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Composition of 2018 Monitoring Dataset for Przewalski gazelle in Qinghai Lake Basin

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Abstract: The Qinghai Lake Basin (97°50′E–101°20′E, 36°15′N–38°20′N) is an important natural geographic area in the northeastern part of the Qinghai-Tibet Plateau and also provides ecological safety via the “two screens and three districts” in Qinghai Province. The basin is rich in biodiversity and is a gene pool of species on the Qinghai-Tibet Plateau; it is also a typical area of the plateau ecosystem. This dataset mainly compiles the monitoring data of the endangered species of Przewalski gazelles in 2018 in the basin. During the non-reproductive and mating period, Przewalski gazelles were monitored with the fixed sample point partitioning straight number method. Monoculars and binoculars were used to directly count the individual Przewalski gazelles and to record their behavior seen in the field. If possible, we distinguished between male, female, and young gazelles. At the same time, we recorded the Przewalski gazelle in sample areas and at sample points, including habitat, human interference, fences, drinking water spots, etc.

Keywords: Qinghai Lake Basin; Qinghai-Tibet Plateau; endangered species; Przewalski’s gazelle monitoring

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Dataset Availability Statement:

The dataset supporting this paper was published and is accessible through the *Digital Journal of Global Change Data Repository* at: https://doi.org/10.3974/geodb.2021.10.02.V1 or https://cstr.escience.org.cn/CSTR:20146.11.2021.10.02.V1.

1 Introduction

The Przewalski gazelle (Procapra przewalskii) is an endangered ungulate endemic to the Qinghai-Tibet Plateau[1] and one of the rarest endangered wild animals in the world. It generally lives in the intersecting area of desert and grassland. A desert area with an area of

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[2] Chen, Z. R., Sun, J. Q., Hou, Y. S., *et al*. Procapra Przewalskii dataset collecting from 76 sample sites in Qinghai Lake Basin (2018) [J/DB/OL]. *Digital Journal of Global Change Data Repository*, 2021. https://doi.org/10.3974/geodb.2021.10.02.V1. https://cstr.escience.org.cn/CSTR:20146.11.2021.10.02.V1.

about 203 km^2 exists near the Qinghai Lake sand Island. The area around Qinghai Lake is uninhabited and has minimal human interference, so it has become a gathering place for Przewalski gazelles[2]. Monitoring Przewalski gazelles is important for collecting information on the variations in Przewalski gazelle population and behavior and for subsequent protection[3].

Qinghai Lake is located in the northeast of the Qinghai-Tibet Plateau, and the area around Qinghai Lake is generally called the Qinghai Lake Basin. This area is in the arid region of northwest China at the intersection of the southwest alpine region and the eastern monsoon region. Qinghai Lake plays a pivotal role in the Qinghai-Tibet Plateau. It provides an ecological security barrier for the northeast part of the Qinghai-Tibet Plateau, and it is also an important water body in the Qinghai-Tibet Plateau ecosystem[4,5]. Qinghai Lake National Nature Reserve is located at the intersection of the two migration paths of waterbirds in Central Asia and East Asia, and its wetland area ranks first in China[6] . This dataset is based on monitoring samples of waterbirds, vegetation, endangered species, etc., over several years by the Qinghai Lake National Nature Reserve Administration.[7] The monitoring time was from March 2018 to February 2019, during which the Przewalski gazelle was monitored four times. By monitoring Przewalski gazelle (Figure 1, 2), we obtained the population number, population dynamics, population distribution, and population structure[8]. The monitoring data for the endangered species (Przewalski gazelle) was sorted to form the 2018 Przewalski gazelle monitoring dataset for the Qinghai Lake Basin.

