SEAFISH
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Research & Development

Fact sheet

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Weighing at sea trials

A revision to an EU Control Regulation came into effect on 1 January 2010. An important part of the new Regulation concerns recording of fish weights and the permitted margin of tolerance it now stipulates between the logbook estimate and the actual landings declaration. The regulation allows 10 per cent for all fish stocks, from a previous margin of 20 per cent, for vessels over 10 metres.

This regulation puts additional pressure on skippers to make accurate onboard assessments to within the new 10 per cent margin to avoid possible prosecution.

This fact sheet summarises the results of a Seafish trial to test different weighing scales used at sea to help fishermen in their initial live weight assessment.

Objective

Research was carried out by Seafish into what weighing equipment is currently available. Seafish sourced a number of electronic scale devices based on their cost, size, robustness and water resistance. The aim was to test scales available at a lower price than those currently employed aboard the larger class of fishing vessels. Two options of crane scale were tested at sea under commercial conditions on various vessels, alongside two bench scales, one with motion compensation and one without. Scales were specifically chosen to assess basket weights, up to 60 kg. To measure the scales accuracy and performance, the readings were compared with those taken from a set of Pols P-15 calibrated motion compensated scales.

Trial conclusions

- Most commercial fishing vessels in the UK do not have access to a set of scales onboard. The skipper or crew has to make a visual assessment of the weight of fish caught.
- Scales currently being used at sea on larger fishing vessels (mostly in Scotland) tend to be motion compensated bench scales.
- The trials clearly showed the use of an effective set of scales can assist the skipper in providing an accurate weight of fish catch by species, allowing the skipper to base any further calculations, such as gutted weight ratios and possible weight loss, from an accurate starting point.
- Prices can vary from £100 for a basic crane scale to over £10,000 for motion compensated bench scales with software, label printer and wheelhouse interface.
- Motion compensated bench scales were favoured by the fishermen, however there is currently no product on the market in the affordable £1,000 to £2,000 price range.
- For vessels on the registry for a minimum of five years grants of between 40 and 60% may be available for purchasing weighing at sea devices. To find out more E: s_bailey@seafish.co.uk
- Seafish has devised a ready reckoner to help fishermen calculate live weight from a known landing weight in 5 kg increments. See page 4 and: http://www.seafish.org/publications-search

Case study – Weighing scale trials in action

Kevin and Mark Curtis, owners of the Elisabeth Veronique, a 15m trawler working from Newlyn, Cornwall agreed to trial motion compensated bench scales. On Trip 1 the crew did not have access to a set of scales and on Trip 2 the scales were used.

The figures from the two trips clearly show the accuracies to be gained by using a set of scales. Although the trips were relatively short, and the impact of weight loss during storage of the fish would be limited, the ability to get an accurate weight for the fish prior to boxing and icing would assist skippers in providing a more accurate assessment of the weight of the catch by species during the trip when filling out their log sheets.

Trip 1: Skipper's estimate weight in Kgs

Species	Megrim	Plaice	L'sole	Monk	Gurnard	H'ddock	Brill	Dover Sole	Squid
Recorded weight from logsheet – live	232	74	218	427	63	329	38	30	243
Actual Landed weight recorded (gutted)	258.5	85.7	272	182	124	308	39.9	42	350
Gutted weight relationship	1.04	1.07	1.04	3	1	1.16	1.05	1.05	1
Actual Landed weight recorded (Live)	268.8	91.7	282.9	546.0	124.0	357.3	41.9	44.1	350.0
Margin of Difference	**13.7%**	**19.3%**	**22.9%**	**21.8%**	**49.2%**	**7.9%**	**9.3%**	**32.0%**	**30.6%**

With the exception of Haddock and Brill all the estimates of weight fall outside the 10% margin of tolerance. The overall average for the skippers' estimate of weights during this trip was 23%.

