

Issue Introduction

The coastal ecosystems being the interface between land and sea, endowed with a unique dynamic environment that nurtures natural resources and biodiversity. The coastal ecosystem include mangroves, coral reefs, estuaries, beaches, etc. The coastal ecosystems by the virtue of their physiology, provide a wide range of goods and services, which supports people's livelihood and hence constitutes an integral component of economic development. The coastal regions are of high ecological and economic significance as the goods and services are of productive in nature with both direct and indirect market values. Maintaining the ecological integrity of the coastal ecosystems will ensure safety and security of livelihood for the local communities and people living further away who are dependent on the resources. However, the high economic value of coastal ecosystems has attracted human settlements leading to over-extraction of resources. The continued unsustainable extraction of natural resources accompanied by the alterations in the physical and chemical integrity of the ecosystem has led to the degradation of their health due to the sustained flow of untreated industrial effluents and domestic sewage. These are evident from algal blooms, decline of native species of flora and fauna, etc. This has prompted many countries to regulate and mitigate the anthropogenic induced impacts. The current issue reviews the coastal regulatory zone framework for the Karnataka Coast, India. The current issue [Sahyadri enews (2019(67): http://wgbis.ces.iisc.ernet.in/biodiversity/sahyadri_enews/newsletter/Issue66/index.html], reviews the Coastal zone regulation framework. Karnataka has a total of 11839.47 ha of the coast delineated as CRZ-I areas across the three coastal districts, i.e., Dakshina Kannada (982.03 ha), Udupi (3040.06 ha) and Uttara Kannada (11839.47 ha). Out of this, the mangroves occupy an area of 2298.94 ha (54%) and Karwar taluk of Uttara Kannada has the largest area covered by mangroves (934.57 ha) with Bhatkal, Uttara Kannada having the least (13.88 ha). A total of 823 instances of violations with respect to the CRZ Notification 2011 were identified across the state covering an area of 56.34 ha. The district of Uttara Kannada was found to have the highest instances of violations (288) with the Honavar Taluk contributing the most (140) within the district. Of the 140 recorded violations, about 92% violations are with respect to the mangroves and their 50 meter buffer zone where applicable as per the CRZ 2011 provisions.

THE COASTAL REGULATION ZONE (CRZ) FRAMEWORK FOR KARNATAKA COAST: REVIEW

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Table of Contents

i. List of Tables	3
ii. List of Figures	3
Summary	4
1.0 Introduction	5
2.0 Indian Coast	7
3.0 Indian Coastal Ecosystems	8
3.1 Mangroves	8
3.2 Estuaries	9
3.3 Coral reefs	9
3.4 Lagoons	9
3.5 Beaches	10
4.0 Economic value of Indian Coastal Ecosystems	10
5.0 Coastal legislations in India	14
5.1 Coastal Regulation Zone Notification, 1991	15
5.2 Coastal Zone Management Authority	16
5.3 Issues with the CRZ Notification 1991	17
5.4 Draft Coastal Management Zone Notification, 2008	18
5.5 Coastal Regulation Zone Notification, 2011	19
5.6 Coastal Regulation Zone Notification 2019	21
6.0 Chronology of CRZ Notifications, India	22

7.0 CRZ-I Violations – Karnataka Coast.....	26
8.0 Conclusion	32
9. References.....	33
Annexure 1 – Violations in CRZ-I zone across Karnataka Coast	38

i. List of Tables

Table 1. Economic valuation of coastal ecosystems in India.....	14
Table 2. Chronology of CRZ Notifications	26
Table 3. Area covered by CRZ-I zones along Karnataka Coast (in ha)	30
Table 4. CRZ-I violations along the coast of Karnataka (Count in no.).....	31
Table 5. CRZ-I violations along the coast of Karnataka (Area in ha)	31

ii. List of Figures

Figure 1. Method for mapping CRZ violations	28
Figure 2. Violations of CRZ-I Zones in (a) Kali estuary (b) Sharavathi estuary (c) Gangavali estuary (d) Netravathi estuary in Karnataka	30

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Summary

The coastal ecosystems being the interface between land and sea, endowed with a unique dynamic environment that nurtures natural resources and biodiversity. The coastal ecosystem include mangroves, coral reefs, estuaries, beaches, etc. The coastal ecosystems by the virtue of their physiology, provide a wide range of goods and services, which supports people's livelihood and hence constitutes an integral component of economic development. The coastal regions are of high ecological and economic significance as the goods and services are of productive in nature with both direct and indirect market values. Maintaining the ecological integrity of the coastal ecosystems will ensure safety and security of livelihood for the local communities and people living further away who are dependent on the resources. However, the high economic value of coastal ecosystems has attracted human settlements leading to over-extraction of resources. The continued unsustainable extraction of natural resources accompanied by the alterations in the physical and chemical integrity of the ecosystem has led to the degradation of their health due to the sustained flow of untreated industrial effluents and domestic sewage. These are evident from algal blooms, decline of native species of flora and fauna, etc. This has prompted many countries to regulate and mitigate the anthropogenic induced impacts.

The coastal districts in India contribute to about 15% of the nation's wealth and supports about 188 million population along the coast. In order to sustain the goods and services from the coastal ecosystem, it is important to maintain the integrity of habitats. Measures towards a sustainable development framework can only be achieved if the measures are taken to regulate the unplanned coastal development activities and prohibition of violation of CRZ norms. The India government has been continuously working for the betterment of coastal health since 1970s, through promulgation of rules and regulation of activities along the coast. The Coastal Regulation Zone (CRZ) notification was first released in 1991 and revised later in 2011 and 2019. CRZ notification of 1991 serves as an umbrella framework governing all activities and restrictions imposed along the Indian coast. This endeavour analyses (i) the coastal regulation legislations internationally and India. (ii) the effectiveness of CRZ framework implementation through spatial mapping of the violations where the notification does not allow any development with a very few exceptions. A total of 823 instances of violations have been identified spread across an area of 56.34 ha. Estuaries highly productive eco-regions are under severe threat because of the urban sprawl, often accompanied by increasing rates of fishing and conversion of mangroves into aquaculture/agriculture fields. Implementation of CRZ notifications are facing severe lacunae either due to lack of adequate staff, understanding of CRZ norms and also the pressure from influential sections of the society apart from the absence of nation-wide pro-active initiatives for the protection and restoration of coastal ecosystems. Recommendations on sustainable pathways

considering the socio-economic and the ecological dimensions have been suggested for implementation by involving all stakeholders - local communities, general public and NGOs.

1.0 Introduction

The coast is the interface between the land and sea. These ecosystems include mangroves, coral reefs, estuaries, beaches, etc. Mangroves are a community of salt tolerant plants usually found in the intertidal zones and stagnant swampy coastal waters. Their dense network of roots gives mechanical support to the plants and also traps sediments that flow from the draining rivers. This makes mangroves very effective coastal stabilising agents. The region where a river meets the sea is an estuary. Since freshwater and brackish water are mixing in these regions, they are biologically very active and are understood to be one of the most productive ecosystems in the world. They help in the retention of excess storm water, mitigating floods and serve as natural water purification systems. Estuaries also have mudflats, an ecosystem formed out of the deposition of fine inorganic material and organic debris. Mudflats are rich in invertebrate life and are ecologically very important as they serve as nesting and feeding grounds to many migratory birds. Coastal ecosystems are also considered to be one of the most effective carbon sinks in the world. The beaches are structures located between the lowest low tide level and a landward limit and are formed by the accumulation of unconsolidated sediments transported to the shore by the wave motion. Often found along the landward limit are sand dunes, formed when the sediment transportation through air is obstructed by surface vegetation or any other barrier. Sand dunes are stable structures that provide security to the people living near the coast by acting as a shield against natural calamities that can arise because of climate change. The diversity in their environmental conditions enables them to produce a variety of natural resources that provide beneficial to humans apart from the functions mentioned above. The extraction and utilisation of these natural resources including fishery, fertile soil, bivalves, etc. have helped in securing the livelihood of coastal communities through times.

The coastal zone is a region where land, ocean and atmosphere interact, making it dynamic in nature (Nayak, 2017). This dynamic nature of the regions have led to the formation of diverse ecosystems along the coast including the coral reefs, mangroves, sand dunes, estuaries, creeks and coastal wetlands. The biological productivity and the diversity of floral and faunal species found in coastal ecosystems owing to the different conditions supported by the ecosystems make them unique from other land masses and serve as the main reason for their attractive nature. They harbour a wealth of species and genetic diversity and also perform functions like the storage and recycling of nutrients, water purification and shore stabilisation (Mondal and Bandyopadhyay, 2014). The co-existence of water and land with the constant mixing of saline and fresh water at the coast has been of significant economic value to the humans and remains to be the most exploited geomorphic unit of the earth (Panigrahi and Mohanty, 2012). The economic nature of the coast and the people's livelihood has been well-documented across different civilisations over

the years. The inter-tidal zones where the sea meets the land is not only sustain the livelihood of the local communities, and also beneficial for travel and trade by the sea-routes. The notion of progress and human well-being has been driven by variables such as economic growth, with no challenge for a long time until recently with the notion of sustainable development. The economic prospects pushed communities to the coast, adding to the already existing local communities dependent on it, increasing the pressure on the ecosystems. The coastal regions cover about 10% of the Earth's land area, and are home to a staggering 60% of the world's population (Lakshmi and Rajagopalan, 2000) across 123 countries. The rate of extraction of natural resources has almost tripled, with industrialisation, as the extraction of natural resources for domestic purposes was contested by the extraction at much larger rates, rarely scientific, by the industries (Oberle et al., 2019). The unsustainable resource extraction and processing is eroding biodiversity and water. With the growing pressure on the coast to provide for economic gains for the people dependent on it, ecosystems have taken a huge toll because of land reclamation for urban and industrial development, agriculture and mariculture. This is worsened by the pollution that accompanies a growing urban sprawl. These include the eutrophication of water bodies due to excessive untreated organic discharge, contamination of sea food and accumulation of plastic in the water bodies, endangering the marine lives. Coastal zones in most countries are under severe and increasing pressure from rapid urbanisation that comes with over exploitation of coastal resources and continued development in hazard-prone areas (Ajai and Nayak, 2012). The increased dependency on the coast for meeting the demands of maritime trade, expansion of tourism and other recreational facilities and industrialisation has degraded the ecosystems to an extent that 51% of the world's coasts are now under moderate or high threats of development (Bryant et al., 1995). The degradation of the coast results in a depletion in its quality and quantity with respect to the goods and services provisioned by it. This would mean a decrease in its fish production (and that of other market-based commodities), reduced ability to sequester carbon (mangrove ecosystems), the inability to mitigate natural disaster services, etc.

The increasing pressure on the ecosystems, coupled with their degradation has been posing problems of not just ecological but also of socio-economic nature. The coastal ecosystems, rich in natural resources, contribute approximately one fifth of total global primary production (Mohanty et al., 2008). Traditional methods of extracting resources by local communities over the years are less endangering than that adopted by industries for mass extraction, which has been practiced by the local communities by utilising the natural resources provisioned by the ecosystems. The case is dynamically reversed in the case of industrial extraction where the objective is to make the most profit out of extraction. The labour and monetary capital invested in the process of extraction is only an incurring cost of less significance than the economic output that could be derived from it. The unrest created between the locals and industries as a consequence, increases the competition which increases the rates and extent of extraction. This effect is profoundly felt in the developing countries more so because the local communities are often low income groups that derive the essential resources to run their family from the natural ecosystems. Along the coast, the developing nations have the majority of the growing coastal zone population is found among the lowest

income groups (Sorensen, 2002). The growing inequality among the stakeholders, accompanied by the environmental implications of coastal degradation has necessitated the use of legislative tools in intervening and regulating anthropogenic activities along the coast that are based in sound scientific principles. Internationally, the question of marine resources and marine environmental protection was majorly addressed through the *United Nations Convention on the Law of the Sea (UNCLOS)*. Entering into force in November 1994, this made individual nations responsible for ocean resources through the worldwide adoption of the concept of the 200 miles exclusive economic zone (EEZ). Legislations aimed at ensuring robust health of coastal ecosystems by promoting sustainable management strategies (Nayak, 2017), supported by the administrative set-up and scientific infrastructures in place is necessary to achieve its intended impact on the coastal ecosystems. This involves the collation of information on the coastal resources, habitats, shoreline conditions, anthropogenic activities, coastal vulnerability etc. The information collected, analysed and correlated would support substantial regulating frameworks through informed decision-making. In India, remote sensing data (satellite based information) has been used for generating inventory on coastal resource mapping, landforms, coastal land use and shoreline condition, condition assessment of protected areas, exploration of marine fisheries, mitigation of coastal disasters and understanding of sediment dynamics, etc. (Mondal and Bandyopadhyay, 2014).

2.0 Indian Coast

India's mainland coast extends to 11,084.5 km, bordered by the Bay of Bengal in the east and south-east, Indian Ocean in the south and Arabian Sea in the west and south-west. It spans from the Gulf of Kutch in the west, through Kanara in Karnataka, through Cape Comorin, the southernmost region of South India, through the Utkala Kalingal region, to the shoreline near the Sunderbans in the east. The coastal districts with a population of 18.8 crores, contribute to 15.5% of the national population (Census of India, 2011) and it is estimated that nearly one-fourth of the country's population living within 50 km of the coast (Nayak et al., 2015). The Indian mainland coast consists of 43% sandy beaches, 11% rocky coasts, 36% muddy flats and 10% marshy coast (Central Water Commission, 2016). The east coast is spread across Tamil Nadu, Pondicherry, Andhra Pradesh, Odisha and West Bengal and is dominated by large river deltas and sandy beaches. The west coast spreads across Gujarat, Maharashtra, Daman and Diu, Goa, Karnataka and Kerala with intricate networks of estuaries, backwaters and predominantly rocky coastline. The eastern coastal plain is 80-100 kilometres broad and the western coast is comparatively narrow with a width of 50-65 kilometres (Central Water Commission, 2016). The morphological difference between the east and the west coasts is mainly because of the presence of Western Ghats along the western coast. The long stretch of undulating terrain from Gujarat in the north all the way to Kerala in the south results in an abrupt sloping of the terrain towards the sea, making the western coast relatively rocky with sand and sand dunes, which is also the reason for the west coast devoid of major deltas and river estuaries. Compared to this, the east coast being shallow, is largely influenced by major deltas and river estuaries and is mostly dominated by deltaic alluvium

(Chandran et al., 2012). With respect to the hydrological regime, the east coast experiences a weak upwelling during the northeast monsoon (October-January), while the west coast is faced with intense upwelling during the southwest monsoon (October-January). The hydro-geomorphological differences between the coasts favour a multitude of coastal and offshore marine ecosystems supporting a diverse biodiversity (Swaminathan et al., 2009) with most of the species endemic to certain areas. Coastal Ecologically Sensitive Areas (CSAs) are home to unique flora and fauna with the coral reefs along supporting over 25% of the marine biodiversity though it constitutes less than 1% of the ocean floor (Nayak et al., 2015). A total of 208 species of protozoan, foraminifera, Tintinnid, dinoflagellate, sponges, cnidarian, Hydrozoa, Siphonophores, polychaetes, Crustacea and Copepoda have been reported along the India coast. There are reports of 2,546 species of fish belonging to 969 genera, 254 families and 40 orders. The reptilian population habited by the coast alone stands at 26 species of sea snakes and 5 species of sea turtles with all 5 nesting on the Indian coast. About 770 species of seaweed (red-184; brown-166; red-420) with about 624 marine algal species of various groups are recorded from Indian waters (Swaminathan et al., 2009). The diverse biodiversity found along the Indian coasts gain them the high economic status and the sustained supply of resources is linked to the health of the ecosystems.

3.0 Indian Coastal Ecosystems

The Indian coast owing to the physiological differences that range within the country from the west coast to the east and even along the coasts is home to a range of ecosystems. The tropical climate, and the diverse physiological features within the country (geomorphology, hydrology, ecology etc.) make the coast develop a number of ecosystems, each with their unique biota and corresponding functions. The coastal ecosystems include mangroves, coral reefs, estuaries, beaches, lagoons and islands. The range of ecosystems come together perform biological processes in addition to protecting the coast from vulnerabilities that might arise from the sea and provide livelihood security to nearly one quarter of the Indian population (Swaminathan et al., 2009).

3.1 Mangroves: Mangrove vegetation are found in the tropical and subtropical coasts globally.

They constitute a community of usually woody, evergreen, salt tolerant plants of soft and swampy mud. Usually found in intertidal zones and stagnant swampy coastal waters, they have a dense network of supporting roots that give mechanical support to the tree and trap all the sediments coming in from the streams. Mangrove ecosystems serve as a barrier against storm, providing protection and stability to the coast. Mangroves have special adaptations like physiological and structural mechanisms to thrive in high saline conditions. Mangroves are highly productive system with most of their species commercially important such as king and banana prawns, mud crabs, *barramunds*, *mackrel*, *mullet*, *threadfin salmon*, *bream*, *whiting*, *huderikand flatheas*. Mangroves in India comprise of 69 species (excluding those of salt marshes and mangrove other associate species, under 42 genera and 27 families. Of these, 63 species (41 genera under 27 families) are present on the East coast; 37 species (25 genera under 16 families) on the West coast; and 44 species (28 genera under 20 families) on the Bay Islands

(Chandran et al., 2012). They contribute nutrients to the estuarine-marine ecosystems and are considered to be in the heart of estuarine ecosystem and productivity.

- 3.2 **Estuaries:** Estuaries are the tidal-mouth of the river, forming semi-enclosed coastal water bodies. They are the regions where freshwater from the rivers meet the brackish water and are usually flat expanses of water dotted with small islands and narrow creeks. This unique nature of opening up one end to saline water and the other to fresh water makes estuaries and their associated biodiversity unique. Though they depend on the fresh-water flow from upland rivers to maintain their functions, there is a two-way flow generated with the mixing of fresh and saline water with the continuous variations generating currents. Estuaries are ranked among the highest productive ecosystems globally (Chandran et al., 2012). They serve as spawning, nursery and feeding ground for a number of marine-based life forms and serve as beds for clams, mussels and sea grass. A few of their functions include maintaining coastal stability, salinity, transportation of nutrients and flood mitigation. Estuaries have historically served as fishing grounds and sources for clams and mussels culturing. Estuaries also contain within them deposition of fine inorganic material and organic debris present in debris formed termed as mudflats/ tidal flats. Mudflats are rich in invertebrate life and possess special ecological significance as they serve as nesting grounds and main feeding grounds for many migratory birds.
- 3.3 **Coral reefs:** Coral reefs are three dimensional, shallow water structures dominated by Scleractinian corals and are rich in terms of their biological diversity. The corals are the largest biogenic calcium carbonate producers and provide substrate for mangrove ecosystems. They also provide habitat to a large variety of flora and fauna, supporting organisms like benthic algae, sea weed, sea grasses, annelids, sponges, crabs, bivalves etc. Even though corals live in nutrient poor waters, their capability to recycle the scarce nutrients (by the whole nutrient community) is enormous. The high productivity is contributed to the efficient retention and recycling of nutrients with the reef system. Coral reefs serve as natural protective barriers against erosion and storm surge by virtue of their formation. In India, coral reefs are mainly found in the Andaman and Nicobar and Lakshadweep islands. On the main land, coral reefs are found in the Palk Bay, Gulf of Mannar, Gulf of Kachchh and Malwan coast. The water body between the circular/semi-circular reef systems and the shore is termed as lagoon.
- 3.4 **Lagoons:** Lagoons are shallow bodies of brackish water partially separated from an adjacent coast by barriers of sand usually. They have narrow openings through the barriers that allow the flow of seawater into the ecosystem. Usually found on low-lying coasts, lagoons are normally aligned to the coast in such a way that their largest diameter runs parallel to the seashore. Being highly productive systems, lagoons have large oscillations in the populations of individual species. This is because, the ecosystem experiences a lot of species migrating to them to take advantage of the considerable production of organic matter and the lack of competition with other species. They function as nursery, breeding and feeding grounds for marine fauna, habitat for mussels and clams and beds for sea grass. Additionally, they influence the shoreline stability by acting as sediment buffers, absorbing the flood waters and wave

energy. They provide grounds for the culturing and removal of mussels, shrimps, crabs, fish etc. for human consumption.

