

Re: Gazette Notice No. 2586 of 22nd February 2013 of the Environmental Management and Coordination Act (No 8 of 1999) inviting Public Comments on the EIA study report for the proposed Waa Whale Shark Sanctuary in Waa, Kwale County.

Prepared: 26 march 2013

Signed: 

This document consists of detailed comments on the text of the report, submitted by David Obura of CORDIO East Africa. P.O.BOX 10135 Mombasa 80101, Kenya. dobura@cordioea.net. Given that I have a Lead Expert # 208 registration with NEMA and am a marine biologist with expertise on in the Western Indian Ocean, I submit these as technical comments on the both the contents of the EIA Project Report, and on the technical competence of the both the Consultant and Proponent in the described project.

Additional comments have been included from consulted experts, including:

- *David Rowat, Marine Conservation Society, Seychelles)*
- *Simon Pierce, Principal Scientist, Marine Megafauna Foundation, USA.*
- *Aaron Nicholas, Conservation Manager, Born Free Foundation, UK.*

Further, the comments in this document serve as backup to an article being prepared for the Kenyan/regional press by this author with some collaborators.

GENERAL COMMENTS/CONCLUSIONS

This project is of regional/global significance, because:

1. the whale shark (*Rhincodon typus*) is migratory at the regional level, is listed as Vulnerable on the IUCN Red List of Threatened Species and is on Appendix II of CITES and is listed in the Convention on Migratory Species.
2. this project is a first-of-a-kind for a developing country, involving technical challenges so far only faced on developed countries (USA, China and Japan). Kenya is at the forefront of conservation globally for the most sensitive and valuable species (e.g. the African elephant, white and black rhinos, etc), so the responsible government agencies (Kenya Wildlife Service, Veterinary Laboratories, etc) should demand the highest level of animal care for captivity of such a charismatic and sensitive species.

Thus a top level of technical competence must be demonstrated, and relevant international authorities should be consulted – the existing captive whale shark projects globally, WWF/IUCN specialist groups and other conservation agencies, CITES/CMS working groups and other international conventions, international whale shark scientists/experts. It is not enough just to consult locally, where there is significant interest in potential income generation, but a lack of technical knowledge.

The project claims that targeted fishing of whale sharks by Bajuni fishermen (Lamu archipelago) is the cause of what they claim is a massive drop in whale shark number (93%) in Kenyan waters from 2006-2010. However no proof is given of intentional or levels of whale shark fishing, and strangely, the intervention they propose, and the benefits claimed that will go to fishermen on Kenya's south coast, will have no impact on fishermen in the Lamu region, some 300 km away.

The project has consulted widely locally, but in such non-specific terms, that local communities and government authorities appear to be beguiled by the apparently lucrative income stream. But they do not have true participation/empowerment in the project, and have not been given a clear presentation of what benefits they will actually receive compared to those received by the

proponent. There are mostly airy promises but with no commitment to or mechanisms of delivery, and no fair discussion of the factors that may reduce the benefits and interactions in the local community. In particular, potential negative impacts to fishermen are not discussed, including potential increase in illegal/damaging fishing related to feeding the whale sharks.

The financial details in the EIA report are misleading and dishonest. The figures for global value of whale shark tourism are ten times higher than published estimates, and they do not justify how they arrived at the figures. Their estimates of revenue to the local area are unreasonable and based on the most opportunistic of all possible scenarios (50 people per day, 30 days per month, 10 months per year), making false promises and raising expectations in the local area.

Most importantly, however, there is a complete lack of apparent competence in marine science and animal care in an aquarium/enclosure demonstrated by either the consultant or the proponent. This EIA is a social consultation in a rural community and with local government, but it completely lacks any credible marine environmental or animal care component, has not consulted with any competent marine scientists on the topic of whale sharks (none of whom are in Kenya) and has not attempted to collect or collate any real data or information relevant to a true EIA.

If the proponent/consultant have more knowledge/ability than shown in the EIA report, that they haven't put it in the report, then it is possible they are trying to hide something or get away with minimal effort. This begs the question as to why. If this is the case it looks like commercial success from taking tourists to the enclosure is the overriding motive, not the care/health of the individual animals, the impact of the project on Kenyan/East African whale shark populations, or mitigating conflicts with fishers in the sea.

If they don't have more knowledge/ability than shown in the EIA report, then they are certainly not competent to undertake this project. The Kenyan authorities responsible for endangered species (Kenya Wildlife Service) and animal care/welfare (Veterinary Dept, KSPCA) could not possibly sanction such an uninformed project on a sensitive and extremely valuable species, and one that is protected by national legislation and international conventions.

The proponent, in the form of the East African Whale Shark Trust (EAWST) (rather the Seaquarium, which is an unknown entity), is to be commended for the excellent work they have done in whale shark conservation and tourist viewing of wild animals in Kenya. And in this they should be encouraged. But as the Seaquarium they have not demonstrated the competence to undertake this project without causing significant harm to the whale sharks, and perhaps becoming the single largest cause of whale shark mortality in East Africa.

