*insects*

*Supplementary Materials*

# Seasonal and Year-Round Distributions of *Bactrocera dorsalis* (Hendel) and Its Risk to Temperate Fruits under Climate Change

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**Table S1.** The 19 bioclimatic variables and their descriptions, see https://www.worldclim.org/data/bioclim.html for details.

| Variables | Descriptions | Unit |
|---|---|---|
| Bio1 | Annual Mean Temperature | °C |
| Bio2 | Mean Diurnal Range | °C |
| Bio3 | Isothermality. Mean diurnal temperature range / annual temperature range *100 | - |
| Bio4 | Temperature Seasonality | coefficient of variation |
| Bio5 | Max Temperature of Warmest Month | °C |
| Bio6 | Min Temperature of Coldest Month | °C |
| Bio7 | Temperature Annual Range | °C |
| Bio8 | Mean Temperature of Wettest Quarter | °C |
| Bio9 | Mean Temperature of Driest Quarter | °C |
| Bio10 | Mean Temperature of Warmest Quarter | °C |
| Bio11 | Mean Temperature of Coldest Quarter | °C |
| Bio12 | Annual Precipitation | mm |
| Bio13 | Precipitation of Wettest Month | mm |
| Bio14 | Precipitation of Driest Month | mm |
| Bio15 | Precipitation Seasonality | coefficient of variation |
| Bio16 | Precipitation of Wettest Quarter | mm |
| Bio17 | Precipitation of Driest Quarter | mm |
| Bio18 | Precipitation of Warmest Quarter | mm |
| Bio19 | Precipitation of Coldest Quarter | mm |

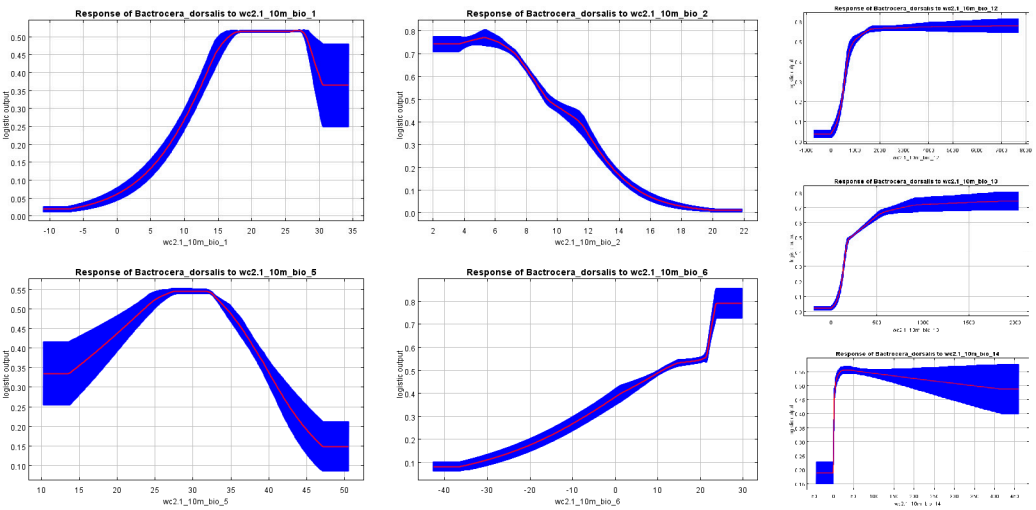


**Figure S1.** Response curves showing the relationship of MaxEnt predicted probability of seasonal occurrence of Bactrocera dorsalis to environmental variables. The values shown on the y-axis are the predicted probability of suitable conditions. The values on the x-axis refer to the corresponding bioclimate variable. Each curve is made by generating a MaxEnt model using only the corresponding predictor variable, disregarding all other variables.

