

# The Legal Protection Of Coral Reefs In Sri Lanka: A Comparative Analysis With International Standards

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**Abstract**— Sri Lanka, being an island, has an abundance of coral reefs and reef ecosystems situated around the country. However, they are currently under the threat of rapid deterioration due to adverse human activities. Even though this deterioration is happening in an alarming rate, it does not receive the necessary attention of the society. This paper seeks to analyze the Sri Lankan legal framework on the protection of coral reefs to ascertain whether it provides a satisfactory framework to protect the coral reefs situated around the country against the threats of damage. In doing so, the research will compare Sri Lankan law with international standards to determine the lessons for law reform. The methodology of this paper is mainly based on the black letter approach and data is gathered from both primary and secondary sources. This study concludes that the Sri Lankan legal system is inadequate to address the threats faced by coral reef ecosystems which escalates the destruction and thereby, recognizes the importance of adapting from international standards to the Sri Lankan legal system to preserve these invaluable resources for the future generations.

**Keywords**— Coral Reef Protection, Sri Lankan Legal framework for protection of corals, International Standards of protecting corals

## I. INTRODUCTION

Coral reefs are a part of environment. Corals are considered as a species of invertebrates that lives as a colony. Each coral is made from an individual organism called a 'polyp'. 'Coral reefs are formed when calcium carbonate cups of many billions of these polyps fuse together.' (Miththapala, 2008) 'Coral reefs provide habitats for a large variety of organisms.' (Monagurusamy and Dhanasiri, n.d.) 'Coral reefs protect the shoreline, providing a physical barrier – a wall –against tidal surges, extreme weather events, ocean currents, tides and winds.' (Miththapala, 2008) Other than that, coral reefs are immensely important to human beings as they provide livelihood for them. Providing sea food (specifically fish) and acting as a tourist attracting area are important in this regard. 'Many species of coral and species associated with coral reefs have medicinal values.' (Miththapala, 2008) Due to the excessive usage of these resources, coral reefs are facing an imminent threat of

extinction. Thus protection of coral reefs has become a necessity at present.

As an eco-system, coral reefs perform a range of invaluable functions. 'Corals act as a home to a variety of species of plants and animals thus, constituting an important link in the marine biodiversity.' (Sehgal, 2006) According to reports, '27 per cent of the world's coral reefs have been lost and it is estimated that another fourteen per cent will be destroyed in the next ten to twenty years.' (Sehgal, 2006) 'The main reason for this is the over consumption of the resources through means such as excessive fishing, irresponsible tourism, coral mining and ocean pollution.' (Sehgal, 2006) The protection given to coral reefs can be identified as inadequate as a whole. 'Though, the international community has already begun to address the crisis in the last decade, the efforts have not had any effect to stave off the large-scale disappearance of coral reefs.' (Sehgal, 2006) Sri Lanka as a country surrounded by corals has also implemented various laws to protect these natural ecosystems. Even if laws exist in Sri Lanka, destruction of coral reefs has not ended, it continues rapidly even at present. The most prominent reasons for this are the lack of a proper legal framework that addresses the threats faced by coral reefs in a proper manner and the lack of a proper responsible body for the protection of coral reef ecosystems as a whole.

Therefore this research mainly aim to perceive whether the laws existing in Sri Lanka are adequate to protect the coral reefs from the threats they face at present. The Sri Lankan legal framework is compared with the current international standards in order to recognize the shortcomings of the Sri Lankan framework to address this issue.

## II. METHODOLOGY

The research was carried out as a library research adopting the black letter approach. The main purpose of using a black letter approach was to get a broader understanding about the existing laws in Sri Lanka regarding the protection of Coral Reefs and also about the International standards and the International legal framework of protecting Coral Reefs. This was conducted by collecting data through various primary resources such as relevant legislations, international conventions and judicial decisions and secondary resources such as research articles, books with critical analysis, journal articles and other electronic resources.

This research was carried out as a comparative analysis between Sri Lankan legal framework and the recognized International standards. International standards were selected due to its comprehensiveness and accuracy in addressing the issue of protecting coral reefs, thus enabling these standards to be adapted in to the Sri Lankan legal framework.

