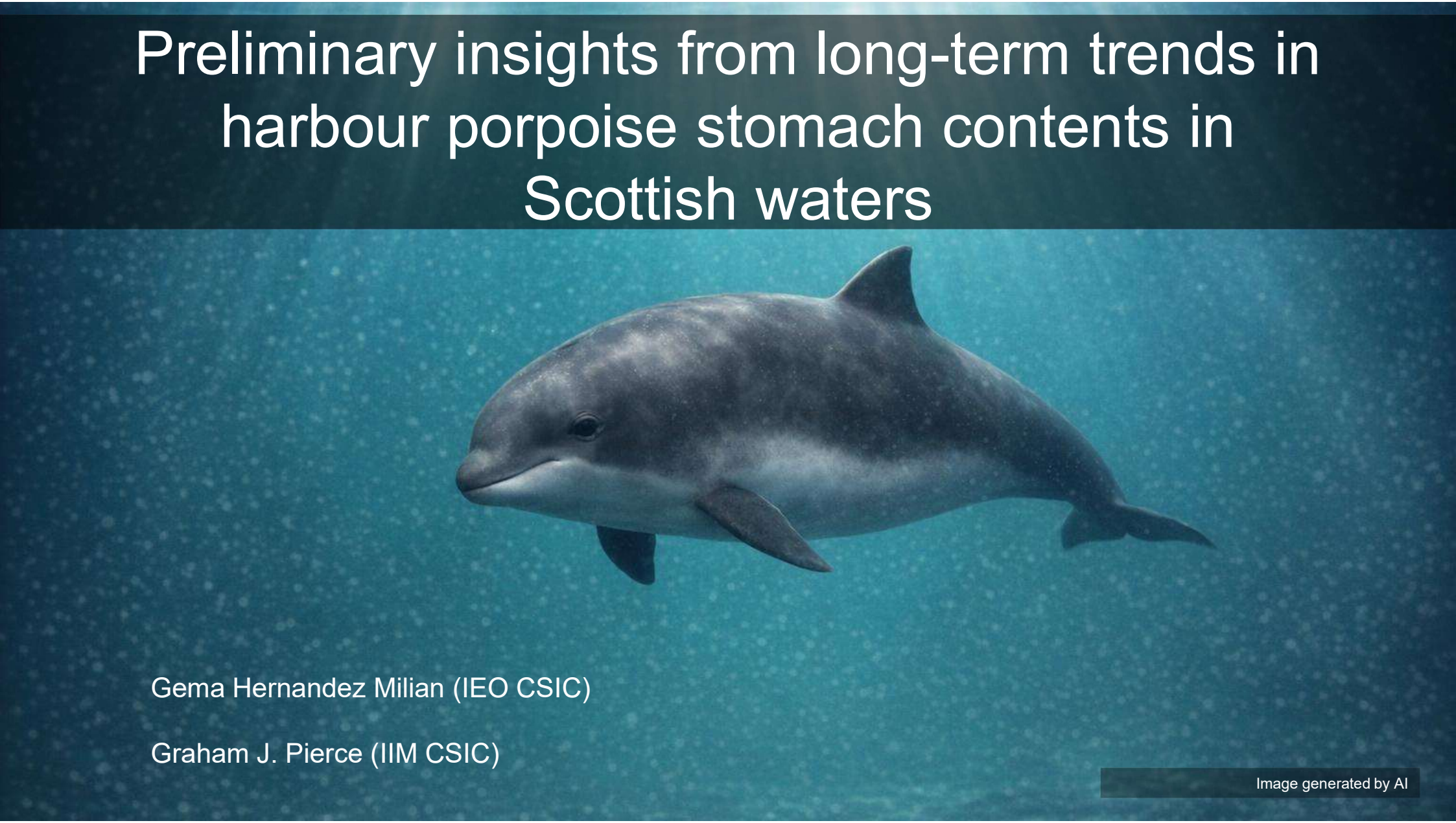
Preliminary insights from long-term trends in harbour porpoise stomach contents in Scottish waters



