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Impact of COVID-19 Pandemic Lockdown on Fishery Potential of Uran Tehsil, M. S., India

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Abstract: *This investigation was intended to find out the impact of covid-19 pandemic lockdown on fishery potential of Karanja and Mora village of Uran Tehsil from Maharashtra State. Data was collected by questionary and on field survey method. Data revealed the presence of 55 commercially important fishery species, including 44 fishes, 08 crustaceans and 03 molluscs. It was found that species diversity was positively corelated with substantial impact of Lockdown.*

Keywords: Uran Landing Centers, Fishery Potential, Covid-19 Lockdown, etc.

I. INTRODUCTION

Today whole world suffers from an ongoing Coronavirus/ COVID-19 pandemic. Humans are mostly affected directly through coronavirus infection and indirectly through their occupation/jobs. This impact is also being seen on the fisheries potential of India. The Coronavirus popularly known as COVID-19 was started in China, mainly fromWuhan city [1, 2]. The spread of the virus was almost in all the countries which leads to millions of corona positive cases and thousands of human deaths per day [2]. On 30 January 2020 World Health Organization had declared a global emergency [1]. In India First lockdown was placed on 24 March 2020 [3].

As the GDP of the world during the Covid-19 lockdown has been affected, the economic status of India also has been lowered down and hence it shows multi-sectoral spillover effects. One of those is the fishery sector, which had also been impacted due to lockdown. In many countries, Fishing and distribution of Fishery products i.e., Transportationof seafood are considered as an important activity and because of implementing several rules to prevent the spread of infection, this sector has been facing great loss [3, 4]. During this period the small-scale fishery was facing problems in pricing, marketing, and organization. Due to complete strict lockdown, there was no landing of fishes on landing centers which affects the economy of the coastal region [5].

Maharashtra state comprises 526 villages which are marked as marine fishing villages. Raigad district with a number of 195 it comprises the maximum number of villages Raigad with 31.2% of them comes under active fishing, more than six months in a year and the rest of the time they do part-time seasonal fishing [6].

Uran is blessed with good nature and marine environment, people living here are mostly 80% fishermen. Fishing is the main occupation and source of economy for the local people in Karanja and Mora. People in these regions are facing fishing crises due to corona pandemic lockdown as compared to past years. In the present work, we try to highlight impact of Covid-19 lockdown impact on fish species occurrence and its potential in the coastal landing centers of Uran tehsil.

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II. METHODOLOGY

A. The Study Area

For this study we have selected two landing centers and local fish market each situated in Karanja and Mora village from Uran Tehsil. Uran (18^0 52'38"N 72^0 55'42"E) is a coastal town which is locatedin Navi Mumbai, Maharashtra State comes under the Raigad district in the Konkandivision. A creek called 'Uran creek / Sheva creek' (Lat. 18^0 50' 20" N and Long. 72^0 57' 5" E) encircles Uran citytowards the north side and is continuous with the Panvel creek and Thane creek. Creek namely Dharamtar creek (Lat.180 50' 5" N and Long. 720 57' 10" E) encirclesUran city towards the south side and is continuous with the Karanja creek and Pen –Khopoli creek. On the west side, Uran is encircled by the Arabian Sea.

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Karanja (18°51'13" N 72° 56'51"E) is a village which is present southward side of Uran. This village is mostly consisting of fishermen families engaged in active fishing in coastal waters, while utilizing landing center located along Karanja creek also known as Karanja jetty (Figure 1). Mora (18°54'47" N 72° 55'30" E) is a village which is present northwards from the in Uran which is complete opposite to Karanja village (Figure 2).

