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WESTERN AUSTRALIAN FISHERIES AND AQUACULTURE INDUSTRY 2017/18: ECONOMIC CONTRIBUTIONS SUMMARY

Presented by the Fisheries Research and Development Corporation and the Institute for Marine and Antarctic Studies.
Economic estimates provided by BDO EconSearch.

FRDC UNIVERSITY of TASMANIA IMAS BDO

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Western Australian Fisheries and Aquaculture Industry 2017/18: Economic Contributions Summary
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2019

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ACKNOWLEDGMENTS

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IMAGE CREDITS

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PREFACE

This report presents a summary of the economic contribution of Western Australia's fisheries and aquaculture industries to the Western Australian community.

This work is an exciting step forward that lays the groundwork for the Western Australian seafood industry to celebrate its economic contributions and to showcase these to its communities and to Western Australians in general. It also provides the starting point for monitoring contributions to Western Australia's economic prosperity over time.

The FRDC on behalf of the Australian Government funded the *National Fisheries and Aquaculture Industry Contributions Study (FRDC project 2017-210)* to produce evidence of industry's contributions. The project was undertaken by the Institute for Marine and Antarctic Studies, University of Tasmania. As part of this project, BDO EconSearch was commissioned to provide an estimate of the economic contribution of Australia's fisheries and aquaculture industries in each state and territory to the Australian community, and to the relevant state or territory community, that is aimed at helping industry tell the story of its contribution.

This summary presents the results of this study for Western Australia.

This is the first time the economic contribution of the Western Australian seafood industry has been reported at the state and national level. Estimates are based on the best available data and most appropriate methods given data availability. Full results are provided in the *Australian Fisheries and Aquaculture Industry 2017/18: Economic Contributions Estimates Report* and demonstrate the nationally consistent approach.

Project Steering Committee, National Fisheries and Aquaculture Industry Contributions Study (FRDC project 2017–210)

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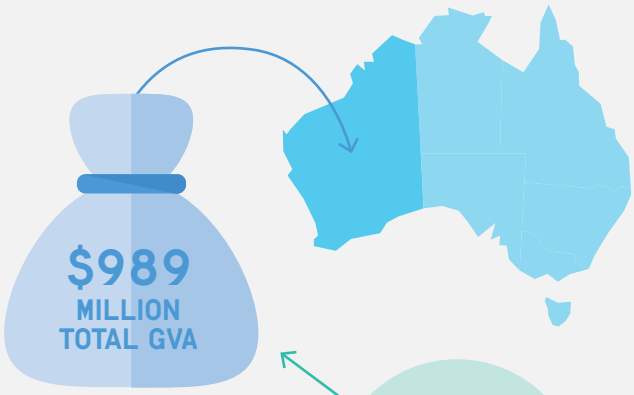
CONTRIBUTING TO WESTERN AUSTRALIA'S ECONOMIC PROSPERITY

