

# The 3<sup>rd</sup> Meeting of the Scientific Working Group on Neritic Tunas Stock Assessment in the Southeast Asian Waters

27-29 June 2016

Mercure Pattaya Ocean Resort, Chonburi Province, Thailand

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Department of Fisheries, Myanmar



# MARINE ECOSYSTEM SURVEYS IN MYANMAR

Marine ecosystem survey was carried out in Myanmar by the Dr. Fridtjof Nansen



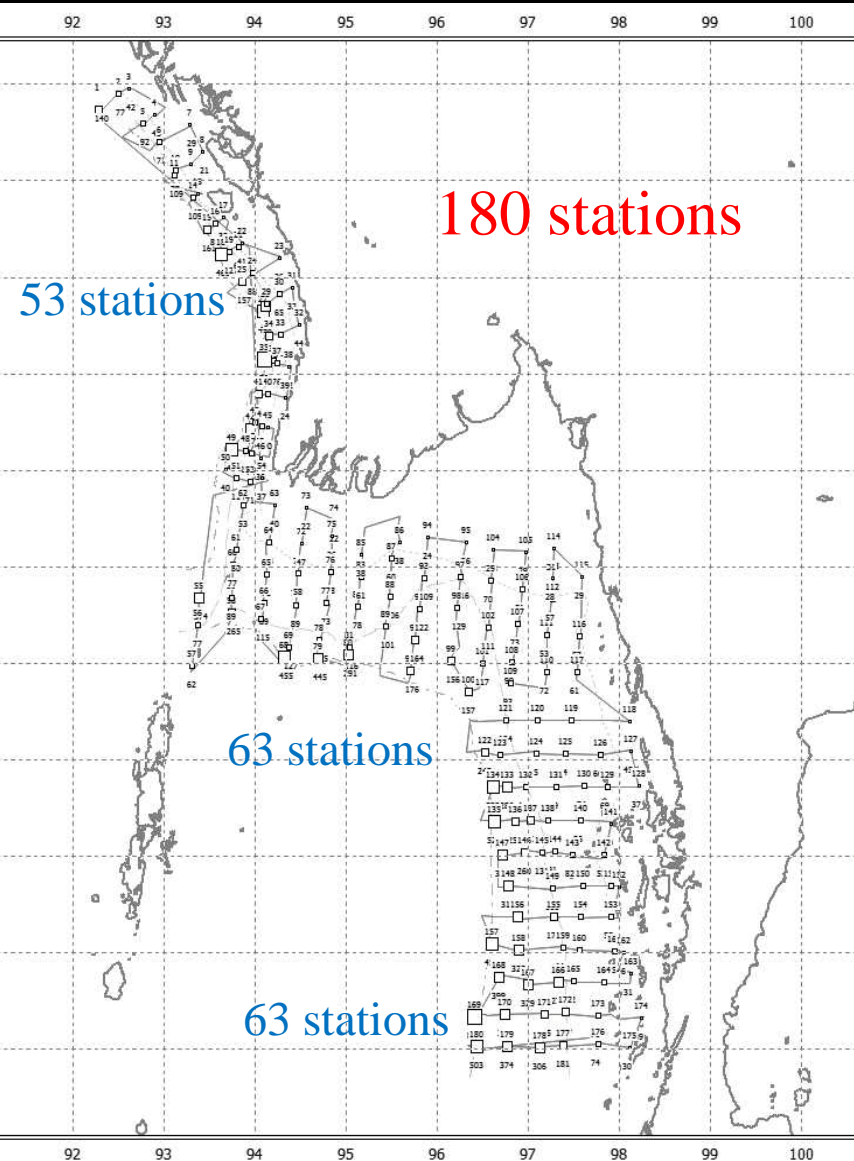
- 1) 1979, September - October
- 2) 1980, March –April
- 3) 2013. November-December
- 4) 2015, April-June



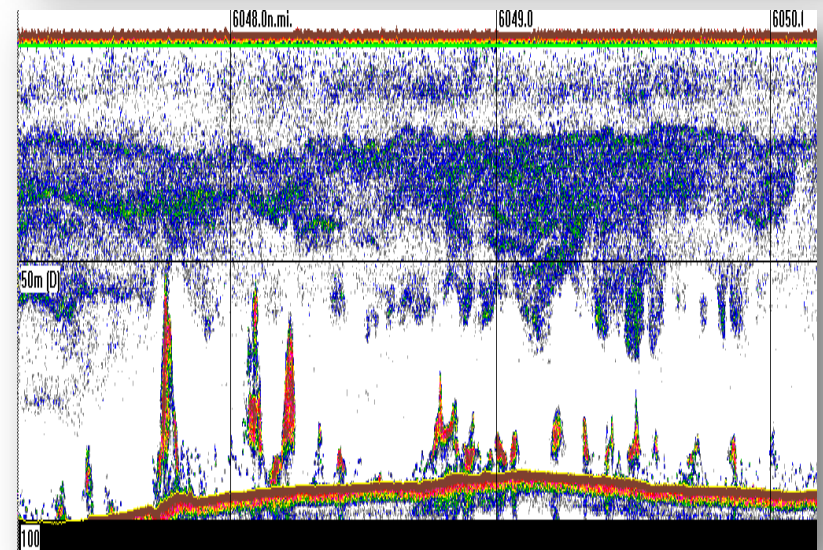
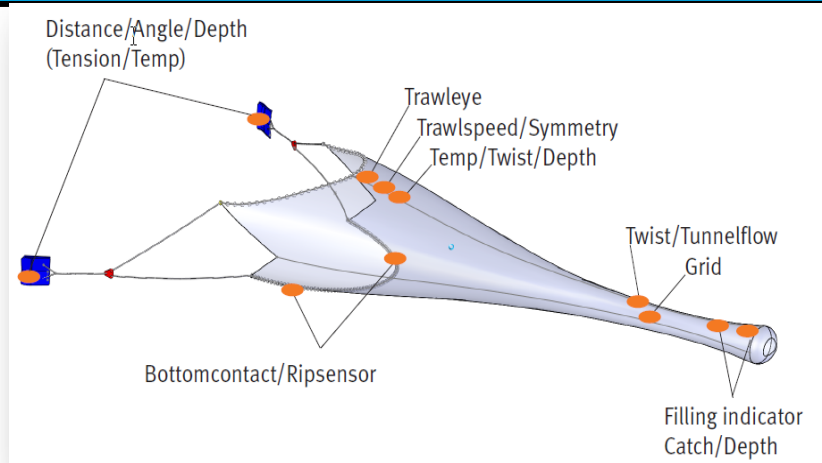


# Vision

Sustainable use of marine resources without putting bio - diversity and habitats at risk



## Methods



## Differences

When compare with 1979 -1980 and 2013-2015 survey results

**Pelagic fish**



90 % decreased

**Demersal fish**



75 % decreased

**Lack of Marine Ecosystem  
Services**



# Results (Species composition)

## Species (Pelagic & Demersal Fish composition)

Taxa	2013 (Post-monsoon)	2015 (Pre- monsoon)
Fish	444	587
Shark	32	26
Ray	20	24



## Pelagic & Demersal Fish composition in different regions

Region	2013 (Post-monsoon)	2015 (Pre- monsoon)
Rakhine	235	372
Delta	352	504
Thanintharyi	329	501



