



The Blue Swimming Crab Bulletin No. 14

The Sri Lanka blue swimming crab (BSC) fishery improvement project (FIP) was initiated by the National Fisheries Institute Crab Council and the Seafood Exporters' Association of Sri Lanka in May 2013. The FIP was officially launched by the Minister of Fisheries in November. The FIP is a tripartite initiative that brings together small scale fishermen, seafood manufacturers and government agencies to improve the biological and ecological status and the management of BSC fisheries in the Palk Bay and the Gulf of Mannar. The FIP also works to ensure that supply chains for Sri Lanka's BSC products are equitable and socially responsible.

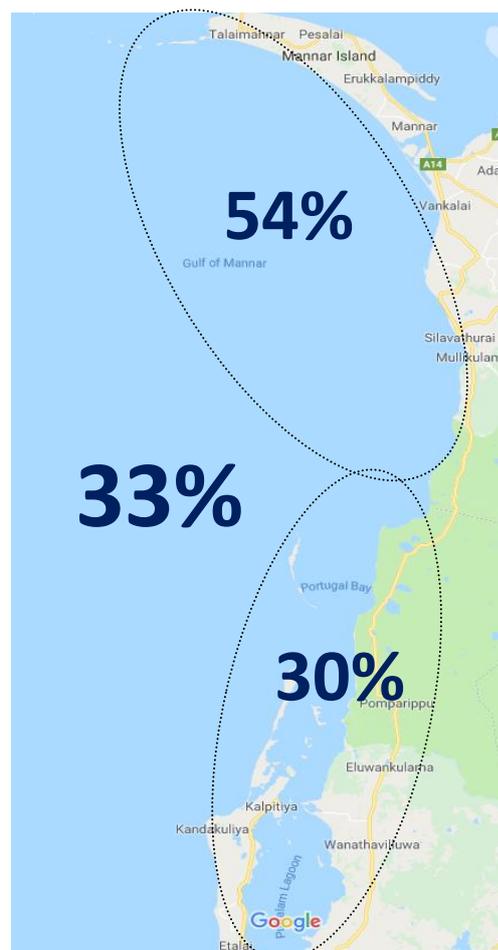


The BSC fisheries in the Palk Bay and the Gulf of Mannar are the only fisheries in Sri Lanka and the first BSC fisheries in South and South East Asia to achieve a Good Alternative rating from the Monterey Bay Aquarium's Seafood Watch Programme (December 2018) and score > 0.80 against the Marine Stewardship Council's Fisheries Standard (May 2020).



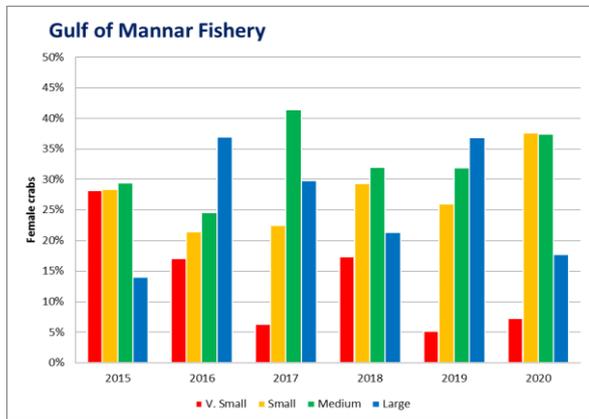
Improving the biological status of the BSC stocks

The 6th annual assessment of the status of the blue swimming crabs stock in the Gulf of Mannar was conducted between 7th September and 30th December 2020. Data collection was conducted by pelagikos pvt ltd and Department of Fisheries and Aquatic Resources (DFAR) District Fisheries Officers from Puttalam and Mannar Districts (see right) over a period of ten days, in collaboration with fishing communities, seafood exporters. 7,847 female crabs were measured from two landing centres in Mannar District (Vankalai and Thalupadu) and four collection centres (covering 12 landing centres) in Puttalam District. The spawning potential of the blue swimming crab stock in the Gulf of Mannar was estimated using a length based approach. The App is available on the [Barefoot Ecologist's Toolbox](#) web site. The results – spawning potential = 33% - suggest that the overall status of the BSC stock in the Gulf of Mannar was at a good level (> 30%) in 2020.



