PART 2

Preliminary Report – The relevance of declaring the area between the southern limits of the Santuário Bravio de Vilanculos and Pomene National Reserve – Inhambane Province, Mozambique as a Protected Area.

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AUTHORS NOTE

Global Warming[3] has now become firmly defined and understood all over the world as Climate Change[4]. The number of people affected by natural disasters doubled from approximately 102 million in 2015 to 204 million in 2017[5]. And this number has risen in 2019, at a high price, these events cost US$335 billion in 2017, a 49% increase in economic losses over the previous decade for the same reasons, these losses disrupting basic infrastructure and affecting poorer countries the most.

Mozambique ranks third amongst African countries most exposed to risks from multiple weather related hazards, and Climate Change meaning cyclic floods, tropical cyclones and droughts. Cognisance of this threat is essential at all levels of leadership in Mozambique. We must have a coordinated set of actions based on scientific knowledge and data, to preserve the Mozambique Channel and integrity of bio-diversity

HUGH BROWN (WIORI) - JANUARY 2020

The unique marine ecological characteristics of the Mozambican coast in terms of water temperature, nutrient rich currents which provide marine life with the essential breeding grounds, the beauty and complexity of our reefs, the diversity of its invertebrate, fish and mammal species, and its diversity of coral species makes this coastline one of the largest nurseries in the Indian Ocean, and therefore this makes the Mozambican coast, as a whole, one of the largest biodiversity hotspots of the world.

Understanding, protecting and sustainably enhancing its value to the benefit of all Mozambicans in a multifaceted way and guarding it against predation and unsustainable practices must be a national imperative. Let us embrace this urgent mission and mobilize the country, the region and the world to face and win one of our greatest bio-diversity challenges. There is no other Mozambique Channel therefore we cannot allow it to be lost, eroded or poached.

ANTÓNIO BRANCO (NATURA) JANUARY 2020

[3] This decade was the hottest in living memory, measured as 1.1˚C hotter than any other. (NASA)

[4] Climate Change as opposed to Global Warming expresses and defines the now emerging affects of Global Warming.

[5] UN Report on Climate Change 2017

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1. FOREWORD

WIORI is a foundation currently being established in Maputo under Mozambique legislation. The Foundation has a partnership with NATURA, and an association with University Pedagogica – the Public University (UP) (Maputo), and the Reef Systems Research and Conservation Laboratory (LECAR) at Universidade Federal Fluminense (Brazil). WIORI is based at Vilanculos Coastal Wildlife Sanctuary (VCWS) (see map) in Inhambane, Mozambique's only privately managed National Park.

Associação NATURA Moçambique is a Mozambican NGO registered in the Conservatória de Registo das Entidades Legais de Moçambique, and is adquartered at Avenida Amílcar Cabral n. 528, Maputo. NATURA's goal is to support conservation projects across Mozambique by sponsoring environmental restoration and education programs as well as coastal health and marine research activities. NATURA has a long history of involvement in credible conservation programmes including the management and development of the Niassa National Reserve and in both marine and terrestrial conservation projects, in partnership with reputed private and public entities as Universidade Pedagógica de Maputo.

The Expedition to survey the underwater areas between San Sebastian Lighthouse and Pomene Point from a depth of 2m depth (if sensitive reef or mangrove or sea grass areas extend onshore these would be included in an authorized extension of the review) to 30m depth (See Annexure 2) would be as follows;

- To undertake a series of underwater dives on a daily basis to determine the nature of the sea bed in the area designated, within the boundaries nominated;
- Locate and map the extent of all underwater reef structures located in the area designated, down to a depth of 30m;
- Undertake a survey of each structure and determine its location, general description of reef structures, assessment of reef fish assemblages, condition of corals and main invertebrate populations included in the benthic community focused on key species, and any overall impacts currently having an effect on these communities that can be identified through observation;
- To plot a chart of the seabed from the 30m to the 200m line in the designated area;
- To collect this data, summarize all data collected electronically, and then document these observations by means of notes, photographs, mapping and reports using specialized equipment including side scan sonar;
- To report on the survey to the sponsors comprehensively in writing (a report) commensurate with a full scientific profile of the area with specific data, photographs, maps, charts and required to provide and underpin stated conclusions, and a visual presentation so that informed decisions can be made relating to;

- Extensiveness and requirements of protection measures needed in the area including motivation to establish a National Park of the area;
- Suitability of the area in terms of exploration activities for oil and gas if required, in relation to environmental compatibility to such activities and especially whether any type of industrial activity such as this could ever be undertaken or not.

