The survey on the current distribution of Faviids was an approach to assess the sustenance of faviids since the past studies at Narara and Poshitra coastal reefs.

Assessing the status of Faviidae in Gulf of Kachchh was challenging as the corals were sparsely located in Narara and closely located in Poshitra coastal reef. At Poshitra reef transect surveys were testing as the concentration of coral patches were high and care was needed to avoid stamping as well walking over them. The Narara and Poshitra reefs being in the same gulf, former in the centre and other near the mouth of Gulf and at about 54 kms. apart, basically had most species common to them except difference in one species each. In past, studies on coral reef biodiversity of Gulf of Kachchh have been carried out by Pillai and Patel (1988), Singh (2001), Singh et al (2004), Dixit (2010) Dave (2011), Parasharya (2013) Sreenath (2014). In gulf of Kachchh Narara reef is highly popular as a tourist spot and easily accessible. Whereas Poshitra is an isolated reef hence less visited by tourists. However, it does have low tourist inflow.

The past studies of Pillai and Patel (1988) at Narara coastal reef reported four species of Faviids i.e., *Dipsastraea favus , Goniastrea pectinata, Leptastrea purpurea* and *Cyphastrea serailia*. This study was followed by Singh et al (2004) who reported eight species of which only two were reported earlier. The additional six species encountered were *Dipsastraea speciosa , Favia maxima, Favites complanata, Favites flexuosa, Platygyra sinenses,* and *Plesiastrea versipora*, while *Goniastrea pectinata* and *Cyphastrea serailia* were not recorded by them. In NIO study (2009) seven species reported were all recorded earlier. Dixit et al (2010) reported eight species of Faviidae i.e. *Dipsastraea favus , Dipsastraea speciosa , Favites complanata, Favites bestae, Goniastrea pectinata, Platygyra sinenses, Leptastrea purpurea* and *Cyphastrea serailia*. While Dave (2011) could

report 9 species with one new record *Platygyra pini*. Parasharya (2013) reported eight species, with *Favites complanata* and *Favites bestae* with status as "might be possible". In Current study carried out at Narara encountered total eight species all recorded earlier, however *Platygyra pini, Favites flexuosa* and *Plesiastrea versipora* could not be spotted. *Favia maxima, Favites flexulosa* and *Plesiastrea versipora* reported by Singh et al (2004) are not reported in any of other studies. At Narara reef vast area is exposed during low tide and the surveyor must complete the survey in short exposure time and if the size of coral is small it is very much likely that some species are missed. Further the species encountered during the surveys by the individual /groups might by due to species complexes made by the members of the family Faviidae. The species reported in all the studies is *Dipsastraea favus* which is the most common species of the reef as is recorded in the present study too with maximum relative abundance.

The Poshitra coastal reef near Laku point has also been studied by Patel and Pillai (1988), Singh (2001), Pandey et al., (2010), Parasharya, (2013), Kamboj et al., (2014) and Joshi (2016), in the past. Kamboj et al., (2014) reported maximum eleven species of Faviids i.e. *Cyphastrea serailia, Dipsastraea favus , Favia maxima, Dipsastraea speciosa , Favites bestae, Favites flexuosa, Favites complanata, Goniastrea pectinata, Leptastrea purpurea, Platygyra sinenses* and *Pleseastrea versipora.* The current study finds eight of these species (Fig. 11 and 12). At Poshitra fishermen and crab catchers' upturn or thump the corals for searching crab for their lively hood in intertidal pools. The said phenomenon results in expulsion of zooxanthellae, disturbing the symbiotic relation and ultimately bleaching of corals. This is likely to lead to the death of Faviids and other scleractinian corals (Parasharya, 2013). Though very low in percentage, coral bleaching was observed at Poshitra coastal reef among the two reefs surveyed (Table 19, Figure 46).