TRP	30%	The status (<i>i.e.</i> spawning potential) of the blue swimming crab stock in the Gulf of Mannar decreased from 57% in 2019 to 33% in 2020. The decrease in stock status is most likely due to sampling. In 2019 the stock was sampled during the peak spawning season. The catch was dominated by large (> 200 g), mature female crabs. The results of the 2020 stock assessment suggest that the fishery is operating at or above the Target Reference Point (SP = 30%); the level equivalent to a sustainably fishery.
2015	31%	
2016	46%	
2017	41%	
2018	37%	
2019	57%	
2020	33%	

The average size of female crabs observed in the catch in 2020 was 149 mm (\approx 191 grams). Crabs ranged in size from 115 to 191 mm (\approx 100 – 402 grams). 18% of the crabs measured were Grade 1 (> 200 g). The majority of crabs measured were Grade 3 (41% Small: 100 – 149 g). 36% of the crabs were Medium (Grade 2: 150 – 199 g). 8% of crabs observed in the catch were Very Small (Grade 4: < 100 g / < 115 mm).



Concern about Very Small crabs (Grade 4: < 99 g) in supply chains were raised by fishermen and the seafood export industry in the Gulf of Mannar fishery in 2017 and 2018 (see left). 26% of crabs measured in Puttalam District in 2018 were Very Small (Grade 4). 16% of these crabs were immature.

Responsible purchasing by the seafood export industry in 2019 and in 2020 resulted in a reduction of Very Small crabs in the supply chains. In 2020 8% of the crabs purchased in the Gulf of Mannar fishery were Grade 4 (< 99 g). 5% of these female crabs were immature.

Improving the ecological status of the BSC fisheries

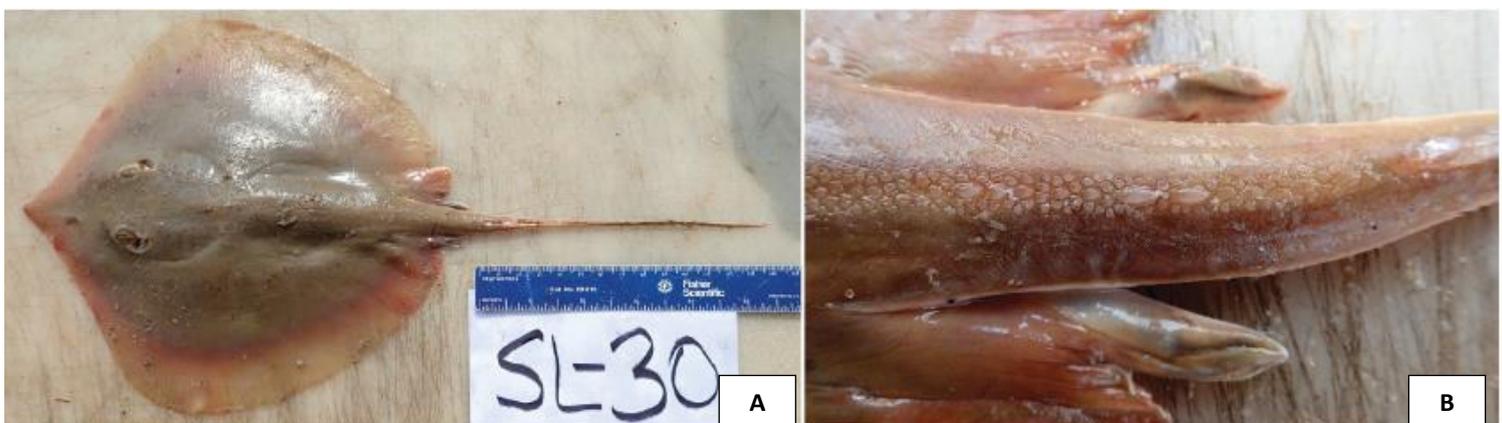
Ecological impacts on non-target species: In November and December, a review of the taxonomy and morphology of the pale-edged stingray (see right - *Telatrygon zugei*, formerly *Dasyatis zugei*) was conducted, in response to the recent publication of new research on sharks and rays in Sri Lanka¹.



Dorsal view of *Telatrygon zugei* collected for the NTS assessment

The recently published paper suggests that the species of stingray identified by the FIP during non-target species (NTS) studies conducted between 2015 and 2019 as *Dasyatis zugei* now known as *Telatrygon zugei* is in fact either *Brevitrygon imbricata* (Scaly stingray or Bengal whipray) or a new species *Brevitrygon species1*. These findings are based on molecular analysis of small, brown stingrays in Gulf of Mannar and Palk Bay, conducted by Fernando et al, 2019.

The International Union for the Conservation of Nature's (IUCN) Red List notes that the *B. imbricata* is *data deficient*². If the new species *Brevitrygon sp1* is confirmed, it too will likely be classified as *data deficient*. The status of *B. imbricata* or *Brevitrygon sp1* would be Secondary Minor according to the Monterey Bay Aquarium's (MBA) Seafood Watch programme's Criteria for Fisheries.