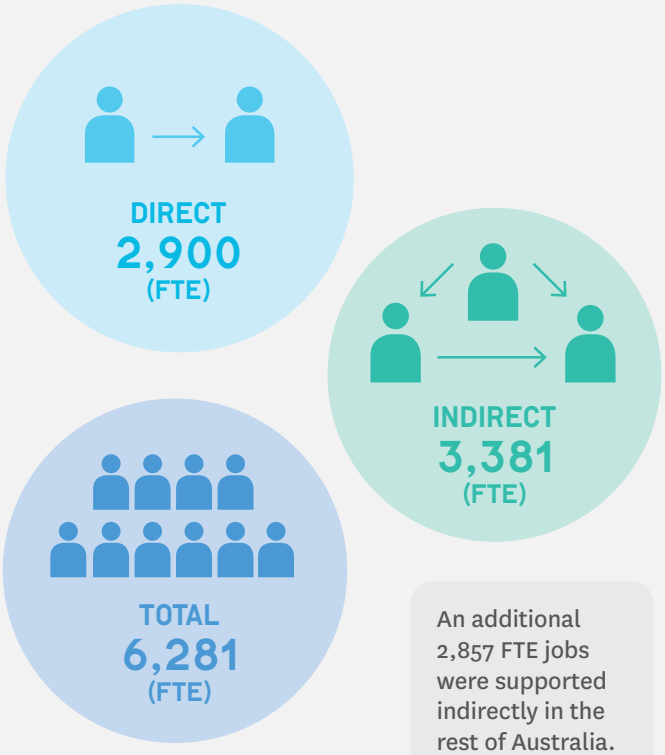
ECONOMY

In 2017/18, WA's fishing, aquaculture and associated processing industries contributed $989 million dollars (total GVA) to the WA economy.



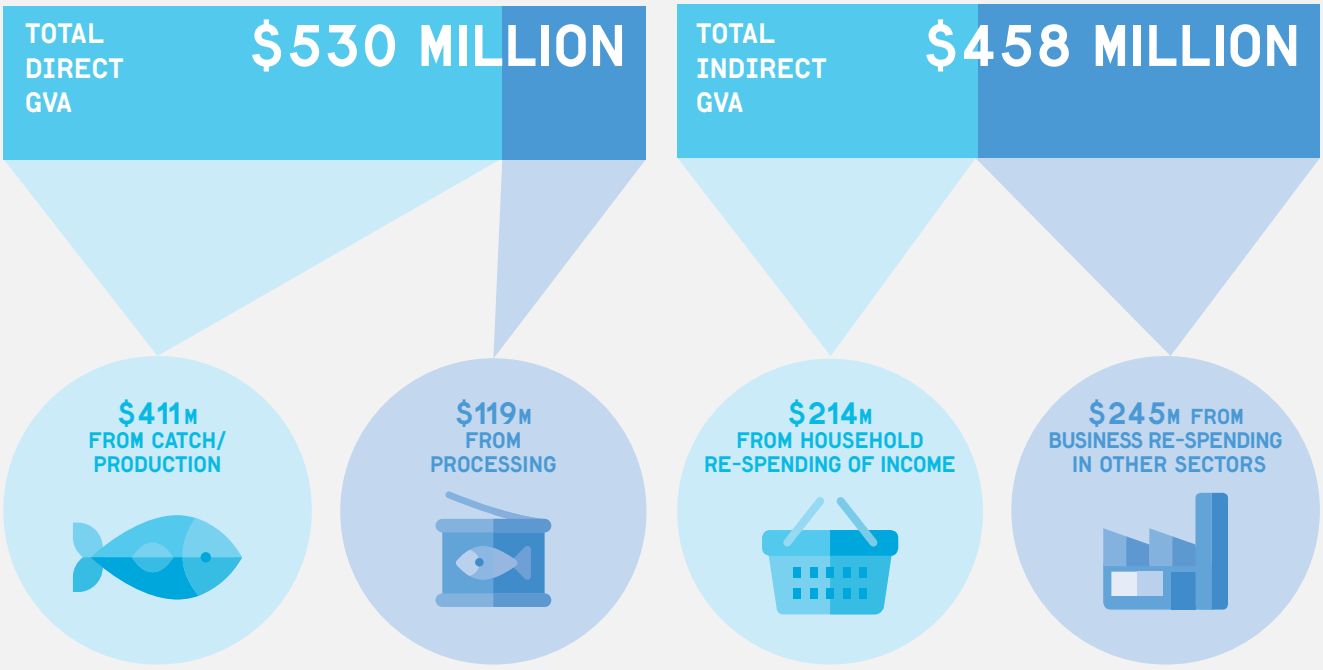
An additional $394 million GVA was generated indirectly in the rest of Australia.

EMPLOYMENT



An additional 2,857 FTE jobs were supported indirectly in the rest of Australia.

ADDING VALUE



Note, totals may not sum due to rounding. Some sub-sectors have not been included in the estimates due to data not being available. See Table 3 for details.

