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Review Paper

Taxonomic studies on hard corals of the Gulf of Kachchh (India): A review

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Abstract

The studies of scleractinian taxonomy in India, is more than 160 year old. India was one of the major countries to initiate coral reef symposium where the first international symposium was organised. However, since then, the focus with reference to scleractinian diversity was restricted majorly to Andaman, Gulf of Mannar and Lakshadweep archipelago, very little attention was given to Gulf of Kachchh. Though after several studies and surveys for scleractinian taxonomy, comprehensive regional lists as well as a country checklist is not available. A detailed review is presented here focusing challenges in the scleractinian taxonomy at regional levels as well as at national level in India. Special attention was given to the scleractinian studies of Gulf of Kachchh.

Keywords: *Scleractinian* corals, taxonomy, distribution, Marine Protected Area, Gulf of Kachchh.

Introduction

Coral reefs are a vital part of our marine ecosystems, providing homes and habitats for countless species. However, not all coral reefs are created equal when it comes to the number of different types of corals they contain. The Coral Triangle, a geographical term referring to the tropical marine waters of Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands and Timor-Leste, in South East Asia is home to an incredible 76% of the world's coral species, with the Bird's Head Peninsula in Indonesian Papua boasting the highest diversity with 574 species, making up 95% of the Coral Triangle total and 72% of the global total. It's amazing to think that individual reefs within this region can support up to 280 species per hectare! Within the Bird's Head Peninsula, reef of Raja Ampat is the World's best coral diversity spot with 553 species[1]. With such high levels of biodiversity, it's clear that the protection and conservation of these areas should be a top priority for us as humans. By taking steps to protect these precious ecosystems, we can help ensure that future generations will be able to marvel at the beauty and complexity of these underwater worlds. South Asian coastlines have diverse marine and coastal habitats including coral reefs, mangrove and sea grass. With 19,210 km^2 of reef area, South Asia contributes 6% to the world's coral reef area[2]. India, bounded by a coastline on three sides has four major (Figure-1) coral reef areas that cover about 5,790 km^2 equal to 2.04% of the global reef area. The four nationally recognized coral reefs include Andaman and Nicobar group of Islands; Lakshadweep group of Islands; the Gulf of Mannar and the Gulf of Kachchh. Further, satellite imagery shows scattered patches of corals in the intertidal areas and occasionally at sub-tidal depths down to a few meters along the west coast of India, notably at Ratnagiri, Malwan, Rede port and Vizhingam[3]. The Indian coral reefs also comprise fringing and barrier reefs or atolls and submerged reef platforms. In 1977, a submerged bank with living corals was discovered at Malpeoff Mangalore cost in western cost of India. This newly discovered bank is about 300 m wide and located about 100 km away from the shore and at the depth of around 35m[4]. In recent years coral taxonomy has entered a historical phase where nomenclatorial uncertainty is rapidly changing, so it's important that we do review of research work time to time and keep ourselves updated so that we can save this fragile ecosystem[5].

An overview of taxonomic studies of hard corals of India: The taxonomy studies of Indian corals have a history of nearly 160 years and was initiated by Rink in 1847 with his work in Nicrobar Islands, which is parallel to the works of Darwin on Volcano islands[6,7]. Later on number of scientist carried out taxonomic and ecological studies on *scleractinian* corals from India and recorded several species[8-21]. British scientists based upon their studies on material from the British Museum of Natural History, London, and the work of the late Professor George Matthai and C.S.G. Pillai, intensifying our understanding of the coral fauna[6]. Matthai was the first to identify specimens in the museum collections as part of unstructured surveys of other coastal habitats[16,18,22].

