



**ANNUAL NARRATIVE REPORT:**  
**Sri Lanka Coral Reef Initiative**  
**Proposal Development**  
January – December 2023

**Report submitted by:**

Convening Agent - IUCN International Union for Conservation of Nature and Natural Resources

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## A. Programme Overview

Programme Title & Project Number	Programme Duration
<b>Programme Title:</b> Sri Lanka Coral Reef Initiative Proposal Development <b>Programme Number:</b> 00133741	<b>Start Date:</b> November 2022 <b>End Date:</b> December 2023
Total Approved Budget	
<b>Total GFCR Budget:</b> USD 97,012 <b>[Convening Agent]:</b> IUCN Sri Lanka Country Office	

## B. Executive Summary

IUCN Sri Lanka was approved as the Convening Agent for the Sri Lanka Coral Reef Initiative (SLCRI) and awarded a preparatory grant to develop a full proposal in the later part of 2022. The 2023–2030 programme for the SLCRI was approved and announced in November 2023 at COP28 during the GFCR event. The National Steering Committee for SLCRI has been formulated with the co-chairmanship of the Ministry of Wildlife and Forest Conservation and the Ministry of Environment. In addition, the Department of Wildlife Conservation, the Department of Coast Conservation and Coastal Resource Management, and the Department of Fisheries are also represented in the SLCRI National Advisory Committee. In addition, the Sarvodaya Shramadaana Movement, Blue Resource Trust, and Environmental Foundation Limited are also joining SLCRI as implementation partners.

The Bar Reef and Kayankerni Sanctuaries and the Pigeon Island Marine National Park Marine National Park and their associated environs were selected for the SLCRI following a scientific scoping among six of such climate ‘refugia’ coral reefs, considering their resilience to climate change, and global biodiversity value with local benefits for livelihoods and the economy. The programme is designed to improve conservation and sustainable management of larger seascapes encompassing those marine protected areas and adopting a seascape approach.

While these globally important coral reef sites are threatened by local threats primarily overfishing and the use of destructive methods such as blast fishing, abandoned fishing gear and ghost fishing, unsustainable tourism, pollution, nutrient loads, and sedimentation, minimising these threats through conservation action and law enforcement has not been successful due to sectoral management and lack of finances. To address the threats, barriers, and financial gap to effectively managing coral reef areas and mitigating local threats the SLCRI strategy encompasses the following key interconnected components under each outcome.

Outcome 1: Strengthened Protection for coral associated priority seascapes in Sri Lanka

- (i) Establishing Co-Management Committees (CMCs) and youth and gender-inclusive Community Conservation Groups (CCGs) for each of the three seascapes to support law enforcement authorities in stopping destructive and illegal fishing, while sustainably managing marine resources, through effective implementation of Seascape Co-Management Plans.
- (ii) Establishing CORALL (Conservation of Reefs for All Life and Livelihoods) Conservation Trust Funds (CCTFs) at three priority seascapes. CCTFs in each seascape will be managed by the Sarvodaya Shramadana Movement under the guidance and in close coordination with the relevant seascape CMCs and function as revolving funds. The CCTFs are part of

- the blended finance approach by having been financed by other donors and enterprises that generate a net positive revenue in the seascapes. This will sustain the financing of effective MPA management and law enforcement, ultimately contributing to the successful co-management of the entire seascape.
- (iii) Adoption and piloting of at least one innovative financing mechanism (e.g., biodiversity credits).

Outcome 2: Transformed livelihoods of coral reef-dependent communities through coral-positive entrepreneurship with enhanced recovery from shocks in coral associated priority seascapes in Sri Lanka.

- (i) Establishment of a Coral Positive Business Support Facility (CPBSF) to provide necessary support on different livelihood opportunities and business development for coral-dependent communities in the three priority seascapes. It will cover ecotourism, sustainable mariculture/aquaculture, waste management, and clean energy applications, through technical assistance in creating value, introducing best practices, and reforming supply chains, while de-risking private sector finances and providing incentives for private sector engagement.
- (ii) Disaster risk finance mechanisms such as alternative temporary employment, and 'Blue' stimulus packages to help recovery after shocks will be planned, through a study on the vulnerabilities reef-dependent communities face when businesses are affected by major shocks. The activity is to be initiated with GFCR funding in each seascape, and to be continued through government budget and sustainable financing mechanisms thereafter.

