

ONLINE SUPPLEMENT

Table 1

Abundance and density estimates generated using Conventional Distance Sampling (CDS) for cetaceans in stratum 1 (Queen Charlotte Basin, coastal British Columbia, 2004–08) over all survey periods and cumulative pooled estimates for stratum 1.

Estimate	Stratum 1						Average – all	Average – summers
	2004 – Summer	2005 – Summer	2006 – Summer	2007 – Spring	2007 – Autumn	2008 – Summer		
<b>Harbour porpoise</b>								
D	0.157	0.309	0	0.056	0.027	0.211	0.153	0.202
95%CI(D)	0.036–0.675	0.108–0.887	0	0.014–0.221	0.003–0.216	0.044–1.023	0.066–0.355	0.083–0.492
N	2,874	5,677	0	1,032	487	3,874	2,806	3,704
95%CI(N)	667–12,391	1,980–16,279	0	263–4,054	60–3,964	799–18,785	1,209–6,514	1,518–9,040
%CV	79.4	54.9	0	73.4	125.1	87.5	43.2	45.9
<b>Dall's porpoise</b>								
D	0.492	0.354	0.113	0.081	0.115	0.182	0.247	0.318
95%CI(D)	0.248–0.978	0.109–1.152	0.039–0.332	0.027–0.240	0.035–0.379	0.085–0.391	0.147–0.416	0.180–0.560
N	9,038	6,507	2,083	1,487	2,105	3,350	4,540	5,838
95%CI(N)	4,549–17,956	2,001–21,159	711–6,098	503–4,399	638–6,950	1,562–7,184	2,700–7,632	3,313–10,289
%CV	33.8	60.9	50.1	55.1	59.7	37.7	25.5	27.8
<b>Pacific white-sided dolphin</b>								
D	2.196	1.762	3.415	0.858	0.085	1.582	1.566	2.013
95%CI(D)	1.048–4.600	0.544–5.705	1.107–10.536	0.387–1.901	0.007–1.041	0.745–3.361	0.928–2.642	1.152–3.517
N	40,316	32,345	62,708	15,755	1,565	29,054	28,759	36,958
95%CI(N)	19,243–84,464	9,988–104,747	20,327–193,448	7,111–34,905	128–19,113	13,680–61,706	17,047–48,517	21,153–64,573
%CV	37.2%	61.1	53.9	40.0	166.2	37.8	26.4	28.1
<b>Humpback whale</b>								
D	0.049	0.046	0.026	0.132	0.06	0.112	0.078	0.065
95%CI(D)	0.020–0.121	0.022–0.095	0.012–0.059	0.086–0.204	0.027–0.131	0.075–0.167	0.059–0.103	0.045–0.092
N	909	839	486	2,431	1,093	2,057	1,431	1,186
95%CI(N)	373–2,213	406–1,737	219–1,081	1,577–3,747	496–2,405	1,382–3,062	1,085–1,888	835–1,684
%CV	44.1	35.7	36.2	21.0	37.7	19.3	13.6	17.0
<b>Fin whale</b>								
D	0.012	0.045	0	0.024	0.026	0.024	0.024	0.024
95%CI(D)	0.005–0.030	0.017–0.120	0	0.010–0.060	0.010–0.068	0.010–0.057	0.014–0.041	0.012–0.047
N	223	820	0	441	476	442	446	443
95%CI(N)	91–548	305–2,199	0	176–1,108	182–1,242	188–1,040	262–760	229–859
%CV	44.9	50.0	0	46.2	47.1	42.7	26.4	32.7
<b>Killer whale</b>								
D	0.026	0.01	0.014	0.015	0.01	0.005	0.014	0.014
95%CI(D)	0.007–0.100	0.002–0.045	0.003–0.073	0.005–0.050	0.001–0.138	0.001–0.025	0.006–0.032	0.005–0.036
N	476	188	263	282	177	94	251	253
95%CI(N)	124–1,829	43–829	51–1,346	86–921	12–2,527	19–463	107–585	96–666
%CV	72.0	81.3	83.6	62.1	186.3	88.6	43.4	49.9
<b>Minke whale</b>								
D	0.029	0.02	0.045	0.02	0	0.02	0.022	0.025
95%CI(D)	0.014–0.058	0.007–0.055	0.015–0.136	0.007–0.061	0	0.005–0.078	0.013–0.037	0.014–0.045
N	526	371	830	371	0	371	396	466
95%CI(N)	258–1,071	136–1,013	275–2,505	123–1,119	0	96–1,431	231–678	261–829
%CV	35.4	51.1	52.1	56.5	0	71.2	26.7	28.6

