

# BLL Bottle Sink Rate Test Protocol

**Purpose:** To measure whether the slowest sinking hook reaches 5 meters depth before the end of the tori line.

Longlines must be weighted so that the slowest sinking hook can be demonstrated to reach a depth of five metres (5m) within the aerial extent of the tori line. The tori line needs to maintain 50m aerial extent when fishing during high risk periods. You are required to conduct sink rate tests for the different longline gear configurations you use and record those results onboard. The tests must be carried out and calculated at least once per month and or whenever there is a gear change which may alter the sink rate and you've not recorded a bottle test for.

The bottle test is a simple way to measure your longline sink rate. Clip an empty plastic bottle onto the backbone when setting with a 5m length of line between the bottle and the clip, when the bottle is pulled below the surface that indicates distance astern when the gear was at 5m depth.

Consider doing the tests on a calm day while steaming out to the fishing grounds, in a similar depth using same gear set up. Rather than when you are fishing, (make sure there's very low risk of seabird captures) and set a few daylight lines (*don't need to have baited hooks*) bottle testing will be much easier and you will have more time do it properly.

## Preparation before the bottle test:

- Get a plastic drink bottle, 500ml to 1lt 'water bottle' (a longer narrow bottle is much easy to see).
- Cut a 5m piece of light-line and tie one end to the neck of the bottle and the other end to a shark clip.
- Pop open or remove the cap of the bottle and drill small hole in the base to allow water in and air out.
- Wrap the line around the bottle so that it can unwind freely when conducting the test.
- Have a stopwatch ready before the test and if doing tests at night, wrap reflective tape around the bottle and use a decent torch, 'spot-light' so see the bottle off in the distance as it sinks.

## Undertaking a bottle test:

- Record the vessel information before undertaking the test (e.g. setting speed, line weight size, aerial extent of tori line) When shooting, clip the bottle onto the mainline halfway between 2 weights, (usually the slowest sinking part of the line) Check Health and safety measures and stay clear from the bottle-line when deployed.
- Do the test in good weather in the depth the gear is set up for; wait until the end weight is on the seabed. During the test you need to record the; (1) length of the tori line aerial extent (2) record distance astern the bottle sinks, there are 2 ways of calculating your sink rate using the bottle-test method:
- The easiest way, before sailing pull out your tori line and mark it at 40m, 50m, 60m+etc (*these measurements need to be from the stern*) when ready, clip the bottle to the mainline and use the tori line as a measuring-tool, watch when the bottle is pulled underwater in relation to your tori line aerial extent and record the distance.
- The other option is the time-speed calculation method. Clip the bottle onto the mainline and start the stopwatch when the mainline leaves the vessel stern. Stop the stopwatch when the bottle is pulled underwater. Using the time it took along with the boat speed in the table below, lookup the distance astern the backbone reached 5m depth.
- Bottle tests will be varied due to changing environmental conditions and other factors so do a few tests to get consistent results you may require changes to gear the set-up, until you manage to sink the gear to the required level, record all test results on the below form.
- Having trouble meeting the required sink depth before the tori line reaches the water surface, you need to make changes to improve your sink rate; add larger weights, or add more weights at closer intervals, improve tori line aerial extent performance and or reduce floatation, perhaps extend the length of the float-ropes. (*Reducing boat speed will help improve the sink rate but you will also reduce your tori line aerial extent*) likely you may need to do some or all of these to reach the standard.



## Bottle test look up table to find distance travelled from speed and time taken

Lookup the time taken along the top row and follow that column down until it matches setting speed (through the water) on the left-hand column. The figure in the box gives the distance travelled before the bottle sank.

Speed (knots) (m/s)		Time (seconds)																														
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
3	1.54	0	2	3	5	6	8	9	11	12	14	15	17	19	20	22	23	25	26	28	29	31	32	34	35	37	39	40	42	43	45	46
3.5	1.80	0	2	4	5	7	9	11	13	14	16	18	20	22	23	25	27	29	31	32	34	36	38	40	41	43	45	47	49	50	52	54
4	2.06	0	2	4	6	8	10	12	14	16	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	54	56	58	60	62
4.5	2.32	0	2	5	7	9	12	14	16	19	21	23	25	28	30	32	35	37	39	42	44	46	49	51	53	56	58	60	63	65	67	69
5	2.57	0	3	5	8	10	13	15	18	21	23	26	28	31	33	36	39	41	44	46	49	51	54	57	59	62	64	67	69	72	75	77
5.5	2.83	0	3	6	8	11	14	17	20	23	25	28	31	34	37	40	42	45	48	51	54	57	59	62	65	68	71	74	76	79	82	85
6	3.09	0	3	6	9	12	15	19	22	25	28	31	34	37	40	43	46	49	52	56	59	62	65	68	71	74	77	80	83	86	90	93
6.5	3.34	0	3	7	10	13	17	20	23	27	30	33	37	40	43	47	50	54	57	60	64	67	70	74	77	80	84	87	90	94	97	100
7	3.60	0	4	7	11	14	18	22	25	29	32	36	40	43	47	50	54	58	61	65	68	72	76	79	83	86	90	94	97	101	104	108

