

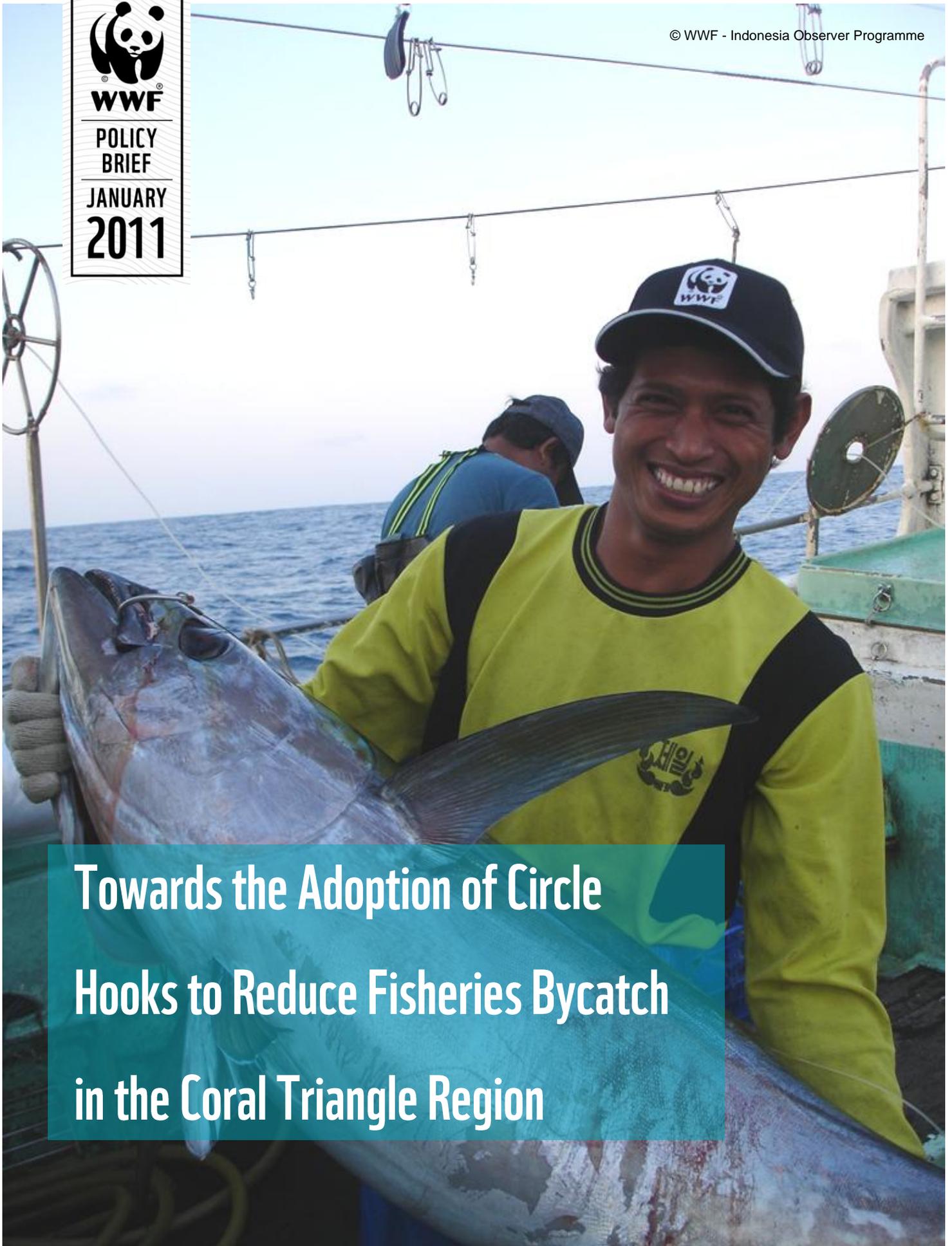


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# Towards the Adoption of Circle Hooks to Reduce Fisheries Bycatch in the Coral Triangle Region

## **Policy Brief**

# **Towards the Adoption of Circle Hooks to Reduce Fisheries Bycatch in the Coral Triangle Region**

**WWF Coral Triangle Programme**

### **Executive Statement**

*This policy brief evaluates the urgent issue of bycatch reduction in longline fisheries in the Coral Triangle, providing evidence, analysis, recommendations and advice. It outlines evidence confirming the benefits of Circle hooks in reducing bycatch of marine turtles while not adversely impacting – and in most cases actually improving – target catch. It furthermore provides a rationale for the transition to the use of Circle hooks among longline operations in the Coral Triangle region, as a necessary step in reversing negative impacts on marine turtles in this region. In describing various policy options and outlining a recommended course of action, this brief aims to serve as an impetus for positive, solution-based change in longline fisheries and contribute to sustained improvements in the management and environmental performance of this sector.*

## Executive Summary

The incidental catch of non-target species in longline fisheries remains a serious problem in the Coral Triangle. For marine turtles – species already officially listed as either endangered or highly endangered – their continued mortality in longline fisheries in the region represents an urgent conservation and management issue. It also represents a major economic imperative in terms of the growing marketplace demands for responsibly-caught seafood and the current inability of the longline industry to meet this demand.

