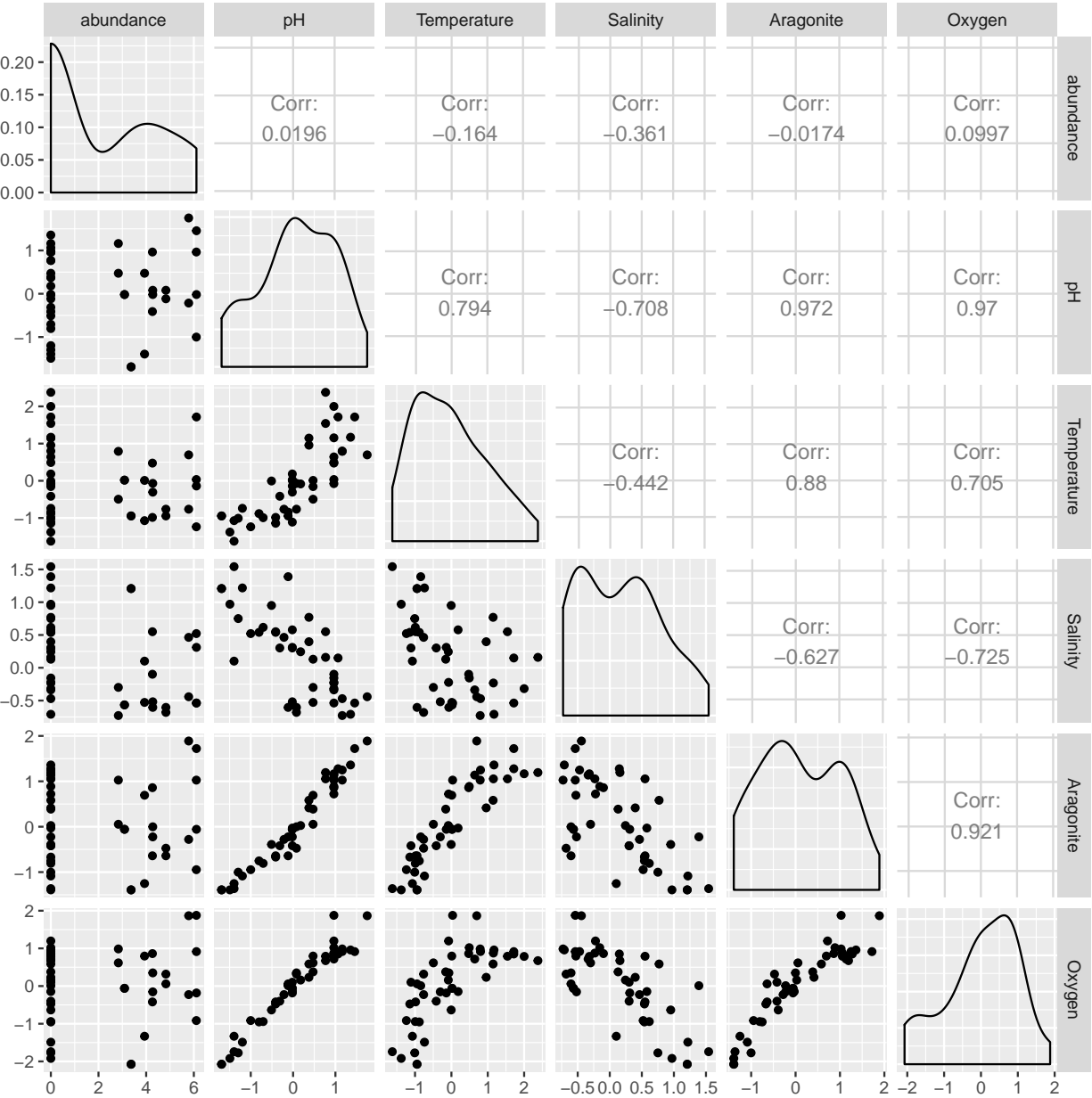# Analysis of crab abundance, presence/absence, and