Table S1: Summary of surveys investigating the use of bait by recreational and subsistence anglers in South Africa

Reference	Area	Total interviewed	Main baits used	worms collected	% using worm bait	Categories of anglers interviewed
Lagoon or Bay areas						
Wynberg and Branch 1991	Langebaan, Western Cape Province	63	Sand and mud prawns	*Arenicola loveni*	<6%	27% subsistence, 73% recreational
Nel and Branch 2014	Langebaan, Western Cape Province	115	Sand and mud prawns	*Arenicola loveni*	1.60%	17% subsistence, 83% recreational
Estuaries						
Pradervand 1999	8 Eastern Cape estuaries	?	Prawns, pilchards	*Arenicola loveni*	~0.2%	
Jooste 2003	Gamtoos	?	Mud and sand prawns, bought squid, sardines, pilchards	*Arenicola loveni* and Coral worm*	<5	100% recreational
Cowley et al. 2004	East and West Kleinemonde	225	Sand and mud prawns, mullet	None	0	97–100% recreational
Cowley et al. 2004	Great Fish River	380	Sand and mud prawns, mullet	*Pseudonereis variegata*#, *Gunnarea capensis*$	? Not among top 3 or 4	~60% subsistence, ~40% recreational
Potts et al. 2005	Great Fish River	2628	Mud prawns	*Arenicola loveni*, *Gunnarea capensis*$	0.2–3.7%	?
Cowley et al. 2004	Kowie estuary	958	Mud and sand prawns, mullet	*Pseudonereis variegata*#, *Gunnarea capensis*$, but not collected from estuary	? Not among top 3 or 4	87% recreational
Hodgson et al. 2000	Knysna	77	Mud prawns	*Arenicola loveni* and “other”	3.90%	40% recreational; 60% subsistence
Napier et al. 2009	Knysna	~230	Mud prawns	Mainly *Arenicola loveni*, *Marphysa elityeni*, some *Diopatra* and *Pseudonereis variegata*	< 17%	Mostly subsistence
Cowley et al. 2013	Sunday's River	864	Mud and sand prawns, mullet	*Arenicola loveni*	6th most popular, no numbers provided	>90% recreational

Van der Westhuizen and Marais 1977	Swartkops	30	Mud and sand prawns	*Diopatra neapolitana*^	14.00%	Mostly recreational
Fielding 2003	Swartkops	65	Mud prawn, Sand prawns, pencil bait	*Arenicola loveni* and some *Diopatra*^	3.1% (2)	Subsistence
Fielding 2007	Swartkops	?	prawns and pencil bait	*Arenicola loveni*	4%	Subsistence
Open Shores						
Clarke and Buxton 1989	Port Elizabeth, rocky shore	2531	Abalone, Turbo, chitons, crabs, pilchards, prawns, sand mussel	None	0	Recreational and subsistence
Brouwer 1997	Stilbaai to Kei Mouth, shore	1556	Pilchard and squid, prawns	*Pseudonereis variegata*[#] and *Eunice aphroditois*	<5%	Mostly recreational?
Mann et al. 2003	Transkei - shore angling	341	Sardines, red bait, pink prawn	None	0	Recreational and subsistence
Open shores and estuaries						
MacKenzie 2005	Buffalo's to Tsitsikamma	429	Shop-bought: sardines, squid, pink prawn; red bait, sand prawns/mussels	Mostly *Arenicola loveni* and *Gunnarea capensis*[$], some *Pseudonereis variegata*[#]	<10%	>90% recreational

* The actual identity of this worm is uncertain, because the name “coral worm” has been applied to *Marphysa* and *Diopatra* species in the Eastern Cape (P Fielding, pers. comm.)