Outcome 3: Improved research and development capabilities in coral reef restoration in Sri Lanka

- (i) Design and implementation of a practical coral reef ecosystem restoration plan, based on robust business models for coral reef restoration and research appropriate for each priority seascape, with inputs from the CPBSF and marine biologists. This will be supported by Biodiversity Sri Lanka to convene a group of interested corporate partners and by the Blue Resource Trust (BRT) and Centre for Smart Future (CSF).

The SLCRI intends to incubate a pipeline of 12 sustainable and bankable ecosystem-friendly and coral-positive businesses and enhance the resilience of a population of about 150,000 living in the priority seascapes, also having an overall influence on 230,900 hectares of marine area with 32,090 hectares of coral reefs. The actual number of direct and indirect beneficiaries including women will be much higher, including the stakeholders involved in the use and in the value chains.

The programme will be implemented for six years across three phases. Phase I will last 18 months (1.5 years) and serve as the initiation phase where an enabling environment is created for reaching the programme objectives, setting up of physical and community structures to support co-management and the establishment of and operationalisation of Programme Management Unit, the Business Support Facility and necessary mechanisms and piloting of its activities are intended. Phase II of the programme counts for another 18 months (1.5 years), where the programme activities will be expanded towards the target impacts, during which the solution I and II of SLCRI will be implemented in full swing with replication of activities initiated in Phase I, while the solution III will start its implementation. The next three years will mark the phase III of the programme where all intended activities will be matured and achieve their financial sustainability towards the

end. This period will also be used to plan a smooth exit strategy for the programme, ensuring that co-management mechanisms in priority seascapes are self-sustainable.

## **I. Programme Objectives**

The proposed SLCRI is expected to focus on coral associated seascapes of Bar Reef, Kayankerni and Pigeon Island that act as healthy climate 'refugia'. SLCRI will strengthen protection of priority coral associated seascapes by promoting a co-management approach that integrates all concerned agencies under a well-developed co-management plan. In implementing those plans, innovative financing mechanisms for coral positive investments will be promoted by removing barriers for investing in nature. In alignment with a blended finance approach, GFCR grant funds will be partly used to de-risk private sector investments in coral associated ecosystems through the Coral Positive Business Support Facility, with additional finances when necessary, from seascape specific CCTFs.

Reef-dependent livelihoods will be transformed to reef positive livelihoods through promoting coral associated entrepreneurial capacity building programs and incentives. Local youth and vigilant groups will be empowered to take up roles in co-management contributing to effective enforcement of rules and regulations in the co-management area. Social security will be enhanced through extending the disaster risk reduction modalities into reef-dependent communities and through collaborative attempts to create a coral reef conservation trust fund established at each site to support actions including social safety.

While the above attempts are to ensure sustainable management of existing reefs, special attention will be provided in SLCRI to identify areas needed to be restored using best science available. Required policy support, guidelines, appropriate technology, and partnerships will be developed and promoted to make scientific restoration and where possible business ventures such as reef restoration and research-based tourism. Success of seascape co-management will be measured using Management Effectiveness Tracking Tool (METT) applied at all sites and appropriate corrective actions will be taken in the process based on findings.

## **II. Programme Implementation & Results**

### **a) Programme Results Overview**

Over the preparatory phase, SLCRI programme established a National Advisory Committee (NAC), as a national level solid platform to oversee the programme development. In addition to all the relevant government and non-government agency representatives, the NAC was represented by individual experts in various disciplines such as coral reef experts, financial and economic experts, etc.

The following key solutions have been identified with the consultation of NAC and developed into the SLCRI proposal as main financial instruments.

- CCTFs established for effective co-management of coral reefs in three seascapes.
- CPBSF to design and promote reef-positive business ventures.
- Innovative Financing from Blue Economy Options (IFBEO) with technical assistance from the programme in addition to the initial grant support.

In addition to the technical contribution in SLCRI programme development, NAC members committed to leveraging USD 9M co-financing during the programme implementation phase.

Further to the National level advice, the programme development was supported by several regional level stakeholder consultations, successfully conducted during the programme preparation stage. They ranged from fisher groups, women, youth, local vendors, tourism sector service providers, representatives from local authorities and law enforcement officers. These consultations not only provided the relevant field level data to strengthen the programme proposal, but also paved a strong platform to establish seascape-level co-management committees during the programme implementation.