### III. IMPORTANCE OF CORAL REEFS AND THREATS FACED BY CORAL REEFS GLOBALLY AND WITHIN SRI LANKA

Coral reefs are regarded as one of the most important and largest living eco-systems of Earth despite covering only 0.1 percent of the ocean floor. 'De facto, coral reefs house over a quarter of all marine biodiversity, providing food and also livelihoods for the local populations.' (Scocca, 2020) When considering about the global situation, majority of the coral reefs are found between the Indo-Pacific and Central Pacific Region. A lesser percentage of the reefs are found within the Caribbean and Atlantic region.

Coral reefs are considered to be providing homes to various species of animals and plants under the ocean. 'Coral reef ecosystems have the largest biodiversity per unit of area on Earth. Although only 93,000 coral reef species have been catalogued, one scientist estimates there are at least 950,000 and possibly up to nine million.' (Kushlan, 2009) Fish that are inhabiting in the coral reef eco-systems are considered to be a vital part of the delicate food chain existing within that specific eco-system. Thus, any damage which is done to coral reefs or any of the species living in coral reefs can destroy the balance within the eco-system. As a result of providing shelter for Zooxanthellae, the primary productivity of coral reefs is considered to be high. Coral reefs also provide protection to the shoreline. It acts as a physical barrier against harsh waves, extreme weather conditions, tidal surges and ocean currents. This protection results in prevention of coastal erosion and flooding.

Other than these uses, coral reefs provide support to the life and livelihood of humans. When considering about the economic importance of coral reefs, it can be discussed under three areas. They are, fisheries, tourism and medicinal. 'Nearly 500 million people depend directly and indirectly on coral reefs for their livelihoods, food and other resources.' (Miththapala, 2008) Marine fisheries take a huge role in this. People all around the world consume fish. Thus, many people around the coastal areas depend on fishing as their main livelihood. Other than fishing, another main income gained through coral reefs is tourism. Coral reefs provide a big income for the coastal communities. Coral reef exploration, diving, snorkeling and glass bottom boating are among the most famous attractions among the tourists. Other than the local community, the tourism industry is able to gain profit from providing tourists with facilities to explore the corals. Medicinal value of coral reefs is a lesser known function but a very important one. 'An example is a chemotherapy drug called Ara-C that helps battle leukemia. Ara-C is made from chemicals found

in a sea sponge that has its home in the reefs of the Caribbean Sea.' (Cremers, 2018)

Despite having immense ecological and economic importance, Cora Reefs are facing rapid destruction. 'In Southeast Asia, 38% of 91,700 km<sup>2</sup> of coral reefs have been destroyed, another 28% are critically threatened and 29% are threatened. Only 5% are at low risk from human activities.' (Miththapala, 2008) The threats faced by coral reefs can be identified in two different kinds. They are the global threats and the direct local threats.

When considering about these threats, a main threat faced by coral reefs can be recognized as the climate change. Due to the rising of the temperature of the atmosphere, the temperature levels of the oceans have also been rising. This rise of temperature has results in coral bleaching. 'Coral bleaching is a phenomenon where corals eject or dispose of algae, called zooxanthellae because they are under severe stress.' (Cremers, 2018) 'Bleaching does not result in the death of corals, but long term continuation of bleaching causes the death of corals.' (Cremers, 2018) This phenomenon has affected the coral reefs around Sri Lanka too. According to the report submitted by National Aquatic Resources Research Agency to the parliament in 2017, 'in Sri Lanka, coral bleaching was heavily recoded in 1998-1999 and 2015-2016 which was coupled with el-Niño years.' (National Aquatic Resources Research & Development Agency, 2017) It also recorded that the recovery of such affected corals has been slow and in some areas non-existent. Other than climate change emission of greenhouse gases, ocean acidification have also been recognized as threats to coral reefs.. Acidification of the sea water mainly results in the bleaching of corals. The X-Press Pearl disaster which released nitric acid to the sea increased the threat of coral bleaching around that area.

