



### **Background**

Raja Ampat is widely seen as the most diverse marine ecosystem in the World. Raja Ampat's reefs have suffered in the past from bomb fishing and over-exploitation. Conservation International (and others) have spent millions establishing large areas which, are now *mostly* protected from bomb fishing and large-scale commercial fishing but this hasn't protected Raja Ampat from other serious threats...

### ***Raja Ampat is not in pristine condition...***

*Many parts of Raja Ampat have already been degraded and without rapid action many areas will continue be damaged or destroyed. Current threats are from unrestricted small-scale fishing, unregulated tourism development and poorly managed marine tourism. There is too much study and not enough action. There is too much hype, but not enough protection. There is money being generated by the 'TAG' system, but there are few patrols in evidence. There are too many outsiders working in tourism, and not enough locals involved. There is far too little work being done to facilitate local Stewardship.*

### **Enlightened Stewardship**

It's widely agreed in the sustainable development community that the best way to manage natural areas for sustainability is to first, empower local communities to take control of their areas. Once they feel they're in control, they can work on developing sustainable management, but as long as others can come and take what they want, as long as there is no effective management of natural resources, the 'Tragedy of the Commons' is triggered, degradation and over-exploitation will continue.

## **Proof of Concept**

The Soof Island project has demonstrated the feasibility of working with locals to create protected areas, sanctuaries where fishing and anchoring are banned. Local fishermen understand the need for nursery areas and size limits but these are not happening because locals have not been empowered to manage their own areas.

Islanders watch fishermen come from other places using whatever methods they choose, taking whatever they want, including undersized fish, while local people don't feel they have the power to chase them away. When local people seeing outsiders taking undersize fish they will inevitably join in, it's human nature, creating a classic case of 'The Tragedy of the Commons' where, in the absence of regulation, a natural resource is destroyed by over exploitation.

## **Early Results**

Before the Soof project people from Soof and elsewhere were fishing on these reefs daily. Each day would see lines, nets, spearguns and traps being used. Now there is no fishing\* in the protected area which, is about 10hectares in size. The local family now feels empowered to chase people out of the area because they have the backing of government, and because of the specially designed marker buoys which, clearly show the boundaries of the protected area.

\*Some rogues still test the boundaries and sneak inside during nighttimes but overall, the fishing effort has been reduced to perhaps 5% of the previous levels

## **Extending the Project**

Soof residents have watched the progress and now they want to come onboard so we have been asked if the protected area can be extended to other parts of the island. Government & non-government players have expressed their support although no funding source has as yet been identified. We are unaware of any other projects to create no-take zones managed by local people.

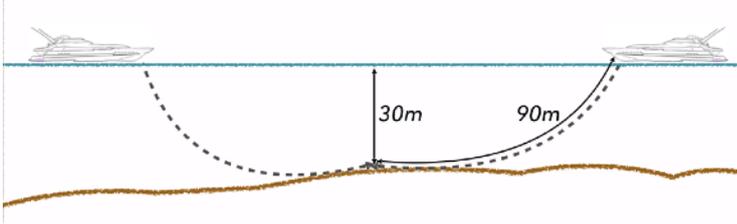
## **Unsustainable Fishing & Anchor Damage**

**Local fishermen** are currently not managed or restricted in anyway - except for a *mainly* successful prohibition on bomb-fishing - so, while their boats are small, their methods are often very unsustainable. Export fisheries are controlled for size and species, but the government is loathe to disturb people's ability to earn a living, so local fishermen have no such controls. For example, a quick walk through any fish market will demonstrate the lack of any size limits, ie. undersize juvenile fish are routinely taken, meaning there will not be enough mature breeders left to maintain fish stocks.

Edible shellfish like clams are now rare and coral 'boulders' are still be taken out for building material. Anchors are dropped everywhere without regard for damage to reefs, and nets and fish traps are used indiscriminately. Spearguns are used at night. The establishment of protected no-take zones ie. nurseries, will be critical for maintaining fish stocks.

**Anchor damage** is an extremely serious threat. Live-aboard dive boats, day trip boats, fishermen & visiting yachts all use anchors and these are already doing serious damage to coral reefs, although this damage is mainly out of sight and therefore, out of mind.

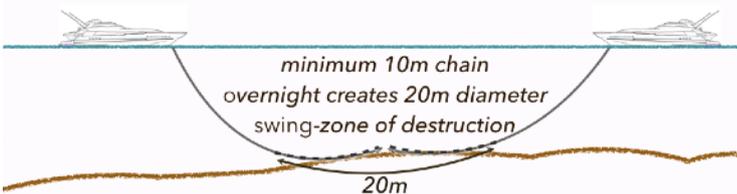
COMMERCIAL VESSELS AND PRIVATE YACHTS ANCHOR WITH A MINIMUM 3-1 'SCOPE' THAT IS, THE LENGTH OF ANCHOR CHAIN AND/OR ROPE IS MINIMALLY THREE TIMES THE DEPTH



**The ultimate solutions for anchor damage are (many) public moorings and designated no-anchor zones..** Awareness will come along with the necessary infrastructure and supporting regulation. Because of depths and currents, placing moorings will often be expensive, and they must also be accompanied by a disciplined maintenance regime, without which, they will be rendered useless. No captain will trust his vessel on a mooring unless he knows it is.. 1. Well Made and 2. Well Maintained.

