**Supplementary material**

**Table S1.** Definitions of habitat structural variables used in analyses.

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| Variable | Units | Definition |
| Depth | metres | Elevation values (negative) of all grid cells in a digital elevation model (DEM) relative to Australian Height Datum. |
| Standard deviation in depth | meters | Square root of the variance of depth values across a grid of 3 x 3 cells within the DEM. |
| Slope | degrees | The angle of the steepest slope as measured between a centre grid cell and its surrounding 8 neighbours in a DEM. |
| Aspect | degrees | The azimuthal direction of the steepest slope measured between the centre grid cell and its 8 surrounding neighbours in a DEM. The direction that a topographic slope faces (measured in degrees from north). |
| Rugosity | ratio | Measure of surface roughness calculated as a ratio between the surface and planar areas across a 3 x 3 cell area in a DEM. |
| Profile curvature |  | Measure of the concavity/convexity of the slope or rate of change in slope in profile. |
| Plan curvature |  | Measure of the concavity/convexity perpendicular to the slope or the rate of change of aspect in plan. |
| Mean curvature |  | Combined index of profile and plan curvature. |