# Results (Biomass Fish)

## Biomass of pelagic fish in different regions

Region	2013 (Post-monsoon)	2015 (Pre- monsoon)
Rakhine	32500	39995
Delta	52000	86210
Thanintharyi	24000	66391
<b>Total</b>	<b>108500</b>	<b>192596</b>

**Biomass of Pelagic is increased to 77 % compared with 2013 result**

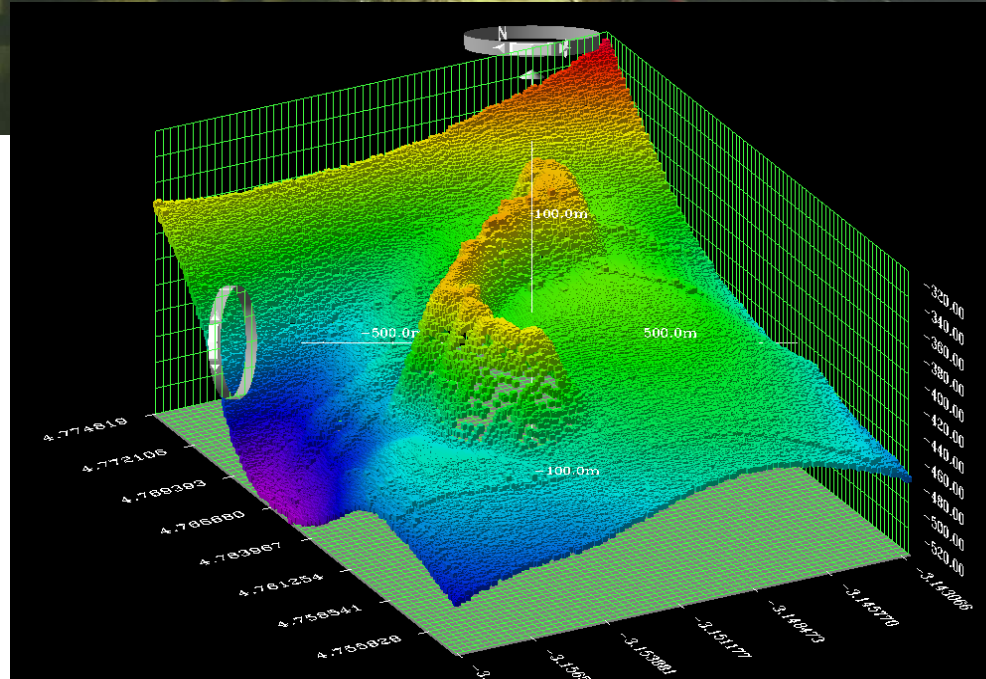
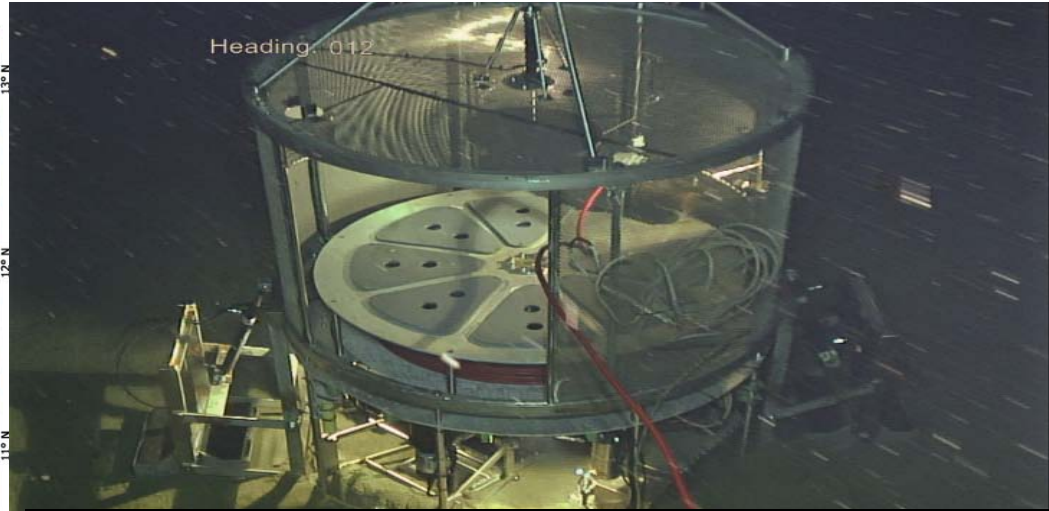
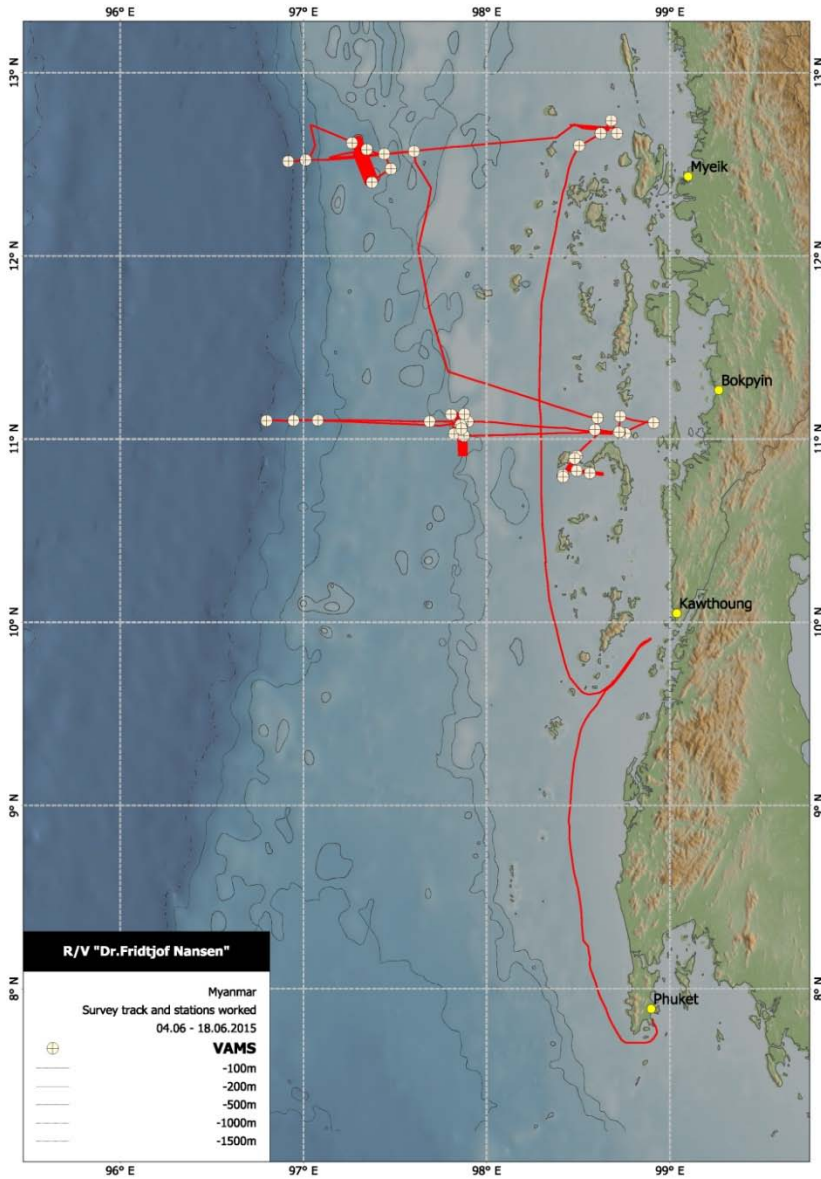
## Biomass of Demersal fish in different regions