Table 2

Abundance and density estimates generated for pinnipeds in stratum 1 (Queen Charlotte Basin, coastal British Columbia, 2004–08) over all survey periods generated using Conventional Distance Sampling (CDS) and cumulative pooled estimates for stratum 1.

Estimate	Stratum 1						Average	Average – summers
	2004 – Summer	2005 – Summer	2006 – Summer	2007 – Spring	2007 – Autumn	2008 – Summer		
<b>Harbour seal, hauled out</b>								
D	0.09	0.089	0.093	0.022	0.042	0.067	0.066	0.083
95%CI(D)	0.019–0.428	0.041–0.192	0.009–0.954	0.002–0.215	0.008–0.212	0.025–0.175	0.033–0.133	0.039–0.176
N	1,651	1,630	1,712	407	769	1,224	1,212	1,523
95%CI(N)	347–7,863	753–3,527	167–17,517	42–3,939	152–3,894	467–3,209	600–2,450	717–3,236
%CV	85.2	38.4	133.4	146.7	86.5	48.4	34.6	37.2
<b>Harbour seal, in water</b>								
D	0.119	0.047	0.026	0.09	0.089	0.047	0.074	0.066
95%CI(D)	0.051–0.282	0.018–0.121	0.004–0.155	0.048–0.167	0.015–0.528	0.018–0.125	0.046–0.118	0.038–0.117
N	2,192	866	485	1,644	1,634	866	1,350	1,217
95%CI(N)	929–5,172	336–2,227	82–2,849	880–3,072	275–9,690	326–2,300	839–2,172	690–2,145
%CV	42.3	47.2	89.8	30.3	97.5	48.7	22.8	27.3
<b>Harbour seal, total</b>								
D	0.209	0.136	0.12	0.112	0.131	0.114	0.14	0.149
95%CI(D)	0.089–0.491	0.075–0.246	0.019–0.750	0.053–0.235	0.035–0.495	0.057–0.226	0.093–0.210	0.092–0.241
N	3,842	2,496	2,197	2,052	2,403	2,090	2,562	2,740
95%CI(N)	1,638–9,016	1,379–4,516	350–13,778	974–4,323	635–9,087	1,052–4,154	1,704–3,852	1,697–4,426
%CV	43.8	29.9	105.8	37.9	71.9	34.8	20.3	24.0
<b>Steller sea lion, hauled out</b>								
D	0	0	0	0	0.301	0.24	0.082	0.072
95%CI(D)	0	0	0	0	0.024–3.821	0.039–1.462	0.013–0.497	0.012–0.438
N	0	0	0	0	5,530	4,399	1,503	1,314
95%CI(N)	0	0	0	0	436–70,158	721–26,845	248–9,119	215–8,036
%CV	0	0	0	0	179.6	109.6	108.9	109.6
<b>Steller sea lion, in water</b>								
D	0.16	0.135	0.063	0.316	0.17	0.158	0.18	0.142
95%CI(D)	0.038–0.664	0.060–0.307	0.012–0.334	0.132–0.758	0.052–0.553	0.059–0.422	0.098–0.333	0.067–0.297
N	2,936	2,485	1,160	5,797	3,126	2,901	3,314	2,601
95%CI(N)	706–12,200	1,096–5,634	219–6,129	2,415–13,914	963–10,145	1,087–7,746	1,796–6,116	1,239–5,460
%CV	76.7	41.8	85.1	44.7	60.0	50.4	31.3	37.7
<b>Steller sea lion, total</b>								
D	0.16	0.135	0.063	0.316	0.471	0.398	0.262	0.213
95%CI(D)	0.038–0.664	0.060–0.307	0.012–0.334	0.132–0.758	0.071–3.117	0.114–1.388	0.121–0.567	0.091–0.498
N	2,936	2,485	1,160	5,797	8,656	7,301	4,817	3,915
95%CI(N)	706–12,200	1,096–5,634	219–6,129	2,415–13,914	1,309–57,235	2,092–25,483	2,230–10,403	1,675–9,153
%CV	76.7	41.8	85.1	44.7	116.8	69.0	40.2	44.5
<b>Elephant seal</b>								
D	0.008	0.004	0	0.004	0	0	0.003	0.004
95%CI(D)	0.003–0.021	0.001–0.014	0	0.001–0.012	0	0	0.002–0.006	0.002–0.008
N	151	74	0	74	0	0	61	67
95%CI(N)	58–391	21–260	0	24–228	0	0	31–119	30–146
%CV	47.4	64.9	0	56.8	0	0	32.0	38.3