When compared with studies of Parasharya (2013) the relative frequency of *Cyphastrea serailia, Dipsastraea speciosa and Dipsastraea favus* showed decline in relative frequencies whereas *Leptastrea purpurea, Platygyra sinenses*, *Goniastrea pectinata* showed increase in relative frequency. In present study *Plesiastrea versipora* was not encountered at Narara,

however, Singh et al., (2004) have reported this species from the Narara coastal reef. This Faviid is often mistaken with *Favia stelligera* and *Cyphastrea sp.* (Veron, 2000).

Looking further with the sustainance of coral species at Poshitra coastal reef the *Cyphastrea serailia, Favites besate, Favites complanata, Platygyra sinensis, Goniastrea pectinata* and *Plesiastrea versipora* recorded in this study were not reported earlier by Parasharya (2013). At Poshitra the corals are densely packed forming massive structures and very likely to be missed. During the current study the relative abundance of *Dipsastraea speciosa* and *Dipsastraea favus* showed an increase when compared to Parasharya (2013). *Leptastrea purpurea* was not found at Poshitra coastal reef. Here, *Dipsastraea favus* was the most abundant species.

The positively skewed graph for frequency of abundance showing mesokurtic trend obtained for Narara gives the probability of more species between 0 to 40% encountered rates. The Poshitra coastal reef too showed positively skewed graph but it showed platykurtic trend where the most of the encountered individuals gave probability between 0 to 100%. The probability of encounter rates was comparatively higher for Poshitra than the Narara coastal reef. The Faviids here were more congregated in the form than the Narara coastal reef giving higher encounter rates. It is less disturbed and less visited by the tourists as well, letting the reef grow and sustain more than the Narara reef. At Narara, the disturbance and pollution pressure on Faviids and other Scleractinians is likely to be higher due to the presence of ship gateway for mega oil industries linked to the near-by coast. In addition, Narara coastal reef encounters direct flow of tide water too. Whereas, Poshitra lies towards inner margin at the mouth of gulf that makes the reef less prone to the disturbances and away from direct flow. But on the other side the crab catching activity disturbs the reef at much higher rates at Poshitra coastal reef. Both Narara and Poshitra coastal reefs deal with the fishing activity leading in upturning of bio-rocks and the corals.

The Bray curtis similarity indices showed the similarity of the population on both the costal reefs. Only two species *Plesiatrea versipora* at Narara and

Leptastrea purpurea at Poshitra coastal reefs were missing at the respective reefs.

ASSOCIATED FAUNA

The macrobenthic fauna associated with the Faviids plotted in histogram with respect to their abundance rates at Narara and Poshitra coastal reefs helped in evaluating the population status of associated fauna with Faviids.

The first group amongst these is sponges - The Poriferans. The sponges have been reported to have constructive or destructive associations with corals (Schonberg, 2017). Hence sponges associated with the Faviids were investigated. Venkataraman and Raghunathan (2015) have mentioned occurrence of 25 species of sponges in the Gulf of Kachchh. However, in present study of two coastal reefs in Marine National Park Jamnagar, Gujarat, only 7 species of sponges could be recorded. 42 islands, many of which with coral reefs, are present in the Gulf of Kachchh, Poshitra and Narara being part of the same. Gohil and Kundu (2012) have also recorded 8 species of sponges encrusting and forming patches on the rocks but in the west coast of Gujarat. The report of Venkatraman and Raghunathan has been referred by Wilson and Kitto (2012) who have been referred by Adhavan et al., (2014).

The abundance of Poriferans near Faviids at Narara was high in number, of which *Haliclona implexiformes* was most abundant while *Galiodes sp*. was least abundant. Whereas, at Poshitra coastal reef *Haliclona sp.*2 was most abundant. Only one species *Callyspongia sp* found in Poshitra reef was not encountered in Narara coastal reef. *Haliclona* genus is known to occur abundantly in many coral reefs of Caribbean Sea (Diaz et al., 2004; Diaz and Rutzler,2009) as is also seen in the present study. Its relation with various environmental parameters could be another interesting study.