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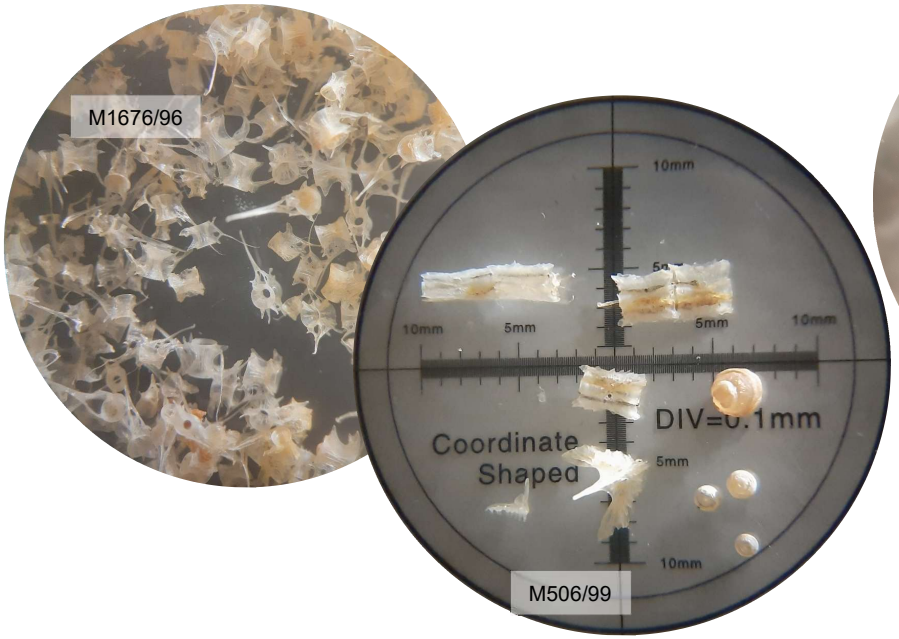
Background: stomach contents from strandings

Scotland: from 1992 to 2014, 1643 porpoises included approximately 330 with stomach contents samples, from the west, north (including Orkney and Shetland) and east (North Sea) coasts.

This presentation reports a reanalysis of **North Sea** samples. So far we have re-examined 108 porpoise stomachs containing prey remains.

Complete/partial stomach contents, analysed otoliths, bones, beaks and crustaceans



Methods

- Prey Identification
- Prey importance expressed as frequency of occurrence (FO), number of individuals (N), total estimated weight (W) and relative importance (IRI)

$$\%FO = \frac{F_i}{F_t} \times 100$$

$$\%N = \frac{N_i}{N_t} \times 100$$

$$\%W = \frac{W_i}{W_t} \times 100$$

F_i : number of stomachs containing prey "*i*"

