SEAFOOD NEW ZEALAND

Bait use by New Zealand Ling Longline Fisheries

21 June 2024

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Background

This report provides a breakdown of bait use by ling longline vessels representing approximately 95% of the effort during the 2022-23 fishing year and an evaluation of the status of bait 'bycatch' species in relation to the overall catch composition by the ling longline fishery in UoAs LIN 3 – 7.

Method

DWC's Environmental Liaison Officer identified 26 vessels identified as being involved in ling longline fishing. Many of these are also involved in bottom longline fisheries other than ling (e.g. bluenose, hapuku, snapper, ribaldo, school shark and surface longlining for tuna species). This analysis of bait use focuses on vessels with effort directed primarily at ling, of which 19 vessels were identified. For one of the vessels, for which no data were received, bait use was estimated based on data from three similar-sized vessels, all of which are full-time ling vessels. Three vessels were large autoliners and 16 were hand-baiters. In total, it is estimated they represented ~95% of the fishing effort by ling longliners in FMAs LIN 3-7.

Bait usage templates were forwarded to companies and/or vessel owners for completion via email. Bait usage data were received for 14 vessels via email return. For the remaining 4 vessels, bait usage data were sourced via telephone call. The information requested included:

- Average duration and number of ling-targeted trips undertaken per year
- Average quantity of bait used, by species, during ling-targeted fishing trips
- Origin of the bait used (NZ trawl-caught, NZ purse seine-caught, imported)
- State of bait used (e.g. whole or fillets).

Jack mackerel is one of baits used and the three species caught in New Zealand are all required to be reported against the generic code, JMA. The information on where the JMA bait was sourced from provided a reasonably good basis for identifying it as either *T. novaezelandiae* if it was sourced from purse seine operators, or as *T. declivis/T. murphyi* if it was sourced from trawl fishing operators. *Trachurus declivis* and *T. murphyi* are taken mainly by trawl gear in waters deeper than 150 m in the JMA 3 and JMA 7 management areas, while *T. novaezelandiae* is the dominant jack mackerel species taken by a purse seine fishery off the east coast of North Island in management area JMA 1 in waters shallower than 150 m (FNZ, 2022).

Results

Characterisation of bait used

Feedback received from companies and vessel owners covered a total of 18 ling-targeting longliners. Six bait types are used:

- Barracouta (BAR): Used by all of the hand-baiting vessels (skin-on fillets, purchased frozen in 10-20 kg boxes, trawl-caught).
- Jack mackerel (JMA): Used by autoline vessels. Most sourced from New Zealand and a small quantity from Chile. All New Zealand JMA was categorised as trawl-caught and assumed to be either *T. declivis* or *T. murphyi*. No JMA bait used was caught by purse seine.
- Atlantic/English mackerel (EMA): Imported, used by two autoliners as part of their bait complement.
- Squid (SQU): A small quantity of New Zealand-caught squid was used by one hand-baiter. One Autoline vessel used squid bait sourced from Chile.
- One vessel used two species of bycatch from their longlining as bait; hairy conger (HCO) and hoki (HOK).

A breakdown of bait use by species and capture method illustrates that jack mackerel species, squid, barracouta and Atlantic mackerel comprise around 62%, 3.5%, 26% and 7.8% respectively. Longline bycatch species (hairy conger and hoki) account for around 0.7% of bait used. Around 89% of the bait used is New Zealand-caught (Table 1).

Table 1: Local and imported bait species and the estimated annual quantity used by ling longline vessels during the 2022-23 fishing year.

Bait Species	Capture Method	Origin	Quantity (t)	Proportion (%)
Jack mackerel	Trawl	New Zealand	584	61.9%
Atlantic mackerel	Trawl?	Imported	74	7.8%
Squid	Trawl	New Zealand	2	0.2%
Squid	Jig?	Imported	31	3.3%
Barracouta	Trawl	New Zealand	246	26.1%
Hairy conger	Longline	New Zealand	5	0.5%
Hoki	Longline	New Zealand	2	0.2%
Total - all			**944**	**100.0%**
Total - NZ			**839**	**88.9%**

Assessment of bait bycatch status

An estimate of the total targeted ling longline catch from LIN 3-7 was based on the average annual observed catch over the 5-year period 2018-19 to 2022-23 (i.e. 655 t, raised by the average rate of observer coverage for this period (i.e. 15.8%), to give a total ling catch of 4,146 t (Data sourced from FNZ (D. Fisher, pers. comm.).