Measures exist to effectively mitigate impacts on marine turtles in longline fisheries, with relatively few (if any) negative economic impacts on fishing communities. Studies have confirmed that the use of “Circle” or “C” hooks – hooks which are sharply curved back in a circular shape – can reduce the hooking rate of marine turtles by as much as 80 percent compared to traditional longline hooks, leading to significant reductions in mortality rates. “C” hooks have also been found to be less prone to swallowing compared to traditional hooks, improving post-hooking survival of marine turtles. In over half the studies surveyed, the use of “C” hooks led to a higher catch rate of target species compared to traditional hooks, while in most of the remaining studies the catch rates for target species were comparatively the same. It is strongly indicated that “C” hooks – due to their tendency to hook in the mouth and thus increase post-hook survival times of the tuna themselves – lead to harvesting of fresher, better quality tuna and ultimately higher quality seafood products.

The above figures and considerations, coupled with estimates of fishing level and activity in the region, suggest that tens of thousands of marine turtles are killed each year in the Coral Triangle by longline operations. It is estimated that less than five percent of longline operations utilize “C” hooks, which translates into a reduction in the number of hooked marine turtles of about 1,000 individuals annually. The corollary implication then is with widespread use of “C” hooks in these fleets, *tens of thousands of marine turtles would be saved annually in the region.*

The positive benefits of “C” hooks are unequivocal and largely unanimous. Yet despite their proven efficacy, these hooks have yet to become the standard in the region, where older technology – the more traditional “J” hooks (and similarly shaped hooks i.e. “Japan tuna hooks” and “Terashima” hooks, etc.) – remain entrenched as the hook of choice for most fishers. Given the longstanding and global recognition of the perilous condition of marine turtle populations, the many important ecosystem services they provide, and their iconic status worldwide, the slow transition to “C” hooks is as surprising as it may seem unacceptable.

The continued prevalence of traditional “J” and Japan tuna hooks may stem from a variety of factors, including misconceptions regarding “C” hooks. Undoubtedly, the front-end cost of converting to “C” hooks remains a major obstacle, even though such costs

would be largely outweighed by their benefits to economic sustainability and conservation for the fishery. At a more fundamental level, the lack of regulatory measures requiring their use is a clear obstacle to their implementation.

Failing to adopt “C” hooks represents a clear impediment for any longline fishery to ever become sustainable. Considering the likely beneficial economic benefits of “C” hooks and their proven history in providing “win-win” scenarios, it is also a lost opportunity.

Ten specific conclusions are elaborated, namely that:

1. “C” hooks are widely effective in reducing both marine turtle encounters and mortality rates.
2. “C” hooks are unlikely to negatively impact target catch or other threatened species, thus fisheries using them can remain viable.
3. “C” hooks provide the most direct, demonstrable and effective means of ensuring that targets towards the reduction of bycatch mortality are being met.
4. “C” hooks are good for business and can provide a “win-win” solution for industry and governments.
5. Progress in “C” hook adoption has been significant but still insufficient.
6. The use of appropriate bait, de-hooking and turtle rescue techniques, as well as onboard observers, are important components of the bycatch mitigation tool kit.
7. The continued application of tariffs and/or import tax on “eco-friendly” fishing gear and equipment remains a confounding obstacle to reducing bycatch impacts on marine turtles.
8. The inclusion of “C” hook transition programmes as part of government support programmes offer an opportunity to provide “positive” subsidies.
9. Regulatory provisions for transition to “C” hook use (mainstreaming) is urgently required.
10. The full transition to the utilization of “C” hooks is practical and achievable.

In reviewing and assessing the “C” hook implementation gap, this policy brief has mapped out and described a general process for a transition to full “C” hook utilization that is both practical and effective in achieving more responsible fisheries and in protecting marine turtle populations. Finally, based on these results and conclusions three main policy recommendations are presented, namely:

1. Develop, enact and implement clear regulatory provisions for the transition to “C” hooks and the mainstreaming of their use as an industry standard.
2. Remove tariff and import tax for “C” hooks and related equipment.
3. Devise and implement national *Action Plans* for a phased transition to “C” hooks.

## Context and Importance of the Problem

### Marine Turtles, Bycatch and Longlines

Marine turtle populations in the Coral Triangle have declined dramatically in recent decades, by as much as 90 percent for some populations. All six species of marine turtles are found in this region and are listed by the World Conservation Union (IUCN) as Vulnerable, Endangered or Critically Endangered on its Red List of Threatened Species. The two greatest threats to marine turtles in the Coral Triangle are direct take (i.e. the harvesting and poaching of eggs on the nesting beaches of the region) and bycatch in gillnet, trawl, and longline fisheries.

While marine turtle interactions are a relatively infrequent occurrence for most longline vessels, the cumulative impact of thousands of boats is alarming. It is estimated that several tens of thousands of marine turtles are killed annually in the Coral Triangle from this activity.