F_t : total number of stomachs with prey

N_i : total number of prey "i" in all stomachs

N_t : total number of prey in all stomachs

W_i : total estimated biomass of prey "*i*" in all stomachs

W_t : total estimated biomass of prey in all stomachs

$$IRI = \%N + \%W) * \%FO$$

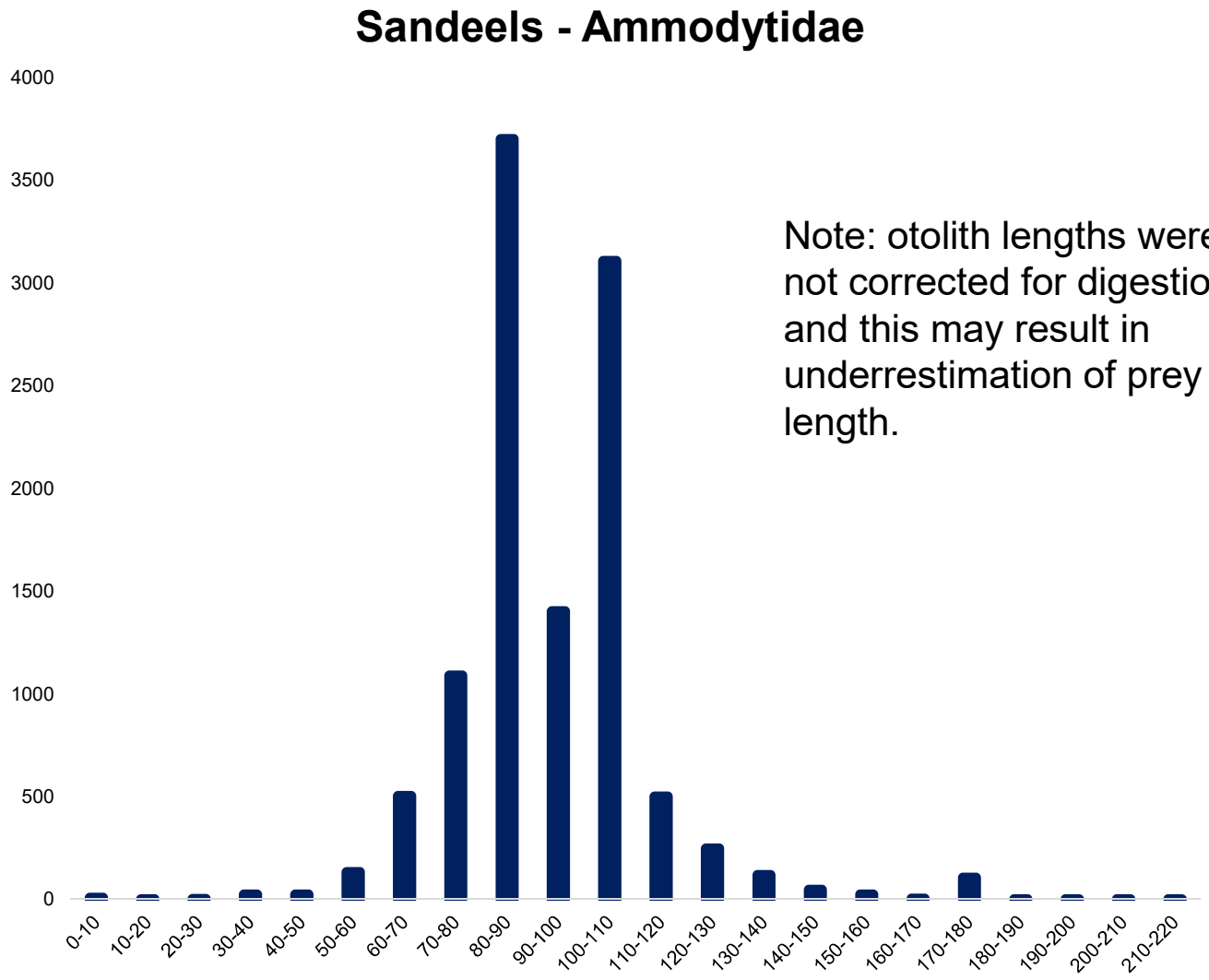
General Results: main prey groups

Species group	FO%	N%	W%	IRI	IRI%
Gadidae (whiting, pollack, saithe, haddock, codlings, etc.)	**69.06**	19.54	**62.20**	5645.17	**47.69**
Sandeels	**57.46**	69.43	28.61	5633.01	**47.59**
Cephalopods	**38.67**	6.87	1.67	330.20	2.79
Pelagic prey (herring, sprat and mackerel)	24.31	1.79	6.00	189.49	1.60
Gobidae	18.23	1.41	0.28	30.90	0.26
Non-identified fish	12.16	0.33	0.00	4.049	0.03
Crustaceans	6.08	0.36	0.00	2.20	0.02
Small benthic fish	3.32	0.09	0.49	1.90	0.02
Lotidae	2.21	0.03	0.22	0.55	0.01

General Results: Gadiformes)