[#]species previously identified as *Pseudonereis variegata,* but previous name of *Pseudonereis podocirra* has recently been re-established (Kara et al. 2018)
[$]species previously known as *Gunnarea capensis*, but has been renamed *Gunnarea gaymardi*
^*Diopatra neapolitana* is not indigenous to South Africa, and the actual identity of the species collected in the study is therefore doubtful

References

Brouwer, S.L. (1998) An assessment of the South African east coast linefishery from Kei Mouth to Stil Bay. PhD thesis, Rhodes University

Clarke, J.R., Buxton, C.D. (1989) A survey of the recreational rock-angling fishery at Port Elizabeth, on the south-east coast of South Africa, South African Journal of Marine Science, 8: 1 183–194, DOI: 10.2989/02577618909504560

Cowley PD, Wood AD, Corroyer B, Nsubuya Y, Chalmers R. 2004. A survey of fishery resource utilisation on four Eastern Cape estuaries (Great Fish, West Kleinemond, East Kleinemond and Kowie). Protocols contributing to the management of estuaries in South Africa, with a particular emphasis on the Eastern Cape Province. Eastern Cape Estuaries Management Research Programme, Vol. III, Project C, Supplementary Report C5. Pretoria: Water Research Commission. pp 129–165.

Cowley, P.D., Childs, A.-R. and Bennett, R.H. (2013) The trouble with estuarine fisheries in temperate South Africa, illustrated by a case study on the Sundays Estuary, African Journal of Marine Science, 35: 1 117–128, DOI: 10.2989/1814232X.2013.789079

Fielding, P.J. 2003. The subsistence bait fishery in the Swartkops Estuary, Port Elizabeth, Eastern Cape. Prepared for Marine and Coastal Management, Department of Environmental Affairs and Tourism

Fielding, P.J. 2007. The subsistence bait fishery in the Swartkops Estuary, Port Elizabeth, Eastern Cape. Analysis of data collected by monitors December 2005 – June 2006. Prepared for Environmental Evaluation Unit University of Cape Town

Hodgson, A.N., Allanson, B.R. and Cretchley, R. (2000) The exploitation of Upogebia africana (Crustacea: Thalassinidae) for bait in the Knysna Estuary, Transactions of the Royal Society of South Africa, 55: 2 197–204, DOI: 10.1080/00359190009520444

Jooste, J.G. (2003) An assessment of bait availability, utilisation and management guidelines in Eastern Cape estuaries. MSc thesis. University of Port Elizabeth

Kara, J., Macdonald, A.H.H., Simon, C.A. Integrative taxonomic methods reveal an incorrect synonymisation of the South African *Pseudonereis podocirra* (Schmarda 1861) as the widespread *Pseudonereis variegata* (Grube 1866) from Chile. Invertebrate Systematics, in press

MacKenzie, B.L. 2005. An assessment of the shore baitfishery in the Eastern Cape. MSc thesis. Rhodes University 115 pp

Mann, B.Q., McDonald, A. M., Sauer, W. H. H. and Hecht, T. (2003) Evaluation of Participation in and Management of the Transkei Shore Linefishery, African Journal of Marine Science 25: 1, 79–97, DOI: 10.2989/18142320309504002

Napier, V. R., Turpie, J.K. and Clark, B.M (2009) Value and management of the subsistence fishery at Knysna Estuary, South Africa, African Journal of Marine Science, 31: 3 297–310, DOI: 10.2989/A JMS.2009.31.3.3.991

Nel, P. and Branch, G.M. (2014) The effect of bait collectors on stocks of *Callichirus kraussi* and Upogebia species in Langebaan Lagoon, African Zoology, 49: 1, 30–43, DOI: 10.1080/15627020.2014.11407618

Potts, W.M., Cowley, P.D., Corroyer, B., Naesje, T.F. (2005). Trends in fishery resource utilisation on the Great Fish River, NINA Report 50

Pradervvand, P. (1999). An assessment of recreational angling in Eastern Cape estuaries. MSc thesis. University of Port Elizabeth: 133 pp

Van Der Westhuizen, H.C. and Marais, J.F.K. (1977) stomach content analyses of *Pomadasys commersonni* from the Swartkops Estuary (Pisces: Pomadasyidae), Zoologica Africana 12: 2, 500–504, DOI: 10.1080/00445096.1977.11447596

Wynberg, R.P. and Branch, G.M. (1991) An assessment of bait collecting for *Callianassa kraussi* Stebbing in Langebaan Lagoon, Western Cape, and of associated avian predation, South African Journal of Marine Science 11: 1 141-152, DOI: 10.2989/025776191784287592

Supplementary material 2A

Differences in bait collecting activity by subsistence and recreational fishers in Knysna Estuary have implications for management and conservation

Please note:

1) This is the complete list of questions included in interviews, but not all responses/questions were analysed for this study.
2) Refer to S2B worm ID sheet for images that accompany question 30.

