SAC GFCM
Sub-Committee on Stock Assessment

Date*	**21**	**October**	**2009**	**Code***	**DPS0309Sai**

Authors*

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Affiliation*

Institut National de Recherche Halieutique (INRH), Tangier Center

Species Scientific name*

1 ***Parapenaeus longirostris - DPS***

Source: GFCM Priority Species

2

Source: -

3

Source: -

Geographical area*

Moroccan coast

Geographical Sub-Area (GSA)*

03 - Southern Alboran Sea

Combination of GSAs

1

2

3

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Assessment form

Sheet #0

Basic data on the assessment

Code: DPS0309Sai

Date*	21	Oct	2009	Authors*	Said Benchoucha

Species Scientific name*	Parapenaeus longirostris - DPS	Species common name*	Deep Water pink shrimp

Data Source

GSA*	03 - Southern Alboran Sea	Period of time*	2000-2008

Description of the analysis

Type of data*	Catch, effort and CPUE for trawl coastal fishery	Data source*	ONP, MPM, INRH.
Method of assessment*	Dynamic Production Shaeffer Model	Software used*	Dynamic CECAFE Shaeffer Model

Sheets filled out

B	P1	P2a	P2b	G	A1	A2	A3	Y	Other	D	Z	C
---	1	1	1	1	---	---	---	---	---	1	1	1

Comments, bibliography, etc.

FAO, CECAFE Shaeffer production model, 2007.

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Assessment form

Sheet P1
General information about the fishery

Code: DPS0309Sai

Data source*	ONP, MPM, INRH.	Year (s)*	2000 - 2008
Data aggregation (by year, average figures between years, etc.)*	By year		

Fleet and catches (please state units)

	Country	GSA	Fleet Segment	Fishing Gear Class	Group of Target Species	Species
Operational Unit 1*	MAR	03	E - Trawl (12-24 metres)	03 - Trawls	34 - Demersal slope species	DPS
Operational Unit 2						
Operational Unit 3						
Operational Unit 4						
Operational Unit 5						

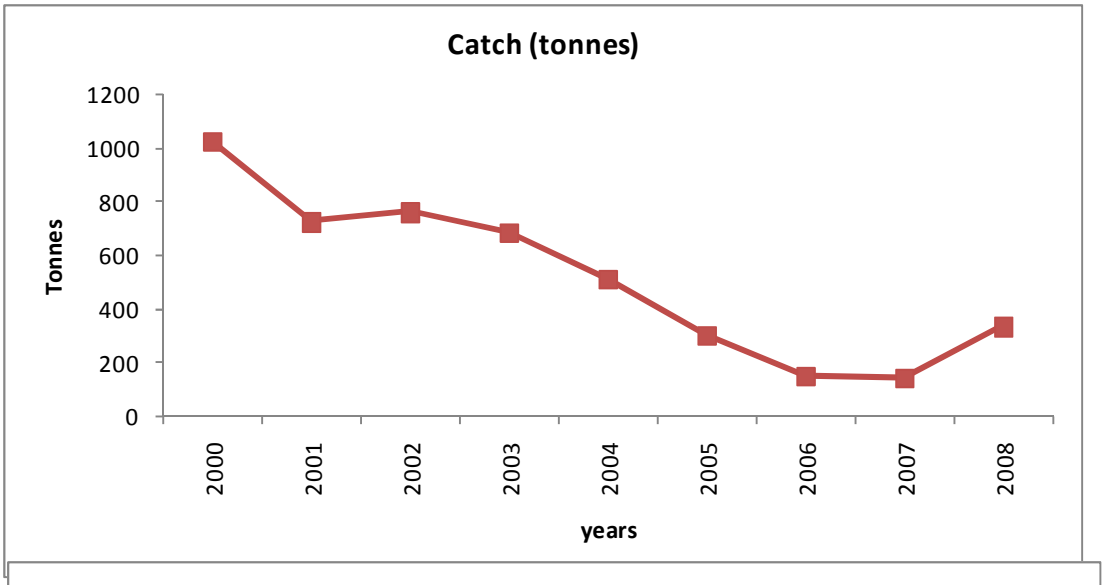
Operational Units*	Fleet (n° of boats)*	Kilos or Tons	Catch (species assessed)	Other species caught	Discards (species assessed)	Discards (other species caught)	Effort units
MAR 03 E 03 34 - DPS	114	Tons	337	ccius merluccius,			Nb of trips
Total	114		337				

