Species Distribution Modelling of *Monotheca buxifolia* (Falc.) A. DC.: Present Distribution and Impacts of Potential Climate Change

Fayaz Ali1, 2, Nasrullah Khan2, Arshad Mahmood Khan3, Kishwar Ali4 and Farhat Abbas5,\*

1 Department of Botany, Shaheed Benazir Bhutto University Sheringal, Dir Upper 18050, Pakistan, [fayazali@sbbu.edu.pk](mailto:fayazali@sbbu.edu.pk) (F.A.) [ORCID iD icon](https://orcid.org/0000-0003-0683-1553)https://orcid.org/0000-0001-9474-1931

2 Department of Botany, University of Malakand, Dir Lower 18800, Pakistan, [nasrullah.uom@gmail.com](mailto:nasrullah.uom@gmail.com) (N.K.)

3 Department of Botany, Government Hashmat Ali Islamia Associate College Rawalpindi, Rawalpindi-46300, Pakistan, [arshadbotanist@gmail.com](mailto:arshadbotanist@gmail.com) (A.M.K.)

4 College of General Education, University of Doha for Science and Technology, P.O. Box 24449, Doha, Qatar, [kishwar.ali@udst.edu.qa](mailto:kishwar.ali@udst.edu.qa) (K.A.)

5 College of Engineering Technology, University of Doha for Science and Technology, P.O. Box 24449, Doha, Qatar, [farhat.abbas@udst.edu.qa](mailto:farhat.abbas@udst.edu.qa) (F.Ab.)

\*Correspondence: [farhat.abbas@udst.edu.qa](mailto:farhat.abbas@udst.edu.qa)



**Figure S1** Heat map depicting the pairwise correlation of the most influential predictor variables used in predictive distribution modeling of *M. buxifolia* in the study area.