Region	2013 (Post-monsoon)	2015 (Pre- monsoon)
Rakhine	60000	105000
Delta	101000	126000
Thanintharyi	112000	190000
<b>Total</b>	<b>273000</b>	<b>421000</b>

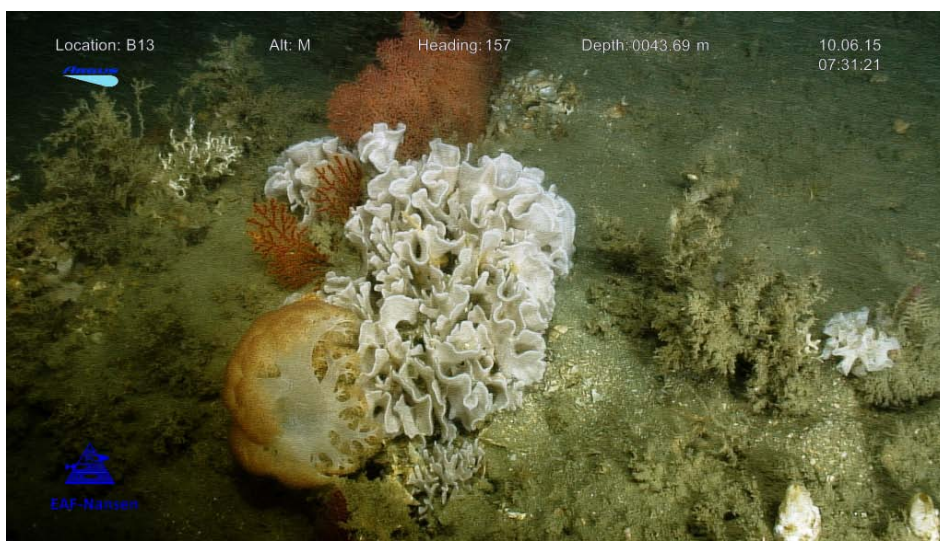
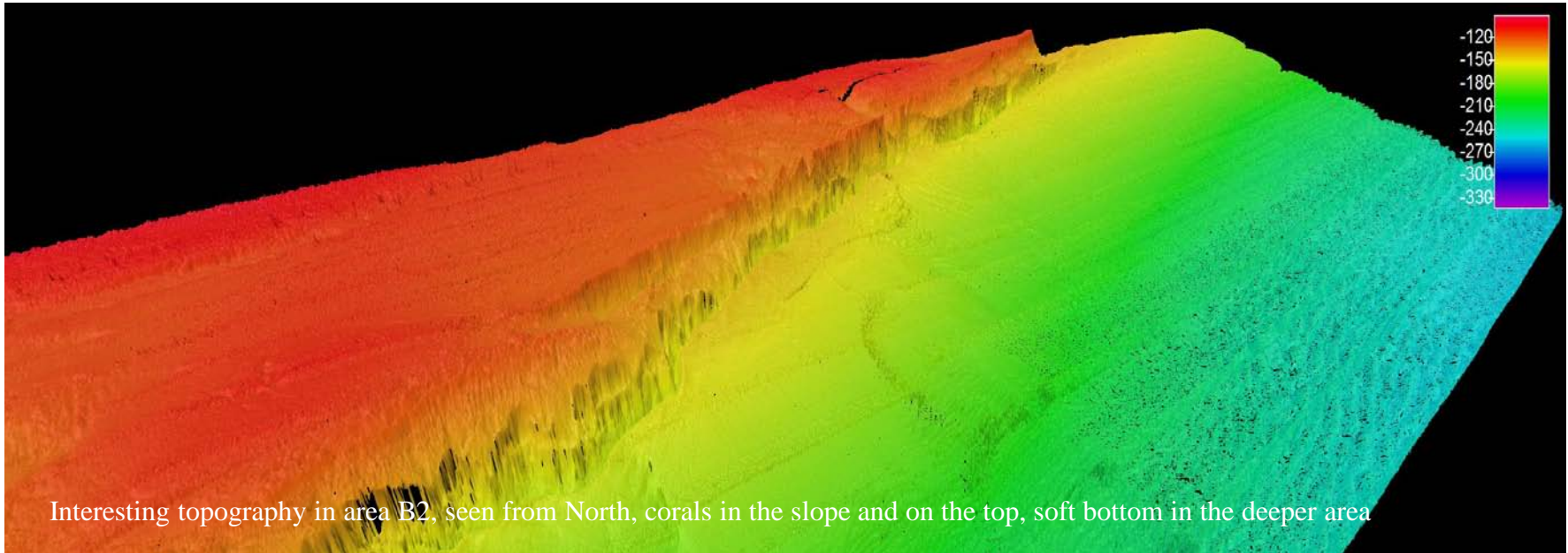
**Biomass of Demersal is increased to 40 % compared with 2013 result**



