is placed on the social component of sustainability, in addition to ecological and economic components. This document provides information about key social aspects of one-by-one tuna fisheries (e.g. pole-and-line, handline, troll). It serves as an introduction, based on a literature review and some preliminary research conducted by IPNLF to examine the social benefits derived from one-by-one tuna fisheries to the communities that depend upon them. As there are currently few studies and analyses on these social factors specific to one-by-one tuna fisheries, we do not have a complete picture at present, which underscores the need for further in-depth research. This is something IPNLF is currently conducting in Indonesia and the Maldives to provide a fuller understanding of where our sustainability efforts need to focus.



Pole-and-line tuna fishing in the Maldives, 2014 © IPNLF



BACKGROUND

One-by-one tuna fisheries (e.g. pole-and-line, handline, troll) offer the most environmentally and socially responsible ways of catching tuna. From an environmental perspective, their high selectivity means only the target species are caught ‘one-by-one’ and the bycatch of non-target species is minimal. These fisheries are diverse in character, ranging from: simple to complex gear operations; manual to motorised crafts; fishing for a few hours to a number of days or weeks at sea; almost zero to high capital involvement; individual to group ownership; household consumption to international marketing; and various degrees of livelihood dependence.

This diversity underscores the importance of understanding the customs, food habits, value systems, traditions and social organisation that are closely linked to the fisheries and to the environments on which they depend (Sharma, 2010). Even though the sector is changing today and is relatively more technology and capital intensive, one-by-one tuna fisheries are still very people-centric, supporting comparatively high employment compared to large-scale industrial fisheries, while still providing a model on which to sustain tuna fisheries and fishery dependent livelihoods into the future.

Fisheries such as pole-and-line fisheries in Japan and the Maldives, handline fisheries in the Maldives, Philippines and Indonesia and troll fisheries in Canada, New Zealand and the USA have experienced considerable commercial success. This underscores that if conducted properly, these fisheries are not only about the social and environmental good but provide a viable model of production and can generate considerable economic returns. However, in many cases, competition for access to tuna resources and market share with industrialised fisheries that are relatively more efficient per tonne of catch and with larger fleet range, not only threatens the resource but also livelihoods, food security and cultures of small scale and/or artisanal operators.

In the past ten years, we have seen mounting pressure for environmental accountability in seafood production, leading to environmental standards such as the Marine Stewardship Council (MSC) being introduced to leverage environmental improvements through consumer purchasing decisions. This has been accompanied by an increasing number of fishery improvement projects (FIPs), which are a tool for delivering stepwise improvements in the sustainable management of fisheries. Both the MSC and FIPs focus primarily on the environmental component of sustainability. While this is a critical aspect of sustainability, social accountability, or at the very least, acknowledgment that the wellbeing of many coastal fishing communities is intrinsically linked to the seafood we

consume is yet to receive corresponding attention or market-oriented pressure.

This document will be structured as follows: the first section will examine material benefits of one-by-one fisheries through looking at employment, income, food security and market recognition; the second section will focus on cultural and community benefits of one-by-one tuna fisheries through examining culture and identity, human rights and gender parity. The paper concludes by considering efforts being made to support maintaining and developing these benefits in one-by-one tuna fisheries. This paper is an early step in IPNLF's social research agenda and will be complemented by in-depth studies of one-by-one tuna fisheries in the future.



Pole-and-line tuna fishing for albacore on the west coast USA © AAFA



MATERIAL BENEFITS/IMPACTS

Employment and Income

Capture fishery supply chains start from oceans and end up in consumer markets and can involve a large number of stakeholders between the fisher and the final consumer. Small-scale fisheries are labour intensive and provide considerable direct and indirect employment opportunities. Figure 1 provides a simplified illustration of two ‘classes’ of vessels for the industrialised and developing countries of the world: small and large-scale fishing operations. The data is not tuna-specific but rather shows in global terms the relative social, economic and ecological advantages of small-scale fishing operations in comparison to their larger counterparts.









	LARGE SCALE 	SMALL SCALE 
Number of fishermen employed	 AROUND 500,000	 OVER 12,000,000
Annual catch of marine fish for human consumption	 AROUND 29 MILLION TONNES	 AROUND 24 MILLION TONNES
Capital cost of each job on fishing vessels	\$ \$ \$ \$ \$ 30,000-\$ 300,000	\$ \$ 250-2,500
Fishermen employed for each \$ 1 million invested in fishing vessels	 5-30	 500-4,000

Figure 1 Table of the world’s two marine fishing industries: small and large-scale fisheries and how they compare at a global scale (Carvalho et al., 2011)

It is estimated that each fisher’s job creates at least two other jobs in processing and distribution (Le Sann, 1998 cited in Naji, n.d.). As Béné and colleagues (2007) explain, multipliers arise because fishing activities use the products of other industries/businesses to produce their own products (e.g. fishing gear, boat building and ice production), and because outputs from fishing become inputs to another industry/business (e.g. fish processing, catch enumeration and transportation). Locally-driven fishing operations provide both direct and indirect activities and in turn generate a third wave of economic activity through providing the means for household expenditure on goods and services. This is described as an “induced impact” of the industry, whereby much of the additional re-spending and income generated will occur within the local area

(Murray 2014 p.5). This section will examine in greater detail the employment and income generating activities associated with one-by-one tuna supply chains, looking first at the direct employment they provide and then examining some of the indirect employment activities.

