SEAFDEC/UNEP/GEF Project on Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand

Portunus pelagicus

Blue Swimming Crab

Scientific classification	
Kingdom:	Animalia
Phylum:	Arthropoda
Subphylum:	Crustacea
Class:	Malacostraca
Order:	Decapoda
Infraorder:	Brachyura
Family:	Portunidae
Genus:	*Portunus*
Species:	***P. armatus***
Binomial name	

Portunus armatus
(Linnaeus, 1758)

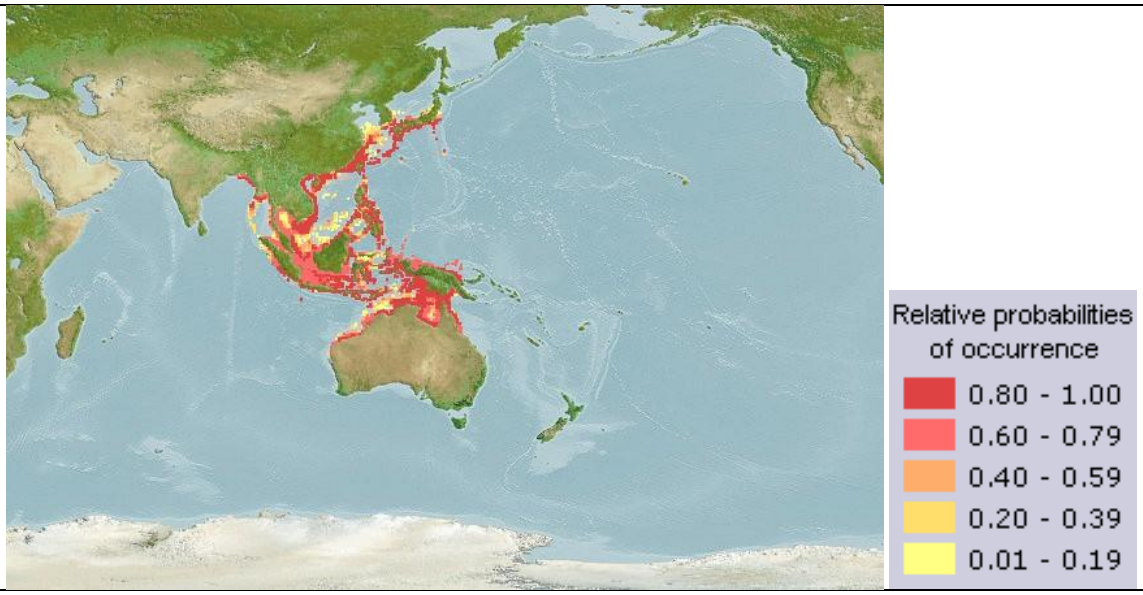
Synonyms

Cancer pelagicus Linnaeus, 1758

A. Environment/Ecology:

Reef-associated; brackish; depth range 0 - 65 m (Ref. 111223). Tropical, preferred 26°C (Ref. 107945); 35°N - 15°S, 99°E - 137°E

B. Distribution:



A tropical species, blue swimmer crabs are found in estuaries and inshore marine waters, mainly between Nickol Bay and Dunsborough. They are also found off northern and eastern Australia and are widely distributed in the Indian and Pacific oceans, including the east coast of Africa and southern Japan. They have even been found in the Mediterranean Sea, having entered via the Suez Canal.

C. Length at first maturity / Size / Weight / Age:

Maturity: L_m 7.3, range 3 - ? cm
Max length : 20.0 cm CW male/unsexed; (Ref. 343)
Blue swimmer crabs are sometimes called 'blue manna'. In WA, they can grow to have a carapace up to 25 centimetres wide and a claw span up to 80 centimetres. The biggest blue swimmer crab caught in WA weighed more than a kilogram. These crabs belong to the Portunidae family, which also includes other large, edible crabs found in Australia such as mud crabs. Crabs from this family can usually be recognised by their flat, discshaped hind legs, used as paddles for swimming and by the nine spikes, called horns, along their carapace, either side of their eyes.
Size limit A Blue Swimmer Crab is undersized if the carapace is less than 11 cm when measured from side to side at the base of the largest spines. Size limits apply in all waters of the state

Length at First Maturity= carapace size of 10.5 cm for females and 9.6 cm for males Size= maximum size of 14 to 15 cm Weight= ?? Age= ??(FiA,2020).