# Research on environmental study (Sea floor study)

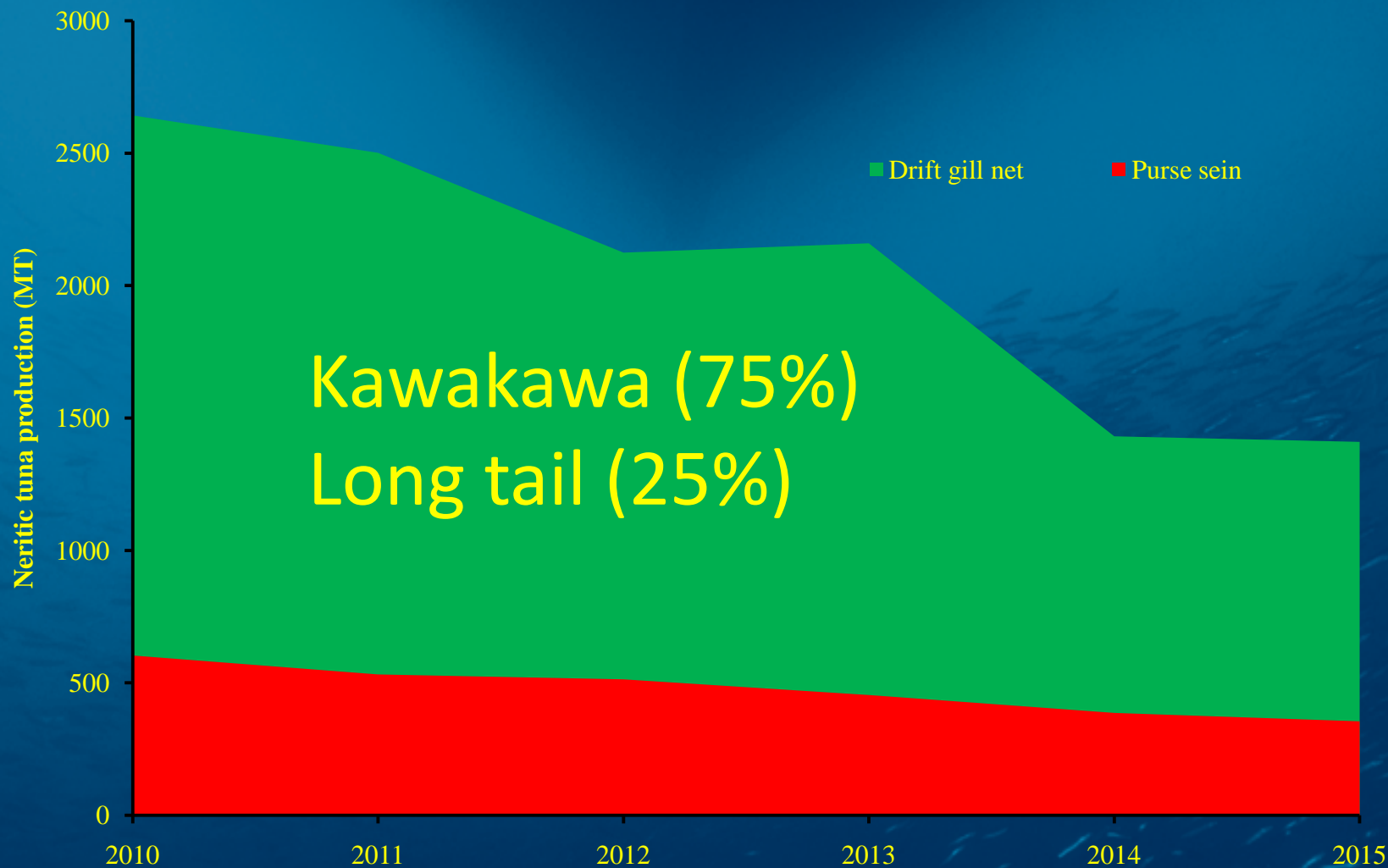






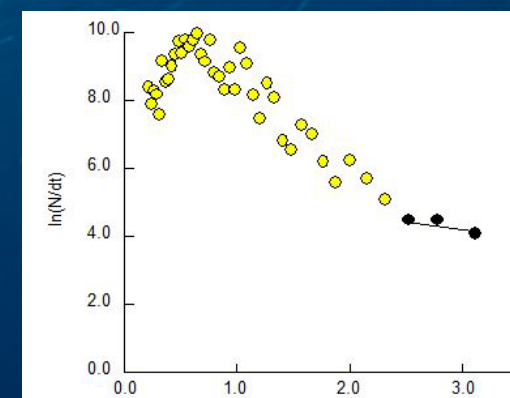
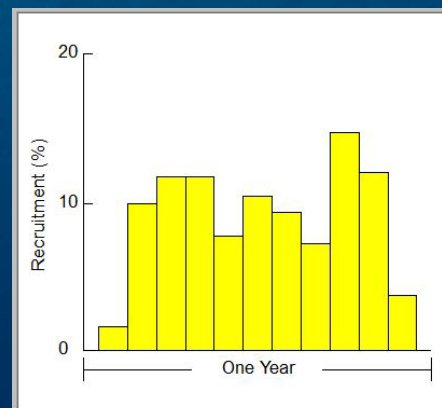
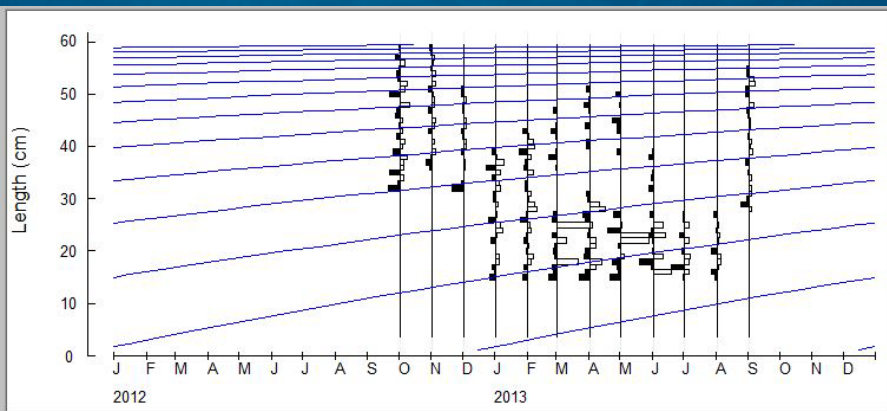
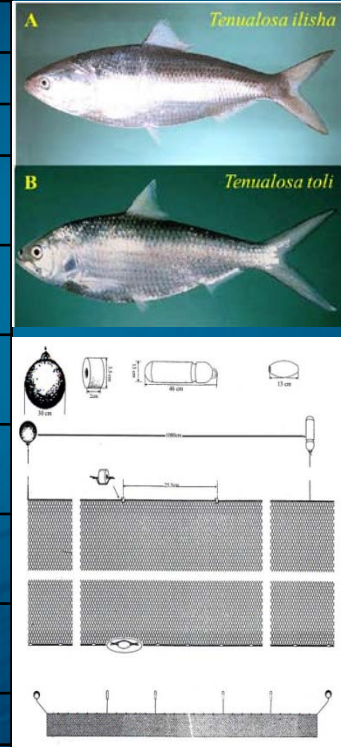


