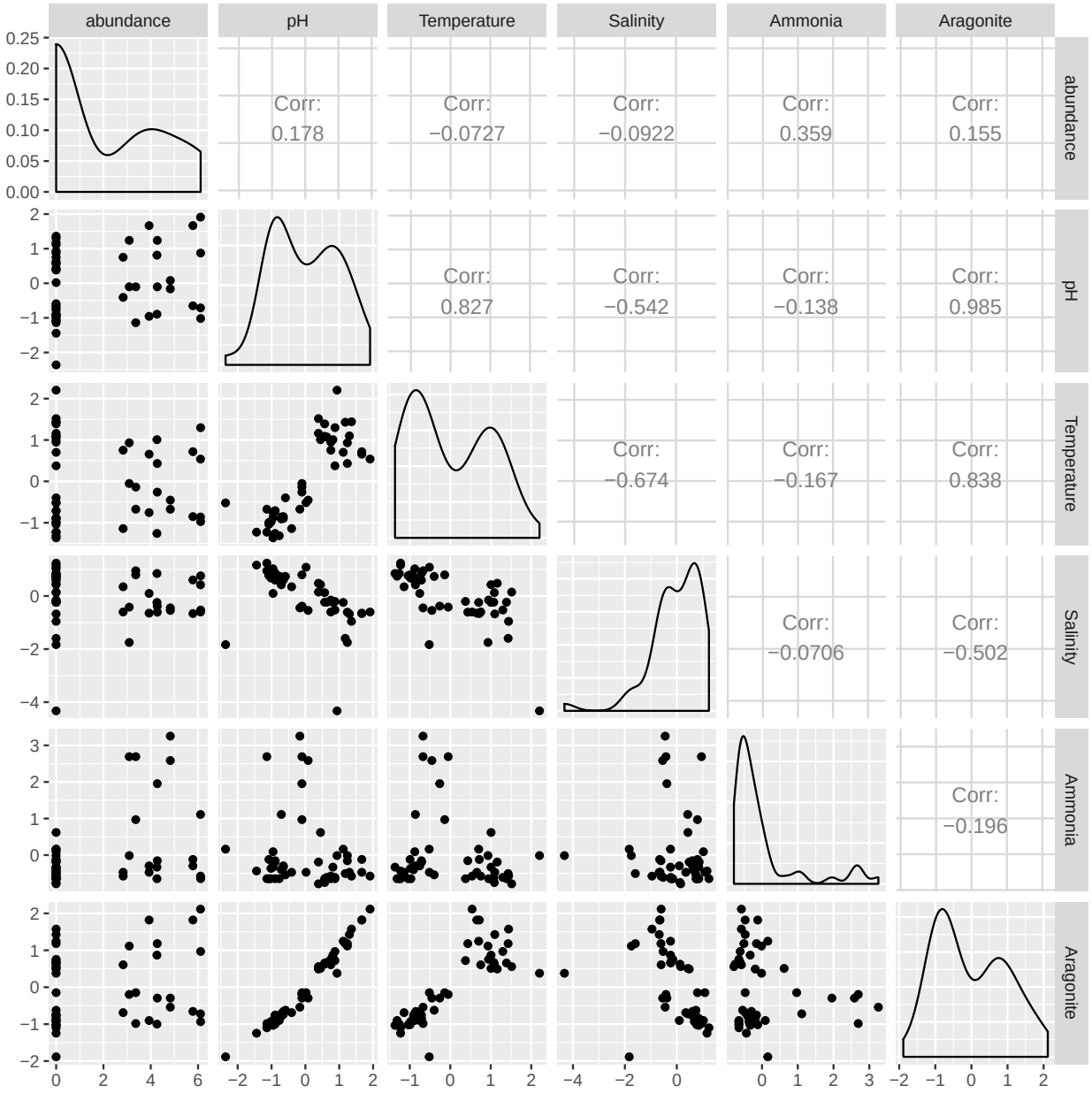
```
## Warning:  package 'tidyr' was built under R version 3.4.2
## Warning:  package 'purrr' was built under R version 3.4.2
## Warning:  package 'dplyr' was built under R version 3.4.2
## Warning:  package 'GGally' was built under R version 3.4.2
## Warning:  package 'glmulti' was built under R version 3.4.2
## Warning:  package 'rJava' was built under R version 3.4.2
## Warning:  package 'MuMIn' was built under R version 3.4.2
```