Zoantharians, the next group, play a major role in occupying the reefs and flourish almost everywhere. The associations of Zoantharians and sponges

have been of an interest to many researchers in Caribbean coast (Lewis and Finelli, 2015, Reimer et.al 2018). They are considered threat to the local species and to the scleractinian corals by causing disturbance to the reef inhabitants (Karlson, 1980; Sebens 1982). Gohil and Kundu (2012) reported only one species of Zoanthus on the upper littoral zones forming large colonies on the rocky substratum of the Suarashtra coast, whereas Thakkar *et al* (2016) have reported 5 species by molecular marking technique from the same coast. However, Dave (2011) reported 4 species from Narara under two genera *Zoanthus* and *Palythoa*. *Zoanthus* sp. was not considered in his study and reported as three types having orange and green mouth parts or oral region, which Thakkar et al (2016) considered as colour morphs. In the present study only two species of Zoantharians were encountered at Narara ie. *Palythoa mutuki* and *Zoanthus sansibaricus.*

At the Poshitra coastal reef total six species of Zoantharians were encountered. Out of these five were also reported by Thakkar et al (2016) on Saurashtra coast except *Neozoanthus Sp*. Which has been reported by us as Padate et al. (2018). The population of Zoantharians was higher than that of at the Narara reef.

Corals reefs have always been associated with Sea anemone as both need rocky substratum. Associations of Sea Anemone with deep water coral, *Primnoa sp*., have been studied by Krieger and Wing (2002) in the Gulf of Alaska. Diversity and distribution of Sea Anemone has been reported by Raghunathan et al (2014) from the Andaman and Nicobar Islands. Shah et al (2017) have reported 15 species of sea anemone from Saurashtra coastline with no association with other species at Okha, Shivrajpur, Mithapur and Sutrapada.

Dave (2011) could report 4 species of sea anemone on Narara reef whereas Parasharya (2013) encountered 3 species at Narara as well as Poshitra. However, in present study these Actiniarans encountered near Faviids differed in number with six species at Narara and twelve species at Poshitra. The Poshitra coastal reef had more than 1400 individuals of *Heteractis malu* during one visit in Month of May 2016. Invasion of alien species is dependent on the rates of reproduction, mortality and physicochemical

characteristics of the reef (Sammarco et al., 2015). Various interspecies competition of alien species with local species have been reported to outgrow local species in number (Richardson et al., 1979). However, as the National Park remains closed from 15th June to 15th October and the monsoon currents in the gulf being very strong during this period, no visits could be made and during next visits the number had dropped down significantly. *H. malu* were located in the reef, surrounding the faviids and other scleractinian corals. *Stichodactyla tapetum* was a new report for Poshitra, in the present study found near Faviid patches (Mirza et al 2019).

Cnidarians, the corals in general including hard and soft forms, organized in the reef structure give support to various other species and hence are important fauna to study. Interspecific competition is widely known as an important structural mechanism in coral assemblages (Tanner, 1997). Coral assemblages have been studied and monitored by Vermeij (2006) for six years on the Caribbean coast. According to his report the coral recruit success was affected by the competing benthic organisms. The community structure of reef is dependent largely on the outcome of direct competition (Sandin and McNamara, 2012). The growth rates usually slow in the intraspecific competition in reef corals with involvement of energy investment (Rinkevich and Loya, 1985) which reduces fecundity, growth and survivorship (Chornesky, 1989).