Figure 1 Przewalski gazelle in Qinghai Lake Basin (by Chen, Z. R., in August 10, 2020）

Figure 2 Monitoring of Pu's original gazelle (by Chen, Z. R., in August 10, 2020）

2 Metadata of the Dataset

The metadata of the Procapra Przewalskii dataset collecting from 76 sample sites in Qinghai Lake Basin (2018)[9] is summarize in Table 1

3 Data Collection

To monitor Przewalski gazelle during the non-reproductive and mating periods (Table 2), we used the fixed sample point partitioning straight number method, and monoculars and binoculars were used to directly count the individual Przewalski gazelles seen in the field of view. A fixed sample was used during the lambing period. The line method for monitoring using monocular and binoculars was used to directly count the individuals and record the behavior of Przewalski gazelles seen on the transect. We distinguished between male, female, and young gazelles if possible and recorded the Przewalski gazelles at sample areas. We sampled at the same spots (Table 3) recording habitats, human interference, fences, drinking water spots, etc.

Przewalski gazelles were monitored at five sub-regions to set up 13 monitoring areas. These 13 monitoring areas cover all the habitats of the Przewalski gazelle in the Qinghai

Table 1 Metadata summary of the Monitoring dataset for Procapra Przewalskii

Item	Description
Dataset name	Procapra Przewalskii dataset collecting from 76 sample sites in Qinghai Lake Basin (2018)
Dataset short name	P.Przewalskii_Qinghai2018
Authors	Qi, D. S., Qinghai Normal University, 2964694441@qq.com Sun, J. Q., Qinghai Lake National Nature Reserve Administration, sunjq @163.com Hou, Y. S., Qinghai Lake National Nature Reserve Administration, 823996451 @qq.com Chen, K. L., Qinghai Normal University, ckl7813@163.com Chen, Z. R., Qinghai Normal University, 424142312@qq.com Ma, Y. X., Qinghai Normal University, 346404980@qq.com
Geographical area	Qinghai Lake Basin
Year	2018
Data format	.shp, .xlsx
Data size	48.3 KB (after compression)
Dataset files	One file in .shp format and one file in .xlsx format
Foundations	Ministry of Science and Technology of P. R. China (2019QZKK0405); National Natural Science Foundation of China (41661023); Qinghai Province (2020-ZJ-Y06)
Data publisher	Global Change Research Data Publishing & Repository, http://www.geodoi.ac.cn
Address	No. 11A, Datun Road, Chaoyang District, Beijing 100101, China
Data sharing policy	***Data*** from the Global Change Research Data Publishing & Repository includes metadata, datasets (in the *Digital Journal of Global Change Data Repository*), and publications (in the *Journal of Global Change Data & Discovery*). ***Data*** sharing policy includes: (1) ***Data*** are openly available and can be free downloaded via the Internet; (2) End users are encouraged to use ***Data*** subject to citation; (3) Users, who are by definition also value-added service providers, are welcome to redistribute ***Data*** subject to written permission from the GCdataPR Editorial Office and the issuance of a ***Data*** redistribution license; and (4) If ***Data*** are used to compile new datasets, the 'ten per cent principal' should be followed such that ***Data*** records utilized should not surpass 10% of the new dataset contents, while sources should be clearly noted in suitable places in the new dataset [10]
Communication and searchable system	DOI, CSTR, Crossref, DCI, CSCD, CNKI, SciEngine, WDS/ISC, GEOSS

Lake Basin but do not include the two areas of Cheji and Wahyu in Gonghe county, Hainan prefecture (Table 2). In the 13 monitoring areas, 76 monitoring sample points were fixed (Figure 3), 15 fixed monitoring sample lines were set up, with a total length of 97.97 km, for a total monitoring area of 490.39 km^2. The monitoring area outside the protection area was 138.42 km^2, and the monitoring area outside the protection area was 351.97 km^2 (Table 4).

4 Data Results

4.1 Dataset Composition

This dataset consists of two data files, one Przewalski gazelle sample geographic information system data in .shp format, and 13 worksheet data in one .xls table. The data size is 75.6 KB (compressed into two files of 48.3 KB).