### “C” Hooks - A Proven Solution

The good news is that measures to effectively mitigate impacts of fisheries on marine turtles exist – solutions with relatively few (if any) negative economic impacts on fishing communities. Recent scientific studies and trials show that the use of “C” hooks (Figure 1) in longline fisheries is highly effective in reducing the hooking rate of marine turtles, compared to traditional “J” and tuna hooks.



**Figure 1** Types of longline hooks (source: SPC)

“C” hooks are round shape (or C-shape or capital-G shape) hooks with the point at a 90 degree angle to the shank. They are sharply curved back, with the barb of the hook bent inward and the diameter of the hook large enough to make swallowing by marine turtles less likely. These hooks are less likely than other hooks to catch an animal to begin with, and those marine turtle that are caught on “C” hooks are more likely to be brought to the surface still alive.

It is now well established in the scientific literature that “C” hooks can reduce catch rates on marine turtles by as much as 80 percent compared to traditional “J” hooks, leading to significant reductions in mortality rates. Studies have also shown that “C” hooks significantly reduce the proportion of swallowed hooks, thereby reducing the trauma of the turtle and improving their post-hooking survival.



In terms of impacts on target catch, “C” hooks have been shown in nearly half of all studies to increase catch rates for tuna compared to traditional hooks, while in most of the remaining studies the catch rates for target species were comparatively the same. In addition, the majority of studies show that the use of “C” hooks leads to the harvesting of better quality tuna and ultimately, higher quality seafood products.

For many in the fishing industry, this is nothing new. The use of “C” hooks in longline vessels pre-dates any campaign to protect marine turtles through their use. In fact, “C” hooks are almost as old as fishing itself. Archaeologists have found ancient “C”-style hooks, with similar design qualities, made of shell in Polynesia, reindeer horn in Japan, and bone among First Nations

“C” hook © Alya B. Honasan / WWF Indonesia

“C” hooks have also become a very popular item in recreational fisheries, where the hook’s efficacy in catching fish combined with its tendency to keep fish alive longer make them particularly attractive for catch-and-release sport fisheries in particular. In commercial fisheries, many tuna operators in the Pacific have been utilizing “C” hooks for several decades for the simple reason that they are better at catching tuna and keeping the fish in a higher-quality condition.



Private sector players are recognized for their green initiatives at the 2010 Coral Triangle Business Summit. © WWF

Recently, several seafood businesses have also made clear commitments to reduce marine turtle bycatch through a transition to “C” hooks. Coral Triangle governments are likewise making key pledges on “C” hook adoption, as demonstrated by former Philippine President Arroyo’s announcement in 2010 in support of “C” hook technology and various MOUs with seafood businesses aimed at their wider application (see Box 1).

**Box 1 – Examples of “C” hook support among fishing businesses and communities in the Coral Triangle region**

In the Coral Triangle, WWF has partnered with businesses and local fishing communities to adopt “C” hooks as technological solutions to marine turtle bycatch.

- In Indonesia, WWF helped mediate the transition to “C” hooks for longline fishing boats in Bali, Java and other ports, with support continuing to grow and their use spreading through positive “word of mouth” within fishing communities; in 2010 it was estimated that over 100 longline vessels are using “C” hooks as a result of this outreach from WWF and its business partners.
- In Tiwi, Philippines, WWF deployed “C” hooks on 110 vessels, or about 80 percent of the area’s artisanal fleet.
- Across the Coral Triangle, WWF is collaborating with companies such as Luen Thai Fishing Ventures, ANOVA, Sea Delight and Culimer BV in converting fishing vessels to “C” hooks and developing models for the promotion of “better alternative” tuna throughout the supply chain and sustainable seafood marketplace.



Green turtle (*Chelonia mydas*) © Jürgen Freund / WWF-Canon

## **Proven but Underutilized**

Despite the growing recognition of the value and benefits of “C” hooks, increasing commitments from industry, and the large body of scientific evidence that shows overwhelmingly that “C” hooks reduce marine turtle interactions dramatically while not negatively impacting target catch, they *remain largely underutilized in the Coral Triangle region*. The proportion of traditional “J” hooks to “C” hooks in the Coral Triangle is estimated to be greater than 20 to one.

The arguments in favour of “C” hooks beg the question: why are other hook types still in use?

- There is a general perception that “J” and tuna hooks are easier to use compared to “C” hooks.
- There is an entrenchment of the development of the traditional “J” and tuna hooks in parallel with longline fishing – which in turn impacts the mindset of individual businesses, boat owners, captains and crew.
- The front-end cost for an individual vessel to convert to “C” hooks makes such a shift unattractive, especially in an industry that already faces a variety of other economic challenges.

However, perhaps the greatest obstacle to the more prevalent use of “C” hooks in longline fishery is that, quite simply, the industry is not at all regulated to use them.