Pillai made history as the first Indian scholar to present a Ph.D. dissertation regarding "Studies on Corals" derived from the Mandappam group of islands located in the Gulf of Mannar, along with those from Chetlat and Minicoy islands in Lakshadweep. His remarkable work discussed 125 species

within 34 genera and a single subgenus in depth[23]. The Marine Biological Association of India – Kochi took a trailblazing step towards protecting coral and coral reef ecosystems when it organized the first ever Coral symposium on "Corals and Coral reefs", bringing together 72 participants (25 international and 47 Indians) to share knowledge at an international level. Dr. Pillai was the convener of this initial symposium. Despite this groundbreaking beginning, only 13 of such symposiums have taken place, none of them occurring in India again, apart from the original. This lack of progress in coral taxonomy at both the institutional and individual level within India clearly demonstrates the dearth of leadership. Pillai made an extensive study of the coral fauna in the Gulf of Mannar, Palk Bay, Lakshadweep, the Gulf of Kachchh and the west coast of the Andamans, the area formerly known as the Travancore coast, including the Kanyakumari coast[24-28]. Pillai and Patel notably contributed to the *scleractinian* corals of the Gulf of Kachchh, providing classification, genus characters, synopsis keys, specimen localities, distributions, remarks and black and white photographs to aid with identification of Kachchh coral taxonomy[26]. In 1979, Pillai went further in his study of Indian corals with five papers, in which he described a new species of *Montipora*, *Goniopora*, three new species of *Porites* and *Dendrophyllia indica* from the Indian seas, and offered re-descriptions of *Cladangiaexusta* and 25 new records of *hermatypic* corals from the suborder *Astrocoeniina*[29-33]. Pillai also recommended George and Sandhya's work for more details on references, as well as his own work[6,25,35]. In 1996 Pillai published a detailed status report on the corals and coral reefs of India which still remains as the basic document in which he listed 199 species of corals from Indian waters belonging to 71 genera of which 50 were colonial *hermatypes* and the rest *ahermatypes*[36]. The *hermatypes* comprised 155 species and the rest deep sea or shallow water *ahermatypes*.

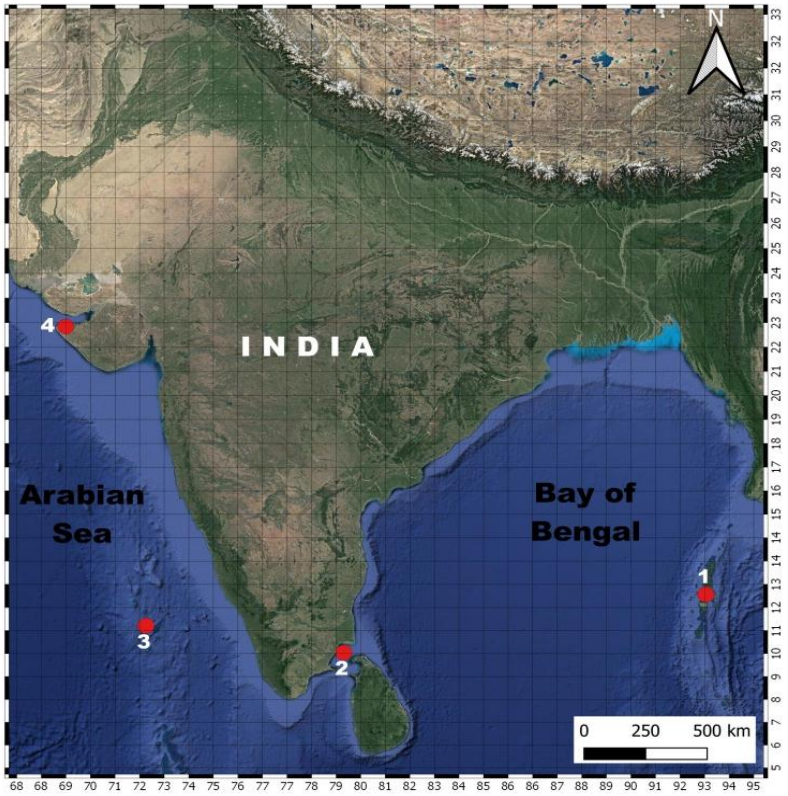

Figure-1: Coral reefs of India (1: Andaman and Nicobar 2: Gulf of Mannar 3: Lakshadweep 4: Gulf of Kachchh).