Table 3

Abundance and density estimates generated using Conventional Distance Sampling (CDS) for cetaceans in stratum 2 (Strait of Georgia), 3 (Johnstone Strait) and 4 (mainland inlets) over all survey periods and averaged estimates for the entire survey region (strata 1–4) in coastal British Columbia (2004–08).

Estimate	Stratum 2		Stratum 3		Stratum 4		Average	Entire region – average
	2004 – Summer	2005 – Summer	2004 – Summer	2007 – Autumn and Spring	2008 – Summer			
<b>Harbour porpoise</b>								
D	1.342	0	0.24	0.049	0.247	0.178	0.272	
95%CI(D)	0.540–3.334	0	0.006–9.643	0.001–1.616	0.006–9.903	0.012–2.709	0.138–0.536	
N	3,203	0	838	170	861	622	6,631	
95%CI(N)	1,289–7,957	0	21–33,641	5–5,639	21–34,546	41–9,449	3,366–13,065	
%CV	47.4%	0	225.0	317.2	225.0	213.6	34.9	
<b>Dall's porpoise</b>								
D	0.358	0.695	0.252	0.335	0.028	0.216	0.256	
95%CI(D)	0.289–0.443	0.562–0.860	0.009–7.159	0.015–7.550	0.001–1.125	0.011–4.390	0.171–0.383	
N	855	85	879	1,168	96	752	6,232	
95%CI(N)	691–1,058	69–105	31–24,973	52–26,339	2–3,926	37–15,315	4,165–9,324	
%CV	10.9	10.9	182.0	238.4	223.9	267.7	20.0	
<b>Pacific white-sided dolphin</b>								
D	0.16	20.675	0	0.151	0.916	0.277	1.34	
95%CI(D)	0.114–0.223	14.803–28.875	0	0.005–4.997	0.030–27.527	0.011–7.093	0.825–2.177	
N	381	2,532	0	525	3,195	965	32,637	
95%CI(N)	273–533	1,813–3,536	0	16–17,433	106–96,029	38–24,744	20,087–53,029	
%CV	17.2	17.1	0	316.7	189.2	322.8	24.6	
<b>Humpback whale</b>								
D	0	0	0.062	0.004	0.047	0.031	0.063	
95%CI(D)	0	0	0.002–1.711	0.000–0.145	0.004–0.615	0.002–0.436	0.049–0.082	
N	0	0	216	15	164	110	1,541	
95%CI(N)	0	0	8–5,967	0–505	13–2,146	8–1,521	1,187–2,000	
%CV	0	0	178.5	316.3	117.1	199.0	12.9	
<b>Fin whale</b>								
D	0	0	0	0	0	0	0.018	
95%CI(D)	0	0	0	0	0	0	0.011–0.031	
N	0	0	0	0	0	0	446	
95%CI(N)	0	0	0	0	0	0	263–759	
%CV	0	0	0	0	0	0	26.4	
<b>Killer whale</b>								
D	0	0.469	0	0	0	0	0.013	
95%CI(D)	0	0.287–0.766	0	0	0	0	0.006–0.027	
N	0	57	0	0	0	0	308	
95%CI(N)	0	35–94	0	0	0	0	146–649	
%CV	0	24.8	0	0	0	0	38.2	
<b>Minke whale</b>								
D	0.014	0	0	0	0	0	0.018	
95%CI(D)	0.011–0.019	0	0	0	0	0	0.011–0.029	
N	34	0	0	0	0	0	430	
95%CI(N)	26–45	0	0	0	0	0	259–712	
%CV	14.0	0	0	0	0	0	25.2	

