Appendix A.

TABLE A1. List of all response and predictor variables considered in the analysis. Variables are classified by type (i.e., response or predictor) and measurement level (i.e., nominal, ordinal, interval or ratio).

Variable	Type	Measurement level
Wetland inundation	Response	Nominal
Wetland ponded area	Response	Ratio
Wetland identifier	Predictor	Nominal
Wetland type	Predictor	Nominal
Year	Predictor	Nominal
Surrounding landuse	Predictor	Nominal
Distance to irrigation reuse pit	Predictor	Ratio
Hydric footprint perimeter-to-area ratio	Predictor	Ratio
Spring days major precipitation event	Predictor	Ordinal
Spring precipitation total	Predictor	Ratio
Spring mean maximum temperature	Predictor	Interval
Spring mean minimum temperature	Predictor	Interval
Spring mean vapor pressure deficit	Predictor	Ratio
Summer days major precipitation event	Predictor	Ordinal
Summer precipitation total	Predictor	Ratio
Summer mean maximum temperature	Predictor	Interval
Summer mean minimum temperature	Predictor	Interval
Summer mean vapor pressure deficit	Predictor	Ratio

Autumn days major precipitation event	Predictor	Ordinal
Autumn precipitation total	Predictor	Ratio
Autumn mean maximum temperature	Predictor	Interval
Autumn mean minimum temperature	Predictor	Interval
Autumn mean vapor pressure deficit	Predictor	Ratio
Winter days major precipitation event	Predictor	Ordinal
Winter precipitation total	Predictor	Ratio
Winter mean maximum temperature	Predictor	Interval
Winter days maximum temperature below freezing	Predictor	Ordinal
Winter mean minimum temperature	Predictor	Interval
Winter days minimum temperature below freezing	Predictor	Ordinal
Winter mean vapor pressure deficit	Predictor	Ratio

TABLE A2. Ranking of three alternative models with identical global fixed effects structures, but different random effects structures, for explaining variation in inundation for total wetlands in 2004 and 2006–2009 in the Rainwater Basin region of Nebraska.

Model	Δ AICc†	w_i‡
Inundation probability = Global fixed structure§ + (1|Wetland)¶	0.00	0.73
Inundation probability = Global fixed structure + (1|Wetland) + (1|Year)#	2.01	0.27
Inundation probability = Global fixed structure + (1|Year)‖	1042.48	0.00

† Δ AICc = Relative Akaike's Information Criterion adjusted for small sample size.

‡ w_i = AICc weight.

§ Global fixed structure = wetland type + surrounding landcover class + log-transformed and standardized perimeter-to-area ratio of wetland hydric footprint + standardized number of spring days with major precipitation events + log-transformed and standardized total summer precipitation + standardized mean maximum daily autumn temperature + log-transformed and standardized total winter precipitation + standardized mean maximum daily winter temperature.

¶ (1|Wetland) = random effects structure allowing the parameter estimate for the model intercept to vary among wetlands

(1|Wetland) + (1|Year) = random effects structure allowing the parameter estimate for model intercept to vary among wetlands and years.

‖ (1|Year) = random effects structure allowing the parameter estimate for model intercept to vary among years.

TABLE A3. Ranking of three alternative models with identical global fixed effects structures, but different random effects structures, for explaining variation in inundation for rowcrop-embedded wetlands in 2004 and 2006–2009 in the Rainwater Basin region of Nebraska.

Model	Δ AICc†	w_i‡
Inundation probability = Global fixed structure§ + (1|Wetland)¶	0.00	0.73
Inundation probability = Global fixed structure + (1|Wetland) + (1|Year)#	2.01	0.27
Inundation probability = Global fixed structure + (1|Year)‖	730.66	0.00

† Δ AICc = Relative Akaike's Information Criterion adjusted for small sample size.

‡ w_i = AICc weight.

§ Global fixed structure = wetland type + surrounding agricultural landcover class + log-transformed and standardized perimeter-to-area ratio of wetland hydric footprint + log-transformed and standardized total summer precipitation + standardized mean maximum daily autumn temperature + log-transformed and standardized total winter precipitation + standardized mean maximum daily winter temperature.

¶ (1|Wetland) = random effects structure allowing the parameter estimate for the model intercept to vary among wetlands.

(1|Wetland) + (1|Year) = random effects structure allowing the parameter estimate for model intercept to vary among wetlands and years.

‖ (1|Year) = random effects structure allowing the parameter estimate for model intercept to vary among years.

TABLE A4. Ranking of three alternative models with identical global fixed effects structures, but different random effects structures, for explaining variation in inundation for non-rowcrop-embedded wetlands in 2004 and 2006–2009 in the Rainwater Basin region of Nebraska.

Model	Δ AICc†	w_i‡
Inundation probability = Global fixed structure§ + (1|Wetland)¶	0.00	0.73
Inundation probability = Global fixed structure + (1|Wetland) + (1|Year)#	2.02	0.27
Inundation probability = Global fixed structure + (1|Year)‖	328.29	0.00

† Δ AICc = Relative Akaike's Information Criterion adjusted for small sample size.