3.5 Beaches: Beaches are structures located between the lowest low tide level and a landward limit, usually defined by a coastal cliff, permanent vegetation or some physical man-made structure. They are formed by the accumulation of unconsolidated sediments transported to the shore and gain a shape over a period of wave generated water motion carrying the sediments. These unconsolidated sediments can range in size from fine-grained sands and mud to rock fragments. Irrespective of the sediments that go into forming a beach, the process in itself is the same across the world. Formed by as an accumulation of unconsolidated sediments, beaches are dynamic landforms, constantly subjected to erosion and/or accretion. Coastal erosion is the landward displacement of the shoreline caused by the wave energy while accretion is deposition of sand on the beaches. They can be caused by the waves and currents from the sea as well as inland sand dune systems that induce erosional and depositional cycles. Sand dunes develop at places where the sediment transportation is obstructed with surface vegetation or any other barrier to the air stream. They range from well vegetated to non-vegetated and from coast parallel to irregular topography. While the fore dunes are in the initial stages of formation and susceptible to removal by storms/high tides, the rear dunes are relatively mature and stable. The stability makes the ecosystem one of the most effective protection against the sea, having them to be the nature's first line of defence (Chandran et al., 2010). The replacement of sand dunes with walls is a rather regressive effort in strengthening the protection along the coast since the stability of the structure in place is deeply compromised.

4.0 Economic Importance of Indian Coastal Ecosystems

The coastal environment plays a vital role in nation's economy owing to the different biological processes with the diverse ecosystems. The coastal zones incur competition for its resources from multiple activities and stakeholders (Nayak et al., 2015). The natural resources generation, productive habitats and rich biodiversity found in different ecosystems including the mangroves, coral reefs, sea grasses, sand dunes, lagoons etc. make them important economic bio-repositories of the country. Flows from the ecosystem to the humans that are beneficiary to the latter are understood as ecosystem good and services (SEEA-EEA, 2014). The beneficial nature of these flows are necessary to distinguish for the decision regarding conservation against degradation for alternate uses of an ecosystem often hinges on the productive nature of their existence in a strictly economic framework (Kumar et al., 2016). These goods and services are economic in nature and hence, have monetary values hidden, if not direct. Enumerating the value of the existence of an ecosystem can further help in understanding their importance in sustaining the livelihood of the population and the alternative costs that might have to be faced by the government in their absence. Additionally, values of a particular ecosystem from an earlier time to the present can influence the flag points for conservation and restoration strategies. A field in

environmental economics looks into the value of such goods and services provided by ecosystems. Services with tangible benefits to the society with market values are termed as provisioning services whereas the regulating, (carbon sequestration, flood mitigation, water purification, micro climate regulation etc.), cultural (recreational, spiritual, cultural etc.) and supporting (soil formation, habitat provision etc.) provide indirect benefits that cannot be measured directly but need proxy variables for the valuation. Marine and coastal ecosystems alone contributed to 32% of the total value of all ecosystems globally, which was estimated to be 33 trillion dollars (Costanza et al., 1997). The values of estuaries (22,838 dollars/ha/year), sea grass (19,004 dollars/ha/year), coral reefs (6,075 dollars/ha/year) and the shelf (1,610 dollars/ha/year) were accounted under coastal ecosystems. The ecosystem services provided of coastal systems was estimated subsequently as 28,917 dollars/ha/year, coastal wetlands at 193,845 dollars/ha/year and coral reefs at 352,916 dollars/ha/year (de Groot et al., 2012).

In an attempt to value the economic worth of coastal and marine ecosystems in India in terms of their beneficial goods and values to humans, a study funded by National Centre for Sustainable Coastal Management (NCSCM) found that the total value of the Indian coast is Rs. 1491.19 billion per annum with the provisioning services coming up to be Rs. 383.06 billion (25.68%) per annum contributed through marine fisheries, seaweed, coastal mineral, coastal salt and water provisioning and regulating services such as carbon sequestration and coastal protection contributing the most (43.93%) (Kumar et al., 2016). A Partial estimate of the recreational value of coastal and marine ecosystems in India without accounting for the consumer surplus reveals that they are worth Rs. 531.8 billion at 2012-13 prices (Mukhopadhyay and Da Costa, 2015). The economic worth of Ashtamudi estuary in Kerala was valued through services including fishery, carbon sequestration, nursery provision and recreational benefits. The net present use value of the estuary was estimated to be Rs. 1923.57 million (Anoop et al., 2008). The option value for the estuary, which is the price people are willing to pay for its optional benefits that might be derived in the future, was valued to at a NPV of Rs. 871 lakhs at a 4% discount rate (Anoop and Suryaprakash, 2008). A detailed study was taken up to value the estuarine ecosystems for the district of Uttara Kannada, Karnataka of the Central Western Ghats region. The total worth of the estuary ecosystems in the district alone was enumerated to be Rs. 1,40,39,296 /ha/year (Ramachandra et al., 2013). The Aghanashini estuary of Kumta taluk was found to be of highly productive and comparatively more intact than estuaries like Kali and Sharavathi due to anthropogenic disturbances to the streams in the form of industrial/domestic discharge and construction of dams specifically in the case of the latter. The economic value of the coral reef systems in Gulf of Kachchh, Gujarat was carried out in the year 2010 (Dixit et al., 2010). The total economic value of the systems were found to be Rs. 79,477/ha/year with the fisheries to be Rs. 4.64 million/year/sq.km of the coral reef area. The economic gain of fishery catch in mangroves as opposed to an alternate landscape was assessed along the south-east coast of India by considering the catches of shellfish and finfish across regions that had different intensity of mangrove cover (Kathiresan and Rajendran, 2002). The difference between an area rich in mangroves as against an area with low and poor mangrove cover with respect to the fishing yield

in monetary terms was found to be Rs. 695.4/ha/day. In the state of Odisha, the Bhitarkanika mangrove ecosystem contributed to 14.2% of the overall everyday needs of each household in the surrounding area (Badola and Hussain, 2003). In the state of Gujarat, increasing rates of mangroves degradation prompted a community-based multi-stakeholder initiative under the REMAG (Restoration of Mangroves in Gujarat) project. A study done under the REMAG umbrella revealed that enriched mangrove plantations increased fish catch by 3.923 kg/day with the total value of mangroves if the fisheries and its coastal protection service is weighed in, was found out to be Rs. 9.55 crores/annum or Rs. 1200/ha/year (Das 2016). Studies done on the valuation of coastal ecosystems in India are slowly gaining a lot of interest over the last decade. The realisation of their economic worth would translate to the significance of having them intact, in good health. This approach surpasses the need to make the decision makers or the public understand the scientific worth for their translation in monetary terms is easier to grasp. Table 1 lists the valuation studies for the coastal ecosystems in India.

S.No	Study Area	Services evaluated	Parameters captured	Approaches involved	Value	Unit	Reference
1	Pichavaram mangroves, Tamil Nadu	Provisioning	Fishery	Market price method	758.2	Rs./ha/day	(Kathiresan & Rajendran, 2002)
2	Bhitarkanika Mangrove, Odisha	Provisioning	Fishery	Market price method	23.85	Rs./hour	(Badola & Hussain, 2003)
			Land accretion	Market price method	4,06,990	Rs./year	
		Regulating	Nutrient retention	Market price method	160 million	Rs./acre/year	
		Regulating	Strom protection	Damage cost avoidance method	5340	Rs./household	
3	Mangroves along Aghanashini River estuary, Uttara Kananda, Karnataka		Option Value	CV - WTP	1,07,530	Rs./year	(Stone et al., 2008)
4	Coral reef systems, Gulf of Kachchh, Gujarat	Provisioning	Fishery	Market price method	79,477	Rs./ha/year	(Dixit et al., 2010)
		Regulating	Coastal Protection	Damage cost avoidance method			
		Cultural	Tourism	Damage cost avoidance method			

		Supporting	Biodiversity	Benefit Transfer			
5	Ashtamudi Estuary, Kollam, Kerala		Option Value	CV - WTP	38,84,000	Rs./year	(Anoop & Suryaprakash, 2008)
6	India	Cultural	Recreation	Zonal Travel Cost method	531.8 billion	Rs./year	(Mukhopadhyay & Da Costa, 2015)
7	Mangroves of Ernakulam and Kannur, Kerala		Option Value	CV - WTP	1,10,769 million	Rs./year	(Hema & Devi, 2015)
8	Estuaries of Karnataka	Provisioning	Fishery, Agriculture, Mining (sand and lime shell), Mangroves product harvesting, Salt production	Market price method	28,07,852 (Average of all 5 estuaries considered)	Rs./hour	(Ramachandra et al., 2013)
		Regulating	Coastal erosion control, Flood control, Storm protection, Carbon sequestration, Disturbance regulation, Gas regulation, Climate regulation, Water supply, Waste treatment, Nutrient retention and cycling, Natural hazard mitigation, Ground water recharging and Oxygen provision	Benefit Transfer			
		Cultural	Recreation, Aesthetic, Science and education				
		Supporting	Habitat function, Nursery and breeding ground, Biodiversity				
9	Gujarat	Provisioning	Fishery	Market price method	1200	Rs./hour	(Das, 2016)

		Regulating	Coastal Protection	Damage cost avoidance method			
10	Indian coast	Provisioning	Marine Fisheries, Seaweeds, Coastal mineral extraction, Coastal salt production, Seawater Desalination, Seawater for Industrial cooling	Market price method	1491.19 billion	Rs./year	(K. S. K. Kumar et al., 2016)

Table 1: Economic valuation of coastal ecosystems in India

The diverse ecosystems found along the coast provide for distinct types of ecosystems goods and services that benefit us. The degradation of such ecosystems is majorly because of the anthropogenic pressure and load imposed upon them. On top of unsustainable over-extraction of the resources, the unstained inflow of pollutants deteriorate the ecosystem health. This necessitates awareness on the ecosystem's diverse nature and economic values with the prudent management approaches through legislative statures promoting environmentally friendly activities and penalising the ones in violation can help in designing effective frameworks that would ensure the path of sustainable development. State issued legislations and directives are often found to be very effective in making the system adapt to a better standard of living, ensuring that the degradation of such natural ecosystems significantly go down with activities and advocacy for their restoration and conservation enter the mainstream only to be a part of a broader framework addressing the nation's development.

5.0 Coastal legislations in India

India is bordered by the Arabian Sea in the west and south-west, Indian Ocean in the south and the Bay of Bengal in the east and south-east with a coast line of 11,084.5 km (NHO, Dehradun). The coastal districts, with a population of 18.8 crore (Census of India, 2011), contribute to about 15.5% of the national population with 4.4 lakh people residing in the island territories. The diversity of resources available along the coast owing to its range of ecosystems such as mangroves, coral reefs, salt marshes and estuaries, along with their associated goods and services makes the coast economically vital to the country's economy. The tangible goods from fishery (fish, shrimps, bivalves, etc.), timber and a number of non-timber forest products are tradable in markets, while the intangible ones including shoreline stabilization, flood protection, storm water storage and carbon sequestration do not enter the traditional market set-up. The various ecosystems found along the coast with the rivers draining into them have for long supporting the livelihood of a number of communities. They indulge in fishing and aqua-culturing

among other activities on an every-day basis to keep their families fed. The revenue generated through coastal tourism, through the recreational and cultural/historic sites, some with national and international significance also contribute to the coasts' economic importance. Historically, the economic activities facilitated along the coast by the virtue of its diverse natural resources stock which has resulted in dense human habitations across the coast. These diverse ecosystems besides supporting human development, is home to a diverse range of floral and faunal species. Owing to these reasons, it is imperative to consider a sustainable framework that can regulate the magnitude of calamitous anthropogenic activities along the coast.

The health of an ecosystem directly and indirect influences the standard of living. Environmental degradation as a by-product of economic activities is also aided by the prioritisation of the economic outcomes by the state, often materialised in the form of policies (Kulkarni and Ramachandra, 2006). Policy-making in the environmental domain is a multi-disciplinary field that involves the understanding of various aspects of growth including that of the economy in relation to the ecosystems and their health. The United Nations Conference on the Human Environment (famously known as the Stockholm Conference), 1972 was one of UN's first major conference on international environmental issues. The year 1972 is also regarded as a crucial year for the genesis of environmental legislations and policies in India. During the 24th UNGA of 1972, Mr. Pitamber Pant, a member of the Planning Commission of India prepared reports on India recognising the impact of population growth on the natural environment. India is a signatory for several international conventions relating to oceans and related activities, some of which are related to marine environment and applicable to coastal area. The important ones include MARPOL 1973/1978; London Dumping Convention, 1972, Convention on Civil Liability for Oil Pollution Damages (CLC 1969) and its Protocol, 1976, Fund, 1971 and its Protocol, 1979, CITES, Convention on Biodiversity, 1992 which includes coastal biodiversity as well.

5.1 Coastal Regulation Zone (CRZ) Notification, 1991: Coastal legislations in India started taking shape since November 1981 with the then Prime Minister, Indira Gandhi, stipulating a no development zone within 500 m of the high tide line (HTL), keeping in mind the importance of maintaining the beauty and ecological integrity of the coast. The stipulation, however, was an advisory that was sent to the coastal state governments and lacked legislative enforcement. Following this event, the environmentalists engaged in coastal protection collaborated with Maneka Gandhi, the environment minister during 1989-91, to draft a legal framework for coastal protection. The drafted framework was published as the CRZ Notification, 1991 (<http://environmentclearance.nic.in/writereaddata/SCZMADocument/CRZ%20Notification,%201991.pdf>). Under section 3(1) and section 3(2)(v) of the Environment (Protection) Act, 1986 and Rule 5(3)(d) of Environmental (Protection) Rules, 1986, the notification declared the coastal stretches of the country as coastal regulation zones and regulated activities in the same. The main objective of the notification was to regulate the use of coastal areas for competing anthropogenic uses including housing and industries in order to maintain the ecological viability of these niche spaces (Menon et al., 2015). It declared the coastal stretches of Sea, bays, estuaries, creeks, rivers and

backwaters influenced by tidal action up to 500 meters land-ward from the HTL and the land between the HTL and the Low Tide Line (LTL) as CRZ (Coastal Regulation Zone Notification 1991). The prohibited activities include setting up of new industries and expansion of existing industries, manufacture or handling or storage and handling of hazardous substances (except specified petroleum products in port areas), fish processing units, disposal of wastes and effluents, mining of sands, rocks and other rare minerals and mechanized drawing of ground water. It further divided the CRZ area into 4 zones.

- CRZ I covered the ecologically sensitive and important areas including conservation reserves, mangroves, coral reefs and breeding and spawning grounds of marine life and the area between the LTL and HTL.
- CRZ II included areas that were already substantially developed close to the shore-line and were within the municipal limits or legally designated urban areas.
- CRZ III included the relatively undisturbed areas. Areas upto 200 metres from the HTL was marked as 'No Development Zone' where no construction was permitted except for repairs of existing authorised structures. No building construction was permitted in CRZ II areas on the seaward side of existing roads/structures with the buildings permitted on the landward side were subject to the local town and country planning regulations. In addressing the already existing traditional communities dependent on the coast, the notification permitted agriculture, horticulture, gardens and salt manufacturing and the construction of dwelling units between the 200-500 m mark from the HTL.
- CRZ IV zones were the coastal stretches in the Andaman and Nicobar, Lakshadweep and other arid small islands that didn't already come under the other three zones.

The notification required for all the states to come up with the Coastal Zone Management Plan (CZMP) maps marking the CRZ zones across the entire coast before February 1992 but this process has taken longer time. A Public Interest Ligation (PIL) was filed by the Indian Society for Enviro-Legal Actions that instigated the Supreme Court to force state governments into submitting the CZMPs. Finally, on 27 September 1996, the CZMPs were conditionally approved by the MoEF&CC (Goenka, 2000). The Supreme Court, recognised the overburdening of the state pollution control boards by making them the authorities responsible for the enforcement of the CRZ notification. It ruled that the Central Government should consider setting up state Coastal management authorities under section 3 of the environmental Act and also a national Coastal management authority.

5.2 Coastal Zone Management Authority: As per the Supreme Court's direction (Order of W.P. No.664 of 1993), the Ministry had constituted the NCZMA and State CZMA for enforcement and monitoring of the CRZ Notification in the year 1999. These Authorities have been delegated powers under Section 5 of the Environment (Protection) Act, 1986 for taking punitive action against the violations. Its powers and functions include the co-ordination with the State Coastal Zone Management Authorities (SCZMAs), examining of proposals for modifications in the clarification of the coastal zone areas and in the CZMPS received from the CZMAs of the states

and union territories, reviewing of cases involving violations of the provisions under the CRZ Notification, provision of technical assistance and guidance to the concerned State Government, Union territory Governments or Administrations, the State Coastal Zone Management Authorities, the Union territory Coastal Zone Management Authorities, and other institutions or organisations in the matters relating to protection and improvement of the coastal environment and serving as an advisory body to the Central Government on policy, planning, research and development and funding in matters relating to Coastal Regulation Zone Management. The NCZMA is followed by the state/union territory Coastal Zone Management Authorities (SCZMAs/UTZMAs). There are a total of 9 SCZMAs and 3 UTCZMAs in India. These institutions are responsible for monitoring and implementing Coastal Regulation Zone rules on a regular basis and the preparation of CMZPs – including mapping the HTL, LTL and the hazard line. Clause 6(c) of the 2011 notification further provides for the constitution of District Level Coastal Committees (DICC)s in all coastal districts though their role isn't completely defined. The various authorities constituted over different spatial levels helps in streamlining the decision-making process, helping the authorities make better informed decisions. The CRZ Notification was far-reaching in its vision and scope and was a commendable effort by the Ministry of Environment and Forest and Climate Change (MoEf&CC – then MoEF) to bring together all the coastal legislations under one directive, making it was a set of discrete parts with little connection between the tasks and lacked a hierarchical framework that was easy to understand and iterate, unlike the EIA notification. It was a set of independent clauses that were to be taken up in parallel (Menon et al., 2015), making the notification very difficult to implement.

5.3 Issues with the CRZ Notification 1991: The subsequent amendments to the CRZ 1991 resulted in the dilution of the Notification by permitting more development activities in the CRZ areas (with each amendment). This created unrest among the local communities, especially the fishermen, whose livelihood was threaded by the increased anthropogenic activities along the water bodies as they were polluting the natural environment, resulting in poorer yields. The notification also did not allow for allied fishing facilities such as storage halls, ice factories, fish processing units etc. making the whole process untenable and more cost-intensive. There was no funding mechanism enabled through the Notification for the authorities to take any pro-active measures in the prevention and conservation of the coastal area (Swaminathan et al., 2005). Their jobs become increasingly complex as the stakeholders started conveniently working around the poorly defined terms and definitions in the Notification and it was criticized for lacking a scientific approach. For instance, terms including 'developed area, substantially built up, relatively undisturbed areas, legally designated urban areas etc.' were vague and open to interpretations. In July 2004, the Ministry of Environment and Forests set up an Expert Committee headed by Prof. M.S. Swaminathan to carry out a comprehensive review of the CRZ Notification. Its mission was to enable the MoEF to refine coastal regulations on strong scientific principles and to devise regulations that would meet the urgent need for coastal conservation and development/livelihood needs. The vulnerability of the coast was evidently experienced with the tsunami that hit the south-

eastern coast of India in December 2004. It demonstrated the vulnerability of the coast and the impacts natural disasters can have on the human and natural capital along the coast, emphasising strongly on the need for developing sustainable coastal management frameworks. The mandate of the committee was to suggest scientific principles for an integrated coastal zone management (ICZM) plan for India, recommendation of methodologies to be followed for the conservation and protection of the coastal and marine resources and recommendations of amendments to the CRZ notification and the regulatory framework. Significant principal recommendations were the rationalization of management boundaries based on the coastal vulnerability of a place, making management of coasts local-centric, moving away from a regulatory framework and adapting to a management framework and creation of institutional infrastructure specifically geared to address coastal management issues and practices scientifically. It proposed the establishment of a National Institute for Sustainable Coastal Zone Management, an All India co-ordinated research project on ICZM and a separate division under MoEF&CC dedicated to coastal management issues. This report highlights the dilution of the law, lack of implementation of the same by the states and lack of resources and infrastructure required for the implementation (Sridhar et al., 2006).

