

Appendix 1.

Table A1.1: Detection of adults (a) and broods (b) of different waterbird species observed on 38 beaver ponds and 12 mining ponds sampled in western Québec, Canada in 2018 and 2019.

(a) Number of sites with adult detections

Species	2018		2019	
	Beaver ponds	Mining ponds	Beaver ponds	Mining ponds
Mallard (<i>Anas platyrhynchos</i>)	17	5	19	7
Ring-necked Duck (<i>Aythya collaris</i>)	12	7	20	10
Common Goldeneye (<i>Bucephala clangula</i>)	3	7	2	7
American Wigeon (<i>Mareca americana</i>)	9	4	10	5
Common Loon (<i>Gavia immer</i>)	1	3	3	5
Common Merganser (<i>Mergus merganser</i>)	2	2	0	2
Hooded Merganser (<i>Lophodytes cucullatus</i>)	9	0	12	3
Pied-billed Grebe (<i>Podilymbus podiceps</i>)	3	2	3	4
Red-necked Grebe (<i>Podiceps grisegena</i>)	1	1	0	1
Green-winged Teal (<i>Anas crecca</i>)	2	3	12	4
Blue-winged Teal (<i>Spatula discors</i>)	1	0	1	0
Wood Duck (<i>Aix sponsa</i>)	5	1	0	0
American Black Duck (<i>Anas rubripes</i>)	2	0	2	1
Bufflehead (<i>Bucephala albeola</i>)	0	1	0	1
Canada Goose (<i>Branta canadensis</i>)	0	1	5	1

Table A1.1 continuation:

(b) Number of sites with brood detections

Species	2018		2019	
	Beaver ponds	Mining ponds	Beaver ponds	Mining ponds
Mallard (<i>Anas platyrhynchos</i>)	9	4	4	3
Ring-necked Duck (<i>Aythya collaris</i>)	5	7	3	6
Common Goldeneye (<i>Bucephala clangula</i>)	1	5	1	4
American Wigeon (<i>Mareca americana</i>)	3	2	2	1
Common Loon (<i>Gavia immer</i>)	0	1	0	1
Common Merganser (<i>Mergus merganser</i>)	1	1	0	0
Hooded Merganser (<i>Lophodytes cucullatus</i>)	0	0	4	1
Pied-billed Grebe (<i>Podilymbus podiceps</i>)	3	2	1	1
Red-necked Grebe (<i>Podiceps grisegena</i>)	0	1	0	0
Green-winged Teal (<i>Anas crecca</i>)	0	1	2	0
Blue-winged Teal (<i>Spatula discors</i>)	0	0	0	0
Wood Duck (<i>Aix sponsa</i>)	0	0	0	0
American Black Duck (<i>Anas rubripes</i>)	0	0	0	0
Bufflehead (<i>Bucephala albeola</i>)	0	0	0	0
Canada Goose (<i>Branta canadensis</i>)	0	0	0	1

Table A1.2: Mean counts (by visit) of adults and ducklings of different waterbird species observed on 38 beaver ponds (BP) and 12 mining ponds (MP) sampled in western Québec, Canada in 2018 and 2019. For ducklings, mean number of broods observed by visit is also presented in parentheses.

