

# 青海湖

Birds in Qinghai Lake

鸟岛·鸟事



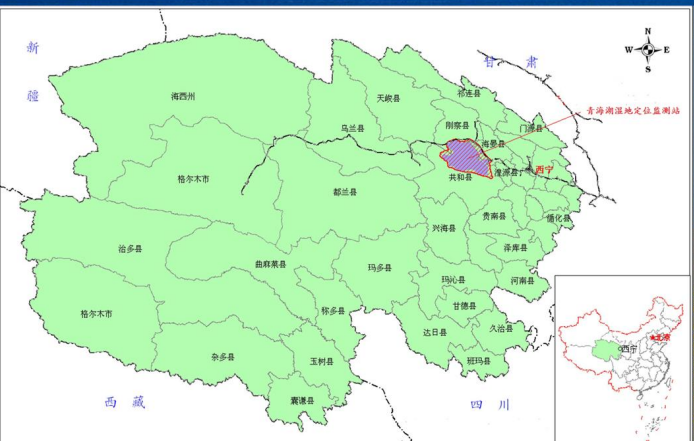
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# 前言

“青海湖是世界上最为重要的湿地之一，蕴含丰富的生态资源，其中以鸟类尤甚。《青海湖鸟岛·鸟事》是介绍青海湖鸟类的系列科普读物。本书为此系列第一辑，包括青海湖鸟类概述，以及棕头鸥、斑头雁、渔鸥、鸬鹚四种青海湖夏候鸟的介绍，集知识性与趣味性于一体。我们希望通过本书让更多的人了解青海湖鸟类和生物多样性，吸引对青海湖生态环境的更多关注。由于编者水平有限，疏漏之处敬请指正。”

As one of the most important wetland on earth, Qinghai lake has abundant ecological resources, especially birds. Birds in Qinghai Lake is a series of popular science books. As the first book of the series, this book consists of the overview of birds in Qinghai lake and introduction of four summer visitors in QingHai Lake-brown-headed gulls, bar-headed geese, great black-headed gulls and cormorants- combined with fun and knowledge. We intend to publicize the general situation of these birds and biodiversity to people, attract more attention to the overall ecological environment of QingHai Lake. Due to the limitation of our knowledge, we will appreciate any correction of mistakes of this book.



# 青海湖概况

青海湖位于青藏高原东北部，祁连山系南麓，是国际上十分重要的湿地。地处青藏高原气候、温性季风气候、温带大陆气候三大气候带的交界处，是维系青藏高原东北部生态安全的重要水体。

Qinghai Lake locating on the north of Qinghai-Tibetan Plateau, and on the south of Qilian Mountain, is in the list of Ramsar wetlands of international importance. It is in the intersection of three climate: Qinghai-Tibet plateau climate, monsoon climate of medium latitudes and temperate continental climate, and is an essential water body that maintains the ecological security of north-east Qinghai-Tibetan Plateau.