5.4 Draft Coastal Management Zone Notification, 2008: Following the recommendations of the committee, the Central Government issued a draft Coastal Management Zone (CMZ) Notification (<http://environmentclearance.nic.in/writereaddata/SCZMADocument/Island%20Protection%20Zone%20Notification,%202011.pdf>) in the year 2008 with guidelines provided for the management and permitted activities along the coast. The draft CMZ notification, received a widespread objections from the stakeholders - environmentalists, fishermen communities and scientists across all the coastal states, for not consulting the stakeholders. The sustained resistance from the stakeholders forced to keep the notification in abeyance till mechanisms are put in place that can lead to inclusive management efforts integrating the coastal communities' opinions and knowledge by facilitating their active involvement in the decision-making processes. On June 15, 2009, the ministry constituted a four-member Committee under the Chairmanship of Prof M S Swaminathan to recommend future steps on the draft Coastal Management Zone (CMZ) Notification, 2008. The Terms of Reference (TOR) set for the committee were to examine the various comments received on the draft CMZ Notification, 2008 and advice on the policy and legal framework required for ICZM. The draft Notification's suggestion to map the setback line was fraught with scientific and data problems that would've lead to delays in its implementation. The terms and proposals were also criticized for not being adequately defined, opening them up to selective interpretation. One of the biggest concerns that was shared by all the coastal states is that during the interim period, a huge number of development activities by some interested parties might be taken up with the hope that they might get legalised as the Plan gets approved. Taking all these gaps into consideration, the committee recommended that the ministry continues with the existing CRZ Notification, 1991 with the incorporation of certain aspects from the draft CMZ Notification as seen beneficial and that the CMZ Notification should be allowed to lapse (Swaminathan et al., 2009). As recommended, the CMZ Notification was allowed to lapse with the ministry concentrating of the

process of modifying the existing framework of the CRZ Notification in such a way that the alternations can include the best practices, as identified through the CRZ and CMA Notifications and the expert committee's recommendations. It ensured that the decision-making involving the participation of all the stakeholders including the government authorities, scientific institutions and the local communities.

5.5 Coastal Regulation Zone Notification, 2011: Swaminathan committee suggested that the CRZ 1991 should be modified to include the seaward side as well so that port-related activities can be regulated based in their impact on the sea. It also suggested the introduction of new management regimes in islands as having a uniform distance of 500 m across small islands would translate to the entire landmass being notified under CRZ, which could potentially be problematic for the island-dwellers in the absence of management plans (Swaminathan et al., 2009). A few more significant suggestions included the need for the strengthening of the mangrove areas through more rigorous mapping and scientific conservation efforts, declaration of regions that required further protection as Critically Vulnerable Coastal Areas (CVCAs) and the security of the rights and as a consequence, the livelihood of local communities living along the coast who have historically depended on it for sustaining themselves. The committee further recommended the use of satellite and information technology to map and monitor the coast in real-time like how it was implemented in the state of Goa. Importantly, it addressed the need to build capacity of the SCZMAs by building information sources for better decision-making as the main problem that was faced by the coastal zone management legislations were the lack of scientific institutional capacity. In the year 2010, with the intention of implementing the National Environment Policy, the Government of India (GOI) embarked upon the World-Bank funded Integrated Coastal Zone Management (ICZM) project. The Society for Integrated Coastal Management (SICOM), established under the Society Registration Act, 1986 by the MoEF&CC, was responsible for its implementation. The SICOM established the National Centre for Sustainable Coastal Management (NCSCM) in the same year with the vision of promoting sustainable coastal practices through increased partnerships, conservation practices, scientific research and knowledge management and to further assist MoEF&CC and the states in the implementation of the CRZ directives. On January 7, 2011, after a series of public consultations in all coastal states that deliberated the draft CRZ Notification 2011 and the suggestions made by the Swaminathan committee, the ministry issued the [Coastal Regulation Zone Notification, 2011](#).

The CRZ 2011 was implemented with a view to ensure livelihood security to the fishermen communities and other local communities living along the coast, protect and conserve the coastal ecosystems and to promote sustainable development based in scientific principles. It declared the coastal stretches of the country, including the water area up to its territorial water limit, excluding the islands of Andaman and Nicobar and Lakshadweep and the marine areas surrounding these islands up to its territorial limit, as Coastal Regulation Zone (Coastal Regulation Zone Notification, 2011). The task of delineation of the HTL and LTL, which would form the baseline for the preparation of CZMP maps, was given to the NCSCM, which was earlier done by the Naval Hydrographic department. Significant deviations from the 1991 Notification are the reduction of

‘No Development Zone’ from 200 m to 100 m from the HTL to meet the increased demands of housing of the local communities and the modification of the CRZ IV to include the bed area between the LTL to the waters between the LTL to the territorial water limit of 12 nautical miles seawards. In addition, the Island Protection Zone (IPZ) Notification, 2011 (<http://environmentclearance.nic.in/writereaddata/SCZMADocument/Island%20Protection%20Zone%20Notification,%202011.pdf>) was notified and published covering Andaman and Nicobar Islands and Lakshadweep as opposed to having them addressed as a part of the CRZ Notification. The Notification made special provisions for Goa, Kerala, and Greater Mumbai and included Critically Vulnerable Coastal Areas (CVCAs), as recommended by the Swaminathan committee. These CVCAs are areas that crucially require protection and conservation and include Karwar and Kundapur taluks of Karnataka, Vembnad, Kerala and the Gulf of Khambat and Kutch, Gurajrat along the west coast. Picking up from the suggestion made by the M.S. Swaminathan expert committee report on the conservation of mangroves, the Notification mandates **a provision of 50 m buffer for mangroves (CRZ-I) spreading over an area of 1000 square metres**. It made the procedures for obtaining CRZ approval clear with the timelines stipulated along with the post-clearance monitoring and enforcement mechanisms. For the clearance of a project, the proponent is required to prepare a CRZ map indicating the CRZ-I, II, III and IV areas including other notified ESAs, normally covering 7 km radius around the project site, with the area covered by the project overlaid which will be reviewed by the concerned CZMA, the recommendations of which will be considered by the MoEF&CC or SEIAA for clearance. It required for the shorelines to be mapped through time-series satellite image with no foreshore development permitted in high-eroding areas. In addition to the NCZMA and SCZMAs/UTCZMAs, the 2011 Notification, under Clause 6(c) suggests **the constitution of district level Committee** chaired by the District Magistrate containing at least three representatives of local traditional coastal communities including fishermen to ensure the involvement of all stakeholders in the decision-making process. Notably, Tamil Nadu and Karnataka had district level committees even prior to the CRZ 2011.

The CRZ Notification 2011, however, lacked implementation on ground owing to the short-staffed nature of the CZMAs in the states and union territories to monitor and regulate the development along the zones. Clause 5 (vi) of the Notification required the states and union territories to prepare and submit the draft CZMP maps in 1:25,000 scale along with their recommendations in a twenty four month period from the issued date. The timeline issued, however, was extended 4 times through amendments up until 2016. The CZMAs also indicated that the preparation time was affected due to the lack of data, expertise and institutional help adding to the manpower. The added pressure on the coastal ecosystems to provide for goods and services to the growing population along the coast coupled with the excessive degradation majorly in the form of land and water pollution was detrimental to the ecosystems. With the increasing rates of degradation and vulnerability of the coast to climate changes, the government wanted to elicit the limitations with the CRZ 2011 and the various issues in its implementation state-wise. This led to the constitution of a six-member Committee on June 17, 2014 under the chairmanship of Dr. Shailesh Nayak, then Secretary, Ministry of Earth Sciences. It recognised that the existing staff

was actively able to address only the violations along CRZ II and III and weren't able to take any pro-active steps in CRZ I and IV areas for conservation. The Committee examined it in detail and observed that several of the activities listed under prohibited activities, due to the exemptions, led to ambiguity among the stakeholder (Nayak et al., 2015). It further identified that some activities relating to industries are governed by Acts and legislations outside of CRZ 2011 and that this overlap should be avoided and that the Acts in themselves should be strengthened by including clauses that specifically address their functioning along the coast. In recognising the lack of resources for CZMAs to effectively monitor and regulate the directive, the committee suggested that SICOM should set up appropriate mechanisms for the enforcement of coastal regulations. On the socio-economic front, (i) the hardship faced by the local communities due to the restrictions imposed on housing, development and tourism, (ii) the increasing pressure on the ecosystems to sustain their livelihood. In view of these issues, the committee suggested that the Notification be recast and that a fresh notification shall be considered by the Government, super-seeding the 2011 Notification.

5.6 Coastal Regulation Zone Notification 2019: The Shailesh Committee recommended that the MoEF&CC may formulate concrete proposals and initiate activities for the conservation and protection of the coastal ecosystems as they are of immense importance in regulating the coastal environment and securing of the local communities' livelihood. Sensitisation drives for the CZMAs on the importance of the coastal ecosystems can help them engage in more pro-active measures in the CRZ 1 and IV areas more effectively. In order to promote economic activities along the coast that can reduce the pressure on ecosystems, the committee identified that the ecosystems can attract tourism if properly managed. It also held that new opportunities and initiatives are needed to address the socio-economic development along the coast. This report led to amendments being made to the CRZ 2011 to promote development along the coast with little concern to the already existing violations along the coast., 3 amendments were made that were pro-development in 2015. The recommendations along with the proposed draft CRZ Notification 2018 (<http://envfor.nic.in/sites/default/files/press-releases/DRAFT%20CRZ%20NOTIFICATION%2020181.pdf>) were considered for the preparation of a fresh notification. The draft notification, however, was strongly criticised for its pro-development stand along the coast even though it places a lot of weight on the importance of the coastal ecosystem and their conservation. In the guise of sustainable development, the draft suggested the coast will be opened up industry, real-estate and tourism. The Central Government, in 19th January, 2019, after considering the views of the stakeholders on the draft, issued the Coastal Regulation Zone Notification 2019 ([http://envfor.nic.in/sites/default/files/GSR%2037\(E\)%20DATED%2018.01.2019.pdf](http://envfor.nic.in/sites/default/files/GSR%2037(E)%20DATED%2018.01.2019.pdf)).

The changes brought about in the notification will promote affordable housing, thereby accommodating the people at large looking for shelter. Tourism, identified through the notification to be one of the greatest creators of livelihood and jobs, will be boosted, leading to more infrastructure, especially surrounding the ESAs and ecosystems covered under CRZ I at large. In addressing the growing population and its demand, the Floor Space Index (FSI), which had been

frozen since the 1991 notification, has been undone by the 2019 Notification, which permits an extension of the FSI with the intention of enabling redevelopment of the coastal areas. To aggravate the environmental consequences of the above mentioned changes, the Notification further divides CRZ III into CRZ – III A and B depending on the population density where CRZ III-A is densely populated with a density of 2161 persons per square kilometre in accordance to the 2011 Census. The No Development Zone in these regions have been reduced 200 meters from the HTL to only 50 meters. With respect to the conservation of coastal ecosystems, all ESAs have been accorded special importance with specific guidelines related to their conservation and management plans being drawn as a part of the notification. A few of them include the rejuvenation and rehabilitation of dead/destroyed coral areas, protection of mangroves and their buffer areas though detailed plans prepared by the Government, efforts to increase the forest area to aid better in mitigating natural disasters like floods and the identification and protection of turtle nesting grounds as per Wildlife Protection) Act of 1972. However, the emphasis placed on the importance of protecting and conserving the ecosystem is directly challenged by the mechanisms introduced in promoting socio-economic activities along the coast. Though the Shailesh Committee urges on the need for immediate stringent measures to counter the growing pollution levels and illegal encroachments in the CRZ I areas, the efficiency with which these recommendations would be implemented remains to be uncertain given the trends of pollution rates and the effectiveness with which it has been handled over the last few decade.

6.0 Chronology of CRZ Notifications, India

In this section, the chronology of the CRZ Notifications, from their inception, through their amendments, to the recent 2019 notification has been tabulated (Table 2).

Year	Date	Event	Significant outcomes
1972		24 th United Nations General Assembly (UNGA) meet	India recognises the impact of population growth on the natural environment
1986	23-May	Environment Protection Act (EPA)	Enacted to implement decisions taken at the UN conference on the Human Environment
1981		Advisory sent by the then Prime Minister Mrs. Indira Gandhi to the coastal state governments	Stipulation of a No Development Zone (NDZ) within 500m of the HTL along the coast
1984	March	Guidelines circulated by the Department of Environment	Guidelines suggested that environmental impact assessment studies should be carried for any form of developmental project
1990	15-Dec	S.O. 114(E) - Draft CRZ Notification issued by MoEF&CC (previously known as MoEF)	Invited suggestions and objections from public on the to-be-implemented directive on coastal zone management
1991	19-Feb	CRZ Notification 1991	Declared 500 m on the landward side from HTL and the area between the HTL and LTL as Coastal Regulation Zones and regulated the activities in the CRZ areas

1994	18-Aug	S.O. 595(E) - Amendment to the CRZ Notification 1991	Relaxed CRZ area to 50 meters along the tidal influenced water bodies
1997	31-Jan	S.O. 73(E) - Amendment to the CRZ Notification 1991	Permitted mining of sand and drawal of groundwater in the CRZ area in Andaman and Nicobar
1997	09-Jul	S.O. 494(E) - Amendment to the CRZ Notification 1991	Permitted reclamation within port limits, constructions for operation, expansion and modernization of ports
1999		Constitution of NCZMA and SCMZAs/UTCZMAs by the MoEF&CC as per the S.O.664 of 1993	Authorities delegated powers under Section 5 of EPA (1986) to regulate and monitor the activities along the coast in line with the CRZ Notification
2000	04-Aug	S.O. 730(E) - Amendment to the CRZ Notification 1991	Permitted storage of LNG in the inter-tidal area and exploration and extraction of oil and gas in CRZ areas
2001	12-Apr	S.O. 329(E) - Amendment to the CRZ Notification 1991	Permitting setting up of projects and Department of Atomic Energy, Pipelines and conveying systems in CRZ areas
2002	21-May	S.O. 329(E) - Amendment to the CRZ Notification 1991	Permitted non polluting industries in the field of IT and other service industries in the CRZ areas of special economic zones
2002	19-Oct	S.O. 110(E) - Amendment to the CRZ Notification 1991	Permitted non conventional energy facilities, desalination plants, air strips in Coastal Regulation Zone of A&N and Lakshadweep. Storage of non-hazardous cargo such as edible oil, fertilizer and food grain was also permitted
2003	22-Apr	S.O. 460(E) - Amendment to the CRZ Notification 1991	Project costing more than 5 crores requires clearance from Ministry of Environment and Forests
2003	30-May	S.O. 636 (E) - Amendment to the CRZ Notification 1991	Permitted construction of embankment facilities for Lakshadweep in Coastal Regulation Zone –I areas
2003	24-Jun	S.O. 725(E) - Amendment to the CRZ Notification 1991	Permitted construction of trans-harbour sea links passing through Coastal Regulation Zone –I areas
2003	24-Jul	S.O. 838(E) - Amendment to the CRZ Notification 1991	Relaxed No Development Zone to 50 mts from 200 mts from HTL in A&N and Lakshadweep for promoting tourism
2004		M.S. Swaminathan Committee appointed by the MoEF&CC	Having identified the need for a scientific basis for the coastal management and regulation of activities along the coast, the committee was formed to review the CRZ Notification; its recommendations included the zonation of a vulnerability line, inclusion of territorial waters in the CRZ Zones and changes in the boundaries among others.
2005	25-Jan	S.O. 86(E) - Amendment to the CRZ Notification 1991	Permitted sand mining for construction purpose on a case to case basis in the UT of Andaman and Nicobar islands

2007	26-Mar	S.O. 451(E) - Amendment to the CRZ Notification 1991	Permitted the setting up of facilities to store fertilizers and raw materials required for manufacturing in addition to the petroleum products and chemicals
2008	01-May	Draft Coastal Management Zone (CMZ) notification 2008	Prepared in line with the recommendations from the M.S. Swaminathan report, the draft CMZ notification was faced with a lot of protests from the civil society and fishermen at large triggered by the permitted activities along the coast
2009	15-May	S.O. 1243(E) - Amendment to the CRZ Notification 1991	Permitted the development of green field Airport at Navi Mumbai subject to detailed scientific study for incorporating adequate environmental safeguard measures
2009	15-Jun	Expert committee chaired by Dr. M.S. Swaminathan constituted by the MoEF&CC	This 4-member committee was formed to recommend future steps on the draft CMZ Notification of 2008 and to advise the government on the policy and legal framework for Integrated Coastal Zone Management (ICZM); It recommended that the draft CMZ notification be allowed to lapse, keeping the CRZ Notification 1991 as the basic framework with suitable alterations to address the sea level rise induced by climate change and the growing pressure of population on coastal resources and biodiversity
2010		Establishment of SICOM (Society for Integrated Coastal Management)	SOCIM was established under the Society Registration Act, 1986 by the MoEF&CC which works as a National Project Management Unit for the ICZM Project
2010		Establishment of NCSCM (National Centre for Sustainable Coastal Management)	NCSCM established by SICOM under MoEF&CC with the vision of promoting sustainable coastal practices through increased stakeholders-participation, conservation practices based in scientific research and knowledge management and to assist MoEF&CC and the states in implementing the CRZ Notification more effectively
2010	Sept	ICZM Project Phase 1	The MoEF&CC, through SICOM (Society for Integrated Coastal Management) embarked on the World Bank funded ICZM project for India; Comprehensive aerial photography work, sediment cell mapping, Ecologically Sensitive Areas (ESAs) and shoreline changes were mapped for the entire Indian coast; Gujarat, Odisha and West Bengal selected for the preparation of ICZM plans based in scientific data and in consultation with the stakeholders
2010	15-Sep	S.O.2291 (E) - Draft CRZ Notification 2011	A series of public consultations were held in all coastal states prior to the announcement of the draft in early March, 2010 which was then integrated in the Draft CRZ Notification issued in September

2011	07-Jan	CRZ Notification 2011	Taking recommendations from the M.S. Swaminathan Committee 2009, the CRZ Notification 2011 was issued. The main objectives of the notification included the security of the livelihood of fisherman and other local communities dependent on the coast, conservation and protection of the coastal environment and to promote sustainable development practices
2013	22-Aug	S.O. 2557(E) - Amendment to the CRZ Notification 2011	Revised its position on the CZMP maps from allowing the State/UT CZMAs to continue with the already approved maps till 31st January, 2014 to asking them to submit the draft CZMPs along with its recommendations on or before 30th September, 2013
2014	30-Apr	S.O. 1244(E) - Amendment to the CRZ Notification 2011	Extension for the submission of CZMP maps till 30th September, 2015
2014	17-Jun	Committee chaired by Dr. Shailesh Nayak constituted by the MoEF&CC	The 6-member committee had sittings with the Governments of Maharashtra, Karnataka and Kerala and also critically examined the CRZ notification 2011 to highlight the issues in its framework and execution. Along with recommending improvements to the Notification, the committee suggested that it should be recast and that a fresh notification should be considered by the government.
2014	28-Nov	S.O. 3085(E) - Amendment to the CRZ Notification 2011	Inclusion of 'salt works' under activities regulated under the CRZ provision; Activities requiring EIA clearance had to be screened by the CZMA and only then recommended to the MoEF&CC for consideration
2015	17-Feb	S.O. 556(E) - Amendment to the CRZ Notification 2011	Permitted the construction of memorials/monuments by the concerned State Governments in CRZ IV (A) areas with adequate environmental safeguards implemented
2015	31-Mar	S.O. 938(E) - Amendment to the CRZ Notification 2011	Extension for the submission of CZMP maps till 31st January, 2016
2015	16-Jun	S.O. 1599(E) - Amendment to the CRZ Notification 2011	Buildings permitted on the landward side of the existing and proposed roads or existing authorised structures provided they subject to the existing local town and country planning regulations
2015	30-Dec	S.O. 3552(E) - Amendment to the CRZ Notification 2011	Permitted land reclamation in case of roads being built on surface provided they are not authorised for permitting development on the landward side
2016	22-Mar	S.O. 1212(E) - Amendment to the CRZ Notification 2011	Extension for the submission of CZMP maps till 31st January, 2017

2019	19-Jan	CRZ Notification 2019	The recommendations made by the Shailesh Nayak Committee and based in the views received on the draft CRZ Notification 2018, the revised Notification was issued by the MOEF&CC. This new notification, in addition to the emphasis on building conservation strategies of natural ecosystems, promotes economic activities that can be taken up by the local communities with the intention of reducing the pressure on the ecosystems.
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Table 2: Chronology of CRZ Notifications

7.0 CRZ-I Violations – Karnataka Coast

The coast of Karnataka is endowed with numerous ecosystems found within the 320 km coastal line including estuaries, lagoons, bays, sand dunes and beaches. From north to south, it is a narrow strip of territory running parallel to the Western Ghats and from each to west, a broken low plateau. The narrow strip is intersected by many coastal rivers and streams that are west-flowing a few of which include Aghanashini, Bedthi, Sita, Sharavathi, Kali and Nethravathi. The coastal Karnataka of the state are composed of Uttara Kannada, Udupi and Dakshina Kannada districts. The coast of Karnataka has high degree of economic development and population density with districts like Udupi majorly focused on small-scale industries that have their raw resource base in the natural ecosystems. The increased economic activities, however, have come at a huge cost for the environmental health along the coast. About 50% of the Karnataka coast is subjected to moderate soil erosion with 6% being subjected to severe erosion (SoER, 2016). The city of Mangalore (capital of Dakshina Kannada) generated 250 tonnes of solid waste per day out of which 200 tonnes were dumped in landfills whereas with the case of Karwar (capital of Uttara Kannada) the numbers were 12 out of 18 tonnes per day that were dumped in landfills and 5 out of 6 tonnes per day for Udupi (capital of Udupi). Subjecting of inshore and estuarine waters with pollution by discharging of untreated domestic and sewage waste accompanied by the inadequate sanitation measures taken in the areas adjacent to the landfills, port activities and dumping of organic waste and debris have majorly degraded the water quality of the coast. The constant drive to expand and urbanise the coast has come in direct clash with the interest of protecting and conserving the natural ecosystems. Starting off as harmless resting grounds for fishermen, regions in and around mangrove gradually start losing their vegetative cover. This is followed by these patches being converted to aquaculture or agricultural lands to support the needs of the people in the area. Once the patches lose their fertility, they become barren lands that invite construction, hence turning dense vegetative cover into buildings and other forms of urban space. The growth of shrimp farming as an enterprise resulted in the inception of numerous aqua-cultural ponds, destroying the mangrove vegetation in the process (Chandran et al., 2012). With the increase in economic activities, there is a corresponding increase in the population of the region, which then leads to more lands (especially mangrove areas) being converted to agricultural/aqua-cultural lands to support the growing population, leading to increased economic wealth and the vicious cycle goes on.

