

100% observer coverage in tuna fisheries

Why, how, and what action can supply chains
take in support

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A brief introduction to O2

- O2 tuna team focused on NE Asia fleets
- Funded by foundational and private support
- NGO partner to FCF's FIPs & longline sector
- >200 vessels in FIPs
- Strategic partnerships in the region for in-country work
- Expanding EM coverage, in partnership with BB, FCF
- Developing an investment fund to resource EM roll-out
- Consider EM fundamental to any FIP work we support



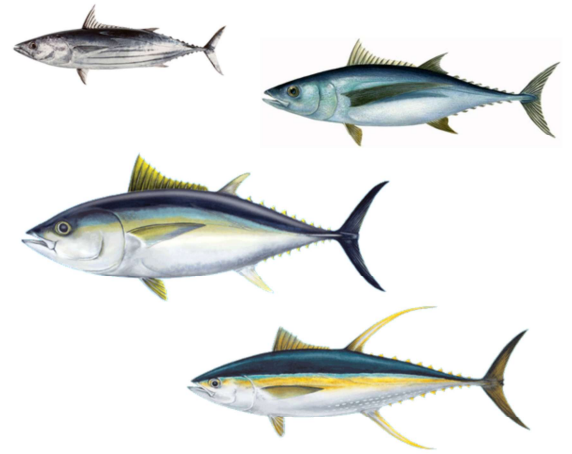
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NGO Tuna Forum

- GTA is a member
- Forum collectively developed campaign for 100% observer coverage
- GTA endorsed the call

Here follows some of the details from the Forum's campaign

Unmonitored =
Unacceptable



- Basic premise is very simple and intuitively clear

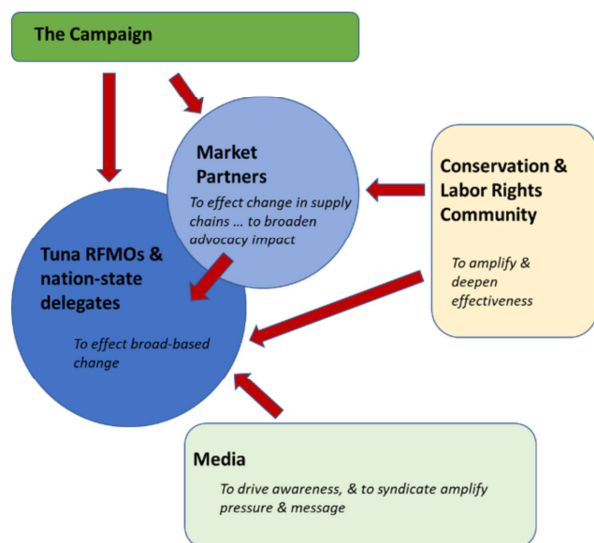
We (Tuna NGO Forum) agreed to pursue a multi-year effort to:



- Raise awareness of the consequences & risks associated with unmonitored tuna fisheries among all key stakeholders
- Build market alignment around, and momentum toward, a requirement of 100% observer coverage for longline & purse seine tuna fisheries
- Increase pressure on RFMOs to adopt & implement policies to require 100% observer coverage (longline & purse seine)



Target Audiences



RFMOs, member nation delegations & fisheries agencies - to effect broad-based change

Market partners - to effect change in supply chains & to broaden advocacy impact

Broader conservation community - to amplify & deepen our effectiveness

Media/Social Media - to drive greater awareness & to syndicate & amplify our efforts

This webinar forms part of the Market Partners outreach program

Statement of Support ...

Unmonitored tuna fisheries are unacceptable.

There is much we cannot see – including illegal fishing, misreported or unreported catch, and bycatch of endangered, threatened & protected species.

What we can't see creates risk to fish stocks, to fisheries, and to companies that purchase tuna.

Regional Fisheries Management Organizations (RFMOs) have the power to reduce these risks by requiring 100% observer coverage. There are no longer credible reasons to delay.

We are committed to working together to make 100% observer coverage a reality.