# Production of Neritic tuna (Long tail & Kawakawa) in Myanmar

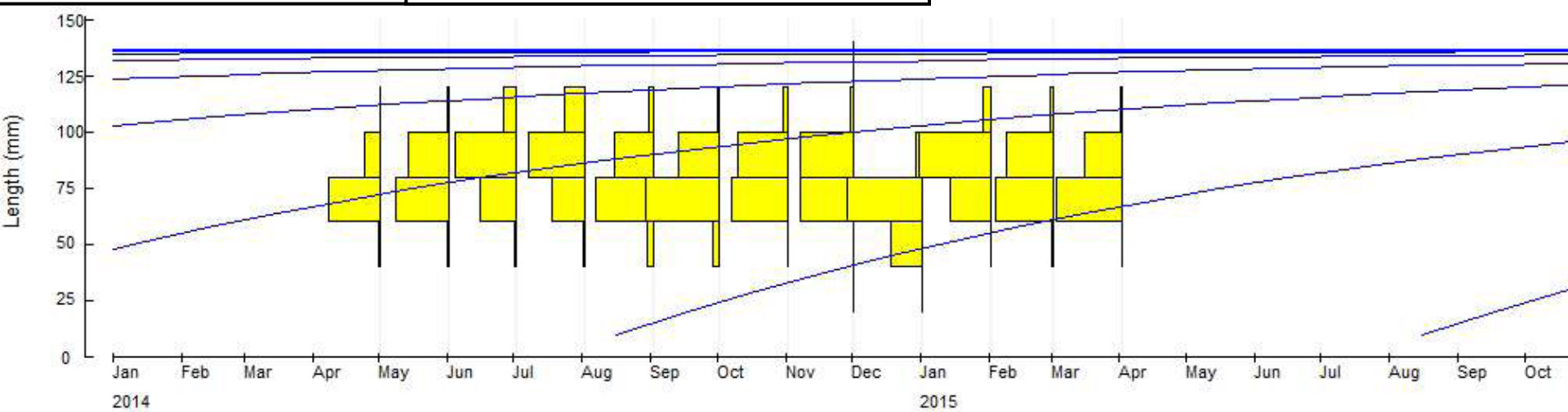
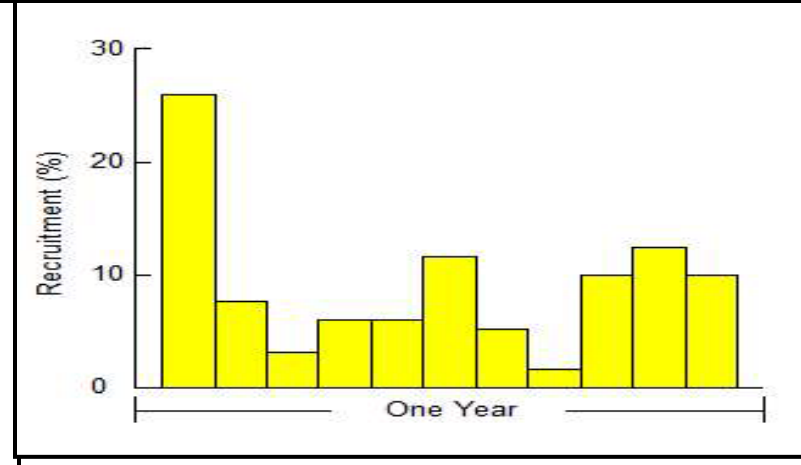
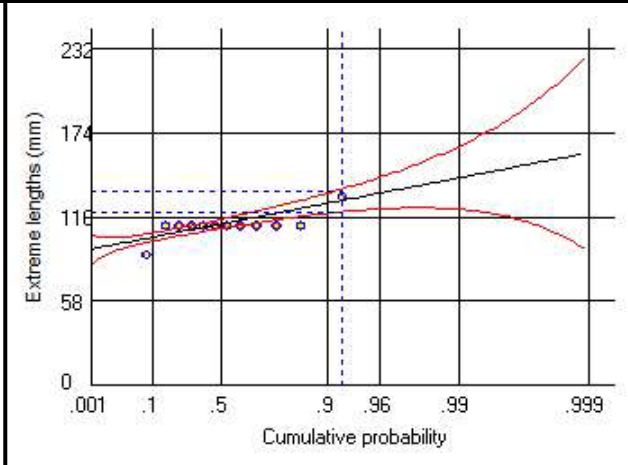
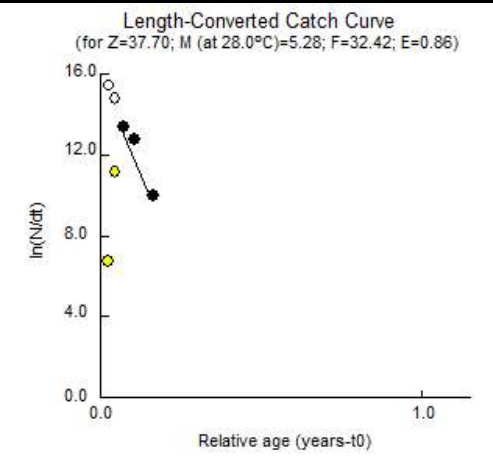
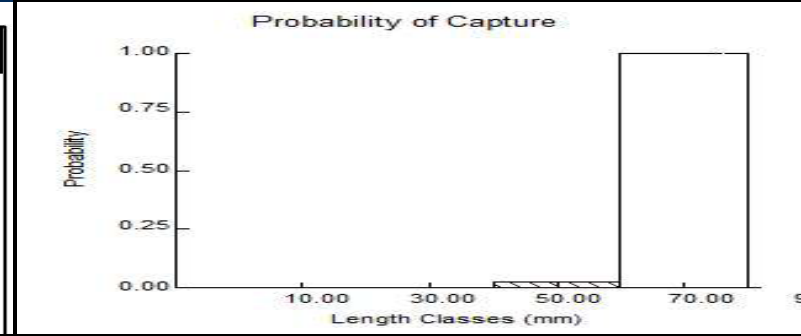


# Stock Assessment of Hilsa Shad, *Tenualosa ilisha*

Parameters	Study areas					
	Inland water			Marine water		
	Ngaputaw	Pyapon	Pathein	Sittwe	Yangon	Yae
Asymptotic length ( $L_{\infty}$ ) cm	61.95	53.55	61.95	60.90	59.85	59.85
Growth constant (K) $\text{yr}^{-1}$	0.700	0.980	0.850	0.800	0.740	0.880
Growth performance ( $\phi'$ )	3.429	3.449	3.514	3.472	3.423	3.499
Natural mortality (M) $\text{yr}^{-1}$	1.154	1.498	1.310	1.266	1.208	1.271
Fishing mortality (F) $\text{yr}^{-1}$	2.810	1.299	1.954	2.198	2.207	1.873
Total mortality (Z) $\text{yr}^{-1}$	3.964	2.797	3.264	3.464	3.415	3.144
Exploitation level (E)	0.708	0.464	0.598	0.635	0.646	0.596
Sample number (N)	1477	971	1163	1485	1109	1577