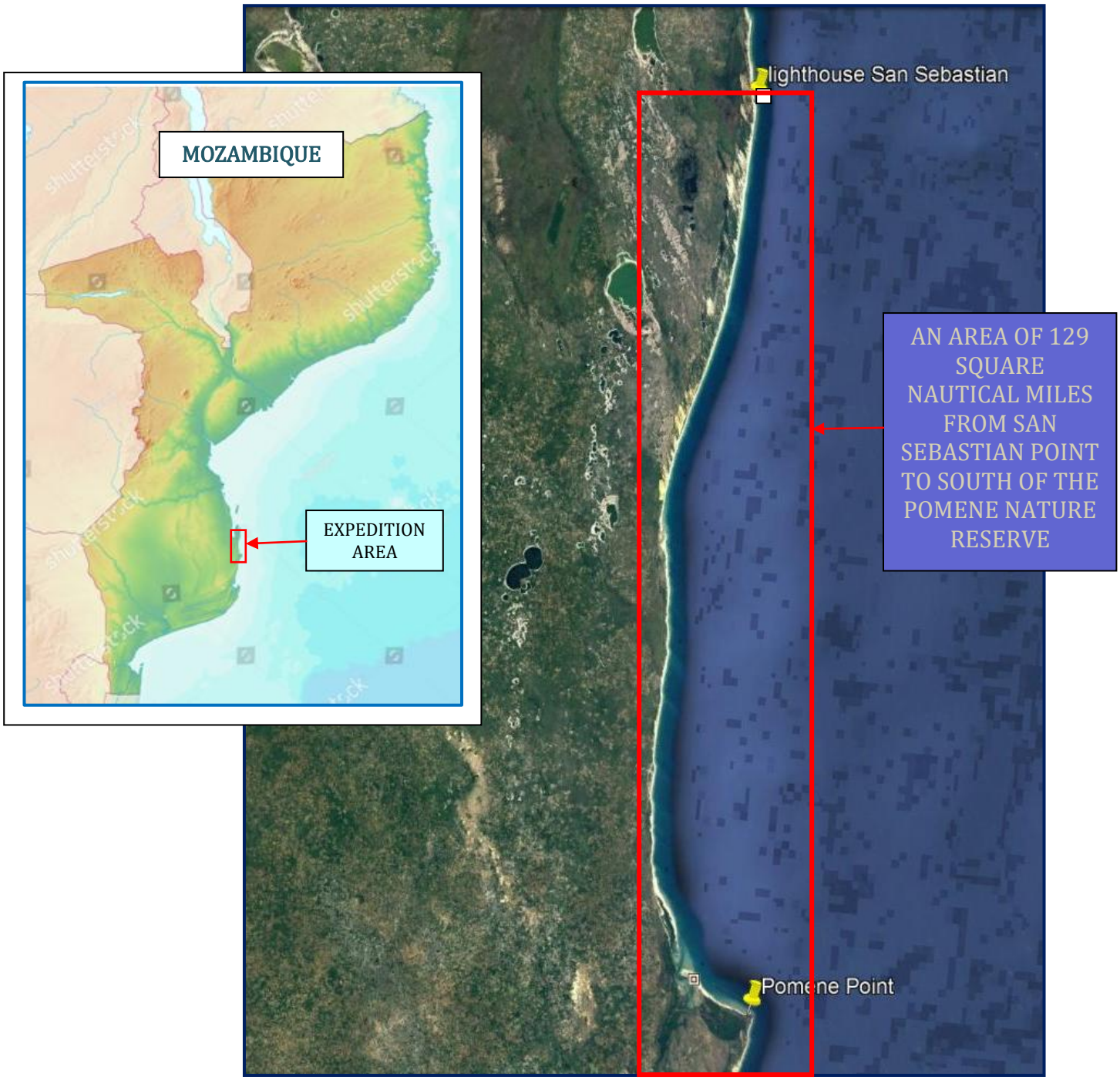

Figure 1. – Detailed Map of Expedition Area.

2. SCIENTIFIC WORK DONE SEPTEMBER/OCTOBER 2019

The expedition team was composed of four scientists, an undergraduate student and three people from the crew. The scientific leader (Dr. Cesar Cordeiro) was in charge of the planning of diving and scientific activities, including fish surveys. The coral specialist (Dr. Katia Capel) was responsible for registering the benthic communities from surveyed reefs, and the scientific diver (MSc. Marcos Bouças) also did the fish surveys. We also had the assistance of Biologist and ocean diver BSc. Fenias Muhate on diving activities and additional underwater photography registers. The undergraduate biologist, Augusto Nhampossa, helped with diving logistics and onboard image management[6]. Besides the scientific team, Mr. Brendan Walsh (Captain), Ms. Deline Du Toit (Purser) and Mr. Ruben Heard (1st Mate) completed the team, in charge of all boat activities and diving support. The expedition started on 17th of September leaving from Vilanculos aboard the HQ2 vessel (70-foot catamaran) and lasting for 21 days. Most of challenges faced by the team were imposed by weather and oceanic conditions. Episodes of strong winds (above 25 knots) and high seas (waves higher than 3 m) hindered the access to sea through the Bazaruto Archipelago for a few days. Notwithstanding, apart from bad weather conditions for eight days, all other days were filled with diving activities, usually two or three dives per day, in a total of 28 dives.

Dive and Underwater Structure Locations

The surveyed area included approximately a 56 km stretch line within four shallow areas (Baixo Africa, Baixo Zambia, Pomene and Baixo Silva) indicated in nautical charts and known from local people as fishing and diving sites. All formations run along the coast between 0.5 to 6.5 kilometers from the shore (figure 1) and bear reefs within 5 to 32 meters deep. Pomene and Baixo Zambia are places where diving activities were more developed (Pereira et al., 2018), although not as popular as other diving areas as the Bazaruto Archipelago - north from the study sites. The first was already a target of exploratory studies cataloging species from different groups, such as mangrove and terrestrial plants, but also coral reef species (Louro et al., 2017). Baixo Silva and Baixo Africa were only reported by local fishermen and recreational fishers (pers. comm.), not been found any register of regular diving or previous scientific data for those areas.