Overfishing is considered to be one of the most harmful threats that could locally occur to the coral reefs. Excessive fishing of a specific type of fish can gravely affect the balance of the coral reef eco-system. Species balance within the marine food web is an essential factor the maintenance of the proper health of coral reefs. 'In Sri Lanka, most of the coastal fish resources are threatened by overfishing; particularly the excessive removal of large algal-grazing fishes decreases reef resilience, as herbivores play an important role by limiting the establishment and growth of algal communities.' (National Aquatic Resources Research & Development Agency, 2017) Other than that, the fishing gear used to fish, such as nets, hooks and fishing lines result in damage to the reef structures. Blast fishing is also considered as a grave threat to coral reefs as they can destroy the coral reefs and also every marine organism within it. 'Barrier-type reefs are found in Colombo and the Negombo region. Most reefs near the shore are affected by human activities, including destructive fishing and coral mining.' (X-Press Pearl disaster: Colombo's coral reefs, marine wildlife in danger, 2022)

Pollution is another major problem that affects the health of the coral reefs. It can be divided in to land based pollution and marine based pollution. When considering

about land-based pollution the main pollutants include sewage waste, factory waste, various oils and chemical waste and other waste from coastal development. 'Pollution caused by sewage is extremely widespread, 96 percent of the places where both humans and coral reefs reside have problems with sewage pollution. Sewage finds a way into the oceans either as treated or even untreated discharge.' (Cremers, 2018) When considering about Sri Lanka, plastic pollution also has a huge impact on coral reefs. Marine based pollution is caused mainly through oil leakage, dumping of solid waste from ships to the ocean and also discharging of ballast water. Oil pollution can occur in several ways. It can be either an accidental spill, leakage from vessels or discharge of used oil to the sea from ships. A recent example for such threat is the incident of the ship "New Diamond". The "Pearl Express" disaster which happened in May 2021 resulted in huge marine pollution. 'The ship was carrying 1,486 containers including 25 tonnes of nitric acid, an estimated 78 tonnes of plastic pellets and other hazardous cosmetic material.' (X-Press Pearl disaster: Colombo's coral reefs, marine wildlife in danger, 2022) The oil spill resulted in making serious damage to coral reefs by cutting off light and oxygen. These spills can affect the corals in several ways such as, affecting the growth, productivity and mortality of the corals.

Therefore, it is evident from the recent incidents that these destructive and harmful human activities to be controlled properly to prevent both direct and indirect harms faced by coral reefs in general.

#### IV. INTERNATIONAL STANDARDS

'*United Nations Convention on the Law of the Sea (UNCLOS), 1982* sets forth the leading regulation of the use of the marine environment and its resources.' (Scocca, 2020) Articles 56 and 57 of the Convention recognizes that, coastal states are given sovereign rights in an exclusive economic zone up to 200 nautical miles.

Article 61 of the Convention states that the coastal state has the authority to determine the allowable catch of living resources while ensuring proper conservation and management measures within the Exclusive Economic Zone so that the resources within the zone are not endangered by over-exploitation. Harvesting should be done with the view of maintaining or restoring populations which are necessary to survive.

Article 192 phrases that, 'States have the obligation to protect and preserve the marine environment.' (UNCLOS) Further Article 193 declares that the states have the sovereign right to exploit natural resources, but in accordance to their environmental policies and in accordance with duty to preserve marine environment. Article 194 imposes a duty upon the states to take appropriate and necessary measures to prevent, reduce and control pollution of marine environment. Article 194(3) recognizes that the measures taken shall deal with all the sources of pollution in the marine environment. Further, article 194 (5) states, 'The measures taken in accordance with this Part shall include those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of

depleted, threatened or endangered species and other forms of marine life.'(UNCLOS)

*Convention on Biological Diversity 1992* has set out three main goals under its objectives. They are, conservation of biological diversity, sustainable use of components of biological diversity and a equitable and fair sharing of the benefits of genetic resources.

The preamble of the convention states, 'where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.' (CBD) This mainly highlights the precautionary principle. The lack of scientific evidence should not be considered when the measures to be taken are decided.

Article 3 of the convention specifies that, the states have the sovereign right to exploit their resources in accordance with the environmental policies of their countries but, the state has the responsibility to not to damage the environment of their country or to areas beyond the country's jurisdiction.

Article 7 of the CBD provides for identification of components of biological diversity which are important and should be sustainably used and monitoring those while 'paying particular attention to those requiring urgent conservation measures and those which offers greatest potential for sustainable use.'(CBD)It provides for 'protected areas and areas where special measures need to be taken to conserve biological diversity.'(CBD) Further it states that specific regulations for protection and conservation and also sustainable development of the biological resources are to be taken.

*Convention on International Trade in Endangered Species (CITES), 1973* mainly provides for the protection of endangered species from extinction by regulating their international trade. The species governed by CITES are specified under three annexes.