When considering direct employment of fishers on vessels, one-by-one tuna catching methods employ more people per tonne of fish caught than large-scale industrial operations.

In the context of tuna fisheries, pole-and-line vessels for example use between eight and nine times more labour per unit catch of tuna than purse seining (Gillett 2011). For the most part, one-by-one fishers work coastally, often in developing countries with a workforce primarily made up of local people. In some cases these fisheries are one of very few sources of local employment. They make relatively short trips enabling crews to return home frequently compared to large industrial tuna vessels that may spend multiple months or even years at sea before going in to port.

In Indonesia, around 4,000 fishers are employed in pole-and-line and 170,600 fishers are employed in handline fisheries (Bureau of Statistics Indonesia pers. comm. May 2016). In the Maldives, a country with almost entirely one-by-one tuna fisheries – where pole-and-line tuna accounts for 71% and handline for 25% of total catch – approximately 13,650 fishers are employed in the fisheries sector (Bureau of Statistics 2015). By comparison, purse seine fisheries operating in the Indian Ocean catching similar volumes could employ as few as 200 people and because their catches are frequently taken to distant canneries, they may be of minimal benefit to local society (Howgate and Leadbitter 2016).

In many pole-and-line fisheries, baitfish fisheries provide another source of employment. In Senegal, for example, the primary source of bait comes from artisanal fishers that are contracted by a pole-and-line vessel (Hickman 2015). In Indonesia, pole-and-line vessels are also supplied with baitfish through a separate fishery. These artisanal bait fisheries operate on a small scale and exist throughout the archipelago providing a source of employment for both men and women. In many other pole-and-line fisheries, however, bait is collected at the start of the fishing operation and not supplied separately.

Often, the largest employers in the one-by-one tuna supply chain are processors. Tuna canneries in countries with one-by-one tuna fisheries and tuna loining plants provide significant employment opportunities and play an important role in poverty alleviation and

socio-economic development (Campling 2008). While these canneries are not necessarily dependent on one-by-one product as their sole source of supply, processing plants are a vital source of local employment in particular to women. One example of the local importance of the processing industry is the SolTuna cannery in Solomon Islands, processing pole-and-line and purse seine caught tuna. This cannery has a total workforce of approximately 1,500 local workers and is the biggest local employer in the region, with women accounting for approximately 62% of the workforce, including 15 higher-level professional positions (IFC 2013).

While the factors controlling the location of canneries (associated with pole-and-line and some troll fisheries) will depend on the volume of fish being produced, as well as other factors such as international trade tariff regimes and wider global trade patterns, processing from handline fisheries is often done more locally as the volumes and the scale of operations are smaller. Furthermore, the handline supply chain will frequently involve middlemen or suppliers who sell the fishers' catch to local processors. They may act as aggregators of fish, logistic operators (transporting fish and ice to and from sites), employers and boat owners and/or unofficial local lenders. These suppliers enjoy a powerful and often highly respected role in the community and can have a large influence on the financial status of fishers (Duggen and Kochen 2016).

Many of the states with significant one-by-one tuna fleets like Japan, Maldives, Indonesia, and the west coast of North America also build and maintain their own fishing vessels in country (pers. comm. American Albacore Fisheries Association (AAFA) 29 April 2016 & AP2HI 10 May 2016). In other countries, such as Senegal, where the majority of vessels are foreign-built, repair and maintenance of these boats are conducted in the port of Dakar by Senegalese technicians (Hickman 2015). Therefore, one-by-one tuna fisheries have an impact on employment both within the fisheries sector and in other sectors.

In terms of national income, one-by-one tuna fisheries have made a significant contribution to some national and local economies through the generation of foreign exchange from international trade. For instance, in the case of the Maldives, the fisheries sector is the second most important source of national foreign currency earnings and export revenue from fish products, accounting for 47% of merchandise exports (Maldives Monetary Authority, 2014). According to a North American fisheries association, the "hook and line albacore tuna fishery contributes to the local domestic economy through local landings and processing the fish" (Western Fishboat Owners Association, pers. comm. 22 April 2016).

However, research indicates that in some cases, examining the contribution of fisheries to the economy on its own does not sufficiently indicate the income value of a fishery to its communities. Studies of tuna fisheries in Tanzania, which, though hampered by data limitations, found that artisanal fisheries had the potential to generate a significant income for fishers, were a significant contributor to exports, and generated some government revenue through licensing and registration fees (Igulu, 2013). However, data on income from one-by-one fisheries remains extremely limited, both at national and fisher/community levels.