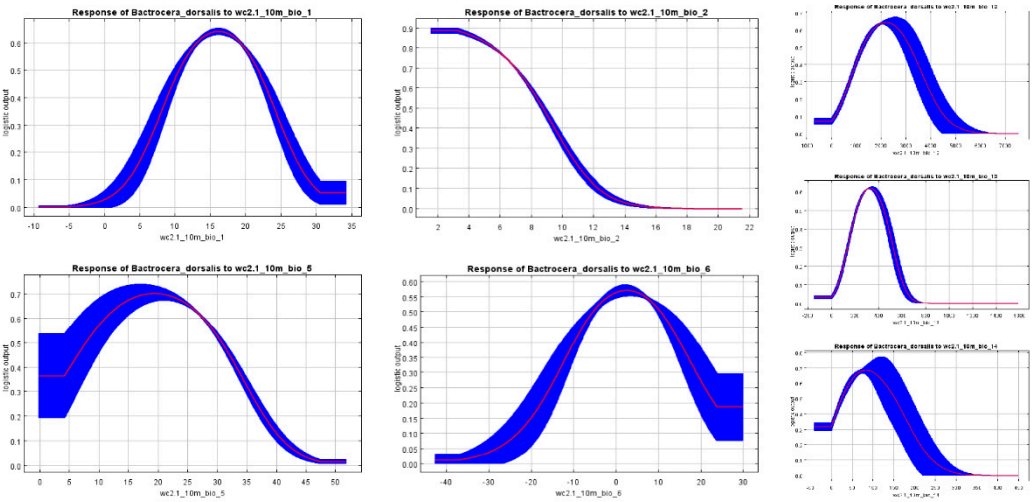


**Figure S2.** Response curves showing the relationship of MaxEnt predicted probability of year-round occurrence of Bactrocera dorsalis to environmental variables. The values shown on the y-axis are the predicted probability of suitable conditions. The values on the x-axis refer to the corresponding bioclimate variable. Each curve is made by generating a MaxEnt model using only the corresponding predictor variable, disregarding all other variables.

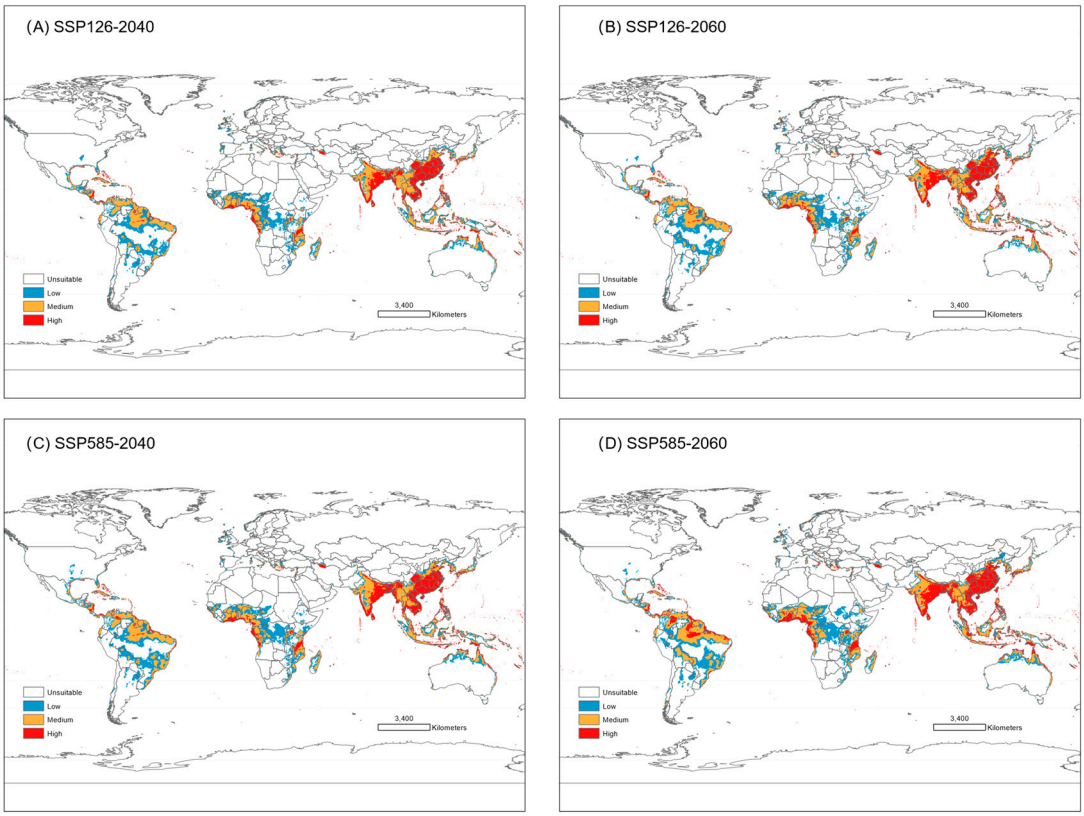


**Figure S3.** Predicted seasonal distribution of *B. dorsalis* under two climate scenarios (SSP126 and SSP585) and two future years (2040 and 2060). White, unsuitable habitat area; blue, low suitability area; orange, medium suitability; red, high suitability. (A) SSP126 to 2040, (B) SSP126 to 2060, (C) SSP585 to 2040 and (D) SSP585 to 2060.