#### **National level consultation sessions**

- III. First National workshop on the SLCRI for establishment of the NAC.
- IV. 1<sup>st</sup> meeting of the NAC - 23<sup>rd</sup> April 2023
- V. 2<sup>nd</sup> meeting of the NAC - 13<sup>th</sup> June 2023
- VI. Private sector consultation workshop - 7<sup>th</sup> July 2023
- VII. 3<sup>rd</sup> meeting of the NAC - 14<sup>th</sup> July 2023
- VIII. 4<sup>th</sup> meeting of the NAC - 29<sup>th</sup> August 2023

#### **Regional level consultation sessions**

- 1. Field stakeholder consultation for Arripu-Silawathura, Vankalei, Vidathlthivu, Kayankerni Marine Sanctuary and Pigeon Island National Park – from 25<sup>th</sup> to 28<sup>th</sup> April 2023
- 2. Field stakeholder consultation for Hikkaduwa National Park and Bar Reef Marine Sanctuary - from 26<sup>th</sup> to 29<sup>th</sup> May 2023
- 3. Field level consultation for Pigeon Island National Park, Kayankerni Marine Sanctuary, Mannar, Arripu-Silawathura, Vankalei, Vidathlthivu areas - from 19<sup>th</sup> to 25<sup>th</sup> June 2023
- 4. Field level consultation for Bar Reef Marine Sanctuary, Pigeon Island National Park, Kayankerni Marine Sanctuary - from 18<sup>th</sup> to 22<sup>nd</sup> December 2023

#### **a) Indicator-Based Performance Assessment**

The SLCRI programme intends to achieve results relevant to all four GFCR outcomes in Sri Lanka. Its delivery will be closely monitored through the monitoring and evaluation results framework most recently developed by the GFCR in June 2023. The SLCRI programme intends to adopt the METT in the three seascapes as a continuous means of ensuring good governance in seascape wide conservation management. IUCN Sri Lanka will work with the OCPP and DWC on the first METT assessment of the priority seascapes during early 2024, which could provide a baseline for this indicator. The GFCR results framework monitors 10 mandatory fund indicators together with sector indicators to be adopted by the programme. IUCN Sri Lanka, as the Convening Agent of the SLCRI has proposed 11 preliminary sector indicators, including the METT assessment score. They will be further developed with the support from GFCR and the National Steering Committee of the SLCRI (please note that the NAC of the programme preparation phase will become the National Steering Committee of the SLCRI with revisions of the composition, if required), which will then be presented with the monitoring protocol and validated at the programme inception workshop.

### III. Gender Mainstreaming

In Sri Lankan coastal and fishing communities, women's economic participation predominantly take place within the informal sectors of the local economy (e.g., agriculture, animal husbandry, fish processing, and traditional handicraft activities<sup>1</sup>). These activities are often organized as backyard operations where women engage on part-time basis with earnings supplementing family incomes<sup>2</sup>. A gendered division of labour and access to spaces also exist, particularly in the fisheries sector where women primarily engage in land-bound activities such as fish processing and selling while men perform fish harvesting activities<sup>1,2</sup>. Gender norms and associated cultural and religious beliefs also shape how women and men engage in productive, reproductive, and community domains<sup>2,3</sup>. Other factors such as educational level, marital status, and age also work in concert with gender to further limit women's prospects for equitable participation in economic activities, their mobility as well as the scope for influence at both household and community levels<sup>3,4</sup>. The SLCRI programme also acknowledges the lack of data and contextual indicators on women's and men's dependency on the coral reefs at the three seascapes of priority focus. The Initiative's situational understanding is primarily based on the available gendered accounts of coastal and fishing communities. However, based on the available data and the understanding, the initial draft Gender Action Plan (GAP) was developed with direct alignment with SLCRI's Results Framework, provided as the Annex IX of the Programme Document. It is an ambitious roadmap towards gender equality and women's empowerment that takes a gender transformative approach to fill knowledge gaps, create spaces for women's and men's meaningful participation, and empower communities in sustainably managing and conserving the seascapes. In particular, the priority actions of the GAP are guided by the three domains of influence on women's and men's coral reef-dependent livelihoods: build agency, change relations, and transform structures<sup>5</sup>. Key gender mainstreaming considerations proposed for SLCRI includes, (a) adoption of a gender-transformative approach throughout the project cycle, (b) embed a gender-disaggregated approach within the project's overall data collection, analysis, and M&E activities, also developing an in-depth understanding of local realities and circumstances, (c) closely engage with local stakeholders from across community, private, public, and non-government sectors, as well as local level government administrative authorities, (d) meaningfully include both women and men in community-level planning and decision-making activities with a 40% target at minimum for women's representation, (e) ensure activities that target all three domains through which gender equality can be advanced within coral reef-dependent communities: build agency, change relations, and transform structure, (f) assign a gender marker GM2 as the minimum requirement on output level, (g) contribute to develop gender-sensitive policy and management guidelines for coral reefs and ensuring alignment with other relevant regulations and guidelines including the Gender Policies of GFCR and IUCN, and (h) operationalization of gender-inclusive Community Conservation Groups as well as Co-management Committees, while developing and maintaining gender-sensitive communications.

