

Supplementary figures

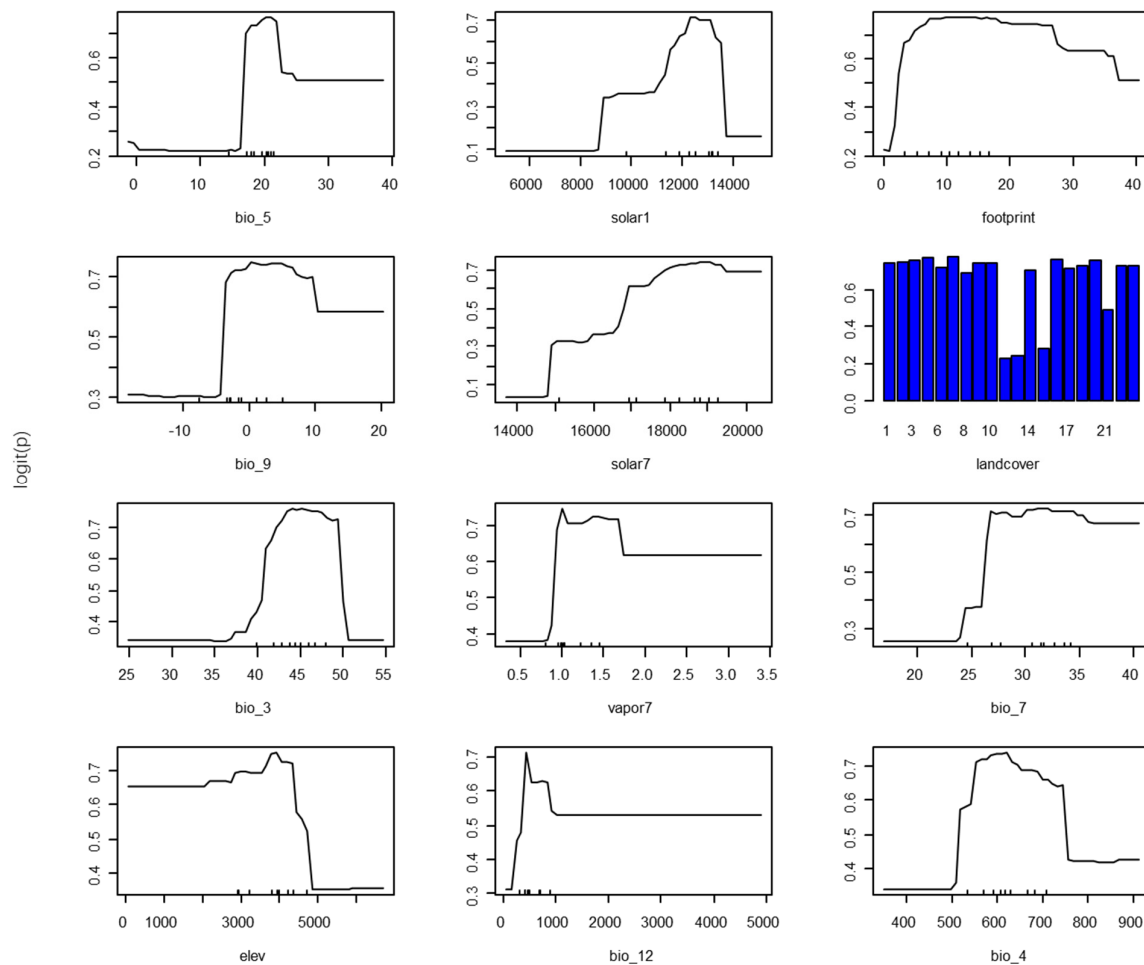


Figure S1. Partial dependence plots for the top 12 variables (out of 29) derived from the random forest model illustrate the effects of each variable on the presence of black-necked cranes during the breeding stage. The full name of the variables are: bio_3 = Isothermality; bio_4 = Temperature Seasonality; bio_5 = Max Temperature of Warmest Month; bio_7 = Temperature Annual Range; bio_9 = Mean Temperature of Driest Quater; bio_12 = Annual Precipitation; bio_15 = Precipitation Seasonality; elev = Elevation; footprint = Human footprint index; solar1/solar7 = Solar radiation (January/July); vapor7 = Water vapor pressure (July); landcover = Land cover type.