carapace length
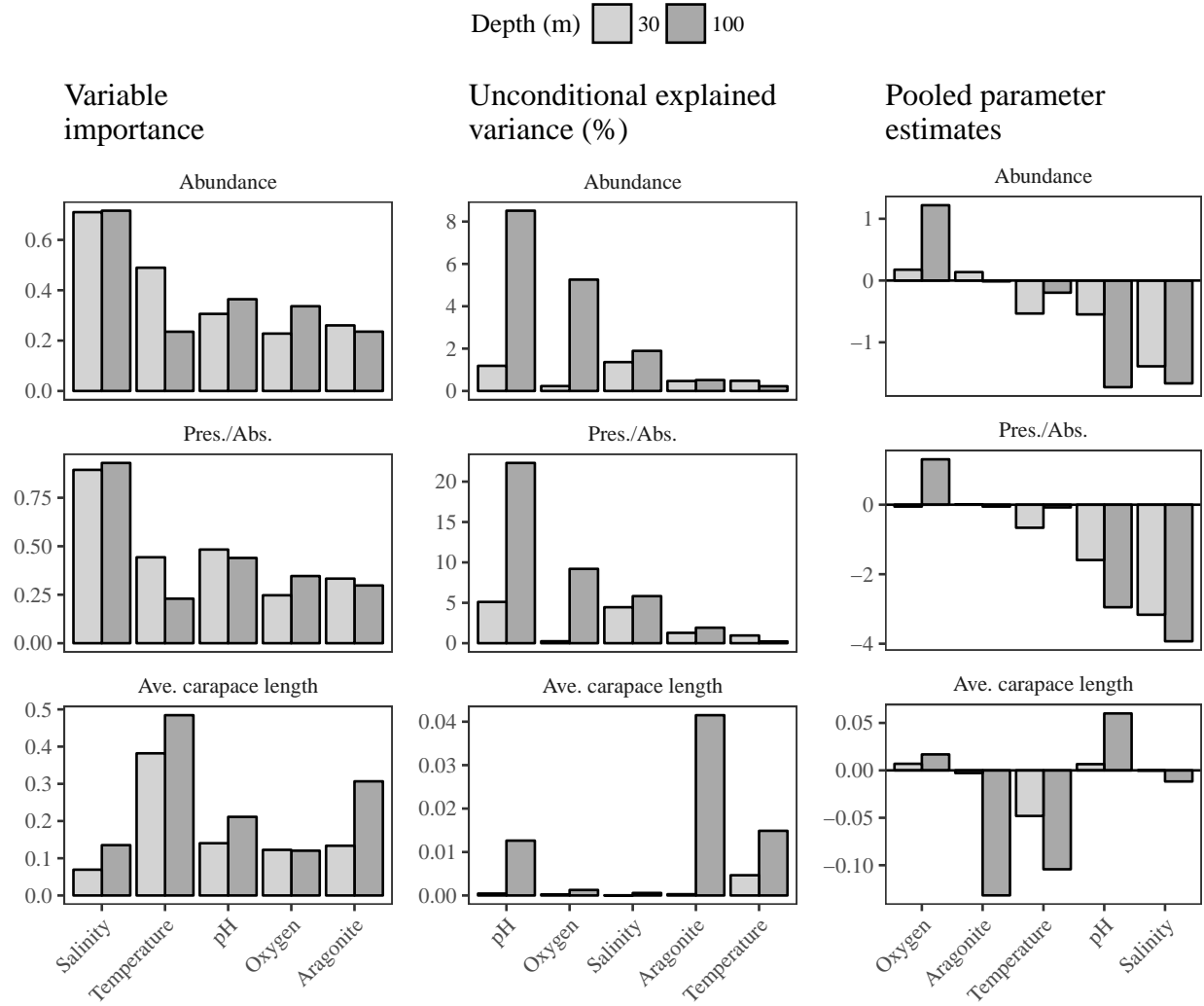
December 1, 2017