### IV. Stakeholder Engagement

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<sup>1</sup> Weeraratne, N. et al., 2021, On the move: Gender, migration and wellbeing in four fishing communities in Sri Lanka: Country Monograph. International Centre for Ethnic Studies. Sri Lanka.

<sup>2</sup> Galappaththi, M. et al., 2023, Gendered dimensions of social wellbeing within dried fish value chains: insights from Sri Lanka, Ocean & Coastal Management 240:106658

<sup>3</sup> Lokuge, G. & Hilhorst, D. 2017, Outside the net: Intersectionality and inequality in the fisheries of Trincomalee, Sri Lanka. Asian Journal of Women's Studies 23:4, 473-497.

<sup>4</sup> Pacific handbook for gender equity and social inclusion in coastal fisheries and aquaculture. Pacific Community (SPC), 2019.

<sup>5</sup> Lau, C & Ruano-Chamorro, C, June 2021, Gender Equality in Coral Reef Socio-ecological Systems: A Literature Review.

The SLCRI has been established through wide stakeholder consultation. Key implementing partners have been identified through national, regional, and local-level stakeholder consultation sessions during the programme preparation. A detailed stakeholder engagement strategy has been developed during the programme preparation and included in the programme document, to establish a strong stakeholder platform for successful implementation of the SLCRI programme.

The SLCRI programme's design unfolds as a unique approach, linking the distinctive threads of both bottom-up and top-down approaches through the Public-Private-People Partnerships (PPPPs). In this collaboration, the bottom-up approach is primarily led by the private sector and Community Conservation Groups (CCGs) including Community-based Organizations and Fisheries Cooperative Societies which are guided by the technical expertise of the Forum for Ecosystem Management and Advocacy (FEMA) and the support of CPBSF. Notably, CCGs undertake a central role, backed by financial, investment, technical and business support from grant, private sector, and impact investors. The SLCRI's stakeholder engagement plan is developed to foster a sense of shared ownership, where local communities and external partners join forces to strengthen protection of coral associated priority seascapes of Pigeon Island, Kayankerni and Bar Reef MPAs along with satellite coral reefs clusters.

Simultaneously, the top-down approach of SLCRI will be led by the FEMA and CPBSF along with the other government agencies. This focus is to provide high-level guidance on programme governance, implementation designs and monitoring frameworks. The hybrid arrangement will be helpful to propel the programme towards comprehensive transformation, resonating with a cohesive progress. Furthermore, this stakeholder engagement mechanism will create a diverse array of business ventures, fostered by innovations and cutting-edge technologies. The programme is designed to emerge the investors as a catalyst for change by advancing the broader objective of the SLCRI.

As the SLCRI embarks on this transformative change, the stakeholder engagement plan will further be expanded by inviting stakeholders from all corners to build collaborations and shared aspirations.

## **V. Resource Mobilisation**

The programme aligns with the GFCR's blended finance approach to unlock additional financing and catalyzing sustainable revenue streams for reef-positive practices and intends to collaborate with the GFCR Investment Fund manager - Pegasus Capital Advisors (PCA). SLCRI Programme's leverage target ratio of GFCR grant to investment capital is 1:4, and it is expected to rely heavily on the grant funding especially during its phase I, while sustainable revenue streams through blended financing, will make the programme self-sustaining towards the Phase III. The SLCRI expects USD 6 Million as the total grant funding, with USD 1.5 Million for the phase I, while USD 24 Million is expected to be generated as investment for the full project which includes co-financing of USD 9 Million. The co-management committees are expected to be well established with sustained finances through the operation of the CORALL (Conservation of Reefs for All Life and Livelihoods) Conservation Trust Fund (CCTF) and continued technical assistance from self-sustained Coral Positive Business Support Facility (CPBSF) as well as the seascape-specific Forum for Ecosystem Management and Advocacy (FEMA) sub committees by the time the programme comes to its end in 2030. Despite the current economic crisis Sri Lanka is currently facing, IUCN SL have been able to secure co-financing commitments totalling closer to USD 9 Million not only from government agencies such as the Coast Conservation & Coastal Resources Management Department (CC&CRMD), the Department of Wildlife Conservation (DWC) and the Ministry of Environment (MoE), but also from the Business Sector and NGO partners such as the Blue Resources Trust (BRT) and the Biodiversity Sri Lanka (BSL), in addition to a number of ongoing and upcoming