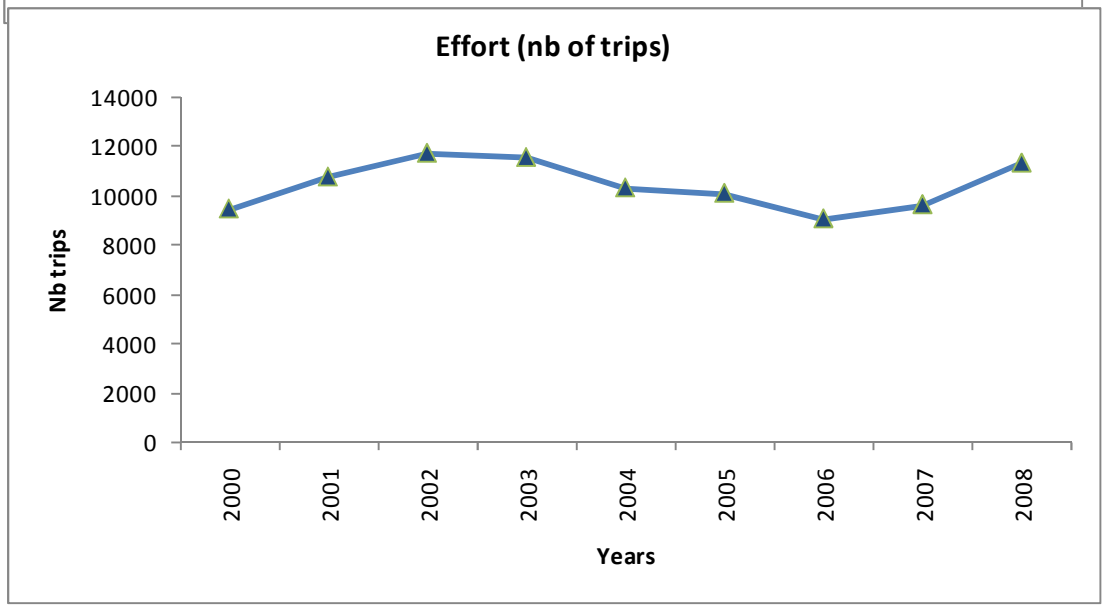
Legal minimum size	10,5 cm (Lt)