This is paraphrases from the full text. Its important to recognise that tuna are not like beef, maize, or bananas. Fishing requires monitoring because unlike those other activities, longlining catches large numbers of other animals. So it's not just about tracing the fish that customers are purchasing. We also need to ensure that all the aspects involved in its capture are well under control and fully legal. That is why unmonitored is unacceptable

... and Call to Action



Require 100% Observer Coverage for Industrial Tuna Fisheries

Show your support for fully monitored industrial tuna fisheries by adding your organization to this statement of support because...

Unmonitored tuna fisheries are unacceptable.

In many tuna fisheries around the world the lack of independent monitoring of fishing activity means that it is hard to control and enforce any known conservation and compliance problems such as illegal fishing, misreported or unreported catch, and bycatch of endangered threatened & protected species. What we can't see creates risk to fish stocks, to fisheries, and to companies that purchase tuna.

Regional Fisheries Management Organizations (RFMOs) have the power to reduce these risks by requiring 100% observer coverage - human and/or electronic - on industrial tuna fishing vessels. 100% observer coverage provides the means to mitigate the conservation and compliance issues that put tuna stocks, ocean ecosystems, and tuna supply chains at risk.

100% observer coverage can and must happen soon. There are no longer credible reasons to delay.

We are committed to working together to make 100% observer coverage a reality. Join us in support of 100% observer coverage requirements across all tuna RFMOs.

#unmonitoredunacceptable

To add your organization's voice in support of fully monitored tuna fisheries, [contact us](#) **now.**