The EIA should be rejected on technical grounds and the project should not be allowed to proceed. No resubmission for this project should be considered until the Seaquarium can show competence in animal care with less valuable and sensitive marine species.

DETAILED COMMENTS

In the following, references are made either by page number, following the format of the pages (e.g. 2-6, or ii), or by section reference (e.g. 2.2)

The report does not state what the proponent, Seaquarium, is, or its legal designation in Kenya.

Executive summary

i, 2nd bullet- \$380m value of whale shark tourism. This number is stated in the main body and here, with no justification. Detailed documentation must be made. The value of whale shark tourism of

US\$380million is spurious, the most recent paper by Gallagher & Hammerschlag (2011) gave a current global worth of all shark tourism (not just whale sharks) at around US\$102.08 p.a., while Graham estimated a global worth of whale shark tourism at US\$47 million p.a. in 2004 (Graham, Shark News 16, 2004).

The summary paragraph talks of the diversification of the economy and of funds generated by the BMU through the whale shark activity being used to fund equipment to enable fishers to move away from inshore fishing but nowhere does the document say how this will happen nor is there a perspective of the feasibility of any such mechanism commented upon by the BMU or local community.

ii and 1-6- "beginning of whale shark tourism in Kenya and Africa". This claim is made in the main body and here, but whale shark tourism has been in Kenya since before the Whale shark trust was started, and is active in Mozambique, Mafia island in Tanzania, the Seychelles since before 2000. Inaccurate and self-aggrandizing statements like this make a knowledgeable reader even more suspicious of other claims in the report. It feels like the EIA is trying to sell a story on behalf of the proponent, as opposed to preparing an objective statement of potential impacts, which is what the law requires that it should do.

ii - mitigating measures. Here and in the body, the report doesn't even mention any aspects of marine biological impacts or veterinary care issues, so it is highly unlikely that this report can be used to ensure sufficient mitigation will be done. Can the project identify these qualified marine biologists/vets, as at present there are only a handful working in developed countries;

ii- presenting the shallow enclosure as "natural" is profoundly misleading, it is a highly unnatural environment for whale sharks, see later comments (with respect to feeding, diet, diving, wide scale ranging, migrating, socialization). Whale sharks are pelagic swimmers, and holding them in a shallow coral reef enclosure is highly artificial and unnatural for them.

iii- what is PPE – this is quote many times without any explanation (though it is in the list of acronyms).

iii - it is not clear if the dive masters are SNORKELLING or diving, or what the "hard net" is or how it will be used. Rather than being just a bullet point on mitigation, this should be an extended section in the report.

- -"completely harmless". While whale sharks are totally non aggressive as far as we know, and don't have biting teeth, they are a large powerful animal. A blow from a tail fin could knock out a person with risk of drowning. This is highly unlikely in the open sea, and to my knowledge has not been reported (though divers have been stunned when hit by a tail fin), but much more likely in an enclosed space with larger number of visitors, potential repetitive aggravation of these large animals, the unnatural environment, and nowhere for the whale sharks to escape to. Human safety must be more carefully analysed in the report.
- migration disturbance ... "the animals stay within East Africa" is suggestive that keeping them in an enclosure will not alter their behavior. However, East Africa is a very large region with a coastline of over 3,500 km, and their own data shows sharks ranging to Seychelles and Mozambique.
- Migration timing - whale sharks undergo annual migrations, so breaking the seasonal pattern to release them after 6 months could be highly damaging. That the EIA report does not even mention the issue of migration timing and local distances travelled casts serious doubt on the technical knowledge of the consultant/proponent in doing a marine EIA, and in caring for captive animals. They show very little serious biological/research interest in the animals.
- sound disturbance - unless the proponent plans to use boats with engines within the enclosure, it is sounds from outside the enclosure that are more likely to disturb the sharks. Given that they are in an enclosure, they will also not be able to swim or dive away from the

frequent and repeated approach of boats, nor from swimmers. Also, since the ocean is free passage, how will they legally control speedboats in the open outside the enclosure?

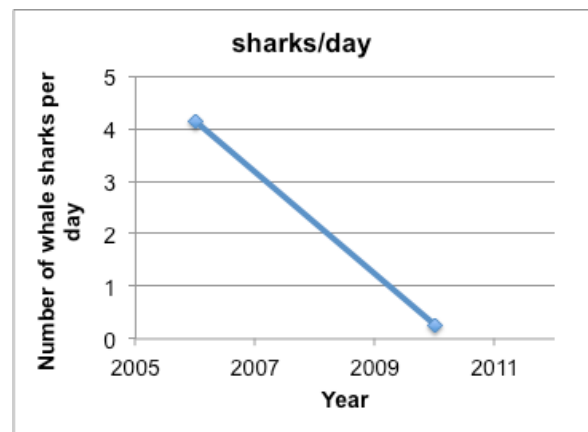
- sound disturbance - There is currently landfill collection from offshore of this area (being operated by the Kenya Ports Authority), and it may continue for a long time, and be repeated in the future for further port development. What are the sound levels from this activity and how might it affect the sharks? Is there any sediment plume disturbance from this activity to the enclosure site?