Table 4

Abundance and density estimates generated using Conventional Distance Sampling (CDS) for pinnipeds in stratum 2 (Strait of Georgia) 3 (Johnstone Strait) and 4 (mainland inlets) over all survey periods and averaged estimates for the entire survey region (strata 1–4) in coastal British Columbia (2004–08).

Estimate	Stratum 2		Stratum 3		Stratum 4		Entire region – average
	2004 – Summer	2005 – Summer	2004 – Summer	2007 – Autumn and Spring	2008 – Summer	Average	
<b>Harbour seal, hauled out</b>							
D	1.217	0	1.567	0.3	1.437	0.844	0.29
95%CI(D)	0.968–1.529	0	0.090–27.386	0.033–2.773	0.059–34.745	0.067–10.642	0.225–0.374
N	2,904	0	5,467	1,047	5,014	2,944	7,060
95%CI(N)	2,311–3,649	0	313–95,538	113–9,673	207–121,210	233–37,126	5,477–9,101
%CV	11.7%	0	138.8	128.1	166.4	185.0	12.9
<b>Harbour seal, in water</b>							
D	1.934	0.647	1.631	1.225	0.902	1.246	0.427
95%CI(D)	1.754–2.133	0.588–0.713	0.134–19.808	0.220–6.830	0.088–9.234	0.240–6.480	0.375–0.485
N	4,617	79	5,689	4,275	3,145	4,348	10,394
95%CI(N)	4,187–5,090	72–87	468–69,099	767–23,827	307–32,212	836–22,606	9,143–11,816
%CV	5.0%	4.9	111.8	88.4	101.2	93.6	6.5
<b>Harbour seal, total</b>							
D	3.151	0.647	3.198	1.526	2.339	2.09	0.717
95%CI(D)	2.832–3.506	0.588–0.713	0.553–18.492	0.373–6.237	0.303–18.047	0.424–10.309	0.631–0.814
N	7,521	79	11,156	5,322	8,159	7,292	17,454
95%CI(N)	6,760–8,367	72–87	1,929–64,510	1,302–21,757	1,057–62,957	1,479–35,964	15,362–19,831
%CV	5.4%	4.9	88.7	75.4	109.4	93.2	6.5
<b>Steller sea lion, hauled out</b>							
D	0	0	0.323	0	0	0.073	0.072
95%CI(D)	0	0	0.009–11.304	0	0	0.002–2.923	0.013–0.391
N	0	0	1,126	0	0	256	1,759
95%CI(N)	0	0	32–39,433	0	0	6–10,196	324–9,534
%CV	0	0	234.4	0	0	474.3	99.9
<b>Steller sea lion, in water</b>							
D	0	0	0.261	0.43	0	0.271	0.175
95%CI(D)	0	0	0.013–5.410	0.022–8.249	0	0.015–4.804	0.101–0.301
N	0	0	910	1,499	0	946	4,260
95%CI(N)	0	0	44–18,874	78–28,777	0	53–16,760	2,472–7,341
%CV	0	0	155.6	213.7	0	240.4	27.9
<b>Steller sea lion, total</b>							
D	0	0	0.583	0.43	0	0.345	0.247
95%CI(D)	0	0	0.051–6.618	0.022–8.249	0	0.024–4.860	0.125–0.487
N	0	0	2,035	1,499	0	1,202	6,019
95%CI(N)	0	0	179–23,087	78–28,777	0	85–16,956	3,056–11,853
%CV	0	0	147.1	213.7	0	214.5	35.3
<b>Elephant seal</b>							
D	0	0	0	0.003	0	0.001	0.003
95%CI(D)	0	0	0	0.000–0.093	0	0.000–0.051	0.001–0.005
N	0	0	0	10	0	4	65
95%CI(N)	0	0	0	0–324	0	0–176	35–121
%CV	0	0	0	316.2	0	469.0	29.9