758 signatories through first 6 weeks

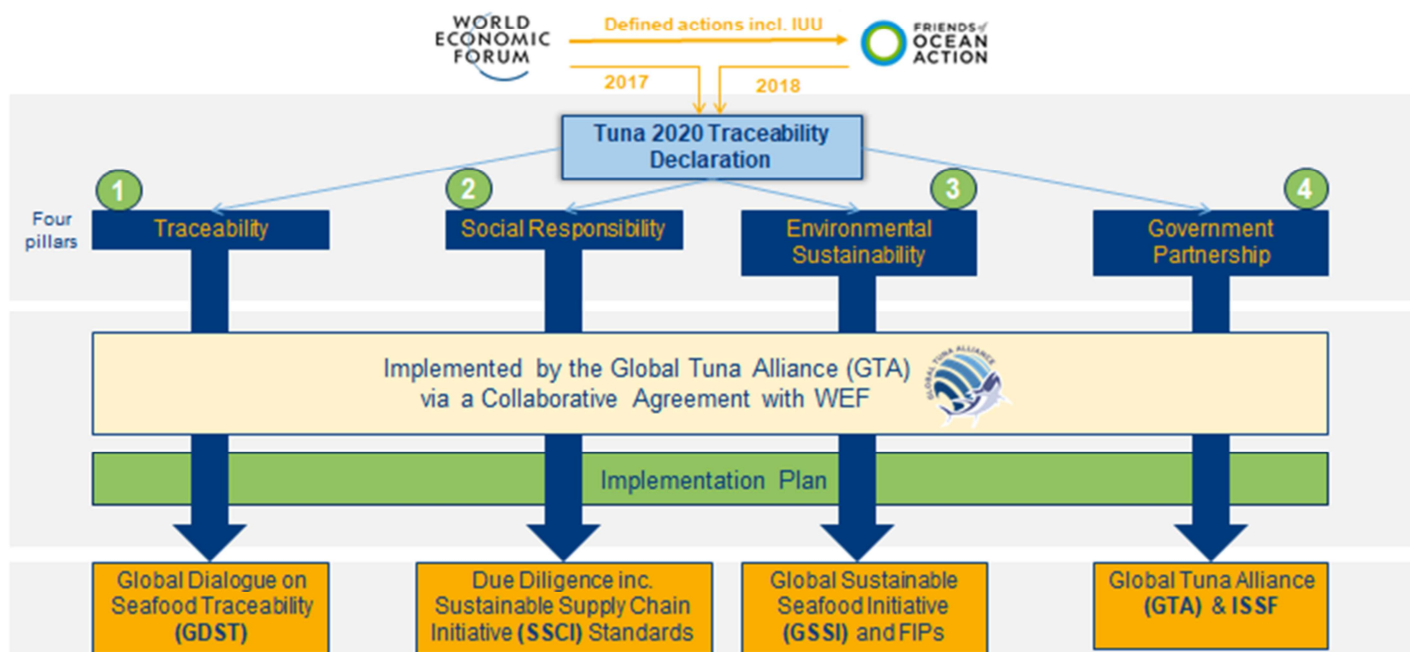
Global reach

Passionate comments

The Global Tuna Alliance (GTA)



The Global Tuna Alliance (GTA)



GTA member 2020 Traceability commitments

We pledge that all tuna products in our supply chains will be fully traceable to the vessel and trip dates, and that this information will be disclosed upon request at the Point of Sale either on the packaging or via an online system.*

* Recognizing the need for aggregated vessel and trip information from small-scale tuna fisheries.

Government Partnership commitment

Work with/support governments efforts to inter alia:

1. Establish systems to identify and restrict illegal seafood through government-led measures on traceability and **transparency**.
2. Build capacity to **establish and manage information systems to account for domestic and international fishing fleets**, landings, enforcement and trade of seafood products, in line with the FAO Code of Conduct and the Port State Measure Agreement.

Waiting to only work on government-led initiatives is problematic

- Govt works very slowly
- Foreign govts not open to interference from foreign 'forces'
- While working with govts is essential, industry has a chance to lead, rather than have governments make the decisions.

So, what is this Webinar all about?

- Problem statement: Outta sight, outta mind, and What happens in Vegas stays in Vegas



There is one overarching issue in most fisheries, more so in pelagic fisheries, and particularly in high seas fisheries. It can be caricatured as: Out of sight, out of mind, or perhaps even “what happens in Vegas stays in Vegas”. When a vessel leaves port, it behaves in many ways as if it is its own miniature country. I like to compare high seas fishing to the closest terrestrial system – which would be licenced hunting in a national park.



In national parks, these vast, open spaces where there are no houses, few people, no businesses, yet there are so many systems to monitor and control behaviour – including through visitors recording and submitting videos or pictures to authorities regarding the behaviour of other vehicles.



Things are rather different on the high seas. The scale of fishing vs hunting in parks is simply not comparable, and yet parks have massively more control, oversight, monitoring, surveillance and compliance systems than high seas. Is it any surprise that some vessel operators find it unnecessary to follow arcane rules that cost time and money? When they know there is functionally zero chance of being caught, and they can make good money from ignoring a few rules? I for one do not find it surprising in the least. Fisheries have been set up in ways that fail to recognize and respond to some very fundamental differences with all other economic activities.



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We weigh, measure or in some other way record what is returned to port.
Not what is caught
Not what is discarded.
Not what is moved out-of-sight to another vessel
Only what is declared at landing



To compensate for the missing information, we ask captains to write some words and numbers in pages in a book. The upshot is that there is a very clear and obvious risk of mismatches between what actually happens, in particular what is caught and retained, versus what is not caught or caught but not retained, and what is *reported* by captains writing words on paper and returning fish to port. The reason for the GTA's Traceability commitment is clear. But traceability potentially ignores all things that are not recorded for official declarations. Sure – it's great to know the details about that the tuna being purchased, but what about the things associated with that catch which and frequently are unreported? This is why EM is such a fundamental tool to achieve traceability and transparency. But let us not delude ourselves, collectively, that we can know what happens on vessels by piecing together information from departure to return to port, plus what is offloaded dockside, and what the captain has written on that paper. The loopholes in that fragmented system are so large you could drive a truck through them – and many do exactly that. That had lead to two ubiquitous and deeply challenging problems for tuna fisheries in particular...