D. Short description

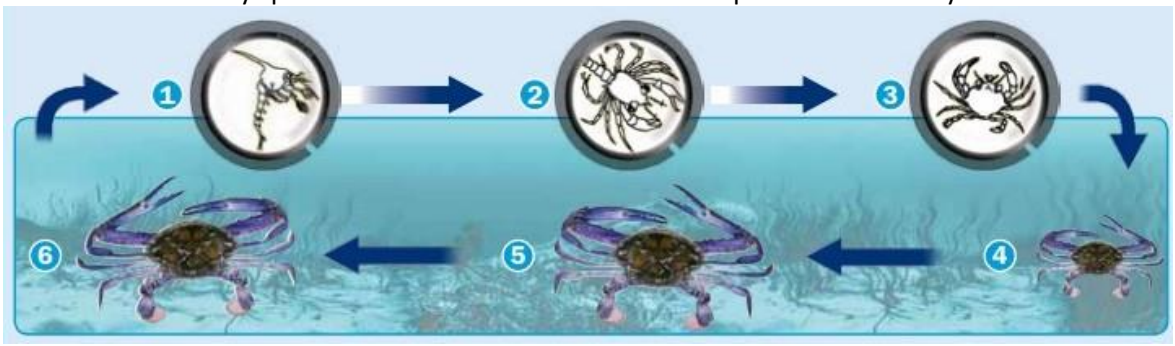
Carapace rough to granulose, regions discernible; front with 4 acutely triangular teeth; 9 teeth on each anterolateral margin, the last tooth 2 to 4 times larger than preceding teeth. Chelae elongate in males; larger chela with conical tooth at base of fingers; pollex ridged. Color: males with blue markings, females dull green.

E. Biology

Matures at about 1 year. Collected mainly by artisanal traps, trawls, beach seines, cylindrical wire traps, folding traps, pots, hop nets, drop nets, and sunken crab gill nets. In shallow waters, it is caught using beach seines, rakes, and dab nets. Sold in local markets (fresh or frozen) and for the crab-flesh canning industry. Most widely sold in markets of Southeast Asia, including the Philippines (Ref. 343). Maximum depth from Ref. 801. Immediate subtidal to a depth of 40 m (Ref. 801), on sandy to sandy-muddy substrates in areas near reefs, mangroves, and sea grass and algal beds (Ref. 343). Juveniles tend to occur in shallow intertidal areas (Ref. 343). Burrows in sand when disturbed; carnivorous and voracious predator (Ref. 801). Host to protozoans, helminths and crustaceans (Ref. 104981). Members of the order Decapoda are mostly gonochoric. Mating behavior: Precopulatory courtship ritual is common (through olfactory and tactile cues); usually indirect sperm transfer (Ref. 833). Spawning occurs throughout the year, with peaks in December, March and August (Ref. 119312).

F. Life cycle and mating behavior

The timing and movements of blue swimmer crabs vary between locations. Estuarine crabs, such as those living in the Leschenault Inlet, Peel-Harvey Estuary and Swan River, tend to move from estuaries into nearby marine waters during winter. Crabs in marine embayments such as Cockburn Sound and Shark Bay spend their entire lives within different parts of the embayment.



Juvenile crabs

By autumn, most megalopae have formed into juvenile crabs with a recognisable crab shape and carapace three to six centimetres wide. They continue growing rapidly.

Mating

Most blue swimmer crabs mate in autumn. The males moult first, so that their shells have hardened beforehand. A courting male then catches a female and carries her beneath him for four to 10 days while fending off other males. The male helps the female to moult and then turns her over to mate while she is still soft-shelled. After mating, he continues to carry her around and protect her for another three-to-four days while her

shell hardens. A male may mate with several females during one season. The female crabs retain the males' sperm over winter until their ovaries develop – helped, it is thought, by the rising water temperature in spring.

G. Fisheries

Mainly collected by artisanal traps, trawls, beach seines, cylindrical wire traps, folding traps, pots, hop nets, drop nets and crab gill nets. The total catch reported for this species to FAO for 1999 was 133 938 t. The countries with the largest catches were China (52 577 t) and Philippines (34 076 t). For sale in local markets (frozen or fresh) and for the crab-flesh canning industry. It attains lower prices than Scylla although crabs of *Portunus* are taken in larger quantities.

