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# **Shark fishing in the Louisiade Archipelago, Papua New Guinea**

## **Socioeconomic characteristics and policy options**

Simon Vieira, Jeff Kinch, Luanah Yaman and William White

Contributed presentation at the 60th AARES Annual Conference,  
Canberra, ACT, 2-5 February 2016

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# Shark fishing in the Louisiade Archipelago, Papua New Guinea

## Socioeconomic characteristics and policy options

Simon Vieira, Jeff Kinch, Luanah Yaman and William White

Funded by: the Australian Centre for International Agricultural Research  
Collaborators: CSIRO, PNG National Fisheries Authority, James Cook University and doMar Research



Presented by Simon Vieira  
doMar Research  
Friday 5<sup>th</sup> 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

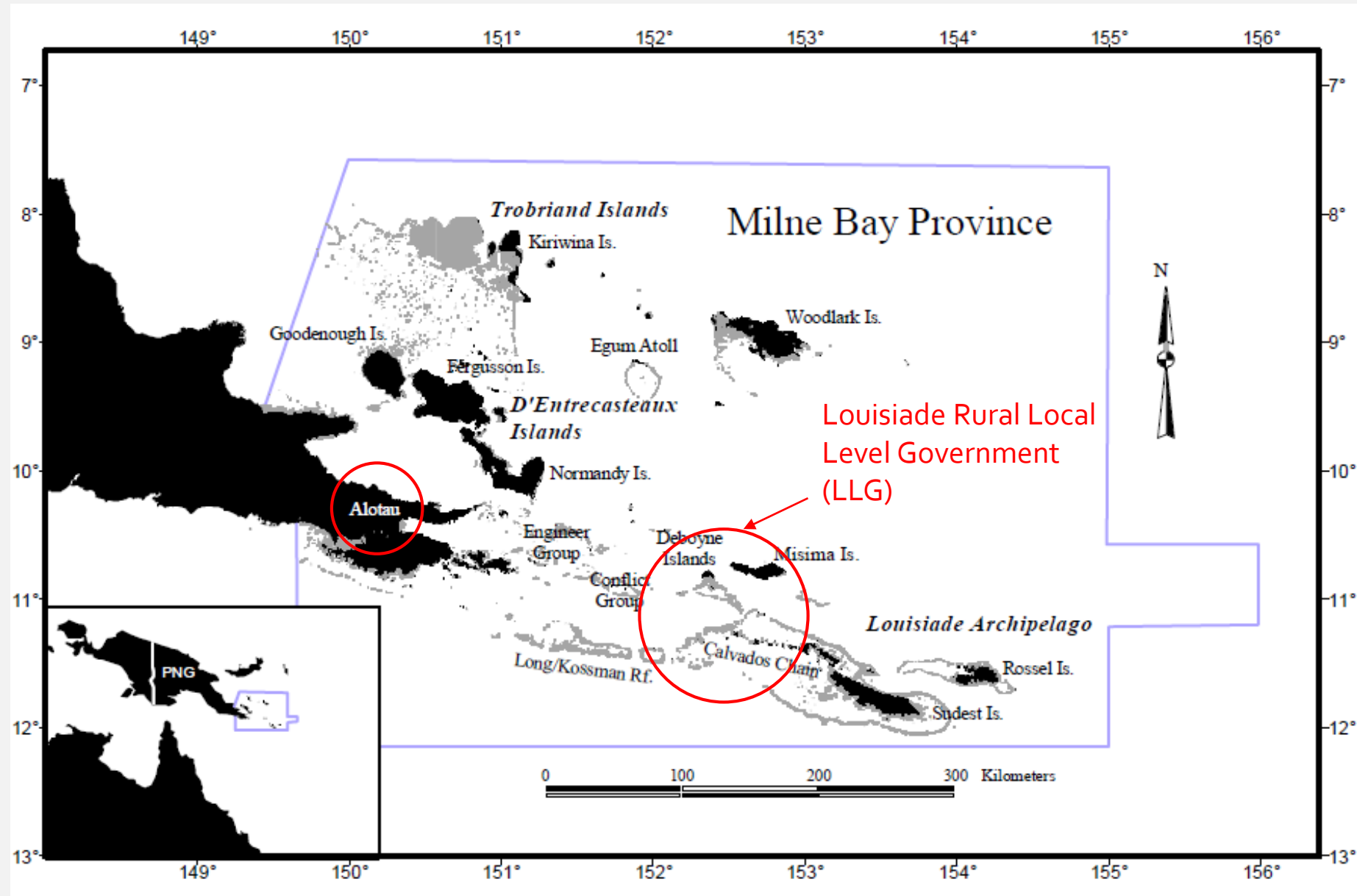
=> shark fin is the perfect commodity

=> 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





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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

INVOICE / STATEMENT No. 0472818

DATE: 26/10/12

FRED

KUJIRAHUA

FROM:

BIDANABUANA

ORDER No.

0.81	Pectoral fin	230	186	30
0.5	"	612	145	43.50
0.8	"	613	110	67.10
0.16	"	614	80.4	12.80
0.7	Dorsal fin	612	145	29.00
0.26	"	613	110	6.60
0.13	"	614	80	10.40
0.25	Caudal fin	61	415	103.75
0.19	"	613	95	37.05
0.05	"	614	110	5.50
0.48	Belly fin	15	7	20