Two fundamental challenges facing tuna

- IUU
 - *environmental*
 - *financial*
 - *reputational*
- Data deficiencies

Paper-based systems are slow and cumbersome, the data are massively labor-intensive to capture/manage, and comes with both problematic time delays and huge scope for errors in manual capture. I've not mentioned human observers, who are placed onboard for scientific purposes to get, *inter alia*, high-quality data on catch and effort. Paper-based logbooks functionally (if unintentionally) prevent effective cross-referencing with those high-quality observer data. At the most basic level, few fisheries managers can ask the question "do observer data match with logbook data". That question is almost never asked. One reason is because observer programmes are exclusively scientific, so it may be illegal or functionally impossible to cross-reference to compliance-ready logbooks. Other absurdities include that in some jurisdictions (e.g. EU), observer data are housed in a different institute and country from logbook data – for the same fleets! And EU is not alone in this. Different databases don't match, so aligning databases for cross-referencing is almost impossible. This is NOT a good way to manage a sector that has so little oversight already!

And it means that data are so delayed, partially captured, etc. that data, or the lack of it, is a constant, nagging problem in tRFMOs. Over the 12+ years I've been deeply involved

with them, the lac of data complaint has not changed ***at all***

The stain on the reputation of all fisheries from IUU will remain a serious impediment to business, and it has to go. But you either need exceptionally good data, or fisheries management needs to be exceptionally robust and precautionary. Sadly all tuna RFMOs are definitely some way short of minimum standards to overcome IUU, yet they face extravagant data challenges – enter EM.

What is EM and 100% coverage all about?

- How it works, and what EM can and cannot do
- Costs
- Obstacles to uptake
- How it helps address IUU
- How it improves management (which is better for everyone)
- How it improves consumer attitudes to fish (vs beef, chicken or pulses for protein)
- How GTA and others in the tuna business can act in support of improved traceability, stronger scientific advice, reduced IUU, and the long-term sustainability of the oceans' tuna stocks

So, given this, and even if there's disagreements with some of the points I've made, I feel confident we can all agree there's a case for improving tuna management through instituting EM. But what is EM? Here I will walk us through some of the basics:

Data from wet observers face multiple challenges

Many vessels are unsuitable to place a human observer, because

- too small
- unsafe
- remote
- unpredictable location for placing and retrieving observers

Most of those challenges boil down to data quality problems. How so?

Representativeness is a FUNDAMENTAL aspect of any statistical design. If the data being analysed do not truly represent the broader situation, the limitations for the data can become insurmountable – i.e. we can only guess at what is really happening. Vessels that never receive observers because they are.....

And several insiders have confessed to me several times that there are elements within fleets that actively resist observer deployments. The officers involved may quickly become comfortable with never having oversight. This means, without any real implication of IUU, they may behave differently from the portion of the fleet that IS monitored. Which creates huge problems

What is Electronic Monitoring?

- EM has been around since the early 1990s, in some form. It's also evolved substantially since those days
- VMS is EM!
- EM is more than cameras
 - *Winch sensors activate and deactivate recording*
 - *GPS can provide date-time-position tags to files for instant AI analysis (potentially making VMS obsolete)*
 - *Tension-sensors can determine if bird-scaring lines are used correctly*
 - *Etc.*
- Hard drives returned to land, analysed, and catch and other data are tabulated for further analysis

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EM is frequently equated with placing cameras onboard. However, it is substantially more than that.

- EM has been around since the early 1990s, in some form. It's also evolved substantially since those days

VMS is ubiquitous in virtually all industrial fisheries. Nobody really argues any longer about having VMS installed. It's required in every tuna RFMO. And it is a form of Electronic Monitoring. AIS is another form of EM. Many commercial operations CHOOSE to place cameras and other electronics onboard because they want to understand deck practice, reduce incidents of quality-impairing practices (this is really important for sushi and sashimi-grade tunas). The list goes on.

Modern practice in EM is for integrated systems to provide various streams of data

so winches...

GPS data can be embedded into the digital files, stamping date, time and positional information into each frame.