This section has illustrated that one-by-one tuna fisheries provide a considerable source of local in-country employment and potential income. This enables both fishing communities and coastal states to directly benefit from their domestic tuna resources. However, a number of key one-by-one tuna coastal states are experiencing out-migration from the sector with younger generations choosing to seek alternative sources of employment. In the case of the Maldives, many younger people are seeking tourism-related jobs, which is the country's largest source of employment and revenue. Or, in the case of countries like Japan and Indonesia, people are migrating to urban areas and leaving fishing communities in search of more lucrative employment opportunities in cities. Therefore, to maintain these fisheries and ensure the stability of the income and employment generated through them, efforts are needed to ensure the availability of employment opportunities offering good, safe and fair paid jobs in one-by-one fishing sectors. This needs to be hand-in-hand with market demand. Therefore, consumer preference in high-value markets for fish caught using environmentally and socially responsible methods is also vital.

Market recognition

Global seafood markets, particularly those in North America, Europe and Australia are turning their attention to issues of sustainability. With this, the environmental benefits and in some instances social benefits of one-by-one tuna fisheries are being recognised. At the heart of the sustainable seafood movement are non-governmental organisations (NGOs), working in partnership with retailers and the foodservice sector to support sustainable procurement policies. Some examples of NGO-retail engagement include the use of consumer guides (e.g. Monterey Bay Aquarium Seafood Watch and Marine Conservation Society's Good Fish Guide), procurement guidelines (e.g. Sustainable Fisheries Partnership and World Wildlife Fund), and the targeted retailer and brand rankings produced by NGOs such as Greenpeace. Many retailers around the world, and particularly in Europe and North America, pay great attention to these NGOs when

defining their procurement policies. In the case of North America, most retailers have official relationships with NGOs that act as their sustainable seafood partner to advise on sourcing. Some of the tuna-related commitments retailers and brands are now making include: avoiding stocks/species at risk; preferential sourcing for more sustainable alternatives in terms of both stocks and environmental impact (e.g. catching methods that have lower impacts, with one-by-one tuna often cited as the most preferable); sourcing products certified to the MSC standard for sustainable fisheries; and sourcing from FIPs (Leadbitter and Bengueuerel, 2013). Using these criteria, one-by-one tuna fisheries are consistently recommended and a number of retailers specify them as a preferred option in their public facing procurement policies (e.g. Marks & Spencer¹ (M&S), Waitrose² and Migros³).

The North American albacore troll fishery and the Maldives pole-and-line fishery were both leaders as the world's first tuna fishery and the first skipjack tuna fishery to be awarded MSC certification, respectively. Some one-by-one tuna fisheries are also in FIPs (e.g. pole-and-line and handline in Indonesia, handline in Philippines). FIPs are often used to prepare a fishery for MSC certification or to improve a fishery's environmental performance by making identifiable, reported progress in adopting more sustainable practices (Duggan and Kochen 2016). For example, in Indonesia, there is the Indonesian National Tuna FIP, which incorporates three species (yellowfin, bigeye and skipjack) and five fishing gears (purse seine, longline, handline, pole-and-line and troll) and is currently in its fifth year of implementation. Of the fisheries in this FIP, selected pole-and-line and handline fisheries have made significant progress and are due to start the MSC certification process by the start of 2017. These activities further evidence the capacity of one-by-one fisheries as the best environmental choice in the market currently.

More recently, sourcing requirements also place explicit emphasis on transparency and traceability throughout the supply chain, all the way back to the source. Concerns over food provenance, quality and safety, fraud, sustainability and illegal, unregulated and unreported (IUU) fishing have led to an increase in the number of traceability systems aimed at providing information about the identity and source of seafood products (Bailey *et al.*, 2015). In the case of small-scale tuna fisheries, such traceability systems, while recognised as necessary, can pose significant challenges to producers and processors. As global trade in tuna places increasingly stringent requirements on traceability, resources are needed to ensure smaller scale producers are able to keep up.

¹ M&S has committed to sourcing "No Net Tuna" and only source tuna that is caught using 'pole & line' and 'line' capture methods, not a net in the own brand products.

² Waitrose have committed to sourcing 100% pole-and-line caught tuna in its own brand products, and only pole-and-line or Marine Stewardship Council certified in its branded products

³ Migros sources 100% pole-and-line tuna in its own-brand canned products

In Indonesia, a number of examples of innovations in small-scale tuna traceability systems have emerged. The handline fishery centred in Maluku (at four sites: Central Maluku, Buru, South Buru and Seram) has developed a consumer-facing full chain traceability system that allows the consumer to trace the final products through the entire supply chain back to the fishers. The Indonesian association of pole-and-line and handline fishers (AP2HI) has developed an online voluntary vessel registry and over 700 handline and 111 pole-and-line vessels have been registered on it and it will soon be harmonised with the governmental national register of fishing vessels (e.g. see: <http://www.fishpanel.com/>).