Figure 1: Site Map of Karanja Village

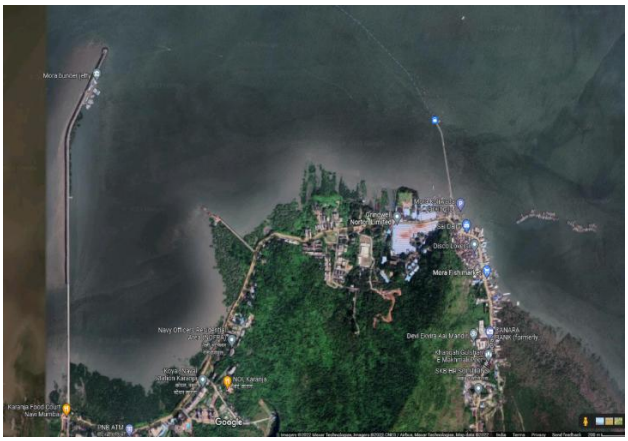

Figure 2: Site Map of Mora Village

B. Data Collection:

Weekly survey was conducted for the period of 3 months from February 2021 to April 2021, to assess fish species occurrence at the selected landing center and local fish market weekly. Fish species were identified by using, Pictorial guide books [7, 8] and through online database of fish base website [9].

III. Result And Discussion

During Covid-19 pandemic period, aquaculture producing Asiatic countries were experienced difficulties in accessing inputs and disrupted export in aquaculture [10, 11]. Decrease in fishing pressure, mainly by legal industrial fleets, may allow fish stocks with more resilient life histories to recover, with important indirect effects for the small-scale sector. For example, the combination of decreased demand, lower prices, and lockdowns on fisheries in many places indicates that boats are harboring in port and fishing is reduced by as much as 80% [12]. Total 55 commercially important species, including 44 fishes, 08 crustaceans and 03 molluscs were recorded.

Reported 44 fish species were belonging to 33 families and 15 order, while 08 crustacean species were belonging to 04 families of order decapoda. Though number of crustacean species were found to be less as compared to data given by Maheshwaradu [13] for economically important curstaceans including penaeid prawns, non-penaeid prawns, crabs and

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lobsters reported along Maharashtra coast. In molluscs, only 03 species reported, each belonging to one order and family respectively. Pawar, [14] has recorded 31 species of fishes from the Uran coast, whereas we have recorded 39 species of fishes from the Karanja and Mora coast.

With site dependent assessment, all 55 reported species were observed at Karanja landing center and local fish market, while only 31 species were reported from Mora landing center and local fish market. Pawar, [14] fishes of Order Perciformes were predominantly recorded from both the landing centers. Similarly, we have also recorded fishes with the species belonging to order Perciforms (25%) in large number followed by Scombriformes, 18% and Carangiformes, 13%. (Table I and Fig. 3).

