Appendix **A**.
Model rankings of the independent analyses of climate
(both 1958–2010 and 1968–2010 separately),
predation, and density dependence.

A. **Tables and Figures**

Table A.1: Comparison of models (using the $-\frac{\sum \log(\text{CPO}_{j,t})}{\text{sample size}}$) with various climatic covariates affecting scaup pair abundance in the Northwest Territories from 1967-2010. Models include covariates for snow cover extent (Snow), Arctic Oscillation (AO), Pacific Decadal Oscillation (PDO), number of ponds in the prairie parkland region (Pond), and El Niño Southern Oscillation (ENSO) for both a year ranging from June of year t-1 to May of year t, as well as the lag-1 year (*lag-1*). Palmer Drought Severity Index (PDSI) was also included for various seasons in the year t-1 leading up to year t. All models include an unstructured random effect, latent density dependence, and an offset for the number of segments sampled in each stratum and year, and 'Null' indicates a model with no climate covariates.

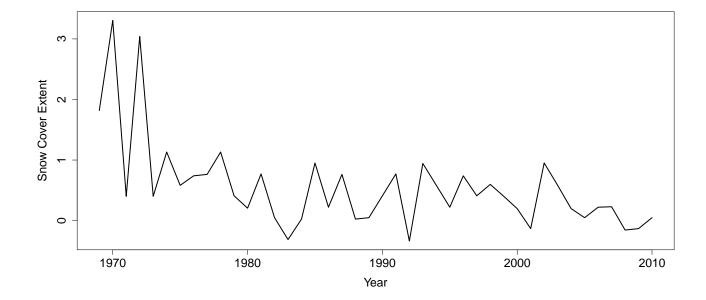| Model	$-\frac{\sum \log(\text{CPO}_{j,t})}{\text{sample size}}$
Snow	4.9882
Snow + Snow$_{lag-2}$	4.9889
Snow + Snow$_{lag-1}$	5.0126
Snow + Snow$_{lag-1}$ + Snow$_{lag-2}$	5.0119
PDSI$_{July-Aug,lag-1}$	5.0082
PDSI$_{July-Aug}$ + PDSI$_{July-Aug,lag-1}$	5.1262
PDSI$_{May-Aug,lag-1}$	5.0107
PDSI$_{May-Aug}$ + PDSI$_{May-Aug,lag-1}$	5.1301
PDSI$_{May-July,lag-1}$	5.0173
PDO$_{lag-1}$	5.0174
PDO + PDO$_{lag-1}$	5.1333
PDSI$_{May-July}$ + PDSI$_{May-July,lag-1}$	5.133
PDO	5.0203
PDSI$_{May-July}$	5.0215
PDSI$_{May-Aug}$	5.0239
Snow$_{lag-1}$	5.0250
ENSO	5.0243
PDSI$_{July-Aug}$	5.0229
Null	5.0247
Pond	5.0191
AO	5.0319
Snow$_{lag-1}$ + Snow$_{lag-2}$	5.0284
AO + AO$_{lag-1}$	5.3159
AO$_{lag-1}$	5.0337
Snow$_{lag-2}$	5.0342

Figure A.1: Snow cover extent (scaled) in stratum 13.

Table A.2: Comparison of models (using the $-\frac{\sum \log(\text{CPO}_{j,t})}{\text{sample size}}$) with various climatic covariates affecting scaup pair abundance in the Northwest Territories from 1958-2010. Models include covariates for Arctic Oscillation (AO), Pacific Decadal Oscillation (PDO), number of ponds in the prairie parkland region (Pond), and El Niño Southern Oscillation (ENSO) for both a year ranging from June of year t-1 to May of year t, as well as the lag-1 year (*lag-1*). Palmer Drought Severity Index (PDSI) was also included for various seasons in the year t-1 leading up to year t and a lag-1 year. All models include an unstructured random effect, latent density dependence, and 'Null' indicates a model with no climate covariates.