Site	Site type	Adults	Ducklings	Site	Site type	Adults	Ducklings
1	BP	0.0	0.0 (0.0)	26	BP	0.4	1.6 (0.3)
2	BP	2.6	3.2 (1.0)	27	BP	2.8	1.4 (0.3)
3	MP	0.8	0.8 (0.5)	28	MP	23.0	10.6 (3.8)
4	MP	4.2	6.0 (1.8)	29	BP	2.6	1.4 (0.5)
5	MP	23.2	15.6 (3.8)	30	BP	4.0	3.8 (0.8)
6	BP	0.8	0.0 (0.0)	31	MP	14.8	14.2 (3.3)
7	BP	2.4	3.2 (0.8)	32	BP	0.4	0.0 (0.0)
8	MP	1.4	0.4 (0.3)	33	BP	0.8	0.0 (0.0)
9	BP	3.0	4.8 (1.0)	34	MP	7.8	10.4 (2.5)
10	BP	0.8	2.2 (0.5)	35	BP	3.6	3.8 (2.5)
11	BP	0.6	0.0 (0.0)	36	BP	2.0	1.6 (0.3)
12	MP	3.6	1.8 (0.5)	37	MP	3.6	2.8 (0.8)
13	BP	0.0	0.0 (0.0)	38	BP	0.2	0.0 (0.0)
14	BP	1.4	0.0 (0.0)	39	BP	0.0	0.0 (0.0)
15	BP	1.2	0.6 (0.3)	40	BP	6.0	4.4 (1.0)
16	BP	2.2	0.0 (0.0)	41	BP	1.6	0.0 (0.0)
17	BP	0.2	1.4 (0.3)	42	BP	1.2	0.8 (0.3)
18	BP	1.0	1.2 (0.3)	43	BP	0.0	0.0 (0.0)
19	MP	0.8	0.0 (0.0)	44	BP	0.4	0.0 (0.0)
20	BP	5.2	0.8 (0.3)	45	BP	2.2	0.0 (0.0)
21	BP	0.2	0.0 (0.0)	46	BP	1.4	2.6 (0.5)
22	MP	18.8	9.8 (1.8)	47	BP	1.8	0.0 (0.0)
23	BP	2.6	0.0 (0.0)	48	BP	0.4	0.0 (0.0)
24	BP	5.6	2.2 (0.8)	49	BP	0.0	0.0 (0.0)
25	MP	3.8	0.0 (0.0)	50	BP	1.6	2.2 (0.5)

Table A1.3: Model selection based on the Akaike Information Criteria corrected for small samples and overdispersion (QAIC_c) explaining the use of two pond types by adults of six species and two guilds of waterfowl in western Québec, Canada in 2018 and 2019. Only models with an $\Delta\text{QAIC}_c < 2$ are presented with their respective Akaike weights (ω_i), quasi log-likelihood (Q-LL), and number of estimated parameters (K).

Models	Q-LL	K	QAIC _c	ΔQAIC_c	ω_i
Mallard ($\hat{c}=1.43$)					
$\psi(\text{Year})p(\text{Year})$	-159.97	5	330.57	0.00	0.22
$\psi(\text{Year})p(\text{Intercept})$	-161.15	4	330.73	0.16	0.20
$\psi(\text{Year})p(\text{Sampling period})$	-160.71	5	332.06	1.49	0.10
Ring-necked duck ($\hat{c}=2.67$)					
$\psi(\text{Year})p(\text{Type})$	-93.26	5	197.16	0.00	0.28
$\psi(\text{Year})p(\text{Sampling effort})$	-93.30	5	197.24	0.08	0.27
$\psi(\text{Year} + \text{Type})p(\text{Sampling effort})$	-92.37	6	197.65	0.49	0.22
Common goldeneye ($\hat{c}=1.25$)					
$\psi(\text{Year} + \text{Type})p(\text{Type})$	-75.19	6	163.28	0.00	0.35
$\psi(\text{Year} + \text{Type})p(\text{Temperature} + \text{Wind})$	-74.26	7	163.75	0.47	0.28
$\psi(\text{Year} + \text{Type})p(\text{Julian day})$	-76.17	6	165.25	1.97	0.13
American wigeon ($\hat{c}=1.88$)					
$\psi(\text{Year})p(\text{Julian day})$	-80.82	5	172.28	0.00	0.31
$\psi(\text{Year} + \text{Type})p(\text{Julian day})$	-80.43	6	173.76	1.48	0.15
$\psi(\text{Year})p(\text{Intercept})$	-82.91	4	174.23	1.95	0.12
Green-winged Teal ($\hat{c}=1.24$)					
$\psi(\text{Year})p(\text{Year})$	-95.57	5	201.78	0.00	0.19
$\psi(\text{Year})p(\text{Intercept})$	-97.02	4	202.46	0.68	0.14
$\psi(\text{Year} + \text{Type})p(\text{Year})$	-94.97	5	202.85	1.07	0.11
$\psi(\text{Year} + \text{Type})p(\text{Intercept})$	-96.47	5	203.59	1.81	0.08
$\psi(\text{Year})p(\text{Type})$	-96.48	5	203.60	1.83	0.08

Table A1.3 continuation:

Models	Q-LL	K	QAIC _c	Δ QAIC _c	ω_i
Hooded Merganser ($\hat{c}=1.48$)					
$\psi(\text{Year})p(\text{Year})$	-80.07	5	170.78	0.00	0.18
$\psi(\text{Year})p(\text{Intercept})$	-81.29	4	170.99	0.21	0.16
$\psi(\text{Year} + \text{Type})p(\text{Year})$	-79.57	6	172.05	1.27	0.09
$\psi(\text{Year} + \text{Type})p(\text{Intercept})$	-80.83	5	172.30	1.51	0.08
$\psi(\text{Year})p(\text{Sampling effort})$	-80.84	5	172.31	1.53	0.08
$\psi(\text{Year})p(\text{Sampling effort})$	-81.02	5	172.68	1.89	0.07
$\psi(\text{Year})p(\text{Type})$	-81.05	5	172.73	1.95	0.07
Dabblers ($\hat{c}=2.44$)					
$\psi(\text{Year})p(\text{Year})$	-117.99	5	246.61	0.00	0.28
$\psi(\text{Year})p(\text{Intercept})$	-119.70	4	247.82	1.21	0.15
Divers ($\hat{c}=2.21$)					
$\psi(\text{Year} + \text{Type})p(\text{Type})$	-105.46	6	223.82	0.00	0.78

Table A1.4: Model selection based on the Akaike Information Criteria corrected for small samples and overdispersion (QAIC_c) explaining the use of two pond types by three species and one guild of waterfowl broods in small ponds in western Québec, Canada. Only models with an $\Delta\text{QAIC}_c < 2$ are presented with their respective Akaike weights (ω_i), quasi log-likelihood (Q-LL) and number of estimated parameters (K).

Models	Q-LL	K	QAIC _c	ΔQAIC_c	ω_i
Mallard ($\hat{c}=3.43$)					
$\psi(\text{Year})p(\text{Intercept})$	-29.74	4	67.89	0.00	0.20
$\psi(\text{Year})p(\text{Sampling effort})$	-28.93	5	68.50	0.61	0.15
$\psi(\text{Year})p(\text{Year})$	-29.28	5	69.21	1.32	0.10
$\psi(\text{Year} + \text{Type})p(\text{Intercept})$	-29.50	5	69.64	1.75	0.08
$\psi(\text{Year})p(\text{Julian day})$	-29.62	5	69.87	1.98	0.07
Common Goldeneye ($\hat{c}=1.63$)					
$\psi(\text{Year} + \text{Type})p(\text{Temperature} + \text{Wind})$	-30.17	7	75.56	0.00	0.36
$\psi(\text{Year} + \text{Type})p(\text{Sampling period})$	-31.85	6	76.60	1.04	0.22
American Wigeon ($\hat{c}=1.11$)					
$\psi(\text{Year})p(\text{Intercept})$	-41.24	4	90.89	0.00	0.21
$\psi(\text{Year})p(\text{Temperature} + \text{Wind})$	-39.66	6	92.22	1.33	0.11
$\psi(\text{Year} + \text{Type})p(\text{Intercept})$	-40.88	5	92.40	1.51	0.10
Dabblers ($\hat{c}=2.67$)					
$\psi(\text{Year})p(\text{Sampling effort})$	-46.12	5	102.89	0.00	0.21
$\psi(\text{Year})p(\text{Intercept})$	-47.39	4	103.21	0.32	0.18
$\psi(\text{Year})p(\text{Year})$	-46.64	5	103.92	1.03	0.12
$\psi(\text{Year} + \text{Type})p(\text{Sampling effort})$	-45.95	6	104.80	1.91	0.08

Table A1.5: Model selection based on the Akaike Information Criteria corrected for small samples and overdispersion (QAIC_c) explaining habitat use according to pond characteristics by adults of six species and two guilds of waterfowl in western Québec, Canada in 2018 and 2019. Only models with an $\Delta\text{QAIC}_c < 2$ are presented with their respective Akaike weights (ω_i), quasi log-likelihood (Q-LL) and number of estimated parameters (K).