Table-1: Summery of research work done by Pillai[36].

	Gulf of Kachchh			Lakshadweep			South East coast of India (GoM & PB)			A & N islands			Total		
	H	AH	T	H	AH	T	H	AH	T	H	AH	T	H	AH	T
Genera	20	4	24	27	4	31	28	9	37	47	12	59	50	21	71
Species	34	3	37	69	9	78	84	10	94	100	35	135	155	44	199

Afterward, various researchers, including Wilkinson, Muley, and Patterson, worked and published coral status reports of Indian water[37,38,39]. India's government and UNDP GEF Field mission's 2001 diving study estimated that 198 scleractinians existed on the Andaman Islands, 111 of which were presumed to be newly-reported for India. Latter on a thorough review with other studies confirmed 102 of them were new records to India's scleractinians and non-scleractinians coral diversity[40]. Species belongs to order scleractinians and antipatharians, genus Millipora and gorgonians as well as species *Tubiporamusica* Linnaeus, 1758 are protected under schedule 1, part 4-A, coelentrata vide 11 July, 2001 under WLPA 1972. Due to the difficulty and required combination of fieldwork and laboratory work to categorise corals properly, there are few students at the university level equipped to take on such projects. If the process for obtaining permissions is not simplified, the science of not only coral taxonomy but taxonomy as a whole may remain in an embryonic state, never achieving its full potential.

The Global Coral Reef Monitoring Network (GCRMN) was created in South-Asia to boost the region's capacity and introduce new coral reef workers to biophysical monitoring and taxonomy of corals. Subsequently, India and Australia signed an agreement to initiate an Indo-Australian Capacity Building and Training Project. The purpose of this project was to train two Indian officers in coral taxonomy at the Museum of Tropical Queensland, Townsville, during the 9th International Coral Reef Symposium in Bali in 2000. Consequently, two Indian scientists were trained in Townsville in 2001-2002, and began the taxonomical work at the Zoological Survey of India in Kolakata.

Publication by Zoological Survey of India listed 208 herm types from India (Table-2), which is a benchmark and a voluminous compilation and publication in itself[1]. Venkatraman et al. reported *Faviteshalicora, Favia pallida* and *Platygyra daedellia* which were reported earlier from Gulf of Kachchh[1]. The photograph of *Pseuosiderastreatayami* published by Venkataraman et al. shows solid skeleton structure whereas Satyanarayana and Ramakrishna shows granular skeleton of the species[1,41].

Looking to the Table-1, Venkatraman et al. could have avoided the repeated species from Table-2, but they totally ignored the list of Pillai and started a new list of their own as per Table-2 as 235 (208 H and 27 AH), which showed duplication of work. The efforts expended on this project were ultimately a drain of resources, which are already scarce for taxonomic work, and the work itself had already been completed. This further shows that there is no effective control from Government on such issues (as 160 species common in both the list; if 160 species removed from 235 species then it would come to 75 species only, which could be added then the total would be 274 (199 + 75) species, but Venkatraman et al. satisfied with 235 species with a loss of 39 species in the total list of Indian corals[1,27]. Veron classified *Balanophyllia, Hetrocyathus* under zooxanthallate group whereas Venkatraman et al. put *Balanophyllia* and other forms under *azooxanthallate*[1,42]. Venkatraman et. al. described the genus character of genus *Caryophyllia* with pali and columela are present, but they did not give the exact status of pali and columela i.e. columella is twisted[1]. Thus Venkatraman et al. gave superficial and incomplete taxonomic data which may mislead the early career researchers[1]. Venkatraman et al. showed occurrences of 235 corals, but later when they revised it as 345 as under they did not show the occurrences of any species from the four major coral reefs of India[1,43]. Thus, they did not give the occurrence of 110 corals (345–235=110) in later publication. Lastly, Venkatraman and Satyanarayana updated the list (Table-3) in coral identification manual (without mentioning exact species occurrences from four major coral reefs of India)[43].

