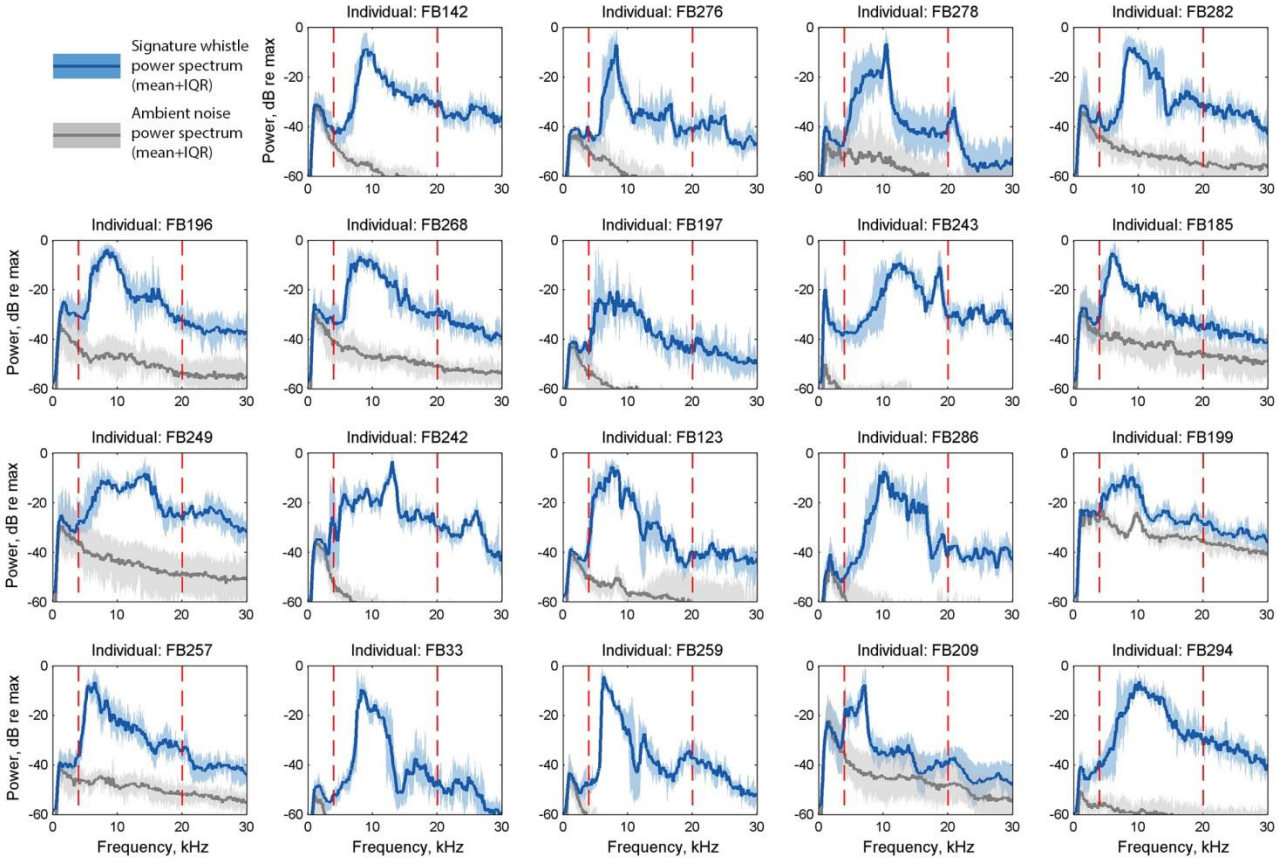

Figure S1 – Spectral energy distribution of bottlenose dolphin signature whistles used for estimating Lombard response magnitude. Ten signature whistles for each individual were extracted and filtered with a 1 kHz to 80 kHz 6-pole Butterworth filter, after which a calibrated power spectral density (PSD) estimate was obtained using the Welch method (240 kHz sample rate, 4096 Hamming window, 50% overlap) for both the signal (95% energy duration) and a 0.1s noise segment preceding the whistle. Blue line represents the mean power spectral density estimate of signature whistles after each PSD was normalized to peak PSD. Grey lines represent the mean power spectral density estimate of the preceding noise segment after each PSD was normalized to the peak PSD of the subsequent signature whistle. Shaded areas represent interquartile range, and red lines indicate analysis band in present study.