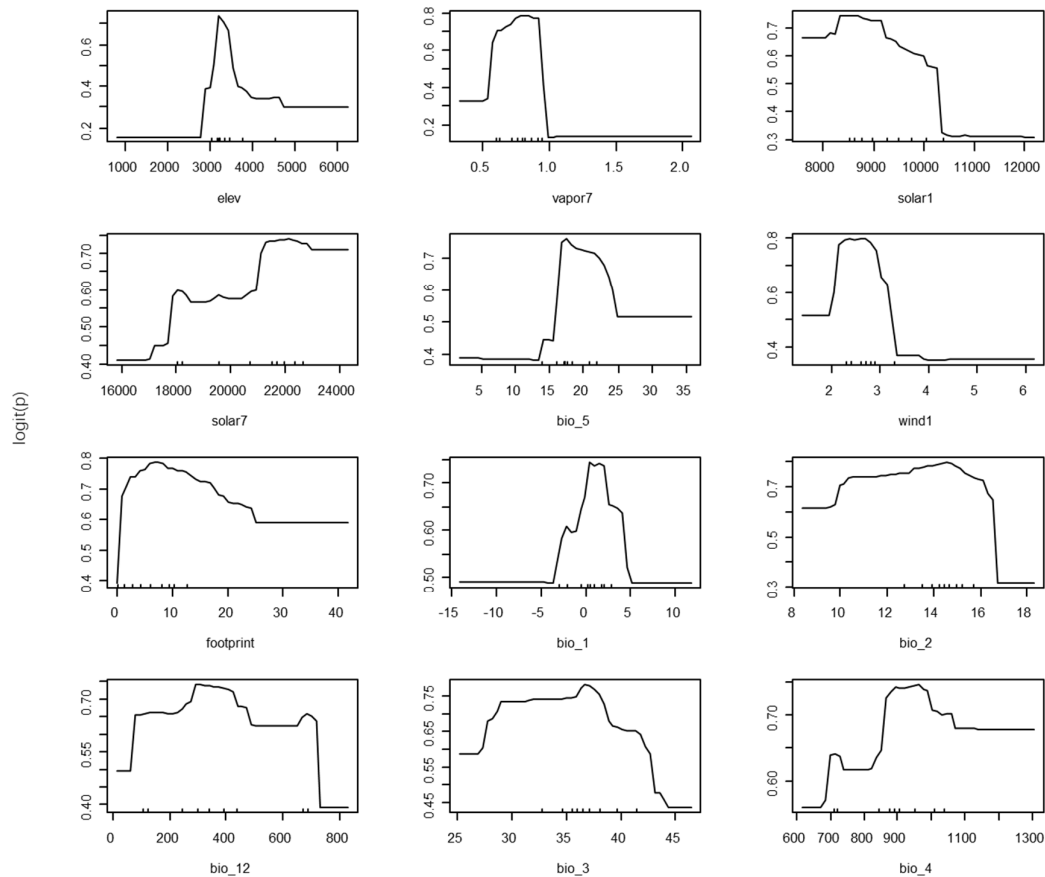


Figure S2. Partial dependence plots for the top 12 variables (out of 29) derived from the random forest model illustrate the effects of each variable on the presence of black-necked cranes during the migration stage. The full name of the variables are: bio_2 = Mean Diurnal Range; bio_3 = Isothermality; bio_4 = Temperature Seasonality; bio_5 = Max Temperature of Warmest Month; bio_7 = Temperature Annual Range; bio_12 = Annual Precipitation; bio_15 = Precipitation Seasonality; elev = Elevation; footprint = Human footprint index; solar1/solar7 = Solar radiation (January/July); vapor7 = Water vapor pressure (July); wind1 = Wind Speed (January).

