

[10.1071/MF24099](https://doi.org/10.1071/MF24099)

*Marine and Freshwater Research*

### Supplementary Material

#### **The life (history), diet and death of the blackspot shark (*Carcharhinus sealei*) from South-east Asia**

*N. Clark-Shen*<sup>A,\*</sup>, *A. Chin*<sup>B</sup>, *J. Domingos*<sup>A</sup>, and *N. Hutchinson*<sup>A</sup>

<sup>A</sup>School of Science and Technology, Tropical Future Institute, James Cook University, Singapore 387380, Singapore.

<sup>B</sup>Centre for Sustainable Tropical Fisheries and Aquaculture, James Cook University, Townsville, Qld 4811, Australia.

\*Correspondence to: N. Clark-Shen, School of Science and Technology, Tropical Future Institute, James Cook University, Singapore 387380, Singapore. Email: [naomi.clarkshen@my.jcu.edu.au](mailto:naomi.clarkshen@my.jcu.edu.au)

## Questionnaire

### **(a) On general fishery the sample was caught from:**

1. What depth is the longline usually set at (if a range, please indicate)
2. How long is the longline and how many hooks does each longline have
3. How far from shore is the longline set (if a range, please indicate)
4. What bait is used on the longline
5. What is the target animal for this fishery or is the fishery mix-species (any species are targeted as every species has a use)
6. How long (hours/days) does the fishing boat go out for at a time & what time are sharks usually caught
7. Do you practice any catch and release with any animals currently

### **(b) On the species itself (blackspot shark):**

1. Have you noticed a decline in their numbers over the years
2. When the longline is pulled in, is the *C. sealei* alive or dead
3. Have you observed any seasonality in when you catch them and what do you attribute this too (e.g. change of fishing location? Monsoon?)
4. Have you observed a month(s)/season when particularly small animals are pulled in (e.g. young animals)
5. How valuable or important is this species to your business:
  - a) *This species is important for my business and not catching it would affect me*
  - b) *This species is fairly important for my businesses and not catching it would affect me somewhat*
  - c) *This species is not important for my business and not catching it would not affect me*

### **(c) On the supply chain:**

1. Is the catch aggregated at any island before being imported into Singapore
2. Is the catch 'landed' at JFP and then driven to your warehouse

### **(d) On market:**

1. Who are your main buyers of *C. sealei* in Singapore
2. How much do you sell them for in Singapore
3. Has the market demand for *C. sealei* changed over the years
4. Has the market demand for sharks in general changed over the years
5. Why was this species in particular favoured for their meat

(e) *On solutions:*

1. Do you think *C. sealei* could benefit from improved fishery management to help their numbers?
  - a) *Yes*
  - b) *No*
2. What do you think would be suitable and feasible measure to help *C. sealei* populations (tick all that apply)
  - a) *No measures needed – the species seems to be doing fine with current rates of fishing*
  - b) *Release of all C. sealei caught (e.g. removing species from the fishery)*
  - c) *Release of certain C. sealei and retention of others (e.g. releasing animals over or under a certain size)*
  - d) *Release of C. sealei during a particular season only (e.g. release animals for a few months of the year)*
  - e) *Set a quota to limit that number of animals that can be caught per month or year*
  - f) *Set up more Protected Areas to better protect particular habitats from fisheries*
  - g) *Other*
3. If you could not catch/sell or could only catch/sell fewer of *C. sealei* than currently, would you replace this species with another one (e.g. become more reliant on another species?)

**Table S1. Results of two-way analysis (ANOVA) for the Hepatosomatic index (HSI) for male ( $n=41$ ) and female ( $n=30$ ) Blackspot shark (*Carcharhinus sealei*) for which liver weight was recorded, with significant results marked with an asterisk (\*).**

	<b>Sum of squares</b>	<b>d.f.</b>	<b>Mean square</b>	<b>F</b>	<b>P</b>
Sex	3.36	1	3.356	5.61	0.0212*
Month	4.31	6	0.718	1.2	0.3188
Sex × Month	4.5	5	0.9	1.5	0.2023
<b>Residuals</b>	<b>35.31</b>	<b>59</b>	<b>0.598</b>		
Sex	3.36	1	3.356	5.17	0.0261*
Maturity	0	1	0	0	0.9866
Sex × Maturity	0.01	1	0.007	0.01	0.92
<b>Residuals</b>	<b>44.11</b>	<b>68</b>	<b>0.649</b>		
Maturity	0.03	1	0.0255	0.04	0.843
Month	5.8	6	0.9664	1.5	0.194
Maturity × Month	3.61	5	0.722	1.12	0.36
<b>Residuals</b>	<b>38.04</b>	<b>59</b>	<b>0.6448</b>		

Interaction of three variables could not be calculated due insufficient data.