These examples illustrate the investment and innovation being put into supply chain traceability – factors that are essential to enable continued access to global tuna markets for the smaller players too. However, to meet growing international demand and increased consumer understanding, more sophisticated, reliable and updated traceability systems are required, placing pressure and costs on small-scale tuna supply chains to respond (Duggen and Kochen 2016). It is widely acknowledged that in the case of one-by-one fisheries better traceability can lead to a range of positive outcomes, such as increased market access (through certification systems and improved consumer trust) and improved fisheries data to support management decisions. However, there is also growing recognition, as indicated by the UN Food and Agriculture Organisation (FAO) for instance, that special consideration should be given to traceability practices in developing countries and small-scale fisheries to avoid the promotion of the universal application of traceability tools as a market entry point in procurement advice acting as a technical barrier to trade.

In addition to market concerns around fish stocks and traceability, the quality of life afforded to fishers aboard tuna vessels is also coming into question and there is an urgent need for all tuna fisheries to make demonstrable improvements in on-vessel operations and performance, including crew welfare and safety. One way in which this is being tackled is through market-oriented standards that ensure vessels maintain a culture of integrity and respect with decent working conditions. Two examples of such standards that are being applied in one-by-one tuna fisheries include the Fair Trade USA capture fisheries certification standard and the Seafish Responsible Fishing Scheme's (RFS) Vessel Improver Programme (VIP).

Fair Trade USA is an internationally recognised labelling scheme informing the consumer that the specific commodity has been produced and sourced in an ethical, fair and environmentally sustainable manner. To help development in these producer

communities, certified Fair Trade producers receive a Premium Fund, which is a set percentage of the dock price of the raw material and is received in addition to the normal product rate. This fund can be spent improving life in the community, improving efficiency in the production systems and in implementing environmental programmes (Duggan and Kochen, 2016).

The RFS is a business-to-business, vessel-based programme certifying high standards of crew welfare and responsible catching practices on fishing vessels. It has five core principles concerning: safety, health and welfare; training and professional development; the vessel and its mission; care of the catch; and care for the environment. Recognising some fleets will face challenges in achieving the level of performance required by the RFS standard, a VIP has been developed and provides a stepwise approach aimed at improving fleets so they can reach the point of readiness to apply for the RFS.

One-by-one tuna fisheries have led the way with both of these innovative rights-oriented standards. Indonesian handline fishers were the world's first fishers to be Fair Trade certified in 2015 and in the Maldives, pole-and-line and handline fishers are the world's first tuna fisheries to pilot a RFS VIP. Community and socially-oriented programmes like the Fair Trade and RFS certifications are critical for both enhancing the quality of life of those involved in producing tuna for global markets while offering small-scale, artisanal tuna fisheries the opportunity to demonstrate the positive human story behind one-by-one tuna fisheries and at the same time benefit from price premiums.

This section has illustrated the positive environmental and social characteristics of one-by-one tuna fisheries that make them a desirable product in markets focussing increasingly on sustainability. However, these fisheries are extremely vulnerable to the decisions retailers make and dependent on retailers choosing their higher priced, eco-labelled, traceable product over cheaper alternatives from large industrial operators. Furthermore, as industrialised fleets are more able to adapt to market demands concerning traceability and social accountability, lower-tech fisheries such as some small-scale tuna fisheries are unable to rapidly modernise and face the threat of exclusion from these markets. According to Howgate and Leadbitter (2016) currently only one quarter of the 386,000 tonnes of the global pole-and-line catch is available to buyers as fully-traceable products, which highlights there are supply chain shortcomings that need to be addressed to satisfy the market demand and ensure the benefits of market access are passed back down to the fishing communities. Therefore, in order to support small scale, one-by-one tuna fisheries accessing global markets,

greater emphasis needs to be placed on supporting on-going fisher-oriented improvement and removing obstacles to local, national and regional trade and markets. This is vital both for food security and for securing sound economic futures for these fisheries.

Food security

According to the FAO, populations are said to be food secure when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy lifestyle (FAO, 1996). Given that roughly 44% of the world's population lives on or near the coast (United Nations Environmental Programme, 2010), seafood clearly is an important contributor to food security, particularly in coastal developing countries. Moreover, fish provide more than 3.1 billion people with almost 20% of their average per capita intake of animal protein (FAO, 2016).