Models	Q-LL	K	QAIC _c	ΔQAIC_c	ω_i
Mallard ($\hat{c}=1.42$)					
$\psi(\text{Year} + \text{SD}^\dagger + \text{Area} + \text{Depth} + \text{NDVI}^\ddagger + \text{pH} + \text{Fish}^§)\text{p}(\text{Type})$	-147.74	11	320.48	0.00	0.36
$\psi(\text{Year} + \text{SD} + \text{Area} + \text{Depth} + \text{NDVI})\text{p}(\text{Type})$	-150.87	9	321.74	1.26	0.19
Ring-necked duck ($\hat{c}=2.62$)					
$\psi(\text{Year})\text{p}(\text{Type})$	-95.04	5	200.72	0.00	0.17
$\psi(\text{Year})\text{p}(\text{Sampling effort})$	-95.08	5	200.80	0.09	0.34
$\psi(\text{Year} + \text{pH} + \text{Fish})\text{p}(\text{Sampling effort})$	-93.08	7	201.38	0.66	0.47
$\psi(\text{Year} + \text{pH} + \text{Fish})\text{p}(\text{Type})$	-93.13	7	201.48	0.76	0.59
$\psi(\text{Year} + \text{pH} + \text{Fish} + \text{pH} : \text{Fish})\text{p}(\text{Sampling effort})$	-91.99	8	201.56	0.85	0.70
Common goldeneye ($\hat{c}=1.26$)					
$\psi(\text{Year} + \text{SD} + \text{Area} + \text{Depth} + \text{NDVI})\text{p}(\text{Type})$	-70.78	9	161.56	0.00	0.18
$\psi(\text{Year} + \text{SD} + \text{Area} + \text{Depth} + \text{NDVI})\text{p}(\text{Temperature} + \text{Wind})$	-69.86	10	162.19	0.63	0.13
$\psi(\text{Year} + \text{SD} + \text{Area} + \text{Depth} + \text{NDVI} + \text{pH} + \text{Fish})\text{p}(\text{Type})$	-69.19	11	163.38	1.82	0.07
$\psi(\text{Year} + \text{SD} + \text{Area} + \text{Depth} + \text{NDVI})\text{p}(\text{Julian day})$	-71.76	9	163.52	1.96	0.07
American wigeon ($\hat{c}=1.87$)					
$\psi(\text{Year} + \text{SD} + \text{Area} + \text{Depth} + \text{NDVI})\text{p}(\text{Julian day})$	-78.19	7	171.59	0.00	0.25
$\psi(\text{Year})\text{p}(\text{Julian day})$	-81.25	5	173.14	1.55	0.11
$\psi(\text{Year} + \text{pH} + \text{Fish} + \text{pH} : \text{Fish})\text{p}(\text{Julian day})$	-77.96	8	173.50	1.90	0.10
$\psi(\text{Year} + \text{pH} + \text{Fish})\text{p}(\text{Intercept})$	-80.33	6	173.56	1.96	0.09

Table A1.5 continuation:

Models	Q-LL	K	QAIC _c	ΔQAIC _c	ω _i
Green-winged Teal ($\hat{c}=1.26$)					
ψ(Year)p(Year)	-94.05	5	198.74	0.00	0.23
ψ(Year)p(Intercept)	-95.48	4	199.38	0.64	0.16
ψ(Year)p(Type)	-94.95	5	200.54	1.80	0.09
Hooded Merganser ($\hat{c}=1.41$)					
ψ(Year)p(Temperature + Wind)	-95.74	6	204.38	0.00	0.24
ψ(Year + pH + Fish)p(Temperature + Wind)	-93.42	8	204.42	0.04	0.24
ψ(Year + pH + Fish + pH : Fish)p(Temperature + Wind)	-92.75	9	205.51	1.13	0.14
ψ(Year + pH + Fish + pH : Fish)p(Type)	-92.75	9	205.51	1.13	0.14
Dabblers ($\hat{c}=2.43$)					
ψ(Year)p(Year)	-118.47	5	247.58	0.00	0.18
ψ(Year)p(Intercept)	-120.19	4	248.81	1.22	0.10
ψ(Year + SD + Area + Depth + NDVI + pH + Fish)p(Year)	-112.28	11	249.57	1.98	0.07
Divers ($\hat{c}=2.14$)					
ψ(Year + SD + Area + Depth + NDVI)p(Type)	-104.42	9	228.85	0.00	0.69

† Shoreline development

‡ Normalized difference vegetation index

§ Presence/absence of fish

Table A1.6: Model selection based on the Akaike Information Criteria corrected for small samples and overdispersion (QAIC_c) explaining habitat use according to pond characteristics by two species and one guild of waterfowl broods in western Québec, Canada in 2018 and 2019. Only models with an $\Delta\text{QAIC}_c < 2$ are presented with their respective Akaike weights (ω_i), quasi log-likelihood (Q-LL) and number of estimated parameters (K).