projects in the coastal and marine sector with overlapping interests with the SLCRI. More challengingly a total of USD 15 Million is anticipated from investment capital that is planned to be met through impact investors and similar entities. Impact Investment Exchange (IIX) is one such entity that have links with the PCA and International Institute for Environment and Development (IIED) is another with whom IUCN is currently in dialogue with. We also have had discussions with PCA (represented by Deliberate Capital) when they visited Sri Lanka to explore potential for investments in coastal aquaculture/mariculture, preliminary ideas have already been exchanged on mariculture in Trincomalee district (where the Pigeon Island Landscape is) with Oceanpick Pvt Ltd. There were other initial ideas such as Atman Group's interest on seafood, leisure, and energy in coastal areas. In addition to above mentioned entities, initial discussions/consultations have been already conducted with IUCN HQ and Regional Office in making connections with right parties. There were number of Sri Lankan initiatives including Serendib Assets, Lanka Impact Investment Network and Centre for Smart Future (CSF) etc. Furthermore, discussions with HSBC and DFCC Banks are also likely to invest on SLCRI, as both those entities are GCF accredited private sector entities for concessional loans.

## **VI. Communications and Visibility**

The overarching objective of the communications and awareness building is connecting all SLCRI stakeholders around the programme objectives. The main objective of the awareness building and communication strategy for SLCRI is to develop a sound understanding of all stakeholders about the importance of coral reefs, threats which coral reefs are facing, their value for the development and sustainability of livelihoods and the importance of conserving coral reefs, especially in priority coral reef sites. To achieve programme outcomes, its communication and awareness component is segregated below into specific communication related objectives to better target the different segments.

These objectives are;

- i. National level stakeholders are integrated into coral reef conservation and restoration at policy level, and to promote the concept of co-management at the seascape level.
- ii. Stakeholders involved in co-management in seascapes, are made aware to facilitate implementation of co-management plans at seascape level with a multi-stakeholder approach and sustainable financing mechanisms.
- iii. All community stakeholders are empowered and motivated to conservation of priority coral reefs by eliminating unsustainable and destructive activities.

Main achievements:

Established partnership with TV Derana - Derana Macro Entertainment (Pvt) Ltd ([www.derana.lk](http://www.derana.lk)), which is one of the leading TV channels in Sri Lanka to promote SLCRI and Coral Conservation.

- Production of education and awareness materials to promote SLCRI.

## **VII. Risk Management and Mitigation**

Contextual, programmatic, institutional, and fiduciary risks for SLCRI have been identified with no high ratings, and a mitigation plan has also been provided in the [Programme Document](#). SLCRI is designed with the engagement of all stakeholders through a thorough consultative process, with strong support from local communities, while IUCN will work closely with implementers to ease any contextual risks of the programme. Furthermore, building resilience of coral reefs and associated ecosystems will help these

systems bounce back from external shocks include climate change, while there are social safety nets proposed to support community resilience.

Programmatic risks are to be managed through the implementation of co-management that has already been discussed in detail with key stakeholders while all has agreed to it as the best way forward. SLCRI is also expected to provide long-term sustainability that will also help in building back local economies. Ongoing discussions have increased the confidence that a viable and sustainable coral positive pipeline can be developed through the course of the programme.

IUCN will work closely with all agencies engaged in governance mechanism to address issues as they arise, to minimise any Institutional risks, while capacity building and hand holding would support CBOs and local NGOs in taking up responsibilities. Fiduciary risks are to be managed through financial discipline to be ensured by IUCN's strong project oversight as the convening agent.