Table 2 Monitoring time and sample area of Przewali's gazelle population in Qinghai Lake Basin in 2018

Monitoring the time	Corresponding life time	Monitoring sample area (unit)
2018.3.20–20218.3.25	non-breeding periods	13
2018.6.19–2018.6.25	non-breeding periods	13
2018.8.8–2018.8.16	lambing period	13
2018.12.21–2018.12.26	mating period	13

4.2 Data Results

4.2.1 Vegetation Types and Biomass in Active Areas of Przewalski's Gazelle in the Qinghai Lake Basin

Vegetation types and biomass statistics of Przewalski's gazelle active areas in Qinghai

Lake Basin include warm steppe, achnatherum splendens, stipa type, achnatherum splendens, sand-fixing grass type in Qinghai, stipa sareptana A. K. Becker var. krylovii, Carex duriuscula subsp. Stenophylloides, Sand-fixing grass type in Qinghai, Wheatgrass, Warm desert grassland, Stipa breviflora, Sand-fixing grass type in Qinghai, Alpine grassland Stipa purpurea type, Warm desert, Stipa type with, Potentilla glabra Lodd, Stipa type with Potentilla glabra Lodd (Contrast) Upland meadow, Elymus nutans typeControl), mountain meadow, Leptospira, etc. Among various vegetation types, the total biomass and edible total biomass were counted (Table 5), including grasses, sedges, legumes, edible miscellaneous grasses, and non-edible poisonous weeds, etc.

Table 3 Habitat information of Przewalski's gazelle observation sites

Sample area	Habitat type	Type and intensity of interference	Average altitude (m)
KuaiErMa	Mountain valley	Grazing (strong in winter and spring, weak in summer and autumn)	3,668
ShengGe	River valley beache	Grazing (strong in winter and spring, weak in summer and autumn)	3,648
Bird island	Lakeside beach	Grazing (strong in winter and spring, weak in summer and autumn)	3,207
Qinghai lake farm	Lakeside beach	Agricultural production (moderate farming period), Grazing (strong in winter and spring, weak in summer and autumn)	3,222
South of Hallgeir railway	Lakeside beach	Agricultural production (moderate farming period), Road and rail transport (mid-year)	3,221
North of Hallgeir railway	Piedmont/River valley beache	Strong agricultural production (middle agrarian stage), Road and rail transport (mid-year), Grazing (strong in winter and spring, weak in summer and autumn)	3,269
South of Ganzihe railway	Lakeside beach	Road and rail transport (mid-year), Grazing (strong in winter and spring, weak in summer and autumn)	3,227
North of Ganzihe railway	Piedmont/River valley beache	Road and rail transport (mid-year), Grazing (strong in winter and spring, weak in summer and autumn)	3,250
TaLeXuanGuo	Piedmont/River valley beache	Grazing (strong in winter and spring, weak in summer and autumn)	3,327
Sand island	Lakeside beach	Grazing (strong in winter and spring, weak in summer and autumn)	3,222
Replace with out-soil	Piedmont beach	Grazing (moderate throughout the year), Tourism (moderate in summer)	3,378
Lake east sheep farm	Piedmont beach	Grazing (moderate throughout the year), Tourism (moderate in summer)	3,344
YuanZhe	Piedmont beach	Grazing (moderate throughout the year), Tourism (moderate in summer)	3,229

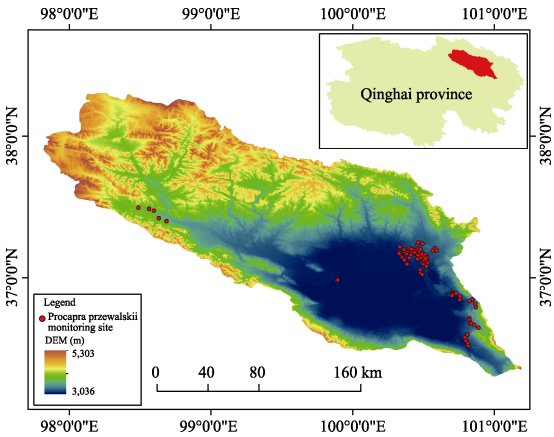

Figure 3 Monitering sites distribution of Przewalski gazelles in Qinghai Lake Basin