Other sensors - BSL

- Hard drives returned to land,

And of course there's an entire field of image recognition development happening that can automate much of the data capturing processes. AI can already provide basic summary data from a trip within minutes of scanning the tagged data in video feeds



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Camera setups typically have 3-4 units (1 stern, 1 or 2 covering hauling deck, sometimes an elevated camera with view of the water/down side of vessel)
Cameras record hauling, and have clear sight of everything hauled onto the deck. The elevated camera gives view of the water around the hauling bay, so that cutaways can be quantified, and walking unclipped branchlines to the stern can also be detected.
Footage is sent to a bank of removable hard drives

Costs for a system like this are ~\$8-10k per vessel, plus monthly data capture costs of \$1-2k/month, or more depending on the nature of the data being requested.

What EM can

- Eliminates observer effects
- Provides representativeness
- Can work 24/7
- Can be in multiple places at same time
- Cannot be bribed or coerced
- Free up space for crew
- Reduce logistical challenges (esp High Seas operations)

and cannot do

- Collect samples
- Explain regulations to crew
- Switch itself on or remove obstructions to views

First I think it's critical to make the point that human observers fulfil important roles and EM simply cannot do certain things, such as determining the sex of fish, collect otoliths/other samples, and more. But human observers also have some very real limitations in a fisheries context. They were chosen because at the time there were no technological solutions to observers. That is no longer the case...

Obstacles to uptake of EM

- 1. Loss of competitiveness (=cost and/or loss of illicit revenue)**
- 2. Poor/fossilized governance systems (no pressure to reform)**
3. Weak legislation
4. Lack of capacity
- 5. Lack of market recognition/support**
6. Inter-operability

I'll focus on the highlighted issues here

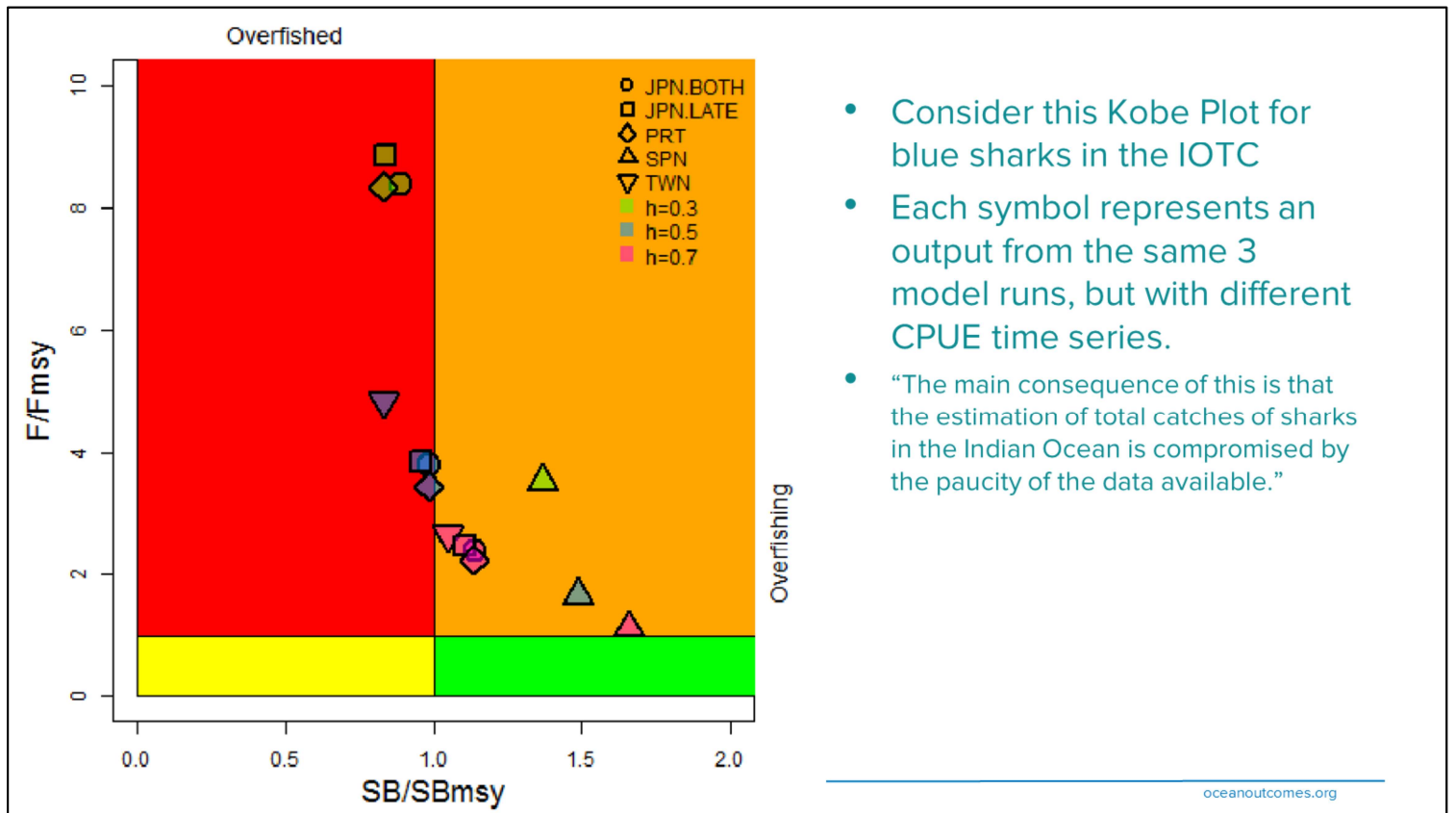
How does 100% coverage help address IUU?