## **Lost Economic Opportunities**

To put the problem in further context, when one considers the growing movement among consumers towards demanding more responsibly-caught seafood products – and the growing activities in the seafood supply chain related to the sourcing of such products – the lack of “C” hook adoption represents a missed opportunity for seafood businesses as well as governments.

For example, major retailers in Europe, North America and other emerging markets are increasingly looking at sourcing more responsibly-caught seafood. Thus the use of “C” hooks in a given fishery, as a means of implementing Best Practices that reduce bycatch, would allow the products from such fisheries to be highlighted as a better alternative for conscientious buyers, retailers and consumers.

## Findings

### “C” Hooks Versus Traditional Hooks

A review of various scientific studies and published papers found that<sup>1</sup>:

- “C” hooks were shown *in all trials* to reduce the hooking of marine turtles, in some cases by as much as 80 percent.<sup>2</sup> In more than half of the trials, “C” hooks were demonstrated to improve target catch (catch per unit effort) compared to traditional hooks.
- Negative impacts (i.e. higher catch rates) of “C” hooks on sharks has not been established, with most studies showing a decrease in shark bycatch as well as indications that bait type (fish vs. squid) and branchline material (steel vs. monofilament) are the major influencing factors.
- Traditional “J” and tuna hooks tend to lead to deeper hooking, with the hook lodging in the oesophagus or even the stomach of turtles, compared to “C” hooks (which are rarely swallowed). “J” hooks also tend to snag turtles on the body, leading to both serious injury and/or entanglement – a phenomenon which rarely occurs with “C” hooks (owing to its shape).

### Impacts on Turtles

Although direct and anecdotal evidence suggests that marine turtle bycatch rates from individual longline vessels are relatively low, the sheer amount of gear deployed by longline vessels and the level of fishing in the region suggests that the cumulative impact of bycatch is quite substantial.

With an estimated 4,000 longline vessels operating in the region, even one turtle killed per month, per vessel (a very conservative estimate given that detailed studies have suggested some boats catch as many as ten or more per month) can quickly translate into tens of thousands of marine turtles annually.

The additional impact of vessels from distant water fleets is more difficult to estimate given their broad geographic range and the lack of precise information on fishing area (and lack of reporting on bycatch from these fleets), but it is likely to be in the order of tens of thousands or more per year. The fate of these animals is at best uncertain. In some countries, the bycatch of marine turtles is considered a “complementary catch” of important economic value, and so the animal is retained. In other situations, the creature may be cut free – dead, dying, or severely injured.

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<sup>1</sup> See Reference list at end of document.

<sup>2</sup> See for example WWF (2008).

## Enabling Provisions for “C” Hooks in the Coral Triangle Region

In reviewing the provisions for “C” hook utilization in the region, it was found that:

- No regional management bodies currently have any specific mandatory provisions or action plan regarding a transition to “C” hooks. While the Western and Central Pacific Fisheries Commission are currently considering regulatory measures that would require the use of “C” hooks, these proposed measures have not yet been adopted.
- Of the Coral Triangle (CT6) countries, only the Philippines have developed specific provisions regarding the use of “C” hooks.
- No regional body or CT6 country has any provisions for the elimination of tariffs or import tax on “C” hooks and/or related marine turtle rescue equipment (i.e. de-hookers, line cutters).
- No CT6 country has any provisions for the inclusion of “positive” subsidies aimed at offsetting the costs of “C” hook transition and trials, under their national offshore fisheries subsidies programmes.

However, many intergovernmental bodies in the Coral Triangle or adjacent regions have steadily recognized the benefits of “C” hooks and have promoted their use.

The Southeast Asian Fisheries Development Center (SEAFDEC) – an intergovernmental organization established for the purpose of promoting sustainable fisheries development in the region – has investigated “C” hook performance through various experiments in the region. Based on these trials they have recommended the mainstreaming of such technology as part of the Next Decade Plan and Resolution under the ASEAN-SEAFDEC umbrella.

The Indian Ocean and Southeast Asia (IOSEA) Marine Turtle Memorandum of Understanding is an intergovernmental agreement that aims to protect, conserve, replenish and recover marine turtles and their habitats in the Indian Ocean and South-East Asian region. The IOSEA-MOU includes the use of “C” hook technology as part of its *Resolution to Promote the Use of Marine Turtle Bycatch Measures by IOSEA Signatory States*, adopted in 2008.

The Secretariat of the Pacific Community (SPC) has shown exemplary leadership in investigating “C” hooks as part of longline fishing Best Practices. Focused on domestic fisheries in the Pacific Islands region, SPC’s ongoing experiments on the performance of “C” hooks in reducing bycatch and their impacts on target catch are adding to the growing body of evidence supporting their use. The SPC research is also tremendously important in providing the scientific basis and technical specifications for any regional measures related to “C” hooks under the WCPFC.

And while the Western and Central Pacific Fishery Commission does not have any current measures regulating the transition to “C” hooks, their Scientific Committee has recognized the efficiency of this technology and over the past several years, various proposals for the greater adoption of “C” hooks have been tabled. These proposals have not, however, received unanimous support from all member states.