The vegetation types of Przewalski's gazelle active area in Qinghai Lake Basin include alpine grassland and warm steppe type warm desert, among which the available area is more than 95% of the total area (Table 6). Overall, the edible biomass, available biomass and available fresh grass are sufficient. The edible biomass and available biomass and available fresh grass amount of alpine meadow were less than those of warm grassland, which were related to vegetation type, altitude and plant growth cycle. There is a certain subjective influence of animal capacity on the basis of edible biomass, available biomass and available fresh grass, which is related to local nomadic life and economic development of local herdsmen.

Table 4 Setting of Przewalski's gazelle sample point and line transect

Distribution area	Monitoring sample area	Sample	Sample setting (km)	Division of protected areas	Monitoring area (km^2)
Lake east	Yuanzhe	5	24.69 (4 strips)	Outside the reserve	40.83
	Lake east sheep farm	6			38.18
	Replace with out-soil	4			20.5
Sand island	Sand island	7	8.37 (1 strips)	Buffer, Core, Test area	30.95
Region of Hallgeir-ganzi river	South of Ganzihe railway	9	28.17 (5 strips)	Buffer, Core, Test area	48.63
	North of Ganzi river railway	12		Outside the reserve	43.28
	Hallgeir railway south	5		Buffer, Core, Test area	53.17
	Hallgeir railway north	10		Outside the reserve	48.29
	TaLeXuanGuo	3	4.32 (1 strips)	Outside the reserve	15.29
	Qinghai lake farm	8	6.95 (1 strips)	Buffer, Core, Test area	51.15
Bird island	Bird island	2	6.49 (1 strips)	Buffer,Core	13.04
Tianjun	KuaiErMa	2	7.62 (1 strips)	Outside the reserve	63.59
	ShengGe	3	11.37 (1 strips)	Outside the reserve	23.49
Total	13 sample areas	76 sample points	97.97 (15 strips)	–	490.39

Table 5 Vegetation types and biomass in active areas of Przewalski's gazelle in the Qinghai Lake Basin

Vegetation form	Total biomass (kg/hm^2)	Total edible biomassb (kg/hm^2)	Vegetation type (kg/hm^2)				
			Gramineous	Cyperaceae	Legumes	Edible miscellaneous weeds	Inedible poisonous weeds
Warm steppe	1,894.1	1,730.46	1,245.5	92	137.4	255.56	163.64
Achnatherum splendens, Stipa type	1,490.5	1,357.3	1,157.5	0	37	162.8	133.2
Achnatherum splendens, Sand-fixing grass type in qinghai	3,195	3,015	3,000	0	10	5	180
Stipa sareptana A. K. Becker var. krylovii, Carex duriuscula subsp. stenophylloides	1,235	1,110	240	400	50	420	125
Sand-fixing grass type in qinghai	1,950	1,950	1,570	0	90	290	0
Wheatgrass	1,600	1,120	260	60	500	400	380
Warm desert grassland	677.5	640	520	25	15	80	37.5
Stipa breviflora, Sand-fixing grass type in qinghai	677.5	640	520	25	15	80	37.5
Alpine grassland	2,000	1,920	1,400	190	180	150	80
Stipa purpurea type	2,000	1,920	1,400	190	180	150	80
Warm desert	1,230	1,110	390	60	410	250	120
Stipa type with Potentilla glabra Lodd	1,830	1,620	460	50	820	290	210
Stipa type with Potentilla glabra Lodd (contrast)	630	600	320	70	0	210	30
Alpine grassland	2,000	1,920	1,400	190	180	150	80
Stipa purpurea type	2,000	1,920	1,400	190	180	150	80
Alpine grassland	2,000	1,920	1,400	190	180	150	80
Stipa purpurea type	2,000	1,920	1,400	190	180	150	80
Warm desert	1,230	1,110	390	60	410	250	120