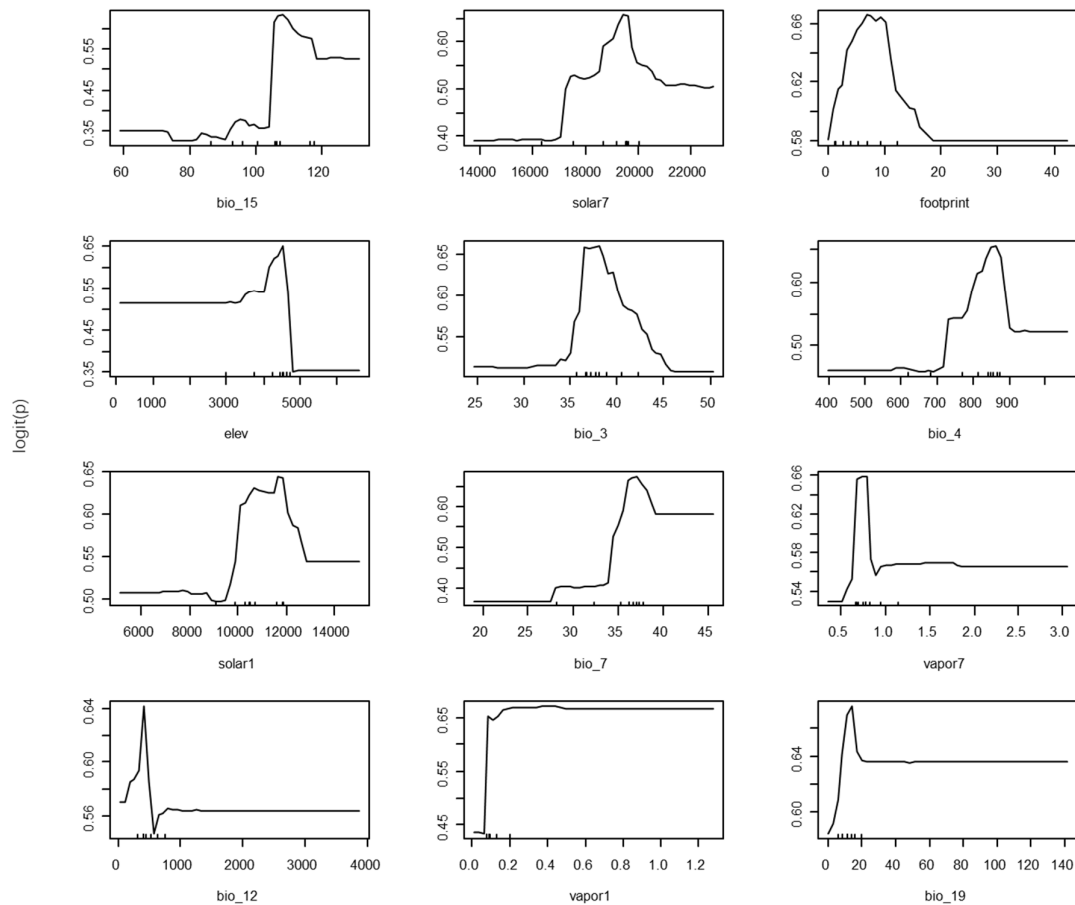


Figure S3. Partial dependence plots for the top 12 variables (out of 29) derived from the random forest model illustrate the effects of each variable on the presence of black-necked cranes during the wintering stage. The full name of the variables are: bio_3 = Isothermality; bio_4 = Temperature Seasonality; bio_5 = Max Temperature of Warmest Month; bio_7 = Temperature Annual Range; bio_12 = Annual Precipitation; bio_15 = Precipitation Seasonality; bio_19 = Precipitation of Coldest Quarter; elev = Elevation; footprint = Human footprint index; solar1/solar7 = Solar radiation (January/July); vapor1 = Water vapor pressure (January).