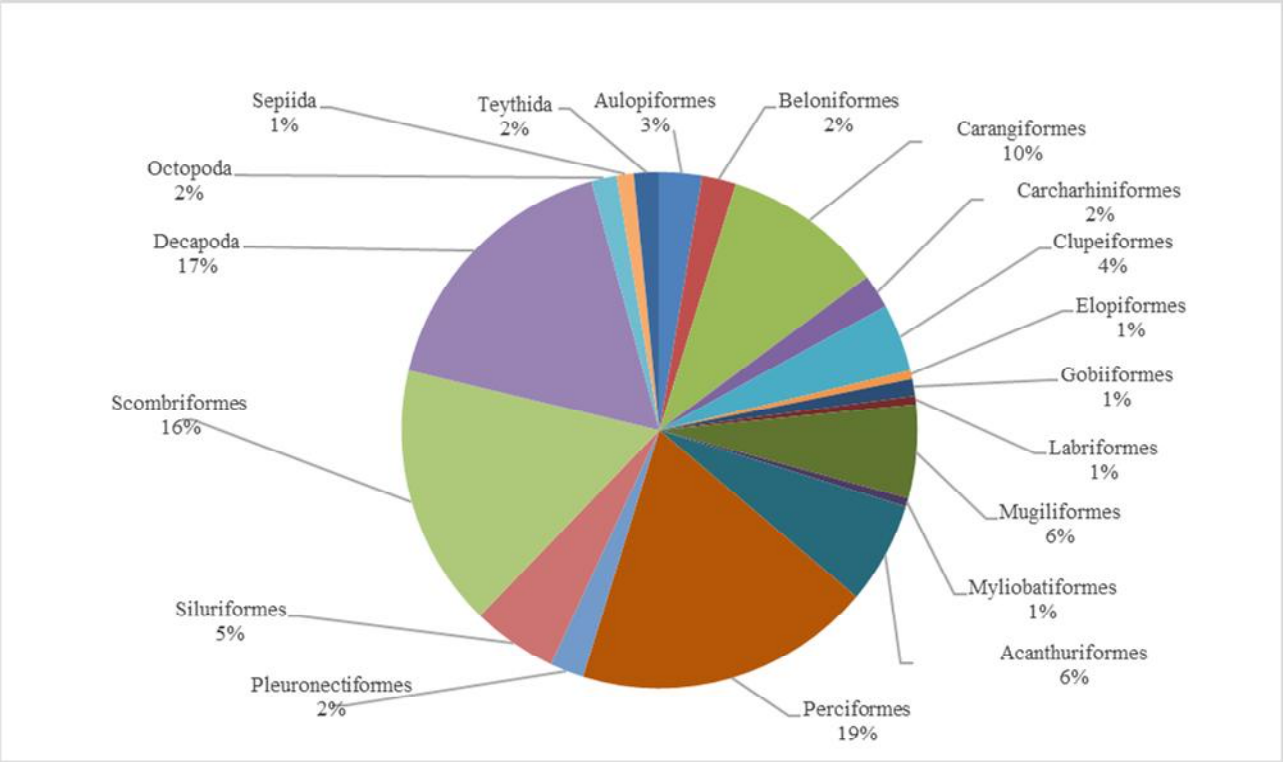

Figure 3: Order wise species occurrence at Uran Tehsil.

At Karanja, species like, Pampus argenteus, Mugil cephalus, Lutjanus argentimaculatus, Parastromateus niger and Penaeus indicus were recorded maximum times, while species like Coryphaena hippurus, Megalops cyprinoides, Boleophthalmus boddarti, Acentrogobius nebulosus, Aetobatus narinari, Pateobatis uarnacoides, Scatophagus argus, Epinephelus coioides, Acanthopagrus berda, Psettodes erumei, Arius maculatus, Leptura canthus, Parapenaeopsis stylifera, Macrobrachium rosenbergi and Portunus sanguinolentus were least observed. From above listed species, ICAR-CMFRI have already successfully developed brood stock induced spawning and seed production for cage culture for Lutjanus argentimaculatus and Epinephelus coioides [15].

At Mora, fishes like Portunus sanguinolentus, Mugil cephalus, Rita rita, Penaeus indicus, were recorded predominantly, whereas species like, Lutjanus sanguineus, Pampus chinensis and Uroteuthis duvaucelil were rarely observed (Table I). In Handbook on Fisheries statistics [16], it was stated that, in Maharashtra, species wise maximum landings were shown by Penaeid and non-paenaeid prawns, Bombay duck, Ribbon fish, Indian Mackerel, Oil Saradine, Silver pomfret. While fishes like, Snappers, Rays, Tunas, Molluscs showed negligible landing.

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Table I: Commercially important fish species at Karanja and Mora village of Uran Tehsil