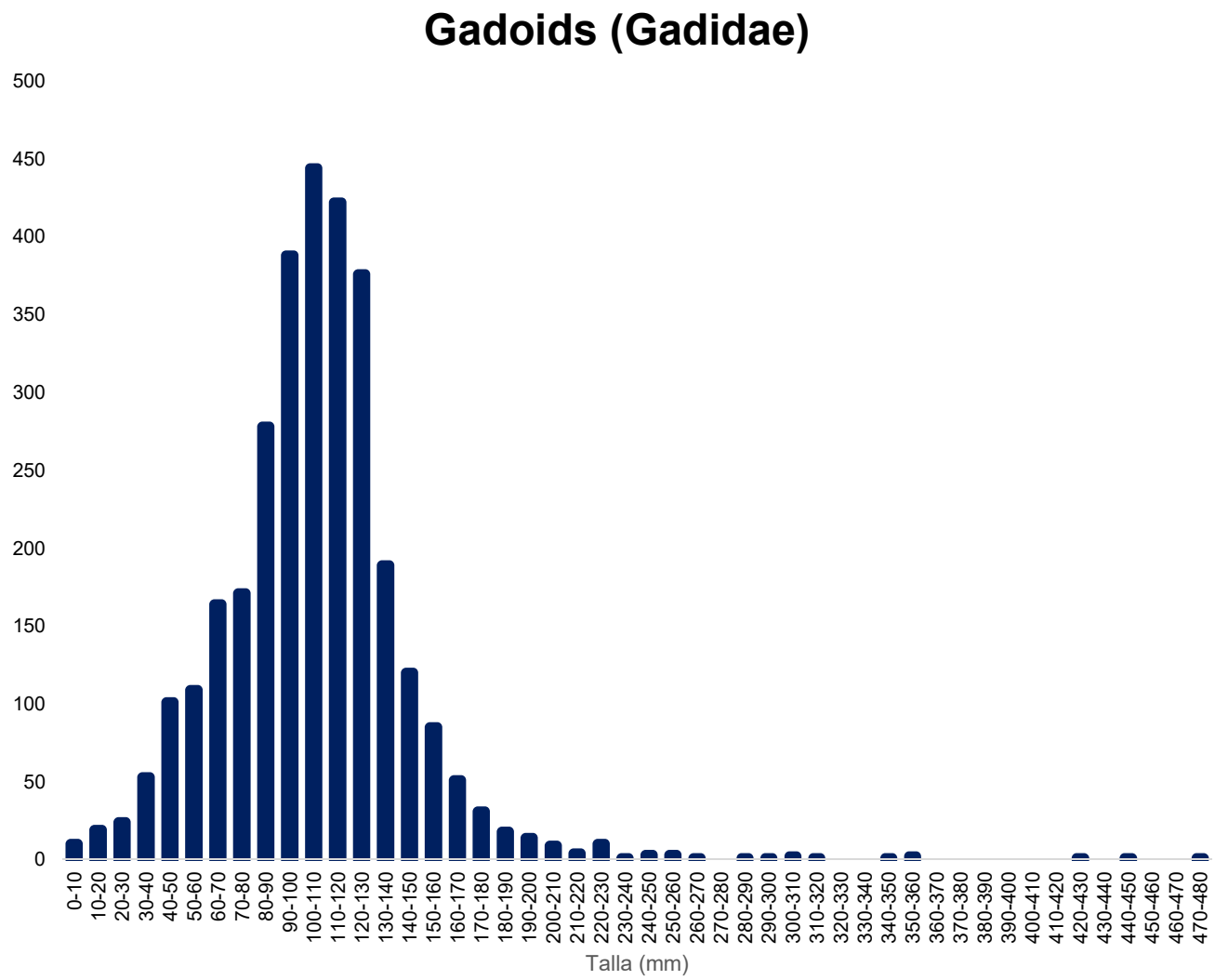
Species group	FO%	N%	W%	IRI	IRI%
Whiting	**58.01**	**13.51**	**41.85**	**3211.69**	**34.09**
Haddock/pollack/saithe*	**17.68**	**0.81**	**6.75**	133.62	1.42
Gadoids non-identified	27.07	1.72	1.40	84.35	0.90
Codlings (*Trisopterus*)	20.44	2.29	1.48	77.07	0.82
Haddock*	8.29	0.33	2.29	21.77	0.23
Cod*	1.66	0.03	7.69	12.79	0.14
Norway pout	7.73	0.62	0.30	7.07	0.08
Pouting/Poor cod	6.08	0.14	0.15	1.81	0.02
Pouting	2.21	0.03	0.09	0.25	0.00
Rocklings	2.21	0.03	0.22	0.49	0.00
Haddock/pollack/saithe/cod*	1.10	0.02	0.11	0.14	0.00
Poor cod	1.10	0.03	0.02	0.05	0.00
Blue whiting	0.55	0.01	0.05	0.03	0.00
Tadpole fish	0.55	0.01	0.02	0.02	0.00
Pollacks*	0.55	0.01	0.01	0.01	0.00
*Haddock+pollack+saithe+cod)	23.76	1.19	16.84	428.36	4.35

General Results
(body length, mm)



Note: otolith lengths were not corrected for digestion and this may result in underrestimation of prey length.