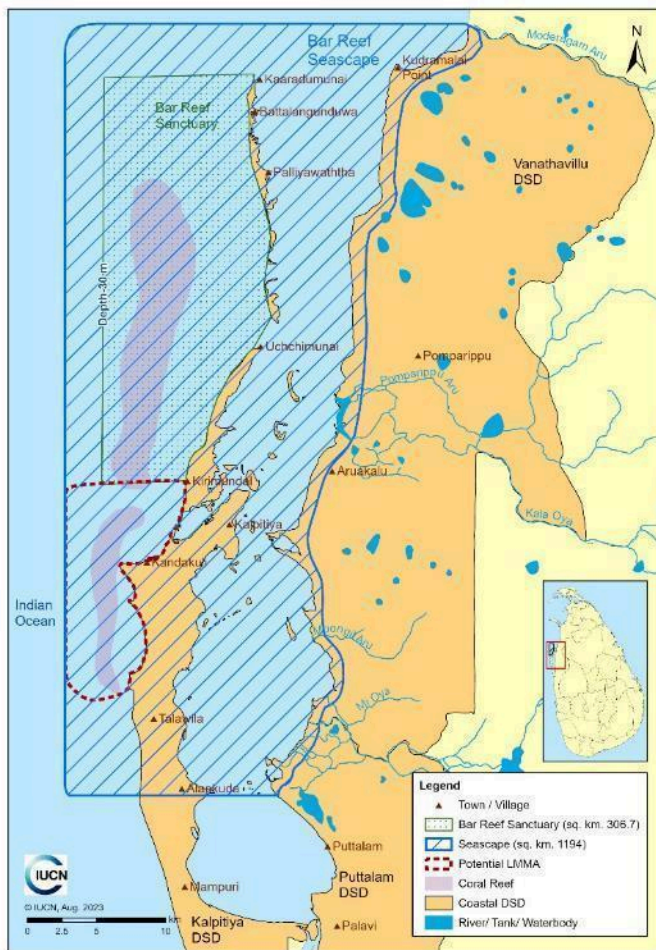
## **VIII. Adaptive Management**

Monitoring, evaluation and results framework and programme risk management plan will be used to evaluate project implementation success. Further mid-term monitoring will facilitate adaptive management and further decision-making regarding investments.

## IX. Annex A: Priority Sescaeapes of SLCRI

### *Priority site 1: Bar Reef Sanctuary & Seascape*

The Bar Reef Seascape is in the Puttalam District in the Northwestern Province. It covers 1194 km<sup>2</sup> including the Bar Reef Sanctuary and the Dutch Bay of Puttalam Lagoon (Figure A1). The seascape has a unique setting with a variety of ecosystems, including coral and sandstone reefs, seagrass meadows, mangroves and sand islands (Dayaratne et al., 1997). The government has declared the Kalpitiya Peninsula and its environs as a tourism development area (UDA, 2019) and the SLTDA has initiated the Kalpitiya Tourism Development Plan. The Bar Reef Sanctuary covering an area of 306.7 km<sup>2</sup> was declared on 3<sup>rd</sup> April 1992 (Gazette No. 708/24) under the Fauna and Flora Protection Ordinance. Further to that, it has been recognised as a Protected Area established under IUCN Management Category IV (WDPA ID:62936) (Bröker and Ilangakoon, 2008; Google, 2023). There are many patch reefs and sandstone reefs scattered throughout the coastal waters of this particular seascape. In addition to the coral reefs there are extensive seagrass meadows and mangroves in the Puttalam Lagoon which is part of the seascape. This setting is unique in Sri Lanka where three of the main sensitive marine ecosystems occur.



**Figure A1:** Map of the Bar Reef Seascape and the Kalpitiya Peninsula in the North-western Province including the Bar Reef Marine Sanctuary and the Kandakuliya potential LMMMA, also showing the major coral reef areas along the north-western coast of Sri Lanka

### **Coral reef habitats in the Bar Reef Sanctuary**

The early scientific surveys of the Bar Reef were conducted by NARA in 1989 & 1990, which led to the declaration of the BRS in 1992 by the DWC under the FFP0. Coral and sandstone/limestone reef habitats are found on Bar Reef. The nearest coral area to the shore is located about 2 km offshore on the west of the Kalpitiya Peninsula. The shallow coral patches lie within a depth range of 1 to 10 meters, whilst the platform type sandstone reefs occur from 12 to 30 meters depth. The live coral cover among the shallow coral banks was over 70% in mid-1990s (Dayaratne et al., 1997). Most of the live corals were lost during the 1998 coral bleaching event (Rajasuriya and Karunarathna, 2000; Wilkinson, 2000), however, the shallow coral areas recovered relatively well, and the live coral cover was 40.76% in 2004 (Rajasuriya, 2005). Another relatively major bleaching event in 2016 destroyed most of the corals that grew well after the 1998 bleaching event, resulting in low coral cover and poor fish life in shallow coral patch reefs.