Sr. No.	Order	Family	Scientific Name	Common Name	Local Name	Karanja												Mora											
						February				March				April				February				March				April			
						I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
	Fish Species																												
1	Aulopiformes	Synodontidae	*Harpadon nehereus*	Bombay Duck	Bombil	■					■				■	■	■		■				■			■	■	■	
2	Beloniformes	Belonidae	*Tylosurus crocodilus*	Hound fish	Toll		■	■				■								■	■					■		■		
3	Carangiformes	Coryphaenidae	*Coryphaena hippurus*	Mahi mahi	Popat Masa									■															
4		Rachycentridae	*Rachycentron canadum*	Cobia	Sakla		■							■	■	■													
5		Carangidae	*Caranx sexfasciatus*	Bigeye trevally	Narba	■	■				■		■							■	■			■			■		■
6			*Decapterus macarellus*	Makerel scad	Teli bangada	■		■				■	■										■			■	■		■
7			*Parastromateus niger*	Black Promfret	Halwa	■	■		■	■	■																		
8			*Seriolina nigrofasciata*	Black bandedtrevally	Sasa masa			■				■		■															
9	Carcharhiniformes	Carcharhinidae	*Scoliodon laticaudus*	Scoliodon	Mushi			■			■		■		■	■	■												
10		Triakidae	*Mustelus henlei*	Brown smoothhound shark	Shinavri			■				■																	
11	Clupeiformes	Chirocentridae	*Chirocentrus dorab*	Silver barfish	Karli						■	■			■	■													
12		Engraulidae	*Coilia dussumieri*	Gold Anchovy Fish	Mandeli	■		■			■		■		■	■	■		■	■				■			■		
13	Elopiformes	Megalopidae	*Megalops cyprinoides*	Indo-pacific tarpon	Palkati												■												
14	Gobiiformes	Oxudercidae	*Boleophthalmus boddarti*	Mudskipper	Nivati									■									■	■				■	
15	Labriformes	Scaride	*Scarus ghobban*	Blue barred parrot fish	-							■																	
16	Mugiliformes	Mugilidae	*Mugil cephalus*	Grey mullet	Boit	■			■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■
17	Myliobatiformes	Aetobatidae	*Aetobatus narinari*	Spotted eagle ray	Waghya pakat			■																					
18		Dasyatidae	*Pateobatis uarnacoides*	White nosewhipray	Pakat											■													
19	Acanthuriformes	Ephippidae	*Platax boersii*	golden spadefish	Habnus	■	■				■	■	■			■	■												
20		Lobotidae	*Lobotes surinamensis*	Atlantic tripletail	Khatkur		■	■				■	■		■	■	■			■	■			■		■		■	■
21		Scatophagidae	*Scatophagus argus*	Spotted scat	Wada								■										■		■		■		
22	Perciformes	Centropomidae	*Lates calcarifer*	Sea bass	Jitada				■		■				■	■	■				■		■			■			
23		Haemulidae	*Pomadasys hasta*	Silverlined grunt	Karkara			■								■				■						■		■	
24		Lutjanidae	*Lutjanus sanguineus*	Blood red snapper	Tamb										■	■	■			■		■							
25			*Lutjanus argentimaculatus*	Snapper	Tamb		■		■	■	■	■	■	■	■	■	■													
26		Polynemidae	*Eleutheronema tetradactylum*	Indian Salmon	Rawas						■	■											■			■	■		
27		Sciaenidae	*Protonibea diacanthus*	Black Jewfish	Ghol		■				■		■	■	■	■	■						■			■			
28			*Johnius dussumieri*	Croaker	Dhoma			■				■	■										■	■			■	■	
29		Serranidae	*Epinephelus aeneus*	White grouper	Hekru				■		■	■				■	■												
30			*Epinephelus coioides*	Orange spotted grouper	Hekru										■														
31		Sparidae	*Acanthopagrus berda*	Goldsilk seabream	Palu								■										■	■	■			■	■
32		Nemipteridae	*Nemipterus virgatus*	Golden threadfin bream	Rani masa					■	■		■	■															
33	Pleuronectiformes	Cyniglossidae	*Paraplagusia bilineatus*	Large tounge Sole	Lepti								■		■				■	■			■			■			
34		Psettodidae	*Psettodes erumei*	Indian Halibut	Bhakas						■																		
35	Siluriformes	Bagridae	*Rita rita*	Catfish	Shingala				■	■						■			■	■	■	■	■	■	■	■		■		■
36		Ariidae	*Arius maculatus*	Catfish	Chivna										■				■		■	■					■	■	
37	Scombriformes	Scombridae	*Scomberomorus commerson*	Narrow-barred Spanish mackerel	Surmai					■	■		■		■	■	■												
38			*Rastrelliger kanagurta*	Indian Mackerel	Kat-Bangada											■	■				■		■	■		■			■