Reef building corals at Narara and Poshitra differed in community structure due to the geographic locations of reefs. Both the reefs have dynamic populations of Scleractinian (hard Corals) and Alcyonarian (soft corals). The soft corals were not encountered at Narara whereas, they were present at Poshitra coastal reef. Narara comprised of twenty-one species of hard corals with *Dipsastraea favus* being most abundant. Amongst the other corals associated with this faviid was the boulder coral *Porites lutea* with second highest abundance competing the former species at Narara. Whereas *Porites lichen* was found to be competing with *Porites lutea*. Tolerant, long live and fast-growing corals out compete the other coral species for space as they are tolerant to environmental extremes too (Seebauer, 2001). Porites in general have bushy morphology which allows them to grow in many directions. The growth of different Porites needs to be monitored in

Gulf of Kachchh as large industries are present in the area and associated industries are also growing up adding to the pollution. Other species found in association with faviids were *Lobophyllia sp.1* and *Lobophyllia radians which* were also observed competing. *Montipora sp*. were found towards the outer reef and were cohabiting with *Zoanthus sansabaricus*. There were few places at reef where *Goniopora pedunculata* were found associated to Faviids. *Cyphastrea serailia* were encountered in comparatively low number and in small size as well at Narara coastal reef. *Homophyllia bowerbanki* which is known to form small colonies (Occasionally forming colony up to 1.5 meter) (Wells, 1955) were though found at Narara they occurred mainly as solitary polyps around the Faviids indicating developing stage. The growth of *Homophyllia bowerbanki* also needs to be monitored in Narara Coastal reef.

Poshitra coastal reef had strong colonial structures of Scleractinian corals in general, with soft corals lying solitary and attached to the rocky caves while hard corals forming the reef structure. With 8 species of faviids the other dominantly associated coral species was *Duncanopsammia peltata* in most abundance. *Turbinaria reniformis* was also present but in low numbers. *Goniopora pedunculata* were found towards the coral colonies and towards the outer reefs. Members of Poritidae family ie. *Porites solida, P. lutea, P. lichen* and *P. compressa* followed decreasing abundance on this reef. They were found adjoining the Faviids and several other reef corals. The competition of individuals was not seen like that found in Narara. This may be due to the distribution of Poritids on the rocky reef structure with compactly formed intertidal pools. Amongst the soft corals *Sinularia sp.* and *Dendroneptheya sp*. were found towards the outer reef structure. *Tuberstrea aurea* were encountered at lower rates near the Faviids.

On the western side of Narara creek coral transplants projects have been initiated by Gujarat Forest Department and Zoological survey of India. However, they are not included in the present counts to avoid the biasness in the Scleractinian community. They being in growing phase, disturbing them would result in loss in zooxanthellae inhabiting the calcareous structure.

The crustaceans play great role as an indicator of reef ecosystem as they inhabit the reef cavities and forage around. Studies on association of crustaceans with coral include Ivanenko et al (2018) who investigated copepods -host coral interspecific interactions and Garcia et al (2008) who studied Macrofauna associated with *Millepora alcicornis.* Crustacenas associated with *Stylophora pistillata* have been studied by Edwards and Emberton (1980) in the Sudanese Red Sea.

Karasawa (2000) reported 52 species of crustaceans associated with corals indicating that environment within the reef flats is suitable for their coexistence. Edwards and Emberton has (1980) described distribution and abundance of crustacea associated with *Stylophora pistillata* while Ivanenko et al (2018) indicated no strict association of host corals and copepods. Thus, several species of crustaceans are associated with coral reef ecosystems. In the present study of macrobenthic fauna mainly crabs and shrimps are included.

All together 16 species of Crustacean observed around Faviids with eleven at Narara and twelve at Poshitra indicate that both the small reefs support good diversity of crustaceans. Dave (2011) could record 16 species at Narara while Parasharya (2013) only 6 species. In Present study *Actaea savigynii* was reported again in the gulf but at Poshitra (Plate 6) (Mirza et al 2017) after about 50 years of its first report at nearby reef at Okha by Gopalakrishnan (1970). Though 28 species of crustaceans have been recorded in focal study of the Crustaceans in Gulf of Kachchh (which included northern as well as southern boundaries) (Trivedi et al. 2012) *Actaea savigynii* was not reported. No specimen and photo-specimen of this species were reported since Gopalakrishnan (1970).