THE ZONE OF DESTRUCTION

VESSELS USE A *MINIMUM* 10m OF CHAIN, AND THIS CHAIN ALWAYS RESTS ON THE BOTTOM. AS THE BOAT SWINGS AROUND THE CHAIN SCOURS THE BOTTOM KILLING EVERYTHING INSIDE THE SWING RADIUS.



*Overnight, vessels swing 360degrees as the tide changes, creating a circular zone of destruction around the anchor*

**LIVE ABOARD DIVE BOATS**

**IF LIVE-ABOARD BOATS OPERATE (CONSERVATIVELY) 100DAYS PER YEAR, THEY MUST ANCHOR OVERNIGHT SOMEWHERE IN RAJA AMPAT 100TIMES/YEAR**

**IF THERE ARE (CONSERVATIVELY) 30-40 LIVE-ABOARD BOATS OPERATING, THEN THERE ARE 30-40 X 100 = 3-4000 OVERNIGHT ANCHORING EVENTS PER YEAR**

**THAT'S 3.000 TO 4.000 OVERNIGHT ANCHORING EVENTS EVERY YEAR!**

**IF ONLY 2% OF ANCHORING EVENTS ARE DESTRUCTIVE, THAT'S 600-800 DESTRUCTIVE ANCHORING EVENTS PER YEAR!**

The Soof project included installing a mooring which, day boats and overnight yachts (<15m) may use instead of anchoring



## The Future

The Soof Island reef protection project showed that it is possible to solve several serious problems by doing cheap, simple projects with local communities. While the concept has now been field proven, it is still far from certain that this will convince existing NGO's or the government to do more projects along the same lines.

The graphic below shows specially designed marker buoys and a no-anchor zone we installed 20 years ago as a pilot project in a number of vulnerable locations around the Whitsunday Islands in Australia. We recently asked if the program had been effective and we were told that it was very successful and had subsequently been 'rolled out' up and down the Great Barrier Reef. As can be seen by the similarity in the marker buoys, this was the same model we applied at Soof Island.

## Whitsunday Islands, Australia, 'No-Anchor Zone' marked with buoys



## Soof Island marker buoys



## COSTS

The Soof Island project cost US\$10,500, the funds were provided by Bill Price & family from the USA. Costs below are approximated because transport & meeting costs varied and externalities ie. Norm's time and using Norm's boat, were not included.

The real costs of doing a similar project would be around US\$20,000 or US\$2,000/hectare.

The bulk of the project monies were spent on materials, transport from Sorong City, and public meetings between Government Agencies, the Dewan Adat\*, and the local community.

\*The Dewan Adat is an umbrella organisation for all the churches in the region

Cost Indicators...

30 marker buoys were custom-made in fiberglass at a cost of about US\$200 each, inc. signage and installation

A compressor with hoses and a regulator were provided to the family so they can install and maintain markers and the mooring. Cost about US\$1.000

Materials for the mooring cost about US\$1.200

Meeting costs, transport, food/drinks, hire on chairs, cost about US\$1.250

## **CONCLUSIONS**

**As far as the author knows, this is the first 'Stewardship' project in Raja Amat based, as it is, on returning control of natural resource management to the local people.**

**It was fast and cheap. Cheap because there were no fees to the manager/facilitator or administrative costs, and fast, because there was no funding organization adding to the workload.**

**Approximately 10 hectares of threatened reef and sea grass is now protected at a cost of around US\$1.000 per hectare, completed in about 3 months.**

**The reduction in fishing effort is quantifiable, it has gone from multiple fishermen daily, using multiple methods, to virtually zero fishing effort (and no anchoring).**

**The change in attitude of the local family is palpable, they no longer feel disempowered. As is evidenced by their daily beach cleaning and their willingness to turn fishermen away, they are taking clear actions to manage their part of Soof Island.**

**The wider Soof community has watched the change and now wants to come onboard, which would, if funding becomes available, be a significant step towards protecting a much larger area of vulnerable coral reefs.**

**Government officers and local people are asking for more projects on different islands so this first project has demonstrated the willingness of locals to embrace the concept, and also, the government's willingness to support more Stewardship projects.**

**Nothing in recent history would suggest that either government or non-government org's are likely to do similar projects. Conservation International has spent millions in the area but coral reefs and fisheries remain extremely vulnerable and island economies remain stagnant, while the government is currently focussed only on rapid tourism development.**

**We 'outed' another problem\* in Raja Ampat involving domestic tourists walking on coral as they attempt to snorkel (most Indonesians can't swim) and we promoted a**

solution, glass bottom boats, which nobody acted on. So we built and have started operating Raja Ampat's first GBB in an attempt to speed up their introduction.

\* See video: [https://www.youtube.com/watch?v=gaAeUY3LQ\\_8](https://www.youtube.com/watch?v=gaAeUY3LQ_8)

We identified the problem of nutrient pollution on fringing reefs and have already provided several examples of more sustainable sewage and wastewater treatment for resorts and communities. Much more could, and should, be done on this issue...

Note: The Soof project included building a public toilet (funded by a local NGO)

We have been in Raja Ampat for 18 months during which time we've achieved some small successes. We remain active, committed and willing to implement more projects along exactly the same lines of the Soof Island project if funding becomes available.

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