Two surveys were conducted in April and December 2022 on the shallow coral patches of Bar Reef and at Kandakuliya by the Environmental Foundation Limited (EFL) (Kumara, 2022). These two surveys revealed that the combined live coral cover for seven shallow patch reefs at the Bar Reef was 16% in December 2022. The reef at Kandakuliya located within the Bar Reef seascape had a live coral cover of 44% in December 2022. Comparison with a previous survey done by EFL in April 2022 at the same reef sites there was an increase of 3.74% in live coral cover among the shallow coral patches of Bar Reef up to December 2022, while a similar comparison of the Kandakuliya reef showed an increase of 32.01% (Kumara, 2022). This rapid increase of live coral cover, especially at the Kandakuliya reef which is within the seascape clearly showed the resilience of the hard corals in this seascape and the recovery of the reef habitats from the last major bleaching event through coral recruitment and growth of existing coral colonies.

These survey results match the observations of the sport diving community on the corals within the seascape support the argument that Bar Reef seascape can be considered a climate refugia. According to the sport diving community [Pers. Comm. Samith Fernando, of Kalpitiya Diving Centre (<https://kalpitiyadivingcenter.com/>)] the patch reefs in 10-to-15-meter depth range is healthy and recovering well and will also serve as sources of larvae for reef recovery in the shallow coral areas that were severely affected in 2016.



### Priority site 2: Kayankerni Marine Sanctuary & Seascape



**Figure A3:** Map of the Kayankerni Seascape including the Kayankerni Marine Sanctuary and potential LMMAs in Passikudah-Kalkudah and Sallitivu, also showing the major coral reef areas along eastern coast of Sri Lanka.

#### **Coral reef habitats in the Kayankerni Sanctuary**

The Kayankerni reef consists of mixed coral habitats within a depth range of 1 to 9 m. There are three main sections of coral reef at Kayankerni. The headland to the south of Thennadi Bay known as the Elephant Point has an apron reef with mixed coral communities surrounding the headland. A submerged shallow coral area is present around a rock outcrop in the centre of the bay where large stands of *Echinopora lamellosa* and *Montipora aequituberculata* were present. Another coral area called the Sand Island lies to the northeast of the coral patch in the centre of the bay. This area is a submerged shallow coral reef. The reef crest consists of branching and tabulate *Acropora* spp. while the northern and southern side of this section consists of massive corals such as *Porites*, *Diploastrea*, *Favia* and *Favites*. The seaward margin has a spur and groove formation. The reef was significantly affected during the 2016 coral bleaching event where about 60% of the corals were lost (Perera, 2019). The reef was severely bleached again during a localized bleaching event in 2019-2020, which caused a major loss of live corals (Painter et al., 2023). Invasive algal overgrowth resulted immediately after the high coral mortality and the presence of invasive encrusting sponges was also observed during surveys. However, this invasion of algae was present for a short period and recent surveys conducted by BRT/IUCN in 2023 revealed that most of algae were not present and there is new coral recruitment and some table corals have already reached a diameter of about 30 cm. The reef is recovering relatively well from the bleaching event and the live coral cover is at KS is 35.8%. Although branching *Acropora* was the dominant coral type, there was significant coverage of tabulate *Acropora*, foliose *Echinopora*, and massive *Porites* domes (BRT/IUCN, 2023).