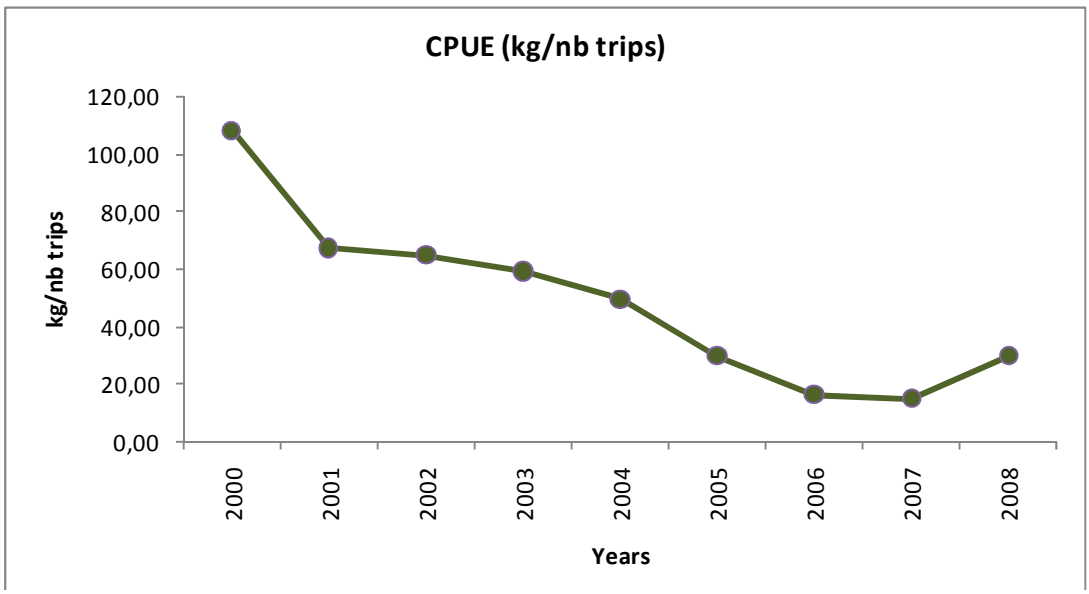
Comments

The fishing activity in Morocco plays an important social and economical roles. The landings are made in 7 ports and 86 artisanal fishery sites. The fishing boats are composed by trawlers, longliners, senners and artisanal samall scale boats. The number of the trawlers is 114. 51% of the trawlers are based in Nador port, 19% in Al Hoceima, 17% in Tangier, 12% in M'diq and 1% in Rass Kebdana, however, the Tangier trawlers are mostly opérating in Atlantic side. The average of the power of the tarwlers is about 325 and the mean tonnage is about 50 TJB. The annual catch of the coastal fishery turn around 8500 tonnes , for an average of 117 millions dirhams in value. The Parapenaeus longirostris trawlers catch in 2008 is about 337 tonnes, the fishing effort is 11345 (nb of trips) wich correspond to 34035 fishing days and the CPUE is about 30 kg/nb trips for the same year. The catch, the effort and the CPUE trend show a decline from 2002 to 2008. The most species targetted with the deep water pink shrimp are pagellus acarne, Mullus spp, Merluccius merluccius, Boops boops, Gadus poutassou, Octopus vulgaris and Sepia spp. This species represent more than 84 % of the total demersal species landed by the trawl fishery .

Comments


Catch (tonnes)
Tonnes
1200
1000
800
600
400
200
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
years


Effort (nb of trips)
Nb trips
14000
12000
10000
8000
6000
4000
2000
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
Years


CPUE (kg/nb trips)
kg/nb trips
120,00
100,00
80,00
60,00
40,00
20,00
0,00
2000
2001
2002
2003
2004
2005
2006
2007
2008
Years

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Assessment form

Sheet P2a
Fishery by Operational Unit

Code: DPS0309Sai

Data source*	ONP, MPM, INRH.	OpUnit 1*	MAR 03 E 03 34 - DPS

Time series

Year*	2000	2001	2002	2003	2004	2005
Catch	1024	726	762	685	513	304
Minimum size						
Average size Lc						
Maximum size						
Fleet	trawlers					

Year	2006	2007	2008			
Catch	150	146	337			
Minimum size						
Average size Lc						
Maximum size						
Fleet			Coastal trawlers			