- Cameras don't lie
- Video footage can be used as evidence (if legal frameworks exist)
- Verification of *actual* catch (including discards) is possible (even more so if eLogbooks are used)
- The system really only work with 100% coverage – any 'gaps' set up representativeness challenges, allow behaviours to diverge, etc. Not good!
- Industry desperately wants a level playing field – same rules for operating apply to all.

- Cameras dont lie: If finning, under-reporting or other IUU activities are caught on camera, there's no escaping the facts.
- These two points – video can be used for compliance, and logbook data can be verified much more readily, are really enormous changes. These are the two points around which this entire presentation, and the entire tuna NGO Forum's call for 100% coverage revolves. These are **THE** twin existential challenges that high seas tuna fisheries currently face, and they are **both** very well addressed through 100% observer coverage, of which EM has to dominate.
- What you don't want is for unequal coverage between vessels. That really undermines both aspects. So it's kinda all, or there's no genuine benefits for ending IUU or improving management
- PNA countries have agreed to introduce 100% coverage in their waters – but carefully so as not to create distortions and cause companies to abandon early leader-countries in favor of those not requiring EM

How does 100% coverage improve management?

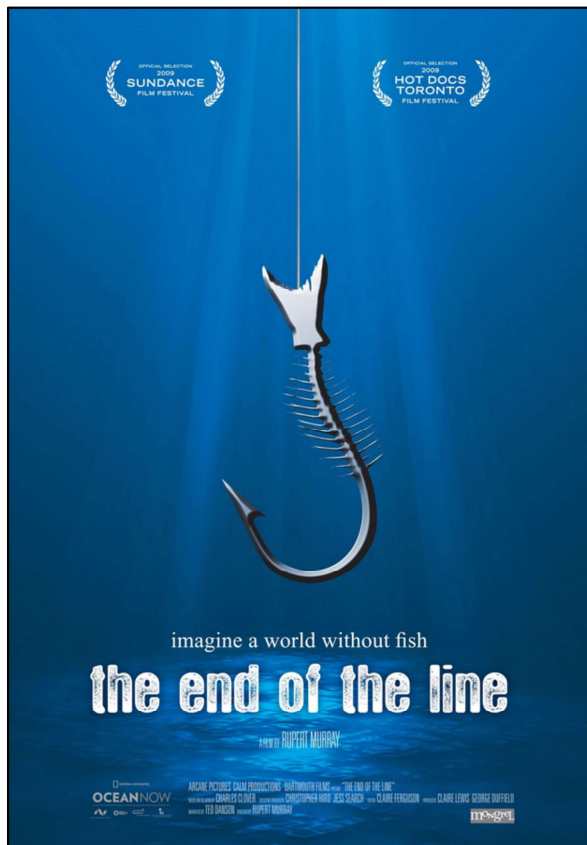
- Scientific data is fundamental to stock assessments. Which are fundamental to sustainable management of open-access resources
- Current data availability is shockingly bad, cross the board.
- Data comes from logbooks and observer programs
- 100% coverage WILL solve a vast array of data problems



