A Big Earth Data Platform for Three Poles

**Modeling the influence of climate change on the distribution and activities of the Qinghai toad-headed lizard (1960-2080)**

1、Description

Based on the distribution locations of the Qinghai toad-headed lizard (Phrynocephalus vlangalii) collected by field investigation and literature investigation, combined with five climate factors from WorldClim database, the current (1960-1990) and future (2061-2080) climate data were input into the trained species distribution model to predict the current and future suitable habitats. The prediction results shows that the lizard will lose a lot of original habitats under the climate change, and the protection measures for the lizard species should focus on the eastern margin of Qinghai-Tibet Plateau, the northern and eastern parts of Qaidam Basin. The model also predicts that after the climate change, new suitable habitats will appear in areas that were not suitable for the Qinghai toad-headed lizard. However, due to the very limited diffusion ability of reptiles (the maximum annual diffusion distance recorded in the literature is less than 500m), the newly emerging suitable habitats may not be used by the Qinghai toad-headed lizard. Meanwhile, based on the physiological, life history, behavior and morphological data of three altitudinal populations of the Qinghai toad-headed lizard collected by field work, and combined with microclimate data, the physiological consequences of climate change on the Qinghai toad-headed lizard in the current suitable distribution area were predicted by using the mechanism niche model. The prediction results of the model show that, whether in the SSP245 or SSP585 climate change scenarios, the activity time of the lizard will increase in most areas (> 93%) of the current suitable distribution area, and the thermal safety threshold will decrease in all places of the current suitable distribution area. The increase of activity time of high-altitude populations is less than that of low-altitude populations, but the decrease of thermal safety threshold is greater than that of low-altitude populations. The results reveal that climate change may have a greater impact on lizard populations in high altitude areas.

2、Keywords

Theme：Biological Resources,Lizard,Topography,Model prediction,Vegetation,Climate change,Diversity and distribution,Tibetan Plateau,Reptiles,Altitude,Other
Discipline：Terrestrial Surface,Human-nature Relationship
Places：Tibetan Plateau
Time：1960-2080

3、Data details

1.Scale：None

2.Projection：

3.Filesize：3.28MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：39.0 | - |
| west：85.0 | - | east：104.0 |
| - | south：27.0 | - |

5、Time frame:1959-12-31 16:00:00+00:00--2080-12-29 16:00:00+00:00

6、Reference method

References to data:

ZENG Zhigao. Modeling the influence of climate change on the distribution and activities of the Qinghai toad-headed lizard (1960-2080). A Big Earth Data Platform for Three Poles, doi:10.11888/Terre.tpdc.2719422021

References to articles:

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program

8、Data resource provider

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