[6] The CV's of the scientific team are available in the report DropBox

Although all reef formations were already included in nautical charts, we used a side-scan sonar (Garmin Plus 92SV and GT51M-TM 260-455 kHz, 500 W) to find and map part of the surveyed reefs, **as many differences were found between charts and true sea bed information gathered on sonar and plotted with GPS[7].**

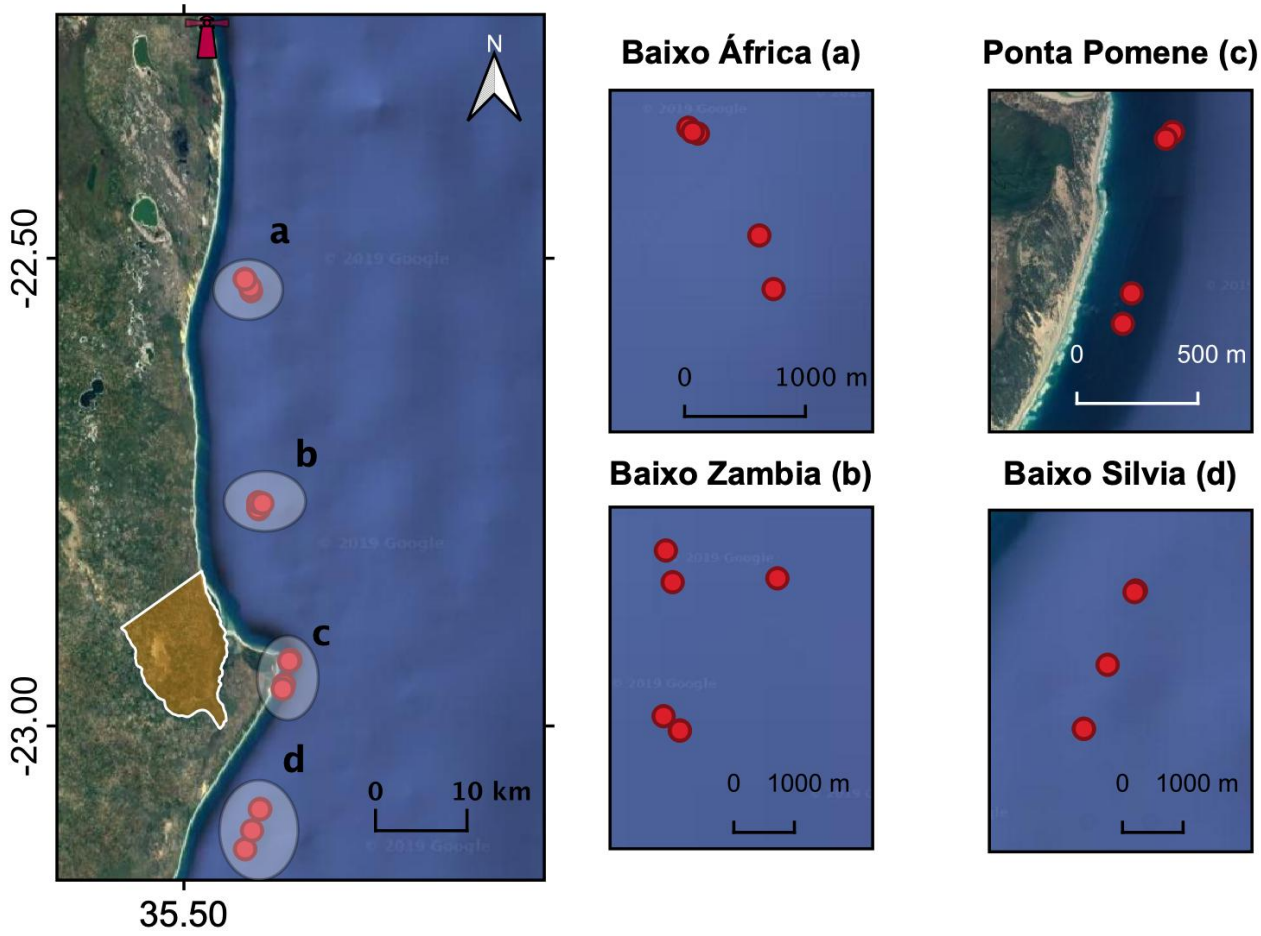

Figure 2. Detailed confirmed locations and identified reefs along the coastline between SSLH and South Pomene. Ellipses indicate groups of reefs, and the red dots indicate the sampling points.

Please refer to Part 1 of this report for a description of the scientific work done on the expedition to determine the suitability of the area to be declared a Protected Area.

[7] This data will be available in the final report in March 2020

3. ARGUMENTS FOR THE DECLARATION OF A PROTECTED AREA

3.1 Methodology

In considering the decision to declare a protected area, basic scientific research needs to be done to identify and assess all of the issues described in this part of the report, and take the data recovered from Part 1 of this report and compare it objectively with internationally accepted criteria for establishing protected areas. This expedition had exactly that mission, to discover the extent and condition of the marine eco-systems and resources in this area and collect sufficient data to determine whether the proposed area should be declared a protected area by the authorities.