### **Fisher and Industry Perspectives**

A growing number of seafood companies and individual fishers are beginning to adopt “C” hook technology. In many cases, entire fishing fleets have transferred to using “C” hooks simply because of their effectiveness on target catch as well as their durability. Following several years of trials and outreach programmes, longline fishers in Indonesia have demonstrated a steady willingness to use “C” hooks as the positive results of these trials continue to surface and “word of mouth” of their effective performance spreads.

Industry and fisherfolk are also sharing experiences on the effective use of “C” hooks and dealing with some of the practical challenges associated with their introduction in fishing fleets previously unfamiliar with them. At the June 2010 [Coral Triangle Fishers Forum](#), where longline fishers from around the region gathered to discuss shared interests in bycatch reduction, some individuals reported that the larger-sized “C” hooks were simply too big for the fish they were targeting, and have instead settled on using medium or smaller-sized “C” hooks.<sup>3</sup> Some captains and crew described the relatively harder work required in baiting and setting gear using “C” hooks relative to “J” hooks, a problem that other experienced captains suggested could be overcome through a few simple adjustments. Fishers using live bait also described the difficulty in baiting “C” hooks with live fish. However, on this issue as well some encouraging solutions were initially developed.

### **Hook Design, Types and Sizes**

The term “C” hook has been used to describe a variety of designs of hooks, from those curved slightly toward the shank to that form a true circle. Materials (and therefore also strength) also vary and there are no “standard” sizes among manufacturers. Experiences to date in the Coral Triangle have suggested that stainless steel hooks such as those provided by NOAA are particularly effective and strong. However, depending on the fishery, hooks made from other materials, such as hi-carbon hooks, may be preferred.

Our review verified the general correlation between the size of the “C” hook and its value in reducing marine turtle bycatch. This supported the notion that larger “C” hooks (i.e. 18/0) have a greater conservation benefit to marine turtles and should be the preferred

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<sup>3</sup> See [www.panda.org/coraltriangle/fishersforum](http://www.panda.org/coraltriangle/fishersforum)

size. However, many fishers in the region perceive “C” hooks – particularly the 18/0 and 16/0 size classes – as being “too big” to catch tuna. Where experiments and trials with the fleet have been conducted, these concerns have been shown to be generally unfounded and abated. In fact, even 16/0 and 14/0 sized hooks have been shown to have conservation benefits, while also performing well in catching fish.

“C” hooks may also be “offset” with a deviation in the plane of the hook point relative to the shank in order to ease baiting. Our review found that generally speaking, the degree of offset affects the rate of damage and mortality to fish – the more the offset the greater the damage – and that offset “C” hooks may also perform less effectively than non-offset in terms of conservation benefits to marine turtles. This appears to support a maximum offset of ten degrees (as identified in various other studies and recommendations) as a practical limit, and suggests that generally, offsets should be discouraged.

Overall, the review found that optimum “C” hook packages for bycatch mitigation will likely vary depending on the characteristics of specific longline fleets. What is most important is that the hooks demonstrably and significantly contribute to marine turtle bycatch reduction, maintain the value of the catch and are supported by fishing communities and businesses.

### Market-Based Opportunities

In reviewing the criteria and methodology used in assessing longline fisheries for “traffic light” style consumer guides on seafood sustainability, it was found that products from “C” hook fisheries would significantly improve the likelihood of being highlighted and communicated in sustainable seafood platforms (for example, the Coral Triangle Seafood Savers programme) as a “better alternative”.

### Resources required and available for transition

Table 1 outlines the estimated resources required for a transition to “C” hooks in fisheries originating from – or operating in – the Coral Triangle region.

**Table 1 – Estimated cost scenarios for phased “C” hook transition<sup>4</sup>**

Scenario	Front-end costs	Ongoing costs
1. Conversion of all CT6 national fleets to “C” hooks with additional resources, trials and extension programmes at current levels, over a step-wise process through to 2020	<u>Hooks:</u> Approx. \$2,000 per vessel X 2,200 vessels = \$4.4 million	Observer training and deployment (25 percent coverage) = Approx. \$2 million / year

<sup>4</sup> Estimated in 2011 US dollars

<p>2. Conversion together with trials/testing covering all national fleets, full rescue kits, training and observer programme deployment over a step-wise process through to 2020</p>	<p><u>Hooks:</u> Approx. \$4.4 million <u>Equipment</u> Approx. \$500 per vessel X 2,200 vessels = \$1.1 million</p>	<p>Observer training and deployment (full coverage) = Approx. \$8 million / year</p>
<p>3. #2 above also including distant water fleets operating within the Coral Triangle region</p>	<p><u>Hooks:</u> Approx. \$8 million <u>Equipment</u> Approx. \$2 million</p>	<p>Observer programme, training and deployment (full coverage) = Approx. \$10-15 million / year</p>

## Conclusions

Our review of the body of scientific evidence, fisher testimonies, interviews, multi-stakeholder consensus statements and emerging proposals for conservation and management measures at the national and regional level, has led to the following conclusions regarding “C” hook utilization in the Coral Triangle:

1. **“C” hooks are widely effective in reducing marine turtle encounters and mortality rates.** The body of evidence overwhelmingly supports this conclusion. Fisheries decision-makers and managers can be assured that the wider adoption of “C” hooks will undoubtedly result in reduced mortality of several threatened species of marine turtles.
  