At the same time there is another list of taxonomical work by Raghuraman et al. (Table-4) where Venkatraman was one of the co-author[44].

Table-2: Summery of research work done by Venkatraman et al.[1].

	Gulf of Kachchh			Lakshadweep			South East Coast (GoM& PB)			A & N islands			Total		
	H	AH	T	H	AH	T	H	AH	T	H	AH	T	H	AH	T
Genera	20	3	23	34	3	37	27	10	37	57	12	69	60	16	76
Species	36	3	39	91	4	95	82	13	95	177	18	195	208	27	235

Table-3: Summery of research work done by Venkatraman and Satyanarayana[43].

	Gulf of Kachchh			Lakshadweep			South East Coast (GoM& PB)			A & N islands			Total		
	H	AH	T	H	AH	T	H	AH	T	H	AH	T	H	AH	T
Genera	23	4	27	42	4	46	29	9	38	59	12	71	66	21	87
Species	45	4	49	105	9	114	86	10	96	265	35	300	301	44	345

Table-4: Summery of research work done by Raghuraman et al.[44].

	Gulf of Kachchh	Lakshadweep	SE coast of India	Andaman islands	Nicobar islands	Total
Genera	27	37	40	86	74	89
Species	49	104	117	424	242	478

As a *scleractinian* scientist, which list one has to follow for Indian corals? In the above list (Table-4), there is a gap of 54 (478-424) species. One has to prepare it from these publications. If we compare, both the list published in 2012, the list from Venkataraman and Satyanarayana research is incomplete for South-East coast of India and Andaman and Nicobar island reefs[43]. Similarly, the list of Raghuraman et al., is also incomplete for Lakshadweep[44].

Moreover, Raghuraman et al. did not account work of Suresh, V R for his doctorate thesis work and work of Shakuntala Caeiro at Lakshadweep Islands with special reference to Agatti atoll. Raghuraman et al., also failed to take note of research done by Jayabaskaran R, for the coral fauna of Lakshadweep while carrying out their research work[44-47]. Rani Mary George and S. Jasmin reviewed coral fauna with 478 species as pointed out by Raghuraman et al.. JyotiSaroj et al., reviewed the coral fauna of India. Thus, there is lack in compilation of coral listing at national level[44,48,49].

Research conducted on an international level also has revealed inconsistencies in the number of species. Veron reported 18 families, 111 genera and 792 species of *scleractinian*s of the world, publishing 3 pictorial volumes on the 'Corals of the World'[42]. Wells stated that approximately 700 species of corals occur in the whole of Indo-Pacific region, which is still debatable as several scientists especially the Australian researchers have added many more species to the biodiversity of Indo-Pacific corals[50]. If one takes Wells estimate of 700 species along with additional information provided by recent workers the total will be about 775 species[50]. This indicates that approximately 35% of the Indo-pacific corals occur in Indian waters.

In recent times, a number of regional publications have been released containing divergent figures concerning total coral counts at the country level, as well as within four main coral reef locations. Nevertheless, there has been no consolidation on the taxonomic statuses of hard corals on a national level in the past decade. The present review takes the coral reefs of the Gulf of Kachchh as a prototypical example.

Methodology

Direct identification for extensive field survey as per Pillai & Patel, were carried out between 2004 to 2019[26]. Records of existing cleractinians coral were recorded and based on available published data comparative account was prepared.

