BAIT COLLECTING ACTIVITY IN THE KNYSNA ESTUARY, 20 YEARS AFTER HODGSON ET AL. 2000

A symphony in progress

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BAITING RESEARCH IN KNYSNA SINCE1995

- Hodgson et al. (2000)
  - 77 fishermen interviewed
    - Four groups
      - Locals (60%)
        - Subsistence (fishing only source of income)
        - Supplementary (fish provides additional source of income)
        - Leisure/recreational
      - Tourists (40%)

93%

- All locals and most tourists collected prawns (*Upogebia africana*) for bait
- 7% of tourists used bloodworm (*Arenicola loveni*) and ribbon worm (*Gorgonorhynchus dayi)*

Upogebia africana

Photo credit: Kyle Smith

BAITING RESEARCH IN KNYSNA SINCE1995

- Napier et al. (2009) interviewed 90 subsistence & supplementary fishermen
  - Prawns still main bait species targeted (73%)
  - Worms targeted
    - Bloodworm (*Arenicola,* 10%)
    - Wonderworm (*Marphysa*, 7%)
    - Nemertean ribbon worm (*Gorgonorhynchus dayi,* 6%)
    - Other polychaetes
      - Musselworm (*Pseudonereis variegata*), moonshine worm (*Diopatra* spp)

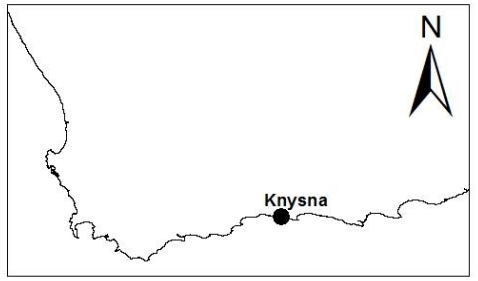
[1] Branch et al. 2010

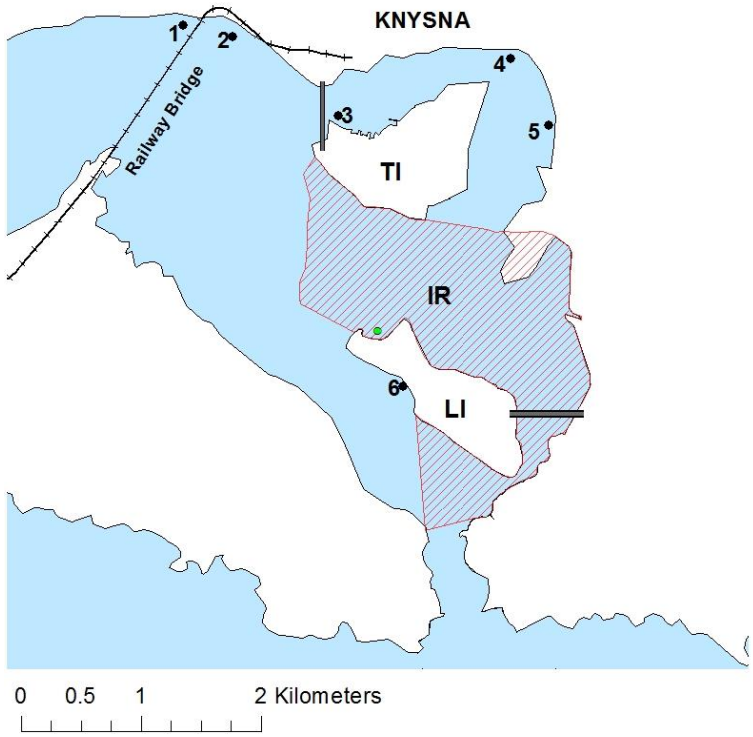
AIMS AND RESEARCH QUESTIONS

- Revisit Hodgson et al. (2000)
  - Has increased use of polychaetes continued?
    - What is used and by whom?
  - Has awareness of legal restrictions, conservation and management increased?
  - Do the responses differ among fishing categories (i.e., subsistence, supplementary, recreational (incl. tourists)?
  - Guide future studies and management of stocks

METHODS AND MATERIALS

- Interview baiters using similar questionnaire at the same sites as in Hodgson et al. (2000)
  - December 2015, Easter & winter holidays 2016
  - Daytime lowtide