CRZ Notification 2011 defined CRZ I areas as those which are ecologically sensitive and the geomorphologic features that play an important role in maintaining coastal integrity. The CRZ I was further classified into CRZ I-A and CRZ I-B.

- CRZ I-A cover mangroves, corals and coral reefs, sand dunes, biologically active mudflats, salt marshes, turtle nesting grounds, horse shoe crabs habitats, sea grass beds, nesting grounds of birds, national parks, marine parks, sanctuaries, reserve forests and other areas protected under the provisions of Wild Life (Protection) Act, 1972 (53 of 1972), the Forest (Conservation) Act, 1980 (69 of 1980) or Environment (Protection) Act, 1986 (29 of 1986); including Biosphere Reserves and areas of archaeological importance and heritage sites.
- CRZ I-B is the area between the Low Tide Line (LTL) and the High Tide Line (HTL) as delineated by NCSCM (CRZ Notification, 2011). Under clause 7 (i)(A)(a) of the notification, the mangroves covering over 1000 square meters are to be provided with a 50 meters buffer zone. The buffer zone of 50 meters has been grossly violated through encroachment, illegal dumping, construction activity and slum redevelopment (Shailesh Committee report, 2010). These encroachments slowly start coming into the mangrove patches eventually, disrupting the ecological balance along the coast supported by the ecosystem. The Shailesh Committee recommended that these buffer regions be developed as a green belt under social forestry or gardens and that the concerned State/UT Governments to earmark adequate funds and strategies for promoting, conserving and reclamation of mangrove areas. Violations of this nature are not only restricted to the mangroves and their buffer zones but across all the ecologically sensitive areas across CRZ-I.

The CRZ-I violations for the state of Karnataka has been marked with respect to the CZMP maps. The maps of scale 1:25,000 were obtained from the Karnataka State Coastal Zone Management Authority (KSCZMA) website (Figure 1). The KSCZMA was constituted in January 4th, 2002 under S.O. 21 (E). The CRZ I-A and CRZ I-B regions were digitised over the geo-referenced CZMP maps using Quantum GIS, open sourced geo-information systems software (<http://wgbis.ces.iisc.ernet.in/foss>). The digitised vector layers of the CRZ I areas were overlaid on Google Earth's satellite data to identify and mark the violations. These violations were identified and marked on a taluk-level across Uttara Kannada, Udupi and Mangalore, the three coastal districts of Karnataka. Violations identified across four important estuaries along the Karnataka coast have been presented in Figure 2.

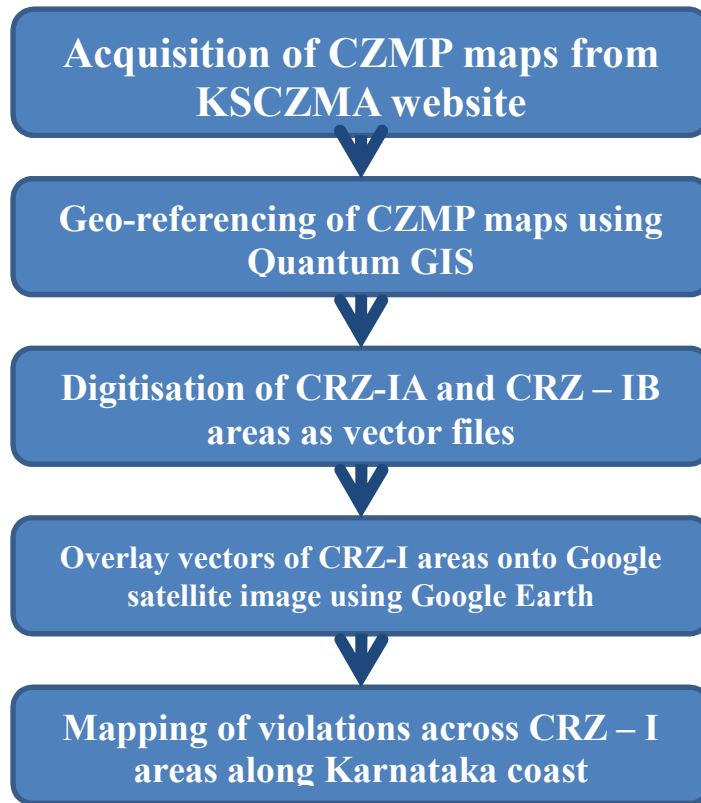
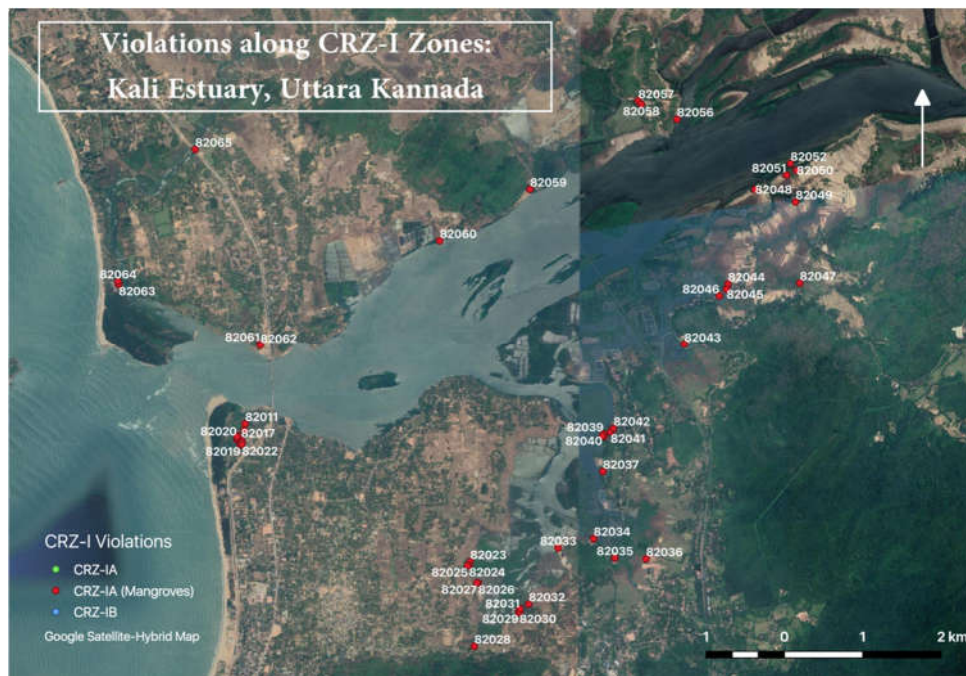
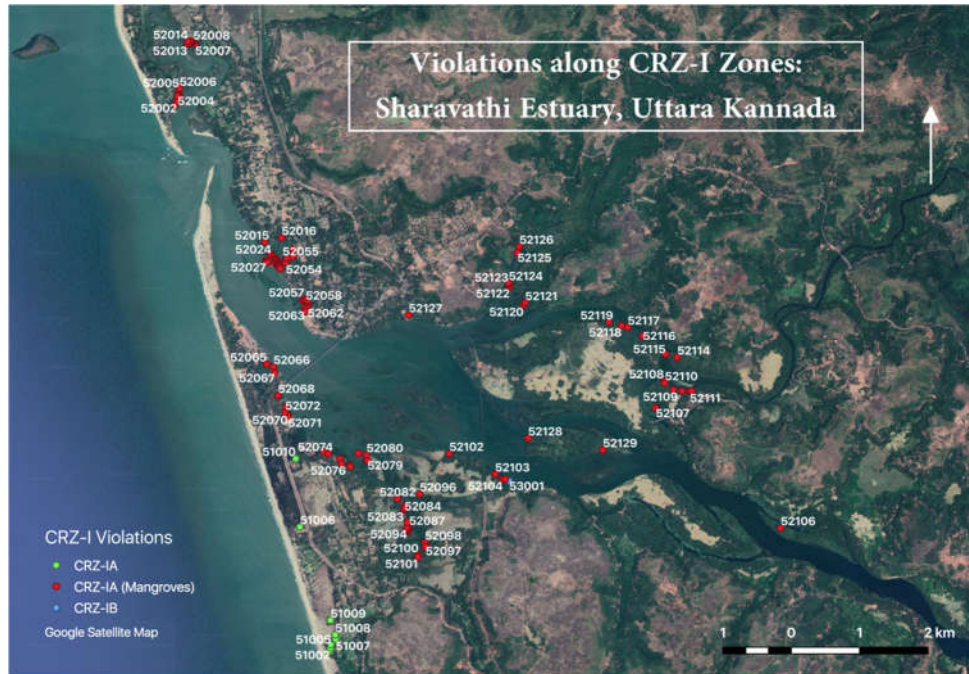


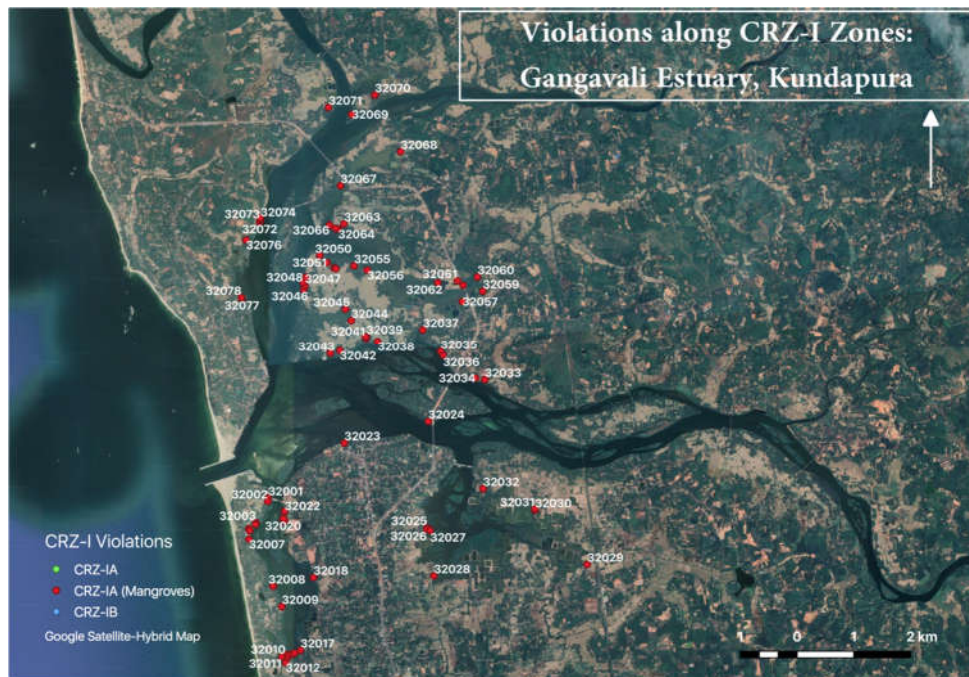
Figure 1. Method for mapping CRZ violations



(a) Kali Estuary, Karwar taluk, Uttara Kannada, Karnataka



(b) Sharavathi Estuary, Kumta taluk, Uttara Kannada, Karnataka



(c) Gangavali Estuary, Kundapura taluk, Udupi, Karnataka



(d) Netravathi Estuary, Mangalore taluk, Dakshina Kannada, Karnataka

Figure 2: Violations of CRZ-I Zones in (a) Kali estuary (b) Sharavathi estuary (c) Gangavali estuary (d) Netravathi estuary in Karnataka

Karnataka has a total of 11839.47 ha of the coast delineated as CRZ-I areas across the three coastal districts, i.e., Dakshina Kannada (982.03 ha), Udupi (3040.06 ha) and Uttara Kannada (11839.47 ha). Out of this, the mangroves occupy an area of 2298.94 ha (54%) without including the buffer area. Karwar taluk of Uttara Kannada has the largest area covered by mangroves (934.57 ha) with Bhatkal, Uttara Kannada having the least (13.88 ha) (Table 3).

District	Taluk	CRZ-IB	CRZ-IA	CRZ-IA (Mangroves)	CRZ-I (Taluk-wise)	CRZ-I (District-wise)
Dakshina Kannada	Mangalore	702.41	279.62	155.04	982.03	982.03
Udupi	Udupi	1426.59	323.19	141.55	1749.78	3040.06
	Kundapura	796.71	493.57	261.48	1290.28	
Uttara Kannada	Bhatkal	379.30	86.22	13.88	465.52	7817.38
	Honavar	642.82	639.75	151.66	1282.58	
	Kumta	2341.03	1011.39	566.50	3352.42	
	Ankola	578.93	140.54	74.27	719.48	
	Karwar	681.32	1316.06	934.57	1997.39	
Total		7549.12	4290.35	2298.94	11839.47	11839.47

Table 3: Area covered by CRZ-I zones along Karnataka Coast (in ha)

District	Taluk	CRZ-1A	CRZ-1A (Mangroves)	CRZ-1B	CRZ-1 (Taluk-Wise)	CRZ-1 (District-wise)
		(No.)				
Dakshina Kannada	Mangalore	2	146	12	160	160
Udupi	Udupi	0	193	19	212	375
	Kundapura	0	163	0	163	
Uttara Kannada	Bhatkal	5	5	21	31	288
	Honavar	10	129	1	140	
	Kumta	4	44	4	52	
	Ankola	0	0	0	0	
	Karwar	0	65	0	65	
Total		21	745	57	823	

Table 4. CRZ-I violations along the coast of Karnataka (Count in no.)

District	Taluk	CRZ-1A	CRZ-1A (Mangroves)	CRZ-1B	CRZ-1 (Taluk wise)	CRZ-1 (District wise)
		Area (ha)				
Dakshina Kannada	Mangalore	0.07	24.96	0.42	25.45	25.45
Udupi	Udupi	0.00	4.66	0.87	5.52	13.41
	Kundapura	0.00	7.88	0.00	7.88	
Uttara Kannada	Bhatkal	0.76	0.30	0.24	1.31	17.48
	Honavar	3.03	2.56	0.02	5.60	
	Kumta	0.28	1.57	0.05	1.91	
	Ankola	0.00	0.00	0.00	0.00	
	Karwar	0.00	8.67	0.00	8.67	
Total		4.14	50.59	1.61	56.34	

Table 5. CRZ-I violations along the coast of Karnataka (Area in ha)

A total of 823 instances of violations (Table 4) with respect to the CRZ Notification 2011 were identified across the state covering an area of 56.34 ha (**Error! Reference source not found.**). The district of Uttara Kannada was found to have the highest instances of violations (288) with the Honavar Taluk contributing the most (140) within the district. Of the 140 recorded violations, about 92% violations are with respect to the mangroves and their 50 meter buffer zone where applicable as per the CRZ 2011 provisions. The district of Dakshina Kannada (Mangalore taluk) was found to have the least instances of violation (160). However, with respect to the area over which the violations have occurred, the least was in Udupi (13.41 ha) with the highest being 25.45 ha, as identified in Dakshina Kannada (Mangalore taluk). Most of the violations were found to

have happened at the 50 meter mangrove buffer areas with the mangroves facing serious degradation problem, as brought out in the Shailesh committee report as well. A significance number of these violations are residential in nature though there are a few violations owing to industrial set-ups and/or expansions over large areas. The district of Udupi, having Kundapura and Udupi taluks along the coast, is known for its extensive small scale industries. The district has violated the mangroves and their buffers the most with a total of 356 violations over a cumulative area of 12.54 ha. Mangroves along estuaries and generally at the banks of tidal-influenced water bodies are critically affected by the development along the banks materialised in the form of infrastructure required for small-scale boat docking and the conversion of land into aqua-culture ponds and agricultural fields among other anthropogenic threats. The depletion of mangroves along the coast and banks of tidal-influenced water bodies, almost always invites more violations in the name of development and in the process, make the areas more vulnerable to natural calamities including floods and sea-level rise. Extensive CRZ-IA violations can be observed closer to estuaries with high productivity values owing to the socio-economic implications highly productive ecosystems have on the local communities. CRZ-IB zones however are very few in numbers with most of the taluks having no violations. They are, however, very high (21) in the case of Bhatkal taluk of Uttara Kannada with four taluks across Karnataka having no violations at all. A list of all the violations marked across the Karnataka coast has been listed taluk-wise as Annexure 1.

8.0 Conclusion

The KSCZMA is authorised with the power to take up measures to protect and improve the coastal environment and the prevention of its depletion. It is responsible for the monitoring and implementation of the CRZ rules and preparation of CZMPs including the mapping of HTL, LTL and hazard line, with the technical support from NCSCM. Exclusively constituted to deal with environmental issues relating to Coastal Regulation Zones, the state authority is responsible for inquiring into cases of alleged violation of the provisions of the CRZ Notification and if found necessary in a specific case, for the issuing of directions under section 5 of the Act. Further, provision has been made for the cases of violations to be referred to the NCZMA with comments if found necessary. Once directions are issued, the authority is expected to fill complaints in case of non-compliance of the directions under section 19 of the Act. For the successful implementation of the CRZ Notification 2019, the violations made across the CRZ zones in accordance with the CRZ Notification 2011 have to be documented and legally dealt with. It becomes increasingly easier for such violations to establish themselves as legitimate holdings under revised notifications, often creating tension between the local communities and the authorities. The socio-equity and the economic impacts of acting upon such violations is often a sensitive domain for legislations and directives to address but do not substantiate the exclusion of its environmental impact on decision-

making. By violating the rules and regulations set in place for the protection of the coastal ecosystem, we tend to put at stake the very factors that make the coast susceptible to human settlements. An increase in encroachments, accompanied by the increased levels of resource-extraction and pollution makes the coast more vulnerable to natural disasters, putting the very lives of the communities depend on it at stake. Hence while focussing on pro-active measures for the conservation and restoration of coastal ecosystems, implementation of mechanisms to effectively address any violations of the directive is necessary.

Under National Biodiversity Target 6, 106 coastal and marine sites have been identified and prioritised as Important Coastal and Marine Areas (ICMBAs) by the Wildlife Institute of India with the aim of conserving a substantial portion of the coastal and marine areas in the country. Out of the 106, 62 belong to the west coast while 44 belong to the east and 22 ICMBAs have been prioritized for immediate conservation measures. Public awareness programs needs to be taken up by the government authorities to impart the scientific basis of conservation and restoration programs, thereby increasing the credibility of all the stakeholders, making the execution of community-driven initiatives smoother and personal. Need to declare ecologically sensitive regions of high productivity as Biological Heritage Site (BHS). Steps towards restoring mangrove vegetation should be carried out with the help of the local communities across all estuaries in Karnataka considering their tremendous ecological and economic value. Further, the use of remote sensing and satellite data can further help in time-sensitive analyses of natural resource availability, their rates of extraction and the violations happening across the CRZ zones, which can then be acted upon as they emerge, avoiding the socio-economic problems that would arise with violations established over longer periods that support the livelihood of the coastal communities dependent on it for that would create friction between the authorities and the local community. Sustainable development of the coastal region can be achieved by sustaining the natural resources while supporting activities that can help in keeping them intact. The inclusion of the local communities, who base their whole lives around the availability of natural resources from the coastal ecosystems, have to be consulted regularly regarding the activities along the coast and their help should be sought while planning and implementing pro-active, prudent conservation and restoration strategies that will contribute towards increasing the health of coastal ecosystems.

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Annexure 1 – Violations in CRZ-I zone across Karnataka Coast

This contains the details for all the violations identified in the CRZ-I Zone across the coast of Karnataka. Along with the distinct ID for every individual violation marked, the taluk, district, extent in terms of Ha and the co-ordinates in terms of degree decimals is given. '1A_Mangrove' under the column 'Violated zone' specifically refers to violations in the mangrove (and 50m buffer for mangroves with area above 10,000 square meters) regions.

