The Blue Swimming Crab Bulletin No.5

*Welcome to the fifth edition of the **Blue Swimming Crab Bulletin**. Over the past six months the FIP (fishery improvement project) continued to make credible progress towards helping the fishery to become the first internationally recommended, sustainably managed BSC crab fishery in Asia. The FIP has initiated a series of new sub projects to improve the fishery's impact on non-target species, marine habitats and the marine ecosystem over the last six months. Fishermen, the Department of Fisheries and Aquatic Resources and manufacturers have also taken significant steps towards introducing a harvest control strategy for the fishery. Details of these activities and more are presented this edition of the **Blue Swimming Crab Bulletin**.*

Improving the biological status of the stock

The National Aquatic Resources, Research and Development Agency's (NARA) final report on the population biology of BSC in the Bay of Bengal was submnitted to the FIP in June. NARA's research findings – the first scientific study of BSC in Sri Lanka – include descriptions of maturity, size on maturity, sex ratios, spawning seasons, fecundity, the carapace width to weight relationship, feeding ecology and estimates of the spawning potential of BSC stocks off the western coast of northern Sri Lanka. Dr. Sisira Haputhanthri and his research team presented three scientific papers at the Annual Sessions of the Sri Lankan Association for Fisheries and Aquatic Research in May. Scientific papers by the NARA team on morphometrics, reproductive biology and food and feeding habits will be published in the proceedings of the SLAFAR sessions later in the year.

Ayantha Abeygunawardana a final year student from the Uva Wellessa University presented a paper on aspects of the reproductive biology of the BSC in the Bay of Bengal at the 6th Research Symposium of the UWU in January. Ayantha's research also highlighted the infection of BSC by the parasitic barnacle *Sacculina sp.,* for the first time in Sri Lanka *(see right).* Ayantha was supervised by Dr Sepalika Jayamana, Dean, Faculty of Aquatic Resources and Export Crop Technology at UWU.

In June Dr Adrian Hordyck (near right) at Murdoch University's Centre for Fish and Fisheries Research launched a new app[1] based on Dr Jeremy Prince's theory length based spawning potential. The FIP test drove the new app in using the size on maturity and length frequency data collected from BSC fishing grounds in 2014/15 and 2016. Values for M/k and L_{50}/L_{inf} were recommended by Dr Prince (far right). The spawning potential (SP) values for BSC in Sri Lanka were above the upper target reference point (TRP) for maximum sustainably yield (MSY) in 2016 (SP = 40%) and above lower TRP for MSY (SP = 30%) in 2014/15. The next assessment of BSC stocks will commence in January 2017.

Year	Sri Lanka	Fishing Grounds	
		Bay of Bengal	Gulf of Mannar
production	*100%*	*80%*	*20%*
2015/16	**45.4%**	(44%) **45%** (46%)	(43%) **47%** (51%)
2014/15	**31.8%**	(31%) **32%** (33%)	(29%) **31%** (33%)

Improvements to the biological status of the stock were co-financed by the NFI Crab Council

[1] http://barefootecologist.com.au/

Improving the ecological status of the fishery

A major focus of the FIP over the past six months has been to improve the FIP's understanding of the ecological impact of fishery on non-target species (NTS), marine habitats and the broader marine ecosystem (MSC Principle 2). The FIP adopted the Marine Stewardship Council's Risk Based Framework (RBF) for data limited fisheries as the theoretical framework through which to assess the fishery's impact on NTS. The FIP has combined MSC's RBF framework with quantitative field studies to identify NTS that might be 'at risk' due to the BSC fishery.

In March Wathsala Dolawaththa submitted his final year dissertation describing the impact of the BSC fishery on NTS off the coast of Mannar (Bay of Bengal). Wathsala was also supervised by Dr. Sepalika Jayamanne, Dean of the Faculty of Animal Science and Export Agriculture at UWU. In May Eranga Gunasekera (see below), a final year students at the Faculty of Fisheries and Marine Sciences, Ocean University successfully completed the second scientific study of the ecological impact of the BSC fishery on NTS. Eranga conducted her research in the Gulf of Mannar fishery (Puttalam Lagoon) with the support of fishing communities in Anawasala, Kalpitiya. Eranga was supervised by Dr M. M. Fairoz, Senior Lecturer, Department of Fishery Resources at Ocean University. She presented her findings at the 2016 Annual Sessions of SLAFAR held at NARA on the 20th May 2016.