TI = Thesen Island
LI = Leisure Isle
IR = Invertebrate reserve

METHODS AND MATERIALS

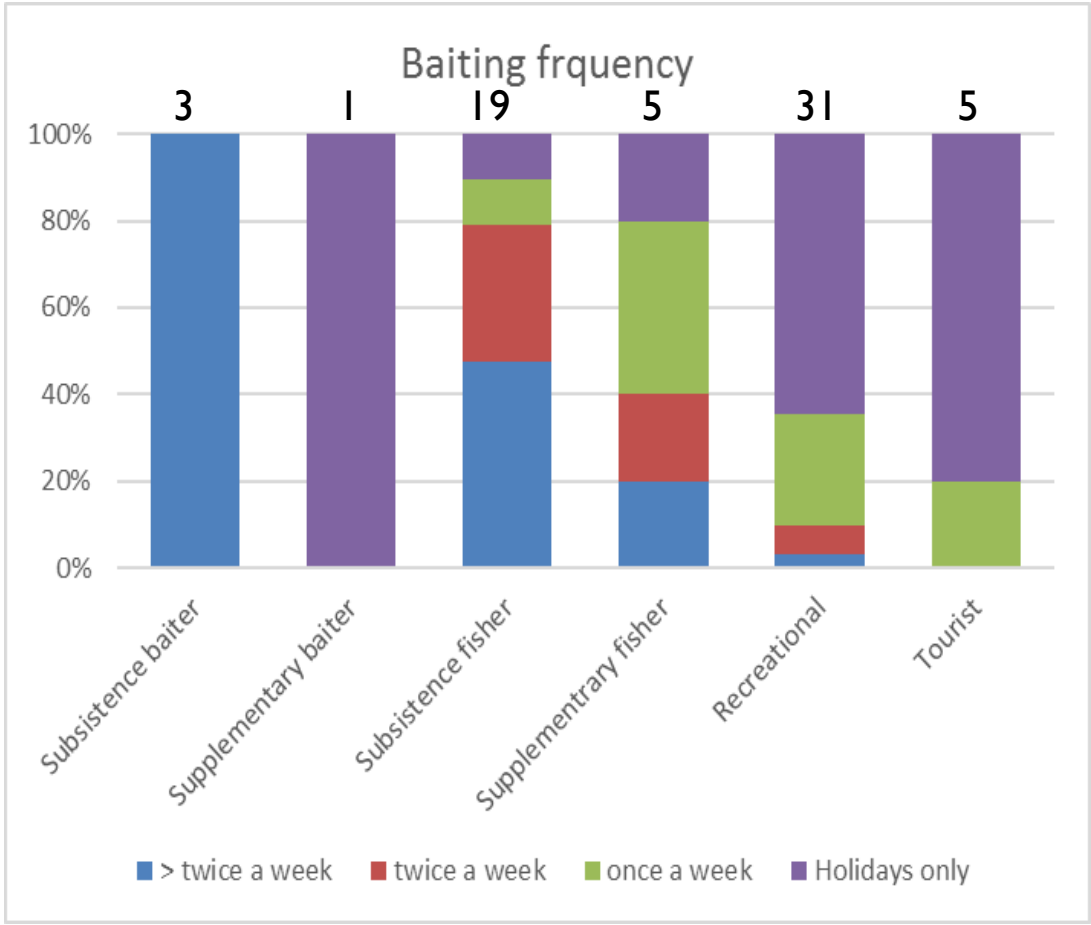
- Demographic information
  - Residency status
  - Reason for baiting/fishing, employment status
- Baiting practises
  - Frequency of baiting, bait used
- Management & conservation
  - Reasons for the restrictions, desired daily bag limits
  - What causes most damage to the estuary and what can be done to protect bait stocks?

