Shark fishing in the Louisiade Archipelago,
Papua New Guinea
Socioeconomic characteristics and policy options

Simon Vieira, Jeff Kinch, Luanah Yaman and William White

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Socioeconomic characteristics and policy options
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Collaborators: CSIRO, PNG National Fisheries Authority, James Cook University and doMar Research

Presented by Simon Vieira
doMar Research
Friday 5th February 2016
The policy issue for PNG’s small-scale sector

PNG’s small-scale shark catches most likely need to be better managed…..

=> vulnerable to overexploitation
=> evidence of increasing catches

…..but the impacts of management may be significant for its small-scale fishers

=> few income and food opportunities
=> shark fin is the perfect commodity
=> sea cucumber fishery closure

Key research questions:
1. How dependent are PNG communities on shark fishing?
2. What management approaches might be appropriate?
Case study: Louisiade Archipelago, Milne Bay
The research

Fieldwork data collection
Focus group discussions with fishers
Interviews with small-scale buyers
The research

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Interviews with large-scale buyers in Alotau
The research

Fieldwork data collection
Focus group discussions with fishers
Interviews with small-scale buyers
Interviews with large-scale buyers in Alotau

Data analysis
Collected data: interview data, price lists and receipts
PNG National Fisheries Authority (NFA) buyer data
Results: socioeconomic context

Communalistic values
Subsistence and trading prevalent
Cash economy is relatively new
Few sources of income
  - Shark consistently cited as the most important
  - Previously it was sea cucumber
  - Others: trochus shell, fresh fish, copra (previously), pearl shell, crayfish
Results: the shark fishery

Family activity
2-4 week trips, camp on islands
Vessels: dinghy or “sailaus”
Demersal longlining
Focused on shark fin
Two buyers in Alotau
Currently unmanaged
“Shark are harder to catch”
“Smaller shark are now caught”
Results: shark fin production

Kilograms of dried shark fin produced per month

Source: NFA buyer data for purchases from sellers in the Louisiade Rural LLG
## Results: shark fin production

| Multiple R | 0.939 |
| R Square   | 0.882 |
| Adjusted R Square | 0.845 |
| Standard Error | 43.613 |
| Observations | 30.000 |

### ANOVA

<table>
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<th></th>
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<th>SS</th>
<th>MS</th>
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<td>Regression</td>
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<td>313,904</td>
<td>44,843</td>
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<td>Residual</td>
<td>22</td>
<td>41,846</td>
<td>1,902</td>
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<td>Total</td>
<td>29</td>
<td>355,750</td>
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### Coefficients

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<tr>
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<th>Coefficients</th>
<th>Standard Error</th>
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<th>P-value</th>
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<td>Intercept</td>
<td>-260.8</td>
<td>119.388</td>
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<td>Sea cucumber open</td>
<td>68.1</td>
<td>24.804</td>
<td>2.745</td>
<td>0.012</td>
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<td>0.014</td>
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<td>Apr Q</td>
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<td>49.8</td>
<td>24.614</td>
<td>2.025</td>
<td>0.055</td>
<td>-1.205</td>
<td>100.887</td>
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<td>Sept 08 outlier</td>
<td>473.8</td>
<td>48.530</td>
<td>9.763</td>
<td>0.000</td>
<td>373.146</td>
<td>574.435</td>
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<tr>
<td>Fin price</td>
<td>1.8</td>
<td>0.842</td>
<td>2.143</td>
<td>0.043</td>
<td>0.058</td>
<td>3.550</td>
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<td>Post-Dec 12</td>
<td>119.2</td>
<td>25.712</td>
<td>4.637</td>
<td>0.000</td>
<td>65.893</td>
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Results: shark fin production

Supply of fin increases with price

Seasonality confirmed
  - Increased production at low food times

Production was higher when the sea cucumber fishery was open
  - Stronger links to buyers?
  - More time spent “on the water” harvesting?
  - More cash to operate dinghies?

Elevated production post December 2012
  - Sea Cucumber closure extension?
  - Government provided transport boat?
Results: dependence on shark fin income

Income from key marine resource commodities for Louisiade LLG (real terms, 2014 forecasted)
Key findings relevant to the policy issue

PNG’s shark catches most likely need to be better managed…..
Anecdotal evidence of stock declines
Trends in shark fin production unexpected
Shark fin production is now increasing and could increase further with:
  • Price increases
  • Further capital investment to increase market access
  • Reopening of the sea cucumber fishery

…..but the impacts of management may be significant for its small-scale fishers
Socioeconomic dependence is high
  • Shark fin is now the major income source
  • An integral part of risk management strategies for consumption
Potential policy recommendations

1. Allocate property rights to individual wards/communities
   • Practical, low cost
   • Discourages race-to-fish incentives (between islands)
   • Complements communal characteristics
   • Uses established monitoring processes
   • Encourages community based fishery management (CBFM)
   • However, shark mobility may reduce resource stewardship incentives

2. Develop alternative livelihood strategies

3. Manage/prevent illegal commercial longlining activity
Potential policy recommendations

Kilograms of dried shark fin produced per month
Source: NFA buyer data

Sale of fin collected from a grounded illegal large-scale longliner
Thank you (or “ateoa” in Misiman)