Parties to the convention have to establish a separate management authority and a scientific authority in order to execute the convention. The management authority shall be responsible for issuing relevant permits for the listed species in CITES.

Article 8 of the convention imposes a duty upon the parties to take appropriate measures to enforce the provisions of the convention to prohibit trade of species, 'to penalize trade in, or possession of, such species, or both' (CITES) and 'to provide confiscation or return to the state of export of such species.'(CITES)

*United Nations Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972*

provides for protection of coral reefs in a different aspect. The convention is governed under United Nations Educational, Scientific, and Cultural Organization ('UNESCO'). Under this convention, an Intergovernmental Committee for the Protection of the Cultural and Natural Heritage of Outstanding Universal Value maintains a "World Heritage List" containing natural and cultural heritages of the states concerned. The list

contains 160 natural properties around the world. Out of the 160, eleven of the sites are coral reefs. Sri Lanka also has one site included in the list, that is Gulf of Mannar.

Article 4,5 and 5(d) of the convention states that, each state party to the convention has the duty of ensuring identification, conservation, protection and rehabilitation of these by ensuring effective legal, technical, scientific administrative and financial measures are taken to conserve and protect the natural heritage situated on its territory.

#### V. GAPS IN THE SRI LANKAN LEGAL FRAMEWORK WHEN COMPARED WITH THE INTERNATIONAL STANDARDS

When the Sri Lankan legal framework is analyzed with the International standards, it's apparent that the Sri Lankan legal framework has various loopholes regarding protection of the coral reefs.

As one of the main legislations regarding protection of coral reefs, Fauna and Flora Protection Ordinance and its amendments has several limitations to the protection of coral reefs. Section 31B of the act deals only with the harms which are done knowingly. It does not deal with harms that are caused due to negligence. Most of the damages which are done to the coral reefs happen as a result of negligence. Such damages are ignored in this. Other than that, Schedule IVA specifies the species of coral that are given protection under section 31B. It does not provide protection for any species of coral that are not specifically mentioned under schedule IVA. Section 40 only prohibits exportation of the coral species, it does not specify a punishment for such act or attempt. Under the Customs Ordinance such act is only punishable through a fine. Paying fines is not effective in order to control exportation. Further, section 40 specifies that the section is not applicable to corals which aren't indigenous to Sri Lanka. Coral reefs are not formed only with indigenous corals to Sri Lanka. It comprises of various classes and species of corals. Such corals do not get any protection under the act. Thus, coral reefs as a whole are not secured. When comparing with International standards UNCLOS III specifically states that, even if the natural resources are within the exclusive jurisdiction of the specific state, the state has to implement means and measures to the management and conservation of the marine resources. This includes the harms that are caused due to negligence and any act done knowingly. It's the responsibility of the state to prevent any kind of harm that happens to the coral reefs. CBD states that when there's a threat to the biological diversity, all measures should be taken in order to protect those resources. As each and every type of coral is part of the same eco-system, conservation should be done covering all the parts of the eco-system. It is further provided in the convention that, in areas where urgent conservation is necessary, special measures are to be taken. Thus, imposing punishments to people who violate laws become important as conservation of coral reefs is an urgent necessity at present. CITES requires, separate management authority to be established in order to issue permits for trade of the listed species. But when considering the Sri Lankan context, it is only governed by the Customs Ordinance. Also, article 8 of the convention requires to

penalize trading or possession of any species mentioned in under the convention. The Sri Lankan Act only mentions about fines.

Fisheries and Aquatic Resources Act No. 2 of 1996 is another act which contains provisions regarding protection of coral reefs. When considering about the limitations within the provisions, it can be observed that, the provisions are broad and due to that the protection is limited. The term "aquatic resources" which acts with a wide scope limits the protection that is specifically necessary for coral reef protection. Other than that, the powers of minister in order to declare fisheries reserves are discretionary. They are not considered to be mandatory. When considering about section 37, even though it prohibits several acts to be conducted within a reserve, it does not state any method or punishment to a person who might contravene with the provisions. Comparing this act to the international standards, it can be observed that, The World Heritage Convention has established an Intergovernmental Committee for the Protection of the Cultural and Natural Heritage of Outstanding Universal Value rather than giving sole discretionary power to one person on decision making on natural resources. CBD imposes a responsibility upon the state to not damage the environment while exploiting for the resources. Thus, minister having discretionary powers to decide upon the necessity of taking necessary steps imposes a huge threat upon the coral reefs.