(*To be continued on the next page*)

(*Continued*)

Vegetation form	Total biomass (kg/hm^2)	Total edible biomass (kg/hm^2)	Among (kg/hm^2)				
			Gramineous	Cyperaceae	Legumes	Edible miscellaneous weeds	Inedible poisonous weeds
Stipa type with Potentilla glabra Lodd	1,830	1,620	460	50	820	290	210
Stipa type with Potentilla glabra Lodd (contrast)	630	600	320	70	0	210	30
Upland meadow	4,430	4,180	3,000	0	970	210	250
Elymus nutans type	4,430	4,180	3,000	0	970	210	250
Average	1,912.54	1,775.66	1,211.59	89.55	259.27	215.25	136.88

Table 6 Vegetation types and biomass in active areas of Przewalski's gazelle in the Qinghai Lake Basin

Activity area	vegetation form	Area (hm^2)	Available area (hm^2)	Edible biomass (kg/hm^2)	Available biomass (kg/hm^2)	Total amount of available fresh grass (kg)	Stocking capacity (sheep unit)
ShengGe	Alpine grassland	4,975	4,756	2,060	1,648	7,788,448	9,272
KuaiErMa	Alpine grassland	5,926	5,630	1,780	1,424	8,017,120	9,544
Bird Islet	Warm steppe	2,932	2,873	2,820	2,256	6,282,960	7,480
Qinghai lake farm	Warm steppe	4,656	4,563	4,180	3,344	1,5258,672	18,165
Hallgeir, ganzi river	Warm steppe	25,502	24,992	875	700	17,494,400	20,827
TaLeXuanGuo	Warm steppe	3,036	2,975	1,120	896	2,665,600	3,173
Sand island	Warm steppe	4,843	4,746	3,015	2,412	1,1447,352	13,628
Lake east	Warm desert	27,063	21,650	1,653.65	1,322.92	2,8641,218	34,097
Replace with out-soil	Warm desert	3,560	3,321	1,110	777	7,886,620	8,250

4.2.2 Monitoring Results of Przewalski's Gazelle Population

Due to the living habits of the Przewalski gazelles, the structure and composition of the population vary over the year. Therefore, according to the living habits of the Przewalski gazelle, the monitoring in 2018 was divided into four periods (Table 7): Monitoring was carried out during the breeding and non-breeding periods of the Przewalski gazelle, lambing period, mating period; that is, during the lambing period in August, when the female antelope is just lambing, and the female antelope and the young gazelle move separately in groups (apart from the males). December is the estrus period and is also the mating period, when the female antelope and the male antelope are active in groups. From early March to late June is the non-reproductive period, when the female antelope and the male antelope are

Table 7 Przewalski's gazelle population in 2018.

Observational sample area	Non-breeding period		Breeding stage		mean
	Early March	Later June	Lamb period August	Relationship period December	
Guilma Township	72	83	49	1	51
Shengge township	100	26	116	89	83
Qinghai Lake Farm	84	106	216	80	122
North of the Halge Railway	768	323	1,278	798	792
South of the Halge Railway	215	553	157	342	317
North of Ganzi River Railway	190	207	176	125	175
South of Ganzi River Railway	334	148	551	163	299
Tareo fruit	42	1	27	0	18
Sand island	125	37	72	83	79
Tori-shima	48	25	42	19	34
Yuan	42	17	23	1	21
Kotō	29	7	0	29	16
Earth	8	13	86	13	30
Total	2,057	1,546	2,793	1,743	2,035

active in groups. The survey of the population of Przewalski gazelles in 2018 counted 2,057 animals in the early non-breeding period, 1,546 in the late period, 2,793 in the lambing period, and 1,743 in the estrus period. The average annual number was 2,035 (Table 8).