# Stock assessment of mud crab, *Scylla olivacea* in Myanmar



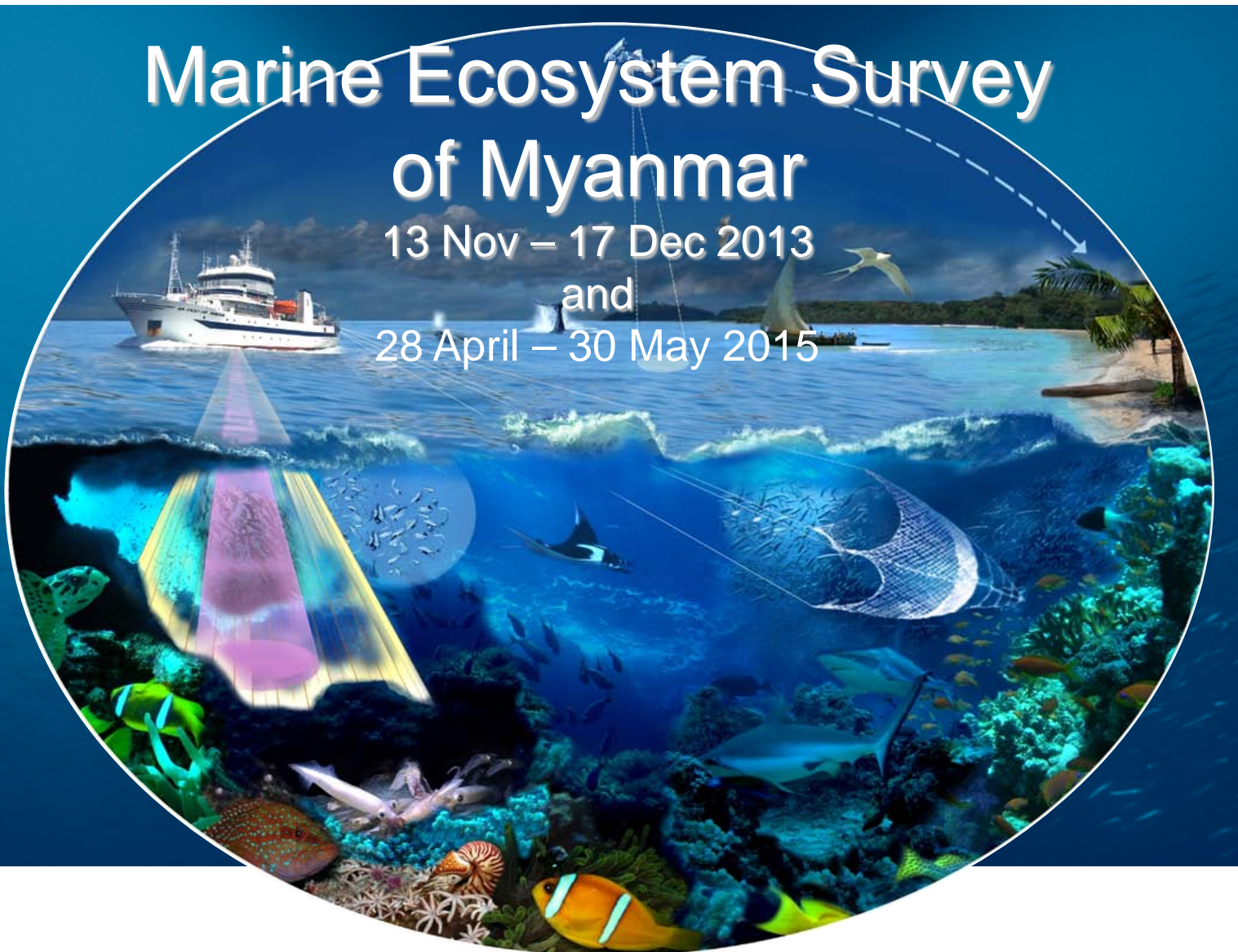


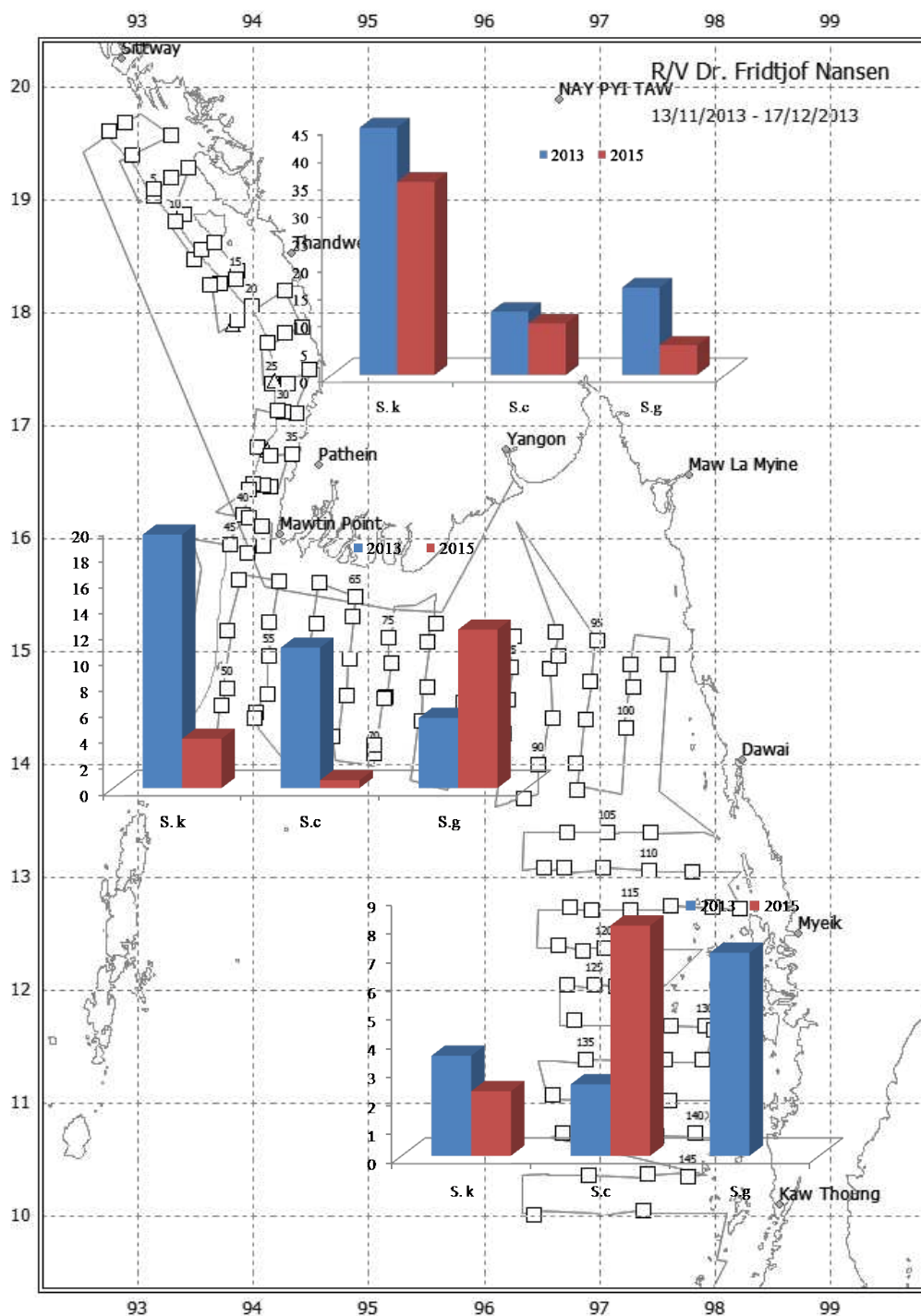


Norad

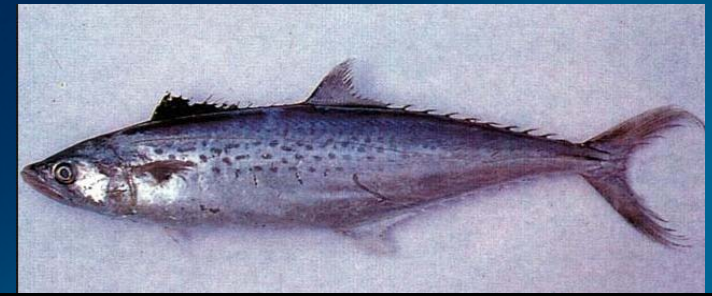
# Marine Ecosystem Survey of Myanmar

13 Nov – 17 Dec 2013  
and  
28 April – 30 May 2015

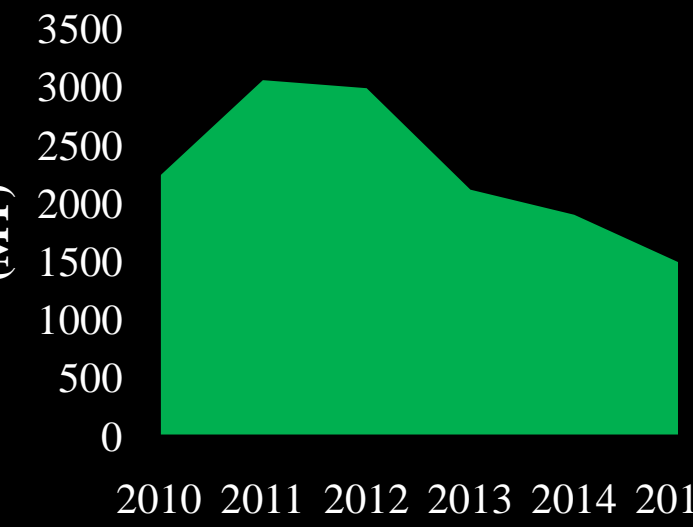




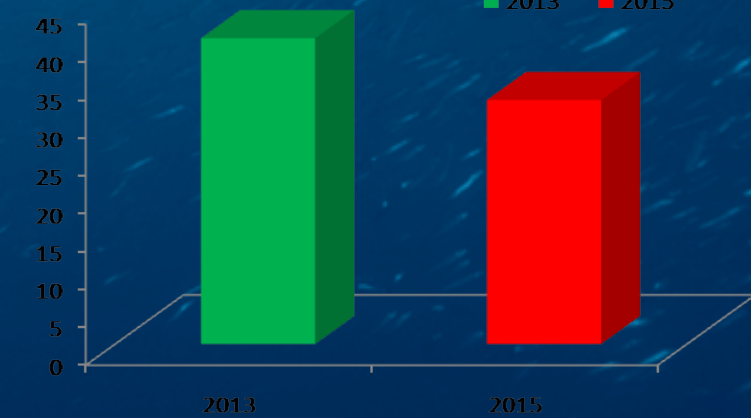
# Seer Fish (CPUE- Kg/ Hr)