Results and Discussion

Coral formations in Gujarat are mainly restricted to the southern shore of Gulf of Kachchh including 42 islands (Figure-2)[51]. These corals are mainly intertidal with massive, submassive, encrusting and folacious in nature (Figure-3). The history of reef based research in Gujarat is more than a century old. The first comprehensive document on the marine flora and fauna from Gujarat was published under the authorship of James Hornell in 1909 and the second in 1916[52]. Two volumes of his massive work published for the state of Baroda ruled by the Maharaja Sayaji Rao Gaekwad IInd, is one of the finest descriptions of the coral reefs of Okhamandal (now known as Poshitra cluster). Hornell also described the reef based Chank fishery and other fishery based small scale businesses. He also described some of the important groups of the reef diversity such as hydroids, polyzoans, nudibranchs and calcareous and non-calcareous poriferans. However, after his work a gap of almost 50 years were observed and no publication is available from 1917 to 1955.

Research work carried out by Gideon et.al. was one of the first research work on coral reef in the Gulf of Kachchh during post-independence and they mentioned the occurrence of *scleractinian* corals from this area[53]. During the first International symposium on "Coral and Coral reefs" Pillai presented a paper titled "Stony corals of the seas around India" [24]. During the discussion of his presentation it was recorded that he was not well aware about the occurrence of *scleractinian* corals in the Gulf of Kachchh, while replying to query of McCloskey (Pp: 216).

Patel gave an account of the coral diversity at Poshitra point in which he studied 16 reefs present in the Poshitra bay only[54,55]. From these publications, four genera viz. *Leptoria*, *Pavona*, *Podabacia* and *Pachyseris* are not reported in any of the consequent publications pertaining to corals, including his own[56,57]. Patel's work in Gulf of Kachchh attracted, Pillai et al to arrange a survey in the Gulf of Kachchh for six weeks and published a paper on their observations, after almost 10 years of the comment he received from McCloskey[57]. In that work Pillai et al. gave a brief report on their preliminary survey at various locations such as Paga and Boria in the western parts of the Gulf of Kachchh and Pirotan in the eastern part of Gulf of Kachchh[57]. They mainly described the coral formations and listed about 26 species of *scleractinian* corals which were belonging to 20 genera. The duo of C.S.G. Pillai and M I Patel contributed maximum in the reef research of the Gulf of Kachchh. The most

comprehensive publication of them described 37 species of hard corals from 16 different reefs spread across southern Gulf of Kachchh[26]. The specimen may be housed at CMFRI museum. Furthermore, Patel also described the impact of mining on the reefs of the Gulf of Kachchh in order to highlight to ban the exploitation of calcareous sea sand from MNP & S Gulf of Kachchh[55,56]. Patel also described the patchy coral reefs of the Gulf of Kachchh[56].