We have divided our answers to this question into two parts;

1) What is the condition and status of the ecosystems and integrated environmental land and seascape in the area?
2) How does the area stack up against broader international Protected Area requirements and criteria for sustainable operations?

We answer question 1 first.

3.2 The Environmental Status of the Ecosystems in the Area between the Southern Boundary of the VCWS[8] and the Baixo Silva south of Pomene - Methodology

Refer to the conclusions following the scientific expedition to the area described in part 1 of this report.

In the first step to answering the question, should this area be a Protected Area, it is necessary to compare the scientific environmental findings in Part 1 of this report with the definitions used by IUCN Red Line ecosystems list and report with regard to describing the importance and condition of the area. The diagram in figure 2 describes the different categories of environmental status and thus risk, and diagram 3 describes the process of defining the condition of an area and the forces and actions it is under environmentally on an ongoing basis, and then clarifying from this analysis whether it is in one of three defined stages. Namely, Vulnerable, Endangered, or Critical.

[8] Vilanculos Coastal Wildlife Sanctuary

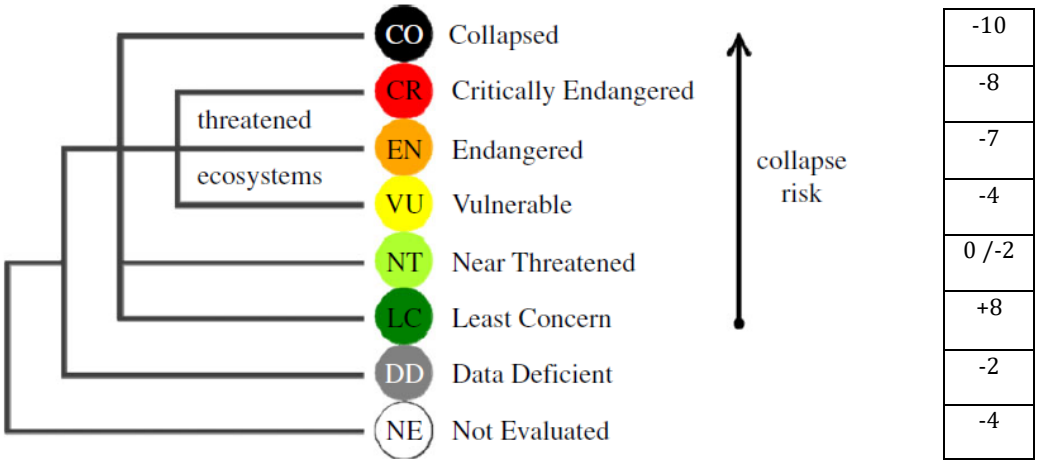

Figure 2 – IUCN definitions related to the condition and status of environmental ecosystems and species and the relevant stages to collapse. Each of these defines a risk category. The scores are added by this team to discriminate between levels of risk and define an overall score and therefore a risk category for an area based on its actual observed condition.

In Figure 2 we can see the status of the IUCN red list of Ecosystems defined in relation to levels of stress and impact, commencing with no data through increasing levels of risk and threat to that of an extreme environmental collapse event. These definitions we have used to determine from an ecological perspective the environmental status of the ecosystems in areas studied between SSLH[9] and Baixo Silva – Pomene based on a simple scoring system applied to help us determine what the eco-system current status is, and risks associated with this area.

The relative impact of the various categories shown here was adapted and have been assigned a number by this team, to show the impact of each category and define the overall environmental risk.

In this case the most severe state is obviously Collapsed at a value of -10, followed by critical which is shown as -8, Endangered at -7, Vulnerable at -4, Near Threatened at 0, (most of the pristine natural areas in the world today are still classified near threatened), Least Concern +8 (in other words in a very good state) Data deficient at -2 (just because there is no data it does not mean there should not be concern) and Not Evaluated in itself is a risk -4.

The IUCN longer term measurements and calculation methodology used to determine the status of an area within these definitions is described in figure 3 below.