Analysis of crab abundance, presence/absence, and carapace length

November 30, 2017



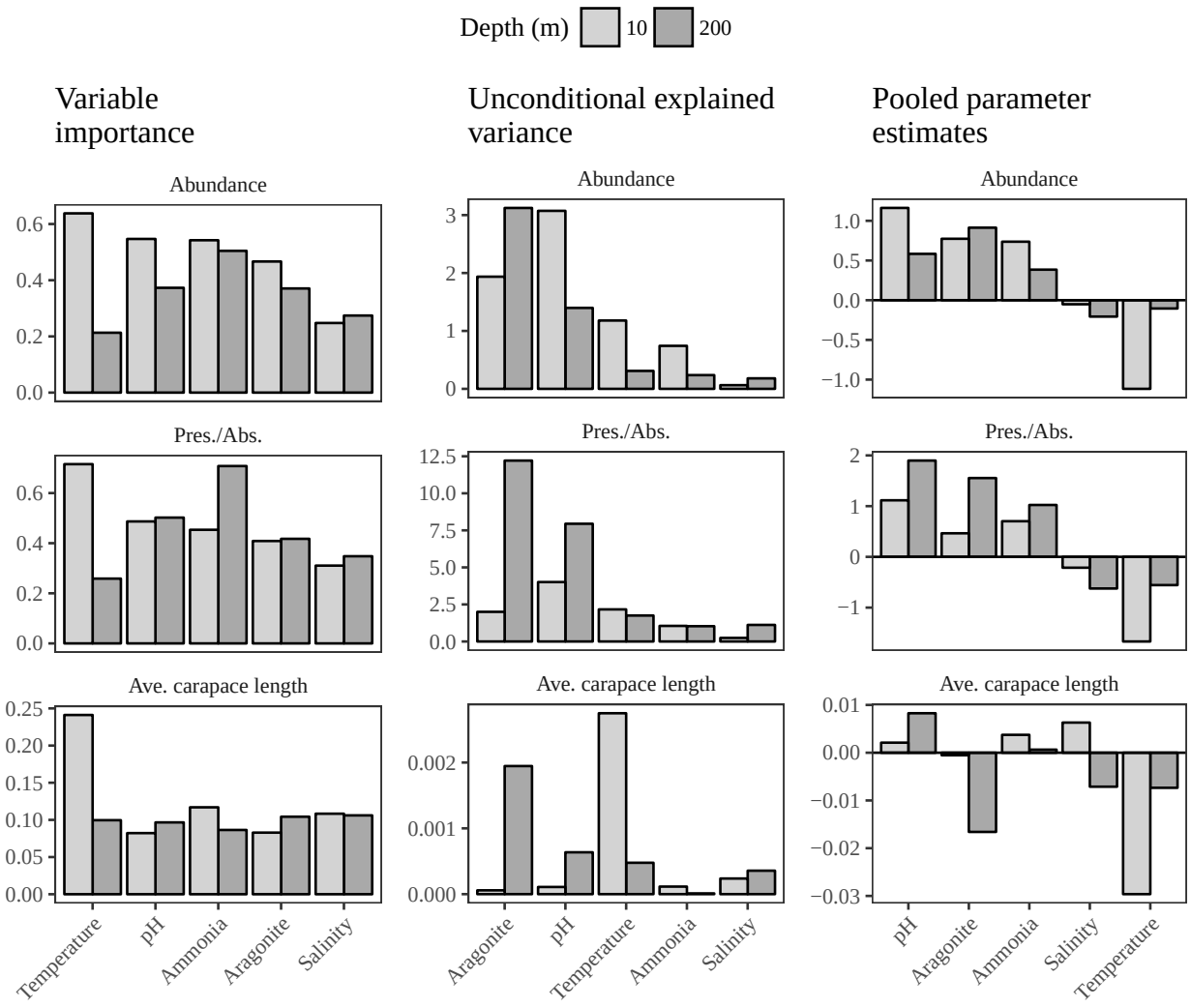


Figure 1: Results of model selection analysis with three crab population variables (abundance, presence/absence, carapace length) by shallow and deep depths. Variable importances and pooled estimates show summarized results from multiple models that evaluated all parameter combinations. The unconditional 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 depths. Input variables were ammonia, aragonite, ph, salinity, and temperature. All explanatory variables were scaled and centered.

Models	Int.	Ammonia	Aragonite	pH	Temperature	df	logLik	AICc	delta
10 m									
1	1.63	-	-	2.15	-1.88	4	-49.42	108.95	0
2	1.08	1.02	-	2.51	-1.37	5	-48.13	109.58	0.64
3	0.41	1.72	2.08	-	-	4	-49.81	109.72	0.78
4	0.17	1.55	-	2.32	-	4	-49.89	109.89	0.94
5	1.31	1.22	2.18	-	-1.27	5	-48.29	109.9	0.96
200 m									
1	1.68	0.87	-	-		3	-51.73	110.66	0
2	4.35	-	2.89	-		3	-52.22	111.65	0.99
3	3.59	-	-	2.01		3	-52.24	111.67	1.01
4	2.87	0.66	-	1.33		4	-50.87	111.84	1.18
5	3.32	0.65	1.84	-		4	-50.95	112	1.34

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

Models	Int.	Ammonia	Aragonite	pH	Salinity	Temperature	df	logLik	AICc	delta
10										
1	-0.34	-	-	2.15	-	-2.32	3	-12.07	31.34	0
2	0.07	-	1.73	-	-	-2.4	3	-12.41	32.01	0.68
3	-0.83	1.48	-	2.63	-	-1.83	4	-10.99	32.09	0.75
4	-1.87	1.93	-	2.12	-	-	3	-12.69	32.57	1.23
5	1.41	-	-	-	-1.04	-2.7	3	-12.76	32.72	1.39
200										
1	2.53	1.35	-	3.37	-		3	-10.74	28.67	0
2	-0.43	1.39	-	-	-		2	-12.4	29.36	0.69
3	2.85	1.19	3.77	-	-		3	-11.18	29.57	0.9
4	4.43	1.42	-	4.16	-1.86		4	-9.94	29.98	1.31
5	2.55	-	-	3.54	-		2	-12.91	30.4	1.72

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

Models	Int.	Ammonia	Aragonite	Salinity	Temperature	df	logLik	AICc	delta	pH
10										
1	6.59	-	-	-	-	2	6.99	-8.28	0	
2	6.65	-	-	-	-0.11	3	8.27	-6.54	1.74	
3	6.58	0.04	-	-	-	3	7.48	-4.97	3.31	
4	6.62	-	-	0.06	-	3	7.43	-4.87	3.41	
5	6.6	-	-0.01	-	-	3	7.02	-4.03	4.24	
200										
1	6.59		-	-	-	2	6.99	-8.28	0	-
2	6.6		-	-0.04	-	3	7.13	-4.26	4.02	-
3	6.55		-	-	-0.05	3	7.11	-4.23	4.05	-
4	6.56		-0.04	-	-	3	7.04	-4.08	4.2	-
5	6.6		-	-	-	3	7.03	-4.06	4.21	0.03