ECONOMIC CONTRIBUTIONS

GROSS VALUE ADDED

In 2017/18, total fishery and aquaculture GVA in WA was $989 million

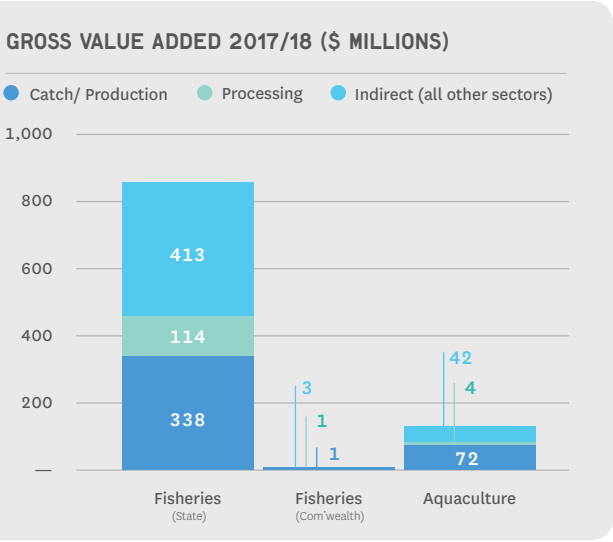
$411 million generated by fishing and aquaculture

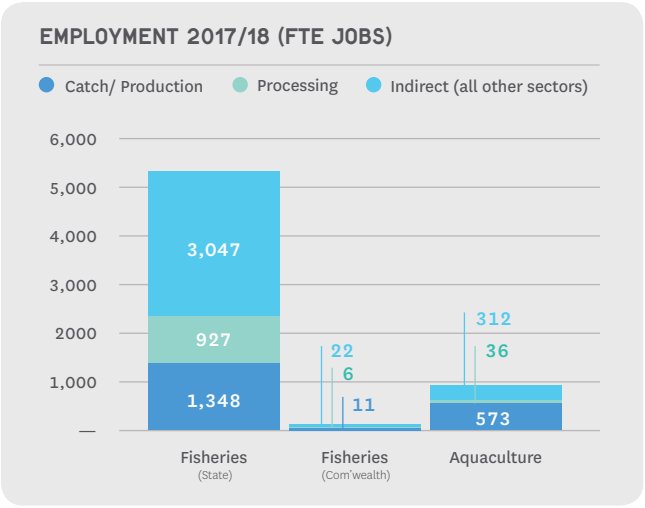
$119 million generated by associated seafood processing activities

$458 million generated by flow-on business activity in other sectors of the economy

An additional $394 million generated by WA fishing, aquaculture and associated processing in other states and territories of Australia

Gross Value Added (GVA) represents the value of all goods and services produced in an industry, minus the cost of all inputs and raw materials used to produce that good or service. It provides a measure of the net contribution of an activity to the State/Territory economies, excluding net taxes.





EMPLOYMENT

In 2017/18, total employment contribution to WA was 6,281 full-time equivalent (FTE) jobs.

1,932 FTE jobs contributed by fisheries and aquaculture

969 FTE jobs contributed by associated seafood processing

3,381 FTE jobs contributed by flow-on business activity in other sectors

An additional 2,857 FTE jobs generated by WA fishing, aquaculture and associated processing indirectly in other states and territories of Australia

HOUSEHOLD INCOME

In 2017/18, total household income contribution in WA was $438 million

$106 million earned as income in fishing and aquaculture

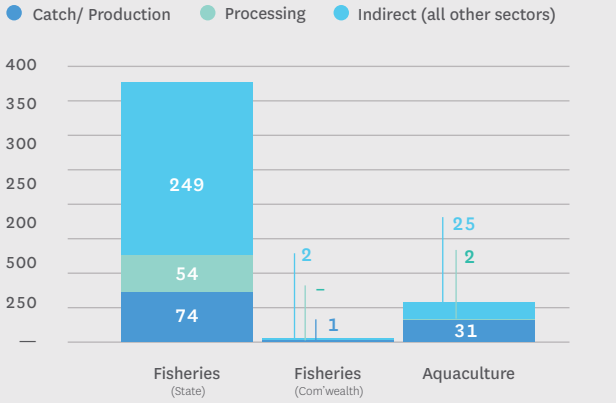
$57 million earned in associated seafood processing