The overall species catch composition by the ling bottom longline fleet was determined from observer data, sourced from Fisheries New Zealand (RDM Rep Log 15659). The process applied for the present analysis was as follows:

- The observed catch estimates for the top 20 species, representing 98% of the catch, and a group of 120 minor species representing the remaining 2% of the catch for the period 2018-19 to 2022-23, were raised using the average rate of observer coverage (i.e. 15.8%)
- The bait usage estimates for the 2022-23 fishing year were then added to the catch composition and their contributions calculated as a percentage of the overall estimated ling longline catch (i.e. the bait species were treated as 'bycatch' in the LIN longline fishery). Bait sourced from countries other than New Zealand, which amounted to around 11% of the bait used, was excluded.

The ling longline catch composition, modified to include bait as 'bycatch', indicates that JMA, BAR and SQU respectively comprise 7.6%, 3.2% and 0.03% of the total estimated commercial catch. (Table 2).

Table 2: Estimated ling longline catch composition for the 2022-23 fishing year by target, QMS bycatch, non-QMS bycatch and New Zealand-caught 'bait bycatch' species.

Category	Raised Catch (t)	Proportion (%)
Targeted LIN catch	4,146	53.9%
QMS bycatch	2,146	27.9%
Non-QMS bycatch	557	7.2%
JMA bait	584	7.6%
BAR bait	246	3.2%
SQU bait	2	0.0%
HCO bait	5	0.1%
HOK bait	2	0.0%
Total	**7,688**	**100.0%**

A detailed breakdown of the estimated ling longline catch composition by species for 2022-23 is provided in Table 3.

Table 3: Estimated catch composition for the ling longline fishery for the 2022-23 fishing year. Ling targeted catch in orange, QMS species in blue, non-QMS species in black and the three bait species in red.

Species Code	Raised Avg. Catch (t)	Raised Avg. Catch (%)	Species Code	Raised Avg. Catch (t)	Raised Avg. Catch (%)
LIN	4,146	53.93%	HCO	51	0.66%
SPD	1,101	14.33%	RCO	38	0.49%
JMA	584	7.60%	OSD	32	0.41%
RIB	367	4.78%	CON	32	0.41%
BAR	246	3.20%	CSQ	25	0.33%
RSK	171	2.22%	HAK	25	0.33%
BCD	146	1.89%	BSH	19	0.25%
SSK	146	1.89%	ETB	19	0.25%
Other	120	1.56%	ETB	19	0.25%
SPE	82	1.07%	ETL	19	0.25%
SND	76	0.99%	BNS	13	0.16%
GSP	70	0.91%	HCO	5	0.07%
SCH	70	0.91%	SQU	2	0.03%
GSH	63	0.82%	HOK	2	0.03%
			Totals	**7,687**	**100.00%**

An evaluation of the quantities of JMA, BAR and SQU used as bait by the ling longline fisheries, as against annual commercial catches of these species in the 2022-23 fishing year, shows that only a very minor component of each of these fisheries is used as bait (Table 4).

Table 4: JMA, BAR and SQU quantities used as bait by the ling longline fleet in relation to New Zealand commercial catches during 2020-21.

Species	Capture Method	Fishery Management Area	Catch 2022-23 (t)	Bait Use (t)	Bait Use (%)
JMA	Trawl	JMA 3 & JMA 7	39,849	584	1.5%
BAR	Trawl	BAR 1, BAR 4, BAR 5 & BAR 7	17,491	246	1.4%
SQU	Trawl	SQU 1T & SQU 6T	10,713	2	0.0%
HCO	Longline	LIN 3 - 7	5	5	100.0%
HOK	Longline	HOK 1	105,555	2	0.0%
		Totals	**173,613**	**839**	**0.5%**

Conclusion

The quantity of jack mackerel (JMA) used as bait in the ling longline fisheries in FMAs LIN 3-7 amounts to 7.6% of the overall estimated catch (Table 3) and may therefore meet the criterion for 'main' species.

References

FNZ (2023). Fisheries Assessment Plenary May 2023: Stock Assessments and Stock Status, Vol. 2 Horse mussel to Red crab (Jack mackerels pp.653-680).

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