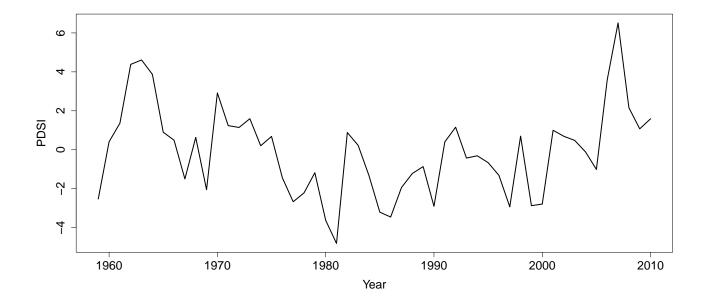| Model	$-\frac{\sum \log(\text{CPO}_{j,t})}{\text{sample size}}$
$\text{PDSI}_{July-Aug,lag-1}$	5.0409
$\text{PDSI}_{July-Aug} + \text{PDSI}_{July-Aug,lag-1}$	5.0414
$\text{PDSI}_{May-Aug,lag-1}$	5.0419
$\text{PDSI}_{May-July,lag-1}$	5.0434
AO	5.0436
$\text{PDSI}_{May-Aug} + \text{PDSI}_{May-Aug,lag-1}$	5.0436
$\text{PDSI}_{May-July}$	5.0444
$\text{AO} + \text{AO}_{lag-1}$	5.0456
$\text{PDSI}_{May-Aug}$	5.0457
$\text{PDSI}_{May-July} + \text{PDSI}_{May-July,lag-1}$	5.0457
Pond	5.0460
Null	5.0465
$\text{PDSI}_{July-Aug}$	5.0467
ENSO	5.0467
PDO	5.0478
PDO_{lag-1}	5.0485
$\text{PDO} + \text{PDO}_{lag-1}$	5.0499
AO_{lag-1}	5.0562

Figure A.2: July-August PDSI in stratum 13

Table A.3: Comparison of models for socio-economic effects on red fox trapping harvest in the Northwest Territories from 1957-2011. Covariates are abbreviated as 'price' for the inflation adjusted price of pelts in that year and 'lag price' for the inflation adjusted price of pelts in the previous year. 'Null' indicates a model with only an intercept, while 'df' indicates the degrees of freedom for the model.

Model	df	AIC_c	ΔAIC_c
lag price	3	805.72	0
price	3	815.65	9.93
price + price^2	4	817.26	11.54
lag price + lag price^2	3	817.81	12.09
null	2	856.67	50.95

Table A.4: Comparison of models for the socio-economic effects on total fox (red and arctic fox) trapping harvest in the Northwest Territories from 1957-2011. Covariates are abbreviated as 'price' for the inflation adjusted price of pelts in that year and 'lag price' for the inflation adjusted price of pelts in the previous year. 'Null' indicates a model with only an intercept, while 'df' indicates the degrees of freedom for the model.

Model	df	AIC_c	ΔAIC_c
lag price	3	1125.24	0
lag price + lag price^2	4	1127.04	2.12
price	3	1143.92	18.67
price + price^2	4	1145.41	20.50
null	2	1172.08	46.60

Table A.5: Comparison of models for the socio-economic effects on mink trapping harvest in the Northwest Territories from 1957-2011. Covariates are abbreviated as 'price' for the inflation adjusted price of pelts in that year and 'lag price' for the inflation adjusted price of pelts in the previous year. 'Null' indicates a model with only an intercept, while 'df' indicates the degrees of freedom for the model.

Model	df	AIC_c	$\Delta\mathrm{AIC}_c$
price + price^2	4	993.47	0
lag price + lag price^2	4	997.54	4.07
price	3	998.86	5.39
lag price	3	1005.09	11.62
null	2	1036.6	43.14

Table A.6: Comparison of models (using the $-\frac{\sum \log(\mathrm{CPO}_{j,t})}{\text{sample size}}$) with various predator covariates affecting scaup population dynamics in the Northwest Territories from 1958-2012. Models include covariates for pelt harvest of mink, red fox, and total fox (red and arctic fox combined) from year t-1. All models include an unstructured random effect and latent density dependence, and 'Null' indicates no predator covariates.

Model	$-\frac{\sum \log(\mathrm{CPO}_{j,t})}{\text{sample size}}$
Null	5.0519
Red fox	5.0522
Total fox	5.0532
Mink	5.0540