H. IUCN Red List Status

(NA)

I. More Information:

1) Stocks

(NA)

2) Ecology

Ecology of ***Portunus Pelagicus***

Main Ref.	Ng, P.K.L., 1998
distribution	Marine - Neritic • **littoral zone** • **sublittoral zone** Brackishwater • **estuaries/lagoons/brackish seas** • **mangroves** Highighted items on the list are where *Portunus pelagicus* may be found.
Remarks	Immediate subtidal to a depth of 40 m (Ref. 801), on sandy to sandy-muddy substrates in areas near reefs, mangroves, and sea grass and algal beds (Ref. 343). Juveniles tend to occur in shallow intertidal areas (Ref. 343). Burrows in sand when disturbed; carnivorous and voracious predator (Ref. 801). Host to protozoans, helminths and crustaceans (Ref. 104981).

Substrate

Substrate	**Benthic**: mobile; demersal; megabenthos; **Soft Bottom**: sand; mud;
Substrate Ref.	Ng, P.K.L., 1998
Special habitats	**Beds:** algae/seaweed; sea grass; **Coral Reefs**;

Special habitats Ref.	Ng, P.K.L., 1998

Associations

Ref.	Ng, P.K.L., 1998
associations	parasitism;
Associated with	protozoa *Operculariella* sp., *Acineta* sp., *Thelohania* sp., *Nematopsis* sp., *Ameson* sp., *Hematodinium* sp.; helminths planoceroid turbellarian, tetraphyllid cestode, *Levinseniella* sp., *Polypocephalus moretonensis*, *Carcinonemertes mitsukurii*; crustaceans *Choniosphaera indica*, *Sacculina granifera*, *Octolasmis* spp., *Chelonibia patula* (Ref. 104981).
Association remarks	
Parasitism	outside host (*Chelonibia patula* is found on the crab's carapace (Ref. 104981).) inside host (All species are endoparasitic except *Chelonibia patula* (Ref. 104981).)

Feeding

feeding type	plants/detritus+animals (troph. 2.2-2.79)
feeding type ref	de Lestang, S., I.C. Platell and M.E. Potter, 2000
feeding habit	hunting macrofauna (predator)
feeding habit ref	de Lestang, S., I.C. Platell and M.E. Potter, 2000

trophic level(s)

	original sample		unfished population		Remark
estimation method	Troph	s.e.	Troph	s.e.	
From diet composition	2.48	0.19			Troph of juv./adults.
Ref.	de Lestang, S., I.C. Platell and M.E. Potter, 2000				
From individual food items	3.54	0.46			Trophic level estimated from a number of food items using a randomized resampling routine.

3) Diet

Food and Feeding Habits: Diet Composition *Portunus Pelagicus*

n = 35

Main Food	Percent	Trophic Level (y)	Predator Life Stage	Country	Locality	Ref.
detritus	59	2.5	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
detritus	59	2.5	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
detritus	59	2.5	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
detritus	59	2.5	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
detritus	59	2.5	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
detritus	59	2.5	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
detritus	55	2.6	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
detritus	55	2.6	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
detritus	55	2.6	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
detritus	55	2.6	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
detritus	55	2.6	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
detritus	55	2.6	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
detritus	55	2.6	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
detritus	55	2.6	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747

	detritus	55	2.6	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747	
	zoobenthos	33	3.1	juv./adults	Australia	Leschenault estuaries (33°12'South and 115°40'East)	8747	
	zoobenthos	33	3.1	juv./adults	Australia	Leschenault estuaries (33°12'South and 115°40'East)	8747	
	zoobenthos	33	3.1	juv./adults	Australia	Leschenault estuaries (33°12'South and 115°40'East)	8747	
	zoobenthos	33	3.1	juv./adults	Australia	Leschenault estuaries (33°12'South and 115°40'East)	8747	
	zoobenthos	33	3.1	juv./adults	Australia	Leschenault estuaries (33°12'South and 115°40'East)	8747	
	zoobenthos	33	3.1	juv./adults	Australia	Leschenault estuaries (33°12'South and 115°40'East)	8747	
	zoobenthos	33	3.1	juv./adults	Australia	Leschenault estuaries (33°12'South and 115°40'East)	8747	
	zoobenthos	33	3.1	juv./adults	Australia	Leschenault estuaries (33°12'South and 115°40'East)	8747	
	zoobenthos	33	3.1	juv./adults	Australia	Leschenault estuaries (33°12'South and 115°40'East)	8747	
	zoobenthos	33	3.1	juv./adults	Australia	Leschenault estuaries (33°12'South and 115°40'East)	8747	
	zoobenthos	29	3.2	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747	
	zoobenthos	29	3.2	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747	
	zoobenthos	29	3.2	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747	
	zoobenthos	29	3.2	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747	