The literature abounds with evidence of the contribution of fish to nutritional security (e.g. FAO, 2005, Kawarazuka, 2010; and Foale *et al.*, 2013, Loring *et al.*, 2013). Karawazuka and Béné (2010) describe three pathways linking fish-related livelihoods and household nutritional security. The first one is the direct nutritional contribution from fish consumption because fish are rich in essential nutrients such as vitamin A, calcium, iron and zinc. Households engaged in one-by-one tuna fisheries and/or the bait fisheries that support pole-and-line fisheries are, in theory, able to improve their own nutritional intake by consuming some of the fish they capture. Therefore, for people living in remote one-by-one tuna fishing communities, tuna production provides a vital and affordable source of food. The second pathway relates to income. As mentioned in the previous section, the employment and income generated through one-by-one tuna fisheries provides fishing communities with increased purchasing power enabling households to access other foods and to improve their overall dietary intake. Finally, in coastal tuna fishing communities, women play an important role in family nutrition and food security and their involvement in one-by-one fisheries related activities (i.e. fish processing, trading and bait fishing) are collectively an important pathway for ensuring household nutritional security. The role of women will be discussed in greater detail on page 25.

It is worth noting, however, that high resource dependence, inescapable poverty traps through a lack of resources and alternatives, and increasing competition for access to coastal fishery resources means coastal communities' nutritional security hangs in a delicate balance (Asia Development Bank, 2014). In the western and central Pacific

Ocean for example, Leroy and colleagues explain that with some tuna stocks depleted to levels below 50% of virgin biomass, there are legitimate concerns that industrial fisheries may reduce local fish availability and consequently impact upon artisanal catch rates and the availability of tuna as a source of food. Another study echoed this concern by calculating that with projected Pacific island population increases, by 2020 tuna will need to supply 12% of the fish required by Pacific island countries for food security, increasing to 25% by 2035 (Bell et al 2015). They note that while this is a proportionally modest amount of the of the average present-day industrial catch (2.1% and 5.9% respectively), systems would need to be in place to make the fish readily accessible to coastal communities and urban populations, which currently do not exist.

Avoiding resource inequities will require coherence and cooperation between policies for economic growth, resource management, poverty reduction and food security (McClanahan *et al.*, 2013). This highlights the importance of both understanding fisheries' contributions to food security and having enabling conditions to support fishery improvement and policies to enhance the robustness of the one-by-one fisheries sector and ensure the resources remain available to those dependent on them. IPNLF is working on programmes that focus specifically on sustainability of tuna fisheries. An example of this is the pole-and-line and handline tuna FIP in Indonesia, a big component of which is on local consumption and ensuring long-term management is in place (both of the target and bait fisheries) to ensure coastal communities' food security.



CULTURAL & COMMUNITY BENEFITS

The previous section addressed the material benefits that can be derived from one-by-one tuna fisheries. However, there is a growing field of research focusing on the wellbeing of fishing communities, which provides a broader conception of social benefit beyond employment, income and food availability (e.g. Coulthard et al., 2012; Coulthard et al., 2014, Weeratunge et al., 2014). This section will examine culture and identity, human rights and gender parity as some of the ways one-by-one tuna fisheries provide broader non-material community benefits.

Culture & Identity

It is widely recognised that fishing is more than ‘just a job’ and consideration of the benefits of one-by-one tuna fisheries to those involved in them needs to acknowledge the importance of factors like culture and identity. There have been many studies of small-scale fishing communities, which frequently reflect fishers’ feelings of profound pride in their occupational identity as fishers and a correspondingly high devotion to the fishing ‘way of life’ (e.g. McGoodwin, 2001; Weeratunge *et al.*, 2014). Characteristics like high degrees of independence, self-reliance, autonomy, risk taking, and getting to work outdoors are frequently reported as central to this way of life. As Polinac and Poggie observe, “some fishermen resist leaving the occupation even when economic returns suggest they should” (2008 p.194).

One-by-one tuna fisheries often have a long heritage in fishing communities, so community members inherit and retain a substantial knowledge base of local ecosystems, fish behaviour, meteorological and oceanographic conditions, accumulated over time and passed on from generation to generation. This means these fisheries contribute to both a community’s cultural identity and the cultural self-identity of the community’s individual members. In both the Maldives and Lakshadweep in India for instance, pole-and-line tuna fishing is a centuries old tradition that has left a large cultural footprint on the fishing communities (Anderson and Hafiz, 1996). In the Philippines, handline fishing is a traditional method of fishing, practiced for thousands of years, and remains the most common type of fishing in both municipal and commercial fishing sectors in the country (West *et al.*, 2011). In the US, the west coast one-by-one albacore tuna fishery is described as “historical and the artisanal harvest method is passed down from generation to generation” (AAFA (pers. comm.) 29 April 2016). Recent research illustrated that good relationships with other members of this fleet can also lead to on-the-water information sharing of fishing conditions, illustrating the cultural capital that can

be stimulated in artisanal tuna fisheries (LWC, 2011). In some instances, this cooperation has even been centred on sustaining environmental benefits of the fishery. For example, the American Albacore Fishing Association (AAFA) and Western Fishboat Owners Association (WFOA) worked cooperatively to merge their two separate certifications to create a MSC certification covering all US troll and pole albacore vessels; stating “a united front in both management and marketing is a benefit to the fishermen, fishing community in general, and to the consumer” (AAFA, 2013).