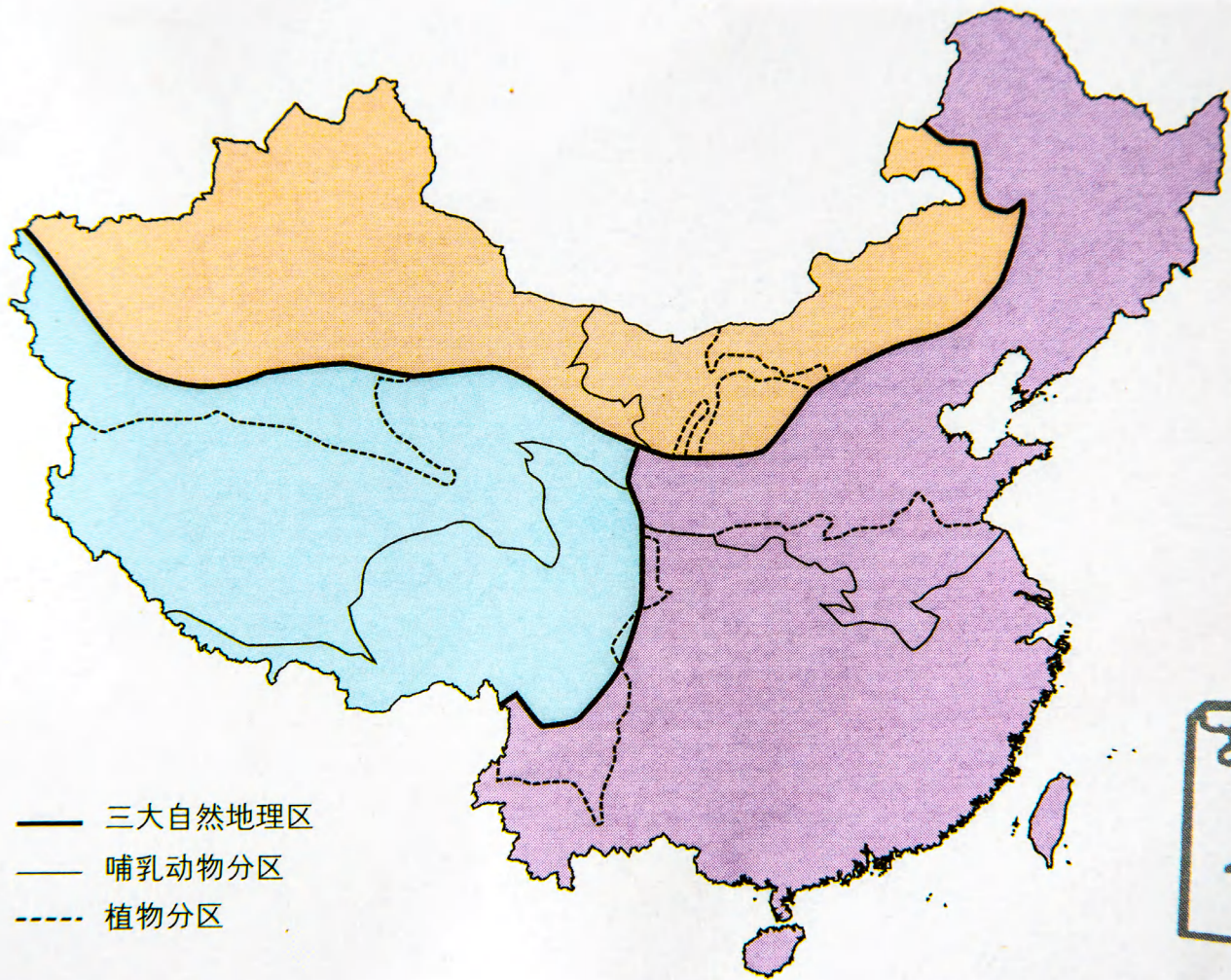


**问题 1：你知道青海湖有多大吗？**

青海湖很大哦，它可是全国最大的内陆咸水湖泊，在全世界排名第三，面积达 4430 平方公里，差不多三分之一个北京市那么大呢。环湖周长有 360 多公里，如果你要环湖一周，相当于跑 8 个全程马拉松那么长，即使是最好的马拉松运动员，也至少要连续跑一天一夜才能环湖一周哦。

**Question 1 : Do you know how wide is the Qinghai Lake?**

**Answer: Qinghai Lake is so large .It is the largest inland salt water lake, ranking third in the world, covering an area of 4430 square kilometers. It's almost equal to a third of the Beijing city. And the perimeter is more than 360 kilometers. If you want run around the lake, which is the equivalent of 34 marathons, you must continuous running around the lake day and night at least.**