DEMOGRAPHICS

Category	Hodgson et al. 2000 (n = 77)	Current study (n = 71)	
Subsistence baiter		3 (4%)	Local baiters/fishermen
Subsistence fisher	**38 (49.5%)**	**19 (27%)**	
Supplementary baiter		1 (1%)	
Supplementary fisher	5 (6.5%)	5 (7%)	
Recreational fisher	**3 (4%)**	**31 (44%)**	
Recreational/ supplementary		7 (10%)	
Tourists	**31 (40%)**	**5 (7%)**	

FREQUENCY OF BAITING

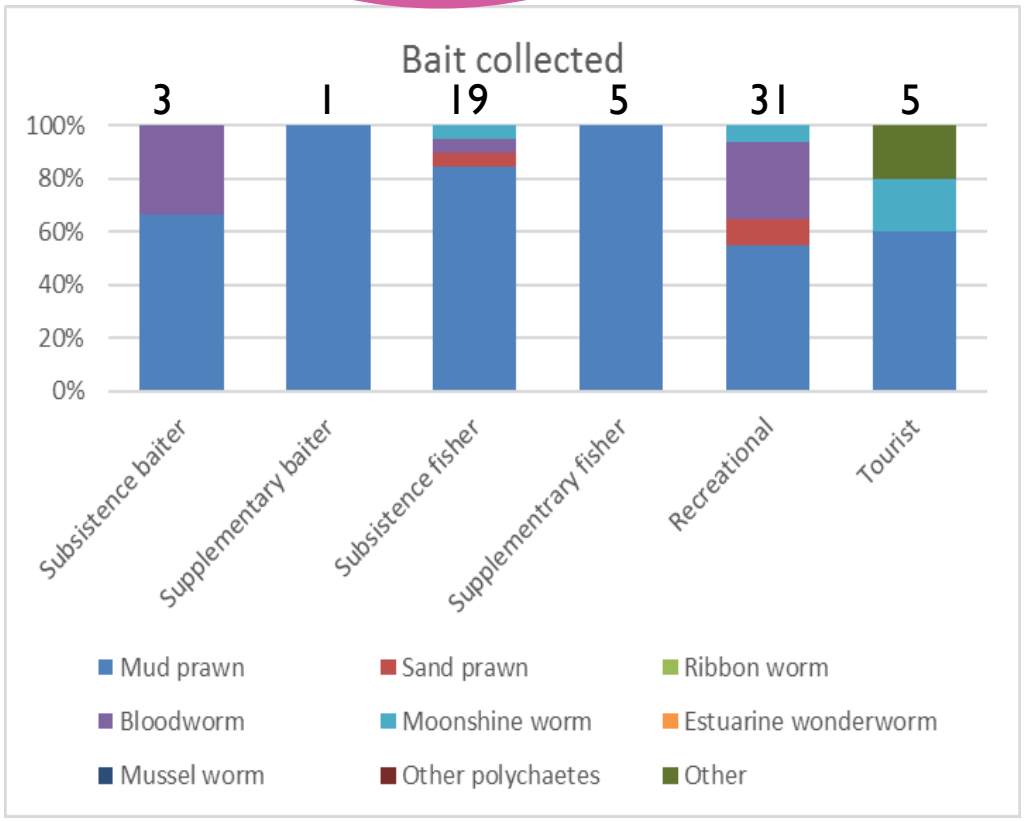
- Recreational fishermen mostly active only during holidays
- Supplementary and subsistence baiters & fishermen mostly active every week



BAIT SPECIES COLLECTED

Mudprawn	Sandprawn	Ribbonworm	Bloodworm	Moonshine worm	Estuarine wonderworm	Musselworm
69.7%	6.1%	0	18.2%	6.1%	0	0