Models	Q-LL	K	QAIC _c	ΔQAIC_c	ω_i
Mallard ($\hat{c}=3.28$)					
$\psi(\text{Year})p(\text{Intercept})$	-31.09	4	70.61	0.00	0.21
$\psi(\text{Year})p(\text{Sampling effort})$	-30.25	5	71.14	0.53	0.16
$\psi(\text{Year})p(\text{Year})$	-30.62	5	71.89	1.28	0.11
$\psi(\text{Year})p(\text{Julian day})$	-30.97	5	72.59	1.97	0.08
Common Goldeneye ($\hat{c}=1.6$)					
$\psi(\text{Year} + \text{pH} + \text{Fish}^\dagger)p(\text{Temperature} + \text{Wind})$	-27.69	8	72.96	0.00	0.24
$\psi(\text{Year} + \text{pH} + \text{Fish})p(\text{Sampling period})$	-29.41	7	74.03	1.07	0.14
$\psi(\text{Year} + \text{pH} + \text{Fish} + \text{pH} : \text{Fish})p(\text{Temperature} + \text{Wind})$	-27.28	9	74.57	1.61	0.11
$\psi(\text{Year} + \text{pH} + \text{Fish} + \text{pH} : \text{Fish})p(\text{Type})$	-27.28	9	74.57	1.61	0.11
Dabblers ($\hat{c}=2.68$)					
$\psi(\text{Year})p(\text{Sampling effort})$	-45.95	5	102.54	0.00	0.21
$\psi(\text{Year})p(\text{Intercept})$	-47.22	4	102.85	0.31	0.18
$\psi(\text{Year})p(\text{Year})$	-46.47	5	103.57	1.03	0.13

[†] Presence/absence of fish

Table A1.7: Multimodel inference explaining habitat use according to pond characteristics by adults of six species and two guilds of waterfowl in small ponds in western Québec, Canada in 2018 and 2019. Estimates of the effect of explanatory variables on the probabilities of occupancy (ψ) and detection (p) are presented with their 95% confidence intervals. All candidate models were used for multimodel inference.

Parameters on ψ	Estimate	Lower limit	Upper limit	Parameters on p	Estimate	Lower limit	Upper limit
Mallard							
Fish [†]	1.93	-1.60	5.47	Temperature	0	-0.03	0.03
pH	-0.08	-1.76	1.6	Wind [#]	0	-0.03	0.03
pH:Fish [‡]	0.33	-1.44	2.09	Hour ^{††}	-0.01	-0.16	0.14
NDVI [§]	-3.43	-10.58	3.71	Time ^{‡‡}	0	-0.07	0.08
Depth	-0.72	-2.40	0.95	Julian day	0	0	0
SD [¶]	-0.99	-2.46	0.49	Year	-0.05	-0.41	0.32
Area	5.39	-2.45	13.2	Type	-0.57	-1.51	0.36
Year	0.38	-1.5	2.26				
Ring-necked Duck							
Fish	0.42	-1.22	2.05	Temperature	0	-0.03	0.03
pH	0.57	-1.13	2.26	Wind	0	-0.03	0.03
pH:Fish	-0.28	-1.82	1.26	Hour	0	-0.07	0.07
NDVI	0.18	-0.88	1.24	Time	0.30	-0.39	0.98
Depth	0.10	-0.59	0.79	Julian day	0	0	0
SD	-0.14	-0.85	0.58	Year	-0.06	-0.58	0.46
Area	0.96	-3.65	5.57	Type	0.51	-0.84	1.85
Year	1.60	-0.20	3.40				
Common Goldeneye							
Fish	-0.76	-2.75	1.24	Temperature	0.16	-0.44	0.76
pH	0.49	-1.01	2.00	Wind	-0.11	-0.55	0.32
pH:Fish	-0.17	-1.29	0.95	Hour	0.01	-0.25	0.22
NDVI	-1.14	-2.55	0.26	Time	-0.02	-0.19	0.16
Depth	-0.15	-1.07	0.77	Julian day	0	-0.01	0.02
SD	0.11	-0.85	1.06	Year	0.02	-0.24	0.28
Area	0.20	-0.43	0.84	Type	0.44	-0.97	1.85
Year	-0.28	-1.78	1.23				