Speed (knots) (m/s)		Time (seconds)																														
		30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
3	1.54	46	48	49	51	52	54	56	57	59	60	62	63	65	66	68	69	71	73	74	76	77	79	80	82	83	85	86	88	90	91	93
3.5	1.80	54	56	58	59	61	63	65	67	68	70	72	74	76	77	79	81	83	85	86	88	90	92	94	95	97	99	101	103	104	106	108
4	2.06	62	64	66	68	70	72	74	76	78	80	82	84	86	88	91	93	95	97	99	101	103	105	107	109	111	113	115	117	119	121	123
4.5	2.32	69	72	74	76	79	81	83	86	88	90	93	95	97	100	102	104	106	109	111	113	116	118	120	123	125	127	130	132	134	137	139
5	2.57	77	80	82	85	87	90	93	95	98	100	103	105	108	111	113	116	118	121	123	126	129	131	134	136	139	141	144	147	149	152	154
5.5	2.83	85	88	91	93	96	99	102	105	108	110	113	116	119	122	124	127	130	133	136	139	141	144	147	150	153	156	158	161	164	167	170
6	3.09	93	96	99	102	105	108	111	114	117	120	123	127	130	133	136	139	142	145	148	151	154	157	161	164	167	170	173	176	179	182	185
6.5	3.34	100	104	107	110	114	117	120	124	127	130	134	137	140	144	147	150	154	157	161	164	167	171	174	177	181	184	187	191	194	197	201
7	3.60	108	112	115	119	122	126	130	133	137	140	144	148	151	155	158	162	166	169	173	176	180	184	187	191	194	198	202	205	209	212	216

## Bottle Sink Rate Test Record Sheet

Date <i>dd/mm/yy</i>	Time <i>hh:mm</i> NZST	Set test number	Avg Line weighting config <i>kg/m</i>	Float size <i>(mm)</i> config <i>(m)</i>	Back bone diameter <i>mm</i>	Setting speed <i>knots</i>	Aerial extent of the tori line <i>(m)</i>	Time to sink <i>seconds or</i> <i>distance from</i> <i>stern it sank</i>	Did the bottle sink within aerial extent? <i>Y/N/U</i>	Comments <i>Weather, gear-set type, night or day test, bird activity</i> <i>etc.</i>
20/09/20	03:45	1	6kg / 80m	200mm /40m	2.2	4.5	55	23sec -53m	Y	<i>Nice day, set 4000m line with the tide, day-light test, Little bird activity, bottle sank few meters before tori line hit the water</i>

*(Note: if a test fails, you must change the configuration of you gear and conduct another test until you meet the requirement. You will need at least 3 successful tests to show consistently for each gear configuration / species-target configuration)*