1.2- there are no references in this section, nor indeed for the whole of the report (though some citations are made in section 6, the full references are not provided). These must be included or it's not possible to judge the sources for the report, and casts doubt on the technical knowledge of the proponent.

1.2.4- this section must mention the possibility of a swimmer being knocked out by a blow from the whale sharks (see mitigation comments, above)

1.2.5- Section 6 says nothing about the local project in Kenya. It should be presented in section 1, as it gives global background on whale sharks and threats. There is a literature on whale shark fisheries, which must be summarized here, as it shows that the Kenyan fishers are not included as one of these, thus undermining the project's claim of threats in Kenya. The proponents know this, as section 6 does not cite any evidence of a significant fishery in Kenya, so it casts doubt on their justification of increased fishing mortality in the last 5 years or so.

1.4 the crux of the project's justification is that "58 whale sharks seen in 14 days in 2006 has reduced to 12 whale sharks seen in 45 days in 2010". They claim that this is a measurable reduction, equivalent to a 93% reduction in the population of whale sharks, and that this is due to local fishing of whale sharks. What they claim is analogous to the figure at right.



They don't show any awareness that counts of large migratory animals can show very high variability from one year to another, and may depend greatly on inter-annual changes (e.g. 2006 was an El Niño year, which results in massive changes in water temperature and currents, and therefore plankton abundance, that control whale shark migrations),

seasonal and short term changes (e.g. in monsoon wind patterns, storms, rainfall, etc) and random factors. Instead, without any data to back up the claim, they imply that this decline is due to local fishing, though they implicate fishermen in the Lamu area some 300 km farther north (and then fail to point out that their project will have no impact on Lamu fishermen either to stop their activities, or to share the benefits of the project which will go to Waa fishermen).

1.4 "to ensure the animals are not finally wiped out" – no analysis or data is presented to justify that this project will in fact help do this.

1.4 "samples would be introduced in the conservation area" ... by 'samples' they presumably mean whale sharks, but have not undertaken to provide any details about how they will be caught, introduced, or maintained in the conservation area. This is what the EIA should be about, not the fairly meaningless consultations that are summarized.

1.4 in the project location one of the main factors preventing offshore fishing is not just poverty, but the lack of a safe anchorage and lagoon for large enough vessels to access the deep sea. Thus just providing more income will not result in "better" offshore fishing. See note in executive summary.

1.5 and 1.6 project report vs a full ESIA. These sections are unclear and appear to claim this document is both. However the summary says it is just a report. To justify capture and captivity of a Vulnerable species that the proponent is in fact one of the principal advocates for its conservation, should require a full ESIA, but this must deal with the capture and captivity issues that are COMPLETELY EXCLUDED from this project report, and demonstrate technical competence to deal with all concerns relevant to the welfare and death of the animals. Given the lack of technical rigor in this report and its low technical level in marine biology, a full EIA should be required giving primary attention to the following. Documentary evidence from the relevant authorities (e.g. KWS) allowing them to proceed from their point of authority should be duplicated in the report.

1.7.1 the report repeatedly focuses on "tribe" in the local area, though the fishing community on the coast is not homogeneous. The area is affected by migrant fishing (all areas on the Kenya coast are), so broader fishermen surveys should be conducted.

1.7.2 these "specialized reports" have not been identified, and very few papers are cited, and no references are presented. So it's not clear what was consulted

1.8 no mention of the marine environment is made, though this is a marine study

2.1 this project is principally about two things - wildlife conservation and animal husbandry. There is no mention here of any Kenyan legislation that relates to animal husbandry, veterinary medicine, care for animals, the KSPCA, etc. Several of the items listed in the last column under "relevance" are not clearly relevant - aerial overflight, driving in game parks, etc. The consultant should not just copy and paste from other EIA reports without tailoring the text to this one.

2.2 this list omits the Kenya Wildlife Service, which is the institution with primary responsibility for wildlife inside and outside of parks, and also with respect to tourism. There is also no mention of the Veterinary Department, KSPCA and other relevant institutions. Narrow interpretation of some institutions, such as for tourism, which should also ensure that all tourism operations that claim an ecotourism label meet international standards and expectations. The Ecotourism Society of Kenya, and the coastal associations - MCTA, etc, should also be consulted (as stakeholders).

2.3 Ten conventions are named as evaluated, but it's not clear how, as no evaluation is presented. It is not clear what the last five have to do with this project. Many of these are about minimizing risks and standards of practice with respect to endangered species, and the project needs to show it can meet these, but it omits all reference to its impact on the endangered species in question. The IUCN Red List of Threatened Species, CITES and CMS have strong stipulations on Vulnerable species, and the report must detail what these are, not just list the names of the conventions. They also have working and technical groups which the project (and NEMA) should consult for technical advice, as it does propose to do something so far unheard of in Africa.

In this whole section, there is no actual discussion of the relevance of these legislative elements and how the project will comply with them. Chapter 2 needs to be rewritten completely.

