updated on 2nd November 2018

Sri Lankan Longline Fishery Improvement Project

Sub Project Proposal (05/2018)

Sub Project Title ***Technical training and capacity building for scientists and fishery managers on IOTC stock assessment methods, harvest strategy evaluation and stock assessment of FIP target species using non-conventional stock assessment methods.***

MSC Principle 1 ***Biological status of the Sri Lankan longline target fisheries***

Performance Indicator(s) *P1.1.1 Stock Status / P1.1.2 Stock Rebuilding*
P1.2.2 Harvest Strategy / P1.2.2. Harvest Control Rules & Tools
P1.2.3 Information / P1.2.4 Assessment of Stock Status

Justification Understanding the stock status of each target species under the Sri Lankan longline fishery improvement project (*i.e.* yellowfin tuna, bigeye tuna and swordfish) is critical to formulating, implementing, monitoring and evaluating national and international fishery management measures (*i.e.* harvest strategies, control rules and tools) intended to maintain these stocks at a level equivalent to a sustainably managed fishery, now and in the future. The Indian Ocean Tuna Commission (IOTC) uses several stock assessment production models to estimate the stock status of yellowfin tuna, bigeye tuna and swordfish and a variety of management strategies have or can be proposed to achieve the IOTC's goal of sustainable management for Indian Ocean tuna and swordfish stocks. Sri Lanka's ability to contribute effectively to IOTC regional meetings and working groups – to drive changes in practices that will lead to the sustainably management of tuna and swordfish - is dependent on the scientific and technical knowledge and understanding of the national representatives it sends to IOTC meetings.

The stock status and management measures adopted by IOTC for yellowfin tuna, bigeye tuna and swordfish in 2016 ensured that each fishery passed the Marine Stewardship Council Pre Assessment conducted by a Certified Assessment Body in March 2018 (see Annex A). However should the fishery management measures for yellowfin tuna adopted by IOTC prove inadequate to drive the recovery of the stock, more stringent management measures will need to be proposed by member states such as Sri Lanka in future IOTC meetings. This sub project seeks to improve the scientific and technical capacity of Sri Lanka's leading scientists, fishery managers and university professors by conducting an international seminar on stock assessment and fishery management by Dr. Toshihide Kitakado, Professor, Department of Marine Biosciences, Tokyo University of Marine Science and Technology (see Annex B).

Implementation & Management

FIP Implementing Agency (IA)	**Seafood Exporters' Association of Sri Lanka (SEASL)**
Focal Point	Viraj Balapitiya, Secretary
Authority	Dilan Fernando, President
Administration & Management	pelagikos pvt ltd

Investment Overview	Total Cost	SEASL
Sub Project Cost (LKR)	**2,191,750.00**	**2,041,750.00**
Sub Project Cost (US$)	**12,524.29**	**11,667.14**
		93%

Objective

The sub project's objective is to ensure that Sri Lanka's representatives to IOTC working groups and regional meetings are able to confidently and effectively contribute to driving positive changes and or improvements to IOTC stock assessment methodologies and fishery management measures for the sustainable management of Indian Ocean tuna and swordfish stock, which will ensure that the Sri Lankan longline fishery maintains or improve the fishery's scores against MSC Standard (see Annex A) for Performance Indicators under MSC Principle 1, by December 2020

Activities

Activity A

International seminar on stock assessment methods and fishery management protocols: The President of the Seafood Exporters' Association of Sri Lanka (SEASL) will invite Dr. Toshihide Kitakado, Professor, Department of Marine Biosciences, Tokyo University of Marine Science and Technology to conduct a **three** day international seminar on stock assessment methods and fishery management protocols at NARA in March 2019. Since this is a wider subject area it will not be possible to cover the entire subject through a short course. However, this course will lay a solid foundation and participants have to improve their skills and knowledge step by step through self-learning, after the completion of the short course / training programme.

Dr. Toshihide Kitakado will look into the possibility of conducting another training programme after this. However, he will find the funds for the second workshop through University of Tokyo. We have to limit the participants for a maximum of 20 otherwise, it is difficult to conduct the course successfully.

The international seminar will limited to a maximum of 20 participants to conduct the course successfully. The 20 participants will include senior scientists at NARA and officers at the DFAR. These officers are engaged in collecting, analyzing, interpreting, compiling data and information for submission to the IOTC and or representing the Government of Sri Lanka at the IOTC's annual meetings and working parties. The **three** day programme shall comprise the following sub activities

Day 1 Basics of stock assessment

Lecture 1	Overview of stock assessment and management
Lecture 2	Fishery and biological data required for stock assessment
Lecture 3	Stock assessment by production models
Lecture 4	Exercises for production models

Day 2 Intermediate level stock assessment

Lecture 5	Several important biological parameters
Lecture 6	Exercises for estimation of biological parameters
Lecture 7	Age-structured population dynamics
Lecture 8	Exercises for age-structure production models etc.