In July Eranga will become the FIP's first Research Assistant. Thereafter she will complete the second and third NTS species assessments in the Gulf of Mannar fishery, before moving on to research the ecological impact of the fishery on NTS in the Bay of Bengal fishery. By the end of the year the FIP plans to have conducted six NTS studies: three in each fishery. This data will give the FIP a better understanding of the fishery's impact on NTS and what measures (*if any*) are necessary to ensure that the fishery's impact is consistent with a sustainably managed fishery. Preliminary analysis of the on-going field data collection from 475 catches, over 46 days from four fishing grounds indicate that BSC comprise 51% of the total catch (8.30 tons). A further 39% of the catch was retained BSC fishermen. Only 10% of the catch was discarded. No ETP species have so far been observed in the catch of BSC fishermen. The hooked-nosed sea snake (*Enhydrina schistosa*) is the only Out of Scope species recorded to date. 84 NTS recorded have so far been recorded, of which four are emerging as potential conservation concerns. These are the spiral melonga (*Pugilina cochlidium* = 14.92%); pale edged stingray (*Dasyatis zugei* = 5.58%); blue spotted stingray (Neotrygon kuhlii = 4.82%) and the sea catfish (*Arius spp., = 3.35%*) The full results of the ecological impact assessment of the fishery on NTS will be known towards the end of the year.

The FIP began investigating the fishery's impact on marine habitats and the broader marine ecosystem in April 2016. Jeewantha Bandara, a final year undergraduate at the Department of Zoology, Colombo University will create GIS maps of marine habitats in the vicinity of BSC fishing villages off the western coast of Jaffna using secondary data and community mapping excercies (see right). Using GIS data generated by mobile phones loaded with the FIP's 'Net Finder' app, he will overlay fishermen's fishing activities on the maps of marine habitats and estimate the impact of the BSC fishery on marine habitats in Jaffna District.

Dr. Sandaruwan and his team at the Colombo University School of Computing suucessfully developed the 'Net Finder' app in June. Jeewantha has begun digitising the locations of marine habitats based on secondary data and locations identified by BSC fishing communities. The phones will start generating GPS data in August.

Improvements to the ecological status of the fishery were co-financed by the NFI Crab Council and Santa Monica Seafoods through FishWise's Responsible Vendors Sourcing Programme

Improving the management of the SLBSC fishery

In June the FIP began to draft a harvest control strategy for the BSC fishery in Sri Lanka: the last piece that needs to be fitted into the sustainably fishery jigsaw. The harvest control strategy for Sri Lankan BSC fisheries will be based upon a collaborative approach to size selective fishery management. Size selective management is most appropriate for resource poor, data limited fisheries like the BSC fishery in Sri Lanka.

The collaborative approach to size selective fishery management proposed is built upon four key documents (see below). These documents collectively make up the harvest control strategy for BSC fisheries in Sri Lanka. The strategy is based on the existing legislative framework for the management of fisheries and aquatic resources in Sri Lanka. The management plan has been designed to be practical. The draft harvest control strategy utilizes existing organizational as well as administrative and management capacities of Sri Lanka's regulatory authorities, BSC fishing communities and BSC manufactures in Sri Lanka. The administrative mechanisms, institutions and individuals necessary to implement the strategy for BSC fisheries in Sri Lanka are already in place.

Fisheries & Aquatic Resources Act No. 2 of 1996	A Regulation for BSC	Harvest Control Rules & Tools	Fishery Management Plan(s)
			

Over the next three months each components of the draft harvest control strategy will discussed with every fishing community harvesting BSC; with representatives of the Department of Fisheries and Aquatic Resources (DFAR) and NARA and the major BSC manufactures in Sri Lanka. The FIP will facilitate these discussions. The FIP will encourage producers, processors and regulators to reach agreement on the key conditions that need to be put in place for each component, to ensure the future management of the BSC fisheries in Sri Lanka maintains the biological and ecological status of the fishery at a level consistent with a sustainably managed fishery.