Though there were few crustaceans found in the open area of the reef, majority were associated with corals. However, Crustaceans being highly mobile their intimacy with faviids could not be established. Nevertheless, *Alpheus sp.* was found frequently near the corals in general, while *Thranita crenata* were observed feeding frequently on debris near bio rocks at Poshitra coastal reef. *Ancylocaris brevicarpalis* was seen in good numbers followed by *Portunus pelagicus* at Narara and *Pilumnus vespertilio* were

majorly seen under bio rocks. At Poshitra, *Thranita crenata* were encountered more frequently. *Ancylocaris brevicarpalis* was seen in low numbers. This species is symbiotically associated with sea anemone genus *Stichodactyla*, whose population was also low at Poshitra.

Mollusc form another important associated fauna of coral reef ecosystem. Zuschin et al., (2001) reported about molluscs (gastropods) being highly dominated on the coral reefs. Structural deformation of branching corals associated with vermetid gastropod has been studied by Zvuloni et al., (2008). Increase in eutrophication and physical damage in the reef is likely to result in loss of mollusc associated with corals (Riegl and Piller, (2000). In present study no eutrophication or algal blooms have been observed at the two reefs. Gastropods being the most diverse group of macrobenthic fauna play important role in community composition near the Faviids and other Scleractinian corals. Total sixteen species encountered at Narara of which the most abundant was *Umbonium vestiarium*. *Turbo intercostalis* was second highest abundant on reef. Chitons were found on the biorocks near Faviids. *Erronea onyx* and *Chiton sp*. were seen on the Faviids and other scleractinian corals. *Murex sp*. were seen low in population at Narara coastal reef.

There were twenty-one species at Poshitra coastal reef. *Bursa granularis* was highest in population followed by *Turbo intercostalis*. Species assemblage was higher in Poshitra due to the intertidal pool structure and diversity of Scleractinian corals.

Nudibranchs or Sea slugs of family Ophisthobranch form another important component of reef fauna. Faucci et al., (2007) has reported dependence of several nudibranchs on corals for their reproduction. The presence of distinct phylogenetic signal from the host corals play an important role in speciation in nudibranchs feeding on corals. The ecological speciation in coral biodiversity has been reported to be supported by Nudibranchs (Fritts-Penniman, 2020). Spotting Nudibranchs was challenging during the study. Dave (2011) reported five nudibranchs from Narara while Parasharya (2013) reported 11 species at Narara and 26 species at Poshitra coastal reef.

During current study only four species could be observed at Narara. Among these *Peronia verruculata* was highly abundant near Faviids. The second highest of Narara, *Joruna funebris* was most abundant at Poshitra with Onchidum vericulatum at second position. Thus, both the species had higher abundance rate at the two reefs studied. *Sakuraolis gujaratica* endemic to this region (Rudman, 1980) sighted after 40 years by Apte (2010) was also sighted during the current study with moderate population. Both the studied reefs had varied species composition. In the present study it was easier to site nudibranchs at Narara as it is open and sandy whereas at the Poshitra reef, which is rocky and compact the siting of nudibranch was difficult. Being small and extremely camouflaged, nudibranchs were difficult to site in the intertidal pools with segregated coral patches and colony.

The next important group in the coral reef system is Echinoderms. In their study of deep-sea echinoderms associated with corals, rocky stratum and the anthropogenic objects, Leonard et al (2020) have reported that bathymetric distribution of echinoderms varies for each of the species encountered in deep sea. Studies of Sotelo-Casas et al (2019) on echinoderms associated with coral communities in the eastern pacific showed conspicuous assemblages that alter the ecosystem structure and composition of corals. The authors state that the echinoderm diversity is more linked with the corals and algal turf. The association of echinoderm with Nephtheid soft corals as common component of benthic ecosystem has also been reported (Neves et al 2020).