$276 million earned in other businesses in WA as a result of fishing, aquaculture and associated processing activities

An additional $210 million generated by WA fishing, aquaculture and associated processing indirectly in other states and territories of Australia

Household income is a measure of wages and salaries paid in cash and in kind, drawings by owner operators and other payments to labour. It includes overtime payments, employer's superannuation contributions and income tax, but excludes payroll tax.

Note, totals may not sum due to rounding.



ECONOMIC ACTIVITY

GROSS VALUE OF PRODUCTION

In 2017/18, GVP of WA fisheries, aquaculture and associated seafood processing was $869 million

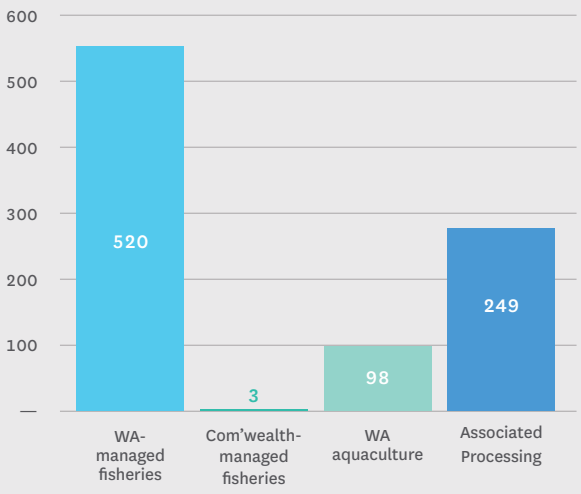
60% from WA-managed fisheries catch

<1% from Commonwealth-managed fisheries catch landed in WA

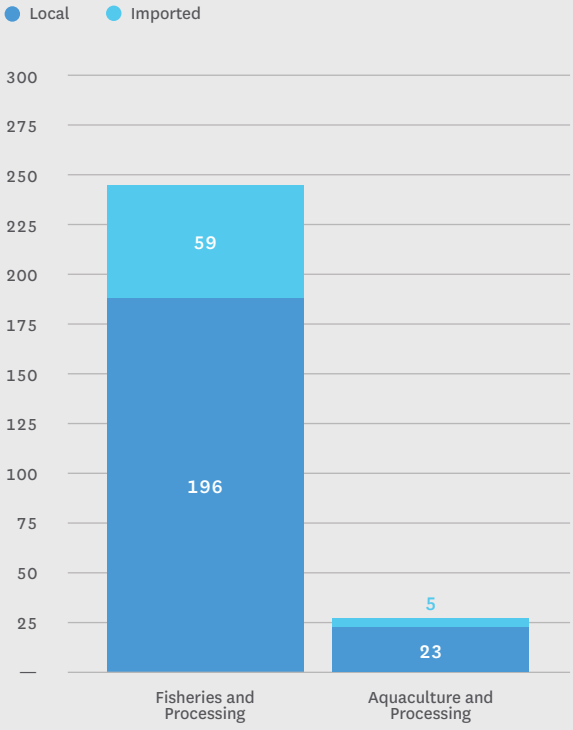
11% from WA aquaculture production

29% from associated seafood processing

GVP OF CATCH/PRODUCTION AND PROCESSING ($ MILLIONS)



EXPENDITURE ($ MILLIONS)



EXPENDITURE

In 2017/18, total (non-wage) expenditure by WA fishing, aquaculture and processing businesses was $283 million

77% of total initial expenditure by fisheries and associated seafood processing was local

81% of total initial expenditure by aquaculture and associated seafood processing was local

Major sectors receiving payments from WA fisheries, aquaculture and associated processing were:

- Professional Scientific and Technical Services
- Machinery and Equipment
- Retail Trade
- Government and Regulatory Services
- Wholesale Trade

Local expenditure excludes: wages, imports (i.e. diesel), indirect taxes (i.e. fuel excise), intra-industry purchases (i.e. fish for bait or processing) and items that represent a return to capital (i.e. quota leasing, insurance and interest). A margin was included for some of these items. Defining expenditure this way avoids overstating flow-on economic contributions.