2. **“C” hooks are unlikely to reduce target catch, nor negatively impact other threatened species, thus fisheries using them will maintain their target catch rates.** Most studies in fact show that “C” hooks can actually lead to higher target catch rates for tuna and furthermore suggest a strong link between “C” hook use and improved seafood quality. For other fish species of concern, such as sharks, the use of “C” hooks does not appear to be a significant influence on catch rates.
  
3. **“C” hooks provide the most direct, demonstrable and effective means to meet targets for the reduction of bycatch mortality.** In many Coral Triangle nations there is limited feasibility for fishing crews to adopt additional bycatch abatement measures, and it is more difficult to verify the use of such strategies among individual fleets or to document their efficacy.

On the other hand, the use of “C” hooks on individual vessels is relatively easy to verify, and their likely impact in terms of reduced hooking of marine turtles can be suitably predicted based on past experimental data. Thus the precautionary

principle suggests that “C” hooks should be mainstreamed and that any “exceptions” to “C” hook regulations (i.e. use of other measures) should be considered only if i) such measures have been scientifically proven to be of greater benefit to marine turtles than “C” hooks and ii) onboard observer programmes and other mechanisms are in place to verify the full utilization of these methods and techniques. The burden of proof in determining any such exceptions should be shouldered by the fishing industry.

4. ***“C” hooks are good for business and can provide a “win-win” solution for industry and governments.*** Already, major supply chain actors who influence production – fishers, local processors, middlemen and buyers – are working together effectively on implementing the adoption of “C” hooks. The use of “C” hooks can allow companies to undertake more responsible fisheries under the principle of continual improvement, allowing them to take advantage of the growing interest and demand in the marketplace for more responsibly-caught seafood.

By streamlining the use of “C” hooks, governments can demonstrably reduce the mortality of threatened marine species and significantly improve management in the longline sector. In fact, since the transition process to “C” hooks would also provide for an expansion in observer programmes as well as improved data collection and catch documentation, their expanded use can also indirectly help CT6 governments address Illegal, Unregulated and Unreported (IUU) fishing as well as associated issues such as trade restrictions. Meanwhile, the negative economic repercussions of transition are likely negligible – a tangible “win-win” scenario for decision-makers.

5. ***Progress in “C” hook adoption has been significant but still insufficient.*** It is estimated that less than five percent of all hooks in the water in the Coral Triangle are in use by CT6 fleets and from fisheries operating inside the region, clearly insufficient given the many imperatives to protect threatened marine turtles, reduce impacts and improve the sustainability of fisheries.
6. ***The use of appropriate bait, de-hooking and turtle rescue techniques, as well as onboard observers, is an important component of the bycatch mitigation tool kit.*** The use of fish bait (as opposed to squid) in combination with “C” hooks provides even more bycatch reduction potential. Post-handling of turtles is likewise very important to ensure that hooked marine turtles have maximum opportunity for survival. Thus, a “C” hook program should also include provisions for de-hooking equipment and fisher training on turtle rescue, resuscitation and handling measures. Related to this, onboard observer programmes are extremely important and should be expanded in tandem with “C” hook projects. Such programmes not only assist to verify that trials are being conducted appropriately, but also help in ensuring that de-hooking and onboard

rescue techniques are being suitably applied. Moreover, they provide a means of verifiably assessing impacts on other sensitive species and offer various complementary fishery management and monitoring functions.

- 7. *The continued application of tariffs and/or import tax to “eco-friendly” fishing gear and equipment remains a confounding obstacle to reducing bycatch impacts on marine turtle.*** On several occasions, attempts to import donated and/or discounted “C” hooks and related equipment have encountered problems from import taxes imposed, resulting in hundreds of thousands of hooks either sent back or sitting in customs offices. Lifting such barriers would be essential to effectively make the transition towards the wider use of “C” hooks.
- 8. *The inclusion of “C” hook transition programmes as part of government support initiatives offer an opportunity to provide “positive” subsidies that would assist in the broader acceptance and adoption of “C” hooks among fisherfolk.*** The inclusion of “C” hook projects in budgets and programmes typically reserved for subsidized support of the tuna industry would not only help expand the availability of “C” hooks but also go a long way in raising support among fisherfolk for their implementation.
- 9. *Regulatory provisions for transition to “C” hook use (mainstreaming) is urgently required.*** While the government of the Philippines, buoyed by progressive commitments from the domestic longline tuna industry, has led the way with a 2010 public announcement of their commitment to a transition towards “C” hooks and to improving market access for fishing communities utilizing “C” hooks, other CT6 countries have yet to match. The government of Indonesia has made several progressive statements indicating support for “C” hook expansion, however further elaboration and formal provisions are required. Other nations have shown similar interest and, in some cases support, for exploring the expansion of “C” hooks in longline fleets, although no formal regulatory provisions exist.
- 10. *The full transition to the utilization of “C” hooks is practical and achievable.*** While a transition to “C” hooks will require notable resources and effort, these challenges are not particularly prohibitive, especially given the longer term benefits to sustainability and conservation. Under conservative estimates, an investment of around US\$15 million over the next ten years would result in tens of thousands of individual marine turtles saved. When one considers that each of those individuals may, in turn, live a full life and contribute immeasurably to the eventual recovery of their threatened population, this suggests that “C” hooks deliver comparatively excellent conservation results dollar for dollar. The burden of this investment can be offset by many resources and in-kind support mechanisms that are available, major donor programmes, or Private Public Partnerships involving the private sector, governments and the