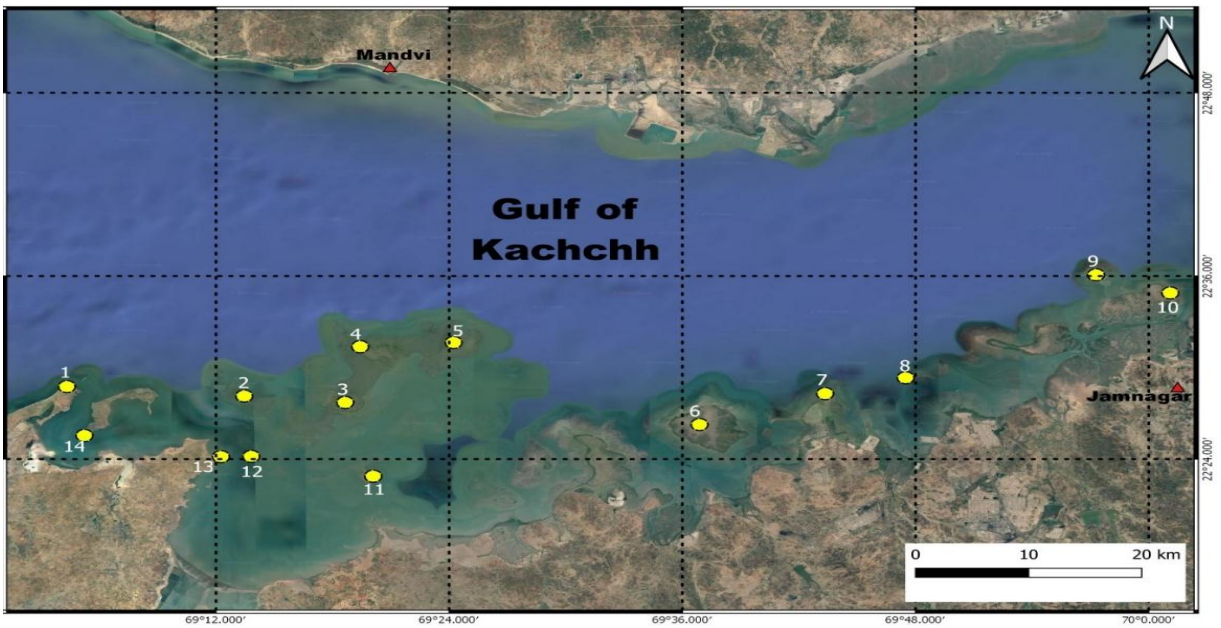

Figure-2: Major coral reefs of Gulf of Kachchh (1. Okha, 2. Paga, 3. Bhaider, 4. Noru, 5. Chank, 6. Kalubhar, 7. Narara, 8. Goose, 9. Pirotan, 10. Jindra, 11. Ajad, 12. Pashu, 13. Poshitra, 14. Beyt Dwarka).

Figure-3: Growth forms of corals in Gulf of Kachchh (A: Submassive Symphillia, B: Folaceous Montipora, C: Massive Dipsastraea and D: Tubastrea (Photos: Mr. Vinod Gajjar).

The El Nino oscillations in the year 1998 drew attention of many researchers towards the global phenomenon of coral bleaching. Internationally Arthur described the bleaching event in all the major reefs of India including the Gulf of Kachchh, which concluded that the reefs of the Gulf of Kachchh to be more resilient to the environmental fluctuations[59]. Deshmukhe et al. gave an overview of the coral reefs of the Gulf of Kachchh, in which they described the diversity of corals at Pirotan, Kalubhar, Boria and Beyt Shankhodar[60].

Kundu described the intertidal macro fauna of the Narara and Sikka intertidal area[61]. He also carried out survey on Sikka and Vadinar coastal coral reefs and recorded 16 species of corals[61]. Out of these, *Meandrinaarabica* and *Flavellumflavum* have not been reported in any of the publications on corals of Gulf of Kachchh and were not recorded earlier by Dave 2011 and Parasharya 2012 also who carried out extensive work at Narara (Sikka Vadinar Coast)[62,51]. Kundu has also mentioned that the *Meandrinaarabica* was dominant on the coast during his study; however the existence of genus is confirmed but there is no evidence of the species known from the work of Veron 2000[61,42]. Unfortunately, he has not claimed first record of the species from the country also. Veron has shown occurrence of this genus from Brazil and there exist no earlier record from India. The existence of this species needs species specific investigations[42].

GEER Foundation carried out extensive surveys to document the marine biodiversity of the Marine National Park and Sanctuary (MNP & S). Satyanarayana and Ramakrishna has listed total 49 species of hard corals from Gulf of Kachchh, which include 37 species described by Pillai and Patel, and 12 more species which were not reported earlier from this area[41,26]. However, Satyanarayana and Ramakrishna has not referred the works carried out by Patel and Pillai & Patel in his book, which are considered to be the pioneering studies for the taxonomy of corals in the Gulf of Kachchh[41,26,55,56]. Unfortunately Satyanarayana and Ramakrishna has neither clarified the status of the 37 species listed by Pillai and Patel, nor has mentioned site locality of any of the species listed, including 12 new records for the area nor showed the same in the distribution maps[41,26]. Out of these 12 new records, 4 are the first record for the country by Satyanarayana and Ramakrishna[41]. Because of these sporadic records one cannot infer distribution or actual existence or status of any of the species of corals in the Gulf of Kachchh.