- Consider this Kobe Plot for blue sharks in the IOTC
- Each symbol represents an output from the same 3 model runs, but with different CPUE time series.
- “The main consequence of this is that the estimation of total catches of sharks in the Indian Ocean is compromised by the paucity of the data available.”

The data constraints facing RFMOs are writ large in this example, taken from the IOTC 2015 WPEB meeting report. The extreme dispersal of outputs from a standard stock assessment modelling approach (this time using CPUE time series from various countries' blue shark records) is really not meaningfully different from throwing a dart at a printout, and accepting that point as the true stock status. This is just one example.

The lack of data is a constant, annual refrain from IOTC's WPEB, and pretty much everywhere else. Go to any SC or working group meeting report and you will find 'data availability' as a recurring theme. With really poor data, we get really poor, if any, 'advice' from scientists except for more/better data!



How does 100% coverage improve management?

- Uncertainty in data creates uncertainty in advice from scientists
- Unequivocal advice is difficult to ignore
- Best available data frequently falls in the face of lobbying from industry/political considerations

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Everyone here has undoubtedly watched, or is aware of, Charles Clover's controversial "End of the line" documentary. One of the primary challenges that runs through fisheries (largely unspoken), and is a clear theme in 'End of the line' is that there is too much uncertainty in the data, which creates all manner of challenges. It's naïve and incorrect to imagine that "best available data" can compensate for the dramatic data challenges facing fisheries managers. The fact that there are both enormous inconsistencies, and large confidence intervals around typical stock assessment models, and vast swathes of national datasets entirely missing, means the credibility given to scientific advice is dramatically watered down. This uncertainty alone is enough to give those with a vested interest in maintaining status quo (quota levels or whatever) confidence to go against scientific recommendations and to suffer few consequences. The upshot is that scientific advice, when given, is heavily caveated and is very vulnerable to attack.



Entering the digital age will change that, incrementally. It's not binary. The tuna industry won't suddenly transition to a Datatopian world where RFMOs can say to fishers – the stock status is X, and we recommend a quota of Y, which is the maximum (not the minimum), that our excellent data support. Is that world possible? Hypothetically yes, over time and with a lotta roadbumps and setbacks. The world's financial institutions are already there, so it's totally possible with the right investments and legal frameworks. But we need to start on the road to Datatopia

And there's some good news...

Datatopia already exists...

- Fully integrated eFIS system
- Was there some pain? Yes!
- Results are astonishingly positive
 - Only monitor 10%
 - Automatic cross-reference EM with ER
 - Any discrepancies – owner pays for additional % capture and review
 - Further discrepancies – fines/warnings/etc
- EM data almost obsolete – logbook data quality is unprecedented



The rise of logbook data quality in a very real sense hands 'power' back to skippers, since it's their catches, and **their data** that are being used to determine stock status. Which is a good thing for a fishery. But the land of Oz is just one country, and it alone cannot drive benefits for the entire ocean basin. We need the major fleets to get onboard

What does 100% coverage for GTA's supply chain represent?

