

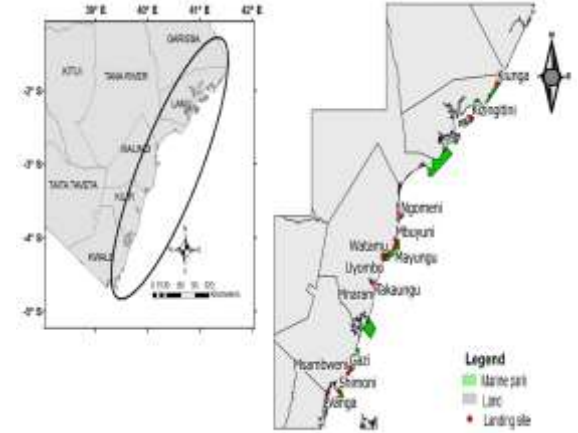
FACT SHEET

Stock Assessment of the Shallow Water Lobster fishery of Kenya

Fishery description

Spiny lobster fishery extends along the entire coastline from Vanga in the south to Kiunga on the border with Somalia (see the Map). Lamu archipelago presents the best fishing grounds and a vast majority of the fishers are concentrated in the fishing grounds of Lamu on a small scale commercial scale. Lobster fishery is targeted by local tourist hotels and export market. Commercial species commonly exploited in the Kenyan marine waters include:

- i. *Panulirus ornatus* (Ornate spiny lobster)- Kamba Mwani/Shuari
- ii. *Panulirus homarus* (Scalloped spiny lobster) -Spiringi
- iii. *Panulirus longipes* (Long-legged spiny lobster) -Mwilo
- iv. *Panulirus versicolor* (Painted spiny lobster)- Kurabu



Study objectives

- i) Examine existing data and information on the lobsters fishery including catches, fishing effort and marketing,
- ii) Determine the current status of the lobster fishery in Kenya using available data and information
- iii) Recommend appropriate reference points and a harvesting strategy taking into account the risks associated with data uncertainty and the methods used

The fishing effort is highest in Lamu County where the number of fishermen ranges 79- 307 per landing site. The number of fishers in Kiunga is 20 to 40. In Msambweni/Funzi landing sites, the number of fishers is 8 to 10.

Catch per Unit Effort (CPUE) of lobster

Year	CPUE (kg/fisher. day)
2001-2009	0.74 ± 0.01 (Lamu)
2012	0.84 ± 0.01
2013-2014	0.8 – 2 (overall)

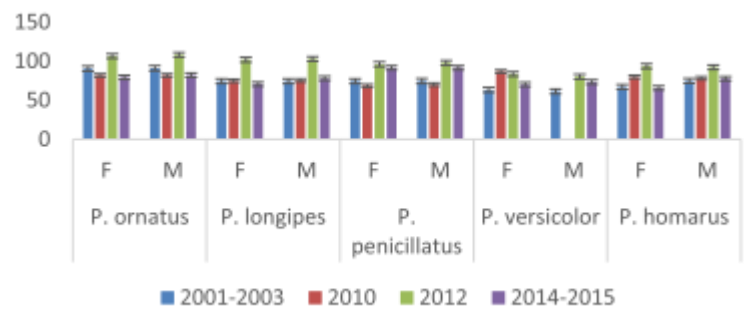
Economic value

Lobster price/kg varies by site/area and the state (frozen or live) and range from Ksh. 500 to 1500 per kg. Overall value is at Ksh. 106 Million. Export records indicate highest volumes in 2003 and 2004 at 165 t and 208 t valued at Ksh. 130 Million respectively. The 2014 export value is estimated at Ksh. 80Million.