S. No.	ID	Violated zone	Taluk Name	District Name	Area (Ha)	Latitude	Longitude
1	11001	1A	Mangalore	Dakshina Kannada	0.0625	13.1017	74.7808
2	11002	1A	Mangalore	Dakshina Kannada	0.0058	13.1018	74.7809
3	12001	1A_Mangrove	Mangalore	Dakshina Kannada	0.0034	12.7629	74.8687
4	12002	1A_Mangrove	Mangalore	Dakshina Kannada	0.0111	12.7673	74.8664
5	12003	1A_Mangrove	Mangalore	Dakshina Kannada	0.0180	12.8302	74.8399
6	12004	1A_Mangrove	Mangalore	Dakshina Kannada	0.0110	12.8292	74.8413
7	12005	1A_Mangrove	Mangalore	Dakshina Kannada	0.0099	12.8288	74.8435
8	12006	1A_Mangrove	Mangalore	Dakshina Kannada	0.0177	12.8290	74.8441
9	12007	1A_Mangrove	Mangalore	Dakshina Kannada	0.0132	12.8290	74.8444
10	12008	1A_Mangrove	Mangalore	Dakshina Kannada	0.0068	12.8302	74.8455
11	12009	1A_Mangrove	Mangalore	Dakshina Kannada	0.0073	12.8300	74.8450
12	12010	1A_Mangrove	Mangalore	Dakshina Kannada	0.0095	12.8302	74.8445
13	12011	1A_Mangrove	Mangalore	Dakshina Kannada	0.0149	12.8308	74.8454
14	12012	1A_Mangrove	Mangalore	Dakshina Kannada	0.0056	12.8311	74.8452
15	12013	1A_Mangrove	Mangalore	Dakshina Kannada	0.0058	12.8309	74.8445
16	12014	1A_Mangrove	Mangalore	Dakshina Kannada	0.0126	12.8309	74.8432
17	12015	1A_Mangrove	Mangalore	Dakshina Kannada	0.0138	12.8296	74.8478
18	12016	1A_Mangrove	Mangalore	Dakshina Kannada	0.0154	12.8265	74.8446
19	12017	1A_Mangrove	Mangalore	Dakshina Kannada	0.0119	12.8271	74.8442
20	12018	1A_Mangrove	Mangalore	Dakshina Kannada	0.0123	12.8272	74.8436
21	12019	1A_Mangrove	Mangalore	Dakshina Kannada	0.0025	12.8261	74.8437
22	12020	1A_Mangrove	Mangalore	Dakshina Kannada	0.0044	12.8263	74.8434
23	12021	1A_Mangrove	Mangalore	Dakshina Kannada	0.0076	12.8258	74.8444
24	12022	1A_Mangrove	Mangalore	Dakshina Kannada	0.0108	12.8257	74.8446
25	12023	1A_Mangrove	Mangalore	Dakshina Kannada	0.0124	12.8256	74.8444
26	12024	1A_Mangrove	Mangalore	Dakshina Kannada	0.0278	12.8256	74.8448
27	12025	1A_Mangrove	Mangalore	Dakshina Kannada	0.0176	12.8255	74.8452
28	12026	1A_Mangrove	Mangalore	Dakshina Kannada	0.0033	12.8261	74.8454
29	12027	1A_Mangrove	Mangalore	Dakshina Kannada	0.0618	12.8297	74.8519

30	12028	1A_Mangrove	Mangalore	Dakshina Kannada	0.0136	12.8297	74.8522
31	12029	1A_Mangrove	Mangalore	Dakshina Kannada	0.0170	12.8285	74.8521
32	12030	1A_Mangrove	Mangalore	Dakshina Kannada	0.0264	12.8287	74.8531
33	12031	1A_Mangrove	Mangalore	Dakshina Kannada	0.0151	12.8288	74.8535
34	12032	1A_Mangrove	Mangalore	Dakshina Kannada	0.0128	12.8298	74.8531
35	12033	1A_Mangrove	Mangalore	Dakshina Kannada	0.0169	12.8293	74.8584
36	12034	1A_Mangrove	Mangalore	Dakshina Kannada	0.0021	12.8291	74.8615
37	12035	1A_Mangrove	Mangalore	Dakshina Kannada	0.0017	12.8291	74.8617
38	12036	1A_Mangrove	Mangalore	Dakshina Kannada	0.0017	12.8290	74.8617
39	12037	1A_Mangrove	Mangalore	Dakshina Kannada	0.0020	12.8291	74.8612
40	12038	1A_Mangrove	Mangalore	Dakshina Kannada	0.0166	12.8303	74.8656
41	12039	1A_Mangrove	Mangalore	Dakshina Kannada	0.0303	12.8302	74.8653
42	12040	1A_Mangrove	Mangalore	Dakshina Kannada	0.0218	12.8289	74.8657
43	12041	1A_Mangrove	Mangalore	Dakshina Kannada	0.0209	12.8294	74.8663
44	12042	1A_Mangrove	Mangalore	Dakshina Kannada	0.0098	12.8295	74.8666
45	12043	1A_Mangrove	Mangalore	Dakshina Kannada	0.0016	12.8298	74.8666
46	12044	1A_Mangrove	Mangalore	Dakshina Kannada	0.0330	12.8294	74.8671
47	12045	1A_Mangrove	Mangalore	Dakshina Kannada	0.0115	12.8307	74.8662
48	12046	1A_Mangrove	Mangalore	Dakshina Kannada	0.0157	12.8305	74.8663
49	12047	1A_Mangrove	Mangalore	Dakshina Kannada	0.0024	12.8302	74.8675
50	12048	1A_Mangrove	Mangalore	Dakshina Kannada	0.0147	12.8311	74.8678
51	12049	1A_Mangrove	Mangalore	Dakshina Kannada	0.0032	12.8310	74.8678
52	12050	1A_Mangrove	Mangalore	Dakshina Kannada	0.0061	12.8313	74.8687
53	12051	1A_Mangrove	Mangalore	Dakshina Kannada	0.0861	12.8724	74.8229
54	12052	1A_Mangrove	Mangalore	Dakshina Kannada	0.0973	12.8732	74.8231
55	12053	1A_Mangrove	Mangalore	Dakshina Kannada	0.0131	12.8735	74.8236
56	12054	1A_Mangrove	Mangalore	Dakshina Kannada	0.0079	12.8736	74.8237
57	12055	1A_Mangrove	Mangalore	Dakshina Kannada	0.0676	12.8778	74.8258
58	12056	1A_Mangrove	Mangalore	Dakshina Kannada	0.0214	12.8917	74.8173
59	12057	1A_Mangrove	Mangalore	Dakshina Kannada	0.0224	12.8916	74.8188
60	12058	1A_Mangrove	Mangalore	Dakshina Kannada	0.0121	12.8948	74.8159
61	12059	1A_Mangrove	Mangalore	Dakshina Kannada	0.0177	12.8947	74.8158
62	12060	1A_Mangrove	Mangalore	Dakshina Kannada	0.7517	12.8991	74.8153
63	12061	1A_Mangrove	Mangalore	Dakshina Kannada	0.0101	12.8999	74.8157
64	12062	1A_Mangrove	Mangalore	Dakshina Kannada	0.0115	12.8998	74.8157
65	12063	1A_Mangrove	Mangalore	Dakshina Kannada	0.3051	12.9080	74.8229
66	12064	1A_Mangrove	Mangalore	Dakshina Kannada	0.0224	12.9085	74.8243
67	12065	1A_Mangrove	Mangalore	Dakshina Kannada	0.0132	12.9096	74.8239
68	12066	1A_Mangrove	Mangalore	Dakshina Kannada	0.0138	12.9094	74.8240

69	12067	1A_Mangrove	Mangalore	Dakshina Kannada	1.1045	12.9141	74.8244
70	12068	1A_Mangrove	Mangalore	Dakshina Kannada	0.0072	12.9194	74.8254
71	12069	1A_Mangrove	Mangalore	Dakshina Kannada	0.0106	12.9204	74.8261
72	12070	1A_Mangrove	Mangalore	Dakshina Kannada	0.1326	12.9217	74.8265
73	12071	1A_Mangrove	Mangalore	Dakshina Kannada	0.1544	12.9227	74.8268
74	12072	1A_Mangrove	Mangalore	Dakshina Kannada	0.4643	12.9247	74.8272
75	12073	1A_Mangrove	Mangalore	Dakshina Kannada	1.4249	12.9468	74.8338
76	12074	1A_Mangrove	Mangalore	Dakshina Kannada	0.4231	12.9481	74.8343
77	12075	1A_Mangrove	Mangalore	Dakshina Kannada	0.3611	12.9503	74.8366
78	12076	1A_Mangrove	Mangalore	Dakshina Kannada	2.2437	12.9563	74.8363
79	12077	1A_Mangrove	Mangalore	Dakshina Kannada	1.8616	12.9557	74.8419
80	12078	1A_Mangrove	Mangalore	Dakshina Kannada	1.0121	12.9591	74.8423
81	12079	1A_Mangrove	Mangalore	Dakshina Kannada	0.1390	12.9598	74.8439
82	12080	1A_Mangrove	Mangalore	Dakshina Kannada	0.3499	12.9608	74.8418
83	12081	1A_Mangrove	Mangalore	Dakshina Kannada	1.5033	12.9608	74.8375
84	12082	1A_Mangrove	Mangalore	Dakshina Kannada	0.0412	12.9590	74.8308
85	12083	1A_Mangrove	Mangalore	Dakshina Kannada	1.4737	12.9596	74.8283
86	12084	1A_Mangrove	Mangalore	Dakshina Kannada	0.0336	12.9597	74.8256
87	12085	1A_Mangrove	Mangalore	Dakshina Kannada	0.3404	12.9596	74.8265
88	12086	1A_Mangrove	Mangalore	Dakshina Kannada	0.1052	12.9587	74.8305
89	12087	1A_Mangrove	Mangalore	Dakshina Kannada	0.1075	12.9577	74.8309
90	12088	1A_Mangrove	Mangalore	Dakshina Kannada	0.0175	12.9577	74.8314
91	12089	1A_Mangrove	Mangalore	Dakshina Kannada	0.1110	12.9578	74.8320
92	12090	1A_Mangrove	Mangalore	Dakshina Kannada	1.1534	12.9568	74.8308
93	12091	1A_Mangrove	Mangalore	Dakshina Kannada	0.0466	12.9560	74.8317
94	12092	1A_Mangrove	Mangalore	Dakshina Kannada	0.0614	12.9557	74.8312
95	12093	1A_Mangrove	Mangalore	Dakshina Kannada	0.0912	12.9552	74.8311
96	12094	1A_Mangrove	Mangalore	Dakshina Kannada	0.0372	12.9552	74.8315
97	12095	1A_Mangrove	Mangalore	Dakshina Kannada	0.0130	12.9549	74.8315
98	12096	1A_Mangrove	Mangalore	Dakshina Kannada	0.0308	12.9548	74.8314
99	12097	1A_Mangrove	Mangalore	Dakshina Kannada	0.0552	12.9547	74.8310
100	12098	1A_Mangrove	Mangalore	Dakshina Kannada	0.0992	12.9545	74.8309
101	12099	1A_Mangrove	Mangalore	Dakshina Kannada	0.0832	12.9540	74.8309
102	12100	1A_Mangrove	Mangalore	Dakshina Kannada	2.0171	12.9533	74.8329
103	12101	1A_Mangrove	Mangalore	Dakshina Kannada	0.6707	12.9548	74.8330
104	12102	1A_Mangrove	Mangalore	Dakshina Kannada	0.4562	12.9542	74.8330
105	12103	1A_Mangrove	Mangalore	Dakshina Kannada	0.0293	12.9536	74.8338
106	12104	1A_Mangrove	Mangalore	Dakshina Kannada	0.0258	12.9557	74.8347
107	12105	1A_Mangrove	Mangalore	Dakshina Kannada	0.0141	12.9548	74.8343

108	12106	1A_Mangrove	Mangalore	Dakshina Kannada	0.8232	13.0340	74.7881
109	12107	1A_Mangrove	Mangalore	Dakshina Kannada	0.0123	13.0335	74.7925
110	12108	1A_Mangrove	Mangalore	Dakshina Kannada	0.0028	13.0333	74.7925
111	12109	1A_Mangrove	Mangalore	Dakshina Kannada	0.0086	13.0407	74.7990
112	12110	1A_Mangrove	Mangalore	Dakshina Kannada	0.0068	13.0369	74.7954
113	12111	1A_Mangrove	Mangalore	Dakshina Kannada	0.0101	13.0359	74.7973
114	12112	1A_Mangrove	Mangalore	Dakshina Kannada	0.0074	13.0364	74.7896
115	12113	1A_Mangrove	Mangalore	Dakshina Kannada	0.0286	13.0380	74.7891
116	12114	1A_Mangrove	Mangalore	Dakshina Kannada	0.0271	13.0375	74.7896
117	12115	1A_Mangrove	Mangalore	Dakshina Kannada	0.0311	13.0401	74.7892
118	12116	1A_Mangrove	Mangalore	Dakshina Kannada	0.0206	13.0422	74.7877
119	12117	1A_Mangrove	Mangalore	Dakshina Kannada	0.0134	13.0423	74.7881
120	12118	1A_Mangrove	Mangalore	Dakshina Kannada	0.0062	13.0424	74.7875
121	12119	1A_Mangrove	Mangalore	Dakshina Kannada	0.0145	13.0423	74.7876
122	12120	1A_Mangrove	Mangalore	Dakshina Kannada	0.0179	13.0494	74.7888
123	12121	1A_Mangrove	Mangalore	Dakshina Kannada	0.0143	13.0497	74.7891
124	12122	1A_Mangrove	Mangalore	Dakshina Kannada	0.0991	13.0541	74.7886
125	12123	1A_Mangrove	Mangalore	Dakshina Kannada	0.4089	13.0548	74.7884
126	12124	1A_Mangrove	Mangalore	Dakshina Kannada	0.0149	13.0538	74.7860
127	12125	1A_Mangrove	Mangalore	Dakshina Kannada	0.2010	13.0518	74.7873
128	12126	1A_Mangrove	Mangalore	Dakshina Kannada	2.3258	13.0635	74.7891
129	12127	1A_Mangrove	Mangalore	Dakshina Kannada	0.0519	13.0684	74.7822
130	12128	1A_Mangrove	Mangalore	Dakshina Kannada	0.0135	13.0716	74.7819
131	12129	1A_Mangrove	Mangalore	Dakshina Kannada	0.0196	13.0714	74.7820
132	12130	1A_Mangrove	Mangalore	Dakshina Kannada	0.0109	13.0718	74.7819
133	12131	1A_Mangrove	Mangalore	Dakshina Kannada	0.0110	13.0720	74.7819
134	12132	1A_Mangrove	Mangalore	Dakshina Kannada	0.0146	13.0723	74.7818
135	12133	1A_Mangrove	Mangalore	Dakshina Kannada	0.0108	13.0736	74.7816
136	12134	1A_Mangrove	Mangalore	Dakshina Kannada	0.0326	13.0769	74.7809
137	12135	1A_Mangrove	Mangalore	Dakshina Kannada	0.0246	13.0762	74.7809
138	12136	1A_Mangrove	Mangalore	Dakshina Kannada	0.0092	13.0796	74.7814
139	12137	1A_Mangrove	Mangalore	Dakshina Kannada	0.0710	13.0796	74.7818
140	12138	1A_Mangrove	Mangalore	Dakshina Kannada	0.0688	13.0474	74.7923
141	12139	1A_Mangrove	Mangalore	Dakshina Kannada	0.0048	13.0800	74.7815
142	12140	1A_Mangrove	Mangalore	Dakshina Kannada	0.0063	13.0804	74.7857
143	12141	1A_Mangrove	Mangalore	Dakshina Kannada	0.0372	13.0804	74.7859
144	12142	1A_Mangrove	Mangalore	Dakshina Kannada	0.0086	13.0797	74.7859
145	12143	1A_Mangrove	Mangalore	Dakshina Kannada	0.0054	13.0796	74.7860
146	12144	1A_Mangrove	Mangalore	Dakshina Kannada	0.0109	13.0873	74.7776

147	12145	1A_Mangrove	Mangalore	Dakshina Kannada	0.0212	13.0886	74.7788
148	12146	1A_Mangrove	Mangalore	Dakshina Kannada	0.0100	13.0975	74.7905
149	13001	1B	Mangalore	Dakshina Kannada	0.0173	12.8965	74.8189
150	13002	1B	Mangalore	Dakshina Kannada	0.0115	12.8936	74.8176
151	13003	1B	Mangalore	Dakshina Kannada	0.0200	12.8780	74.8205
152	13004	1B	Mangalore	Dakshina Kannada	0.0598	12.8683	74.8306
153	13005	1B	Mangalore	Dakshina Kannada	0.1353	12.8635	74.8250
154	13006	1B	Mangalore	Dakshina Kannada	0.0152	12.8594	74.8263
155	13007	1B	Mangalore	Dakshina Kannada	0.0105	12.8581	74.8267
156	13008	1B	Mangalore	Dakshina Kannada	0.0281	12.8579	74.8267
157	13009	1B	Mangalore	Dakshina Kannada	0.0173	12.8556	74.8279
158	13010	1B	Mangalore	Dakshina Kannada	0.0202	12.8553	74.8279
159	13011	1B	Mangalore	Dakshina Kannada	0.0664	12.8542	74.8279
160	13012	1B	Mangalore	Dakshina Kannada	0.0219	12.8532	74.8281
161	21001	1A_Mangrove	Udupi	Udupi	0.0482	13.1235	74.7657
162	21002	1A_Mangrove	Udupi	Udupi	0.0095	13.1258	74.7646
163	21003	1A_Mangrove	Udupi	Udupi	0.0256	13.1257	74.7643
164	21004	1A_Mangrove	Udupi	Udupi	0.0045	13.1265	74.7667
165	21005	1A_Mangrove	Udupi	Udupi	0.0165	13.1262	74.7650
166	21006	1A_Mangrove	Udupi	Udupi	0.0123	13.1260	74.7646
167	21007	1A_Mangrove	Udupi	Udupi	0.0104	13.2565	74.7351
168	21008	1A_Mangrove	Udupi	Udupi	0.0077	13.2633	74.7320
169	21009	1A_Mangrove	Udupi	Udupi	0.0029	13.2635	74.7320
170	21010	1A_Mangrove	Udupi	Udupi	0.0081	13.2641	74.7318
171	21011	1A_Mangrove	Udupi	Udupi	0.0026	13.2642	74.7318
172	21012	1A_Mangrove	Udupi	Udupi	0.0146	13.2644	74.7317
173	21013	1A_Mangrove	Udupi	Udupi	0.0129	13.2649	74.7346
174	21014	1A_Mangrove	Udupi	Udupi	0.0201	13.2645	74.7352
175	21015	1A_Mangrove	Udupi	Udupi	0.0072	13.2642	74.7365
176	21016	1A_Mangrove	Udupi	Udupi	0.0155	13.2666	74.7364
177	21017	1A_Mangrove	Udupi	Udupi	0.0044	13.2660	74.7326
178	21018	1A_Mangrove	Udupi	Udupi	0.0165	13.2671	74.7333
179	21019	1A_Mangrove	Udupi	Udupi	0.0147	13.2669	74.7332
180	21020	1A_Mangrove	Udupi	Udupi	0.0102	13.2678	74.7310
181	21021	1A_Mangrove	Udupi	Udupi	0.0138	13.2684	74.7314
182	21022	1A_Mangrove	Udupi	Udupi	0.0198	13.2688	74.7315
183	21023	1A_Mangrove	Udupi	Udupi	0.0095	13.2699	74.7303
184	21024	1A_Mangrove	Udupi	Udupi	0.0061	13.2707	74.7308
185	21025	1A_Mangrove	Udupi	Udupi	0.0141	13.2695	74.7337