[9] Sao Sebastiao Lighthouse

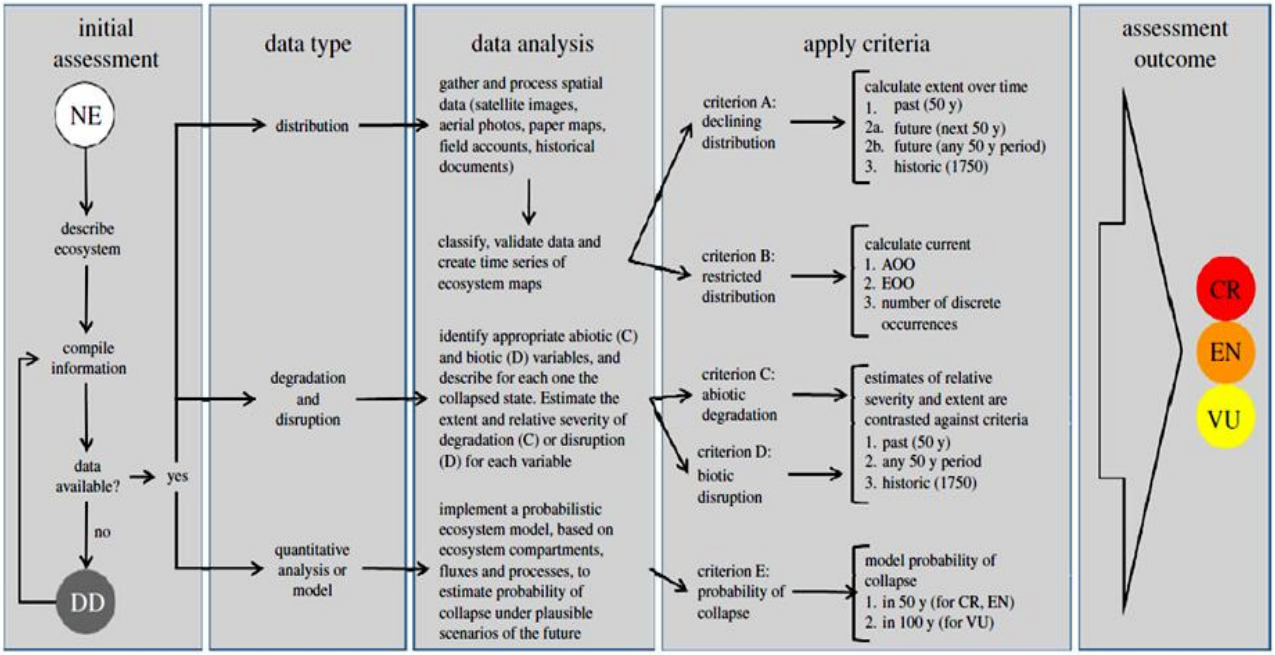

Figure 3. Steps followed for the application of the IUCN Red List of Ecosystems Categories and Criteria. For risk status symbols, follow figure 2. AOO, area of occupancy, EOO, extent of occurrence. (Online version in colour.)

From the analysis in Part 1 of this report and the calculations and expressions of values made therein, the photographic material gathered, and overall opinions of the 4 scientists involved on the one hand, plus the interview of local fisherman (NATURA report dated December 2019) provides a first time base line of evidence, enabling us to commence with ecosystem classification and monitoring of the area, and therefore we are now following the actions described in column 3 of Figure 3 above. Further analysis of the sea bottom mapping done in October 2019 aboard HQ2 will add another layer complexity to strengthening the conclusions concerning habitat distribution.

The IUCN Ecosystem Red List[10] criteria refer to the observation and collection of scientific data over a long period to determine the exact status of ecosystems in a given area. VCWS has now three years of data collated, and the area under discussion and analysis in this report has only one year of marine data collected, however a number of years of turtle migration data.

In assuming and quantifying the status of ecosystems at this stage of this area, we have depended on real information gathered scientifically through observation on the expedition and interaction with locals. This presents a real data set once the sea bed mapping information is presented by end-February 2020. This does not sound like much but it is a very intensive data set gathered with over 3 500 images, and over 50 000m^2 of reef structure analyzed, over 132 dives[11] .

[10] See References

[11] 4 divers diving three times a day

3.3 Overall Status of the Area in 2020 - Analyzed[12]

The following table represents the results of all observations by the team to date for the area from SSLH to Baixo Silva - Pomene and expresses it against the IUCN status of environment risk shown in Figure 2 and 3.

From the data gathered and associated opinions here, not considering the future but the current status of the area there is no sign of immediate risk of Collapse to these ecosystems. However in Table 1 the concerns of the team based on all evidence collected and analyzed to date is summarized and expressed in terms of estimating the current risk and using the IUCN Ecosystem Red List[13] definitions to define the risk after assigning scores to assist the team to define the risk profile.

Table 3 – Status of Ecosystems SSLH to Baixo Silva - Threats.

CRITERIA	EVIDENCE/ OBSERVATIONS	IMPACT	IUCN STATUS / RISK DEFINITION
1.Climate Change	Presence of broken coral colonies at reef crest probably associated to past cyclonic conditions which physically break up formations and are globally expected to increase in frequency and intensity[14].	-7	Endangered
2.Over fishing – (Artisanal)	Reduction in catches over time by local fisherman[14], lack of numbers in certain fish species that should be better represented across the types of habitats and ecosystems assessed, given the food content of ocean currents affecting this part of the coast. Pieces of line, hooks, and nets found at certain locations.	-2	Near Threatened
3. Commercial and illegal	Absence of numbers of larger reef		

[12] The assessment is a subjective set of opinions determined by this expedition team and applied to the IUCN criteria and does not represent the views of the IUCN or its affiliates or associated organizations

[13] See References. The opinion of observer scientists and local knowledge applied from the Expedition completed in October 2019 in relation to IUCN classifications and expressed as a risk in terms of a score.

[14] See reference Mendelsohn et al. 2012.