Table 5

Abundance and density estimates generated using Density Surface Modelling (DSM) for cetaceans all strata (1, Queen Charlotte Basin; 2, Strait of Georgia; 3, Johnstone Strait; and 4, mainland inlets) over all survey periods and average estimates for the entire survey region in coastal British Columbia (2004–08).

Estimate	Strata				Entire region – average
	1	2	3	4	
<b>Harbour porpoise</b>					
D	0.058	0.368	0.21	0.11	0.097
95%CI(D)	0.035–0.096	0.222–0.610	0.127–0.350	0.066–0.183	0.058–0.160
N	3,647	3,053	92	1,298	8,091
95%CI(N)	2,202–6,041	1,843–5,058	55–153	783–2,153	4,885–13,401
%CV	26.2	26.2	26.4	26.2	26.2
<b>Dall's porpoise</b>					
D	0.067	0.063	0.17	0.041	0.063
95%CI(D)	0.059–0.077	0.055–0.072	0.143–0.203	0.035–0.046	0.055–0.073
N	4,232	518	75	478	5,303
95%CI(N)	3,701–4,839	452–595	63–89	418–548	4,638–6,064
%CV	6.9	7.0	9.0	7.0	6.8
<b>Pacific white-sided dolphin</b>					
D	0.313	0.001	2.704	0.106	0.265
95%CI(D)	0.233–0.419	0.000–0.002	1.996–3.664	0.079–0.144	0.198–0.356
N	19,715	7	1,183	1,256	22,160
95%CI(N)	14,699–26,441	3–18	873–1,603	931–1,693	16,522–29,721
%CV	15.1	52.6	15.6	15.3	15.1
<b>Humpback whale</b>					
D	0.016	–	–	0.008	0.013
95%CI(D)	0.014–0.017	–	–	0.007–0.009	0.012–0.014
N	995	–	–	97	1,092
95%CI(N)	905–1,094	–	–	87–107	993–1,200
%CV	4.8	–	–	5.3	4.8
<b>Fin whale</b>					
D	0.005	0	0	0.001	0.004
95%CI(D)	0.004–0.006	0	0	0.001–0.002	0.003–0.005
N	314	0	0	15	329
95%CI(N)	262–377	0	0	11–19	274–395
%CV	9.3	0	0	12.5	9.3
<b>Killer whale</b>					
D	0.004	0	0.118	0.005	0.004
95%CI(D)	0.003–0.007	0	0.071–0.199	0.003–0.008	0.003–0.007
N	264	0	52	55	371
95%CI(N)	158–442	0	31–87	33–93	222–621
%CV	26.7	0	26.8	27.2	26.7
<b>Minke whale</b>					
D	0.008	0.003	0	0	0.006
95%CI(D)	0.004–0.014	0.001–0.005	0	0.000–0.001	0.004–0.011
N	498	21	0	4	522
95%CI(N)	281–883	11–39	0	2–7	295–927
%CV	29.9	32.3	0	38.9	29.9

Table 6

Abundance and density estimates generated using Density Surface Modelling (DSM) for pinnipeds in all strata (1, Queen Charlotte Basin; 2, Strait of Georgia; 3, Johnstone Strait; and 4, mainland inlets) over all survey periods and average estimates for the entire survey region in coastal British Columbia (2004–08).