509.20



# 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

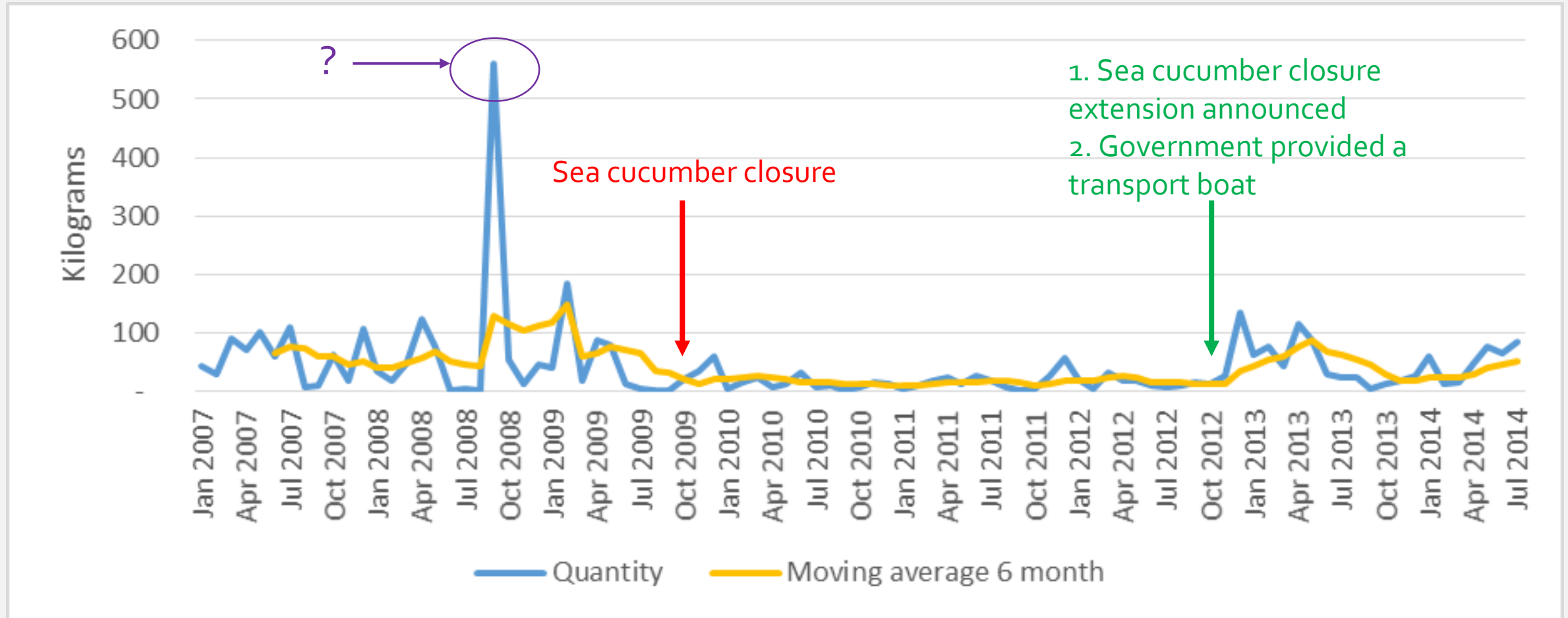
Currently unmanaged

*“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	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	7	313,904	44,843	23.576	0.000	
Residual	22	41,846	1,902			
Total	29	355,750				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-260.8	119.388	-2.185	0.040	-508.441	-13.248
Sea cucumber open	68.1	24.804	2.745	0.012	16.655	119.534
Jan Q	63.0	23.726	2.654	0.014	13.763	112.173