3.1 to 3.3 these sections are almost entirely irrelevant for the actual environment of the project, a shallow coral reef front. Is it just copy-pasted from another EIA report without tailoring to this project? The project must present information on seawater temperatures and the thermocline, currents, wave regime, winds and storms, coral reef structure and hydrography/bathymetry, freshwater runoff/groundwater, nutrients and algal blooms, plankton dynamics, fish and megafauna migratory patterns, seasonality of these, etc. If the consultant is not knowledgeable on these matters

he/she should not have taken on the project, and the EIA should be retracted or unconditionally rejected for lack of competence.

3.4 according to the study, the fishing community is a major stakeholder, so needs to be described, but is entirely lacking from this section. Note earlier comment on migrant fishing. There is also coral rock mining, a major cement quarry and small scale tourism developments and other beachside/landowners

3.5 the relevance of most of this section is unclear, see comments on 3.1 to 3.3

3.6 the project is marine, yet there is no mention of sensitive marine habitats or features, so it is not clear that the project or the consultant have sufficient knowledge of the area. This section is entirely irrelevant. It should deal with the coral reef habitat, any deeper habitats that might be affected, the lagoon, the immediate coastal vegetation, the possibility of marine sacred sites, and sites/locations identified by the local community to be sensitive

3.6.1 Shimba hills is totally irrelevant to the project site. The Shimba catchment is isolated from this site, with water going out through the Mkurumudji river or the Mwaluganje river to Port Reitz. There is no functional or habitat connection between the plants and animals of Shimba and the project location

3.6.2 what is the relevance of kaya forests to the project site-as with the Shimba forest, it's not clear there is any? How close is the closest one (Waa), and be more specific about its relevance. Is its relevance claimed to be environmental with respect to the project site, or cultural with respect to the affected communities?

3.6.3 and 3.6.4 similarly, of what relevance are these to a marine project?

As with chapter 2, chapter 3 appears to be a cut and paste from another EIA project report to this one, without regard for this one needing to focus on a marine species and the marine environment.

4 project description

- it is not clear what 150 then eventually 650 m means. When would this decision be made, on what basis, what would be the upscaling of environmental impacts to the enclosure site?
- what is the total length of nets that will be installed at these sizes – this is more meaningful.
- that this is a circular net so does not touch the reef crest is not clear until fig 1 is shown. This is important, and must be stated in the descriptions
- what is the barrier to seaweed in fig 4.1? This is not at all clear. How does it 'block' seaweed, as seaweed will foul on just about anything in the water.
- provide a photo of the net mesh,

There are three primary gaps in this chapter that CANNOT BE EXCLUDED FROM THIS PROJECT!!

First, about the enclosure -

- there is no physical analysis of the forces the enclosure/net will experience in different wave and wind regimes, though the location is completely exposed to the elements. What forces will the net experience? Are the anchors strong/heavy enough to hold the net in severe conditions? What happens with combined tides of 4 m and swell of 5-6 m? Can/do the anchors hold onto both rock and sand? Is the substrate reef rock or sand? What impact does the net have on the bottom where it touches and if/when it drags? How quickly could repairs be undertaken if damage is incurred? What capacity does the proponent have to manage the net if it is uprooted during a storm with the whalesharks inside? What are the periods of greatest vulnerability? Do these coincide with the gap in visitors (2 months) does this have anything to do with the holding/release times of the animals?

Second, this project is about keeping wild animals in captivity, which is very arduous and technical undertaking by any professional organization. Yet there is absolutely no description of the capture and care techniques that will be used. The EIA should be rejected outright on this basis alone. They note that "one animal died in Georgia", but in fact, 2 animals died in captivity in 2007 despite the intensive care that such a major institution could provide (Dove et al. 2012), and of close to 50 captive animals reported publicly, 5 have died (http://elasmollet.org/Rt/Rt_captive.html).