Estimate	Strata				Entire region – average
	1	2	3	4	
<b>Harbour seal, haul-out</b>					
D	0.048	0.436	0.051	0.387	0.134
95%CI(D)	0.038–0.060	0.348–0.547	0.040–0.066	0.308–0.485	0.107–0.168
N	3,040	3,613	22	4,558	11,233
95%CI(N)	2,423–3,815	2,881–4,530	18–29	3,635–5,715	8,965–14,076
%CV	11.6	11.6	12.7	11.6	11.5
<b>Harbour seal, in-water</b>					
D	0.018	0.441	0.352	0.741	0.164
95%CI(D)	0.017–0.019	0.413–0.471	0.304–0.407	0.680–0.807	0.152–0.176
N	1,141	3,652	154	8,736	13,683
95%CI(N)	1,068–1,219	3,420–3,900	133–178	8,017–9,520	12,734–14,703
%CV	3.4	3.4	7.5	4.4	3.7
<b>Harbour seal, total</b>					
D	0.066	0.877	0.403	1.128	0.298
95%CI(D)	0.052–0.084	0.693–1.110	0.302–0.537	0.885–1.436	0.235–0.378
N	4,181	7,265	176	13,294	24,916
95%CI(N)	3,301–5,296	5,740–9,195	132–235	10,439–16,930	19,666–31,569
%CV	12.1	12.1	14.8	12.4	12.1
<b>Steller sea lion, haul-out</b>					
D	0.042	0.128	0.023	0.023	0.048
95%CI(D)	0.012–0.147	0.037–0.442	0.007–0.081	0.007–0.080	0.014–0.166
N	2,673	1,057	10	273	4,014
95%CI(N)	771–9,262	305–3,664	3–36	79–948	1,158–13,908
%CV	70.3	70.4	70.4	70.3	70.3
<b>Steller sea lion, in-water</b>					
D	0.0003	0	0	0.0004	0.0003
95%CI(D)	0.000–0.000	0	0	0.000–0.001	0.000–0.000
N	19	0	0	4	23
95%CI(N)	12–30	0	0	3–7	15–37
%CV	24.1	0	0	24.4	24.0
<b>Steller sea lion, total</b>					
D	0.043	0.128	0.023	0.024	0.048
95%CI(D)	0.012–0.157	0.035–0.468	0.006–0.086	0.006–0.087	0.013–0.177
N	2,692	1,057	10	278	4,037
95%CI(N)	733–9,882	288–3,876	3–38	76–1,021	1,100–14,815
%CV	74.4	74.3	74.3	74.5	74.3
<b>Elephant seal</b>					
D	0.00007	0.000005	0	0.0004	0.0001
95%CI(D)	0.000–0.000	0.000–0.014	0	0.000–0.065	0.000–0.015
N	5	0	0	4	9
95%CI(N)	3–7	0–116	0	0–770	0–1,248
%CV	22.2	411,476.5	0	3,497.3	2,452.4

Table 7

Sightings of other species observed but not modelled by season, year, and stratum from surveys in coastal British Columbia (2004–08).

Species	Season	Year	Stratum	Sightings
Gray whale	Spring	2007	1	3
		2007	4	1
	Summer	2004	1	3
<b>Total</b>				<b>7</b>
Sunfish	Summer	2004	1	8
		2005	1	9
		2006	1	8
		2008	1	2
<b>Total</b>				<b>27</b>
Shark	Summer	2004	1	21
		2005	1	57
		2006	1	27
		2008	1	1
<b>Total</b>				<b>106</b>
Sei whale	Summer	2005	1	1
Sea otter	Autumn	2007	1	5
		2007	4	7
	Spring	2007	1	5
		2007	4	3
	Summer	2005	1	2
		2006	1	7
		2008	1	6
	2008	4	1	
<b>Total</b>				<b>36</b>