General Results
(body length, mm)



General Results

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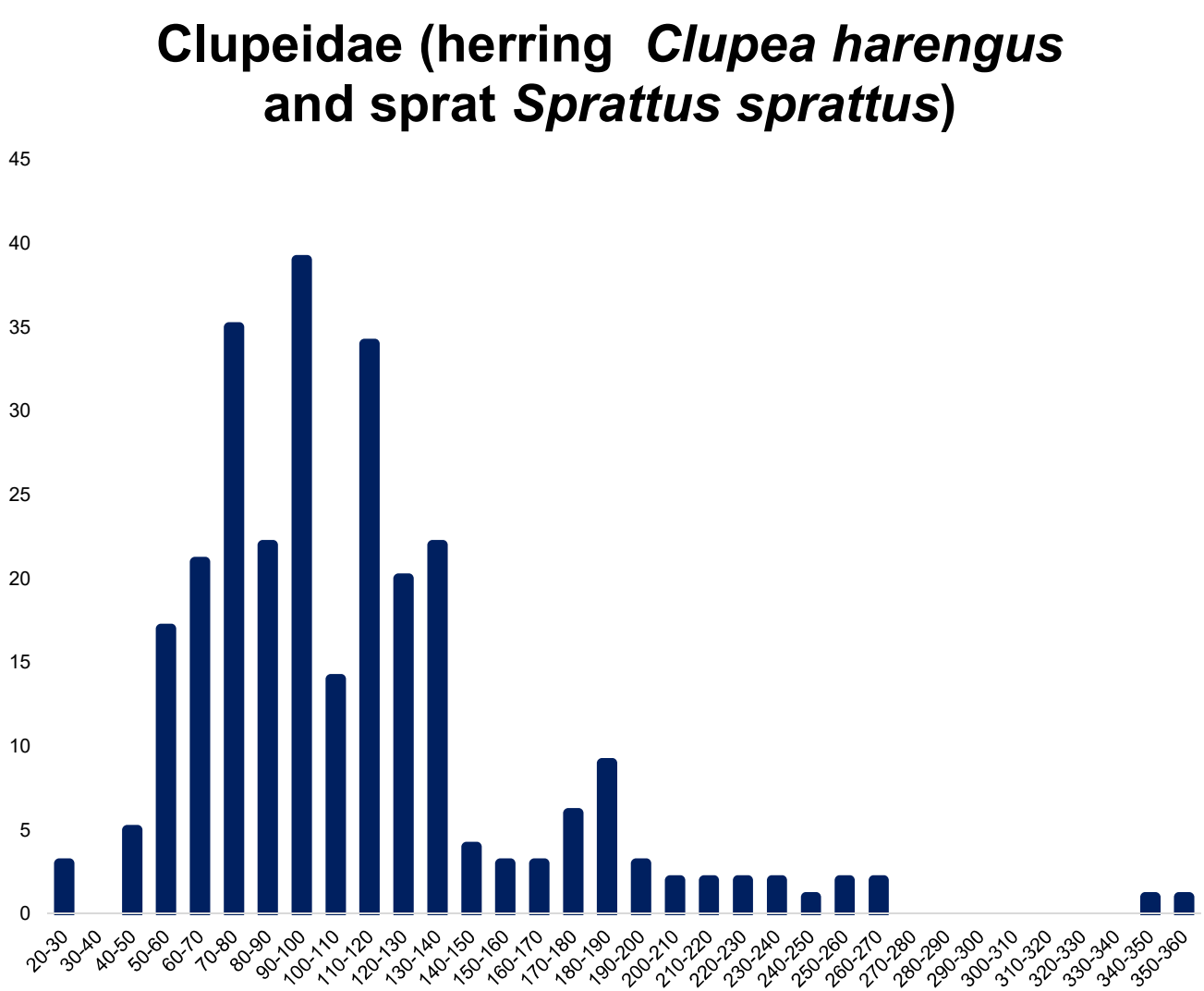