# Streamer Line and Bottle tests – The Basics

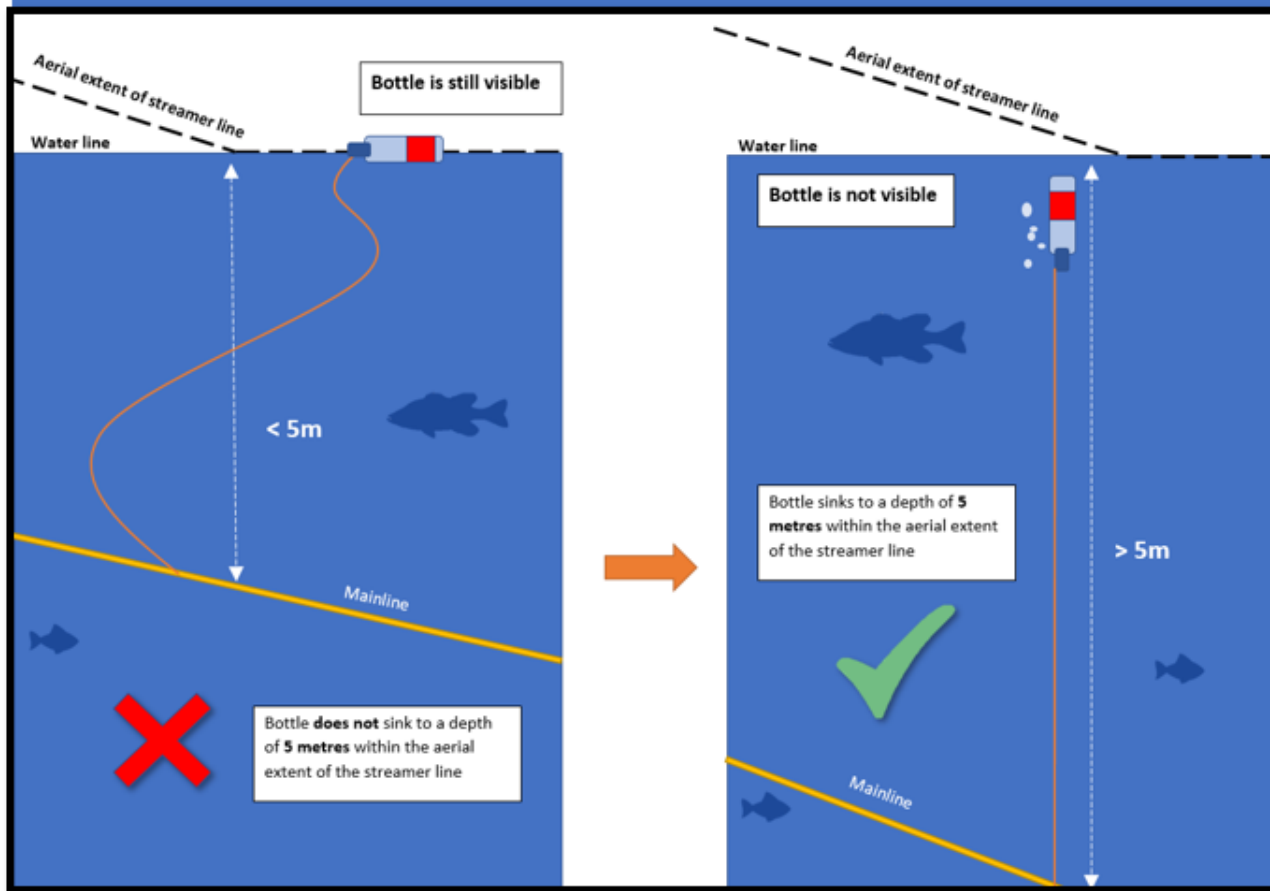
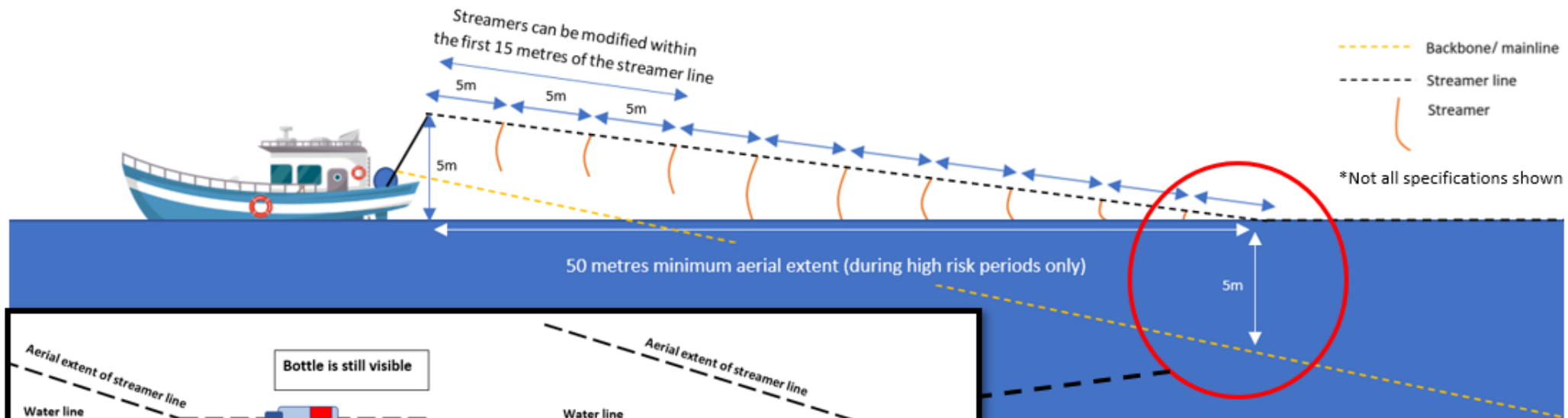
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Fisheries New Zealand  
Tini a Tangaroa



Department of Conservation  
Te Papa Atawhai



- Attach bottle with 5m snood to slowest sinking part of mainline (mid-way point between two weights)
- Does the bottle disappear before the streamer line enters the water? If not:
  - Add more weight, decrease the spacing between your weights, remove floats and/or decrease setting speed; and
  - Improve performance of streamer line to increase aerial extent (i.e. increase drag and/or height of attachment point)
- Sink rates must be tested at least once per month and/or when gear set up changes significantly
  - Record sink rate results on a form and keep on board for a minimum of one year