186	21026	1A_Mangrove	Udupi	Udupi	0.0182	13.2702	74.7338
187	21027	1A_Mangrove	Udupi	Udupi	0.0098	13.2707	74.7356
188	21028	1A_Mangrove	Udupi	Udupi	0.0199	13.2713	74.7354
189	21029	1A_Mangrove	Udupi	Udupi	0.0152	13.2711	74.7340
190	21030	1A_Mangrove	Udupi	Udupi	0.0091	13.2712	74.7340
191	21031	1A_Mangrove	Udupi	Udupi	0.0096	13.2751	74.7280
192	21032	1A_Mangrove	Udupi	Udupi	0.0168	13.2812	74.7268
193	21033	1A_Mangrove	Udupi	Udupi	0.0092	13.2817	74.7273
194	21034	1A_Mangrove	Udupi	Udupi	0.0191	13.2865	74.7274
195	21035	1A_Mangrove	Udupi	Udupi	0.0111	13.2853	74.7358
196	21036	1A_Mangrove	Udupi	Udupi	0.0221	13.2883	74.7457
197	21037	1A_Mangrove	Udupi	Udupi	0.0162	13.2885	74.7456
198	21038	1A_Mangrove	Udupi	Udupi	0.0119	13.2886	74.7455
199	21039	1A_Mangrove	Udupi	Udupi	0.0080	13.2892	74.7440
200	21040	1A_Mangrove	Udupi	Udupi	0.0155	13.2922	74.7420
201	21041	1A_Mangrove	Udupi	Udupi	0.0192	13.2946	74.7422
202	21042	1A_Mangrove	Udupi	Udupi	0.0178	13.2947	74.7424
203	21043	1A_Mangrove	Udupi	Udupi	0.0155	13.2895	74.7381
204	21044	1A_Mangrove	Udupi	Udupi	0.0082	13.2930	74.7241
205	21045	1A_Mangrove	Udupi	Udupi	0.0138	13.3001	74.7239
206	21046	1A_Mangrove	Udupi	Udupi	0.0025	13.3002	74.7239
207	21047	1A_Mangrove	Udupi	Udupi	0.0100	13.3004	74.7242
208	21048	1A_Mangrove	Udupi	Udupi	0.0144	13.3007	74.7242
209	21049	1A_Mangrove	Udupi	Udupi	0.0136	13.3017	74.7244
210	21050	1A_Mangrove	Udupi	Udupi	0.0076	13.3018	74.7243
211	21051	1A_Mangrove	Udupi	Udupi	0.0097	13.3020	74.7243
212	21052	1A_Mangrove	Udupi	Udupi	0.0095	13.3026	74.7242
213	21053	1A_Mangrove	Udupi	Udupi	0.0112	13.3032	74.7241
214	21054	1A_Mangrove	Udupi	Udupi	0.0139	13.3030	74.7242
215	21055	1A_Mangrove	Udupi	Udupi	0.0093	13.3034	74.7241
216	21056	1A_Mangrove	Udupi	Udupi	0.0118	13.3172	74.7202
217	21057	1A_Mangrove	Udupi	Udupi	0.0016	13.3177	74.7201
218	21058	1A_Mangrove	Udupi	Udupi	0.0058	13.3180	74.7200
219	21059	1A_Mangrove	Udupi	Udupi	0.0112	13.3181	74.7202
220	21060	1A_Mangrove	Udupi	Udupi	0.0078	13.3184	74.7201
221	21061	1A_Mangrove	Udupi	Udupi	0.0092	13.3182	74.7201
222	21062	1A_Mangrove	Udupi	Udupi	0.0207	13.3188	74.7200
223	21063	1A_Mangrove	Udupi	Udupi	0.0317	13.3223	74.7199
224	21064	1A_Mangrove	Udupi	Udupi	0.0030	13.3235	74.7192

225	21065	1A_Mangrove	Udupi	Udupi	0.0066	13.3236	74.7194
226	21066	1A_Mangrove	Udupi	Udupi	0.0119	13.3236	74.7195
227	21067	1A_Mangrove	Udupi	Udupi	0.0152	13.3237	74.7197
228	21068	1A_Mangrove	Udupi	Udupi	0.0151	13.3238	74.7200
229	21069	1A_Mangrove	Udupi	Udupi	0.0142	13.3238	74.7204
230	21070	1A_Mangrove	Udupi	Udupi	0.0072	13.3241	74.7203
231	21071	1A_Mangrove	Udupi	Udupi	0.0080	13.3240	74.7197
232	21072	1A_Mangrove	Udupi	Udupi	0.0313	13.3256	74.7186
233	21073	1A_Mangrove	Udupi	Udupi	0.0112	13.3273	74.7209
234	21074	1A_Mangrove	Udupi	Udupi	0.0055	13.3272	74.7209
235	21075	1A_Mangrove	Udupi	Udupi	0.0096	13.3312	74.7172
236	21076	1A_Mangrove	Udupi	Udupi	0.0111	13.3319	74.7179
237	21077	1A_Mangrove	Udupi	Udupi	0.0103	13.3320	74.7181
238	21078	1A_Mangrove	Udupi	Udupi	0.0090	13.3320	74.7183
239	21079	1A_Mangrove	Udupi	Udupi	0.0116	13.3318	74.7186
240	21080	1A_Mangrove	Udupi	Udupi	0.0124	13.3319	74.7186
241	21081	1A_Mangrove	Udupi	Udupi	0.0149	13.3319	74.7189
242	21082	1A_Mangrove	Udupi	Udupi	0.1268	13.3333	74.7145
243	21083	1A_Mangrove	Udupi	Udupi	0.0098	13.3333	74.7149
244	21084	1A_Mangrove	Udupi	Udupi	0.0281	13.3335	74.7152
245	21085	1A_Mangrove	Udupi	Udupi	0.0098	13.3337	74.7155
246	21086	1A_Mangrove	Udupi	Udupi	0.0095	13.3342	74.7167
247	21087	1A_Mangrove	Udupi	Udupi	0.0092	13.3342	74.7168
248	21088	1A_Mangrove	Udupi	Udupi	0.0158	13.3357	74.7172
249	21089	1A_Mangrove	Udupi	Udupi	0.1367	13.3357	74.7161
250	21090	1A_Mangrove	Udupi	Udupi	0.0248	13.3353	74.7155
251	21091	1A_Mangrove	Udupi	Udupi	0.0090	13.3354	74.7150
252	21092	1A_Mangrove	Udupi	Udupi	0.0103	13.3355	74.7149
253	21093	1A_Mangrove	Udupi	Udupi	0.0076	13.3357	74.7145
254	21094	1A_Mangrove	Udupi	Udupi	0.0055	13.3359	74.7147
255	21095	1A_Mangrove	Udupi	Udupi	0.0102	13.3359	74.7145
256	21096	1A_Mangrove	Udupi	Udupi	0.0242	13.3359	74.7142
257	21097	1A_Mangrove	Udupi	Udupi	0.0244	13.4204	74.7094
258	21098	1A_Mangrove	Udupi	Udupi	0.0120	13.4211	74.7095
259	21099	1A_Mangrove	Udupi	Udupi	0.0163	13.4196	74.7005
260	21100	1A_Mangrove	Udupi	Udupi	0.0126	13.4300	74.7039
261	21101	1A_Mangrove	Udupi	Udupi	0.0035	13.4333	74.7081
262	21102	1A_Mangrove	Udupi	Udupi	0.0075	13.4334	74.7088
263	21103	1A_Mangrove	Udupi	Udupi	0.0040	13.4327	74.7160

264	21104	1A_Mangrove	Udupi	Udupi	0.0104	13.4334	74.7168
265	21105	1A_Mangrove	Udupi	Udupi	0.0117	13.4344	74.7168
266	21106	1A_Mangrove	Udupi	Udupi	0.0109	13.4400	74.7149
267	21107	1A_Mangrove	Udupi	Udupi	0.0115	13.4402	74.7150
268	21108	1A_Mangrove	Udupi	Udupi	0.0240	13.4426	74.7120
269	21109	1A_Mangrove	Udupi	Udupi	0.0100	13.4464	74.7158
270	21110	1A_Mangrove	Udupi	Udupi	0.0158	13.4476	74.7150
271	21111	1A_Mangrove	Udupi	Udupi	0.0339	13.4627	74.7263
272	21112	1A_Mangrove	Udupi	Udupi	0.0231	13.4676	74.7303
273	21113	1A_Mangrove	Udupi	Udupi	0.0255	13.4748	74.7352
274	21114	1A_Mangrove	Udupi	Udupi	1.0331	13.4738	74.7381
275	21115	1A_Mangrove	Udupi	Udupi	0.0090	13.4509	74.7011
276	21116	1A_Mangrove	Udupi	Udupi	0.0071	13.4507	74.7014
277	21117	1A_Mangrove	Udupi	Udupi	0.0062	13.4512	74.7012
278	21118	1A_Mangrove	Udupi	Udupi	0.0136	13.4530	74.7017
279	21119	1A_Mangrove	Udupi	Udupi	0.0129	13.4533	74.7014
280	21120	1A_Mangrove	Udupi	Udupi	0.0236	13.4552	74.7030
281	21121	1A_Mangrove	Udupi	Udupi	0.0161	13.4553	74.7026
282	21122	1A_Mangrove	Udupi	Udupi	0.0097	13.4586	74.7041
283	21123	1A_Mangrove	Udupi	Udupi	0.0044	13.4584	74.7041
284	21124	1A_Mangrove	Udupi	Udupi	0.0064	13.4626	74.7017
285	21125	1A_Mangrove	Udupi	Udupi	0.0091	13.4624	74.7016
286	21126	1A_Mangrove	Udupi	Udupi	0.0275	13.4639	74.7009
287	21127	1A_Mangrove	Udupi	Udupi	0.0306	13.4639	74.6970
288	21128	1A_Mangrove	Udupi	Udupi	0.0330	13.4638	74.6971
289	21129	1A_Mangrove	Udupi	Udupi	0.0060	13.4612	74.6967
290	21130	1A_Mangrove	Udupi	Udupi	0.0042	13.4612	74.6967
291	21131	1A_Mangrove	Udupi	Udupi	0.0093	13.4611	74.6967
292	21132	1A_Mangrove	Udupi	Udupi	0.0109	13.4612	74.6965
293	21133	1A_Mangrove	Udupi	Udupi	0.0035	13.4610	74.6967
294	21134	1A_Mangrove	Udupi	Udupi	0.0089	13.4609	74.6966
295	21135	1A_Mangrove	Udupi	Udupi	0.0612	13.4600	74.6972
296	21136	1A_Mangrove	Udupi	Udupi	0.0325	13.4595	74.6973
297	21137	1A_Mangrove	Udupi	Udupi	0.0158	13.4591	74.6976
298	21138	1A_Mangrove	Udupi	Udupi	0.0160	13.4585	74.6973
299	21139	1A_Mangrove	Udupi	Udupi	0.1206	13.4591	74.6950
300	21140	1A_Mangrove	Udupi	Udupi	0.0515	13.4594	74.6947
301	21141	1A_Mangrove	Udupi	Udupi	0.0109	13.4602	74.6943
302	21142	1A_Mangrove	Udupi	Udupi	0.0133	13.4620	74.6935

303	21143	1A_Mangrove	Udupi	Udupi	0.0085	13.4621	74.6934
304	21144	1A_Mangrove	Udupi	Udupi	0.0146	13.4622	74.6937
305	21145	1A_Mangrove	Udupi	Udupi	0.0125	13.4624	74.6937
306	21146	1A_Mangrove	Udupi	Udupi	0.0092	13.4697	74.6963
307	21147	1A_Mangrove	Udupi	Udupi	0.0061	13.4697	74.6965
308	21148	1A_Mangrove	Udupi	Udupi	0.0015	13.4698	74.6965
309	21149	1A_Mangrove	Udupi	Udupi	0.0151	13.4691	74.6967
310	21150	1A_Mangrove	Udupi	Udupi	0.0103	13.4681	74.6962
311	21151	1A_Mangrove	Udupi	Udupi	0.0110	13.4702	74.6956
312	21152	1A_Mangrove	Udupi	Udupi	0.0072	13.4705	74.6957
313	21153	1A_Mangrove	Udupi	Udupi	0.0105	13.4756	74.6997
314	21154	1A_Mangrove	Udupi	Udupi	0.0060	13.4758	74.6993
315	21155	1A_Mangrove	Udupi	Udupi	0.0056	13.4758	74.6992
316	21156	1A_Mangrove	Udupi	Udupi	0.0455	13.4766	74.6993
317	21157	1A_Mangrove	Udupi	Udupi	0.0200	13.4771	74.6996
318	21158	1A_Mangrove	Udupi	Udupi	0.0118	13.4772	74.6995
319	21159	1A_Mangrove	Udupi	Udupi	0.0448	13.4745	74.6916
320	21160	1A_Mangrove	Udupi	Udupi	0.0129	13.4752	74.6906
321	21161	1A_Mangrove	Udupi	Udupi	0.0360	13.4755	74.6913
322	21162	1A_Mangrove	Udupi	Udupi	0.0213	13.4751	74.6922
323	21163	1A_Mangrove	Udupi	Udupi	0.0083	13.4754	74.6918
324	21164	1A_Mangrove	Udupi	Udupi	0.0075	13.4868	74.6984
325	21165	1A_Mangrove	Udupi	Udupi	0.0027	13.4889	74.6980
326	21166	1A_Mangrove	Udupi	Udupi	0.0087	13.4888	74.6980
327	21167	1A_Mangrove	Udupi	Udupi	0.0041	13.4897	74.6961
328	21168	1A_Mangrove	Udupi	Udupi	0.0193	13.5012	74.6971
329	21169	1A_Mangrove	Udupi	Udupi	0.0111	13.4975	74.6991
330	21170	1A_Mangrove	Udupi	Udupi	0.0107	13.4972	74.6988
331	21171	1A_Mangrove	Udupi	Udupi	0.0122	13.4957	74.6982
332	21172	1A_Mangrove	Udupi	Udupi	0.0048	13.4963	74.6982
333	21173	1A_Mangrove	Udupi	Udupi	0.0157	13.5004	74.6973
334	21174	1A_Mangrove	Udupi	Udupi	0.0030	13.5018	74.6940
335	21175	1A_Mangrove	Udupi	Udupi	0.0324	13.5069	74.6967
336	21176	1A_Mangrove	Udupi	Udupi	0.0449	13.5074	74.6967
337	21177	1A_Mangrove	Udupi	Udupi	0.0099	13.5078	74.6968
338	21178	1A_Mangrove	Udupi	Udupi	0.0069	13.5079	74.6965
339	21179	1A_Mangrove	Udupi	Udupi	0.0465	13.5091	74.6963
340	21180	1A_Mangrove	Udupi	Udupi	0.0740	13.5095	74.6961
341	21181	1A_Mangrove	Udupi	Udupi	0.0708	13.5098	74.6959

342	21182	1A_Mangrove	Udupi	Udupi	0.0289	13.5104	74.6959
343	21183	1A_Mangrove	Udupi	Udupi	0.0449	13.5101	74.6959
344	21184	1A_Mangrove	Udupi	Udupi	0.0116	13.5100	74.6956
345	21185	1A_Mangrove	Udupi	Udupi	0.1418	13.5109	74.6958
346	21186	1A_Mangrove	Udupi	Udupi	0.0331	13.5116	74.6955
347	21187	1A_Mangrove	Udupi	Udupi	0.0095	13.5117	74.6947
348	21188	1A_Mangrove	Udupi	Udupi	0.0315	13.5118	74.6952
349	21189	1A_Mangrove	Udupi	Udupi	0.1469	13.5121	74.6942
350	21190	1A_Mangrove	Udupi	Udupi	0.0922	13.5120	74.6947
351	21191	1A_Mangrove	Udupi	Udupi	0.0409	13.5128	74.6944
352	21192	1A_Mangrove	Udupi	Udupi	0.0181	13.5141	74.6950
353	21193	1A_Mangrove	Udupi	Udupi	0.0275	13.5146	74.6952
354	23001	1B	Udupi	Udupi	0.0032	13.1740	74.7519
355	23002	1B	Udupi	Udupi	0.0024	13.1738	74.7519
356	23003	1B	Udupi	Udupi	0.0063	13.1738	74.7519
357	23004	1B	Udupi	Udupi	0.0052	13.1789	74.7504
358	23005	1B	Udupi	Udupi	0.0055	13.1790	74.7504
359	23006	1B	Udupi	Udupi	0.0140	13.1913	74.7453
360	23007	1B	Udupi	Udupi	0.0020	13.1911	74.7453
361	23008	1B	Udupi	Udupi	0.0025	13.1908	74.7454
362	23009	1B	Udupi	Udupi	0.0111	13.1908	74.7455
363	23010	1B	Udupi	Udupi	0.0059	13.1969	74.7441
364	23011	1B	Udupi	Udupi	0.0068	13.1975	74.7440
365	23012	1B	Udupi	Udupi	0.0705	13.2906	74.7317
366	23013	1B	Udupi	Udupi	0.0552	13.2905	74.7314
367	23014	1B	Udupi	Udupi	0.2790	13.2903	74.7312
368	23015	1B	Udupi	Udupi	0.2782	13.2900	74.7313
369	23016	1B	Udupi	Udupi	0.0085	13.3309	74.7153
370	23017	1B	Udupi	Udupi	0.0251	13.3424	74.7161
371	23018	1B	Udupi	Udupi	0.0645	13.3454	74.7088
372	23019	1B	Udupi	Udupi	0.0199	13.3473	74.7101
373	32001	1A_Mangrove	Kundapura	Udupi	0.0047	13.6287	74.6746
374	32002	1A_Mangrove	Kundapura	Udupi	0.0118	13.6282	74.6746
375	32003	1A_Mangrove	Kundapura	Udupi	0.0093	13.6248	74.6727
376	32004	1A_Mangrove	Kundapura	Udupi	0.0333	13.6245	74.6726
377	32005	1A_Mangrove	Kundapura	Udupi	0.0193	13.6238	74.6715
378	32006	1A_Mangrove	Kundapura	Udupi	0.0153	13.6235	74.6716
379	32007	1A_Mangrove	Kundapura	Udupi	0.0893	13.6221	74.6715
380	32008	1A_Mangrove	Kundapura	Udupi	0.0300	13.6147	74.6755

381	32009	1A_Mangrove	Kundapura	Udupi	0.0108	13.6114	74.6769
382	32010	1A_Mangrove	Kundapura	Udupi	0.0133	13.6038	74.6775
383	32011	1A_Mangrove	Kundapura	Udupi	0.0176	13.6035	74.6769
384	32012	1A_Mangrove	Kundapura	Udupi	0.0645	13.6025	74.6775
385	32013	1A_Mangrove	Kundapura	Udupi	0.0188	13.6034	74.6778
386	32014	1A_Mangrove	Kundapura	Udupi	0.0328	13.6038	74.6780
387	32015	1A_Mangrove	Kundapura	Udupi	0.0067	13.6039	74.6786
388	32016	1A_Mangrove	Kundapura	Udupi	0.0184	13.6041	74.6789
389	32017	1A_Mangrove	Kundapura	Udupi	0.0722	13.6045	74.6799
390	32018	1A_Mangrove	Kundapura	Udupi	0.0240	13.6161	74.6820
391	32019	1A_Mangrove	Kundapura	Udupi	0.0160	13.6250	74.6773
392	32020	1A_Mangrove	Kundapura	Udupi	0.0085	13.6253	74.6771
393	32021	1A_Mangrove	Kundapura	Udupi	0.0119	13.6254	74.6771
394	32022	1A_Mangrove	Kundapura	Udupi	0.0956	13.6266	74.6773
395	32023	1A_Mangrove	Kundapura	Udupi	0.0747	13.6374	74.6870
396	32024	1A_Mangrove	Kundapura	Udupi	0.1156	13.6409	74.7007
397	32025	1A_Mangrove	Kundapura	Udupi	0.0134	13.6240	74.7005
398	32026	1A_Mangrove	Kundapura	Udupi	0.0164	13.6237	74.7005
399	32027	1A_Mangrove	Kundapura	Udupi	0.0053	13.6235	74.7010
400	32028	1A_Mangrove	Kundapura	Udupi	0.4930	13.6163	74.7016
401	32029	1A_Mangrove	Kundapura	Udupi	0.0738	13.6182	74.7266
402	32030	1A_Mangrove	Kundapura	Udupi	0.0118	13.6268	74.7181
403	32031	1A_Mangrove	Kundapura	Udupi	0.0071	13.6270	74.7181
404	32032	1A_Mangrove	Kundapura	Udupi	0.0134	13.6302	74.7096
405	32033	1A_Mangrove	Kundapura	Udupi	0.0901	13.6475	74.7099
406	32034	1A_Mangrove	Kundapura	Udupi	0.0108	13.6478	74.7084
407	32035	1A_Mangrove	Kundapura	Udupi	0.4445	13.6521	74.7027
408	32036	1A_Mangrove	Kundapura	Udupi	0.5425	13.6515	74.7031
409	32037	1A_Mangrove	Kundapura	Udupi	0.0296	13.6556	74.6998
410	32038	1A_Mangrove	Kundapura	Udupi	0.0150	13.6537	74.6924
411	32039	1A_Mangrove	Kundapura	Udupi	0.0121	13.6545	74.6906
412	32040	1A_Mangrove	Kundapura	Udupi	0.0269	13.6542	74.6905
413	32041	1A_Mangrove	Kundapura	Udupi	0.0213	13.6545	74.6905
414	32042	1A_Mangrove	Kundapura	Udupi	0.0110	13.6522	74.6863
415	32043	1A_Mangrove	Kundapura	Udupi	0.0096	13.6518	74.6847
416	32044	1A_Mangrove	Kundapura	Udupi	0.0280	13.6570	74.6881
417	32045	1A_Mangrove	Kundapura	Udupi	0.0151	13.6589	74.6872
418	32046	1A_Mangrove	Kundapura	Udupi	0.0055	13.6620	74.6804
419	32047	1A_Mangrove	Kundapura	Udupi	0.0249	13.6626	74.6806