zoobenthos	29	3.2	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
zoobenthos	29	3.2	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
zoobenthos	29	3.2	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
zoobenthos	29	3.2	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
zoobenthos	29	3.2	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747
zoobenthos	29	3.2	juv./adults	Australia	Peel-Harvey (32°40'South, 115°40'East), Australia	8747

4) Reproduction

Reproduction of *Portunus Pelagicus*

Main Ref.	Ruppert, E.E., R.S. Fox and R.D. Barnes, 2004
Mode	dioecism
Fertilization	
Spawning Frequency	two seasonal peaks per year
Batch Spawner	No
Reproductive Guild	bearers External brooders
Description of life cycle and mating behavior	Members of the order Decapoda are mostly gonochoric. Mating behavior: Precopulatory courtship ritual is common (through olfactory and tactile cues); usually indirect sperm transfer.
Search for more references on reproduction	Scirus

5) Maturity

Maturity studies for *Portunus Pelagicus*

n = 10

Lm vs Linf graph

Lm (cm)	Length (cm)			Age range (y)		tm (y)	Sex of fish	Country	Locality
	7.9	-	9.0	-			mixed	Australia	Moreton Bay
	7.0	-	8.0	-			unsexed	Qatar	Doha
	3.2	-		-			female	Iran	Bandar Abbas, Hormozgan / 2006-2007
	6.0	-	6.5	-			mixed	Oman	Gulf of Oman and Arabian Sea / 2011-2012
4.4 CL		-		-			female	India	Kakinada/ Jan 1979-Dec 1980
7.5 CW	5.8	-		-			female	Thailand	Kung Krabaen Bay/ 2008-2009
7.5 CW	5.8	-		-			female	Thailand	Kung Krabaen Bay, Chanthaburi / 2008-2009
9.6 CW		-		-			unsexed	India	Karnataka/ 2011-2012
9.6 CW		-		-			female	India	Karnataka / 2001-2005
12.0 CW		-		-			mixed	Indonesia	Kendari Bay / 2016-2016

6) Spawning

Spawning for *Portunus Pelagicus*

n = 9

J	F	M	A	M	J	J	A	S	O	N	D	Country	Locality
2	3	0	3	3	3	3	3	2	2	2	3	Iran	Bandar Abbas, Hormozgan
				111							111	Indonesia	Bone Bay, Sulawesi
111	111	111					111	111	111		111	Qatar	Doha
111								111	111	111	111	India	Kakinada/ Jan 1979-Dec 1980
111	111	111	111	111	111	111	111	111	111	111	111	India	Karnataka
111	111	111	111	111	111	111	111	111	111	111	111	India	Kerala
3	3	6	2	1	1	3	4	2	3	2	4	Thailand	Kung Krabaen

													Bay, Chanthaburi
111	111	111	111	111	111	111	111	111	111	111	111	Indonesia	Pangkep
111	111	111	111	111	111	111	111	111	111	111	111	India	Tuticorin

7) Spawning aggregation

(NA)

8) Fecundity

Fecundity for *Portunus Pelagicus*

Sort by Country Locality

[n = 5]

Country	Locality	Absolute Fecundity			Relative Fecundity			Fecundity/length relationship	
		Min	Max	Mean	Min	Max	Mean	a	b
Australia	Moreton Bay	103,000	1,880,000	0				431.51	3.145
India	Palk Bay	60,000	1,976,398	0					
Iran	Bandar Abbas, Hormozgan	277,421	1,114,348	662,978					
Qatar	Doha	150	450,000	0				0.782	2.78
Thailand	Kung Krabaen Bay, Chanthaburi	148,237	1,448,180	572,138					