					Raw data		Whistle analysis					Linear regression	
Year	*Tag ID*	*Animal ID*	*Type*	*Age*	*Recording time (h)*	*Analysis duration (h)*	*SW*	*NSW*	*HQ SW*	*HQ NSW*	*HQ total*	*SW slope (R^2)*	*NSW slope (R^2)*
2016	128a	FB33	Mother	34	24,24	12,00	135	94	71	21	92	0,06 (0,02)	0,59 (0,28)
	128b	F259	Calf (f)	3	24,21	5,10	2362	356	942	81	1023	0,10 (0,05)	0,34 (0,11)
	131a	F209	Mother	12	6,30	6,30	37	21	10	14	24	0,03 (0,00)	0,32 (0,10)
	131b*	F255	Calf (f)	3	6,30	6,30	20	3	9	1	10	-	-
	132c*	F223	Mother	15	0,58	0,58	21	1	14	0	14	-	-
	132d	F294	Calf (m)	3	18,35	18,35	504	391	349	173	522	0,03 (0,00)	0,09 (0,01)
2015	131a	F123	Mother	17	20,50	16,00	58	95	31	54	85	-0,19 (0,04)	0,62 (0,53)
	131b	F286	Calf (m)	3	20,50	16,00	892	385	518	228	746	0,29 (0,06)	0,67 (0,34)
	134a	F199	Mother	13	17,84	12,21	44	89	11	21	32	0,55 (0,42)	0,26 (0,17)
	134b	F257	Calf (f)	2	18,17	12,02	619	276	405	135	540	0,17 (0,03)	0,65 (0,30)
2014	125a	F196	Male	16	10,61	10,61	128	120	24	41	65	0,29 (0,17)	0,19 (0,05)
	125b	F268	Male	21	8,86	8,86	75	29	29	15	44	0,35 (0,39)	0,06 (0,00)
	126a*	F276	Male	22	2,28	2,28	35	38	11	6	17	-	-
	126b*	F142	Male	22	9,62	9,62	159	132	6	5	11	-	-
	127a	F197	Mother	11	18,23	18,23	252	124	92	46	138	0,14 (0,04)	0,40 (0,12)
	127b	F243	Calf (f)	2	18,18	18,18	548	101	222	35	257	0,00 (0,00)	0,22 (0,09)
	129a	F185	Mother	14	4,75	4,75	180	85	7	13	20	-0,41 (0,13)	0,86 (0,27)
	129b	F249	Calf (f)	3	21,01	21,01	767	427	102	44	146	0,20 (0,01)	0,23 (0,06)
	129c*	F164	Male	25	1,48	1,48	11	53	3	25	28	-	-
	129d	F242	Male	24	5,71	5,71	49	269	25	86	111	0,10 (0,05)	0,44 (0,51)
2013	130a*	FB33	Mother	31	5,31	2,90	12	59	0	5	5	-	-
	130b	F282	Calf (m)	5	2,89	2,87	48	112	19	38	57	-0,10 (0,02)	0,13 (0,05)
2012	130a	F142	Male	20	6,53	2,79	75	17	17	11	28	0,11 (0,02)	0,16 (0,03)
	130b	F276	Male	20	6,82	2,79	26	38	10	13	23	0,71 (0,27)	-0,61 (0,24)
	132a	F278	Calf (m)	2	2,74	2,74	153	439	10	98	108	0,10 (0,08)	0,00 (0,00)
	132b*	FB07	Mother	28	2,81	2,74	4	5	3	2	5	-	-

Table S1: Overview of source data and estimated Lombard response magnitude per dataset. SW = signature whistle, NSW is non-signature whistle (confirmed using Sarasota Dolphin Signature Whistle Database); Recordings with * were excluded from statistical analysis since they had less than 6 high-quality whistles in one or both whistle categories

Table S2 – Results were robust to specific measures of apparent output level. The full linear mixed-effects model (fixed effects in bold, random effects in italic) was regenerated for three different AOL measures: An RMS measure across the 95% energy duration of the signal (AOL: units of dB re. 1µPa; data presented in full manuscript); the highest RMS level across a 200-ms window reflecting the integration time of low-frequency tonal signals in bottlenose dolphins (AOL_{200}: dB re. 1µPa); and an energy flux measure that accounts for changes in signal duration (AOL_{EFD}: dB re. 1µPa^2s). Apparent output level differences between signature and non-signature whistles were similar, and there were no marked differences in Lombard response magnitude (dB whistle/dB NL). *Model input abbreviations: AOL = apparent output level (dB re. 1µPa SPL_{RMS}), AOL_{200} = maximal apparent output level for a 200 ms window (dB re. 1µPa SPL_{RMS}). AOL_{EFD} = apparent output level energy flux density (dB re. 1µPa^2s), NL = noise level, WT = whistle type, ID = individual.*

Model	Δ AOL	Lombard response magnitude (dB/dB ± S.D.)	
		Signature	Non-signature
AOL ~ **NL** + **WT** + **NL*WT** + (*1+NL* | *ID*)	8.6	0.14 ± 0.03	0.32 ± 0.03
AOL_{200} ~ **NL** + **WT** + **NL*WT** + (*1+NL* | *ID*)	9.7	0.13 ± 0.03	0.33 ± 0.03
AOL_{EFD} ~ **NL** + **WT** + **NL*WT** + (*1+NL* | *ID*)	11.1	0.12 ± 0.03	0.34 ± 0.03