

附录1 镇海棘螈产卵场微生境环境变量的描述

Appendix 1 Description of spawning ground microhabitat variables of *Echinotriton chinhaiensis*

附录1A 镇海棘螈产卵场的微生境分类变量

Appendix 1A Categorical variables of microhabitat investigated of spawning ground of *Echinotriton chinhaiensis*

环境变量 Environment variables	分类 Categories	描述 Description
位点方向 Aspect	朝向水坑坡面(正向)、背对水坑坡面(反向) Tilted towards the puddles (Positive); Back to the puddle slope (Reverse)	产卵位点与水坑坡面的相对关系。直接观测 Relative relationship between spawning site and puddle slope. Direct observation
基质 Matrix	砾石、土壤、砾石+土壤 Gravel, soil, gravel + soil	样方内的基质类型。直接观测 Matrix type within the quadrat. Direct observation
遮蔽物种类 Type of shade	倒木、乔木、石块、树根、藤本 Fallen trees, trees, stones, roots, vines	距离产卵位点最近的可遮蔽物。直接观测 The closest shelter near the spawning site. Direct observation

砾石指破碎的小块岩石, 形状不规则; 倒木指无生命倒下的树木; 乔木指树身高大的树木, 树干和树冠有明显区分; 石块指完整有明显形状的块石; 树根指乔木树根露出表面的部分; 藤本指靠近地面的粗藤蔓茎干

Gravel refers to broken small rocks with irregular shapes; fallen wood refers to fallen trees without life; arbor refers to tall trees with distinct trunks and crowns; stones refer to intact blocks with obvious shapes; root refers to the exposed part of the root of an arbor; vine refers to the thick vine stem near the ground.

附录1B 镇海棘螈产卵场的微生境数值变量

Appendix 1B Numerical variables of microhabitats investigated spawning ground of *Echinotriton chinhaiensis*(with Abbreviations)

环境变量 Environment variables	描述 Description	仪器 Instrument
地表温度 DBWD Earth's surface temperature (°C)	测量样方内随机 3 个点的数值, 求平均值 Measure the values of 3 random points in the quadrat and find the average	建大仁科 COS-03 温湿度记录仪 Jianda Renke COS-03 temperature and humidity recorder
地表湿度 DBSD Earth's surface moisture (%)	测量样方内随机 3 个点的数值, 求平均值 Measure the values of 3 random points in the quadrat and find the average	建大仁科 COS-03 温湿度记录仪 Jianda Renke COS-03 temperature and humidity recorder
空气温度 KQWD Air temperature (°C)	测量样方上方 10 cm 处的空气温度, 重复两次求平均值 Measure the air temperature 10cm above the quadrat, repeat twice to get the average	建大仁科 COS-03 温湿度记录仪 Jianda Renke COS-03 temperature and humidity recorder
空气湿度 KQSD Air moisture (%)	测量样方上方 10 cm 处的空气湿度, 重复两次求平均值 Measure the air moisture 10cm above the quadrat, repeat twice to get the average	建大仁科 COS-03 温湿度记录仪 Jianda Renke COS-03 temperature and humidity recorder
坡度 PD Slope (°)	测量样方中心处朝向最近水坑方向的坡度 Measure the slope at the center of the quadrat towards the nearest puddle	syntek If01 数显款倾角仪 syntek If01 digital inclinometer
土壤 pH TRPH Soil pH	测量样方内随机 3 个点的数值, 求平均值 Measure the values of 3 random points in the quadrat and find the average	华润土壤酸度湿度测量仪 (ZD06) China Resources Soil pH and Moisture Tester (ZD06)
土壤含水量 TRHSL Soil moisture content (%)	测量样方内随机 3 个点的数值, 求平均值 Measure the values of 3 random points in the quadrat and find the average	华润土壤酸度湿度测量仪 (ZD06) China Resources Soil pH and Moisture Tester (ZD06)
光照度 GZD Sun radiation intensity (lux)	用照度计直接测量下午 14: 00-16: 00 时样方内随机 3 个点的光照强度, 求平均值 Use the illuminometer to directly measure the light intensity of three random points in the quadrat from 14:00 to 16:00 in the afternoon, and calculate the average value	特安斯照度计(TA8121) Teance Light Meter (TA8121)

环境变量 Environment variables	描述 Description	仪器 Instrument
落叶层厚度 LYCHD Leaf litter depth (cm)	测量样方内随机 3 个点的数值, 求平均值 Measure the values of 3 random points in the quadrat and find the average	5 m 卷尺 5 m tape measure
到岸边距离 DABJL Distance to shore (cm)	测量样方中心处到水坑岸边的最近距离 Measure the closest distance from the center of the quadrat to the shore of the puddle	5 m 卷尺 5 m tape measure
植物数量 ZWSL Plant number	直接计数样方内各种植物的数量 Directly count the number of various plants in the quadrat	-
植物高度 ZWHE Plant height (cm)	随机选取样方内 4 株植物并用卷尺测量高度, 求平均值 Randomly select 4 plants in the quadrat and measure the height with a tape measure to obtain the average value	5 m 卷尺 5 m tape measure
植物盖度 ZWCO Plant coverage (%)	估测值。估测植被所投影面积和小样方面积的比值 Estimated value. Estimating the ratio of the projected area of vegetation to the area of the quadrat	-
到最近大型遮蔽物的距离 DZJZBW Distance to large nearest shelter (cm)	实测值。产卵位点到最近的遮蔽物的直线距离 Measured value. Linear distance from spawning site to nearest shelter	5 m 卷尺 5 m tape measure
大型遮蔽物的体积 ZBWTJ Volume of large shelter (cm ³)	估算值。据遮蔽物的大致几何形状, 测量各形状参数, 由数学计算公式得出体积 Estimated value. According to the approximate geometric shape of the shelter, measure the shape parameters, and obtain the volume from the mathematical calculation formula	-

遮蔽物的几何形状据形态大致分为长方体(石块)和圆柱体(倒木、乔木、树根、藤本)。考虑到可比性, 遮蔽物参数的可测量性以及镇海棘螈的实际利用空间, 将长方体的高的平均值作为圆柱体的高进行计算。

The geometry of the shelter is roughly divided into cuboid (stone) and cylinder (fallen wood, tree, root, vine) according to the shape. Taking into account the comparability, the measurability of the parameters of the shelter, and the actual utilization space of *Echinotriton chinhaiensis*, the average value of the height of the cuboid was calculated as the height of the cylinder