9) Eggs

Egg Characteristics of *Portunus Pelagicus*

The eggs are fertilised by the stored sperm and, when laid, they attach to hairs in a spongy mass under the female's abdomen. The eggs go from orange to black as they mature. The term for a female crab carrying egg clusters in this way is 'berried'. Any berried females caught by fishers must be returned to the water. The female incubates the eggs for about 18 days. When the embryos inside are mature she shakes the eggs off her abdomen and they hatch into zoea

10) Egg development

(NA)

11) Age/Size

List of Population Characteristics records for *Portunus Pelagicus*

n = 32

Sex	Wmax	Lmax (cm)	Tmax (y)	Country	Locality
unsexed		7		Philippines	central Visayan region
female		7.4		Indonesia	Brebes coast, central Jawa
male		7.5		Indonesia	Brebes coast, central Jawa
male	675.00 g	9.2		Oman	Gulf of Oman and Arabian Sea / 2011-2012
female	730.00 g	9.6		Oman	Gulf of Oman and Arabian Sea / 2011-2012
female		9.989		Indonesia	PGN Bay, Labuhan Maringgai, East Lampung
female	136.70 g	10.1		Bahrain	Barbar, 2004-2005
male	227.69 g	11.5		Bahrain	Barbar, 2004-2005
male		12.08		Indonesia	PGN Bay, Labuhan Maringgai, East Lampung
unsexed		12.5		India	Karnataka/ 2011-2012
unsexed		13		India	Kerala/ 2011-2012
unsexed		14		India	Kerala/ 2012-2013
male		14.77		Indonesia	Lasongko Bay, central Buton / 2013-2014
female		14.83		Indonesia	Pati coast, central Jawa / 2012-2013
male		15.94		Indonesia	Pati coast, central Jawa / 2012-2013
unsexed		16		India	Karnataka and Goa
unsexed		16		India	Thoppukadu / 1995-1998
male		16		Bahrain	Unspecified, Bahrain
female		16.22		Indonesia	Lasongko Bay, central Buton / 2013-2014
male		16.5		India	Karnataka / 2001-2005
male	270.83 g	16.7		India	Karnataka / 1992-1994
female		17		India	Karnataka / 2001-2005

unsexed	409.00 g	17		Pakistan	Pakistan coastline, 2015-2015
unsexed		17.3		Iran	Bandar Abbas, Hormozgan / 2006-2007
female	317.26 g	17.3		India	Karnataka / 1992-1994
unsexed		18		India	Gulf of Mannar, Mandapam / 1995-1998
unsexed		18.2		India	Devipattinam / 1995-1998
female		18.5		Australia	Unspecified, Australia
male	420.00 g	18.6		China	Beibu Gulf, Hainan Islands, South China Sea, Mar 1997-Apr 1999

12) Growth

Growth parameters for *Portunus Pelagicus*

Maximum Length 20cm CW n = 52

Note that studies where Loo is very different (+/- 1/3) from Lmax are doubtful.

Auximetric graph	[n = 45]
Lm vs Linf graph	[n = 8]
M vs K graph	[n = 38]
M vs Linf graph	[n = 38]

ø = 2.61 **L inf** = 17.0 cm CW **K** = 1.4 Median record no. 27 Ref. 116321

Loo (cm)	Length Type	K (1/y)	to	Sex	M (1/y)	Temp°C	Lm	Ø'	Country	Locality	Questionable	Captive
5.90	CL	1.900						1.82	Pakistan	Bhanbhore	Yes	Yes
8.11	CL	0.780		F	1.53			1.71	Indonesia	Brebes coast, central Jawa	No	No
8.14	CL	1.200		M	1.53			1.90	Indonesia	Brebes coast, central Jawa	Yes	No
10.28	CL	1.850		M	3.15			2.29	Oman	Gulf of Oman and Arabian Sea	No	No