‡ w_i = AICc weight.

§ Global fixed structure = wetland type + log-transformed and standardized perimeter-to-area ratio of wetland hydric footprint + standardized number of spring days with major precipitation events + log-transformed and standardized total summer precipitation + standardized mean maximum daily autumn temperature + log-transformed and standardized total winter precipitation + standardized mean maximum daily winter temperature.

¶ (1|Wetland) = random effects structure allowing the parameter estimate for the model intercept to vary among wetlands.

(1|Wetland) + (1|Year) = random effects structure allowing the parameter estimate for model intercept to vary among wetlands and years.

‖ (1|Year) = random effects structure allowing the parameter estimate for model intercept to vary among years.

TABLE A5. Ranking of three alternative models with identical global fixed effects structures, but different random effects structures, for explaining variation in ponded area for all inundated wetlands in 2004 and 2006–2009 in the Rainwater Basin region of Nebraska.

Model	Δ AICc†	w_i‡
Ponded area = Global fixed structure§ + (1|Wetland) + (1|Year)¶	0.00	1.00
Ponded area = Global fixed structure + (1|Wetland)#	71.98	0.00
Ponded area = Global fixed structure + (1|Year)‖	831.54	0.00

† Δ AICc = Relative Akaike's Information Criterion adjusted for small sample size.

‡ w_i = AICc weight.

§ Global fixed structure = wetland type + surrounding landcover class + log-transformed and standardized perimeter-to-area ratio of wetland hydric footprint + standardized number of spring days with major precipitation events + log-transformed and standardized total summer precipitation + standardized mean maximum daily summer temperature + standardized mean minimum daily autumn temperature + log-transformed and standardized total winter precipitation + standardized number of winter days with maximum temperature < 0°C.

¶ (1|Wetland) + (1|Year) = random effects structure allowing the parameter estimate for model intercept to vary among wetlands and years.

(1|Wetland) = random effects structure allowing the parameter estimate for the model intercept to vary among wetlands.

‖ (1|Year) = random effects structure allowing the parameter estimate for model intercept to vary among years.

TABLE A6. Ranking of three alternative models with identical global fixed effects structures, but different random effects structures, for explaining variation in ponded area for rowcrop-embedded and inundated wetlands in 2004 and 2006–2009 in the Rainwater Basin region of Nebraska.

Model	Δ AICc†	w_i‡
Ponded area = Global fixed structure§ + (1|Wetland) + (1|Year)¶	0.00	1.00
Ponded area = Global fixed structure + (1|Wetland)#	54.93	0.00
Ponded area = Global fixed structure + (1|Year)‖	413.79	0.00

† Δ AICc = Relative Akaike's Information Criterion adjusted for small sample size.

‡ w_i = AICc weight.

§ Global fixed structure = wetland type + surrounding agricultural landcover class + log-transformed and standardized perimeter-to-area ratio of wetland hydric footprint + standardized number of spring days with major precipitation events + log-transformed and standardized total summer precipitation + standardized mean maximum daily summer temperature + standardized mean minimum daily autumn temperature + log-transformed and standardized total winter precipitation + standardized number of winter days with maximum temperature < 0°C.

¶ (1|Wetland) + (1|Year) = random effects structure allowing the parameter estimate for model intercept to vary among wetlands and years.

(1|Wetland) = random effects structure allowing the parameter estimate for the model intercept to vary among wetlands.

‖ (1|Year) = random effects structure allowing the parameter estimate for model intercept to vary among years.

TABLE A7. Ranking of three alternative models with identical global fixed effects structures, but different random effects structures, for explaining variation in ponded area for non-rowcrop-embedded and inundated wetlands in 2004 and 2006–2009 in the Rainwater Basin region of Nebraska.

Model	Δ AICc†	w_i‡
Ponded area = Global fixed structure§ + (1|Wetland)¶	0.00	0.73
Ponded area = Global fixed structure + (1|Wetland) + (1|Year)#	2.03	0.27
Ponded area = Global fixed structure + (1|Year)‖	421.93	0.00

† Δ AICc = Relative Akaike's Information Criterion adjusted for small sample size.

‡ w_i = AICc weight.

§ Global fixed structure = wetland type + log-transformed and standardized perimeter-to-area ratio of wetland hydric footprint + standardized number of spring days with major precipitation events + log-transformed and standardized total summer precipitation + standardized mean maximum daily autumn temperature + log-transformed and standardized total winter precipitation + standardized number of winter days with maximum temperature < 0°C.

¶ (1|Wetland) = random effects structure allowing the parameter estimate for the model intercept to vary among wetlands.

(1|Wetland) + (1|Year) = random effects structure allowing the parameter estimate for model intercept to vary among wetlands and years.

‖ (1|Year) = random effects structure allowing the parameter estimate for model intercept to vary among years.