## Seer Fish Production (MT)



## Seer Fish Production Comparison (2013 vs 2015)





Trawl entry



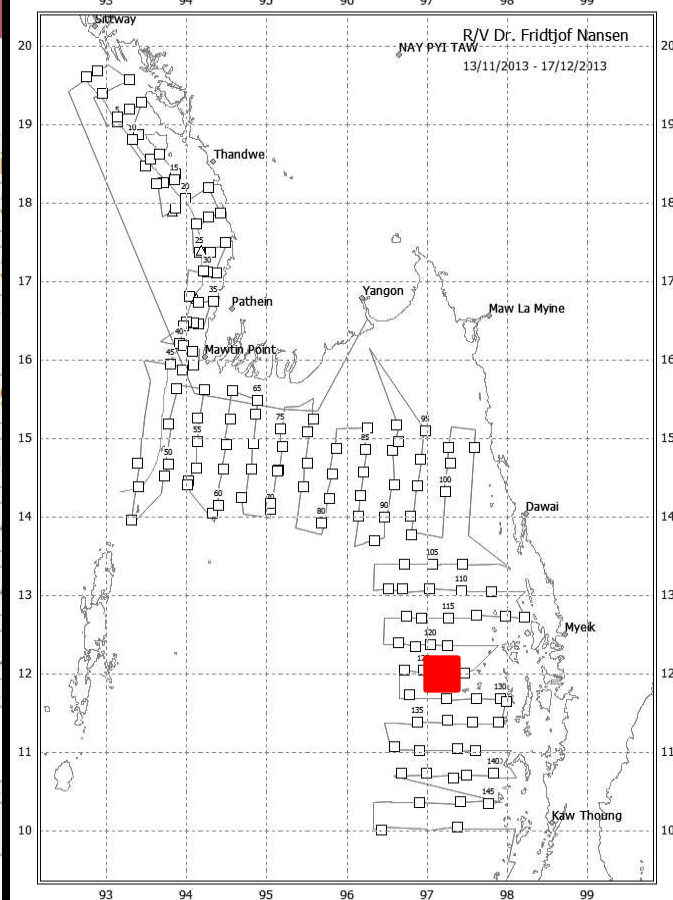
**Survey:** 2015404  
**Station:** 128  
**Start date:** 22/05/15  
**Stop date:** 22/05/15

**Start position:** Lat.: N 12 44.26 Lon.: E 98 12.55  
**Stop position:** Lat.: N 12 44.26 Lon.: E 98 12.55

**Start:** Time(UTC): 10:53:20 Log: 7981.50 Gear-dep.: 37 Bot-dep.: 37 Wire out: 110  
**Stop:** Time(UTC): 11:12:53 Log: 7982.48 Gear-dep.: 32 Bot-dep.: 32 Wire out: 110  
**Other:** Dur: 1 Dist: 0 Mean: 3 Mean: 3 CatchID: 1 Speed: 3



Comments: Fishing gears waste 3 pcs.



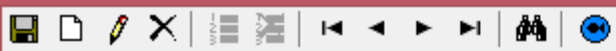
1

Spec. code	Scientific name	Tot. weight	Tot. num.	Wei	
WASTE03	Fishing gears	0.000	3.00	0.000	9
SCMSM03	<i>Scomberomorus commerson</i>	9.140	1.00	28.051	3
HAEPO07	<i>Pomadasys kaakan</i>	2.780	7.00	8.532	21
GERGE01	<i>Gerres filamentosus</i>	0.800	2.00	2.455	6
HAEPO06	<i>Pomadasys maculatus</i>	2.800	28.00	8.593	86
ENGST03	<i>Stolephorus indicus</i>	0.880	112.00	2.701	344

Sum Catch/Hour in kg 251.110 Catch/hour in % 100.000%



Trawl entry



**Survey:** 2015404

**Station:** 64

**Start date:** 09/05/15

**Stop date:** 09/05/15

**Start position:** Deg.: Min.:  
 Lat.: N 15 15.64  
 Lon.: E 94 9.46

**Stop position:** Deg.: Min.:  
 Lat.: N 15 15.64  
 Lon.: E 94 7.8

**Start:** Time(UTC): 22:59:39  
**Stop:** 23:29:48  
 Dur: 30

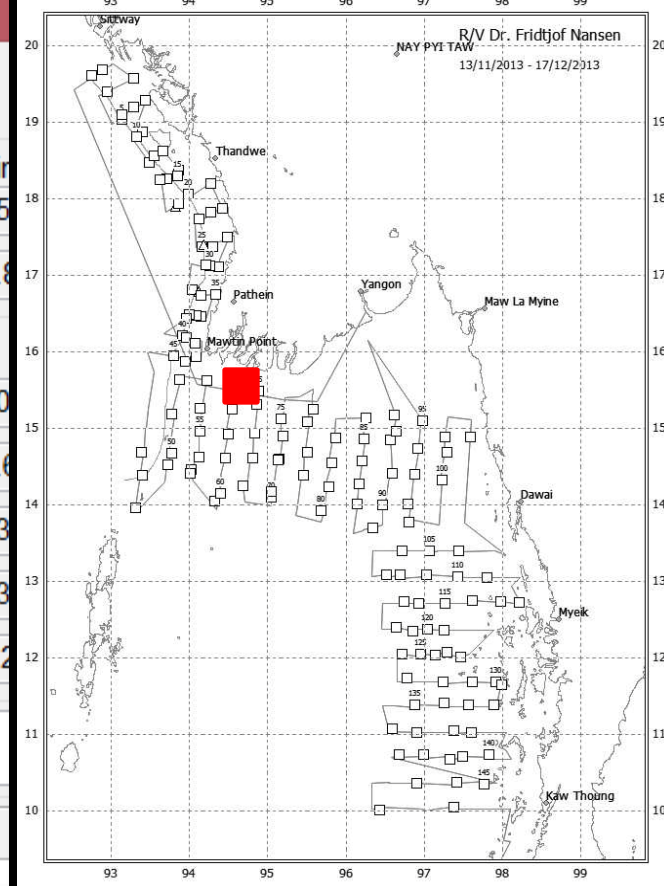
**Log:** 5910.25 5911.86  
 Dist: 1.6

**Gear-dep.:** 53 54  
 Mean: 53

**Bot-dep.:** 53 54  
 Mean: 53

**Wire out:** 150  
**CatchID:** 1  
 Speed: 3.2

Comments



1

Spec. code	Scientific name	Tot. weight	Tot. num.	Weight/hour	No / hour	Sample
ENGST03	<i>Stolephorus indicus</i>	0.640	18.00	1.274	36	
SPHSP17	<i>Sphyraena pinguis</i>	1.620	18.00	3.225	36	
CLUDU01	<i>Dussumieria acuta</i>	1.890	23.00	3.762	46	
SCMRA01	<i>Rastrelliger kanagurta</i>	0.420	4.00	0.836	8	88
SCMSM04	<i>Scomberomorus guttatus</i>	6.480	9.00	12.900	18	
HAEPO06	<i>Pomadasys maculatus</i>	0.490	5.00	0.975	10	