- how will the animals be captured? What are the different methods available, their costs, their impacts on the animals? What is the impact of capture on the family/social groups since the whale sharks are usually in aggregations? How are the individuals to be selected? What mortality/injury levels are associated with the proposed techniques? How to mitigate for these?
- how will the animals be transported? Where will they be caught, at what distance from the enclosure, what is the actual mortality rate of whale sharks in other capture operations and aquaria/enclosures, what is the impact of transport on animal health, how do they recover?
- What aspects of animal health will be monitored? What competence do the team have to do this and judge health? What mitigation actions can be taken to improve the animals' health?
- how will the animals be fed? What feed per body weight is needed? If wild capture of fish/shrimp is needed how will they do this. If artificial/land-based feed, what would this be? How will they ensure it's cleanliness for health of the animals? What is the possibility of wild feed/plankton in the enclosure?
- apart from feeding, there are general aspects of whale shark biology that are impacted by holding in a shallow reef enclosure. It is important to note that though this is not an artificial aquarium on land, it is a highly irregular/extreme environment for a whale shark for the following reasons:
 - depth and water temperature. Like other fish, whale sharks are ectothermal, meaning their body temperature equilibrates with the surrounding environment. Surface waters (less than 10 m) heat up significantly, and many marine species are heat-stressed at the highest temperatures. There is evidence (Thums et al.) that whale sharks regulate their body temperature by alternating time in deep cooler waters and shallow hotter waters. Do they do this to cool down when they are deep, or heat up when they are shallow? Since most of their food is in the surface waters, and the depth/duration of their dives increases with higher surface temperatures, it is likely that surface waters are too hot to stay in permanently, and they need deeper dives to allow their body temperatures to go down. EAWST data in fact shows a very high degree of deep diving by sharks tagged in Kenya, and Kenya is in one of the warmest parts of the western Indian Ocean. Keeping the whale sharks in less than 10 m of water throughout the day may cause severe heat stress and mortality – it would be like keeping a lizard (or indeed a person, or an elephant) basking in the sun through the heat of the day, without being able to move to the shade to avoid overheating. This level of heat stress may be fatal for the animals.
 - range of movement. The daily movement patterns of whale sharks are not well known, but clearly can exceed several km or tens of km given their size and potential swimming speed. The proponents point out that whale sharks are kept in restricted spaces in aquaria in the US (Georgia) and Japan (Okinawa), and in an enclosure in Japan. However they don't access or refer to any literature or findings from these projects as to the effects of restricted movement on the health of the sharks. When restricted, many vagile animals brush repeatedly against their enclosure, incurring injuries from abrasion and infection. This has not been assessed for this project.
 - seasonality of migration. One of the commendable research and conservation activities of EAWST in Kenya has been documentation of the seasonal migrations and distances travelled of tagged sharks. They should show greater analysis and cognizance of the dangers of preventing such migrations in a migratory animal, but they just dismiss this feature as "most of the whale sharks stay in East Africa" – which in fact has a coastline of over 3,500 km. More importantly, they claim, without any justification or analysis, that holding animals for 6 months will minimize impact. Yet, this would mean holding an animal until the time of year when whale sharks are not normally present in Kenyan waters, then releasing it into an unfamiliar environment for its seasonal internal 'clock'. That they do not even query the wisdom of doing this is very suspect.

So ... how many animals will be affected annually? If they are keeping 2 for 6 months at a time, that means 4. But how many attempted captures must be made, how many dragged to the enclosure, and if early release is necessary for any reason, how many might this be? Is there an acceptable number of animals impacted or dead from the activities of the project? Estimates MUST be made for a credible project.

The proponents point out that whale sharks are kept in restricted spaces in aquaria in the US (Georgia) and Japan (Okinawa), and in an enclosure in Japan. However they don't access or refer to any literature or findings from these projects as to the effects of captivity on the health or survival of sharks. While one animal may have been kept for many years in Georgia, how many other animals have been kept? Have they/how many have died in captivity? How many have been released prior to death, but in a compromised state? How much does it cost in these places to care for a whale shark? What technical expertise is needed? Does the Seaquarium have a business plan that can provide the resources (financial and technical) that only a handful of projects can in developed countries?

Third, there is no mention of the displacement of fishing activity from the area of the enclosure, and how this may affect the local fishermen. The enclosure WILL occupy space they would have used for fishing, and their use of the area surrounding the enclosure may also be affected. Less directly, activity around the enclosure and potential conflicts will arise over time, and these are not anticipated in the document.

5 consultation process

- the EIA consultation process is useful for gathering some data but primary data collection and literature must be consulted for technical fields, such as wild animal capture and care. This has not done.

5-5 land use onshore - Kwale DC

- transparency is identified as critical by the officials, but the proponent is not being clear about the full dimensions of the project

- tourists may not interact with the community onshore. The EIA does not present any details, but other sources (e.g the EAWST website) state that tourists will be boated from Diani. Because of the dangers of crossing the reef and coming on shore, it is likely that they will not step onshore in the Waa area, so there may be limited local benefits; there is no clear statement that 'white collar jobs', as identified by the assistant chief, will not be provided by the Project.

- the proponent allows for extensive comments on land use which he knows he will not impact, with no mention of potential conflicts at sea - access of fishermen near the enclosure, gear entanglement issues, what is the actual investment plan with local community beyond vague promises of 'ecotourism development'

One issue that has not been raised but may result in conflicts locally, is the need to provide food for the whalesharks. As presented in the report, they feed on small fish schools and plankton, and in captivity by a mixture of fish, meat, etc. - though no data is presented on how much feed is needed per body weight of whale shark, and how the proponent will actually provide this on a daily basis. One of the potential sources for small fish/adequate protein for the whale sharks may be from local fishermen eager to benefit from the project and generate an income (especially if/when they find that benefits onshore from expected interaction with tourists don't, in fact, materialize). They may thus increase fishing effort in the local area to sell to the proponent to supply food for the whale sharks. The gears most efficient at catching the right sized prey for whale sharks are small-mesh beach seines and ring nets that catch small and juvenile fish. These gears are either illegal in Kenya or highly damaging and conflict-causing when used in the wrong environment, and already a source of conflict with fishers that use other gears. It is VERY POSSIBLE that the project will result in increased, not decreased, fishing effort locally, and in a way that results in high levels of social

conflict. These unintended consequences of poorly-construed projects are rampant, with recent examples in the Diani area being efforts to replace traditional gear with 'better' more modern gears, but resulting in capture of turtles in nets supplied by USAID.