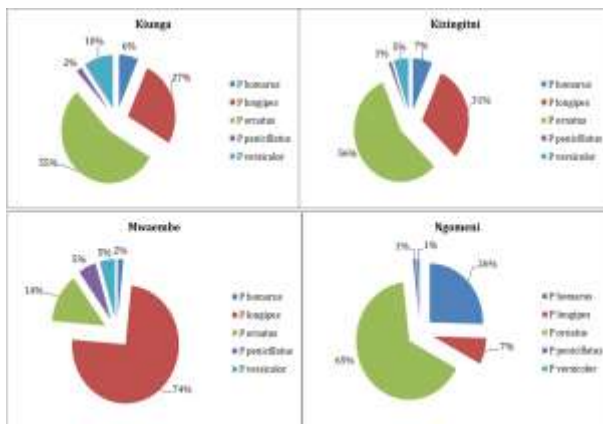
Catch trends

The overall mean annual landing for 2001- 2012 was estimated at 94Mt with minimum landings of 33Mt in 1996 and the maximum 170Mt in 1999 and 2003. Annual landings in 2009-2013 were stabilized at 84Mt. However, estimation from Catch assessment surveys (CAS) was 159.5 Mt with 123.4 (78.6%) Mt landed in Lamu.

Size Frequency analysis



Species Composition and relative abundance



3661 samples of lobsters were sampled of which 921 were undersized. *Panulirus ornatus* was the most abundant with 1884. *Panulirus longipes* had 1183 that were individuals sampled.

- Results of 2001 – 2012 assessment indicated that all the species had higher mean size in 2012 compared to 2001-2003 and 2010 (Rapid assessment survey data).
- 2014-2015 surveys indicated a mean weight of 549.26±65.07 g for *P. versicolor* and carapace length CL 74.48±1.60 mm and *P. homarus* 283.49±20.56 g, with a mean CL of 68.61±2.52 mm, in Kizingitini, Lamu. The mean weight of *P. ornatus* was 600.29±13.84 g in Kiunga, 505.66±13.21g in Kizingitini and 600.29±13.84 g in Mwaembe
- A total of 450 *P. longipes* individuals were recorded in Kiunga with a mean weight of 335.64±6.54 g, while in Kizingitini (n=414) the mean weight for *P. longipes* was 426.31±11.77 g.

What is the current stock status of five shallow water lobster species?

Stock parameter	<i>P. ornatus</i>	<i>P. longipes</i>	<i>P. homarus</i>	<i>P. versicolor</i>	<i>P. pencillatus</i>
Size at Maturity	84	72	47	73	63
Size at first capture	54	41	38	40	45
F _{MSY}	1.8	3.0	1.5	1.0	2.1
F _{current}	0.35	0.55	1.06	0.88	0.61
SSB _{current}	47%	13%	30%	11%	41%
SSB _{F_{MSY}}	7%	6%	11%	6%	21%
Mean size (Male)	106.8	102.1	96.3	83.8	93.9
Mean size (Female)	108.4	103.1	98	80.4	92.5

Management regulations and plans

The management of the lobster fishery is by gear limitations, protection of breeding stock and size limitation in terms of weight. Others include specific licenses for the trade in lobsters but with no specific address on effort control. A management plan is developed with a harvest strategy on the indicators to monitor and reference points for management.

Management Recommendations

- Based on this assessment for the different lobster species, it is clear that the fishery is not fully overexploited and that *P. ornatus* is currently under-exploited. This is because stock simulation models (Virtual Population Analysis, VPA) indicated that the current fishing mortality ($F_{\text{current}}=0.35$) is low and far to the fishing effort required to provide MSY ($F_{\text{MSY}}=1.8$). Earlier assessments estimated F_{curr} at 0.62.

Technical /Performance indicators (stock indicators & reference points)

Indicators	Reference Point	Management measures
Biomass estimates	Current Spawning Stock Biomass (SSB _{curr})	<ul style="list-style-type: none"> Increase the minimum weight/minimum size
Population size structure (Carapace length distribution, maturity)	Fishing Mortality at Maximum sustainable yield	<ul style="list-style-type: none"> Size limit Reduce fishing effort Protect breeding stock (closed season /area)
Catch per Unit Effort (Kg/fisher/day)	Mean current CPUE (Kg/fisher/day) Number of registered lobster fishers	<ul style="list-style-type: none"> Control fishing effort Season or area closures
Total annual catch	Current total annual catch (159MT)	
Lobster price per kilo	Current lobster mean price per kilo (ksh 800) Current number of registered lobster fishers Current number of lobster dealers	<ul style="list-style-type: none"> Enhance lobster value chain Increase the number of licensed fishers

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