B. imbricata specimen collected by Fernando et al. 2019. A. Dorsal surface of maturing male. B. Thorns and denticles on base of tail of mature male

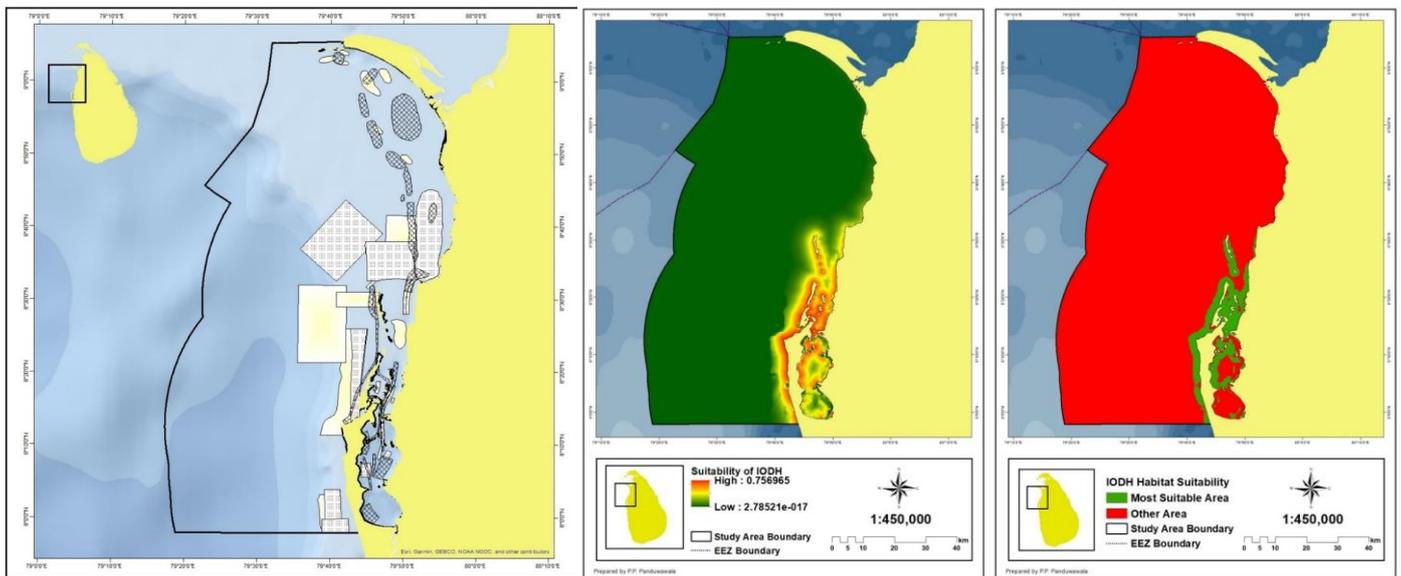
¹ Fernando et al., 2019. New insights into the identities of the elasmobranch fauna of Sri Lanka. *Zootaxa* 4585 (2): 201–238.

² Manjaji Matsumoto, B.M., Last, P.R. & White, W.T. 2016. *Brevitrygon imbricata*. *The IUCN Red List of Threatened Species* 2016: e.T161728A104179707.

In October a GIS based study to investigate the potential impact of the small-scale fisheries on four endangered, threatened and protected (ETP) non-target marine species - Indian Ocean humpback dolphin (*Sousa plumbea*), dugong (*Dugon dugong*), green turtle (*Chelonia mydas*) and olive ridley turtle (*Lepidochelys olivacea*) - in Gulf of Mannar was published by Panduwawala, 2020³. Occurrence data for each species were gathered using global databases and from fishermen and tour operators in the study area. Information on fishing grounds for sharks, rays and BSC were gathered using community mapping. Species distribution models of four species were developed in MaxEnt software using environmental parameters such as sea-surface temperature, chlorophyll a, depth, distance from the shore, distance to different contour lines and habitat. Then the overlap percentages between the distribution of fishing grounds and the habitat distribution of species were calculated and analysed the risk for four species due to each fishing gear.



The species distribution models used in the study highlighted areas that hold favourable conditions for the occurrence of each species. Shark net fishing grounds had a moderate overlap percentage with areas favourable for Indian Ocean humpback dolphin (12%), dugongs (15%) and green turtles (17%) and a high level of overlap with olive ridley turtle habitats (25%). Therefore, the risk of shark nets for these species is also likely to be 'moderate' to 'high'. The results of study determined the risk to each species from ray nets also as 'moderate' to high with the same level of overlap between ray net fishing grounds and favourable conditions for Indian Ocean humpback dolphin (12%), dugong (15%), green turtle (17%) and olive ridley turtle (25%). The overall risk rating for the interaction of BSC nets and each species was moderate too low for Indian Ocean humpback dolphin (12%), dugong (7%), green turtle (9%) and olive ridley turtle (4%).