[14] Annexure 2 – NATURA local fisherman survey Dec 2019.

large-scale fishing inshore	dwelling specimens (e.g. sharks) and absence of larger schools of game and pelagic fish (add some examples)[15]	-7	Endangered
4. Lack of scientific environmental data	This expedition is the first real data collection in All this area, (Some work was done in Baixo Zambia) and the first research conducted by a PhD in Corals[16]	-2	Data Deficient
5.Industrialization and over development	A major threat to the entire area if allowed, specifically mineral sand mining and concentrate manufacture, or finished product reduction. High density residential or resort development	-7	Endangered
AVERAGE SCORE/OVERALL STATUS		**-4.5** **(-5) if criteria 5 is included**	**Vulnerable** **Between Vulnerable and Endangered**

2.4 Identified Future Threats to the Area

A visual analysis of the coastal area of evaluated reefs it is noticeable that most dangerous threats to ecological processes locally are derived from global drivers (e.g., mass bleaching, hurricanes and ocean acidification). Of the potential impacts on the area, the following are described as of major concern.

The observations and opinions of the team show this area to be currently Vulnerable. This vulnerability is directly related to the items listed in table 3. It should be noted that this status is believed to be downgraded towards Endangered on the following basis within 5 years.

[15] Compared to the year 2002 reflected in the VCWS (GEF IUCN) habitat and ecosystem review, and Bazaruto Archipelago 2003 – 2012 (personal observations)

[16] Dr Katia Capel PhD

- **Further Climate change. Mozambique ranks third amongst African countries most exposed to risks from multiple weather related hazards, suffering from cyclic floods, cyclones and droughts**.
- **Entrenched illegal Commercial fishing. Evidence gathered by the crew of HQ2 and the interviews undertaken by NATURA of local fisherman in the area in December 2019, invasive illegal commercial fishing remains a major challenge in the future and is increasing in frequency and volume of catches**.
- **Introduction of Heavy Industry; and any other environmentally destructive practices on a large scale[17].**

[17] Proposal to introduce a mineral sands mining and processing plant in the area in late 2019

4. THE OVERALL CASE FOR THE DECLARATION OF A PROTECTED AREA FROM THE SOUTHERN BOUNDARY OF VCWS TO BAIXO SILVA-POMENE

4.1 Further International Criteria Selected for the determination of the Declaration of a Protected/Conservation Area between SSLH and Pomene.

The team studied several internationally well know organizations models to determine what the latest international norms are regarding the evaluation of an area to determine whether it should be declared a protected area or reserve. These are not limited to the IUCN model related to Environmental Status and Risk discussed above. The impact and level of current and potential pressure described above are the key factors in this decision.

In table 1 below we show the description and criteria used by the IUCN to determine the suitability and status of areas to be considered protected areas with examples from around the world. In table 2 we consider the application of these and other criteria considered in relation to the proposed Protected Area between the southern VCWS boundary and Baixo Silva - Pomene.

Table 1 – IUCN Criteria – Protected Areas.

The new IUCN definition of a protected area

The IUCN definition is given and explained, phrase by phrase

IUCN members have worked together to produce a revised definition of a protected area, which is given below. The first draft of this new definition was prepared at a meeting on the categories in Almeria, Spain in May 2007 and since then has been successively refined and revised by many people within IUCN-WCPA.

A protected area is: **"A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values".**

In applying the categories system, the first step is to determine whether or not the site meets this definition and the second step is to decide on the most suitable category.

This definition packs a lot into one short sentence. Table 1 looks at each word and/or phrase in turn and expands on the meaning.

Table 1. Explanation of protected area definition

Phrase	Explanation	Examples and further details
Clearly defined geographical space	Includes land, inland water, marine and coastal areas or a combination of two or more of these. "Space" has three dimensions, e.g., as when the airspace above a protected area is protected from low-flying aircraft or in marine protected areas when a certain water depth is protected or the seabed is protected but water above is not: conversely subsurface areas sometimes are *not* protected (e.g., are open for mining). "Clearly defined" implies a spatially defined area with agreed and demarcated borders. These borders can sometimes be defined by physical features that move over time (e.g., river banks) or by management actions (e.g., agreed no-take zones).	**Wolong Nature Reserve** in China (category Ia, terrestrial); **Lake Malawi National Park** in Malawi (category II, mainly freshwater); **Masinloc and Oyon Bay Marine Reserve** in the Philippines (category Ia, mainly marine) are examples of areas in very different biomes but all are protected areas.
Recognised	Implies that protection can include a range of governance types declared by people as well as those identified by the state, but that such sites should be recognised in some way (in particular through listing on the World Database on Protected Areas – WDPA).	**Anindilyakwa Indigenous Protected Area** (IPA) was self-declared by aboriginal communities in the Groote Eylandt peninsula, one of many self-declared IPAs recognised by the government.
Dedicated	Implies specific binding commitment to conservation in the long term, through e.g.: • International conventions and agreements • National, provincial and local law • Customary law • Covenants of NGOs • Private trusts and company policies • Certification schemes.	Cradle Mountain – **Lake St Clair National Park** in Tasmania, Australia (category II, state); **Nabanka Fish Sanctuary** in the Philippines (community conserved area); **Port Susan Bay Preserve** in Washington, USA (private) are all protected areas, but their legal structure differs considerably.
Managed	Assumes some active steps to conserve the natural (and possibly other) values for which the protected area was established; note that "managed" can include a decision to leave the area untouched if this is the best conservation strategy.	Many options are possible. For instance **Kaziranga National Park** in India (category II) is managed mainly through poaching controls and removal of invasive species; islands in the **Archipelago National Park** in Finland are managed using traditional farming methods to maintain species associated with meadows.
Legal or other effective means	Means that protected areas must either be gazetted (that is, recognised under statutory civil law), recognised through an international convention or agreement, or else managed through other effective but non-gazetted means, such as through recognised traditional rules under which community conserved areas operate or the policies of established non-governmental organizations.	**Flinders Range National Park** in Australia is managed by the state authority of South Australia; **Attenborough Nature Reserve** in the UK is managed by the county Nottinghamshire Wildlife Trust in association with the gravel company that owns the site; and the **Alto Fragua Indiwasi National Park** in Colombia is managed by the Ingano peoples.