420	32048	1A_Mangrove	Kundapura	Udupi	0.0127	13.6631	74.6803
421	32049	1A_Mangrove	Kundapura	Udupi	0.0130	13.6639	74.6807
422	32050	1A_Mangrove	Kundapura	Udupi	0.0075	13.6674	74.6830
423	32051	1A_Mangrove	Kundapura	Udupi	0.0453	13.6663	74.6842
424	32052	1A_Mangrove	Kundapura	Udupi	0.0064	13.6654	74.6853
425	32053	1A_Mangrove	Kundapura	Udupi	0.0086	13.6654	74.6855
426	32054	1A_Mangrove	Kundapura	Udupi	0.0025	13.6653	74.6856
427	32055	1A_Mangrove	Kundapura	Udupi	0.0052	13.6658	74.6886
428	32056	1A_Mangrove	Kundapura	Udupi	0.0428	13.6651	74.6907
429	32057	1A_Mangrove	Kundapura	Udupi	0.4472	13.6601	74.7062
430	32058	1A_Mangrove	Kundapura	Udupi	0.3697	13.6627	74.7064
431	32059	1A_Mangrove	Kundapura	Udupi	0.0125	13.6618	74.7095
432	32060	1A_Mangrove	Kundapura	Udupi	0.1109	13.6640	74.7087
433	32061	1A_Mangrove	Kundapura	Udupi	0.1476	13.6634	74.7054
434	32062	1A_Mangrove	Kundapura	Udupi	0.8299	13.6631	74.7022
435	32063	1A_Mangrove	Kundapura	Udupi	0.0236	13.6724	74.6869
436	32064	1A_Mangrove	Kundapura	Udupi	0.0738	13.6716	74.6860
437	32065	1A_Mangrove	Kundapura	Udupi	0.0200	13.6717	74.6855
438	32066	1A_Mangrove	Kundapura	Udupi	0.0273	13.6722	74.6846
439	32067	1A_Mangrove	Kundapura	Udupi	0.0198	13.6785	74.6864
440	32068	1A_Mangrove	Kundapura	Udupi	0.0339	13.6839	74.6961
441	32069	1A_Mangrove	Kundapura	Udupi	0.0157	13.6898	74.6882
442	32070	1A_Mangrove	Kundapura	Udupi	0.0421	13.6929	74.6919
443	32071	1A_Mangrove	Kundapura	Udupi	0.0354	13.6909	74.6844
444	32072	1A_Mangrove	Kundapura	Udupi	0.0107	13.6727	74.6732
445	32073	1A_Mangrove	Kundapura	Udupi	0.0040	13.6729	74.6732
446	32074	1A_Mangrove	Kundapura	Udupi	0.0111	13.6732	74.6733
447	32075	1A_Mangrove	Kundapura	Udupi	0.0088	13.6733	74.6733
448	32076	1A_Mangrove	Kundapura	Udupi	0.0225	13.6699	74.6710
449	32077	1A_Mangrove	Kundapura	Udupi	0.0118	13.6605	74.6703
450	32078	1A_Mangrove	Kundapura	Udupi	0.0089	13.6607	74.6702
451	32079	1A_Mangrove	Kundapura	Udupi	0.1301	13.8017	74.6335
452	32080	1A_Mangrove	Kundapura	Udupi	0.9758	13.8026	74.6337
453	32081	1A_Mangrove	Kundapura	Udupi	0.0137	13.8020	74.6320
454	32082	1A_Mangrove	Kundapura	Udupi	0.0070	13.8022	74.6320
455	32083	1A_Mangrove	Kundapura	Udupi	0.0261	13.8030	74.6318
456	32084	1A_Mangrove	Kundapura	Udupi	0.0344	13.8033	74.6317
457	32085	1A_Mangrove	Kundapura	Udupi	0.0494	13.8036	74.6316
458	32086	1A_Mangrove	Kundapura	Udupi	0.0168	13.8041	74.6314

459	32087	1A_Mangrove	Kundapura	Udupi	0.0554	13.8114	74.6244
460	32088	1A_Mangrove	Kundapura	Udupi	0.0153	13.8117	74.6248
461	32089	1A_Mangrove	Kundapura	Udupi	0.0043	13.8123	74.6248
462	32090	1A_Mangrove	Kundapura	Udupi	0.0235	13.8126	74.6246
463	32091	1A_Mangrove	Kundapura	Udupi	0.0056	13.8128	74.6247
464	32092	1A_Mangrove	Kundapura	Udupi	0.0304	13.8125	74.6239
465	32093	1A_Mangrove	Kundapura	Udupi	0.0125	13.8129	74.6242
466	32094	1A_Mangrove	Kundapura	Udupi	0.0070	13.8145	74.6240
467	32095	1A_Mangrove	Kundapura	Udupi	0.0299	13.8119	74.6278
468	32096	1A_Mangrove	Kundapura	Udupi	0.0129	13.8121	74.6278
469	32097	1A_Mangrove	Kundapura	Udupi	0.0306	13.8124	74.6275
470	32098	1A_Mangrove	Kundapura	Udupi	0.0145	13.8128	74.6274
471	32099	1A_Mangrove	Kundapura	Udupi	0.0147	13.8128	74.6273
472	32100	1A_Mangrove	Kundapura	Udupi	0.0088	13.8131	74.6272
473	32101	1A_Mangrove	Kundapura	Udupi	0.0615	13.8134	74.6274
474	32102	1A_Mangrove	Kundapura	Udupi	0.0318	13.8162	74.6274
475	32103	1A_Mangrove	Kundapura	Udupi	0.0355	13.8165	74.6278
476	32104	1A_Mangrove	Kundapura	Udupi	0.0246	13.8174	74.6278
477	32105	1A_Mangrove	Kundapura	Udupi	0.0150	13.8183	74.6271
478	32106	1A_Mangrove	Kundapura	Udupi	0.0333	13.8186	74.6271
479	32107	1A_Mangrove	Kundapura	Udupi	0.0250	13.8178	74.6245
480	32108	1A_Mangrove	Kundapura	Udupi	0.0178	13.8185	74.6236
481	32109	1A_Mangrove	Kundapura	Udupi	0.0205	13.8436	74.6150
482	32110	1A_Mangrove	Kundapura	Udupi	0.0132	13.8436	74.6148
483	32111	1A_Mangrove	Kundapura	Udupi	0.0132	13.8438	74.6149
484	32112	1A_Mangrove	Kundapura	Udupi	0.0039	13.8441	74.6149
485	32113	1A_Mangrove	Kundapura	Udupi	0.0086	13.8442	74.6147
486	32114	1A_Mangrove	Kundapura	Udupi	0.0123	13.8445	74.6146
487	32115	1A_Mangrove	Kundapura	Udupi	0.0168	13.8447	74.6145
488	32116	1A_Mangrove	Kundapura	Udupi	0.0088	13.8448	74.6147
489	32117	1A_Mangrove	Kundapura	Udupi	0.0102	13.8450	74.6145
490	32118	1A_Mangrove	Kundapura	Udupi	0.0370	13.8454	74.6144
491	32119	1A_Mangrove	Kundapura	Udupi	0.0068	13.8451	74.6145
492	32120	1A_Mangrove	Kundapura	Udupi	0.0266	13.8478	74.6136
493	32121	1A_Mangrove	Kundapura	Udupi	0.0230	13.8482	74.6133
494	32122	1A_Mangrove	Kundapura	Udupi	0.0099	13.8482	74.6136
495	32123	1A_Mangrove	Kundapura	Udupi	0.0276	13.8484	74.6135
496	32124	1A_Mangrove	Kundapura	Udupi	0.0026	13.8485	74.6131
497	32125	1A_Mangrove	Kundapura	Udupi	0.0244	13.8489	74.6132

498	32126	1A_Mangrove	Kundapura	Udupi	0.0081	13.8493	74.6133
499	32127	1A_Mangrove	Kundapura	Udupi	0.0094	13.8494	74.6132
500	32128	1A_Mangrove	Kundapura	Udupi	0.0167	13.8496	74.6132
501	32129	1A_Mangrove	Kundapura	Udupi	0.0142	13.8499	74.6134
502	32130	1A_Mangrove	Kundapura	Udupi	0.0137	13.8501	74.6131
503	32131	1A_Mangrove	Kundapura	Udupi	0.0106	13.8502	74.6131
504	32132	1A_Mangrove	Kundapura	Udupi	0.0042	13.8503	74.6131
505	32133	1A_Mangrove	Kundapura	Udupi	0.0108	13.8504	74.6128
506	32134	1A_Mangrove	Kundapura	Udupi	0.0118	13.8503	74.6127
507	32135	1A_Mangrove	Kundapura	Udupi	0.0644	13.8506	74.6127
508	32136	1A_Mangrove	Kundapura	Udupi	0.0070	13.8554	74.6114
509	32137	1A_Mangrove	Kundapura	Udupi	0.0081	13.8556	74.6112
510	32138	1A_Mangrove	Kundapura	Udupi	0.0040	13.8560	74.6110
511	32139	1A_Mangrove	Kundapura	Udupi	0.0089	13.8562	74.6108
512	32140	1A_Mangrove	Kundapura	Udupi	0.0075	13.8588	74.6098
513	32141	1A_Mangrove	Kundapura	Udupi	0.0068	13.8586	74.6099
514	32142	1A_Mangrove	Kundapura	Udupi	0.0067	13.8593	74.6097
515	32143	1A_Mangrove	Kundapura	Udupi	0.0314	13.8596	74.6203
516	32144	1A_Mangrove	Kundapura	Udupi	0.0292	13.8559	74.6171
517	32145	1A_Mangrove	Kundapura	Udupi	0.0171	13.8553	74.6179
518	32146	1A_Mangrove	Kundapura	Udupi	0.0117	13.8525	74.6201
519	32147	1A_Mangrove	Kundapura	Udupi	0.0177	13.8531	74.6209
520	32148	1A_Mangrove	Kundapura	Udupi	0.0058	13.8567	74.6198
521	32149	1A_Mangrove	Kundapura	Udupi	0.0109	13.8570	74.6198
522	32150	1A_Mangrove	Kundapura	Udupi	0.0266	13.8567	74.6205
523	32151	1A_Mangrove	Kundapura	Udupi	0.0099	13.8573	74.6256
524	32152	1A_Mangrove	Kundapura	Udupi	0.0199	13.8569	74.6257
525	32153	1A_Mangrove	Kundapura	Udupi	0.0202	13.8568	74.6260
526	32154	1A_Mangrove	Kundapura	Udupi	0.0047	13.8550	74.6228
527	32155	1A_Mangrove	Kundapura	Udupi	0.0141	13.8532	74.6247
528	32156	1A_Mangrove	Kundapura	Udupi	0.0364	13.8503	74.6268
529	32157	1A_Mangrove	Kundapura	Udupi	0.0735	13.8501	74.6269
530	32158	1A_Mangrove	Kundapura	Udupi	0.0215	13.8501	74.6273
531	32159	1A_Mangrove	Kundapura	Udupi	0.0445	13.8500	74.6275
532	32160	1A_Mangrove	Kundapura	Udupi	0.0433	13.8525	74.6354
533	32161	1A_Mangrove	Kundapura	Udupi	0.0372	13.8534	74.6353
534	32162	1A_Mangrove	Kundapura	Udupi	0.0425	13.8509	74.6365
535	32163	1A_Mangrove	Kundapura	Udupi	0.0165	13.8535	74.6387
536	41001	1A	Bhatkal	Uttara Kannada	0.3098	14.0939	74.4817

537	41002	1A	Bhatkal	Uttara Kannada	0.3434	14.0950	74.4832
538	41003	1A	Bhatkal	Uttara Kannada	0.0457	14.0947	74.4832
539	41004	1A	Bhatkal	Uttara Kannada	0.0205	14.0948	74.4836
540	41005	1A	Bhatkal	Uttara Kannada	0.0438	14.0949	74.4840
541	42001	1A_Mangroves	Bhatkal	Uttara Kannada	0.0025	14.0265	74.5136
542	42002	1A_Mangroves	Bhatkal	Uttara Kannada	0.0097	14.0228	74.5233
543	42003	1A_Mangroves	Bhatkal	Uttara Kannada	0.0163	14.0224	74.5230
544	42004	1A_Mangroves	Bhatkal	Uttara Kannada	0.2366	14.0247	74.5246
545	42005	1A_Mangroves	Bhatkal	Uttara Kannada	0.0342	14.1131	74.4876
546	43001	1B	Bhatkal	Uttara Kannada	0.0058	13.9731	74.5448
547	43002	1B	Bhatkal	Uttara Kannada	0.0070	13.9733	74.5446
548	43003	1B	Bhatkal	Uttara Kannada	0.0146	13.9823	74.5525
549	43004	1B	Bhatkal	Uttara Kannada	0.0186	13.9833	74.5513
550	43005	1B	Bhatkal	Uttara Kannada	0.0302	13.9841	74.5483
551	43006	1B	Bhatkal	Uttara Kannada	0.0099	13.9696	74.5353
552	43007	1B	Bhatkal	Uttara Kannada	0.0062	13.9699	74.5348
553	43008	1B	Bhatkal	Uttara Kannada	0.0034	13.9789	74.5235
554	43009	1B	Bhatkal	Uttara Kannada	0.0031	13.9789	74.5236
555	43010	1B	Bhatkal	Uttara Kannada	0.0240	13.9858	74.5187
556	43011	1B	Bhatkal	Uttara Kannada	0.0046	13.9874	74.5171
557	43012	1B	Bhatkal	Uttara Kannada	0.0073	13.9878	74.5169
558	43013	1B	Bhatkal	Uttara Kannada	0.0132	13.9901	74.5160
559	43014	1B	Bhatkal	Uttara Kannada	0.0033	13.9930	74.5171
560	43015	1B	Bhatkal	Uttara Kannada	0.0368	13.9859	74.5164
561	43016	1B	Bhatkal	Uttara Kannada	0.0108	13.9864	74.5157
562	43017	1B	Bhatkal	Uttara Kannada	0.0063	13.9864	74.5158
563	43018	1B	Bhatkal	Uttara Kannada	0.0268	13.9929	74.5140
564	43019	1B	Bhatkal	Uttara Kannada	0.0062	14.1043	74.4876
565	43020	1B	Bhatkal	Uttara Kannada	0.0036	14.1039	74.4881
566	43021	1B	Bhatkal	Uttara Kannada	0.0023	14.1040	74.4881
567	51001	1A	Honavar	Uttara Kannada	0.0096	14.2340	74.4423
568	52001	1A_Mangrove	Honavar	Uttara Kannada	0.0044	14.3063	74.4211
569	51002	1A	Honavar	Uttara Kannada	0.0046	14.2342	74.4423
570	52002	1A_Mangrove	Honavar	Uttara Kannada	0.0041	14.3068	74.4213
571	51003	1A	Honavar	Uttara Kannada	0.0064	14.2342	74.4423
572	52003	1A_Mangrove	Honavar	Uttara Kannada	0.0057	14.3075	74.4217
573	51004	1A	Honavar	Uttara Kannada	0.0108	14.2345	74.4423
574	52004	1A_Mangrove	Honavar	Uttara Kannada	0.0043	14.3075	74.4214
575	51005	1A	Honavar	Uttara Kannada	0.0231	14.2349	74.4424

576	52005	1A_Mangrove	Honavar	Uttara Kannada	0.0059	14.3083	74.4216
577	51006	1A	Honavar	Uttara Kannada	0.7175	14.2505	74.4381
578	52006	1A_Mangrove	Honavar	Uttara Kannada	0.0058	14.3085	74.4217
579	51007	1A	Honavar	Uttara Kannada	0.3097	14.2357	74.4430
580	52007	1A_Mangrove	Honavar	Uttara Kannada	0.0115	14.3144	74.4238
581	51008	1A	Honavar	Uttara Kannada	0.1580	14.2362	74.4430
582	52008	1A_Mangrove	Honavar	Uttara Kannada	0.0042	14.3146	74.4235
583	51009	1A	Honavar	Uttara Kannada	1.7790	14.2381	74.4423
584	52009	1A_Mangrove	Honavar	Uttara Kannada	0.0064	14.3145	74.4233
585	51010	1A	Honavar	Uttara Kannada	0.0105	14.2595	74.4376
586	52010	1A_Mangrove	Honavar	Uttara Kannada	0.0060	14.3146	74.4233
587	52011	1A_Mangrove	Honavar	Uttara Kannada	0.0093	14.3146	74.4232
588	52012	1A_Mangrove	Honavar	Uttara Kannada	0.0055	14.3148	74.4231
589	52013	1A_Mangrove	Honavar	Uttara Kannada	0.0091	14.3144	74.4227
590	52014	1A_Mangrove	Honavar	Uttara Kannada	0.0047	14.3147	74.4228
591	52015	1A_Mangrove	Honavar	Uttara Kannada	0.0110	14.2882	74.4333
592	52016	1A_Mangrove	Honavar	Uttara Kannada	0.0090	14.2888	74.4356
593	52017	1A_Mangrove	Honavar	Uttara Kannada	0.0338	14.2872	74.4371
594	52018	1A_Mangrove	Honavar	Uttara Kannada	0.0059	14.2864	74.4371
595	52019	1A_Mangrove	Honavar	Uttara Kannada	0.0083	14.2862	74.4371
596	52020	1A_Mangrove	Honavar	Uttara Kannada	0.0131	14.2866	74.4341
597	52021	1A_Mangrove	Honavar	Uttara Kannada	0.0038	14.2866	74.4341
598	52022	1A_Mangrove	Honavar	Uttara Kannada	0.0052	14.2866	74.4340
599	52023	1A_Mangrove	Honavar	Uttara Kannada	0.0043	14.2865	74.4341
600	52024	1A_Mangrove	Honavar	Uttara Kannada	0.0239	14.2863	74.4342
601	52025	1A_Mangrove	Honavar	Uttara Kannada	0.0046	14.2857	74.4334
602	52026	1A_Mangrove	Honavar	Uttara Kannada	0.0027	14.2857	74.4335
603	52027	1A_Mangrove	Honavar	Uttara Kannada	0.0149	14.2855	74.4335
604	52028	1A_Mangrove	Honavar	Uttara Kannada	0.0050	14.2856	74.4337
605	52029	1A_Mangrove	Honavar	Uttara Kannada	0.0127	14.2860	74.4346
606	52030	1A_Mangrove	Honavar	Uttara Kannada	0.0029	14.2859	74.4343
607	52031	1A_Mangrove	Honavar	Uttara Kannada	0.0119	14.2860	74.4347
608	52032	1A_Mangrove	Honavar	Uttara Kannada	0.0138	14.2860	74.4348
609	52033	1A_Mangrove	Honavar	Uttara Kannada	0.0095	14.2859	74.4346
610	52034	1A_Mangrove	Honavar	Uttara Kannada	0.0104	14.2858	74.4348
611	52035	1A_Mangrove	Honavar	Uttara Kannada	0.0101	14.2857	74.4350
612	52036	1A_Mangrove	Honavar	Uttara Kannada	0.0077	14.2856	74.4348
613	52037	1A_Mangrove	Honavar	Uttara Kannada	0.0084	14.2855	74.4346
614	52038	1A_Mangrove	Honavar	Uttara Kannada	0.0153	14.2856	74.4352