Interview questions for bait collectors in the Knysna Lagoon area.

Interview number (coded according to interviewer)_____

Interviewer information

Name_____ Date and time_____

Socioeconomic data					
1	Population group	Black	White	Coloured	Asian
2	Residency status	Local	Tourist		
3	Gender	Male	Female		
4	Age group	≤20	≤55	>55	
5	For how many years have you been collecting bait in Knysna?				
6	Employment status	Unemployed	Temp worker	Full employment	Retired/pension or disability grant
7	Reason for baiting	To sell, it's my primary income	To sell, as an extra source of income	For fishing for recreation.	To catch fish to either eat or sell.
		For a fishing competition			
Fishing practices					
8	Where how do you fish most often?	Boat	Railway Bridge	Thesen Jetty	Belvedere
		Loerie Park	Ashmead	Leisure Isle	KADA
		Point	Heads	Coney Glen	
9	Transportation to fishing/launch site	Walk	Cycle	Car	Boat
		Taxi			
10		less than half	half to 1	1–2	2–4

	Time spent fishing per outing (hours)	≥4			
11	Fishing method used	Handline (“Afrikaans tol”)	Planted lines	Rod	Other?
12	Do you catch anything you don’t use?	Yes	No		
13	What do you do with unwanted catch?	Throw back	Leave on bank	Sell	
Bait collecting and usage practices					
14	Where do you collect bait most frequently?	Leisure Isle	Loerie Park	Ashmead	Thesen Island
		KADA	Railway Bridge	Middle banks	Wherever fishing
15	How frequently do you collect bait/catch fish?	Once a week	Twice a week	More than twice a week	Holidays only
16	What do you collect? (tick as many boxes as necessary)	Mudprawn	Sandprawn	Ribbon/tape worm	Bloodworm
		Moonshine worm	Estuarine wonderworm	Musselworm	Other polychaete species
					Other
17	What is your preferred bait? Please rank 1 (most) to 8 (least).	Mudprawn	Sandprawn	Ribbon/ tapeworm	Bloodworm
		Moonshine worm	Estuarine wonderworm	Musselworm	
		Other polychaete species		Other	
18	Do you use different bait to target specific fish?	Yes	No	If yes, please explain.	
19	Method of bait collecting	Tin can	Pusher	Pump	Fork
		Spade	Wire	Other	
20	Time spent collecting bait (hours)	Few minutes when bait needed	less than quarter	quarter to half	half to 1
		1 to 2	The entire low tide		
21	What do you do with unused bait?	Don’t have unused bait	Discard	Put in water	Put in holes
		Sell	Keep for following trip	Give away	

22	Are you aware of bait restrictions?	Yes	No		
23	Is it reasonable to have bait restrictions	Yes	No	Don't know	
24	Why are there restrictions?	Don't know	To protect stocks	So that everyone can have	Prevent wastage
		Protect the environment	Don't want us to profit from baiting		
25	What activity related to fishing/baiting do you think causes the most environmental damage to the lagoon?	Pushing prawns	General trampling	Digging	Littering
		Damaging vegetation	Boating	Don't know	
26	What should the bait restrictions (per day) be for prawns?	<50	50 (current)	2 × current	3 × current
		4 × current	6 × current	Don't know	
27	What should the bait restrictions (per day) be for bloodworm?	<5	5 (current)	2 × current	3 × current
		4 × current	6 × current	Don't know	
28	What should the bait restrictions (per day) be for polychaete worms?	<10/ <250 ml	10/ 250 ml (current restrictions)	2 × current	3 × current
		4 × current	6 × current	Don't know	
29	Over the years, have worm bait numbers	Decreased	Stayed the same	Increased	
30	Identify the worms in the photographs (see Appendix 2)	Musselworm	Coralworm	Wonderworm	Estuarine wonderworm
		Moonshine worm	Bloodworm		
31	What conservation actions do you feel are appropriate to ensure continued availability of bait species?				