Table 1. Explanation of protected area definition (cont.)

Phrase	Explanation	Examples and further details
… to achieve	Implies some level of effectiveness – a new element that was not present in the 1994 definition but which has been strongly requested by many protected area managers and others. Although the category will still be determined by objective, management effectiveness will progressively be recorded on the World Database on Protected Areas and over time will become an important contributory criterion in identification and recognition of protected areas.	The **Convention on Biological Diversity** is asking Parties to carry out management effectiveness assessments.
Long-term	Protected areas should be managed in perpetuity and not as a short-term or temporary management strategy.	Temporary measures, such as short-term grant-funded agricultural set-asides, rotations in commercial forest management or temporary fishing protection zones are not protected areas as recognised by IUCN.
Conservation	In the context of this definition conservation refers to the *in-situ* maintenance of ecosystems and natural and semi-natural habitats and of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species (see definition of agrobiodiversity in the Appendix), in the surroundings where they have developed their distinctive properties.	**Yellowstone National Park** in the United States (category II) has conservation aims focused in particular on maintaining viable populations of bears and wolves but with wider aims of preserving the entire functioning ecosystem.
Nature	In this context nature *always* refers to biodiversity, at genetic, species and ecosystem level, and often *also* refers to geodiversity, landform and broader natural values.	**Bwindi Impenetrable Forest National Park** in Uganda (category II) is managed primarily to protect natural mountain forests and particularly the mountain gorilla. The **Island of Rum National Nature Reserve** in Scotland (category IV) was set up to protect unique geological features.
Associated ecosystem services	Means here ecosystem services that are related to but do not interfere with the aim of nature conservation. These can include provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious and other non-material benefits.	Many protected areas also supply ecosystem services: e.g., **Gunung Gede National Park** in Java, Indonesia (category II) helps supply fresh water to Jakarta; and the **Sundarbans National Park** in Bangladesh (category IV) helps to protect the coast against flooding.
Cultural values	Includes those that do not interfere with the conservation outcome (*all* cultural values in a protected area should meet this criterion), including in particular: • those that contribute to conservation outcomes (e.g., traditional management practices on which key species have become reliant); • those that are themselves under threat.	Many protected areas contain sacred sites, e.g., **Nyika National Park** in Malawi has a sacred pool, waterfall and mountain. Traditional management of forests to supply timber for temples in Japan has resulted in some of the most ancient forests in the country, such as the protected primeval forest outside **Nara**. The **Kaya** forests of coastal Kenya are protected both for their biodiversity and their cultural values.

The three-dimensional aspects of protected areas

In some situations protected areas need to consider the impacts of human activities in three dimensions. Issues can include: protecting the airspace above a protected area for instance from disturbance from low-flying aircraft, helicopter flights or hot-air balloons; and limiting human activity below the surface such as mining and other extractive industries. Issues specific to marine and inland water sites include fishing, dredging, diving and underwater noise. A number of countries have enshrined three-dimensional aspects into their protected area legislation; for example Cuba bans mining below protected areas. IUCN encourages governments to consider a general legal provision to safeguard protected areas from intrusive activities above and/or below ground and underwater. It encourages governments to ensure that assessments are undertaken to ascertain the potential effects of such activities before any decisions are taken on whether they should be permitted and if so whether particular limits or conditions should apply.

Considering the criteria applied by the IUCN discussed above in Table 1, and those utilized by the US Fish and Wildlife department, SAN Parks, and others, the following criteria have been purposefully selected for the San Sebastian VCWS border to Baixo Silva - Pomene project used by world class wildlife and marine agencies worldwide, researched by and selected by the team (as part of this expedition output), and are used for determining the case for declaring a Protected Area and or a Marine Reserve [18].

(i) The area represents national or international natural biodiversity and contains a viable, representative cross section and population of endemic flora, fauna, and ecosystems, is made up of important riverine, estuary or coastal water systems, important geological formations and landscape structures, scenic areas or cultural heritage sites, or combinations thereof.

Therefore, it is necessary to:

(a) prevent occupation and exploitation of natural resources inconsistent with the sustainability of the entire natural resources base and ecosystems present in a defined area;

(*b*) prevent pollution and contamination from commercial and/or industrial practices destroying, denuding, contaminating, removing, terrestrial and marine resources such that the sustainability of the habitat and its ecosystems are undermined and destroyed;

(*c*) protect integrated or single habitats and ecosystems, species of flora and fauna from over exploitation resulting in part or total extinction and or permanent damage resulting in the partial or total loss of habitat and some and/or all ecosystems and their species as a result of environmentally destructive practices and over utilization;

(*d*) provide spiritual, scientific, educational, cultural, recreational and well suited and defined[19] tourism opportunities to sustain the area without damaging undermining or denuding the natural habitat and flora and fauna of the area;

(e) contribute to the security of and sustainability of terrestrial wildlife, coastal and marine resources which are essential for settled local populations' survival provided they are harvested under approved artisanal and sustainable methods through community agreed programmes and written agreements.