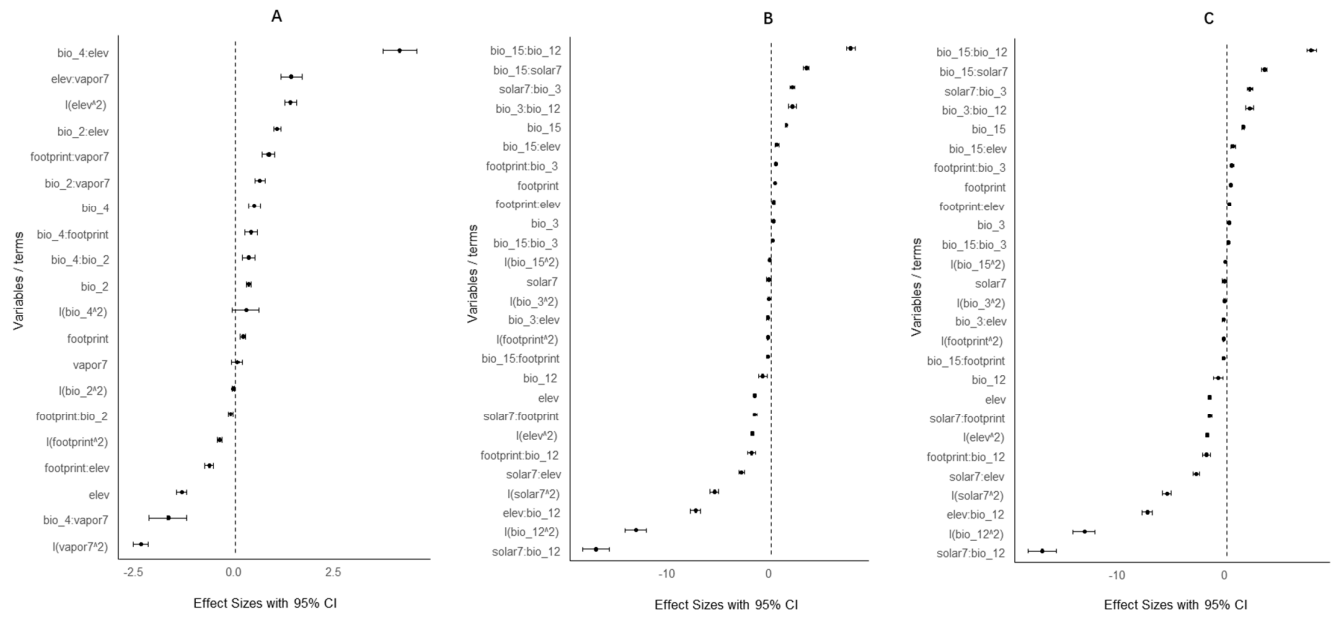


Figure S4. The effect sizes and 95% confidence intervals of the model coefficients of best linear models for the three stages: A. breeding; B. migration; C. wintering.