financial sector. Many companies in Asia and worldwide have supported the adoption of “C” hooks by donating hundreds of thousands of hooks to fleets willing to test their effectiveness. NOAA, SEAFDEC, SPC, WWF and other organizations continue to show willingness to work with fishing communities in assisting their transition to “C” hooks, offering technical help, field training, awareness programmes and even marketing support.

While resources and investments for gear, trials, training, observer programmes and market-based projects are increasingly available, it is likely in many instances that a gradual, phased transition would in fact cost nothing to an individual vessel, and be quite simple. Approximately 10-20 percent of longline hooks are typically lost on each fishing trip. Thus, with a suitable supply of “C” hooks on hand, each time a vessel goes to sea or prepares to go to sea, all of the lost “J” hooks or Japan tuna hooks could be replaced with “C” hooks. Eventually all of the hooks would be “C” hooks.

Finally, there is a good foundation of support among some fishing communities, as well as collaborative partnerships with the private sector, with lessons learned from those experiences that can be shared and applied to a regional transition process. The Coral Triangle Seafood Savers programme and the Coral Triangle Fishers Forum provide key platforms for spearheading industry partnerships on “C” hook transition, and for achieving consensus and buy-in across a broad spectrum of stakeholders.

#### **“C” Hook Testimonies**

*“Norpac is committed to Best Practices, sourcing HMS exclusively from vessels fishing under Managed Fisheries, within territorial waters, using circle hooks, and our barcode technology. Norpac continually seeks to promote advancements in fisheries management through our support of Environmentally Responsible fishing practices and technologies.”* **Thomas Kraft, Norpac Fisheries Export**

*“With the steady growth of the fisheries industry, Luen Thai Fishing Ventures has intensified its focus on the environment, especially on developing and implementing environmentally friendly and sustainable fishing practices. LTFV is pleased to be one of the pioneer partners in cooperating with WWF in actually developing and putting into action programmes such as the exclusive usage of Circle Hooks that help protect species not targeted by the fishing vessels. It is through action and not words that we can all work together to ensure an eco-friendly and sustainable fishing industry.”*

**George Chiu, President, Luen Thai Fishing Ventures**

*“We never catch turtles with these circle hooks so far. If a turtle is caught, it must be the J-hook. We are fishing for tuna and we get tuna, not harming other species.”*

**Kisyono, fisherman**

*“At ANOVA we are very pleased to have WWF as a partner towards sustainable fishing and minimizing bycatch of marine turtles, through Circle hook trials and onboard observer programmes on tuna fishing vessels that supply us.”*

**Bas Zaunbrecher, Southeast Asia Representative, Anova Food B.V.**

*“Culimer is proud to partner with WWF on implementation of circle hooks in its fishing and processing activities. Training hundreds of fishermen and helping them to implement C-hooks is a joy. The enhanced quality of circle hook caught fish (J-hook fish often die upon swallowing the J-hook) can create a better product in combination with super frozen processing. This value allows fishermen to make a decent living whilst allowing them to protect the resource and respect sensible quota. Combining sustainable growth with economic sense is possible! Making it work for the fishing community creates better results for all, we can see that every day with pleasure.”*

**Martin Brugman, Director, Culimer B.V.**

*“Edeka is working with WWF to support the conversion of longline fishing boats operating in the Coral Triangle to circle hooks. We see this as an important first step to sourcing fish from more responsible and better-managed fisheries, as is our company's goal.”* **Michaela Fischer-Zernin, EDEKA**

## **Recommendations**

Flowing from these conclusions and all evidence available, WWF and the indicated endorsers of this policy brief offer the following recommended policy options for national and regional government bodies within the Coral Triangle region:

1. **Develop, enact and implement clear regulatory provisions for the transition to “C” hooks and the mainstreaming of their use as an industry standard.**
  - i. Identify enabling legislation and responsible management bodies
  - ii. Draft regulatory provisions mirroring/aligned with the proposed regional Conservation and Management Measure for marine turtles under the WCPFC
  - iii. Conduct a series of public consultations with fishing communities and seafood supply line actors to communicate the benefits of “C” hook provisions, address concerns, and develop fleet-wide Action Plans in a participatory manner with stakeholders

## **2. Remove tariff and import tax for “C” hooks and related equipment**

As evidenced by the 2010 Coral Triangle Fishers Forum, many stakeholders involved in “C” hook use and expansion report that import tax or tariffs on hooks and other related gear (such as de-hookers and equipment for bycatch experimentation) have created a significant obstacle to field programmes, trials and private sector projects. The differentiation of “C” hooks in customs offices and the removal of all tariffs in close cooperation with national trade and customs agencies would go a long way to ensuring that existing programmes meet their fullest potential.