At Narara Dave (2011) reported 7 species; whereas, Parasharya (2013) could report only two. Echinoderms are important marine organisms in the reef habitats. They are also sensitive to the changing water quality and useful indicators of environmental attributes (Givianrad et al, 2014). Total five species encountered in present study at Narara indicate probably improved environmental attributes. However, at Poshitra out of six species reported by Parasharaya (2013), 2 could not be reported. As expected, the species abundance was different at the two reefs with *Ophiopleutus imbricatus* abundant followed by *Holothuria scabra* at Narara while *Asterina*

sp. most abundant at Poshitra followed by *Ophiopleutus imbricatus* and *Holothuria scabra*.

Fish diversity is one of the important components in the reef biota. The coral reef structural complexities have a strong influence on the reef associated fishes as they provide broad range of food, protection and shelter (Epstein and Kingsford, 2019). The branching corals like Millepora are ideal amongst these as their branches provide shelter for fish as well as many other microfauna which can be source of food to fishes (Leal et al., 2013). With decrease in coral cover the reef fishes also decline (Feary et al., 2007). Dave (2011) reported three species from Narara reef while Parmar et al (2015), during a survey on ichthyofauna in the Gulf of Kachchh reported 18 species from Narara and 21 species from Poshitra reef. Further, Adhavan et al (2014) could report only two species from the Narara reef, while nine species are encountered in Narara reef in present study. Time of the survey seems to be important for fish studies as at the lowest of low tide the tidal pools are drained off and fishes are not encountered whereas at 1-meter tide usually the water is not receded and fishes can be encountered. Most of the present study was conducted at below 0.5-meter tide when good number of fishes have been encountered. At Poshitra, the reef being compact and rocky the fish were probably hiding in the crevices and cave formations and comparatively less encountered. All the species encountered at Poshitra reef were also encountered at Narara too.

Epinephelus coioides was observed in abundance at Narara. *Allenbatrachus grunniens* was mainly sighted by its grunting sound from under the bio-rocks. *Blenniella sp*. were found popping out in the sandy areas of intertidal pools. *Tetrodon lineatus* were encountered frequently when trapped in tidal pools. Their population was higher at Narara than Poshitra coastal reef as the rocky intertidal pools retain very less water and constricted area leave no space for the fishes to swim around during low tides. At Poshitra reef the most abundant fish encountered was *Abudefduf sordidus* followed by *Allenbatrachus grunniens*. With reference to high sclerectinian diversity that include faviids it is likely that more fish diversity was present at Poshitra reef. However, the density and compactness of these corals prevented reaching at fish without stamping on coral patches.

Species specific differences in distribution of fauna in a marine ecosystem are known to occur depending on the temperature of sea water (Murawski, 1993). The temperature is also known to influence breeding performance of various species (Orton, 1920). Thus, temperature as an environmental parameter is dependent on various other environmental factors including pollution, while temperature in turn also influences various environmental characteristics. Narara reef being closer to industrial belt of Gulf of Kachchh the higher SST is likely to occur compared to Poshitra reef which is seclusive. However, the difference in the temperature of sea water of two reefs is non-significant as the Gulf as a whole face highest of hightides in the world (Vethamony et al 2005) mixing water twice in a day. Similarly, pH, salinity and nitrite levels in the water collected from the two reefs are non-significantly different but Higher at Narara. Dissolved Oxygen, salinity and nitrate levels from the two reefs showed significant differences at $P<0.05$ (*) with lower levels at Narara reef. Here pollution level is expected to be high due to presence of petrochemical base industries. In addition, at Narara algal cover is higher indicating use of nitrate and phosphates. As far as Oxygen is concerned its levels are known to decrease with increase in Temperature (Desa et al 2005).