BSC fishing communities and manufactures continued to drive Sri Lanka's efforts to end illegal, unregulated, and unreported (IUU) fishing by Tamil Nadu trawlers in Sri Lanka, one of the biggest threats to the sustainable management of northern Sri Lankan fisheries. In January the Seafood Exporters' Association of Sri Lanka (SEASL) hosted a discussion with heads of foreign missions in Colombo about the need to stop IUU fishing by Tamil Nadu trawlers in Sri Lankan waters. In February more than 200 Sri Lankan fishermen and civil society organizations took to the streets in Colombo to protest against IUU fishing by Tamil Nadu in Sri Lankan waters (see right). A public seminar was held the same the evening, in which MPs, academics and fishermen's leaders from the north urged the Sri Lankan government to take meaningful measures to stop IUU fishing by Tamil Nadu trawlers in Sri Lankan waters. The Faceook page[2] 'stopindiantrawlers' continued to post daily updates and information on persistent IUU fishing by Tamil Nadu trawlers in Sri Lankan waters over the last six months.

Improvements to the management of the BSC were co-financed by the National Fisheries Institute Crab Council, Chicken of the Sea Frozen Food and The Asia Foundation

[2] https://www.facebook.com/STOP-Indian-Trawlers-1664473020454507/timeline/?ref=bookmarks

Improving economic and social equity

International protocols for FIPs and sustainably sourced seafood have yet to begin to address economic or social equity in sustainably managed fisheries. Members of the FIP in Sri Lanka are committed to ensuring that the benefits that arise from improvements to the fishery are shared equitably between fishing communities, manufacturers (and their employees) and the government of Sri Lanka.

In the first half of 2016 the FIP continued to build the administrative and management capacity of BSC fishermen's cooperatives in BSC fishing grounds. Eleven cooperatives in Kilinochchi District have already received assistance under this programme. Support for cooperative development was extended to include seven cooperatives (and one union) in Jaffna Districtand nine cooperatives in Puttalam District. Field assessments evaluate the administrative and management needs of the cooperatives. Office bearers and clerks are then give a one day exposure tour by Poonakary Fishermen's Cooperative Societies Union (see right), where they meet successful village level cooperatives. Then programme of clerk training begins including salary payments. This enables societies to achieve a basic level of administration and management within six months.

Improvements to economic and social equity in the fishery were co-financed by the International Labour Organisation of the United Nations' Local Empowerment through Economic Development Project and the NFI Crab Council.

SLBSC Fishery / FIP Status Report

The second unofficial / unapproved / unauthorized internal assessment of the fishery - by the FIP - against three internationally recognized protocols for sustainably sourced seafood was completed on 30th June 2016. The internal assessment suggests

The FIP is currently at **SFP Stage 3**: **Implementation** - *encouraging improvements*

The fishery would score **0.44** using the MSC's *Fishery Assessment Methodology* (v2.0). The fishery would currently fail (SG < 60) the MSC's standard for sustainable fisheries.

The fishery would score **2.11** using the Monterrey Bay Aquarium's Seafood Watch Criteria of Capture Fisheries (v2.0). The fishery would currently be ranked **red / avoid** by Seafood Watch.

In April **Taprobane Seafood (TSF) Group (Pvt) Ltd** became the first Corporate Member of the FIP. TSF continued to set the standard for co-financing the FIP by raising 43% of the total cost of the FIP to date. **Fresh Catch (Pvt) Ltd** became the second Corporate Member of the FIP in June. Other SLBSC exporters are represented by the Seafood Exporters' Association of the Sri Lanka (SEASL).

Improvements to the BSC fishery in Sri Lanka thar are described in this bulletin would not have been possible without the generous financial support of the National Fisheries Institute Crab Council, the Interanational Labour Organisatsion's Local Empowerment through Economic Develolpment (LEED) project, The Asia Foundation, Santa Monic Seafoods, FishWise and Chicken of the Sea Frozen Foods. Members of the FIP are extremely grateful to these organisations and their staff for their continuing support, understanding (and patience) in respect of all the efforts that are being made to improve the SLBSC fishery.

Soft copies of Blue Swimming Crab Bulletins in English, Sinhala and Tamil can be downloaded from the SEASL website (www.seasl.lk). For further details about the FIP please email steve@pelagikos.lk