Table 8 Statistics of Przewalski's gazelle structure in 2018

Observational sample area	Total individual	Male		Female		Young antelope (including subadult)	
		Number of individuals	Specific value	Number of individuals	Ratio	Number of individuals	Ratio
Guilma Township	49	4	8%	27	55%	18	37%
Shengge township	116	15	13%	59	51%	42	36%
Yuan	23	2	9%	12	52%	9	39%
Kotō	0	0	0%	0	0%	0	0%
The earth	86	7	8%	49	57%	30	35%
Sand island	72	14	19%	35	49%	23	32%
South of Ganzi River Railway	551	133	24%	251	46%	167	30%
North of Ganzi River Railway	176	44	25%	80	45%	52	30%
South of the Halge Railway	157	82	52%	22	14%	53	34%
North of the Halge Railway	1,278	272	21%	724	57%	282	22%
Qinghai Lake Farm	216	31	14%	145	67%	40	19%
Tareo fruit	27	8	30%	11	41%	8	30%
Tori-shima	42	4	10%	31	74%	7	17%
Total	2,793	616	22%	1,446	52%	731	26%

The population structure of the Przewalski gazelle is as follows: for monitoring, the male, female, and young Przewalski gazelles were distinguished. The statistics showed males accounted for 22% (616), females accounted for 52% (1446), and 26% were young gazelle (731) in the overall population structure of Przewalski gazelle. Compared with 2017, the proportion of males increased by 1%, females increased by 1%, and young gazelles rose by 1%. The overall population structure was more reasonable. Ideally, the population structure should be maintained at about 60% compared with females, which still has a certain potential impact on the overall population structure.

Comparing the average values of the data obtained by monitoring four times per year shows that the population remained at 700 from 2011 to 2012, increased from 2013 to 2014 to over 1,000, and from 2016 to 2017 the number further increased to 1,300. From 2017 to 2018 it could be seen an increase of 760 animals for a total of 1,300 animals. This result showed that the population of Przewalski gazelles has been restored in recent years and the protection measures have produced results. In the August 2018 lambing survey, the population of Przewalski gazelles was 2,793, which is the highest number since monitoring began (Figure 4).

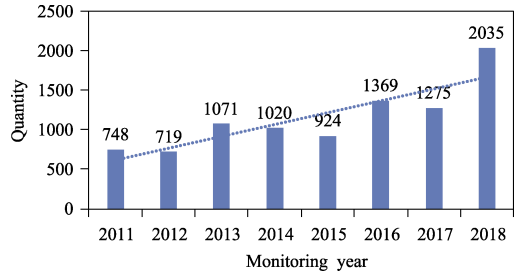

Figure 4 Population of Przewalski gazelles in the Qinghai Lake Basin over the years

5 Discussion and Summary

The monitoring results showed that the population structure of Przewalski gazelles was more reasonable. Males accounted for 22% (616 animals), females 52% (1,446 animals), and young antelopes 26% (731 animals). The proportions of male and female antelopes increased by 1%. In 2018, a total of 2,035 Przewalski gazelles was counted within a monitoring range of 490.39 km^2 around the lake (excluding Wahyu and Cheji) (average of four monitorings throughout the year). The population of Przewalski gazelles has increased significantly, with an increase of 760 in 2018 compared with 2017, and an increase of 1,287

compared with 748 in 2010，The total increase was nearly threefold over nine years.