## **3. Devise and implement national *Action Plans* for “C” hook transition**

Action Plans could include the identification of priority fleets or areas to begin efforts. Steps would include rigorous data collection, categorization of the fleet, deployment of trials concurrent with expansion of observer programmes, and identification of an optimum mitigation package for each category including circle parameters (hook size and best practices guidelines) and research protocols. Resources for making “C” hooks, rescue kits, guidelines and observer programme training programmes readily available should be concurrently mobilized. The Coral Triangle Fishers Forum is proposed to serve as an information clearinghouse and as a monitoring function for measuring and reporting progress in national implementation to all stakeholders. The Coral Triangle Seafood Savers programme can likewise provide a regional Business-to-Business platform for developing new partnerships and resources for “C” hook use across the seafood supply chain.

## **References**

Beverly, S., Chapman, L. and Sokimi, W. 2003. *Horizontal longline fishing methods and techniques: a manual for fishermen*. Secretariat of the Pacific Community. Noumea Cedex New Caledonia. 139 pp.

Boggs, C. H. and Swimmer, Y. 2007. *Developments (2006-2007) in scientific research on the use of modified fishing gear to reduce longline bycatch of sea turtles*. Presented at the Western and Central Pacific Fisheries Commission’s Science Committee Third Annual Session. WCPFC-SC3-EB SWG/WP-7. Honolulu.

Burgener, V. and Cosandey-Godin, A. 2010. *Assessment of the impact of circle hooks on shark catches/bycatch in pelagic longline fisheries: a literature review*. WWF International. Gland.

Cooke, S.J., Barthell B.L., Suski C.D., Siepker M.J., and D.P. Phillip. 2005. *Influence of circle hook size on hooking efficiency, injury, and size selectivity of bluegill with*

*comments on circle hook conservation benefits in recreational fisheries.* N. Am. J. Fish. Manage. 25:211-219.

Crowder, L. B. and Myers, R. A. 2001. *A Comprehensive Study of the Ecological Impacts of the Worldwide Pelagic Longline Industry.* First Annual Report to the Pew Charitable Trusts. Philadelphia, PA, 166p.

Gilman, E. 2010. *Mitigating unwanted bycatch in global tuna fisheries* In: Proceedings of the Fifth International Fishers Forum (In Press).

Gilman, E., Zollett, E., Beverly, S., Nakano, H., Davis, K., Shiode, D., Dalzell, P., and I Kinan. 2006. *Reducing sea turtle bycatch in pelagic longline industries.* Fish and Fisheries 7: 2-23.

Kerstetter, D.W. and Graves, J.E. 2006. *Effects of circle versus J-style hooks on target and non-target species in a pelagic longline fishery.* Fish. Res. 80: 239–250.

Lewison, R.L., and Crowder, L.B. 2007. *Putting Longline Bycatch of Sea Turtles into Perspective.* Conservation Biology 21: 79-86.

Lewison, R.L., Freeman, S.A., and L.B. Crowder. 2004. *Quantifying the effects of fisheries on threatened species: the impact of pelagic longlines on loggerhead and leatherback sea turtles.* Ecology letters 7: 221-231.

Prince, E. D., Snodgrass, D., Orbesen, E., Hoolihan, J. P., Serafy, J. E. and J. E. Schratweiser. 2007. *Circle hooks, 'J' hooks and drop-back time: a hook performance study of the south Florida recreational live-bait fishery for sailfish, *Istiophorus platypterus*.* Fisheries Management and Ecology 14:173–182.

Promjiinda, S., Siriraksophon, S., Darumas, N. and P. Chaidee. 2008. Efficiency of the circle hook in comparison with J-hook in longline fishery. In: [The Ecosystem-Based Fishery Management in the Bay of Bengal](#). SEAFDEC publication.

Read, A.J. 2007. *Do circle hooks reduce the mortality of sea turtles in pelagic longlines? A review of recent experiments.* Biological Conservation 135: 155-169.

WWF. 2008. *Experimental gear adjustment to reduce the interactions of sea turtles and tuna longlines in the western pacific.* Draft Final Report submitted to NOAA Fisheries Service. Washington.

Zainudin, M.I., Pet-Soede, L., Hitipeuw, C., and W. Adnyana. 2008. [Interaction of Sea Turtles with Indonesian Fisheries - Preliminary Findings](#). WWF Indonesia summary report.



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