Trip 2: Weighed figures weight in Kgs

Species	Megrim	Plaice	L'sole	Monk	Gurnard	Haddock	Brill	Dover Sole	Whiting
Recorded weight from logsheet - live	38	201	570	630	50	85	60	69	201
Actual Landed weight recorded (gutted)	39	177.2	536	202	58.9	77	55.7	67.7	175
Gutted weight relationship	1.04	1.07	1.04	3	1	1.16	1.05	1.05	1.18
Actual Landed weight recorded - live	40.6	189.6	557.4	606.6	58.9	89.3	58.5	71.1	206.5
Margin of Difference	**6.3%**	**-6.0%**	**-2.3%**	**-3.9%**	**15.1%**	**4.8%**	**-2.6%**	**2.9%**	**2.7%**

From the figures shown below all species except gurnards are now within the 10% margin of tolerance. The overall average for this trip using the scales was just over 5%.

UK suppliers of motion compensated balance scales

	Nesco Weighting Ltd.		Lorrimar Weighing Ltd.	Marel	Marelec
Product	Fishway lie	Wave Cheetah	Uinsystems - U2372 Marine scales	Marel 2200/PL4200	Marelec W50
Build Specification	IP67 Stainless steel	IP68 Stainless Steel	IP67 stainless steel	IP67 stainless steel	IP67 stainless steel
Weighing plate	300 x 300mm or 400 x 400mm	300 x 300mm or 400 x 400mm	348 x 415mm or 500 x 600mm	400 x 500mm platform	500 x 600mm platform
Weight capacity	Various	Various	30kg, 70kg and 150kg.	30/60kg	30kg, 50kg and 75kg.
Display	Digital LCD	Digital LCD	RED LED display	LCD	RED LED display
Power source	Various options	Various options	220/240V AC or Mains rechargeable or battery version	Various options	230VAC, 24VCC or batteries (optional).
Prices	from £3300	from £4500	From £3,980	Contact supplier	Contact Supplier
Printer	Fish Box Label Printer	Fish Box Label Printer	Compatable with LP542 Plus Thermal Label printer	Thermal printer station	MARELEC PR1-PR2 label printer:
Options	Printing station stand and printer garage from £5470	Indicator. Ticketing & Reporting Software, Wheel House Comms	Printing station stand, LP542 Plus Thermal Label printer, Winscale PC software	Innova Marine pack software	Contact supplier
Motion Compensated	Yes	Yes	Yes	Yes	Yes
Contact and website	Gordon Norman, Nesco Weighing, 89-91 Lambert Street, Hull. HU5 2SH **M:** 07966 159338 **T:** +44 (0) 1482 346865 **F:** +44 (0) 1482 445483 **E:** g.norman@nesco-weighing.co.uk www.nescoweighing.co.uk		John Hammond Lorrimar Weighing Ltd. **T:** +44 (0) 1482 228173 **F:** +44 (0) 1482 214106 **E:** john@lorrimar.co.uk www.lorrimar.co.uk	Andrew Masson UK Fishery Sales SELEX Communications **T:** +44 1346 518187 **E:** Andrewmasson@selex-comms.com	Steven Wood Woodsons of Aberdeen **T:** + 44 1224 722884 www.woodsons.co.uk

To view the full report see: http://www.seafish.org/publications-search and search for weighing scales.

The ready reckoner overleaf has been prepared to help fishermen calculate live weight from a known landing weight in 5 kg increments. For exact figures there is a Seafish live weight calculator for download and use in the wheelhouse.