Selectivity

L25	
L50	
L75	
Selection factor	

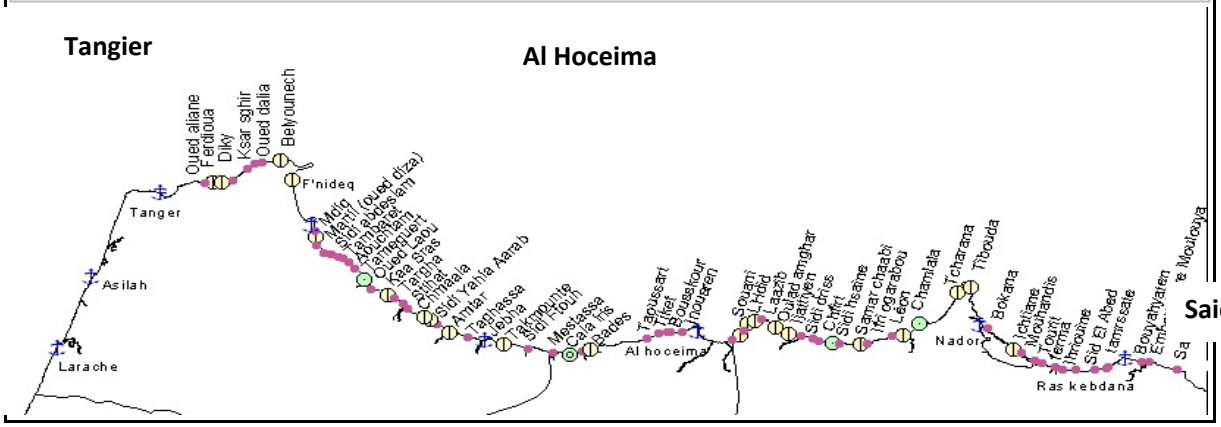
Remarks

Structure by size or age

Data source*	Ministry of fishery and agriculture	OpUnit 1*	MAR 03 E 03 34 - DPS

Regulations in force and degree of observance of regulations

- Gel of Fishing licence : Fully observed
- Trawl mesh size : ≥ 50mm (streched mesh size)
- Minimal landing size : 10,5cm (Total length)
- Interdiction of fishing under 80m between Tangier and Al Hoceima and under 3 miles between Alh Hoceima and Saidia.



Accompanying species

Merluccius merluccius, Boops boops, Pagellus acarne, Mullus surmuletus, Mullus barbatus, Gadus poutassou, Octopus vulgaris, Sepia spp ...

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Assessment form

Sheet G
Indirect methods. Global model

Code: DPS0309Sai

Analysis #*	1

Data source*	Office National desPêches (ONP)	Gear*	Trawl

Model characteristic

Type of model*	Dynamic Shaeffer Model	Fitting criterion	Observed and predicted abundance indices (CPUE of coastal fishery)
Software	CECAFE Shaeffer Model	Bibliographical source	CECAFE Dyanmic Shaeffer Model

Data

Year	2000	2001	2002	2003	2004	2005	2006
Catch	1024	726	762	685	513	304	150
Effort	9472	10773	11739	11569	10331	10111	9070
CPUE	108	67	65	59	50	30	17

Year	2007	2008					
Catch	146	337					
Effort	9647	11345					
CPUE	15	30					

Adjustment

RMS	

Results

Carryng capacity		a	
Growth rate		b	
Catchability			
MSY			
EMSY		TACMSY	
E0.1		TAC0.1	
Ecurrent			