5-12 county Fisheries Officer – noted that fishers will be forced to fish farther away, as they will not be able to fish at the enclosure itself. This has not been addressed in the EIA, but is more important than the many vague issues analysed on land. The impact of the project on “neighbors and businesses”, has also not really been addressed transparently.

5-13- marine ecosystem comments, these have not really been addressed and it's not clear why Illegal fishing would be reduced, see comment getting feed for the sharks – many projects can have perverse/unintended consequences if issues are not fully thought through.

5.2.6 KWS - the project did not consult any of the marine offices of KWS, why? Marine park authorities and research dept would have been more relevant for comments than the Shimba office. The proponent is very experienced in marine issues, so its very likely this was an avoidance tactic, to not face more technical questions from the marine authorities. The 'Shimba-Waa' circuit comments are helpful but do not deal at all with the primary purpose of the environmental part of the EIA

5.2.7 BMU- the project apparently did not ask the BMU about potential issues they might have with the project (such as displacement of fishing), as this section is just informational about what a BMU is. It does not assess any potential environmental or social impacts of the project

5.2.8 WWF - is one of the foremost conservation organizations globally with a track record of conserving endangered species, while also recently being at the forefront of community based conservation in Kenya and globally. While they recognize the community and consultative process the project has followed it is surprising that they do not mention that the focal species is listed as threatened globally, the multiple projects exist in east Africa to conserve them, and that the project does not demonstrate any experience or competence in captive care of wildlife let alone threatened species. It may be that WWF did not consult broadly enough within its competence to comment on these matters, and it should be asked to do so.

5.2.9 KMFRI - also noted the issue of obstruction to community, problems of feeding, captive care, pollution/eutrophication. But the project report has not responded to these. It must do so.

6.1.1 this is an excellent introductory section to the problem of whale shark fishing globally and the benefits devised from whale shark tourism globally. It is NOT relevant to the impacts of the proposed project, which are to whale sharks themselves, their local/regional populations, the environment at the enclosure, and the area/community at Waa. This section should be placed as an introduction to the whole report, in section 1 (see comments in that section).

This section does have some problems, it does not use sufficient referencing to back up some of the claims (e.g. in para 2), and shows where the project's poor interpretation of the sighting data of sharks in Kenya might have come from - an analysis from India that two numbers of whale sharks sighted in 1998 and 2001 represent a 97% reduction in numbers in three years, as opposed to a more likely interpretation of a very variable quantity, as explained earlier for Kenya. To claim potential fishing impacts, fishing data must be shown!

This introduction does not once mention any intentional whale shark fishing in Kenya, undermining the claim by the project that this does exist.

The introduction also makes the clear point that an individual whale shark's benefit may be shared across countries and locations due to their migratory behaviour. Likewise, the effect of catching and

keeping whale sharks for six months, and the impact this may have on their survival and migration to other locations must be assessed as a potential regional impact of the project. This project needs regional consultation, with scientists and whale shark conservation/research/watch projects in other countries, to ensure that the impacts of whale shark capture in Kenya are not detrimental to whale shark populations and benefits in other countries

6.1.2 a) it has not actually been stated how the private/community collaboration will be manifest.

A and b) there have been no actual numbers or plans shown to back up the claims that these benefits will be obtained? How much benefit, to how many people? Who will receive it? How will its equitable sharing be assured? What if no benefits arise? There is no substantiation of any of these claims as would be needed in a real business plan for example.

C) the introduction has already shown that whale shark tourism is already present in Africa, so how can the project claim to be 'starting' it. The figures here on whale shark industry benefits are ten times higher than those presented in table 6.1. Where do these come from? A source, or the relevant calculations with sufficient justification, must be quoted for any claims such as these.

E) the project has not presented a plan for visitation by 'Kenyans' to the enclosure, just of tourists who would pay \$100 or more for the experience. Unless the Project shows how it will make this opportunity accessible financially to Kenyans, there is unlikely to be much benefit as claimed.

6.2.1 there has been no section outlining the various potential causes of death to sharks, during captured, transport and containment. The project must also demonstrate that it can attract the necessary expertise, as it currently does not have it, and it does not exist in Africa, let alone in Kenya.

More than death, the health and ethical care of the animals must be addressed as it is easy for the project to release a compromised animal prior to death and claim there have been no deaths as a results of their activities. Without sufficient expertise and planning that would be necessary to demonstrate the ability to catch, transport and keep these animals, this EIA is a waste of time.

6.2.2 as in 6.2.1, without actually listing and analyzing the actual or potential threats, it is not possible to credibly describe the mitigation measures needed, or the capacity of the proponent to implement these. This section is copied *in toto* to the executive summary, as if it is the most important part of the EIA about the actual enclosures. It is not. 6.2.1 is the most important, yet it is the shortest, and details have been completely excluded from the document.