Day 3 Management of fishery population

Lecture 9	Overview of Management Strategy Evaluation (MSE)
Lecture 10	Exercises of simple MSE using "R"
Lecture 11	Data-limited stock assessment and management
Lecture 12	Exercises of data-limited stock assessment and management

Activity B **Non-Conventional Stock Assessment (for Target Species)** Life history parameters will be researched from the literature for the FIP's target species – i.e. yellowfin and bigeye tuna and swordfish; new data collected by a research assistant in collaboration with seafood manufacturers purchasing and processing yellowfin and bigeye tuna and swordfish; the new data will be used to estimate the stock status of these species, using a non-conventional stock assessment methods (length based approach spawning potential ratio). The results of the LBSPR assessment will be compared with the IOTC's stock assessment reports for Indian Ocean yellowfin and bigeye tuna and swordfish stocks.

Implementation Plan

The activity described above will be implemented by the SEASL and pelagikos pvt ltd in accordance with the implementation schedule shown below.

		2019						
	Months	**J**	**F**	**M**	**A**	**M**	**A**	**J**
Sub Project Activities / Sub Activities								
A	**International seminar on stock assessment methods & fishery management protocols**							
A1	*Lecture Day 1* – Basics of stock assessment							
A2	*Lecture Day 2* – Intermediate level stock assessment							
A3	*Lecture Day 3* – Management of fishery population							
B	**Non-Conventional Stock Assessment**							
B1	*Estimate of Life History Parameters*							
B2	*Length Data Collection*							
B3	*LBSPR Assessment*							

Budget

The total cost of the sub project is ***LKR 2,191,750.00*** of which 93% will be contributed by SEASL. The balance funds will be contributed in-kind by NARA as shown below and overleaf.

Activities		**Total Cost**		**SEASL**	
		LKR		LKR	
A - International Seminar		582,500.00		432,500.00	**29%**
B - Non Conventional Stock Assessment		1,410,000.00		1,410,000.00	**71%**
Sub Project Cost	**LKR**	**1,992,500.00**		**1,842,500.00**	
Administration & Management	*10%*			199,250.00	
Total Sub Project Cost	**LKR**	**2,191,750.00**		**2,041,750.00**	**93%**
Total Sub Project Cost	**LKR**	**12,524.29**		**11,667.14**	

Budget Breakdown

A - International Seminar						
sub total				**582,500.00**	**432,500.00**	**70%**
A1 Domestic & International Travel						
Domestic Travel (Return)	All	1	25,000.00	25,000.00	25,000.00	
International Travel (Return)	All	1	120,000.00	120,000.00	120,000.00	
A2 5 Day Seminar Programme						
NARA Facilities	Days	3	50,000.00	150,000.00		
Seminar Refreshments (15 people)	Days	3	5,000.00	15,000.00	15,000.00	
Seminar Lunch (15 people)	Days	3	10,000.00	30,000.00	30,000.00	
Lecture Fee	Days	3	17,500.00	52,500.00	52,500.00	
Transport	Days	3	30,000.00	90,000.00	90,000.00	
A3 Accommodation & Meals						
Daily Subsistence Allowance	nights	4	25,000.00	100,000.00	100,000.00	
B - Non Conventional Stock Assessment						
sub total				**1,410,000.00**	**1,410,000.00**	100%
B1 Estimate of Life History Parameters						
Desktop Review of Life History Parameters	mths	1	120,000.00	120,000.00	120,000.00	
B2 Length Data Collection						
Technical Assistance	mths	4	120,000.00	480,000.00	480,000.00	
Research Assistant	mths	6	65,000.00	390,000.00	390,000.00	
Travel	mths	6	50,000.00	300,000.00	300,000.00	
B3 LBSPR Assessment						
LBSPR Assessment	mths	1	120,000.00	120,000.00	120,000.00	

Annex A: MSC Approved CAB Pre Assessment of the Sri Lankan Longline Fishery (March, 2018)

A MSC approved Pre Assessment of the Sri Lankan Longline Fishery was conducted by Capricorn Marine Environmental (Pty) Ltd. South Africa between November and March 2018. A summary of the scoring guideposts for each Performance Indicator and the overall MSC Scores for the three Units of Assessment is presented below

Principle	Component	Performance Indicator (PI)		Yellowfin	Bigeye	Swordfish
P1	Outcome	1.1.1	Stock status	60-79	>80	>80
		1.1.2	Stock rebuilding	60-79	not applicable	
	Management	1.2.1	Harvest strategy	>80	>80	>80
		1.2.2	Harvest control rules & tools	60-79	60-79	60-79
		1.2.3	Information & monitoring	60-79	60-79	60-79
		1.2.4	Assessment of stock status	>80	>80	>80
P2	Primary species	2.1.1	Outcome	>80	60-79	60-79
		2.1.2	Management strategy	>80	>80	>80
		2.1.3	Information/Monitoring	>80	>80	>80
	Secondary species	2.2.1	Outcome	60-79		
		2.2.2	Management strategy	60-79		
		2.2.3	Information/Monitoring	>80		
	ETP species	2.3.1	Outcome	<60		
		2.3.2	Management strategy	60-79		
		2.3.3	Information strategy	<60		
	Habitats	2.4.1	Outcome	60-79		
		2.4.2	Management strategy	>80		
		2.4.3	Information	>80		
	Ecosystem	2.5.1	Outcome	>80		
		2.5.2	Management	60-79		
		2.5.3	Information	60-79		
P3	Governance & Policy	3.1.1	Legal &/or customary framework	>80		
		3.1.2	Consultation, roles & responsibilities	>80		
		3.1.3	Long term objectives	>80		
	Fishery specific management system	3.2.1	Fishery specific objectives	60-79		
		3.2.2	Decision making processes	60-79		
		3.2.3	Compliance & enforcement	60-79		
		3.2.4	Monitoring & Management	60-79		