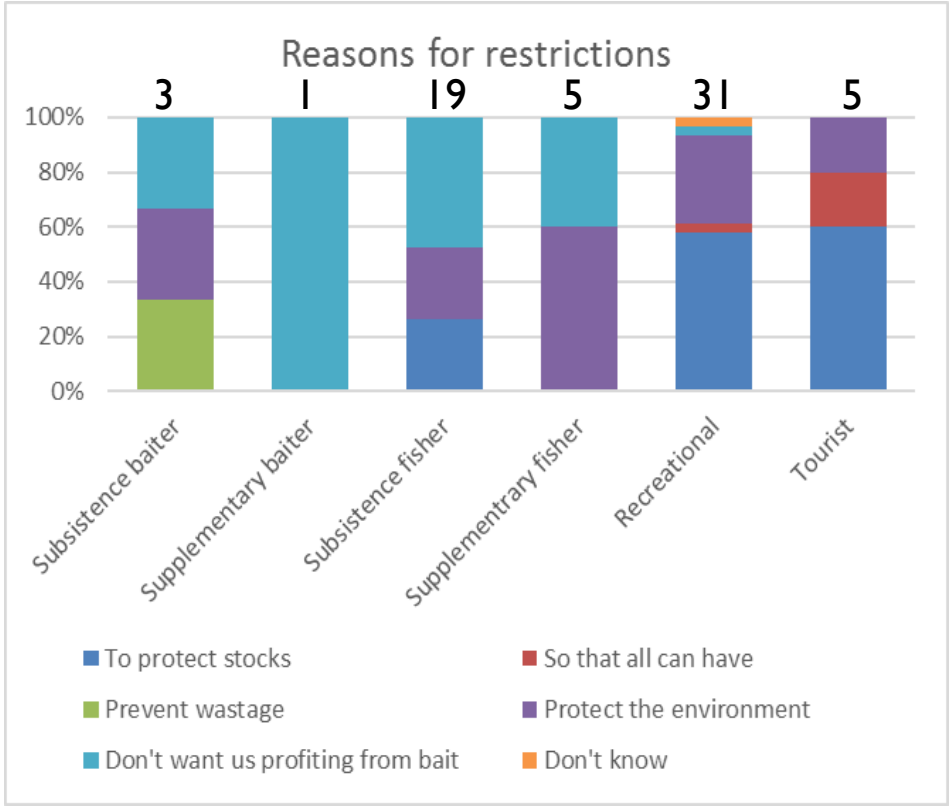
- All categories of baiters and fishermen collected mainly prawns
- Recreational fishermen tended to collect polychaetes more frequently
  - Moonshine worms replaced wonderworm as 2nd most popular polychaete bait



MANAGEMENT & CONSERVATION

Reasons for restrictions	To protect stocks	So that everyone can have	Prevent wastage of bait	Protect the environment	Prevent profiting from bait	Don't know
Hodgson et al. 2000 (%)	**30.4**	6.5	23.9	4.3	6.6	28.3
Current study (%)	**37.9**	1.5	3	**33.3**	**22.7**	1.5

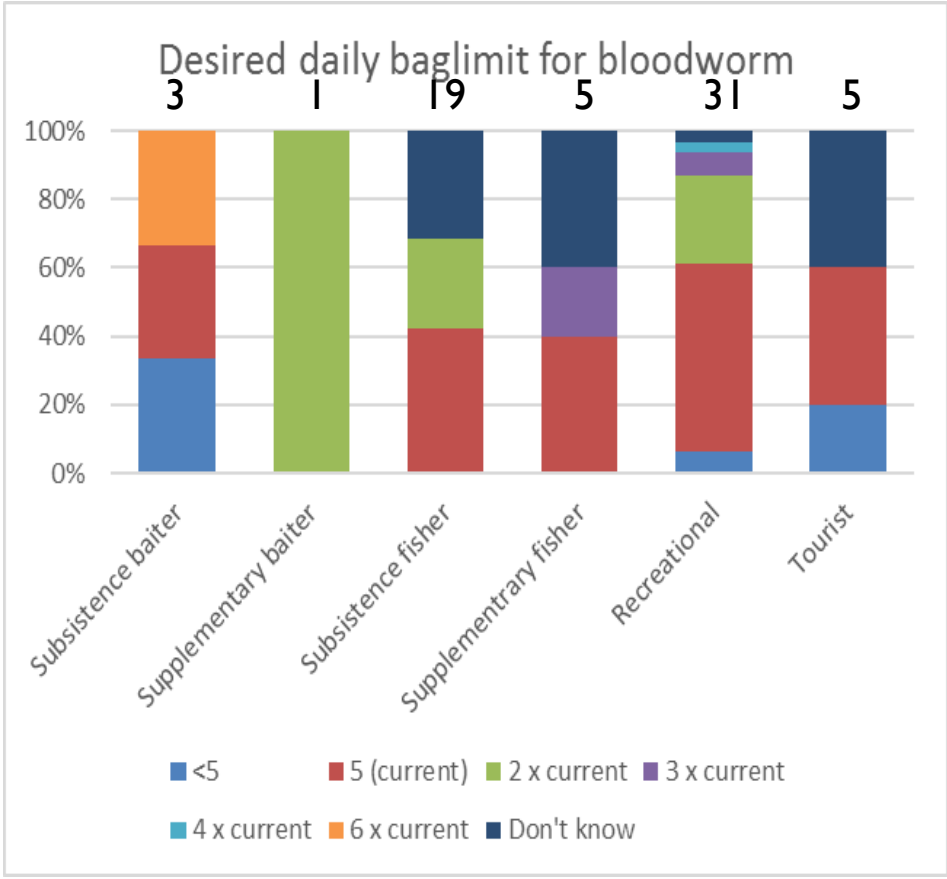
- Increase in awareness
  - Most interviewees could provide a reason for the restrictions
- 'To protect stocks' still most frequently quoted reason, but now followed by 'to protect environment'
- >20% felt that they were to prevent the baiters from profiting from selling bait which is illegal
  - Does happen