6.2.3 the data collected by the project shows that ALL the whalesharks tagged move extensively-70% within East Africa (a shoreline distance of over 3,500 km counting Kenya, Tanzania and Mozambique alone), and several out to the Seychelles. For some reason, the report claims that confining the whale sharks and preventing their movement is insignificant as the whale sharks "remain in East Africa" (see earlier sections). The EIA does not actually explore how the capture will affect the whale shark migration. It also is naive to suggest that releasing the whale sharks after six months in a location where they are not usually present at that time of year will not have significant impacts on their subsequent movement. Whether it is right to conduct this as an uninformed experiment on a species classified as Vulnerable is not addressed in the EIA.

6.2.5 sound disturbance -see earlier

Summary - this should summarize the potential impacts and it should also estimate potential benefits of the project. WWF is a conservation organization, not a research institution. The national research institutions listed do not have any expertise in whale sharks, or sharks for that matter – no

scientist in Kenya has the relevant expertise. So the proponent should seek advice from reputable research institutions internationally as well as conservation/tourism partners.

At the moment, this EIA document presents itself as a smoke screen to divert regulators and stakeholder attention away from the real issue of the project, which is that this activity may in fact pose the most significant /directed threat to whale sharks in Kenya and East Africa, through reducing the health and maybe increasing mortality of whale sharks.

Appendix 1 revenue

- what is the revenue estimated to the proponent? If this is a participatory project, then the financing should be transparent (ie. what actual and proportion of revenue each partner receives) and mutually agreed. If it is a private commercial venture with the proponent paying rights/access at a mutually agreed rate, then the absence of detail on shared benefits, and focus on fee payments, is more understandable.
- 50 visitors per day, 30 days per month, 10 months per year. These numbers are ridiculously overstated. The result is to unfairly raise expectations in the community and government departments, of massive revenue of "300 million shillings over 5 years". Some likely scenarios should be included, which include closure of the enclosure due to mechanical problems and loss of the whale sharks, death of the whale sharks, inability to find or catch them, lack of access during the southeast monsoon, variation in tourism numbers for various reasons, etc. Based on fluctuation in diver and snorkeller numbers established in Kenya, it is very likely that there will be many days with none to five visitors, and thus much lower revenue – these scenarios should be presented.

Additional comments, provided in discussion with Dr. David Rowat, Chairman, Marine Conservation Society, Seychelles.

The MCSS (<http://www.mcass.sc/whale.htm>) has experience in wild whale shark viewing, conservation and research since 1996, predating the similar activities of the East Africa Whale Shark Trust by ten years. In that time, significant benefits have accrued to the whale sharks and to the Seychelles tourism industry and economy from wild animal viewing, without any recourse to the captivity approach proposed by EAWST.

COMMENTS ON EAWST EIA REPORT

EIA Executive Summary:

The three bullet points are not substantiated in the text:

- There is no methodology detailed about how investor and community collaboration is to be initiated, or how it will conserve biodiversity
- The value of whale shark tourism of US\$380million is spurious, the most recent paper by Gallagher & Hammerschlag (2011) gave a current global worth of all shark tourism (not just whale sharks) at around US\$102.08 p.a., while Graham estimated a global worth of whale shark tourism at US\$47 million p.a. (Graham, Shark News 16, 2004). Also as Simon points out, Kenya is already in the whale shark eco-tourism business through Volker Bassen's own current activities and other dive operators.
- There is no indication of how the Beach Management Units (BMU) or local communities will benefit from this project

The summary paragraph to the executive summary talks of the diversification of the economy and of funds generated by the BMU through the whale shark activity being used to fund equipment to enable fishers to move away from inshore fishing but nowhere does the document say how this will happen nor is there a perspective of the feasibility of any such mechanism commented upon by the BMU or local community.

Environmental Conservation:

As outlined above, there is no indication of the methodology of creating fiscal or technical capacity through local community and private investor collaboration apart from stating that the project will do it.

Economic Development:

As above, no methodology for sharing the 'benefits' of this project have been provided.

Foreign Exchange:

This paragraph needs some form of reference as none of these figures seem to make sense... The most recent Australian figure was 4\$million p.a in 2006 (Catlin et al. 2010) while tourism figures for Holbox (Mexico) were given in Paco Remolina's presentation at IWSC in 2008, with a value of \$240k in 2002 and 12.8 million in 2007 based on a constant 'ball-park' value of \$800 per visitor... I do not know where the 2011 figures are derived.

Research and innovation:

The value of wildlife interactions has been well discussed and has a large body of literature examining both the benefits and negative impacts, none of which are referenced here. The proponent states that MoUs are being sought with KMFRI, Fisheries Dept and the University of Nairobi: these should either be included with the EIA or at least a letter of intent / support included verifying these statements.

Deaths of whale sharks:

The report indicates two mitigation measures to safeguard the captive whale sharks:

- qualified marine biologists and veterinary doctors – even at Georgia Aquarium (and also at Okinawa and Osaka) where there are highly trained and experienced staff whale sharks in captivity have died.
- the fact that the sharks will be in captive in their 'normal habitat' not an enclosure – this is not correct as pointed out in the EAWST / HSWRI report on their own web site all whale sharks tagged off Kenya made dives to in excess of 150 m some to over 1000m in depth, this is not a comparable habitat to a 10m deep enclosure. Similarly, their own tracking results show that whale sharks encountered off Kenya migrate long distances to other countries including Mozambique, Tanzania, Somalia and Seychelles so any enclosure will not be a 'normal habitat'.