Weight at landing to live weight equivalent ready reckoner

Example (in yellow): landing a 40kg box of gutted cod is equivalent to 46.8kg live wight

Species	Code	Preparation	Conversion factor	Box / landed weight												
			1	5	10	15	20	25	30	35	40	45	50	55	60	
Monk	ANF	gutted	1.22	6.1	12.2	18.3	24.4	30.5	36.6	42.7	48.8	54.9	61	67.1	73.2	
		tails	3	15	30	45	60	75	90	105	120	135	150	165	180	
Blue Ling	BLI	gutted	1.17	5.9	11.7	17.6	23.4	29.3	35.1	41.0	46.8	52.7	58.5	64.4	70.2	
Brill	BLL	gutted	1.09	5.5	10.9	16.4	21.8	27.3	32.7	38.2	43.6	49.1	54.5	60.0	65.4	
Cod	COD	gutted	1.17	5.9	11.7	17.6	23.4	29.3	35.1	41.0	**46.8**	52.7	58.5	64.4	70.2	
Conger Eel	COE	gutted	1.125	5.6	11.3	16.9	22.5	28.1	33.8	39.4	45.0	50.6	56.3	61.9	67.5	
Flounder	FLE	gutted	1.08	5.4	10.8	16.2	21.6	27.0	32.4	37.8	43.2	48.6	54.0	59.4	64.8	
Haddock	HAD	gutted	1.17	5.9	11.7	17.6	23.4	29.3	35.1	41.0	46.8	52.7	58.5	64.4	70.2	
Hake	HKE	gutted	1.11	5.6	11.1	16.7	22.2	27.8	33.3	38.9	44.4	50.0	55.5	61.1	66.6	
Halibut	HAL	gutted	1.08	5.4	10.8	16.2	21.6	27	32.4	37.8	43.2	48.6	54	59.4	64.8	
Lemon Sole	LEM	gutted	1.05	5.3	10.5	15.8	21.0	26.3	31.5	36.8	42.0	47.3	52.5	57.8	63.0	
Ling	LIN	gutted	1.14	5.7	11.4	17.1	22.8	28.5	34.2	39.9	45.6	51.3	57.0	62.7	68.4	
Megrim	LEZ	gutted	1.06	5.3	10.6	15.9	21.2	26.5	31.8	37.1	42.4	47.7	53.0	58.3	63.6	
Nephrops	NEP	tails	3	15	30	45	60	75	90	105	120	135	150	165	180	
Plaice	PLE	gutted	1.05	5.3	10.5	15.8	21.0	26.3	31.5	36.8	42.0	47.3	52.5	57.8	63.0	
Pollack	POL	gutted	1.17	5.9	11.7	17.6	23.4	29.3	35.1	41.0	46.8	52.7	58.5	64.4	70.2	
Saithe	POK	gutted	1.19	6.0	11.9	17.9	23.8	29.8	35.7	41.7	47.6	53.6	59.5	65.5	71.4	
Skates & rays		gutted	1.13	5.7	11.3	17.0	22.6	28.3	33.9	39.6	45.2	50.9	56.5	62.2	67.8	
		wings	2.09	10.5	20.9	31.4	41.8	52.3	62.7	73.2	83.6	94.1	104.5	115.0	125.4	
Sole	SOL	gutted	1.04	5.2	10.4	15.6	20.8	26.0	31.2	36.4	41.6	46.8	52.0	57.2	62.4	
Spurdogs	DGS	gutted	1.35	6.8	13.5	20.3	27.0	33.8	40.5	47.3	54.0	60.8	67.5	74.3	81.0	
		skinned	2.52	12.6	25.2	37.8	50.4	63.0	75.6	88.2	100.8	113.4	126.0	138.6	151.2	
Tope	GAG	gutted	1.125	5.6	11.3	16.9	22.5	28.1	33.8	39.4	45.0	50.6	56.3	61.9	67.5	
Turbot	TUR	gutted	1.09	5.5	10.9	16.4	21.8	27.3	32.7	38.2	43.6	49.1	54.5	60.0	65.4	
Whiting	WHG	gutted	1.18	5.9	11.8	17.7	23.6	29.5	35.4	41.3	47.2	53.1	59.0	64.9	70.8	
Witch	WIT	gutted	1.06	5.3	10.6	15.9	21.2	26.5	31.8	37.1	42.4	47.7	53.0	58.3	63.6	

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