**Figure S2**. Flowchart depicting step-wise methods used in this research work.

**Table S1** A list of environmental variables used in preliminary SDMs of *M. buxifolia*.

| Code | Name of variable & description | Database | Unit | Data Type |
| --- | --- | --- | --- | --- |
| Pop.D | Population density (GPWv411) | Conservation Science Partners | Ind./km2 | Anthropogenic |
| gHM | Global Humana Modification dataset (CSP gHM) | Conservation Science Partners | Nil | Anthropogenic |
| Bio1 | Annual Mean Temperature | WorldClim | °C | Climatic |
| Bio2 | Mean Diurnal Range (Mean of monthly (max temp - min temp)) | WorldClim | °C | Climatic |
| Bio3 | Isothermality (BIO2/BIO7) (×100) | WorldClim | Percent | Climatic |
| Bio4 | Temperature Seasonality (sd ×100) | WorldClim | °C | Climatic |
| Bio5 | Max. Temperature of Warmest Month | WorldClim | °C | Climatic |
| Bio6 | Min. Temperature of Coldest Month | WorldClim | °C | Climatic |
| Bio7 | Temperature Annual Range (BIO5-BIO6) | WorldClim | °C | Climatic |
| Bio8 | Mean Temperature of Wettest Quarter | WorldClim | °C | Climatic |
| Bio9 | Mean Temperature of Driest Quarter | WorldClim | °C | Climatic |
| Bio10 | Mean Temperature of Warmest Quarter | WorldClim | °C | Climatic |
| Bio11 | Mean Temperature of Coldest Quarter | WorldClim | °C | Climatic |
| Bio12 | Annual Precipitation | WorldClim | mm | Climatic |
| Bio13 | Precipitation of Wettest Month | WorldClim | mm | Climatic |
| Bio14 | Precipitation of Driest Month | WorldClim | mm | Climatic |
| Bio15 | Precipitation Seasonality (Coefficient of Variation) | WorldClim | Percent | Climatic |
| Bio16 | Precipitation of Wettest Quarter | WorldClim | mm | Climatic |
| Bio17 | Precipitation of Driest Quarter | WorldClim | mm | Climatic |
| Bio18 | Precipitation of Warmest Quarter | WorldClim | mm | Climatic |
| Bio19 | Precipitation of Coldest Quarter | WorldClim | mm | Climatic |
| Bdod | Mean Bulk Density (Depth: 0–30 cm) | SoilGrids | cg/cm3 | Edaphic |
| Cec | Mean Cations Exchange Capacity (pH: 7) (Depth: 0–30 cm) | SoilGrids | mmol(c)/kg | Edaphic |
| Cfvo | Mean Volumetric Fraction of Coarse Fragments (> 2 mm) (Depth: 0–30 cm) | SoilGrids | cm3/dm3 | Edaphic |
| Clay | Mean Clay Contents (Depth: 0–30 cm) | SoilGrids | g/kg | Edaphic |
| Nitrogen | Mean Total Nitrogen (Depth: 0–30 cm) | SoilGrids | cg/kg | Edaphic |
| Ocd | Mean Organic Carbon Density (Depth: 0–30 cm) | SoilGrids | hg/dm3 | Edaphic |
| Phh2o | Mean Soil pH \*10 (Depth: 0–30 cm) | SoilGrids | Nil | Edaphic |
| Sand | Mean Sand Contents (Depth: 0–30 cm) | SoilGrids | g/kg | Edaphic |
| Silt | Mean Silt Contents (Depth: 0–30 cm) | SoilGrids | g/kg | Edaphic |
| Soc | Mean Soil Organic Carbon (Depth: 0–30 cm) | SoilGrids | dg/kg | Edaphic |
| NDVI | Normalized Difference Vegetation Index × 10,000 (MODIS/006/MOD13A2) | NASA LP DAAC | Nil | RS/GIS |
| Elevation | Elevation | SRTM DEM Global | Meter | Topographic |
| Alf | Global ALOS Landforms | Global Science Partners | Nil | Topographic |
| Chin | Continuous Heat-Insolation Load Index (Global ALOS CHILI) | Global Science Partners | Nil | Topographic |
| Hillshade | Hillshade | SRTM DEM Global | Degree | Topographic |
| Northness | Cos-Transformed-Aspect (0–1) | Derived | Nil | Topographic |
| Slope | Slope | SRTM DEM Global | Degree | Topographic |
| Tdiv | Topographic Diversity | Conservation Science Partners | Nil | Topographic |

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| --- | --- |
| C:\Users\Home\Desktop\Revision\Prediction_maps\Monotheca6.tifC:\Users\Home\Desktop\Revision\Prediction_maps\Monotheca7.tifC:\Users\Home\Desktop\Revision\Prediction_maps\Monotheca8.tifC:\Users\Home\Desktop\Revision\Prediction_maps\Monotheca9.tif |  |

**Figure S3**. Map showing pairwise inter-conversions of the considered habitat suitability classes (HSCs) for *M. buxifolia* under projected climate change scenarios in the study area (A: SSPs 245 (2050s); B: SSPs 585 (2050s); C: SSPs 245 (2070s) and D: SSPs 585 (2070s)).

**Table S2** Different accuracy values of the considered SDMs for *Monotheca buxifolia*.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Climatic scenario | AUC-ROC | TSS | Kappa | AUC Ratios | p-AUC-ROC% |
| Current climate | 0.989 | 0.978 | 0.976 | 195.6 | 97.8 |
| SSPs–245 (2050s) | 0.989 | 0.984 | 0.983 | 191.0 | 95.5 |
| SSPs–585 (2050s) | 0.990 | 0.986 | 0.986 | 189.6 | 94.8 |
| SSPs–245 (2070s) | 0.989 | 0.985 | 0.984 | 190.8 | 95.4 |
| SSPs–585 (2070s) | 0.989 | 0.987 | 0.988 | 191.8 | 95.9 |