Apr Q	99.7	23.797	4.189	0.000	50.325	149.029
Oct Q	49.8	24.614	2.025	0.055	-1.205	100.887
Sept 08 outlier	473.8	48.530	9.763	0.000	373.146	574.435
Fin price	1.8	0.842	2.143	0.043	0.058	3.550
Post-Dec 12	119.2	25.712	4.637	0.000	65.893	172.541



# Results: shark fin production

Supply of fin increases with price

Seasonality confirmed

- Increased production at low food times

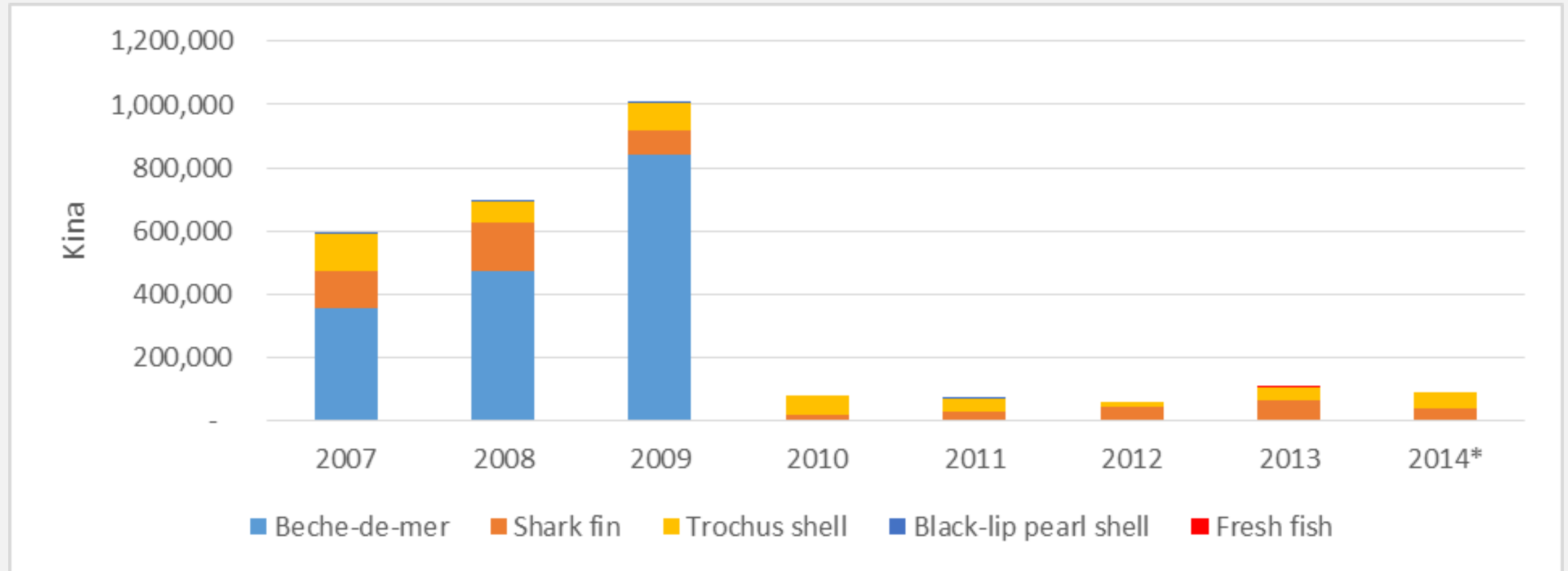
Production was higher when the sea cucumber fishery was open