Sum Catch/Hour in kg 579.914 Catch/hour in % 100.000%

Help Close

Trawl entry

**Survey:** 2013409

**Station:** 21

**Start date:** 18/11/13

**Stop date:** 18/11/13

**Start position:**

Deg.: Min.:  
 Lat.: N 18 12.48  
 Lon.: E 94 16.00

**Stop position:**

Deg.:  
 Lat.: N 18  
 Lon.: E 94

**Start:** Time(UTC): 04:55:13

**Stop:** 05:20:47

**Dur:**

**Log:** 18.57

**Dist:** 19.84

**Gear-dep.:** 35

**Mean:** 37

**Bot-dep.:** 35

**Mean:** 37

**Wire out:** 110

**CatchID:** 1

**Speed:**

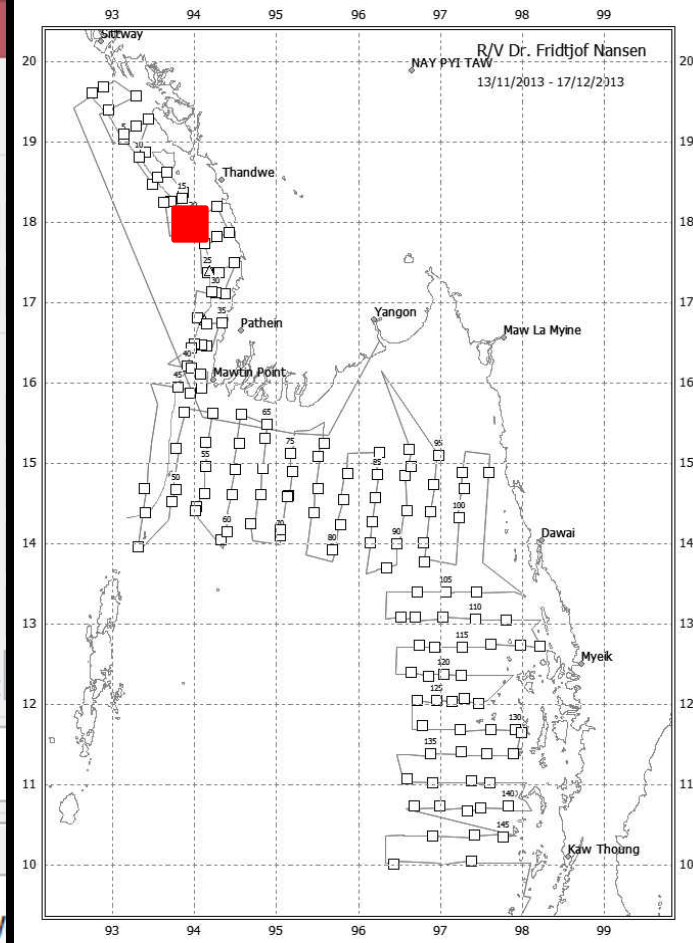
Comments



1

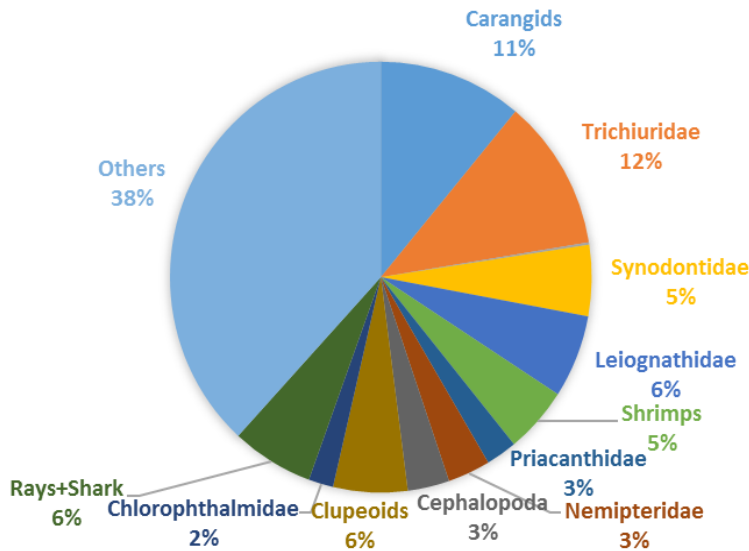
Spec. code	Scientific name	Tot. weight	Tot. num.	W
SCMSM03	<i>Scomberomorus commerson</i>	6.640	9.00	15.581 21
SCMSM04	<i>Scomberomorus guttatus</i>	21.900	61.00	51.388 143 49
LACLA01	<i>Lactarius lactarius</i>	9.420	45.00	22.104 106 50
TRILT01	<i>Lepturacanthus savala</i>	39.080	624.00	91.701 1464
CARCA04	<i>Caranx sexfasciatus</i>	4.400	16.00	10.325 38
LUTLU10	<i>Lutjanus johnii</i>	0.396	1.00	0.929 2 54

Sum Catch/Hour in kg 412.693 Catch/hour in % 100.000%

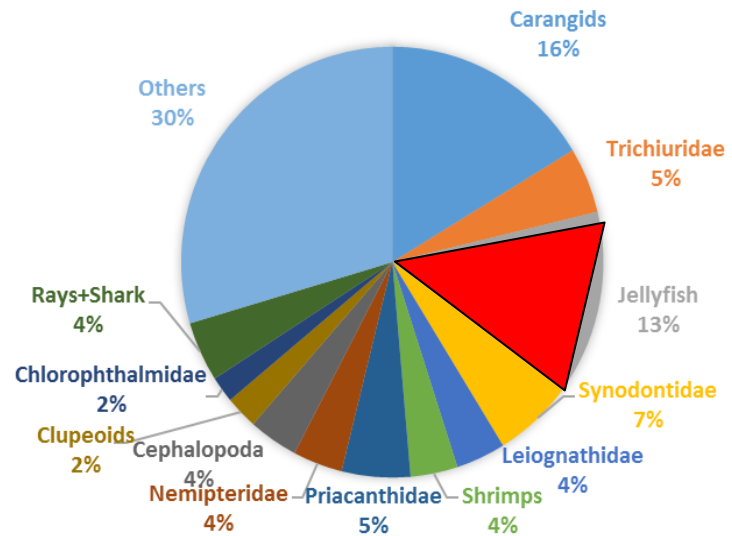


# COMPARISONS OF CATCH COMPOSITION SHOW SEASONAL VARIATIONS

2013 SURVEY



2015 SURVEY



Jellyfish population is increasing



# Jellyfish population is increasing

High jellyfish population is a concern several places in the world as this is considered a “dead-end” since the jellyfish have few predators and are also not (with few exceptions) useful for human consumption.

## Cause of the bloom of Jellyfish