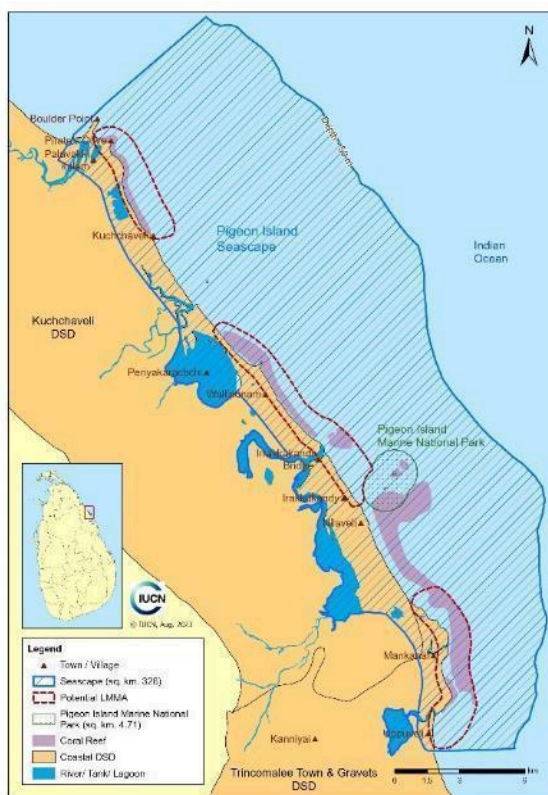


**Figure A4:** Healthy corals around Kayankerni Sand Island (Picture; Blue Resource Trust)

### Priority site 3: Pigeon Island Marine National Park & Seascape

The rocky seabed of Trincomalee supports extensive reef habitats, the majority of which are large boulder type reefs of crystalline rock. Coral reefs are few, and their distribution is scattered along the coast. Including Pigeon Island and Coral Island, the main coral reefs are located in Nilaveli, Duch Bay, Back Bay, Coral Cove, Foul Point, and along the coast south of Foul Point to Batticaloa (Rajasuriya and Premaratne, 2000; Rajasuriya et al, 2005). The Pigeon Island seascape includes the area from Uppuveli to Kuchchaveli in the Trincomalee District Figure A5. Fringing coral reefs are scattered along this coastal stretch. The Pigeon Island Marine National Park (PIMNP) is located at Nilaveli within this seascape. Pigeon Islands National Park (PINP) is one of the three Marine National Parks in Sri Lanka, with coral reefs being the major habitat protected. PINP is located 1 km off shore of the Nilaveli beach in the Trincomalee District, Sri Lanka (80 45'0" N and 810 9'0" E to 80 36'0" N and 810 14'0" E).

Pigeon Island was first declared as a sanctuary under the Fauna and Flora Protection Act (FFPA) in 1974 to protect the nationally endangered Wild Rock Pigeons (*Columba livia*) that roost on the islands. The sanctuary did not include the surrounding marine environment. The Pigeon Island Sanctuary was upgraded to a Marine National Park on 4<sup>th</sup> June 2003 (Gazette No. 1291/16). The Pigeon Island Marine National Park (PIMNP) consists of two small islands (large and small Pigeon Island) and the protected area covers 471.4 ha which includes a core and a buffer zone. The core area includes the two islands and the coral reefs around them. At present the main conservation objectives are to protect the coral reefs within the PIMNP and the nationally endangered Wild Rock Pigeons (DWC 2017).



**Figure A5:** Map of the Pigeon Island Seascape including the Pigeon Island Marine National Park and potential LMMAs in Uppuveli, Irakkandi and Kuchchaveli, also showing the major coral reef areas along the north-eastern coast of Sri Lanka

### **Coral reef habitats in Pigeon Island Marine National Park**

Being the second largest marine national park in the country, the Pigeon Island National Park provides home to an extensive range of fringing coral reefs, seagrass beds, mangrove and reef fish (Perera and De Vos, 2007). Coral reef and rock reef habitat are present within the PIMNP. The main coral reef is located on the southwestern edge of the large Pigeon Island. It is about 200 m long and 100 m wide and has a depth range from 1 to 7 meters. The small Pigeon Island has only a few small coral patches around it. Coral reefs of the PIMNP were destroyed in the early 1970s by an invasion of the Crown-of-Thorns (COT) starfish (*Acanthaster planci*) that affected many reefs in the northwestern and eastern coastal waters. The reefs recovered after the removal of COT by the Department of Fisheries and Aquatic Resources. Thereafter the major impact on coral reefs in the Trincomalee area was due to the coral bleaching event in 1998. However, corals in PIMNP were not bleached in 1998 (Rajasuriya & Karunarathna, 2000; Rajasuriya, 2005). They were also undamaged during the Indian Ocean tsunami in 2004 (Rajasuriya et al, 2005). Corals were bleached again in 2010 in Trincomalee including the PIMNP. However, most corals recovered a few months later. Intermittent bleaching events that caused partial bleaching of corals have been observed during the past decade, however, relatively quick recovery has also been observed. This phenomenon may indicate that corals are adapting to repeated bleaching events where the SST increases are short lived. The coral reef of the PIMNP consists mainly of branching and tabulate *Acropora*, *Montipora* species and massive corals (Faviidae, Poritidae and Mussidae). The live coral cover of the Pigeon Island shallow coral reef was 51.3% in 1999 and was dominated by branching and tabulate *Acropora* spp. (Christoffels et al., 2000). Although the reef has been bleached occasionally it has always recovered with branching and tabulate *Acropora* species (Perera and Kotagama, 2016., BRT/IUCN 2023). The PIMNP had a live coral cover of 54.4% in 2003 (Rajasuriya et al, 2005) and 21% in 2013 (Perera and Kotagama, 2016). A survey conducted in 2023 revealed that the live coral cover is 46.5% (BRT/IUCN 2023) indicating a higher resistance to global climate change.



**Figure A6:** Corals in Pigeon Island National Park (Picture; Naalin Perera)



## C. References for Annex A

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