- 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

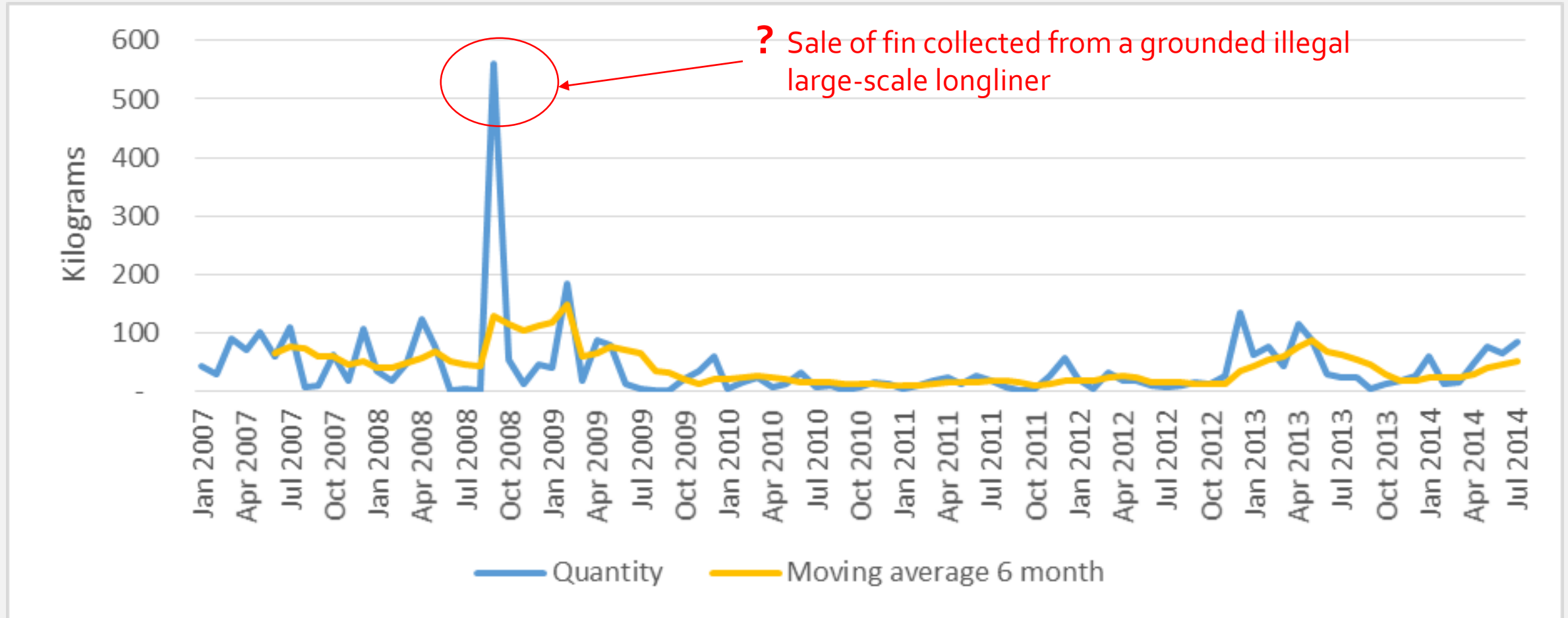
- Shark fin is now the major income source
- An integral part of risk management strategies for consumption

# 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

# Thank you (or “ateoa” in Misiman)



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