Comments

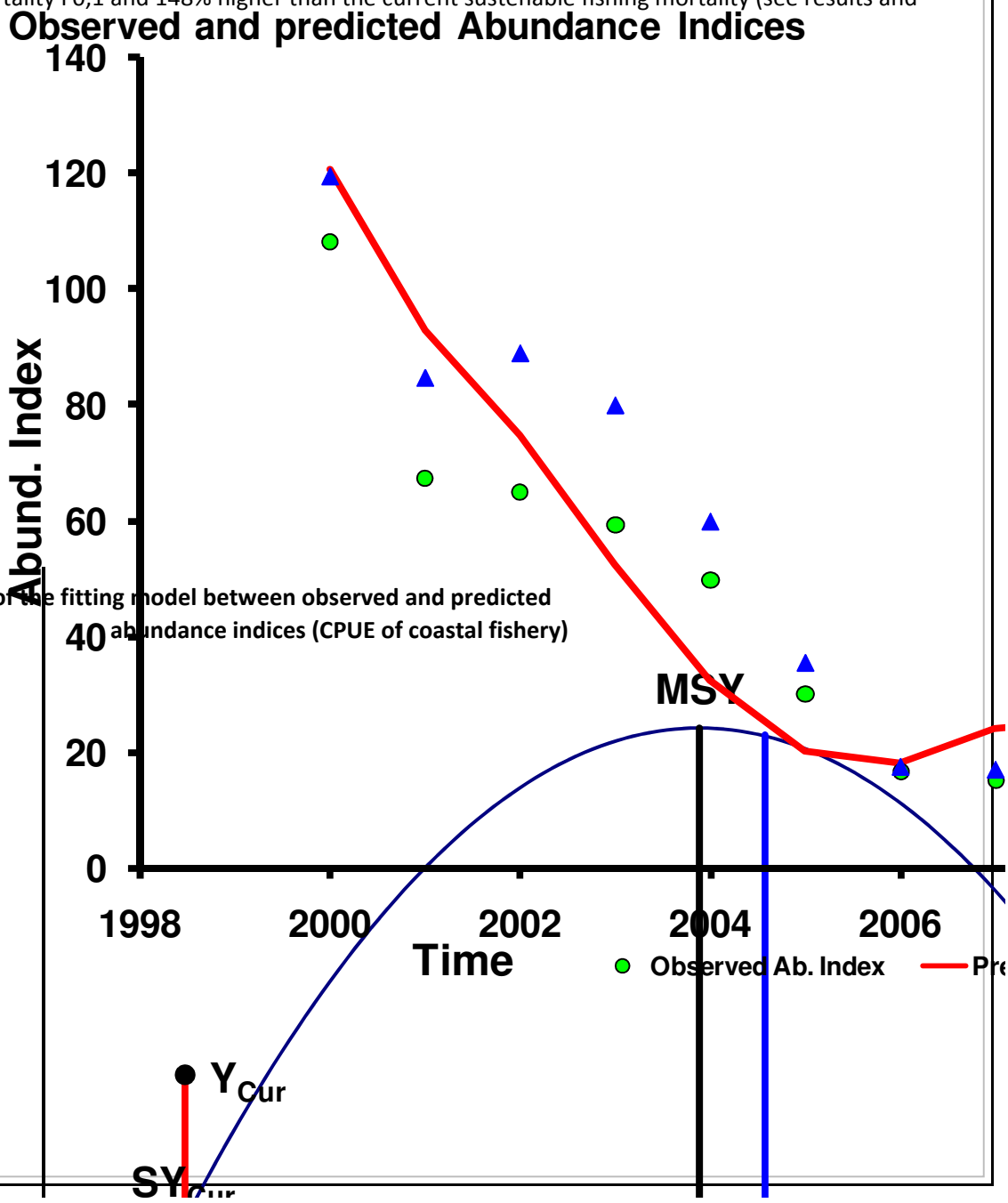
B/B0.1 = 19%
Fcur/F0.1 = 295%
Fcur/FSYCur = 148%

References points : B0,1 = 11,01 tonnes

Comments

The stock of Parapenaeus longirostris was assessed by the Dynamic Shaeffer Production Model. The model use a basic parameters: virgin biomasse **K**, Growth rate of the population **r**, Initial appauvrissement **D** (initial biomass corresponding to K). After giving a better assessment of **MSY**, $\mathbf{B_{MSY}}$ et $\mathbf{F_{MSY}}$, the model calculate the reference points $\mathbf{B_{ratio\,=}}$ (the ratio between the biomass estimated for the last year of the data and B_{MSY}), and $\mathbf{F_{ratio\,=}}$ (the ratio between the fishing mortality for the last year and the fishing mortality wich should produce a sustenable catch for the same year). The values of F_{MSY}, B_{MSY} and K should not be taken into a consideration because the model give more reliable estimation for F_{ratio} and B_{ratio}. The trends of this ratios, depending they are up or under 1.0, give informations for management.