[18] IUCN, SAN Parks, US Fish and Wildlife Services

[19] Density and type

4.3 Evaluation of the Expedition Area between the Southern Boundary of VCWS and Baixo Silva – Pomene for the purposes of declaring the Area, a Protected Area.

The following evaluation is made up of scores attributed by the team to the proposed protected area against criteria developed from international sources for conservation and low density sustainable tourism use.

PROTECTED AREA CRITERIA – WIORI – NATURA – USE AND SUSTAINABILITY	Score[20]	Remarks
Contiguous and or integrated natural geographical systems. A contiguous destination with integrated but separate systems and environmental structures.	8	A contiguous land mass with intact coastal dunes part forested part open coastal primary and secondary vegetation, with corresponding uninterrupted undulating shoreline.
Ecosystems[21] represented in the Area **Biodiversity suitable for attracting visitors to the area**	7	Coastal dunes, not more than 100m between high and low tide mark, coral structures and outcrops (8) in groups and or single outcrops at depths between 7m and 30m in open sea between 2 and 6 km offshore. Sea currents prevalent bringing food for resident and annual visiting foraging and breeding species into 3 of the worlds 10 ecosystems represented, namely numbers 2, 3 and 5[9].
Suitability for low density eco-tourism and sustainability with conservation	8	Suitability for low density ecotourism is confirmed however joint regional management with VCWS and Bazaruto NP and single entity management of area of this area marine resources is essential with a scientific waterborne capability, and rules enforcement capability
Cultural Importance	5	There are local fishermen that reside in the area that are dependent on local protein sources, building materials and wood as fuel for cooking. Local jobs will improve their lifestyles and reduce their dependency on harvesting local materials and some stressed species
Area has Sustainable Utilization potential with Conservation and Protection	8	Most definitely a candidate for low density high end and community-based tourism with limited infrastructure and control resource use
TOTAL SCORE[22]	**36/50**	

Any score over 30 is highly recommended and constitutes firm grounds for declaration as a protected area; a score of over 40 denotes an area of great natural importance.

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[20] A maximum score of 10 is given for strong reasons why the declaration of a protected area is desirable and correspondingly 0 for not doing so in relation attractiveness and sustainable use criteria.

[21] The World's 9 main ecosystems include, (1) aquatic (land locked water systems), (2) coastal dune (incl dune forests), (3) marine (coral reef and ocean), (4) desert, (5) Mangrove and mud flat (incl estuaries), (6) Tropical rainforest, (7) Savanna, (8) Tundra / Taiga, (9) Alpine.

[22] The above evaluation should score not less than 28 to warrant declaration as a protected area.

5. RECOMMENDATIONS TO THE AUTHORITY

WIORI and NATURA recommend the following to ANAC regarding the current environmental status and suitability of the area to serve as and be declared a Protected Area;

- The declaration of the area as a Protected Area and the implementation of any and all actions to ensure effective governance which includes regular marine research to build up data on ongoing effects of some of the threats to the area defined in this report;

- This Protected Area should be defined on the eastern side at the 200m depth line[23] and no closer to the shoreline in order to protect all species active in the area and dependent on the structures and currents which make up the eco-systems along this section of the Mozambique coast.

- The banning of land based and marine industrial land use and or commercial fishing practices – enforced in terms of a patrol and enforcement cooperation plan with the VCWS and the BNP[24] boundaries;

- The scientific and community-based setting of artisanal fishing quotas and methods, zone management and cooperation with genuine, dependant local communities resident in the area;

- Creation of employment for local communities within a sustainable utilization approach to be based specifically in this case on low density eco-tourism, based on the ecosystems in this area and their carrying capacity related to water based activities, beach use (turtle breeding) sensitive wetland or dune areas, reef proximity, traffic, and fresh water sources; with a component of community-based tourism and service provision.

- Ongoing programmes and management plans, keeping a balanced set of ecosystems, monitored and recorded each year;

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[23] This should apply to the VCWS and BNP

[24] Bazaruto National Park

6. ACKNOWLEDGEMENTS

The study team wish to thank ANAC for giving us the opportunity to review this area and make recommendations to the Government of Mozambique regarding the future of this important bio-diverse area. We also acknowledge the assistance given by the management of VCWS, and the cooperation of the communities around Pomene.

7. REFERENCES

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Annexures

1. Letter from ANAC – Declaration of support for the scientific expedition and fishing review from SSLH to Pomene to NATURA and WIORI 2019
2. IUCN Protected Area definitions and classifications
3. NATURA – Survey of Artisanal Fishing Malamba - Pomene November / December 2019
4. VIDEO ATTACHMENTS – Videos 1 – 7 from the Expedition showing active work on the reefs surveyed (DropBox file) Double Click on the icon to see the video in each case.