10.96	CL	1.680		F	3.15			2.30	Oman	Gulf of Oman and Arabian Sea	No	No
11.91	CW	3.110	0.25	M				2.64	Australia	Leschenault Estuary and Koombana Bay	No	No
12.47	CW	2.670	0.25	F				2.62	Australia	Leschenault Estuary and Koombana Bay	Yes	No
12.59	CW	2.820	1.70					2.65	Australia	Peel-Harvey Estuary	Yes	No
12.89	CW	0.100	0.10					1.22	Australia	Peel-Harvey Estuary	Yes	No
13.10	CL	1.420						2.39	Pakistan	Miani Hor	No	Yes
14.26	CW	2.750		M	3.98			2.75	Thailand	Kung Krabaen Bay	No	Yes
14.26	CW	2.750		M	3.98			2.75	Thailand	Kung Krabaen Bay, Chanthaburi	No	No
14.80	CL	1.730						2.58	Pakistan	Korangi Creek	No	Yes
15.00	CW	2.370						2.73	Qatar	Doha	No	Yes
15.20	CW	0.930	-0.96	M	1.09			2.33	Indonesia	Lasongko Bay, central Buton	No	No
15.27	CW	1.500	0.57					2.54	Australia	Cockburn Sound	No	No
15.40	CW	1.090	-0.09	F	1.21	29.00	7.16300	2.41	Indonesia	Bone Bay, Sulawesi	No	No

15.57	CW	3.000	0.10					2.86	Australia	Peel-Harvey Estuary	No	No
15.90	CW	1.270	-0.08	M	1.33	29.00	7.16300	2.51	Indonesia	Bone Bay, Sulawesi	No	No
15.90	CW	2.630						2.82	Qatar	Doha	No	Yes
16.30	CW	1.500	0.59				9.60000	2.60	India	Karnataka and Goa	No	No
16.73	CW	1.130		F	2.07		7.52000	2.50	Thailand	Kung Krabaen Bay	No	Yes
16.73	CW	1.130		F	2.07		7.52000	2.50	Thailand	Kung Krabaen Bay, Chanthaburi	No	No
16.80	CW	1.200	-0.04	M	1.21	26.32		2.53	Iran	Bandar Abbas, Hormozgan	No	No
16.90	CW	1.700		M	2.50			2.69	India	Tamil Nadu	No	No
16.90	CW	1.300	-0.04	M	2.20			2.57	India	Karnataka	Yes	No
17.00	CW	1.400		F	1.50			2.61	India	Tamil Nadu	No	No
17.00	CW	1.400	-0.04	F	2.20			2.61	India	Karnataka	No	No
17.10	CW	1.600	-0.04	F	1.61			2.67	Thailand	Trang Province	No	No
17.30	CW	1.300	-0.08		2.50		9.60000	2.59	India	Karnataka	No	No
17.30	CW	0.680	-0.84	F	0.86			2.31	Indonesia	Lasongko Bay, central Buton	No	No
17.38	CW	1.200	-0.08	M	1.44			2.56	Indonesia	Pangkep	No	Yes

17.40	CW	1.600			1.54			2.69	India	Karnataka and Goa	No	Yes
17.61	CW	1.300			2.54			2.61	Philippines	Sorsogon Bay	No	Yes
17.79	CW	1.100	-0.04	F	1.13			2.54	Iran	Bandar Abbas, Hormozgan	No	No
17.90	CW	1.500	-0.04	M	1.61			2.68	Thailand	Trang Province	No	No
18.20	CW	0.910			1.07			2.48	Indonesia	Kendari Bay	Yes	No
18.50	CW	1.600		F	1.42			2.74	Iran	Persian Gulf and Oman Sea	No	No
18.50	CW	1.260	-0.00	M	1.27			2.63	Indonesia	Pati coast, central Jawa	No	No
18.64	CW	1.500	-0.06	F	1.27			2.72	Indonesia	Pangkep	No	Yes
18.70	CW	1.130	-0.00	F	1.18			2.60	Indonesia	Pati coast, central Jawa	No	No
19.10	CW	1.700		M	1.47			2.79	Iran	Persian Gulf and Oman Sea	No	No
19.50	CW	0.840		F				2.50	Philippines	Panay	No	Yes
19.50	CW	1.600		M	2.50		9.30000	2.78	India	Tuticorin	No	No
19.51	CW	1.000		F	2.11	29.00		2.58	India	Palk Bay and Gulf of Mannar	No	No
20.00	CW	0.870		M				2.54	Philippines	Panay	No	Yes
20.40	CW	0.970	-0.07	F	1.60			2.61	India	Karnataka	No	No
20.98	CW	0.840			1.82			2.57	Philippines	San Miguel Bay	No	Yes