Ecological impacts on marine habitats: The FIP published an updated report on the ecological impact of BSC fishing on marine habitats in the Palk Bay in June 2020 (see *Bulletin 13* for details). The updated analysis suggested that the area of seagrass beds potentially impacted by BSC fishing is 7,958 hectares or 10% of the seagrass beds in the Palk Bay. The estimated interaction between BSC fishing nets and coral / limestone reefs was 0.94% (68.84 ha) and for mangroves 0.2% / 1.2 ha) in the Palk Bay. The corresponding figures for the Gulf of Mannar were mangroves (0.71%), seagrass beds (16.73% and coral / limestone reefs (5.64%)

³ Panduwawala, P. P. 2020. A risk assessment on non-target marine species in small scale fisheries (a GIS based case study in the Gulf of Mannar Sri Lanka)' Faculty of Graduate Sciences, Department of Geography, University of Sri Jayawardenapura

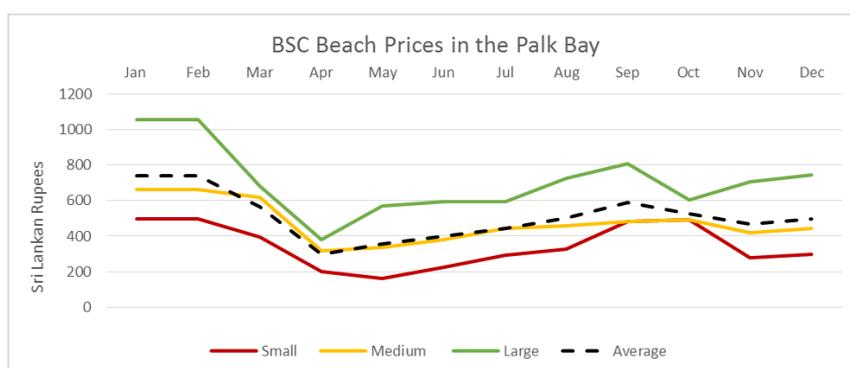
Improving the management of the fisheries

Fishery Specific Management Systems: In September the DFAR commenced a legal training for senior officers from the Police and the Sri Lanka Navy in Mannar, Kilinochchi, Jaffna, Mullaithivu and Puttalam districts. The programmes were designed and conducted by Mrs Salika Waduthanthri, Legal Officer at the Ministry of Fisheries and Aquatic Resources. The programmes introduced the main features of the Fisheries and Aquatic Resources Act No. 2 of 1996 and highlighted key regulations, amendments and orders relevant to fisheries in each district. The first two programmes were conducted in Mannar and Kilinochchi district on the 24th and 25th of September, attended by 59 participants. The team of senior officials appointed by the Director General, DFAR successfully completed the final draft of the blue swimming crab fisheries regulation in December. The regulation addresses the issue of immature (< 99 g / < 115 mm) crabs in the catch by setting a minimum mesh size of 4½" (114.5 mm) and proscribing the purchasing, processing and export of crab products sourced from less than crabs weighing less than 100 grams.



Improving economic equity and social responsibility in supply chains

COVID19: The global COVID19 pandemic caused beach prices to fall sharply between January and April 2020 (- 60%), according to beach price data collected by 18 cooperatives in the Palk Bay fishery. This was due to lack of consumer demand for BSC products in North America and Europe. Beach prices began to recovery in June (- 46%). The average beach price for eco-recommended BSC in the Palk Bay fishery In December was 32% less, compared to beach prices paid at the beginning of the year.



Economic Equity: The average beach price for BSC in the Palk Bay fishery in December 2020 (LKR 496.00) was 43% less compared to beach prices paid in January 2019 (LKR 871.00); two years after the fishery was **eco-recommended** by Seafood Watch. According to US importers, there is no demand for Seafood Watch **eco-recommended** BSC products in North America. This means that US importers, Sri Lankan manufacturers and small scale fishermen have not yet been able to get an **eco-price premium** for Sri Lanka's unique Asian BSC products.

Social Responsibility: The FIP did not implement any actions to improve social responsibility in supply chains for Sri Lanka blue swimming crabs during the reporting period.

The only Corporate Member of Sri Lanka BSC FIP - **Taprobane Seafood Group Pvt Ltd** - the Seafood Exporters' Association of Sri Lanka, the Department of Fisheries and Aquatic Resources and BSC fishing communities are grateful to the **National Fisheries Institute Crab Council** for its generous support of the FIP since 2013. The members of the FIP are also grateful to **The Asia Foundation** and **CM Blue Crab Pvt Ltd** for co-financing one or more of the actions described in this edition of the **Sri Lanka Blue Swimming Crab Bulletin**.

