

Table S4: Environmental data for habitat suitability modelling

Full list of environmental variables evaluated for inclusion as predictor variables in habitat suitability modelling. NSW Office of Environment and Heritage (2017). The final column provides information that is available on the source of the information including references for publication. The full details of references are given in the references section after this table.

Group	LayerName	Layer Description	Units	Type	Original Resolution	Reference/ source
Landform	lf_aspect	Aspect derived from smoothed DEM (DEM-S)	degrees	float	1 sec (~30 m)	derived 1 sec SRTM
Landform	lf_aspect_tr	Beer's Aspect- transformation of aspect to a continuous scaled variable. Changed for the southern hemisphere by setting maximum value (2) to SE slopes (coolest) and minimum (0) to NW slopes (warmest).	index	float	1 sec (~30 m)	derived 1 sec SRTM
Landform	lf_cti	Compound topographic index or CTI also known as wetness index, topographic wetness index. Based on DEM-H (for flow direction and accumulation)	index	float	1 sec (~30 m)	derived 1 sec SRTM
Landform	lf_curv	Curvature or slope of the slope: defines concave, convex and flat. A positive curvature indicates the surface is upwardly convex at that cell. A negative curvature indicates the surface is upwardly concave at that cell. A value of 0 indicates the surface is flat.	index	float	1 sec (~30 m)	derived 1 sec SRTM
Landform	lf_curv_plan	Curvature in plan (is perpendicular to the direction of maximum slope)	index	float	1 sec (~30 m)	derived 1 sec SRTM
Landform	lf_curv_prof	Curvature in profile (the direction of the maximum slope)	index	float	1 sec (~30 m)	derived 1 sec SRTM
Landform	lf_dems1s	1 sec SRTM smoothed DEM (DEM-S)	mm	float	1 sec (~30 m)	CSIRO, GeoScience Australia
Landform	lf_exp315	Exposure to the NW (low = exposed (drier forests); high = sheltered (moister forests)).	index	float	1 sec (~30 m)	Ashcroft M. B. and Gollan J.R. (2012)
Landform	lf_logre10	Cold air drainage	index	float	1 sec (~30 m)	Ashcroft M. B. and Gollan J.R. (2012)
Landform	lf_rough0100	Neighbourhood topographical roughness based on the standard deviation of elevation in a circular 100 m neighbourhood. Derived from DEM-S	index	float	1 sec (~30 m)	derived 1 sec SRTM

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Landform	lf_rough0500	Neighbourhood topographical roughness based on the standard deviation of elevation in a circular 500 m neighbourhood. Derived from DEM-S	index	float	1 sec (~30 m)	derived 1 sec SRTM
Landform	lf_rough1000	Neighbourhood topographical roughness based on the standard deviation of elevation in a circular 1000 m neighbourhood. Derived from DEM-S	index	float	1 sec (~30 m)	derived 1 sec SRTM
Landform	lf_slope_deg	Slope in degrees. Derived from DEM-S.	degrees	float	1 sec (~30 m)	derived 1 sec SRTM
Landform	lf_tpi0120	Topographic position index using neighbourhood of 120m radius	index	float	1 sec (~30 m)	derived 1 sec SRTM
Landform	lf_tpi0250	Topographic position index using neighbourhood of 250m radius	index	float	1 sec (~30 m)	derived 1 sec SRTM
Landform	lf_tpi0500	Topographic position index using neighbourhood of 500m radius	index	float	1 sec (~30 m)	derived 1 sec SRTM
Landform	lf_tpi1000	Topographic position index using neighbourhood of 1000m radius	index	float	1 sec (~30 m)	derived 1 sec SRTM
Landform	lf_tpi2000	Topographic position index using neighbourhood of 2000m radius	index	float	1 sec (~30 m)	derived 1 sec SRTM
Soil	sm_illite20	relative abundance of illite clay minerals in surficial topsoil (0-20cm)	proportion	float	3 sec (~ 90 m)	Viscarra Rossel R.A. (2011)
Soil	sm_kaol20	relative abundance of kaolinite clay minerals in surficial topsoil (0-20cm)	proportion	float	3 sec (~ 90 m)	Viscarra Rossel R.A. (2011)
Soil	sm_smec20	relative abundance of smectite clay minerals in surficial topsoil (0-20cm)	proportion	float	3 sec (~ 90 m)	Viscarra Rossel R.A. (2011)
Soil	sp_awc000_100prop	Available water capacity proportionally combined depths from 0 to 100 cm	%	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia. Proportion derived OEH.
Soil	sp_awc100_200	Available water capacity	%	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia
Soil	sp_bdw000_100prop	Bulk density proportionally combined depths from 0 to 100 cm	g/m3	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia. Proportion derived OEH.
Soil	sp_bdw100_200	Bulk density (100 - 200cm)	g/m3	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia

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Soil	sp_cly000_100prop	Clay content proportionally combined depths from 0 to 100 cm	%	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia. Proportion derived OEH.
Soil	sp_cly100_200	Clay content (%) (100 - 200cm)	%	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia
Soil	sp_des000_200	Depth of Soil Profile (A and B horizons) 0 to 200 cm depths	m	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia
Soil	sp_ece000_100prop	Effective Cation Exchange Capacity proportionally combined depths from 0 to 100 cm.	meq/100g	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia. Proportion derived OEH.
Soil	sp_ece100_200	Effective Cation Exchange Capacity (100 - 200 cm)	meq/100g	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia
Soil	sp_nto000_100prop	Total nitrogen proportionally combined depths from 0 to 100 cm	%	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia. Proportion derived OEH.
Soil	sp_nto100_200	Total nitrogen (%) (100 - 200cm)	%	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia
Soil	sp_phc000_100prop	pH (calcium chloride) proportionally combined depths from 0 to 100 cm	pH _{Ca}	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia. Proportion derived OEH.
Soil	sp_phc100_200	pH (calcium chloride) (100 - 200cm)	pH _{Ca}	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia
Soil	sp_pto000_100prop	Total phosphorus proportionally combined depths from 0 to 100 cm	%	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia. Proportion derived OEH.
Soil	sp_pto100_200	Total phosphorus (%) (100 - 200cm)	%	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia
Soil	sp_slt000_100prop	Silt content proportionally combined depths from 0 to 100 cm	%	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia. Proportion derived OEH.

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Soil	sp_slt100_200	Silt content (%) (100 - 200cm)	%	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia
Soil	sp_snd000_100prop	Sand content proportionally combined depths from 0 to 100 cm	%	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia. Proportion derived OEH.
Soil	sp_snd100_200	Sand content (%) (100 - 200cm)	%	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia
Soil	sp_soc000_100	Organic Carbon proportionally combined depths from 0 to 100 cm	%	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia. Proportion derived OEH.
Soil	sp_soc100_200	Organic Carbon	%	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia
Soil	sp_weath_ind	A weathering intensity index using airborne gamma-ray spectrometry and digital terrain analysis	index	float	100 m	Wilford, J. (2012)
Geophysics	gp_k_fillspl	filtered potassium (K), gaps filled in using geographically weighted regression model and spline function	pct	float	100 m	Geoscience Australia. Gaps filled OEH.
Geophysics	gp_th_fillspl	filtered thorium (Th), gaps filled in using geographically weighted regression model and spline function	ppm	float	100 m	Geoscience Australia. Gaps filled OEH.
Geophysics	gp_u_fillspl	filtered uranium (U), gaps filled in using geographically weighted regression model and spline function	ppm	float	100 m	Geoscience Australia. Gaps filled OEH.
Geophysics	gp_totd_fillspl	total dose rate, gaps filled in using geographically weighted regression model and spline function	unitless	float	100 m	Geoscience Australia. Gaps filled OEH.
Geophysics	gp_tmia	magnetic intensity	T	float	50 m	Geoscience Australia
Geophysics	gp_tmi_1vda	1 st derivative magnetic intensity	T	float	50 m	Geoscience Australia
Geophysics	gp_tmi_2vda	2 nd derivative magnetic intensity	T	float	50 m	Geoscience Australia
Geophysics	gp_grav_boug	Bouguer gravity	mGal	float	800 m	Geoscience Australia
Climate/Temp	ct_temp_maxann	Average daily max temperature - Annual	°C	float	3 sec (~ 90 m)	BOM
Climate/Temp	ct_temp_maxsum	Average daily max temperature - Summer	°C	float	3 sec (~ 90 m)	BOM
Climate/Temp	ct_temp_maxwin	Average daily max temperature - Winter	°C	float	3 sec (~ 90 m)	BOM

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Group	LayerName	Layer Description	Units	Type	Original Resolution	Reference/ source
Climate/Temp	ct_temp_minann	Average daily min temperature - Annual	°C	float	3 sec (~ 90 m)	BOM
Climate/Temp	ct_temp_minsum	Average daily min temperature - Summer	°C	float	3 sec (~ 90 m)	BOM
Climate/Temp	ct_temp_minwin	Average daily max temperature - Winter	°C	float	3 sec (~ 90 m)	BOM
Climate/Temp	ct_tempann	Annual Mean Temperature (bio1)	°C	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Temp	ct_tempannrnge	Temperature Annual Range: difference between bio5 and bio6 (bio7)	°C	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Temp	ct_tempcq	Mean Temperature of Coldest Quarter (bio11)	°C	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Temp	ct_tempciurn	Mean Diurnal Range (Mean(period max-min)) (bio2)	°C	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Temp	ct_tempdq	Mean Temperature of Driest Quarter (bio9)	°C	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Water	cw_precipann	Annual Precipitation (bio12)	mm	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Water	cw_precipwp	Precipitation of Wettest Period (bio13)	mm	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Water	cw_precipdp	Precipitation of Driest Period (bio14)	mm	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Water	cw_precipseas	Precipitation of Seasonality: Coefficient of Variation (bio15)	C of V	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Water	cw_precipwetq	Precipitation of Wettest Quarter (bio16)	mm	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.