21.00	CW	1.300		F	2.00		11.80000	2.76	India	Tuticorin	No	No
21.10	CW	1.140	-0.09	M	1.70			2.71	India	Karnataka	No	No
21.36	CW	0.870			1.85			2.60	Philippines	San Miguel Bay	No	No
22.30	CW	0.950		M	2.72	29.00		2.67	India	Palk Bay and Gulf of Mannar	No	No

13) Length-weight

Length-Weight Parameters for *Portunus Pelagicus*

Length-weight (a vs b) graph	[n=58]	Median Record No. 30 **a** = 0.1326 cm CW **b** = 2.9864 Ref. 117381

a	b	Doubtful?	Sex	Length (cm)	Length type	No.	Country	Locality
1.8368	1.720	Yes	male		CW	389	Philippines	Panay / 2002-2002
1.2035	1.850	Yes	female		CW	366	Philippines	Panay / 2002-2002
0.0216	2.340	Yes	male		CL	60	China	Hainan Island, North Bay / 1997-1999
0.9672	2.440	Yes	male		CL	419	Pakistan	Sindh and Balochistan coasts / 2015-2015
1.2974	2.511	Yes	male	3.2 - 6.1	CL	27	Egypt	Lake Timsah / 2014-2014
0.2040	2.560	No	male		CW	419	Pakistan	Sindh and Balochistan coasts / 2015-2015
0.3600	2.567	No	male		CW		Qatar	Ras Rakan to Al Wakrah / 2014-2014
0.2600	2.665	No	female		CW		Qatar	Ras Rakan to Al

								Wakrah / 2014-2014
0.9796	2.690	Yes	female	3.4 - 5.7	CL	77	Egypt	Lake Timsah / 2014-2014
0.3478	2.719	No	male	4.5 - 15.4	CW	170	India	Kakinada / 1979-1980
0.5248	2.720	Yes	female	7.1 - 11.8	CW	77	Egypt	Lake Timsah / 2014-2014
0.2171	2.725	No	mixed	4.5 - 15.4	CW	340	India	Kakinada / 1979-1980
0.2888	2.730	No	mixed		CL	897	Pakistan	Sindh and Balochistan coasts / 2015-2015
0.1120	2.748		female		CW	348	Iran	Bandar Abbas, Hormozgan / 2006-2007
0.1143	2.757		male		CW	424	Iran	Bandar Abbas, Hormozgan / 2006-2007
0.1198	2.790	No	mixed	7.0 - 17.0	CW	897	Pakistan	Sindh and Balochistan coasts / 2015-2015
0.1694	2.839	No	female	4.9 - 15.4	CW	170	India	Kakinada / 1979-1980
0.0855	2.860		female		CW	859	Indonesia	Kendari Bay / 2016-2016
0.8845	2.868		female	3.9 - 9.6	CL	414	Oman	Gulf of Oman and Arabian Sea / 2011-2012
0.1568	2.894	No	female		CW		Thailand	Kung Krabaen Bay / 2008-2009
0.0784	2.894		female		CW		Thailand	Kung Krabaen Bay, Chanthaburi

								/ 2008-2009
1.1700	2.910	No	male		CW		Philippines	San Miguel Bay / 2011-2012
0.9670	2.910	No	female		CL	478	Pakistan	Sindh and Balochistan coasts / 2015-2015
0.0834	2.921		male		CW		Thailand	Kung Krabaen Bay, Chanthaburi / 2008-2009
0.1668	2.921	No	male		CW		Thailand	Kung Krabaen Bay / 2008-2009
1.2100	2.940	No	mixed		CW		Philippines	San Miguel Bay / 2011-2012
0.8138	2.950	No	female		CW	478	Pakistan	Sindh and Balochistan coasts / 2015-2015
1.2500	2.970	No	female		CW		Philippines	San Miguel Bay / 2011-2012
0.9333	2.970	Yes	male	6.4 - 11.8	CW	27	Egypt	Lake Timsah / 2014-2014
0.1326	2.986	No	female	2.6 - 14.8	CW	260	Pakistan	Pakistan coast / 2004-2005
0.8212	3.000	No	female		CL	10	Iran	Persian Gulf / 2009-2009
0.8559	3.000	No	male		CL	8	Iran	Persian Gulf / 2009-2009
1.0000	3.000	No	female	3.4 - 7.0	CL	56	Egypt	Lake Bardaweel / 2014-2014
0.1302	3.009	No	mixed	2.3 - 14.8	CW	540	Pakistan	Pakistan coast / 2004-2005