Table A1.7 continuation:

Parameters on ψ	Estimate	Lower limit	Upper limit	Parameter on p	Estimate	Lower limit	Upper limit
American Wigeon							
Fish	0.32	-1.09	1.73	Temperature	-0.02	-0.22	0.18
pH	0.54	-0.49	1.57	Wind	0.01	-0.12	0.13
pH:Fish	0.10	-0.69	0.89	Hour	-0.05	-0.49	0.38
NDVI	0.02	-0.29	0.34	Time	0.01	-0.13	0.14
Depth	-0.02	-0.31	0.27	Julian day	-0.01	-0.03	0.01
SD	-0.01	-0.21	0.19	Year	0.01	-0.26	0.27
Area	0.01	-0.19	0.22	Type	0.03	-0.33	0.4
Year	0.02	-1.33	1.37				
Green-winged Teal							
Fish	-0.14	-0.96	0.68	Temperature	0.02	-0.15	0.19
pH	0.01	-0.31	0.33	Wind	-0.03	-0.27	0.21
pH:Fish	0.01	-0.26	0.27	Hour	0.03	-0.30	0.37
NDVI	0.00	-0.19	0.19	Time	0.03	-0.22	0.28
Depth	0.02	-0.23	0.27	Julian day	0.00	-0.01	0.01
SD	-0.01	-0.18	0.17	Year	-0.34	-1.57	0.89
Area	0.04	-0.32	0.39	Type	0.03	-0.34	0.41
Year	1.46	0.11	2.80				
Hooded Merganser							
Fish	1.16	-1.14	3.45	Temperature	-0.54	-1.26	0.19
pH	0.53	-0.93	2.00	Wind	-0.08	-0.53	0.38
pH:Fish	-0.33	-1.78	1.12	Hour	-0.02	-0.3	0.25
NDVI	-0.03	-0.51	0.46	Time	0.00	-0.07	0.07
Depth	0.01	-0.20	0.22	Julian day	0.00	0.00	0.00
SD	0.02	-0.23	0.27	Year	0.00	-0.18	0.18
Area	0.00	-0.22	0.23	Type	-0.04	-0.54	0.45
Year	0.72	-0.55	1.99				

Table A1.7 continuation:

Parameters on ψ	Estimate	Lower limit	Upper limit	Parameters on p	Estimate	Lower limit	Upper limit
Dabblers							
Fish	0.72	-1.89	3.33	Temperature	-0.01	-0.12	0.1
pH	-0.14	-1.25	0.97	Wind	0	-0.1	0.09
pH:Fish	0.07	-0.81	0.95	Hour	-0.05	-0.39	0.29
NDVI	0.42	-1.05	1.90	Time	0.01	-0.09	0.10
Depth	-0.23	-1.26	0.81	Julian day	0	-0.01	0
SD	0.37	-1.52	0.77	Year	-0.24	-1.04	0.56
Area	2.42	-4.97	9.81	Type	0.03	-0.28	0.35
Year	0.95	-0.70	2.61				
Divers							
Fish	0.01	-0.88	0.90	Temperature	0	-0.01	0.01
pH	0.18	-0.79	1.15	Wind	0	-0.01	0.01
pH:Fish	-0.07	-0.89	0.75	Hour	0	-0.04	0.04
NDVI	-0.04	-1.25	1.17	Time	0	-0.03	0.03
Depth	0.18	-0.71	1.07	Julian day	0	0	0
SD	-0.45	-1.31	0.41	Year	0	-0.08	0.07
Area	4.17	-1.92	10.26	Type	1.39	0.47	2.31
Year	1.03	-0.53	2.60				

† Presence/absence of fish in the pond.

‡ Interaction between presence/absence of fish and pH.

§ Normalized difference vegetation index.

‖ Depth at 50 cm from the shoreline.

¶ Shoreline development.

Force of wind on the Beaufort scale.

†† Period (morning or evening) when the inventory was done.

‡‡ Time spent around the pond to do the inventory.

Table A1.8: Multimodel inference explaining habitat use according to pond characteristics by two species and one guild of waterfowl broods in small ponds in western Québec, Canada in 2018 and 2019. Estimates of the effect of explanatory variables on the probabilities of occupancy (ψ) and detection (p) are presented with their 95% confidence intervals. All candidate models were used for multimodel inference.