Satyanarayana and Ramakrishna have claimed of *Faviteshalicora, Favites flexuosa* and *Favites pentagona* as new records from Gulf of Kachchh. Satyanarayana was one of the team member of Venkatraman et al., where *Faviastelligera, Favia pallida, Faviteshalicora, Platygyra Daedella* and *Turbinaria mesenterina* reported to occur in Gulf of Kachchh[41,1]. However, Satyanarayana and Ramakrishna only included *Faviteshalicora* and *Turbinaria mesenterina* in their list[41]. Patel and Singh et al. had already listed the species but Satyanarayana and Ramakrishna could not refer it[54,63,41]. Pandey et al. gave the recruitment and growth rates of corals at six locations in the Gulf of Kachchh[64]. This was the first study conducted towards the ecological / physiological process of corals in the Gulf of Kachchh. The report also gave detailed account of live coral cover at six different locations in the Gulf of Kachchh. Dave 2011 gave comprehensive account of Narara reef, recording 27 species of hard corals from Narara reef[62]. Parasharya 2012 gave status of *scleractinian*s corals including live coral cover and abiotic benthic substrate composition at six different sites in Gulf of Kachchh[51]. He reported 38 species of *scleractinian*s from six different locations. He also gave presence and absence status of *scleractinian* species mentioned by Pillai and Patel in the respective study locations[26].

The World Bank sponsored / supported project "Integrated Coastal Zone Management" enabled a huge scope of scientific research and publications from the inception year 2010. "Economic Valuation of Coral Reef systems in Gulf of Kachchh" published by Gujarat Ecology Commission was one of its kind and listed 45 species of *scleractinian* corals through collating past publications[65].

The first publication from this project was an "Atlas of Coral reefs of Gujarat" published by Gujarat Ecology Commission[66]. The publication also elaborated on the lesser known coastal locations throughout the Gujarat coast with reference to occurrence of corals. This publication considered the list of Pillai and Patel, Venkatraman et al. and Satyanarayana and Ramakrishna for coral species[26,1,41]. However, they could not provide the locations for the species first time recorded by Satyanarayana and Ramakrishna[41]. So the ambiguity of occurrence of these 12 species remained unsolved for another two years. Parasharya and Padategave an account of *scleractinian* diversity and status of live corals at Narara[67]. Yogesh kumar et al. published detailed paper on the longitudinal variations in the coral reef features in MNP & S[68]. In this publications, authors could provide occurrence sites for some of the species first time recorded by Satyanarayana and Ramakrishna where Satyanarayana is also one of the author. Kamboj compiled some of the restoration efforts of the past and current ICZM project[41,69].

Year 2014 was also important for the patchy coral occurrences on the Saurashtra coast also. Parasharya and Padate recorded eight species of *scleractinian* corals from Kuchdi coastal area of Porbandar district[70]. Poriya et al. elaborated on the occurrence of *scleractinian* corals from Dwarka, Mangrol, Veraval and Diu as well as recorded eight species[71]. Of these two papers, three species were commonly recorded.

Poriyaet al. has recorded *Turbinariapeltata* and *Porites stephensoni* are doubtful[71]. Adhavan et al. published a checklist of the intertidal marine fauna of Narara, in which they mentioned *Faviabestae*[5], which shall be *Favitesbestae* now accepted as *Favitesmelicerum*[72].

Sreenath submitted his PhD thesis on the Ecological studies of the coral reefs of the Gulf of Kachchh with special emphasis on *scleractinian* diversity[73]. In the year 2014 there were few publications pertaining to coral diversity in below average, not peer reviewed journals, which are not mentioned here.