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Group	LayerName	Layer Description	Units	Type	Original Resolution	Reference/ source
Climate/Water	cw_precipdq	Precipitation of Driest Quarter (bio17)	mm	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Water	cw_precipwq	Precipitation of Warmest Quarter (bio18)	mm	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Water	cw_precipcq	Precipitation of Coldest Quarter (bio19)	mm	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Energy	ce_radann	Annual Mean Radiation (bio20)	Wm ²	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Energy	ce_radhp	Highest Period Radiation (bio21)	Wm ²	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Energy	ce_radlp	Lowest Period Radiation (bio22)	Wm ²	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Energy	ce_radseas	Radiation of Seasonality: Coefficient of Variation (bio23)	C of V	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Energy	ce_radwetq	Radiation of Wettest Quarter (bio24)	Wm ²	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Energy	ce_raddq	Radiation of Driest Quarter (bio25)	Wm ²	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Energy	ce_radwq	Radiation of Warmest Quarter (bio26)	Wm ²	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Energy	ce_radcq	Radiation of Coldest Quarter (bio27)	Wm ²	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Temp	ct_tempiso	Isothermality 2/7 (bio3)	unitless	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.

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Group	LayerName	Layer Description	Units	Type	Original Resolution	Reference/ source
Climate/Temp	ct_temptmcp	Min Temperature of Coldest Period (bio6)	°C	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Temp	ct_temptmtp	Max Temperature of Warmest Period (bio5)	°C	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Temp	ct_tempscas	Temperature Seasonality: Coefficient of Variation (bio4)	C of V	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Temp	ct_temptwarmq	Mean Temperature of Warmest Quarter (bio10)	°C	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Temp	ct_temptwetq	Mean Temperature of Wettest Quarter (bio8)	°C	float	1 sec	Xu T. and Hutchinson M. (2011). Generated OEH.
Climate/Water	cw_etaaann	Average areal actual evapotranspiration - Annual	mm	float	3 sec (~ 90 m)	BOM
Climate/Water	cw_etapann	Average areal potential evapotranspiration - Annual	mm	float	3 sec (~ 90 m)	BOM
Climate/Water	cw_rainspr	Average Rainfall - Spring	mm	float	3 sec (~ 90 m)	BOM
Climate/Water	cw_rainsum	Average Rainfall - Summer	mm	float	3 sec (~ 90 m)	BOM
Climate/Water	cw_rainwin	Average Rainfall - Winter	mm	float	3 sec (~ 90 m)	BOM
Climate/Water	cw_prescott	Prescott Index	index	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia
Climate/Water	cw_rain1mm	Average Number of days with rainfall greater than 1mm Annual	mm	float	3 sec (~ 90 m)	BOM
Climate/Water	cw_rain_sumwinr	Average Rainfall - Summer Winter Ratio	mm	float	3 sec (~ 90 m)	Soil and Landscape Grid of Australia
Drainage	dl_strmdstall	Euclidean distance to all streams (i.e. all orders: 1 to 9)	m	integer	30 m	NSW Office of Water. Derived OEH
Drainage	dl_strmdstge2	Euclidean distance to 2 nd order streams and above	m	integer	30 m	NSW Office of Water. Derived OEH
Drainage	dl_strmdstge4	Euclidean distance to 4 th order streams and above	m	integer	30 m	NSW Office of Water. Derived OEH

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Group	LayerName	Layer Description	Units	Type	Original Resolution	Reference/ source
Drainage	dl_strmdstge6	Euclidean distance to 6 th order streams and above	m	integer	30 m	NSW Office of Water. Derived OEH
Location	dl_lat_grid	Latitude (surrogate for location, dispersal, isolation)	degrees	float	30 m	OEH
Location	dl_long_grid	Longitude (surrogate for location, dispersal, isolation)	degrees	float	30 m	OEH
RS	sfc	Seasonal Fractional Cover representing proportions of green (g), bare (b), and non-green or senescent (b). Derived from Landsat imagery over the period of 1998 to 2012, for each season (summer, winter, spring and autumn) and for 5th, 50th and 95th percentiles. A total of 36 layers.	% cover	float	30 m	OEH
RS	rs_fpc	Foliage projective cover or the percentage of ground cover occupied by the vertical projection of foliage. Predicted using a time series of SPOT images between 2008-2011	%	float	30 m	OEH
RS	rs_waterobs	Water occurrences as observed through Landsat imagery for a 25 year period.	count	float	30 m	OEH
RS	rs_euc_waterobs	Euclidean distance to water observations	m	float	30 m	OEH

References

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