The result show that the model fitted well with the CPUE used (coastal fishery). The current Biomass represent only 19% of the target Biomass B0,1. The current fishing effort is 295% higher than the target fishing mortality F0,1 and 148% higher than the current sustenable fishing mortality (see results and graphs).



The plot of the fitting model between observed and predicted abundance indices (CPUE of coastal fishery)

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Assessment form	**Sheet Y** **Indirect methods: Y/R**

Code: DPS0309Sai

Sex		Analysis #	

# of gears		Software	

Parameters used

Vector F	
Vector M	
Vector N	

Model characteristics

Results

	Total	Gear			
Current YR					
Maximum Y/R					
Y/R 0.1					
F_{max}					
$F_{0.1}$					
Current B/R					
Maximum B/R					
B/R 0.1					

Comments

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Assessment form	**Sheet D Diagnosis**

Code: DPS0309Sai

Indicators and reference points

Criterion	Current value	Units	Reference Point	Trend	Comments
B	213	tonnes	B0,1	11.01	
SSB					
F					
Y					
CPUE					
B/B0,1	19	%			
Fcur/F0,1	295	%			
Fcur/Fsyc	148	%			

Stock Status* Use one (or both) of the following two systems for the stock assessment status description

Unidimensional

☐	? - (or blank) **Not known or uncertain**. Not much information is available to make a judgment;
☐	U - **Underexploited, undeveloped or new fishery**. Believed to have a significant potential for expansion in total production;
☐	M - **Moderately exploited**, exploited with a low level of fishing effort. Believed to have some limited potential for expansion in total production;
☐	F - **Fully exploited**. The fishery is operating at or close to an optimal yield level, with no expected room for further expansion;
☉	O - **Overexploited**. The fishery is being exploited at above a level which is believed to be sustainable in the long term, with no potential room for further expansion and a higher risk of stock depletion/collapse;
☐	D - **Depleted**. Catches are well below historical levels, irrespective of the amount of fishing effort exerted;
☐	R - **Recovering**. Catches are again increasing after having been depleted or a collapse from a previous;

Bidimensional

Exploitation rate

☐	No or low fishing
☐	Moderate fishing
☉	High fishing mortality
☐	Uncertain / Not assessed

Stock abundance

☐	Virgin or high abundance
☐	Intermediate abundance
☉	Low abundance

☐	Depleted
☐	Uncertain / Not assessed

Comments

The results show that the model fit well with the abundance indexes (CPUE of the coastal fishery) choosen. The current biomass represent only 19% of the target Biomass. The current fishing mortality is so high and exced the sustenable fishing mortality by 148% and exced the target fishing mortality by 295%. This result shows that the stock of Parapenaeus longirostris is overexploited.

Code: DPS0309Sai

Management advice and recommendations*

As the results show,the current biomass represent 19% of the target Biomass. The current fishing mortality is so high and exced the sustenable fishing mortality by 148% and exced the target fishing mortality by 295%, it is recommanded to decrease the fishing mortality 10% every year until the recovering of the stock.

Advice for scientific research*

- Undertake the surveys regularely in the same period,
- Use the surveys abundance indexes (2000-2007) in the Dynamic Shaeffer production model and compare the results with those obtained with the coastal tarwlers CPUE,
- Use the surveys data in order to run the SURBA,
- Undertake a regularly coastal fishery landings sampling in the main ports in morocco and undertake Biological studies and studies on the effect of environmental factors on this species with the posible support of Regional projects.

Comments*

The results show that the model fit well with the abundance indexes (CPUE of the coastal fishery) choosen. The current biomass represent only 19% of the target Biomass. The current fishing mortality is so high and exced the sustenable fishing mortality by 148% and exced the target fishing mortality by 295%. The stock of Parapenaeus longirostris is overexploited. This specie show a big changes in trend of abundance indexes due to the changes in recrutement. Some studies show that some environmental factors (salinity and temperature) have also an effect on spawning and catch of thi specie. A management plan should be prepared for this fishery including all this aspects.