MANAGEMENT & CONSERVATION

Desired bag limits per day	Less than current	Current	2 x current	3 x current	4 x current	6 x current	Don't know
Bloodworm (5)	4.5	**48.5**	**22.7**	6.1	1.5	1.5	15.2

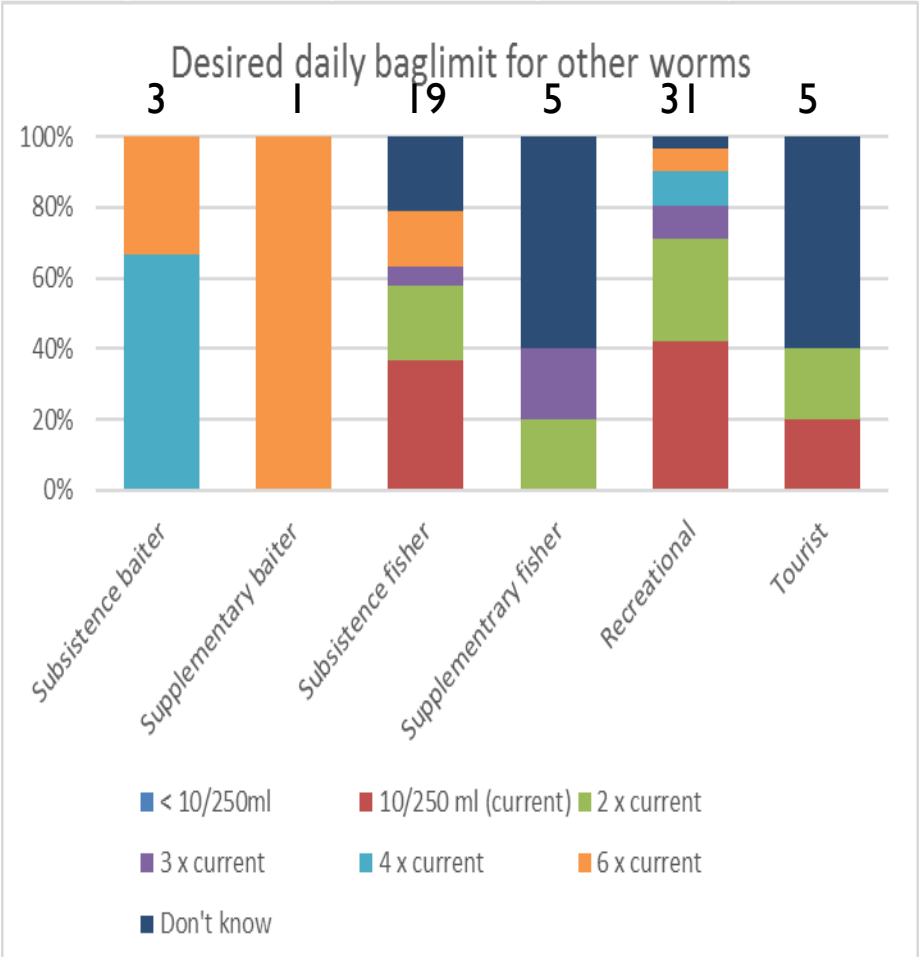
- > 50% satisfied with bag limit of 5 bloodworm per day
- Similar opinions across categories