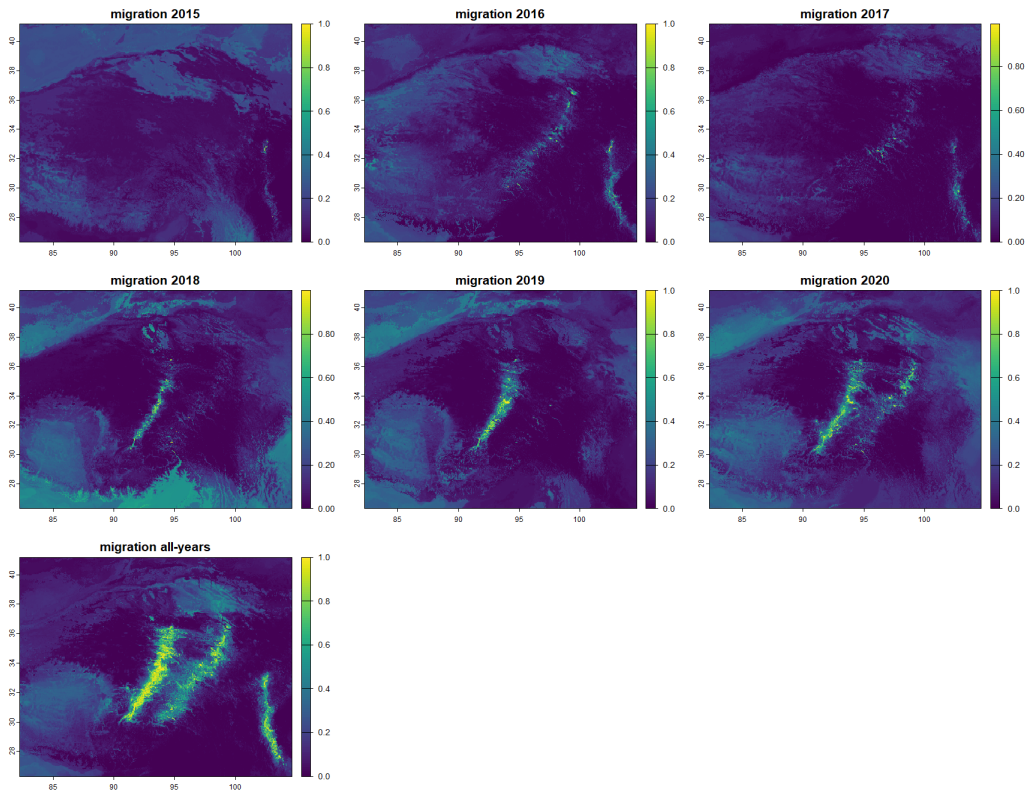


Figure S5. Habitat suitability index for the black-necked crane in the migration stage from 2015 to 2020, and one layer using occurrences in all years. From 2015 to 2018, the number of tracked individuals **was** fewer than 30, resulting in sparse occurrence data.

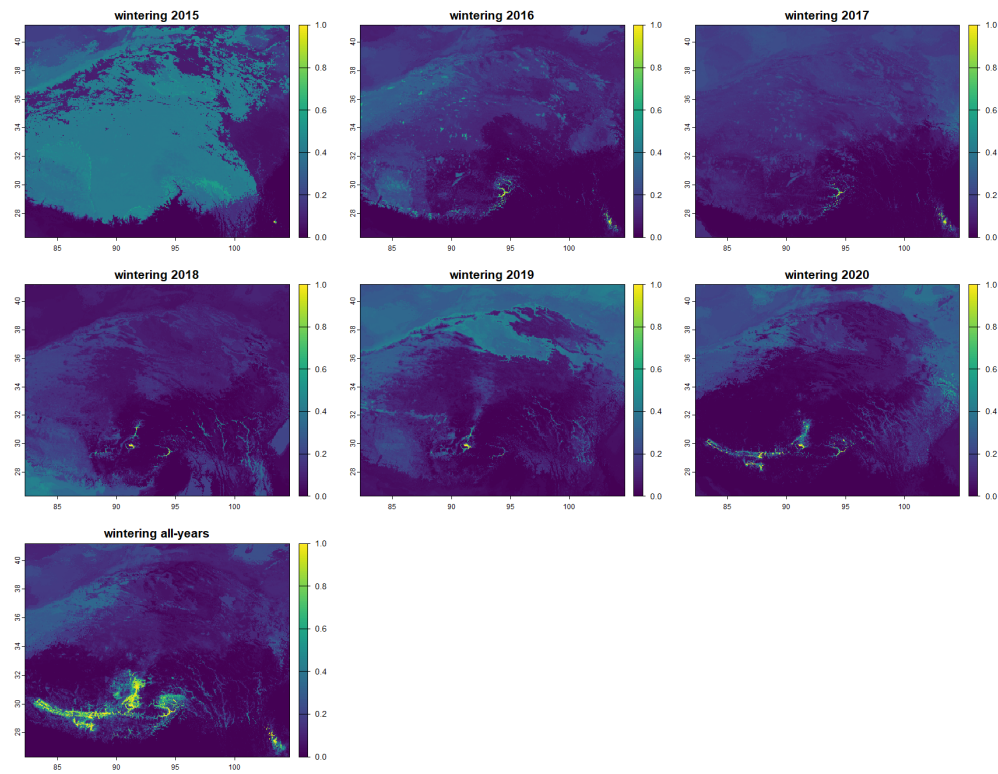


Figure S6. Habitat suitability index for the black-necked crane in the wintering stage from 2015 to 2020, and one layer using occurrences in all years. From 2015 to 2018, the number of tracked individuals was fewer than 30, resulting in sparse occurrence data.