Parameters on ψ	Estimate	Lower limit	Upper limit	Parameters on p	Estimate	Lower limit	Upper limit
Mallard							
Fish [†]	0.11	-1.09	1.31	Temperature	-0.02	-0.28	0.25
pH	0.06	-0.68	0.8	Wind [#]	0.04	-0.34	0.41
pH:Fish [‡]	0.06	-0.68	0.80	Hour ^{††}	0.02	-0.49	0.53
NDVI [§]	0	-0.25	0.25	Time ^{‡‡}	0.12	-0.49	0.72
Depth	0	-0.23	0.22	Julian day	0	-0.02	0.02
SD [¶]	-0.01	-0.24	0.23	Year	-0.16	-1.37	1.04
Area	0.02	-0.52	0.57	Type	-0.01	-0.59	0.57
Year	-0.73	-2.78	1.33				
Common Goldeneye							
Fish	-2.96	-9.40	3.47	Temperature	0.76	-1.15	2.67
pH	1.82	0.09	3.56	Wind	0.01	-0.62	0.64
pH:Fish	0.58	-4.52	5.67	Hour	0.32	-1.14	1.78
NDVI	-0.05	-3.61	3.50	Time	-0.02	-0.26	0.23
Depth	0	-0.51	0.51	Julian day	0	-0.01	0.01
SD	0.01	-1.76	1.78	Year	0.04	-0.47	0.55
Area	0	-0.83	0.84	Type	0.1	-0.95	1.14
Year	-0.38	-2.60	1.84				

Table A1.8 continuation:

Parameters on ψ	Estimate	Lower limit	Upper limit	Parameters on p	Estimate	Lower limit	Upper limit
Dabblers							
Fish	0.07	-0.91	1.06	Temperature	-0.01	-0.16	0.15
pH	0.05	-0.62	0.71	Wind	0.01	-0.18	0.21
pH:Fish	0.08	-0.70	0.86	Hour	-0.01	-0.39	0.36
NDVI	0.02	-0.34	0.39	Time	0.16	-0.46	0.77
Depth	-0.02	-0.32	0.28	Julian day	0	-0.01	0.01
SD	-0.02	-0.31	0.27	Year	-0.18	-1.21	0.85
Area	0.06	-0.87	0.98	Type	0.02	-0.43	0.47
Year	-0.34	-1.99	1.31				

† Presence/absence of fish in the pond.

‡ Interaction between presence/absence of fish and pH.

§ Normalized difference vegetation index.

‖ Depth at 50 cm from the shoreline.

¶ Shoreline development.

Force of wind on the Beaufort scale.

†† Period (morning or evening) when the inventory was done.

‡‡ Time spent around the pond to do the inventory.

Table A1.9: Model-averaged predicted detection probability of breeding adults (a) and broods (b) of different waterfowl species and guilds presented with their 95% confidence intervals. Estimates were obtained after sampling 38 beaver ponds and 12 mining ponds in western Québec, Canada in 2018 and 2019.

(a) Adult detection

Species	Beaver ponds			Mining ponds		
	Prediction	Lower limit	Upper limit	Prediction	Lower limit	Upper limit
Mallard	0.41	0.29	0.55	0.41	0.28	0.55
Ring-Necked duck	0.44	0.27	0.62	0.57	0.30	0.80
Common Goldeneye	0.54	0.24	0.82	0.65	0.48	0.79
American Wigeon	0.46	0.32	0.62	0.48	0.32	0.63
Green-winged Teal	0.37	0.15	0.64	0.38	0.16	0.65
Hooded Merganser	0.36	0.15	0.64	0.37	0.15	0.64
Dabbling ducks	0.55	0.38	0.71	0.56	0.39	0.72
Diving ducks	0.46	0.35	0.58	0.80	0.66	0.89

(b) Brood detection

Species	Beaver ponds			Mining ponds		
	Prediction	Lower limit	Upper limit	Prediction	Lower limit	Upper limit
Mallard	0.40	0.15	0.71	0.39	0.14	0.72
Common Goldeneye	0.47	0.07	0.89	0.53	0.25	0.79
American Wigeon	0.21	0.06	0.52	0.21	0.06	0.53
Dabbling ducks	0.43	0.22	0.66	0.43	0.22	0.68