MANAGEMENT & CONSERVATION

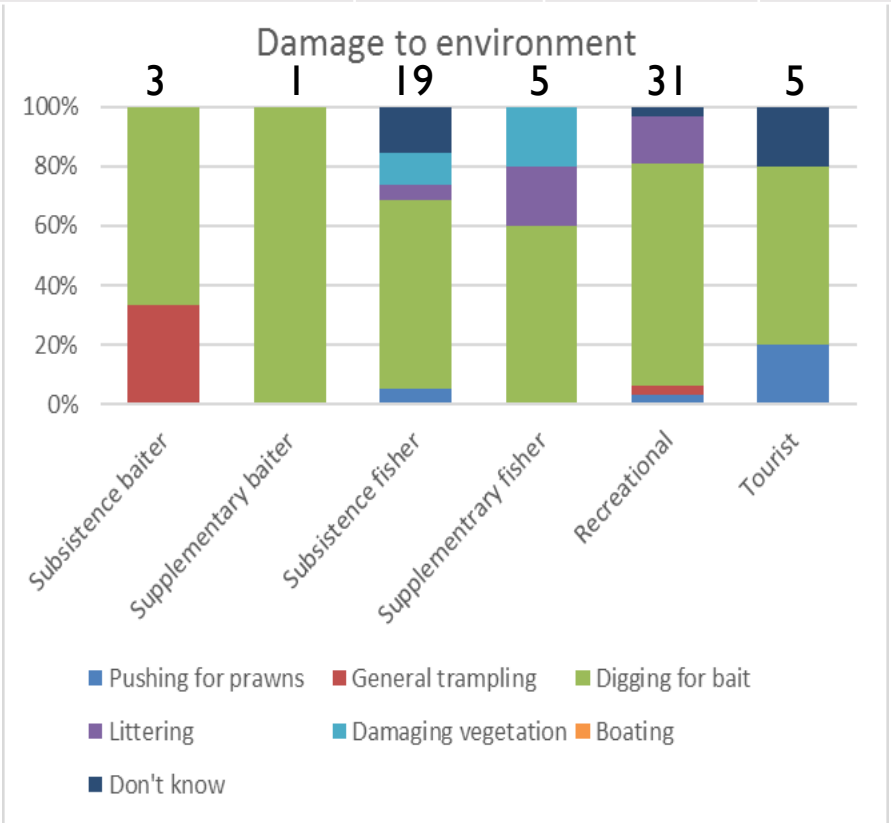
Desired bag limits per day	Less than current	Current	2 x current	3 x current	4 x current	6 x current	Don't know
Other polychaetes (10/ 250ml)	0	**33.3**	**24.2**	7.6	7.6	**10.6**	16.7

- Only a third were satisfied with current bag limit (10 individual or 250ml)
  - Recreational & subsistence fishermen
- ~40% want to take out more, up to 60 per day
  - Across most categories



BAITING ACTIVITIES DAMAGING TO THE ESTUARY

Activity most damaging to lagoon	Pushing prawns	General trampling	Digging (spade/ fork)	Littering	Damaging vegetation	Boating	Don't know
Hodgson et al. 2000 (%)	10.8	4.5	**34.8**	15.2	0	6.5	28.2
Current study (%)	3	3	**68.2**	12.1	4.5	3	6.1



- No one admitted to collecting by digging with spades and forks
- Only 7% thought that stopping digging would help to conserve stocks
- Rotate baiting and no-baiting zones
  - Conservation or increasing access to bait?

CONCLUSIONS & FUTURE STUDIES

- Polychaetes are being used more frequently than 20 years ago
  - Mostly among recreational fishermen who are mainly active during the holidays
    - Pressure on worms might not be critical
    - Subsistence & supplementary fishermen prefer more easily collected prawns
  - Many baiters would like daily bag limits to be increased, particularly for non-bloodworms
    - Populations studies needed
  - Increased use of *Diopatra* spp
    - Identify spp

CONCLUSIONS AND FUTURE STUDIES

- Awareness of legal restrictions, conservation and management appears to have improved
  - But suggestions to improve conservation at odds with perception of what causes most damage
    - Rotating baiting and no-baiting zones may not reduce the effects of digging,
      - might lead to more widespread damage
      - Population studies needed!

ACKNOWLEDGEMENTS

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jou kennisvennoot • your knowledge partner

South African
NATIONAL PARKS

KNYSNA
BASIN
PROJECT