Understanding the importance of the foregoing cultural characteristics in small-scale fishing communities is therefore vitally important. Indeed, sustaining the fishing way of life is as highly valued, or even more highly valued, than merely ensuring that fishing is a profitable livelihood.

Human Rights

In her tireless and invaluable efforts to draw attention to human rights in small-scale fisheries, Chandrika Sharma⁴ underscored the importance of ensuring small-scale fisheries uphold a standard of equal rights for all people everywhere. She specified that recognised rights include the right to work in just and favourable conditions, to social protection, to an adequate standard of living, to the highest attainable standards of physical and mental health, to education, and to enjoyment of the benefits of cultural freedom and scientific progress (Sharma 2010). This section considers the issue of human rights in the context of one-by-one tuna fisheries and encompasses both the rights fish workers have to safe and decent working conditions, as well as the rights of fishing communities and coastal states to access and manage their fishery resources.

In global tuna fisheries, the issues concerning human rights have recently come into the spotlight when significant rights abuses including forced labour and human trafficking were documented in some large-scale tuna fishing operations (e.g. Guardian· New York Times and Associated Press). There have been no such reports associated with one-by-one tuna fisheries. In fact, the features of one- by-one tuna fisheries like local ownership, fishing closer to shore and for shorter lengths of time mean that these fisheries can contribute to securing economic and social rights of fishing communities, provided they are managed well, and support inclusive regimes that foster equity and community wellbeing. Furthermore, the efforts being taken in a number of these fisheries in the Maldives, Indonesia and the US to ensure fishers are afforded good working

⁴ Chandrika Sharma, an advocate for the human rights of small scale fisheries and gender equity, was one of the 239 passengers on the Malaysia Airlines plane that disappeared while crossing the South China Sea.

conditions through programmes like Fair Trade and the RFS continue to raise the bar to demonstrate social benefits of these fisheries, provided they are managed well, and support inclusive regimes that foster equity and community wellbeing.

In order to sustain a flow of benefits to one-by-one fisheries, they need to be responsibly managed. The resources, although renewable, must be exploited within biological, economic and social bounds. If fisheries are not properly managed, depleted stocks harm incomes, nutritional security and livelihoods, particularly of those most closely tied to the resource. In the case of highly migratory tuna fisheries, one-by-one fishing communities are competing against highly industrialised fleets from developed states and often lack the political influence and resources to ensure their interests are protected by high-level decision makers. In order to maintain the many contributions of one-by-one fisheries to poverty alleviation and food security at individual, household, local, national and regional levels it is critical that these fisheries engage in the policy-making process. As tuna fisheries are highly migratory species, Regional Fisheries Management Organisations (RFMOs) are the inter-governmental arrangements for managing the transboundary and high seas fisheries, while local and national-level policies are also relevant to one-by-one tuna fishing communities.

Literature on rights-oriented management in small-scale fisheries underscores: the need to improve fishing communities' awareness and exercise of their rights (e.g. Sharma 2010, Allison *et al.*, 2012 and Jentoft, 2014); equitable allocation of resources; and equitable distribution of responsibility for conservation and management of fisheries. Recognising that RFMOs are the primary vehicles for facilitating cooperation between fishing nations and coastal states to agree conservation and management measures for tuna fisheries, it is imperative that the rights of small-scale, one-by-one tuna fisheries and their importance to coastal communities are understood and accounted for. However, the extent to which some coastal states are able to engage with RFMOs has been constrained by a combination of factors, including limited capabilities of delegates to engage with fisheries science, insufficient financial capital to attend multiple RFMO meetings, and poor national-level political organisation. Therefore, it is imperative that the profile and voice of these often-marginalised fisheries are raised among fisheries managers both nationally and regionally so RFMOs can serve their needs and the rights of coastal communities become better recognised.

Regarding equitable allocation, well-defined systems of resource allocation are greatly needed to ensure fishing opportunities are given to small-scale fisheries in the face of competition from large-scale, industrial counterparts. This requires taking into account the history of fishing activity, the socio-economic dependency of the fishers concerned

and the technological characteristics of the fleets and gears, among others (Aranda and Murallis, 2015). In spite of this, the International Commission for the Conservation of Atlantic Tunas (ICCAT) is the only tuna RFMO with a (voluntary) resolution (15-13) on allocation all Members agreed to in 2015. Debate continues on how best to go about allocating resources and is the subject of considerable debate in international fisheries management fora like RFMOs. Often allocation by gear is more of a country-specific decision. In ICCAT, for example, each country is given a quota for a specific tuna stock and that country is responsible for its individual allocation scheme. In places where one-by-one tuna fisheries are one of several gears (e.g. Indonesia), it is critical that the one-by-one sector clearly articulates its interests and needs to the domestic and relevant international-level decision making bodies.