Coast Conservation Act also has several limitations when considering about protection of coral reefs. The section 31A only deals with breaking of corals. Any other damage caused to the corals such as pollution, overfishing or irresponsible tourism is not recognized. Thus, the scope of protection provided for coral reefs is limited. When considering Marine Pollution Prevention Act's capacity to protect coral reefs, it is evident that the protection given to coral reefs is insufficient as the act mainly deals with pollution. Taking all the conventions in to account, they do not specify a specific harm that could occur to the natural resources. Accordingly, they all mention about any kind of harm that could occur due to any activity of human kind that would result in the damaging of the natural resources. UNFCCC requires the parties to take necessary precautionary measures to anticipate, prevent or minimize the causes of climate change. It doesn't specify regarding one kind of pollution.

#### VI. RECOMMENDATIONS

Thus, it is evident that these above-mentioned legislations governing the coral reef protection should be amended in order to update and widen the scope of protection of coral reef eco-systems as a whole. Offences should be made cognizable and conservation and sustainable development should be given vital importance to ensure that all the matters are dealt with in a more timely manner.

As the main governing legislature for protecting corals, FFPO (amendment) Act 49 of 1993 should be further amended. Section 31B of the act should widen its scope to address the involuntary damages caused to the coral reefs which are harmful. Schedule IVA of the act where only several specific species of coral are identified should be

amended and more species of corals should be added. Section 40, where exportation of corals is prohibited only if those species are indigenous should be extended to any species of corals without any discrimination to indigenous species and other species. Further, penalizing any such activity with fines and imprisonments according to the degree of the offence should be promoted.

Under FAR, Fishing within areas containing corals should be made more restricted. Issuing of permits or licenses when fishing in such areas should be made necessary. Harms caused to coral reefs due to irresponsible tourism activities such as snorkeling, diving and boat rides should be addressed.

Further, the discretionary power to declare any area as a reserve should be removed from the minister and the authority should be given to a committee of experts who has extensive knowledge of natural resources and the threats faced by them.

Other than amending the existing laws on protection of corals, novel measures should be taken. A national strategy and programs should be implemented for conservation of corals as according to UNCLOS III. Conservation should be done in accordance with national policies of environment. Through researches, various zones should be identified that requires urgent protection and others which do not require such protection. Based on these zones, various degrees of protective restriction on each zone could be implemented. Special measures should be taken to protect the world heritage listed reef eco-system in Mannar as Sri Lanka is obliged to take effective and active measures to protect the listed sites.

Further, the impacts caused as a result of land based and marine based activities should be recognized. Laws should be implemented in order to regulate such activities which affect the health of coral reefs. Through such preventive and precautionary measures over use and exploitation of these natural resources could be regulated and controlled.

## VII. CONCLUSION

From acting as an invaluable eco-system and providing habitat for numerous species of marine organisms to providing livelihood and food supplies to human beings, coral reefs provide many benefits to the world as a whole. Sri Lanka being a country surrounded by ocean contains many coral reef eco-systems that should be conserved. Even though Sri Lanka is a signatory party to various environmental conventions protection provided for coral reefs in Sri Lanka is not sufficient. As a result of these issues, coral reefs are in danger of depleting in a fast rate. It is evident when analyzing the legal framework, that sustainable exploitation of the resources has not been recognized within Sri Lanka.

Further, proper implementation procedures and enforcement procedures have not been recognized either. There are several barriers within the implementation procedure. which results in inefficiency when protecting coral reefs. Authorities have a major responsibility of taking necessary action in order to protect coral reefs as a whole.

Finally, it can be concluded that, Sri Lanka should move forward towards a more effective and coherent legal framework while incorporating the international standards to the legislature to conserve the coral reefs in a sustainable manner.

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#### ABBREVIATIONS AND SPECIFIC SYMBOLS

CBD - Convention on Biological Diversity

CITES - Convention on International Trade in Endangered Species

FAR - Fisheries and Aquatic Resources Act

FFPO - Fauna and Flora Protection Ordinance

SAM - Special Area Management

WHC - World Heritage Convention

UNESCO -United Nations Educational, Scientific, and Cultural Organization

UNCLOS – United Nations Convention of Law of the Sea

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