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39			*Thunnus tonggol*	Mackerel tuna	Kupa	
40			*Euthynnus affinis*	Mackerel tuna	Teli kupa	
41		Stromateidae	*Pampus argenteus*	Silver Pomfret	Paplet/ Sarga	
42			*Pampus chinensis*	Chinese Pomfret	Calet	
43		Trichiuridae	*Trichiurus lepturus*	Large headed ribbon fish	Bala	
44			*Leptura canthus*	Ribbion fish	Vakti	
	Crustacean species					
45	Decapoda	Palinuridae	*Panulirus gracilis*	Lobster	Shivandi	
46		Penaeidae	*Parapenaeopsis stylifera*	Kiddi shrimp	Shengti kolbi	
47			*Penaeus monodon*	Tiger Prawn	Karpali	
48			*Penaeus indicus*	White Prawns	Sot Kolbi	
49		Palaemonidae	*Macrobrachium rosenbergi*	Scampi	Pocha kolbi	
50		Portunidae	*Portunus sanguinolentus*	Three spot swimming crab	Kawari	
51			*Scylla serrata*	Mud crab	Chimbori	
52			*Portunus armatus*	Flower Crab	Morkat	
	Molluscan species					
53	Octopoda	Octopodidae	*Octopus vulgaris*	Octopus	Sar makul	
54	Sepiida	Sepiidae	*Sepia officinalis*	Cuttlefish	Waghya Makul	
55	Teythida	Loliginadae	*Uroteuthis duvaucelil*	Indian OceanSquid	Nal makul	

According to FSI report [17], along North Maharashtra and Gujrat coast, at a depth of 30-50 m & 50-100 m the catch was dominated by Cat fishes (56.80%), Sciaenids (Dhoma) (3.89%), barracuda (3.89%). In present investigation, species composition found to vary, with deviation as species belongs to order Perciformes (19%), Decapoda (17%), Scombriformes (16%) and Carangiformes (10%) with maximum occurrence, while species belongs to order like, Elopiformes, Gobiformes, Labriformes, Myliobatiformes, and Sepiida showed least occurrence (1%) in fish markets and landing centres of study area (Table I & Figure 3).

During Covid-19 lockdown period, fisheries were entirely closed down initially (contrary to farming), and due to fisheries importance and significance as a food provision for civil society, fishing permitted to continue operations within some boundaries [12]. In this present investigation, lowest number of fish species were reported in the first week February at both the selected sites (Karanja, 11 and Mora, 9 Species, respectively), most probably due to limited fishing practice, whereas maximum numbers of species were observed in first week of march at Mora (18 species) and in second week of April at Karanja (27 Species) can be correlated with less fishing attempts ahead of restrictions and lack of storage facilities (Fig. 4). Though fishing is an essential service, social distancing measures have prohibited many small-scale fishers from going fishing due to large vessel size or trading in close quarters in local markets [4, 18]. Small scale fishery as the most vulnerable fishing sector, in relation to the short-term socio-economic effects imposed by the lockdown [19].

It is evident that the diversity of marine fish and shellfish fishes is increasingly threatened and management strategies have to vigorously monitor gears and catches affecting biodiversity and fisheries [20]. Declines in fishing pressure, particularly by large fishing vessels, may allow fish stocks to recover their population. In addition to this, many places fishing reduced to 80% [12]. Observations along both the sites along Uran showed lowest number of species occurrence in February, which gradually increased till month of April, as low fishing rate facilitates undisturbed conditions to thrive fish species and their population. Though, short-term cessations such as COVID-19 lockdown during early 2020 cannot recover marine resources as it requires long term environmental improvement and management commitments [21].