At the heart of allocation decision-making is the recognition that it relates to allocating benefits from the (shared) tuna resources but is also about fairness and equity. Particularly in the case of transboundary tuna stocks, fish caught somewhere is lost catch somewhere else, so who should bear that responsibility and who should 'pay' for it - should it be the participants that drove stock declines; should it be equally spread around even if certain countries did not contribute; should countries that depend on the fisheries for food security and local employment pay the price of distant water fleet overfishing? Pre-agreed rules on fishery management can address some of these difficult allocation questions. The key is to have a jointly agreed objective for the fishery, which includes protecting access, employment, and food security needs of small scale/artisanal fisheries, and pre-agreed actions that will take place should stocks drop below healthy levels.

Alongside issues of allocation, there is a growing recognition that conservation measures coming out of RFMOs will differentially impact participating states. As Hanich and Ota (2013) point out, conservation measures may affect developing states that depend significantly on fisheries and have strong aspirations to further develop their resources, with few other development and resource options. They explain that the impact of conservation measures can be disproportionate, incurring a relatively higher economic and social burden as a consequence of RFMO conservation measures compared to other states with diverse resources, large institutions and substantial revenue streams from multiple economic activities. The authors argue for measures that explicitly determine the impact on each state, depending on their national characteristics and to distribute the impacts and benefits based on specific values for each area of interest.

Acknowledgement of the rights of coastal states, small scale and artisanal fisheries have been incorporated into the text of tuna RFMOs like the Indian Ocean Tuna Commission, ICCAT, and Western and Central Pacific Fisheries Commission. This illustrates the strong influence this concept is having on international fisheries management and holds potential for coastal tuna states to have a more equitable seat at the negotiating table.

This section has briefly addressed the issue of rights in the context of one-by-one tuna fisheries and while more in-depth consideration is necessary, it is clear that sustainable tuna fisheries are possible only if their political, civil, social, economic and cultural rights are addressed in an integrated manner.



Troll tuna fishing in the Maldives © IPNLF

Gender Parity

Women play a pivotal role in fisheries around the world. Contrary to the widespread perception that fishing is a male-dominated activity, a recent study by FAO (2014) finds that of the 120 million people worldwide who work in capture fisheries and associated supply chains, half are women. This perception of male-dominance has led to a degree of 'gender blindness' in the fisheries sector and has meant that the post-harvesting and trading activities of women are often overlooked or neglected in fisheries development and management, while training and assistance programmes are often targeted for men (Barclay *et al.*, 2015, cited in Krushelnytska, 2015).

This section will provide a brief overview of women's contribution to global fisheries. For the most part, though, there is little literature available to document and/or explore the roles of women in one-by-one tuna fisheries specifically. Therefore, insights for this section draw on discussions around the role of women in small-scale fisheries generally with some information from research conducted on tuna fisheries in the Solomon Islands, the Maldives and Indonesia.

What literature there is shows that in small-scale fisheries, women are mainly engaged in the post-harvest activities, handling the fish after it is caught and ensuring that this important source of nutrition reaches more than 1 billion consumers for whom fish is a key component of their diets (World Bank *et al.*, 2010).

Reports from the Maldives, Indonesia and Solomon Islands indicate that in one-by-one tuna fisheries, many women are engaged in fish processing, both in industrial processing facilities and in cottage industries. IPNLF research in the Maldives has indicated that women make up the majority of employees in processing factories, working on cleaning and processing the tuna but also some in managerial, quality control and human resources roles. Furthermore, women in some island communities have formed a cooperative that collects and sells tuna-based snacks to the capital Male, local islands, resorts etc.

In Indonesia, women work in the shore-based bait fishery as net-draggers. Research conducted by den Boon and Bailey (2015) illustrated that without women, there would not be anyone to drag the net and that the bait fishery offered women their own source of income. In addition to processing nodes and baitfishing, women are also playing a critical role as collectors/wholesalers, distributing fish domestically, and as retailers at traditional

markets. In the Solomon Islands, women were engaged in fishing for bait; owning boats; administration and office work; working in government departments; and related businesses in seafood export, transport and retail (Barclay *et al.*, 2015, cited in Krushelnytska, 2015).

Despite their important role, the literature is replete with evidence that women currently lack profile and recognition in fisheries. Many groups have started to shine a light on the contribution of women in small-scale fisheries (e.g. International Collective in Support of Fishworkers, WorldFish Center, Asian Fisheries Society). Through increased reporting of the roles of women, researchers and agencies are also looking to take strategic initiatives to put gender more firmly on the fisheries agenda by building the evidence base, and engaging in advocacy and networking to voice issues, especially those in which vulnerabilities are strongly gender biased (Williams 2012). However, as noted by Marilyn Porter when presenting on “Why the Coast Matters for Women” (2012), simply adding the gender lens to fisheries research is not enough; social, culture, power and household lenses must also be added.