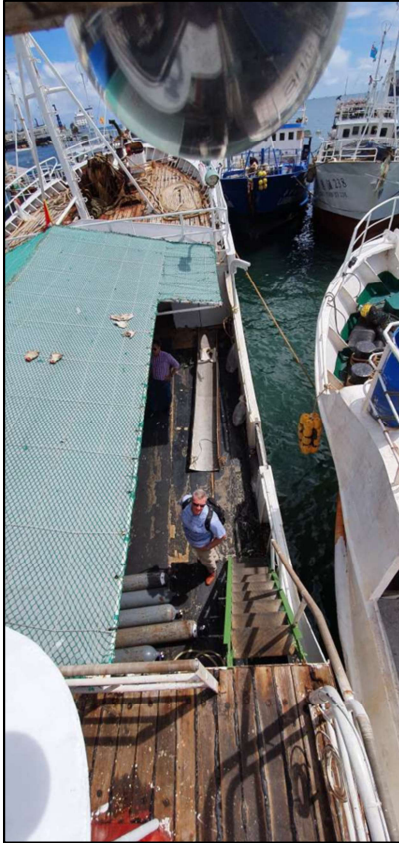
- Feels like a lot – after all, it's asking for 100%
- Unobserved = unacceptable
- Uneven application of rules & regs causes problems
- Without 100%, there are incrementally fewer IUU-combating and datatopian benefits
- This is NOT the globe's tuna fleet! It's only a small part
- It does allow consumers to rest assured that their tuna come from amongst the best managed fisheries available

Is it required to be Datatopia immediately before change happens, across all tuna supply chains the world over? Obviously not.

100% sounds like a lot. After all, it's everything, right? It's not 20% or 50 % or even 80% - what is being requested is 100%. Not so fast...

So 100% EM from **GTA's supply chain** over, perhaps 3-5 years, is NOT really asking for everything, in the context of a global tuna fleet of several thousand industrial longliners. It's not going to get us to Datatopia, not even for a single stock – since many unobserved vessels will continue to catch tuna in all oceans. But, it's a step in the right direction. It's what the GTA companies can do in support of sustainability and addressing IUU. It's what they can do to remove the stain of IUU from their tuna-consumers' hearts and minds.

It will not end IUU, but it will dramatically curtail IUU from vessels that supply you with tuna.



There is work to be done yet...



EM is to fisheries what smartphones are to communications. The revolution to so many aspects of our lives that smartphones brought is astonishing, and EM is similar in many important respects. It's not the only thing required to drive change. But it's a massive part of transitioning the fishing industry to the digital age. Banking and financial sectors did that transition a long time ago, and bank fraud is now massively more difficult to pull off (so I imagine, I've never actually tried...).. Lets be clear, EM is about compliance, with a spin-off benefit of data. So EM will also happen in fisheries, eventually. There is plenty of work to be done yet, these systems are still growing and changing, as is the technology. But it's pretty much a one-way street.

There will always be those who seek to cut costs by cutting corners or breaking laws. But eFIS can change the numbers and ease for the better. Which side of this struggle do GTA companies fall on?

Where are things at currently?

- We need EM and related systems onboard, now! Overcoming those obstacles requires at least 2 things to happen:

1. Investment

- a. AI to bring down data costs (ongoing)*
- b. Support the transition to eLogbooks (ER)*

2. Support to cover the costs

- a. create demand for monitored tuna (unmonitored = unacceptable)*
- b. support industry leaders willing to make the necessary investments*

AI: AI to make data capture and transmission over satellite a negligible cost. Where video feeds are analysed 'on the fly' by AI, which populates tables of data and transmits ASCII files, not images. TNC and others are pushing these technologies, and in a few years, we probably will be referring to this issue in the past tense, like we do the era before the internet and smartphones. ER, which faces considerably lower barriers to uptake, and makes a clear gesture to skippers that their welfare and interests are also being considered (it's much less hassle to use eLogs, although it's a nightmare to use both paper and eLogs). Remember ER is a fundamental piece in the puzzle that locks with EM to make a very robust system

Where are things at currently?

Many actors are taking important steps in support of this ask.

- O2 and an array of other partners are considering establishing a pre-competitive (i.e. legally NOT collusion) collaboration to bring economies of scales to *inter alia* EM data.
- O2 is preparing to launch a blended-finance facility to support the implementation costs of EM
- Market support for this, through establishing clear targets for EM-sourced tunas, would be a significant assistance to these endeavours

If 100% coverage is part of a retailers procurement requirements, it will go a very long way to supporting those in the industry who are trying to do the sustainable thing.

Thank you for your attention!

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