Dol netting is one of the major fishing methods used mainly by traditional fishermen of Maharashtra, such nets can be operated with small fishing vessels [22]. Number of fishermen practicing fishing activity by using small vessels with,

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cast net as well as gill net are higher in Karanja village, so higher number of species occurrence with range of 20-25 species observed along Karanja, whereas a smaller number of fishermen practicing along Mora village, hence low number with ranges of 10-15 species observed during month of March (Table I, II & Fig. 4).

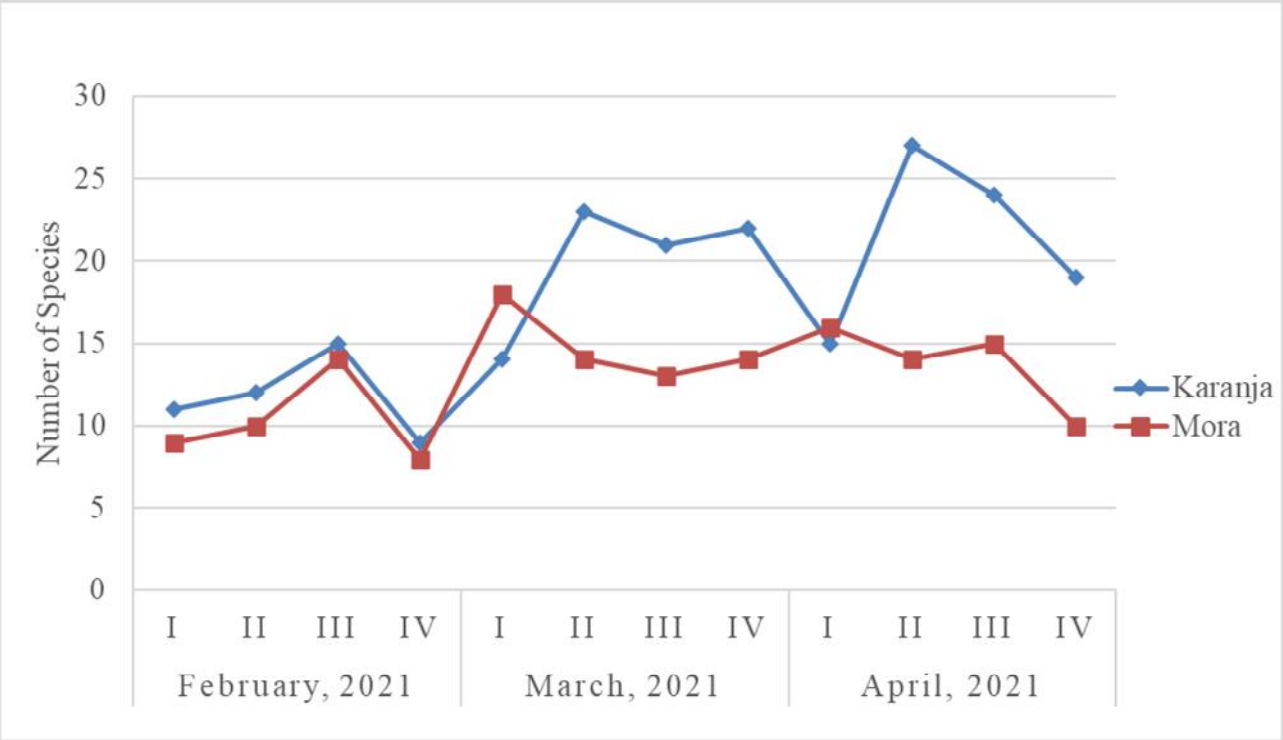

Figure 4: Weekly occurrence of commercially important fish species from Karanja and Mora village.

IV. Conclusion

Covid-19 Lockdown enforcement adversely affects commercial capture fishing practice as well as reduces vessel traffic along coastal water. These conditions probably avail optimum environment to thrive fish species, which is resulted in to increased species diversity along coast line of study area. Other hand current socioeconomic status of coastal fishermen needs to asses as under these circumstances, their only source of bread is badly influenced.

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