Therefore, it is vital to pay specific attention to securing the economic, social and cultural rights of women in fishing communities and specific measures to address, strengthen and protect women’s rights to enable them to participate fully in, and benefit from, one-by-one tuna fisheries.



Woman working in pole-and-line tuna processing, Maldives, 2013 © Monika Flueckiger



Pole-and-line tuna fishing in Indonesia © Paul Hilton & IPNLF

ENHANCING THE BENEFITS

This paper underscores the value one-by-one tuna fisheries bring to fishing communities and coastal states. Examining the social advantages derived from these fisheries it is clear that they present a spectrum of benefits, not only do they provide an opportunity for coastal states to develop a profitable and socially responsible domestic fishery sector but they are also the foundation of cultures, identities and rights. Through working with one-by-one tuna fisheries, IPNLF's ambition is to contribute to sustainable coastal communities and to see the fisheries and seas that they depend upon, thrive. This section will consider IPNLF's efforts to ensure the social benefits outlined in this report are maintained and developed in the context of the benefits outlined.

The report introduced the material benefits that can be derived from one-by-one tuna fisheries. From a market perspective, considerable benefits could be seen concerning employment, income and preferential market access. However, despite a growing interest from industry and foodservice in sourcing from these fisheries, these fisheries are not in a position to fully satisfy the huge international market demand for tuna. The lower relative cost per tonne of catch of industrial fisheries means they are able to out-compete one-by-one fisheries in many global markets. To counter this, one-by-one fisheries need to lower their input costs to increase harvesting efficiency (so the tuna that is caught can provide greater economic return) while not adding to the broader problem of fishing overcapacity; and continued effort is needed to strengthen the presence of one-by-one tuna products in the market.

This is where IPNLF comes in: our role helps to bridge the gap between demand and supply of sustainable one-by-one caught tuna, to ensure fisheries reach a stage where they can credibly supply the growing consumer demand for these products. IPNLF works with our Members within the tuna supply chain to develop these fisheries further – growing the volumes of verifiable one-by-one product in the global marketplace where possible – and then supporting their sustainable progression. We focus on initiating practical fishery projects and then help facilitate stakeholder cooperation in ways that support and improve existing fisheries, and create possibilities for new and revived fisheries. Efforts aimed at tuna fisheries sustainability like FIPs, education programmes, supply chain improvements and implementing fisheries standards support strengthening tuna supply chains and thus ensuring a stable source of employment and income to coastal communities. Furthermore, our efforts are aimed at supporting coastal communities having increased control of their natural resources and more robust food security.

Additional activities with food security implications concerns the work IPNLF and partners are undertaking with baitfish fisheries. As indicated in this report, baitfish fisheries are an integral component of one-by-one tuna fisheries and are also a source of nutrition and employment for coastal communities. The supply of baitfish has been critiqued somewhat in recent years with some speculation that unsustainable volumes of live bait are caught for use. However, on average the pole-and-line fisheries need a relatively modest 25,000 tonnes (combined total) of baitfish to catch more than ten times as much tuna each year (Howgate and Leadbitter 2016). Moreover, some of these bait fisheries are now being managed much more responsibly than previously and are also subject to frequent assessment. IPNLF and our partners have been developing best-practice guidelines for baitfish management and providing skill sharing, training and capacity building to improve community and coastal states' ability to manage these fisheries on a long-term sustainable and equitable basis. In Indonesia, we are also working on milkfish aquaculture as an alternative to wild-caught baitfish to reduce pressure on near-shore fisheries and provide a supplementary source of nutrition to coastal communities.

Moving beyond the material benefits, to issues of culture and identity, IPNLF's social research programmes support evidence-based advocacy for political and market recognition of the contribution of one-by-one fisheries to the communities and states where they are located. While this paper has provided an overview of salient information concerning these fisheries, the literature review has revealed that data focusing on the social contribution of one-by-one tuna fisheries to the people that depend on them is extremely limited. IPNLF is currently working with partner organisations on programmes in both Indonesia and the Maldives to collect and report primary data about the social and economic aspects of these fisheries, to build a robust understanding of their current status, vulnerabilities and future potential, and inform how institutional arrangements can support advocacy for improved fisheries management at the national and international level.

Through harnessing the collective voice of our Members, we are in a strong position to drive policy improvements locally, regionally and at RFMOs that recognise the rights of one-by-one fisheries, coastal communities and coastal states. This is where research on the social benefits of one-by-one tuna fisheries will play a critical role, allowing us to emphasise that management strategies for sustainable tuna fisheries should not only focus on biological data parameters and national financial interests but instead place fishers and fishing communities at the centre of decision making.

Through work aimed at giving a voice to coastal tuna communities IPNLF's aim is to help 'tell-and-sell' the story of the people and places behind the product to influence and advance global tuna sustainability. While the social pillar of sustainability remains an under-developed aspect of fisheries sustainability, it is clear from the evidence presented in this report that it is not of lesser importance.



Pole-and-line fishing in the Azores © Fish4Ever

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