

Table S1. Environmental variables for MaxEnt and GLMM models.

| Category | Code | Description | Source |
|-------------------|-------|-------------------------------------|---|
| Climate variables | bio1 | Annual mean temperature | WorldClim |
| | bio2 | Mean diurnal rang | |
| | bio3 | Isothermality | |
| | bio4 | Temperature seasonality | |
| | bio5 | Max temperature of warmest month | |
| | bio6 | Min temperature of coldest month | |
| | bio7 | Temperature annual range | |
| | bio8 | Mean temperature of wettest quarter | |
| | bio9 | Mean temperature of driest quarter | |
| | bio10 | Mean temperature of warmest quarter | |
| | bio11 | Mean temperature of coldest quarter | |
| | bio12 | Annual precipitation | |
| | bio13 | Precipitation of wettest month | |
| | bio14 | Precipitation of driest month | |
| | bio15 | Precipitation seasonality | |
| | bio16 | Precipitation of wettest quarter | |
| | bio17 | Precipitation of driest quarter | |
| | bio18 | Precipitation of warmest quarter | |
| | bio19 | Precipitation of coldest quarter | |
| Land use | LU | Land use/cover | Resource and Environment Science and Data Center |
| | DF | Distribution of farmland | Ministry of Education Ecological Field Station for East Asian Migratory Birds |
| Topography | DEM | Altitude | Geospatial Data Cloud |
| Human disturbance | RD | Distance to road | OpenStreetMap |
| | POP | Distribution of the population | Resource and Environment Science and Data Center |
| | CD | Distance to countryside | Resource and Environment Science and Data Center |
| | HF | Human footprint | China Agricultural University |