General Results

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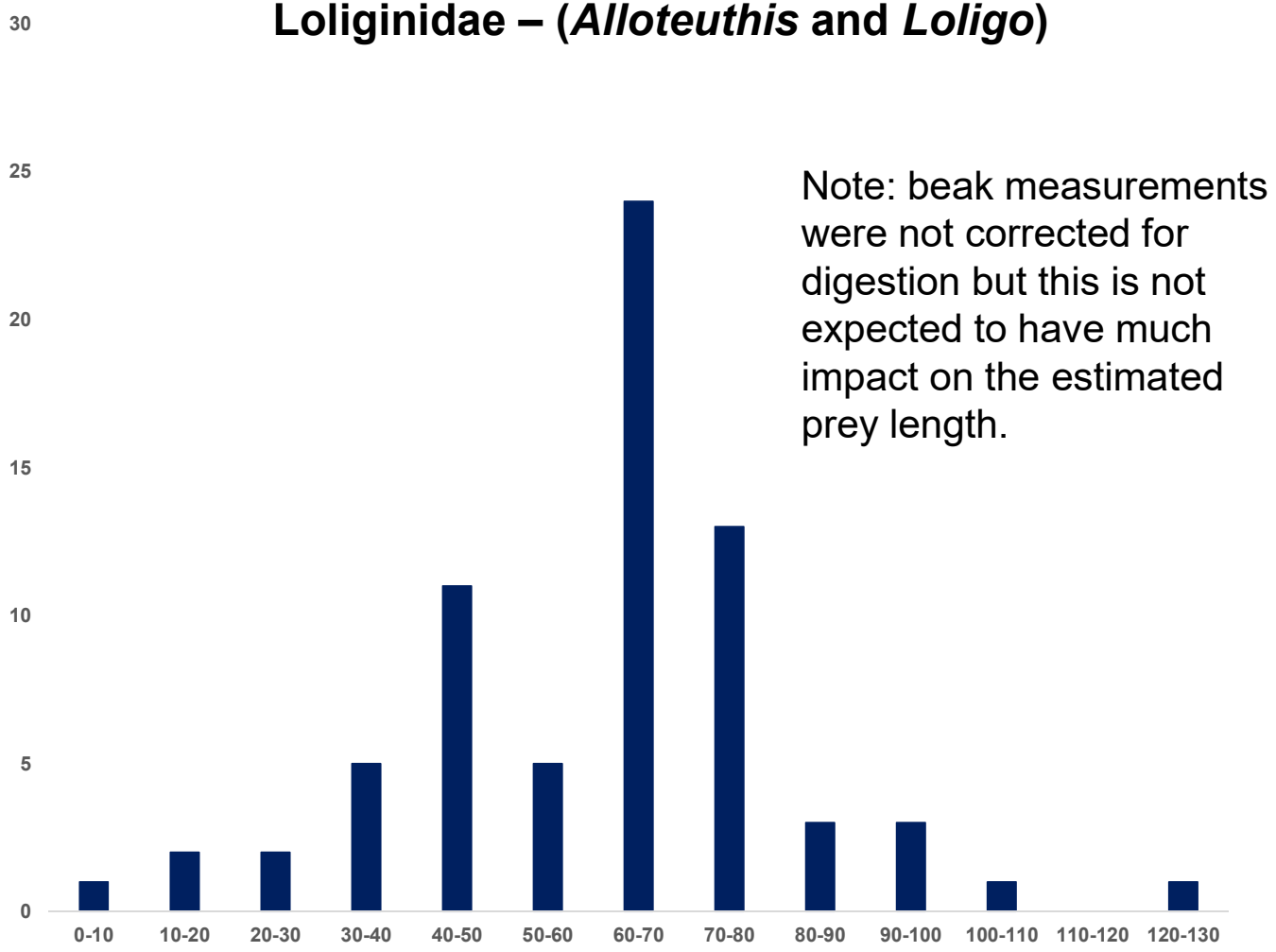

Note: beak measurements were not corrected for digestion but this is not expected to have much impact on the estimated prey length.

Next steps

- Manuscript on long-term dietary trends in Scottish porpoise diet 1992-2014
  - Importance of main prey species versus abundance
  - Dietary diversity
  - Other factors affecting diet composition
- Potential for combining results with those from more recent strandings (held by SMRU)
- Manuscript of diet of various dolphin species stranded in Scotland 1992-2014 (white-beaked, white-sided, common, etc.)

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