Figure 1: Results of model selection analysis with three crab population variables (abundance, presence/absence, carapace length) by shallow and deep water. Variable importances and pooled estimates show summarized results from multiple models that evaluated all parameter combinations. The unconditional explained variance (%) is the effect of each variable independent of all other variables.

Table 1: Top five selected models for crab abundance at shallow and deep water. Input variables were aragonite, oxygen, ph, salinity, and temperature. All explanatory variables were scaled and centered.

Models	Int.	Aragonite	Oxygen	pH	Salinity	Temperature	df	logLik	AICc	delta
100 m										
1	2.34	-	-	-	-1.76	-1.01	4	-48.29	106.8	0
2	1.75	-	-	-	-1.51	-	3	-50.42	108.11	1.31
3	2.54	-	-	-1.3	-2.39	-	4	-49.01	108.24	1.44
4	2.44	-1.02	-	-	-2.09	-	4	-49.28	108.77	1.97
5	1.94	-	-	-	-	-	2	-52.17	108.94	2.14
30 m										
1	2.75	-	-	-	-1.85	-	3	-49.78	106.83	0
2	2.52	-	-	-1.25	-2.81	-	4	-48.86	107.94	1.11
3	2.26	-	-	-	-2.21	-0.99	4	-48.98	108.17	1.34
4	2.31	-1.28	-	-	-2.53	-	4	-49.02	108.26	1.43
5	2.59	-	-0.81	-	-2.65	-	4	-49.31	108.84	2.01

Table 2: Top five selected models for crab presence/absence at shallow and deep water. Input variables were aragonite, oxygen, ph, salinity, and temperature. All explanatory variables were scaled and centered.

Models	Int.	Aragonite	Oxygen	pH	Salinity	Temperature	df	logLik	AICc	delta
30										
1	1.08	-	-	-2.79	-4.17	-	3	-10.51	28.28	0
2	0.28	-	-	-	-2.25	-1.79	3	-10.97	29.2	0.92
3	1	-2.27	-	-	-3.29	-	3	-11.07	29.39	1.11
4	1.06	-	-	-1.92	-3.81	-0.97	4	-9.98	30.18	1.9
5	0.76	-	-1.13	-	-3.46	-1.6	4	-10.24	30.7	2.42
100										
1	0.87	-	-	-2.2	-4.94	-	3	-10.61	28.48	0
2	0.84	-	-	-	-2.62	-	2	-12.21	29.01	0.54
3	0.36	-2.21	-	-	-4.19	-	3	-10.91	29.08	0.6
4	0.86	-	-1.48	-	-4.54	-	3	-11.15	29.57	1.09
5	0.77	-	6.04	-9.31	-4.35	-	4	-9.85	29.92	1.45

Table 3: Top five selected models for crab carapace length at shallow and deep water. Input variables were aragonite, oxygen, ph, salinity, and temperature. All explanatory variables were scaled and centered.

Models	Int.	Aragonite	Oxygen	pH	Salinity	Temperature	df	logLik	AICc	delta
30										
1	6.59	-	-	-	-	-	2	6.99	-8.28	0
2	6.6	-	-	-	-	-0.09	3	8.57	-7.14	1.13
3	6.57	-	-	0.11	-	-0.2	4	10.45	-4.9	3.38
4	6.6	-0.03	-	-	-	-	3	7.34	-4.68	3.6
5	6.6	-	-	-0.02	-	-	3	7.12	-4.23	4.04
100										
1	6.45	-	-	-	-	-0.19	3	9.82	-9.64	0
2	6.59	-	-	-	-	-	2	6.99	-8.28	1.37
3	6.42	-0.63	-	0.41	-	-	4	12.07	-8.14	1.5
4	6.41	-	-	-	-0.1	-0.27	4	11.68	-7.35	2.29
5	6.46	-0.42	0.23	-	-	-	4	11.25	-6.5	3.15