Tourist Safety:

This section is reasonable although the requirement to have all participants use the facilities hire equipment (PPE) may have some negative issues with experienced visitors. Of more concern is the use of 'hard nets' to be deployed to keep tourists safe from the sharks.... This needs to be explained further as no such protective measures are required at any other whale shark experience that I know of.

Migration Disturbance:

The proponents acknowledge that whale sharks are highly migratory and their own study has indeed confirmed this with 7 out of 14 tagged sharks moving away from Kenya to Mozambique, Tanzania, Somalia and Seychelles, which is a different perspective on 70% staying in East Africa.

The fact that they have already tagged 20 sharks shows that it is not necessary to put sharks in captivity to track migrations.

Sound Disturbance:

While the project intends to control noise within the enclosure, the fact that the enclosure is in the middle of a bay will necessitate boats going to and from the area and thus an increase in noise disturbance. Similarly, if the project succeeds in providing the local fishers with improved boats to access further reef systems, there will be an increase in noise from this also.

Main Proposal

1.4 Project justification

There is no clear indication of the source of the data for the reported decline in sightings, nor as to the survey intensity between the two periods given. As this is the primary driver for the project this needs to be provided if the report is to have any value. While whale shark liver oil has historically been used to water-proof wooden boat hulls there is no evidence of any local capture in Kenya presented in this report or in published articles. Finally the temporary captivity of 2 animals has no value in terms of conservation to "ensure these animals are not finally wiped out..." as they will be released into the same area.

The local fishing techniques of canoe and beach seine are slated as being destructive and has lead to localised reef and ecosystem destruction, is this the case, is there proper survey data to justify this claim?

The diversification of the economy and generation of funds by the BMU through the whale shark activity are cited as a way to fund equipment to enable fishers to move away from inshore fishing. However, how this will happen is not even outlined, nor is there a perspective of the feasibility of any such mechanism commented upon by the BMU or local community. Similarly, as this is an EIA there should also be comment as to how the change of target species / area will affect the new areas targeted, otherwise this just moves the perceived problem to another area.

1.7 Study methodology

As pointed out by an earlier reviewer, this study purports to spend a lot of effort on analysis of terrestrial and riparian areas in the vicinity that will hardly be affected by a marine enclosure of any type and similarly will have limited effects on one, apart from potential input of pollutants, which the report does not seem to cover. In fact in Section 4 the proponents state "The operation will be entirely marine based with no land construction at this site".

3.2 Hydrogeology

This section completely omits any study of the marine area concerned.

3.3 Topography

The topography given puts the enclosure on land: " It lies below 30m above sea-level and extends 10km inland".... Not very useful for an EIA on a marine enclosure...

3.6 Sensitive Areas

Again this section completely omits any study of the marine area concerned, one assumes that there are coral reefs, sea-grass beds and other marine structures that will be directly affected?

4 Project Description

The proposal indicates that the enclosure will be around 150 metres across and eventually 600 metres across with the Figure 4.1 matching the larger area indicated; they also indicate that 3 panels of the net have already been set without an EIA being undertaken?

A table is included in 4.1 which purports to indicate appropriate legislation, while I am unaware of Kenyan Fisheries or Tourism legislation I would have thought that there was something about the setting of nets and permanent structures in shallow waters? If so, that should be appropriately acknowledged and the project discussed in that context.

5 Public Consultations

5.1 & 5.2. include a number of tables of comments from various County and Government personnel and some stakeholders with the proponents remarks as to the comments or issues raised. Some of these comments are very germane to the project development but the proponent's remarks do not provide any substantive detail as to how these issues will be met nor have they been followed-up on to any extent in the report. This is the biggest flaw with the socio-economic side of this report and project in that while benefits keep on being cited there are no real structures proposed to ensure that these benefits actually go to the communities rather than to just the project proponent.

6 Assessments of Environmental & Social Impacts

6.1.2 Positive Impacts

Environmental Conservation – no concrete proposals are put forward as to how this project will conserve biodiversity apart from by implication... that is not good enough in an EIA

Economic Development – as mentioned many times previously there is no detailed proposal for the involvement of communities in the benefit sharing of the project, without it this is just words and rhetoric...

Foreign Exchange – this suggests that increased numbers of tourists will be drawn to the country, rather than it relying on tourists (or locals) already in the country coming to participate. If this is to

be believed then a proper business plan with cash-flows and income projections needs to be appended, this should include the benefit sharing by local communities.

Research & innovation – the debate about the educational benefit of animals in captivity is a long one which Kenya has done much to assuage by the introduction of Game Parks which allows viewing in a natural habitat.... Unfortunately the 'Seaquarium' proposed is like a wildebeest in a 100m² pen and would probably do little to enhance Kenya's tourism product, in fact probably the reverse. The access of Universities etc to study the animals may indeed be better but on a 6-month turn-around of individuals is likely to be of limited real scientific value and no conservation value.

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