615	52039	1A_Mangrove	Honavar	Uttara Kannada	0.0038	14.2855	74.4350
616	52040	1A_Mangrove	Honavar	Uttara Kannada	0.0039	14.2856	74.4349
617	52041	1A_Mangrove	Honavar	Uttara Kannada	0.0200	14.2853	74.4349
618	52042	1A_Mangrove	Honavar	Uttara Kannada	0.0115	14.2854	74.4351
619	52043	1A_Mangrove	Honavar	Uttara Kannada	0.0150	14.2852	74.4350
620	52044	1A_Mangrove	Honavar	Uttara Kannada	0.0178	14.2853	74.4352
621	52045	1A_Mangrove	Honavar	Uttara Kannada	0.0060	14.2851	74.4350
622	52046	1A_Mangrove	Honavar	Uttara Kannada	0.0070	14.2851	74.4351
623	52047	1A_Mangrove	Honavar	Uttara Kannada	0.0063	14.2851	74.4352
624	52048	1A_Mangrove	Honavar	Uttara Kannada	0.0050	14.2852	74.4353
625	52049	1A_Mangrove	Honavar	Uttara Kannada	0.0045	14.2850	74.4351
626	52050	1A_Mangrove	Honavar	Uttara Kannada	0.0095	14.2849	74.4352
627	52051	1A_Mangrove	Honavar	Uttara Kannada	0.0045	14.2851	74.4353
628	52052	1A_Mangrove	Honavar	Uttara Kannada	0.0073	14.2849	74.4353
629	52053	1A_Mangrove	Honavar	Uttara Kannada	0.0057	14.2847	74.4354
630	52054	1A_Mangrove	Honavar	Uttara Kannada	0.0071	14.2855	74.4361
631	52055	1A_Mangrove	Honavar	Uttara Kannada	0.0158	14.2861	74.4363
632	52056	1A_Mangrove	Honavar	Uttara Kannada	0.0168	14.2805	74.4384
633	52057	1A_Mangrove	Honavar	Uttara Kannada	0.0166	14.2806	74.4387
634	52058	1A_Mangrove	Honavar	Uttara Kannada	0.0201	14.2805	74.4388
635	52059	1A_Mangrove	Honavar	Uttara Kannada	0.1924	14.2802	74.4391
636	52060	1A_Mangrove	Honavar	Uttara Kannada	0.0217	14.2797	74.4390
637	52061	1A_Mangrove	Honavar	Uttara Kannada	0.0127	14.2797	74.4392
638	52062	1A_Mangrove	Honavar	Uttara Kannada	0.0127	14.2795	74.4391
639	52063	1A_Mangrove	Honavar	Uttara Kannada	0.1146	14.2794	74.4388
640	52064	1A_Mangrove	Honavar	Uttara Kannada	0.1127	14.2790	74.4388
641	52065	1A_Mangrove	Honavar	Uttara Kannada	0.0541	14.2719	74.4336
642	52066	1A_Mangrove	Honavar	Uttara Kannada	0.0214	14.2716	74.4345
643	52067	1A_Mangrove	Honavar	Uttara Kannada	0.0667	14.2708	74.4347
644	52068	1A_Mangrove	Honavar	Uttara Kannada	0.0454	14.2678	74.4351
645	52069	1A_Mangrove	Honavar	Uttara Kannada	0.0133	14.2662	74.4362
646	52070	1A_Mangrove	Honavar	Uttara Kannada	0.0120	14.2652	74.4365
647	52071	1A_Mangrove	Honavar	Uttara Kannada	0.0084	14.2651	74.4365
648	52072	1A_Mangrove	Honavar	Uttara Kannada	0.0867	14.2655	74.4361
649	52073	1A_Mangrove	Honavar	Uttara Kannada	0.0145	14.2603	74.4414
650	52074	1A_Mangrove	Honavar	Uttara Kannada	0.1271	14.2601	74.4420
651	52075	1A_Mangrove	Honavar	Uttara Kannada	0.0218	14.2594	74.4435
652	52076	1A_Mangrove	Honavar	Uttara Kannada	0.0133	14.2588	74.4438
653	52077	1A_Mangrove	Honavar	Uttara Kannada	0.0119	14.2586	74.4449

654	52078	1A_Mangrove	Honavar	Uttara Kannada	0.0139	14.2584	74.4450
655	52079	1A_Mangrove	Honavar	Uttara Kannada	0.0095	14.2593	74.4473
656	52080	1A_Mangrove	Honavar	Uttara Kannada	0.0102	14.2600	74.4471
657	52081	1A_Mangrove	Honavar	Uttara Kannada	0.0142	14.2602	74.4460
658	52082	1A_Mangrove	Honavar	Uttara Kannada	0.1823	14.2542	74.4514
659	52083	1A_Mangrove	Honavar	Uttara Kannada	0.0289	14.2527	74.4522
660	52084	1A_Mangrove	Honavar	Uttara Kannada	0.0349	14.2532	74.4523
661	52085	1A_Mangrove	Honavar	Uttara Kannada	0.0215	14.2530	74.4524
662	52086	1A_Mangrove	Honavar	Uttara Kannada	0.0067	14.2505	74.4529
663	52087	1A_Mangrove	Honavar	Uttara Kannada	0.0062	14.2504	74.4529
664	52088	1A_Mangrove	Honavar	Uttara Kannada	0.0130	14.2499	74.4527
665	52089	1A_Mangrove	Honavar	Uttara Kannada	0.0176	14.2500	74.4529
666	52090	1A_Mangrove	Honavar	Uttara Kannada	0.0088	14.2502	74.4527
667	52091	1A_Mangrove	Honavar	Uttara Kannada	0.0114	14.2502	74.4526
668	52092	1A_Mangrove	Honavar	Uttara Kannada	0.0122	14.2508	74.4528
669	52093	1A_Mangrove	Honavar	Uttara Kannada	0.0240	14.2506	74.4527
670	52094	1A_Mangrove	Honavar	Uttara Kannada	0.0104	14.2504	74.4527
671	52095	1A_Mangrove	Honavar	Uttara Kannada	0.0077	14.2511	74.4527
672	52096	1A_Mangrove	Honavar	Uttara Kannada	0.0135	14.2548	74.4544
673	52097	1A_Mangrove	Honavar	Uttara Kannada	0.0053	14.2482	74.4552
674	52098	1A_Mangrove	Honavar	Uttara Kannada	0.0106	14.2484	74.4551
675	52099	1A_Mangrove	Honavar	Uttara Kannada	0.0052	14.2479	74.4552
676	52100	1A_Mangrove	Honavar	Uttara Kannada	0.0153	14.2468	74.4542
677	52101	1A_Mangrove	Honavar	Uttara Kannada	0.0143	14.2465	74.4542
678	52102	1A_Mangrove	Honavar	Uttara Kannada	0.0062	14.2602	74.4584
679	52103	1A_Mangrove	Honavar	Uttara Kannada	0.0019	14.2575	74.4646
680	52104	1A_Mangrove	Honavar	Uttara Kannada	0.0111	14.2568	74.4656
681	52105	1A_Mangrove	Honavar	Uttara Kannada	0.0144	14.2568	74.4660
682	52106	1A_Mangrove	Honavar	Uttara Kannada	0.0220	14.2505	74.5033
683	52107	1A_Mangrove	Honavar	Uttara Kannada	0.0083	14.2662	74.4864
684	52108	1A_Mangrove	Honavar	Uttara Kannada	0.0074	14.2698	74.4875
685	52109	1A_Mangrove	Honavar	Uttara Kannada	0.0192	14.2686	74.4887
686	52110	1A_Mangrove	Honavar	Uttara Kannada	0.0524	14.2696	74.4876
687	52111	1A_Mangrove	Honavar	Uttara Kannada	0.0337	14.2685	74.4910
688	52112	1A_Mangrove	Honavar	Uttara Kannada	0.0117	14.2685	74.4899
689	52113	1A_Mangrove	Honavar	Uttara Kannada	0.0172	14.2685	74.4912
690	52114	1A_Mangrove	Honavar	Uttara Kannada	0.0227	14.2729	74.4893
691	52115	1A_Mangrove	Honavar	Uttara Kannada	0.0176	14.2733	74.4877
692	52116	1A_Mangrove	Honavar	Uttara Kannada	0.0196	14.2759	74.4846

693	52117	1A_Mangrove	Honavar	Uttara Kannada	0.0569	14.2770	74.4825
694	52118	1A_Mangrove	Honavar	Uttara Kannada	0.0206	14.2773	74.4817
695	52119	1A_Mangrove	Honavar	Uttara Kannada	0.0241	14.2777	74.4800
696	52120	1A_Mangrove	Honavar	Uttara Kannada	0.0416	14.2799	74.4684
697	52121	1A_Mangrove	Honavar	Uttara Kannada	0.0045	14.2802	74.4686
698	52122	1A_Mangrove	Honavar	Uttara Kannada	0.0274	14.2824	74.4665
699	52123	1A_Mangrove	Honavar	Uttara Kannada	0.0164	14.2827	74.4664
700	52124	1A_Mangrove	Honavar	Uttara Kannada	0.0126	14.2829	74.4664
701	52125	1A_Mangrove	Honavar	Uttara Kannada	0.0118	14.2869	74.4675
702	52126	1A_Mangrove	Honavar	Uttara Kannada	0.0083	14.2877	74.4678
703	52127	1A_Mangrove	Honavar	Uttara Kannada	0.0333	14.2786	74.4528
704	52128	1A_Mangrove	Honavar	Uttara Kannada	0.0068	14.2622	74.4691
705	52129	1A_Mangrove	Honavar	Uttara Kannada	0.0278	14.2607	74.4792
706	53001	1B	Honavar	Uttara Kannada	0.0179	14.2566	74.4665
707	61001	1A	Kumta	Uttara Kannada	0.2343	14.3852	74.4024
708	61002	1A	Kumta	Uttara Kannada	0.0369	14.3863	74.4021
709	61003	1A	Kumta	Uttara Kannada	0.0073	14.3871	74.4019
710	61004	1A	Kumta	Uttara Kannada	0.0056	14.3874	74.4018
711	62001	1A_Mangrove	Kumta	Uttara Kannada	0.0077	14.4214	74.3931
712	62002	1A_Mangrove	Kumta	Uttara Kannada	0.0073	14.4213	74.3934
713	62003	1A_Mangrove	Kumta	Uttara Kannada	0.0205	14.4217	74.3945
714	62004	1A_Mangrove	Kumta	Uttara Kannada	0.0052	14.4223	74.3952
715	62005	1A_Mangrove	Kumta	Uttara Kannada	0.0162	14.4225	74.3955
716	62006	1A_Mangrove	Kumta	Uttara Kannada	0.0116	14.4235	74.3954
717	62007	1A_Mangrove	Kumta	Uttara Kannada	0.0045	14.4232	74.3955
718	62008	1A_Mangrove	Kumta	Uttara Kannada	0.0011	14.4234	74.3955
719	62009	1A_Mangrove	Kumta	Uttara Kannada	0.0056	14.4234	74.3966
720	62010	1A_Mangrove	Kumta	Uttara Kannada	0.0321	14.4244	74.3975
721	62011	1A_Mangrove	Kumta	Uttara Kannada	0.0207	14.4251	74.3978
722	62012	1A_Mangrove	Kumta	Uttara Kannada	0.0108	14.4253	74.3977
723	62013	1A_Mangrove	Kumta	Uttara Kannada	0.0220	14.4208	74.4006
724	62014	1A_Mangrove	Kumta	Uttara Kannada	0.0772	14.4215	74.4005
725	62015	1A_Mangrove	Kumta	Uttara Kannada	0.0143	14.4170	74.4098
726	62016	1A_Mangrove	Kumta	Uttara Kannada	0.0055	14.5153	74.3794
727	62017	1A_Mangrove	Kumta	Uttara Kannada	0.0507	14.5143	74.3796
728	62018	1A_Mangrove	Kumta	Uttara Kannada	0.0047	14.5126	74.3804
729	62019	1A_Mangrove	Kumta	Uttara Kannada	0.0061	14.5136	74.3802
730	62020	1A_Mangrove	Kumta	Uttara Kannada	0.0069	14.5135	74.3801
731	62021	1A_Mangrove	Kumta	Uttara Kannada	0.0182	14.5122	74.3805

732	62022	1A_Mangrove	Kumta	Uttara Kannada	0.0099	14.5114	74.3805
733	62023	1A_Mangrove	Kumta	Uttara Kannada	0.0189	14.5110	74.3805
734	62024	1A_Mangrove	Kumta	Uttara Kannada	0.0068	14.5110	74.3807
735	62025	1A_Mangrove	Kumta	Uttara Kannada	0.0098	14.5110	74.3806
736	62026	1A_Mangrove	Kumta	Uttara Kannada	0.0054	14.5084	74.3774
737	62027	1A_Mangrove	Kumta	Uttara Kannada	0.0028	14.5085	74.3775
738	62028	1A_Mangrove	Kumta	Uttara Kannada	0.0037	14.5084	74.3778
739	62029	1A_Mangrove	Kumta	Uttara Kannada	0.0124	14.5082	74.3774
740	62030	1A_Mangrove	Kumta	Uttara Kannada	0.0039	14.5081	74.3774
741	62031	1A_Mangrove	Kumta	Uttara Kannada	0.0177	14.5083	74.3771
742	62032	1A_Mangrove	Kumta	Uttara Kannada	0.0224	14.4946	74.3797
743	62033	1A_Mangrove	Kumta	Uttara Kannada	0.0054	14.4809	74.4271
744	62034	1A_Mangrove	Kumta	Uttara Kannada	0.0031	14.4810	74.4271
745	62035	1A_Mangrove	Kumta	Uttara Kannada	0.0122	14.4814	74.4247
746	62036	1A_Mangrove	Kumta	Uttara Kannada	0.2066	14.5064	74.3925
747	62037	1A_Mangrove	Kumta	Uttara Kannada	0.0104	14.5173	74.3892
748	62038	1A_Mangrove	Kumta	Uttara Kannada	0.0093	14.5173	74.3893
749	62039	1A_Mangrove	Kumta	Uttara Kannada	0.0057	14.5173	74.3895
750	62040	1A_Mangrove	Kumta	Uttara Kannada	0.6211	14.5342	74.3765
751	62041	1A_Mangrove	Kumta	Uttara Kannada	0.2051	14.5358	74.3757
752	62042	1A_Mangrove	Kumta	Uttara Kannada	0.0104	14.5423	74.3483
753	62043	1A_Mangrove	Kumta	Uttara Kannada	0.0064	14.5422	74.3483
754	62044	1A_Mangrove	Kumta	Uttara Kannada	0.0100	14.5422	74.3482
755	63001	1B	Kumta	Uttara Kannada	0.0293	14.4224	74.4004
756	63002	1B	Kumta	Uttara Kannada	0.0135	14.4224	74.4008
757	63003	1B	Kumta	Uttara Kannada	0.0072	14.4219	74.4017
758	63004	1B	Kumta	Uttara Kannada	0.0040	14.4221	74.4017
759	82001	1A_Mangrove	Karwar	Uttara Kannada	0.0108	14.7615	74.1657
760	82002	1A_Mangrove	Karwar	Uttara Kannada	0.0503	14.7612	74.1657
761	82003	1A_Mangrove	Karwar	Uttara Kannada	0.3926	14.7613	74.1663
762	82004	1A_Mangrove	Karwar	Uttara Kannada	0.0114	14.7657	74.1765
763	82005	1A_Mangrove	Karwar	Uttara Kannada	0.0147	14.7653	74.1767
764	82006	1A_Mangrove	Karwar	Uttara Kannada	0.0232	14.7653	74.1772
765	82007	1A_Mangrove	Karwar	Uttara Kannada	0.6476	14.7685	74.1827
766	82008	1A_Mangrove	Karwar	Uttara Kannada	2.1245	14.7683	74.1710
767	82009	1A_Mangrove	Karwar	Uttara Kannada	0.3928	14.7657	74.1627
768	82010	1A_Mangrove	Karwar	Uttara Kannada	0.3542	14.7657	74.1636
769	82011	1A_Mangrove	Karwar	Uttara Kannada	0.0088	14.8374	74.1285
770	82012	1A_Mangrove	Karwar	Uttara Kannada	0.0072	14.8366	74.1284

771	82013	1A_Mangrove	Karwar	Uttara Kannada	0.0067	14.8360	74.1276
772	82014	1A_Mangrove	Karwar	Uttara Kannada	0.0137	14.8356	74.1280
773	82015	1A_Mangrove	Karwar	Uttara Kannada	0.0082	14.8356	74.1278
774	82016	1A_Mangrove	Karwar	Uttara Kannada	0.0027	14.8355	74.1276
775	82017	1A_Mangrove	Karwar	Uttara Kannada	0.0139	14.8355	74.1281
776	82018	1A_Mangrove	Karwar	Uttara Kannada	0.0097	14.8354	74.1282
777	82019	1A_Mangrove	Karwar	Uttara Kannada	0.0021	14.8350	74.1280
778	82020	1A_Mangrove	Karwar	Uttara Kannada	0.0059	14.8357	74.1276
779	82021	1A_Mangrove	Karwar	Uttara Kannada	0.0041	14.8359	74.1276
780	82022	1A_Mangrove	Karwar	Uttara Kannada	0.0124	14.8350	74.1282
781	82023	1A_Mangrove	Karwar	Uttara Kannada	0.0199	14.8216	74.1553
782	82024	1A_Mangrove	Karwar	Uttara Kannada	0.0288	14.8212	74.1551
783	82025	1A_Mangrove	Karwar	Uttara Kannada	0.0093	14.8212	74.1550
784	82026	1A_Mangrove	Karwar	Uttara Kannada	0.0096	14.8192	74.1562
785	82027	1A_Mangrove	Karwar	Uttara Kannada	0.0082	14.8192	74.1561
786	82028	1A_Mangrove	Karwar	Uttara Kannada	0.2920	14.8120	74.1558
787	82029	1A_Mangrove	Karwar	Uttara Kannada	0.0074	14.8159	74.1610
788	82030	1A_Mangrove	Karwar	Uttara Kannada	0.0079	14.8159	74.1611
789	82031	1A_Mangrove	Karwar	Uttara Kannada	0.0066	14.8163	74.1612
790	82032	1A_Mangrove	Karwar	Uttara Kannada	0.0157	14.8168	74.1622
791	82033	1A_Mangrove	Karwar	Uttara Kannada	0.2449	14.8233	74.1657
792	82034	1A_Mangrove	Karwar	Uttara Kannada	0.0201	14.8244	74.1699
793	82035	1A_Mangrove	Karwar	Uttara Kannada	1.0778	14.8221	74.1724
794	82036	1A_Mangrove	Karwar	Uttara Kannada	0.6749	14.8220	74.1761
795	82037	1A_Mangrove	Karwar	Uttara Kannada	0.0134	14.8321	74.1710
796	82038	1A_Mangrove	Karwar	Uttara Kannada	0.0138	14.8361	74.1711
797	82039	1A_Mangrove	Karwar	Uttara Kannada	0.0263	14.8364	74.1710
798	82040	1A_Mangrove	Karwar	Uttara Kannada	0.0044	14.8362	74.1709
799	82041	1A_Mangrove	Karwar	Uttara Kannada	0.0390	14.8366	74.1719
800	82042	1A_Mangrove	Karwar	Uttara Kannada	0.0116	14.8370	74.1722
801	82043	1A_Mangrove	Karwar	Uttara Kannada	0.0105	14.8468	74.1805
802	82044	1A_Mangrove	Karwar	Uttara Kannada	0.0095	14.8538	74.1857
803	82045	1A_Mangrove	Karwar	Uttara Kannada	0.0124	14.8532	74.1855
804	82046	1A_Mangrove	Karwar	Uttara Kannada	0.0096	14.8524	74.1847
805	82047	1A_Mangrove	Karwar	Uttara Kannada	0.0683	14.8539	74.1942
806	82048	1A_Mangrove	Karwar	Uttara Kannada	0.0113	14.8646	74.1889
807	82049	1A_Mangrove	Karwar	Uttara Kannada	0.0091	14.8632	74.1937
808	82050	1A_Mangrove	Karwar	Uttara Kannada	0.0100	14.8668	74.1938
809	82051	1A_Mangrove	Karwar	Uttara Kannada	0.0085	14.8663	74.1926

810	82052	1A_Mangrove	Karwar	Uttara Kannada	0.4471	14.8676	74.1931
811	82053	1A_Mangrove	Karwar	Uttara Kannada	0.0303	14.8824	74.2533
812	82054	1A_Mangrove	Karwar	Uttara Kannada	0.1202	14.8745	74.2185
813	82055	1A_Mangrove	Karwar	Uttara Kannada	0.8739	14.8976	74.2312
814	82056	1A_Mangrove	Karwar	Uttara Kannada	0.0277	14.8727	74.1796
815	82057	1A_Mangrove	Karwar	Uttara Kannada	0.0162	14.8747	74.1750
816	82058	1A_Mangrove	Karwar	Uttara Kannada	0.0155	14.8743	74.1754
817	82059	1A_Mangrove	Karwar	Uttara Kannada	0.0060	14.8645	74.1622
818	82060	1A_Mangrove	Karwar	Uttara Kannada	0.1017	14.8586	74.1515
819	82061	1A_Mangrove	Karwar	Uttara Kannada	0.0099	14.8466	74.1303
820	82062	1A_Mangrove	Karwar	Uttara Kannada	0.0575	14.8465	74.1303
821	82063	1A_Mangrove	Karwar	Uttara Kannada	0.0422	14.8535	74.1135
822	82064	1A_Mangrove	Karwar	Uttara Kannada	0.0033	14.8538	74.1134
823	82065	1A_Mangrove	Karwar	Uttara Kannada	0.1165	14.8690	74.1225