TABLE 1. ECONOMIC CONTRIBUTION OF WA COMMERCIAL FISHING AND AQUACULTURE TO WA, 2017/18

	GROSS VALUE ADDED ($M)	EMPLOYMENT (FTE JOBS)	HOUSEHOLD INCOME ($M)	GVP ($M)
FISHING (WA MANAGED)				
DIRECT				
Fishing	338	1,348	74	520
Processing	114	927	54	238
INDIRECT (ALL OTHER SECTORS)[A]				
Production induced	229	1,780	150	—
Consumption induced	184	1,267	98	—
Total indirect	**413**	**3,047**	**249**	—
TOTAL[B]	**865**	**5,322**	**377**	**758**
FISHING (COMMONWEALTH MANAGED)				
DIRECT				
Fishing	1	11	1	3
Processing	1	6	0	1
INDIRECT (ALL OTHER SECTORS)[A]				
Production induced	2	13	1	—
Consumption induced	1	9	1	—
Total indirect	**3**	**22**	**2**	—
TOTAL[B]	**5**	**39**	**3**	**5**
AQUACULTURE				
DIRECT				
Production	72	573	31	98
Processing	4	36	2	9
INDIRECT (ALL OTHER SECTORS)[A]				
Production induced	14	120	10	—
Consumption induced	28	192	15	—
Total indirect	**42**	**312**	**25**	—
TOTAL[B]	**118**	**920**	**58**	**107**
FISHING AND AQUACULTURE TOTAL				
DIRECT				
Catch and Production	411	1,932	106	620
Processing	119	969	57	249
INDIRECT (ALL OTHER SECTORS)[A]				
Production induced	245	1,913	161	—
Consumption induced	214	1,468	114	—
Total indirect	**458**	**3,381**	**276**	—
TOTAL[B]	**989**	**6,281**	**438**	**869**

A Indirect GVP effects are excluded to avoid double counting.
B Totals may not sum due to rounding.

Source: WA DPIRD, ACIL Allen (2017), Daley & Pullen (2018), BDO EconSearch (2019b,c,d,f,g,h,i,j,l) and BDO EconSearch analysis.

TECHNICAL SUMMARY

This is a summary of the economic contributions of Western Australia's fisheries, aquaculture and associated processing industries to the Western Australian economy. The full national report of economic estimates is the *Australian Fisheries and Aquaculture Industry 2017/18: Economic Contributions Estimates Report*.

SCOPE

The estimates reported includes economic contributions of: commercial fishing activity; aquaculture activity; associated processing activity.

These estimates are for economic contributions of these activities in Western Australia to the Western Australian economy.

Commercial activities by Indigenous fishing and aquaculture businesses are included in commercial fishing and aquaculture. Commercial charter fishing activity is excluded. Fishery and aquaculture sector management activity (other than where these costs are recovered through licence fees) is excluded. Seafood processing of locally produced seafood is included where it occurs within Western Australia. Processing of imported seafood is excluded.

The economic activity of sectors that supply goods and services to the commercial fishing and aquaculture industry are included in the analysis as the flow-on effects from the expenditures by the commercial fishing and aquaculture industry. This includes fishing support services and aquaculture support services. Contributions of Western Australian fisheries and aquaculture to the rest of Australia are also reported.

DATA

Best available data for 2017/18 was used to produce estimates of GVP, and of direct employment, GVA, GSP/GDP and household income. Data was collected from primary sources (databases) and published sources, where available, for the individual fisheries/aquaculture sectors. This data included: wild catch/farm production, product prices, cost of production, licence fees, employment. Further information on data sources and validation is provided in the Australian Fisheries and Aquaculture Industry Economic Contributions – Data Framework.