Poshitra being a seclusive reef the physicochemical characteristics of the reef water were found to support more diverse fauna while numbers of individuals observed for particular species at Narara reef were always higher. However, the geomorphology of the two reefs being different it is likely that survey of Poshitra reef is more difficult as during lowest of low tide water is drained off from the intertidal pools and increases the visibility for identification whereas at Narara reef some water is always retained over corals during lowest of low tide making observation difficult.

The tidal fluctuations being very high the physicochemical parameters of both the reefs showed varied correlation and hence no significant conclusion

can be made. Desa et al (2005), Dave (2011) and Parasharya (2013) also reported fluctuations in the physicochemical parameter studied due to high tidal fluctuations in the Southern Gulf of Kachchh.

Coral substrate and habitat characteristics of both the reefs differed extensively. The open sandy reef of Narara had low coral cover compared to compact rocky substratum of Poshitra reef. However, the bleaching though low was observed only at Poshitra reef. Joshi et al (2016) and Adhavan et al (2014) have reported that though coral bleaching occurs extensively in month of May-June in the area there is 100% recovery. During this phase the corals go under environmental stress by Indian pre-monsoon conditions with high temperatures, high UV radiation (sunlight) and strong monsoon currents in the sea. These corals revive again to healthy stage during the months of December to April. The bleaching observed at Poshitra reef was mainly due to the turning of biorocks upside down by the fishermen (crab catchers). Poshitra has low tourism influx but the intrusion of crab catchers is extensive. As present study was carried out mainly from November to May; no major bleached corals were observed. Sand cover was found to be higher at Narara reef.

The extensive and dispersed algal cover at Narara coastal reef may have been caused due to input of urban waste from Jamnagar city. The sandy and open reef area provide easy encourage to the marine algae compared to the rocky tidal pools of Poshitra. In addition, Poshitra also had more area covered with mud.

NUMBERS OF THE INDIVIDUALS IN THE ASSOCIATED FAUNA

The need to find out the number of individuals was to evaluate the population status of the species at both the respective sites. The individuals of cnidarians and molluscans encountered at both the sites were always higher. If we look at the global and Indian cnidarian species status of its diversity is high with 9924 Cnidarian reported globally including 1042+ from India (Venkataraman and Raghunathan, 2015). This group dominated Narara as well as Poshitra reefs with Poshitra giving higher encountered rate in the compactly packed coral reef system. As mentioned earlier*, H.*

malu influenced the total number of cnidarians because of their presence in huge number.

Similarly, when one looks at status of marine molluscs, about 3400 have been recorded from Indian waters that make a part of 52525 species globally (Venkataraman and Raghunathan, 2015). The comparatively smaller reef areas of Narara and Poshitra also recorded higher species as well as individuals that is 23 species at Narara and 28 at Poshitra compared to other groups of associated fauna.

The representation of Crustaceans seems to be moderate at the two reefs as only 11 (Narara) and 12 (Poshitra) species were recorded at the two reefs against global species diversity of 44950 and Indian species 2394 (Venkataraman and Raghunathan, 2015). The encounter rate of the same group was also moderate at the two reefs.

With reference to Venkataraman and Raghunathan (2015) who have also given global and Indian probable numbers of Poriferan, Echinoderm and reef fish species, the numbers of species recorded at Narara and Poshitra reefs were low for these groups. However, some of the species present were encountered in good numbers increasing the overall encounter rate of the groups studied.

One striking observation is that for Ophisthobranchs where only nudibranchs have been considered. Out of 15000 species recorded globally only 38 have been listed by Venkataraman and Raghunathan (2015) in "Costal and Marine Biodiversity of India" a Zoological Survey of India Publication. Apte (2010) and Parasharaya (2013) could report 26 species whereas during present study only 8 could be observed in the two reef systems. As said earlier this is an important group of small microbenthic fauna which is very much influenced by environmental conditions. An exclusive study with nudibranchs as focal group can throw the better light on its ecology.