The expansion of the habitat area is one likely reason for the increase in the population of the Przewalski gazelle. The habitat area was 437.96 km^2 before 2016 and is now 490.39 km^2, expanded by 52.43 km^2. The expansion of the habitat area is mainly manifested in the three distribution areas of Qinghai Lake Farm, Hargai, and Shadao. The habitat area of Ganzihe, Hudong, and Tianjun has remained stable, while the area of Bird Island has decreased. The habitat area of Hargai, Shadao, and Qinghai Lake farms has expanded, but the corresponding protection measures have not kept up. We therefore recommend the implementation of protective measures such as lowering and removing iron mesh fencein newly expanded habitats and establishing new passageways and drinking-water points. The rise of the water level of Qinghai Lake in the bird island distribution area has led to a reduction of Przewalski gazelle on the bird island, and the shortage of herbivores in winter has led to a decline in the population. In view of these two problems, we recommend the instauration of habitat restoration and supplementary feeding in the winter.

Statistics on interference factors of habitats found that all habitats have different degrees of interference factors. Farming and agricultural production in the Hargey distribution area and road and rail transport are the main interference factors. In the Hudong distribution area, the development of sheep breeding and Yuanzhe tourism activities are the main interference factors, and grazing in other distribution areas is the main interference factor in these areas. Based on the results of this survey combined with the management of protected areas, we select different protection measures for different areas. The choice of measures and the effective management of natural resources in the protected area are inseparable from the production and life of the community. Therefore, when implementing protective measures, we must consider ecological protection and community livelihood development.

Author Contributions

Qi, D. S. and Chen, Z. R. design the dataset development; Chen, K. L., Hou, Y. S., Ma, Y. X. and Wang, X. Y. collected and processed the data; Chen, Z. R., *et al*. wrote the data paper.

Conflicts of Interest

The authors declare no conflicts of interest.

References

[1] Ping, X. G., Li, C. W., Li, C. L., *et al*. Distribution, population and protection status of Przewalski gazelle [J]. *Biodiversity*, 2018, 26(2): 177–184.

[2] Jiang, Z. G. The mystery of Przewalski's gazelle by the Qinghai Lake [J]. *Earth*, 2020(7): 6–13.

[3] Zhi, Y. J., Yi, J. F., Liu, W., *et al*. Monitoring of overwintering waterbirds in the Poyang Lake Nanji Wetland National Nature Reserve [J]. *Journal of Ecology*, 2020, 39(7): 2400–2407.

[4] Zhang, L. L., Gao, L. M., Chen, K. L. Variation characteristics of radiation balance and surface albedo of Wayan mountain wetland in Qinghai Lake Basin [J]. *Glaciology and Geocryology*, 2018, 40(6): 1216–1222.

[5] Gao, L. M., Zhang. L. L., Chen, K. L. Microclimate characteristics of wetland in Qinghai Lake Basin [J]. *Arid Zone Research*, 2019, 36(1): 186–192.

[6] Cairen, Z. M. Legal research on the protection of Qinghai Lake wetland ecosystem [D]. Lanzhou: Lanzhou University, 2016.

[7] Hou, Y. S., He, Y. B., Xing, Z., *et al*. Diversity and distribution of waterbirds in Qinghai Lake National Nature Reserve [J]. *Journal of Animal Taxonomy*, 2009, 34(1): 184–187.

[8] Sun, J. Q., Lu, F. G., Wu, Y. L., *et al*. Investigation and study of Przewalski gazelle and bird habitat in Qinghai Lake area [J]. *Qinghai Grass Industry*, 2011, 20(1): 41–48.

[9] Chen, Z. R., Sun, J. Q., Hou, Y. S., *et al*. Procapra Przewalskii dataset collecting from 76 sample sites in Qinghai Lake Basin (2018) [J/DB/OL]. *Digital Journal of Global Change Data Repository*, 2021. https://doi.org/10.3974/geodb.2021.10.02.V1. https://cstr.escience.org.cn/CSTR:20146.11.2021.10.02.V1.

[10] GCdataPR Editorial Office. GCdataPR data sharing policy [OL]. https://doi.org/10.3974/dp.policy.2014.05 (Updated 2017).