Where cost data was not available for a particular sub-sector, it was matched with an equivalent sub-sector for which data was available and cost data was then imputed based on available activity data (including: production, GVP, total days fished, average vessel length, active vessels).

Fisheries or aquaculture sub-sectors excluded from the analysis due to lack of data are listed in Table 4.

MODEL APPROACH

The flow-on effects of State and Territory fisheries, Commonwealth fisheries and aquaculture sectors for each State or Territory were estimated using multi-region input-output (MRIO) analysis. An extended input-output model known as the RISE model (Regional Industry Structure and Employment) was used. The model includes one region for each state and territory in Australia and captures the interstate trade effects between them.

LIMITATIONS

The main limitations are due to data gaps and issues with data quality for some sectors. These were identified in the process of building the national data framework which supports the estimation of contributions.

Limited data was available to estimate the contributions of the processing sector, and the estimates of the processing sector should be regarded as preliminary. Similarly, the estimates present an incomplete profile of economic contributions made along the seafood supply chain, as secondary processing and retail sectors are not included due to lack of data. Addressing this by collecting data on these sectors presents an opportunity to produce more comprehensive estimates in future.

COMPARISON

Comparisons of these estimates can also be made with other productive industries (for example, beef or sheep). These will be less reliable due to differences in the number of sectors included (this study included only the catch/production and processing sectors), data availability and quality, and modelling across various studies.

The use of these estimates to predict the impact of changes in the level of activity of the fisheries and aquaculture industries is not advised. While results can be used to highlight the possible size and nature of impacts, further analysis would be required to estimate the actual impact on the economic measures of such changes.

Comparisons of the economic contributions of commercial fisheries and recreational fisheries (made as fishing-related expenditures generate direct and indirect economic impacts) need to be made very cautiously. The two activities are fundamentally different and require different input-output modelling approaches, and comparison can only be made where estimates are comprehensive.

For commercial fisheries this requires that estimates include backward and forward linked sectors (for example, boat building sectors, as well as seafood retail sectors). For recreational fisheries this requires that only expenditures that are directly attributable to fishing are included in the estimate.

The use of estimates of economic contributions to predict the impact on a state or territory economy of changes in resource allocation between commercial and recreational fisheries can complement economic benefit or efficiency analysis. However, it will require further knowledge to determine how inputs would be redeployed in the economy by other sectors were commercial fishing no longer occurring, and how recreational fishers would spend their discretionary income on substitutable activities were they not able to recreationally fish.

This project also supports the ability for individual industries and jurisdictions to monitor trends in the size of contributions over time.

APPENDIX 1
BACKGROUND DATA

TABLE 2: CATCH, PRODUCTION AND GVP OF THE TOP FIVE CONTRIBUTORS (BY GVP) TO WA COMMERCIAL FISHING AND AQUACULTURE IN 2017/18[A]

RANK	DESCRIPTION	CATCH/ PRODUCTION (T)[B]	GVP ($M)	VALUE PER UNIT ($/KG)[C]
	FISHERIES (WA MANAGED)			
1	Western Rock Lobster	6,333	392	61.86
2	Prawn	3,169	46	14.47
3	Scallop	1,297	11	8.14
4	Demersal Trap	1,223	10	7.92
5	Abalone	173	7	42.50
	Other fisheries	9,161	54	5.95
	Total wild caught	**21,356**	**520**	—
	FISHERIES (COMMONWEALTH MANAGED)			
1	Western Tuna Billfish	344	2	6.22
	Other Fisheries[F]	53	1	19.01
	Total wild caught	**397**	**3**	—
	AQUACULTURE			
1	Pearl Oyster	n.a.	77	n.a.
2	Barramundi	1,083	12	10.95
3	Other species[D]	150	4	23.62
4	Marron	51	2	32.32
5	Ornamental Invertebrates	208	1	4.52
	Other sectors	218	2	9.70
	Total Production[E]	**1,502**	**98**	—