0.1312	3.028	No	male	2.3 - 13.5	CW	280	Pakistan	Pakistan coast / 2004-2005
0.0679	3.056	No	female		CW	1076		Peel-Harvey estuary (32°32' S, 115°43' E) / 1980-1981
0.1148	3.110	No	male	5.2 - 11.5	CW	163	Bahrain	Barbar / 2004-2005
1.3490	3.130	No	female	7.0 - 13.5	CW	56	Egypt	Lake Bardaweel / 2014-2014
0.0605	3.132	No	mixed		CW	80	China	Hainan Island, North Bay / 1997-1999
0.1422	3.153	No	male	3.2 - 7.2	CL	56	Egypt	Lake Bardaweel / 2014-2014
0.4510	3.177		male	2.7 - 9.2	CL	584	Oman	Gulf of Oman and Arabian Sea / 2011-2012
0.0425	3.186		female		CW		Thailand	Trang Province / 2006-2007
0.1016	3.213	No	female		CW	70	China	Hainan Island, North Bay / 1997-1999
0.0404	3.219		male		CW		Thailand	Trang Province / 2006-2007
0.0285	3.221		female		CW	158	India	Karnataka / 2001-2005
0.0292	3.253		female	8.0 - 17.3	CW	106	India	Karnataka / 1992-1994
0.0356	3.259		female		CW		Indonesia	Pati coast, central Jawa / 2012-2013
0.0466	3.260	No	male		CW	694		Peel-Harvey estuary (32°32' S, 115°43' E) / 1980-1981

0.1820	3.284	No	mixed		CL	70	China	Hainan Island, North Bay / 1997-1999
0.0555	3.310		male		CW	784	Indonesia	Kendari Bay / 2016-2016
0.1976	3.330	No	female		CL	60	China	Hainan Island, North Bay / 1997-1999
0.0220	3.342		male		CW		Indonesia	Pati coast, central Jawa / 2012-2013
1.8100	3.360	No	mixed	3.6 - 17.0	CW		Philippines	Unspecified
0.0234	3.366	No	unsexed		CW		India	Karnataka and Goa
0.0597	3.404	No	male		CW	70	China	Hainan Island, North Bay / 1997-1999
2.7542	3.440	No	male	5.9 - 13.6	CW	54	Egypt	Lake Bardaweel / 2014-2014
0.0201	3.486		male		CW	156	India	Karnataka / 2001-2005
0.0132	3.617		male	8.1 - 16.7	CW	111	India	Karnataka / 1992-1994

14) Length-length

Length-length Parameters for *Portunus Pelagicus*

n=12

Unknown length	a	b	Known length	r	Length range (cm)			Sex of fish
CL	0.208	0.593	CW	0.97		-		male
CL	0.091	0.619	CW	0.96		-		female
CW	0.156	0.480	CL	0.87		-		male
CW	0.048	0.490	CL	0.9		-		female
CW	0.008	0.500	CL	0.92		-		female
CW	0.014	0.510	CL	0.95		-		male
CW	1.139	1.564	CL	0.92957	2.2	-	9.3	male
CW	0.499	1.640	CL	0.962393	2.7	-	8.5	female

CW	0.973	1.952	CL	0.983	2.7	-	9.2	male
CW	0.882	1.979	CL	0.984	3.9	-	9.6	female
OT	-0.269	0.848	CW	0.99		-		female
OT	-0.525	0.884	CW	0.99		-		male

15) Length-frequencies

(NA)

16) Morphometrics

(NA)

17) Morphology

(NA)

18) Larvae

(NA)

19) Recruitment

A term used by researchers to describe the addition of crabs or fish (juvenile or of legal size) to a population, either by reproduction or migration. Levels of recruitment of adult crabs to WA's blue swimmer crab populations fluctuate considerably. A range of environmental factors – including water temperature variations, the relative strength of wind and current systems, and the amount and timing of rainfall – can affect the survival and growth rates of crab larvae and juveniles. This in term leads to big fluctuations in the available crab harvest from time to time. Estuaries along WA's west coast, including the PeelHarvey near Mandurah, are under pressure from rapid population growth. This includes increases in recreational and commercial fishing activity, urban development and associated environmental change, which may also affect crab recruitment.

20) Abundance

(NA)

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