Yogeshkumaret. al. published their detailed findings of the transplantation work carried out under ICZM project[68]. During the project they transplanted *Acropora muricata, Acropora nobilis, Acropora cytherea* and *Acropora diversa* which were never reported from Gulf of Kachchh in any of the publication, including all the authors' own publications. Yogesh kumar et al. explained the success of transplantation of 1569 fragments of locally occurring eight genera[74]. However, species were not mentioned in this publication. Yogesh kumar et al. recorded *Lobophyllia hemprechii* from Pirotan island[75]. However, the author did not refer Patel where the species had already been recorded[54]. Gujarat Ecology Commission published a massive two volume coffee table book titled "Magnificent mosaic of Gujarat coast – Corals of the Gulf of Kachchh"[76]. The coffee table book reported 16 additional species of *scleractinian* corals from the Gulf of Kachchh (Table-5). However, all the identification was purely based on photographs, without any on field efforts and needs robust taxonomic detailing.

Due to regular coral monitoring and taxonomic works in Gulf of Kachchh, the number of occurrence of new corals are steadily increasing which may wipe out the image of low generic diversity of *scleractinian* corals in Gulf of Kachchh. Though all these taxonomic studies require a thorough revision.

However, the paucity of hermatypic *scleractinian* genus (Acropora, Palauastrea, Stylocaeniella, Seriatopora, Euphyllia, Physogyra, Plerogyra, Galaxea, Dichocoenia, Agaracia, Coeloseris, Leptoseris, Pachyseris, Pavona, Cantharellus, Ctenactis, Cycloseris, Diseris, Fungia, Halomitra, Heliofungia, Herpolitha, Lithophyllon, Podabacia, Polyphyllia, Sandolitha, Zoopitus, Echinomorpha, Pectinia, Australomussa, Blastomussa, Calpophyllia, Cynaria, Mycetophyllia, Caulastrea, Diploria, Leptoria, Merulina, Moseleya, Oulastrea, Oulophyllia, Paraclavrina, Scapophyllia, Solenastrea, Trachyphyllia, Alvepora, Stylaria, Heterocyathus, Heteropsammia, Astrangia), ahermatypic scleractnian genus (Caryophyllia, Deltocyathus, Solenosmilia, Stephanocyathus, Balanophyllia, Eguchipsammia, Enallopsammia, Endopachys, Endopsammia, Flabellum, Plachotrochus, Rhizotrochus, Truncatoflabellum, Fungiacyathus, Madrepora, Clandagia, Culicia) and non-*scleractinian* genus (Heliopora) are notable in Gulf of Kachchh till today.

Dead fragments of *Acropora* genus were recorded throughout Gulf of Kachchh. Maximum density of such fragments was observed regularly at Boria during the field trips. Also, after the channel dredging for an oil company at Narara, one can see several dead fragments of *Acropora* genus along with other massive coral boulders. The dead fragments of *Acropora* may suggest the possibility of sub tidal reef and good generic diversity in the sub tidal regions of Gulf of Kachchh. In the other major coral reefs of India viz. Lakshadweep, Gulf of Mannar and Andaman Nicobar, most of the surveys have taken place in the subtidal or the regions filled with ocean waters only where the possibility of the coral abundance and richness is always higher including *Acropora*. The survival of these branching corals, especially *Acropora* genus, contributes a large amount to the species richness of the *scleractinian* corals of these reefs[6,77]. However from the reefs of Gulf of Kachchh, till date only three species of dead *Acropora* have been reported. This fact leads us to two hypothesis – i. *Acropora* has become extinct in Gulf of Kachchh, ii. Area having liveAcropora inGulf of Kachchh is yet not identified.

Conclusion

Considering all these discrepancies, there is a need to prepare a comprehensive and robust checklist of *scleractinian* corals of all the four major coral reefs of India. Also, online portals for coral reef related information such as ENVIS node shall be created for easy dissemination of information. In India there is a great scope of qualitative taxonomic work for the *scleractinian* corals especially in the Gulf of Kachchh.

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