A 2017/18 GVP estimates are updated from 2016/17 published data, which was the latest year of available data. Catch/ production reported for 2016/17 (latest year of available data).
B Production of Ornamental Invertebrates are reported by number (in thousands) produced.
C Value per unit of Ornamental Invertebrates are by dollars per number produced.
D Other Species refers to production where there were less than three contributing licences. Over the last 10 years this has included artemia, abalone, black bream, Mahi mahi, live rock, mulloway, Murray cod, pink snapper, prawns, rotifers, western rock oysters and yellowtail kingfish.
E Production totals exclude Ornamental Invertebrates (reported by no. '000).
F Includes estimated production in the confidential North West Slope Trawl and Western Deepwater Trawl fisheries.
n.a. not available
Source: WPIRD, ABARES and BDO EconSearch analysis.

TABLE 3: WA OVERSEAS SEAFOOD EXPORTS, TOP CONTRIBUTORS BY EXPORT VALUE, 2017/18

RANK	SEAFOOD CATEGORY[A]	EXPORT QUANTITY		EXPORT VALUE[B]		AVERAGE VALUE ($/KG)
		(TONNES)	(%)	($M)	(%)	
1	Rock Lobster	6,587	77	505.7	92	76.8
2	Shrimp & Prawns	886	10	15.4	3	17.3
3	Toothfish	157	2	8.8	2	56.0
4	Scallops	154	2	7.3	1	47.4
5	Abalone	35	0	4.4	1	125.9
6	Crabs	183	2	3.0	1	16.4
7	Other frozen fish	313	4	1.9	0	6.1
8	Other fresh fish	93	1	0.7	0	7.8
9	Ornamental fish[C]	6	0	0.6	0	94.7
10	Swordfish	34	0	0.5	0	13.9
	Other	103	1	1.7	0	16.9
	Total[CD]	**8,544**	**100**	**550**	**100**	**64.3**

A Ranked by export value. Seafood categories are defined in Appendix 3, Australian Fisheries and Aquaculture Industry 2017/18: Economic Contributions Estimates Report (BDO 2019).
B Export values are in terms of Free on Board (FOB) values. FOB values exclude the cost of freight and merchandise insurance involved in shipping the goods beyond the place of export up to the customs frontier of the importing country.
C Export quantity of "Ornamental fish" is measured by number of specimens. The reported "Ornamental fish" export quantity and price are per '000 specimens exported. Total seafood export quantity and price exclude "Ornamental fish" due to differences in units of measurement.
D Totals may not sum due to rounding.
Source: ABS (2019) and BDO EconSearch analysis.

TABLE 4: WA FISHERIES AND AQUACULTURE SUB-SECTORS EXCLUDED FROM THE ANALYSIS

FISHERY	REASON FOR EXCLUSION
WA Broome Prawn, Cockburn Sound Mussel, Marine Aquarium Fish, Northern Shark, North Coast Shark, Peel-Harvey West Coast Crab, South Coast Trawl, Swan and Canning Rivers Crab, Temperate Demersal Shark, West Coast Sea Crustacean, West Coast Deep Sea Crab.	No catch/effort data available.
WA Albany/King George Sound Purse Seine, Cockburn Sound Crab, Mandurah to Bunbury Developing Crab, Onslow Prawn, Peel Harvey West Coast Crab, Pilbara fisheries (except Line), South West Trawl, West Coast Beach Bait, Exmouth Gulf Beach Seine and Mesh Net Managed Fishery, FBL condition 66 Cockburn Sound Fish Net	No catch/effort data published or means to estimate it
AQUACULTURE SUB-SECTOR	**REASON FOR EXCLUSION**
Nil	—

Source: Australian Fisheries and Aquaculture Industry 2017/18: Economic Contributions Estimates Report (BDO 2019).

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