Principle 1 PIs are scored separately for each UoA. The lack of clear HCRs and the poor reporting on catches by fisheries in the Indian Ocean are areas of concern for all three UoAs.
The Yellowfin UoA is not likely to pass MSC full assessment. The bigeye and swordfish UoAs may pass if the aggregate score for P1 does not fall below 80.

The Principle 2 PIs are scored once and the scores apply to all three UoAs. This means that if a single PI fails here then all UoAs will fail full assessment.
There are too many interactions with ETP species and no validation of release statistics.
Also of concern are the lack of secondary species management strategies and the unreliability of catch statistics and data reported. An at-sea observer program and electronic monitoring could help scoring for P2.

Principle 3 has no major issues however, the aggregate score during full assessment may only be marginally above 80. Clarity on decision making processes and evidence of compliance and enforcement will likely need to be provided during a MSC full assessment.

Summary of Scores	Yellowfin UoA 1	Bigeye UoA 2	Swordfish UoA 3
Total number of PIs equal to or greater than 80	12	12	12
Total number of PIs 60-79	14	13	13
Total number of PIs less than 60	2	2	2
Overall Pre-Assessment Likely Score	**0.68**	**0.69**	**0.69**

Annex B: Bio Data - Dr. Toshihide Kitakado

Dr. TOSHIHIDE KITAKADO

CONTACT INFORMATION

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ACADEMIC DEGREE

Ph.D in Agricultural and Life Sciences, **University of Tokyo**, Tokyo, Japan
Dissertation: "Statistical genetic modeling and estimation of spatial and temporal population structures with application to fisheries populations"

PROFESSIONAL EXPERIENCE

Professor (April 2017 –present) Tokyo University of Marine Science and Technology (TUMSAT)
Associate Professor (April 2010 – March 2017) ditto
Assistant Professor (October 2003 – March 2010) ditto
Assistant Professor (November 1995 – September 2003) Tokyo University of Fisheries (currently TUMSAT)
Visiting Researcher, University of Washington (August 2007 – March 2008)
Visiting Researcher, University of Oslo (April 2003 – May 2003)

SCIENTIFIC ACTIVITY

Activity in the International Whaling Commission (IWC)
Chair of the Scientific Committee (July 2012-June 2015)
Vice-Chair of the Scientific Committee (July 2009- June 2012)
Chair of the Working Group of Ecosystem modelling (2015-present)
Chair of the Subcommittee of Bowhead, Right and Gray whales (2010 – 2012)
Chair of the Working Group of the In-depth Assessment of the North Pacific common minke whales (2006 – 2009)

Activities in other international commissions (since 2011)
Chair of Working Party on Method of the Indian Ocean Tuna Commission (IOTC, 2015-present)
Vice-chair of Working Party on Temperate Tuna of the IOTC (2016-present)
Vice-chair of Working Party on Method of the IOTC (2011-2015)
Chair of Technical Working Group of Pacific saury assessment of the North Pacific Fishery Commission (NPFC, 2017-present)
International fishery meetings involved: IWC, IOTC, ICCAT, ISC, NPFC, CCAMLR etc.

Domestic activities (since 2012)
Chair of research group for cetacean sciences in Japan (2015-present)
Committee member of conservation and management for Steller sea lions (2014-present)
Member of Scientific Committee of Kuril harbor seals management (2014-present)
External reviewer of domestic fishery stock assessment (2012-present)

SELECTED PUBLICAION (from 43 peer-reviewed papers)

Kell, L.T., A. Kimoto and T. Kitakado (2016) Evaluation of the prediction skill of stock assessment using hindcasting. Fisheries Research 183. 119–127

Punt, A.E., T. Hakamada, T. Bando and T. Kitakado (2014) Assessment of Antarctic Minke Whales using Statistical Catch-at-age Analysis, Journal of Cetacean Research and Management. 14: 93-116.

Kitakado, T., C. Lockyer and A.E. Punt (2013) A statistical model for quantifying age-reading errors and its application to the Antarctic minke whales. Journal of Cetacean Research and Management. 13(3):181-190.

Kitakado. T, S. Kitada, H. Kishino and H.J. Skaug (2006) An integrated-likelihood method for estimating genetic differentiation between populations. Genetics 173: 2073–2082.

Kitakado, T., S. Kitada, Y. Obata and H. Kishino (2006) Simultaneous estimation of mixing rates and genetic drift under successive sampling of genetic markers with application to the mud crab (Scylla paramamosain) in Japan. Genetics 173: 2063–2072.