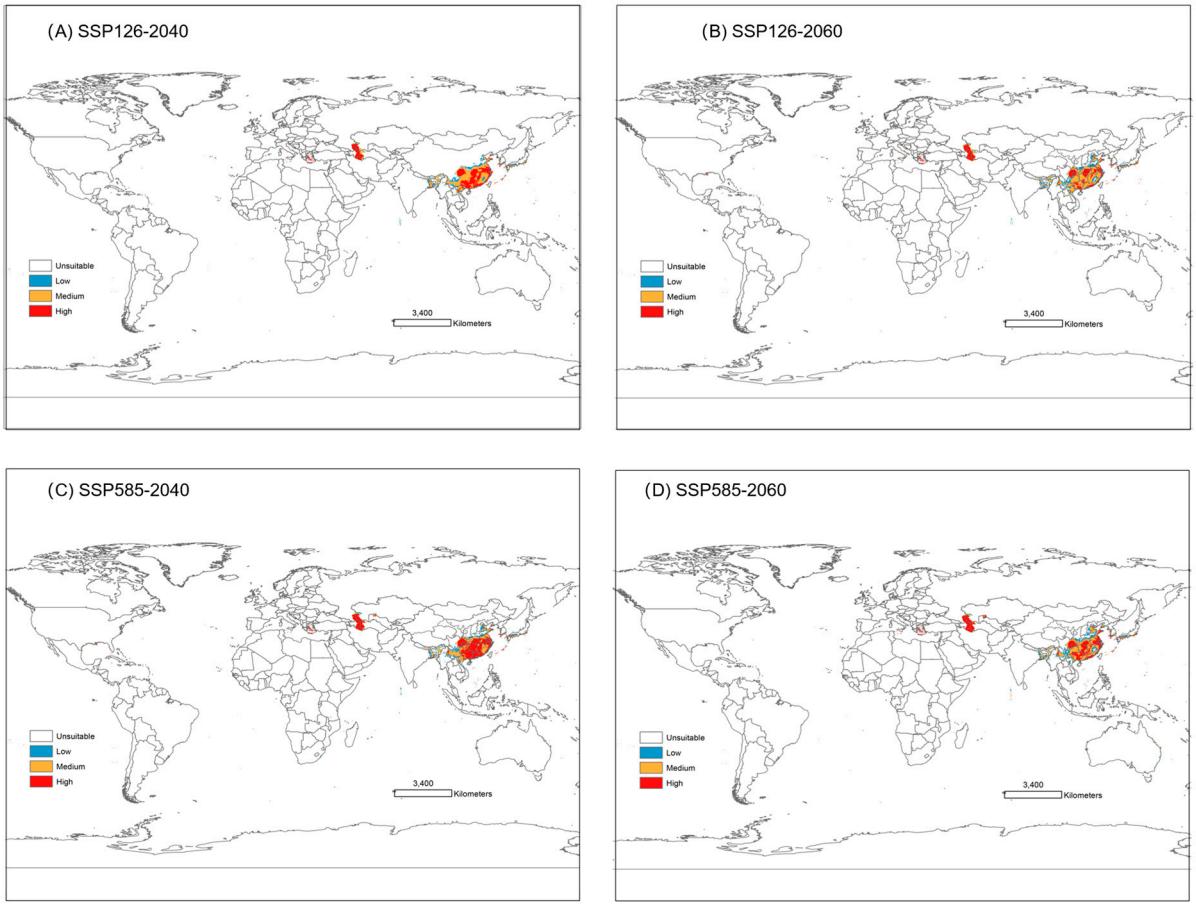


**Figure S4.** Predicted year-round distribution of *B. dorsalis* under two climate scenarios (SSP126 and SSP585) and two future years (2040 and 2060). White, unsuitable habitat area; blue, low suitability area; orange, medium suitability; red, high suitability. (A) SSP126 to 2040, (B) SSP126 to 2060, (C) SSP585 to 2040 and (D) SSP585 to 2060.