- 三大自然地理区
- 哺乳动物分区
- 植物分区

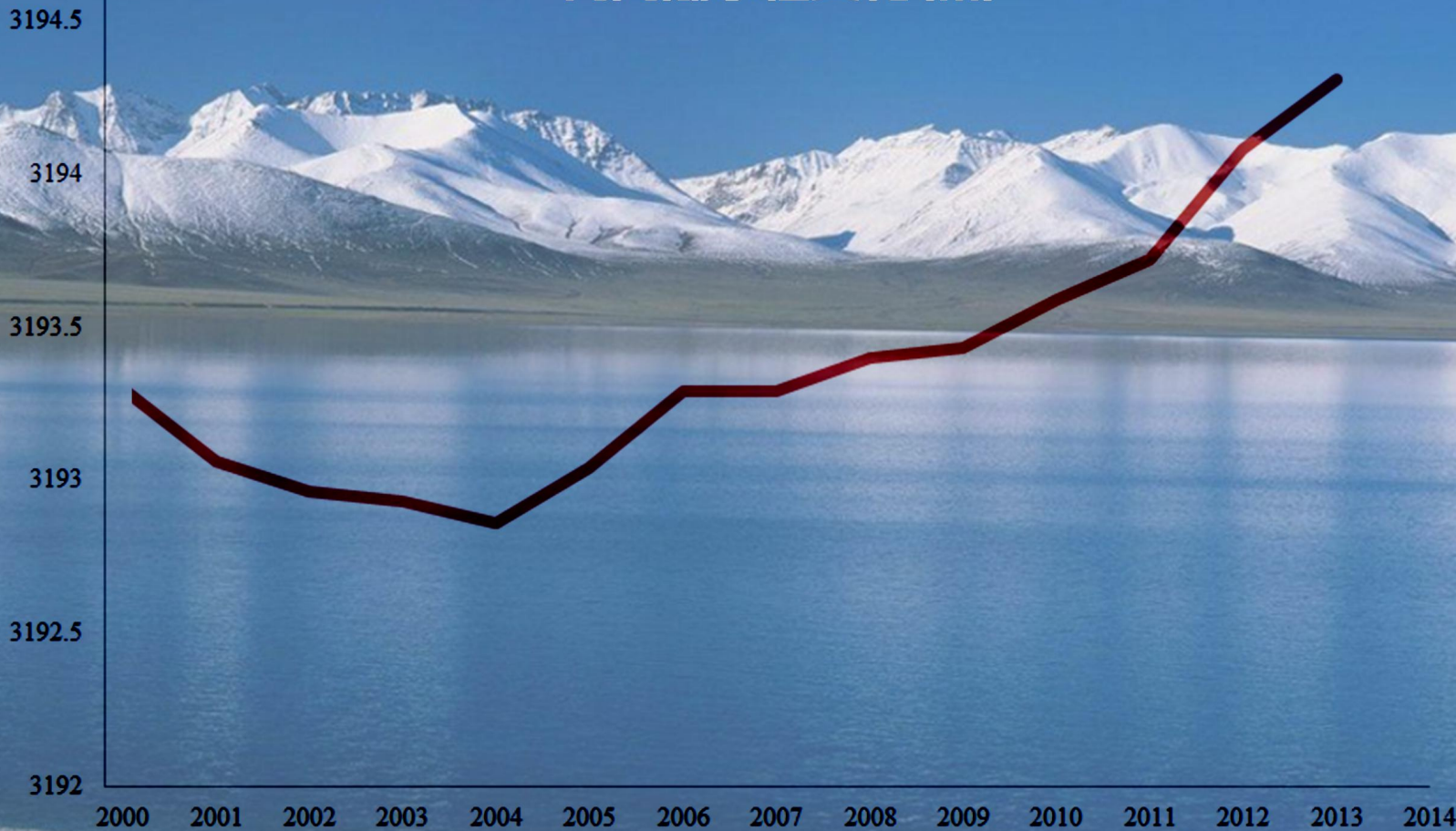
## **问题 2：你知道青海湖为什么拥有独特而丰富的物种资源吗？**

青海湖海拔约 3194 米，处于我国三大气候区的交汇点，独特的地理环境使青海湖拥有了独特的物种资源。多种的气候类型为不同的生物提供了适宜的生存环境，原生态的保留又使生物种群的繁衍生息能够顺利进行，因此青海湖物种资源格外丰富。

## **Question 2: Do you know why Qinghai Lake has unique and rich species resources?**

Answer: Qinghai Lake has an altitude of about 3194 meters above sea level, and is in the intersection of three climate. The unique geographical environment makes the unique species resources in Qinghai Lake. A variety of climate types provide a suitable living environment for different creatures, and the preservation of the original ecology ensures that species breeding can go smoothly. So Qinghai Lake has extraordinarily rich species resources.

# 青海湖水位变化 (m)



### 问题 3: 你知道青海湖近年来水位变化的情况吗?

从 2000 年到 2004 年, 青海湖水位以平均每年 11 厘米的速度下降, 降雨量减少、人类活动加剧以及周边的盲目开荒都是青海湖缩减的原因。不过由于近些年来生态工程的实施, 以及全球回暖造成的冰川融化、雨水增多, 使原本的干冷气候逐渐转变为温室气候, 从 2005 年开始, 青海湖水位又以平均每年 16.1 厘米的速度上升, 2013 年青海湖的水位已经达到了 3194.31 米。

### Question 3: Do you know how the water level of Qinghai Lake fluctuates in recent years?

Answer: The fact is that from 2000 till 2004, the water level decreases at a speed of 11 cm per year. It is because of less rain, more active human activities and blind-eyed cultivation around the lake. However, due to the performance of ecological engineering, as well as the the present phenomenon of the melting of glacier and increase of recipitation caused by global warming, the original dry-cold climate is gradually converted to a humid-warm climate. From 2005 till now, the water level has beenincreasing at an average speed of 16.1cm per year, and now it reaches the level of 3194.31m above the sea level.

# 全球候鸟迁徙路线图





如图所示，青海湖是国际候鸟迁徙的重要节点和通道，为中亚、东亚两条迁徙路径的交汇点。

As shown, Qinghai Lake is one of the most important nodes and channels of international migratory birds, which is the intersection of two migration paths of Central Asia and East Asia.



# 青海湖鸟类概述

青海湖是国际重要湿地，野生水鸟资源丰富，资源地位突出。青海湖位于中亚、东亚两条候鸟迁徙路径的交汇点，是候鸟迁徙途中的重要停歇地和中转站，每年在青海湖迁徙停留的候鸟有数十万只，是越冬水禽的重要越冬地，同时青海湖又是中国境内夏候鸟繁殖数量最多种群最为集中的繁殖地。

Qinghai Lake is in the list of Ramsar wetlands of international importance. It has rich wild waterfowl resources and its resources status is prominent. Qinghai Lake is located in the intersection of two migratory paths of Central Asia and East Asia and it is the important rest stop and transfer stop in the migration. Hundreds of thousands of migratory birds inhabit in Qinghai Lake during their migration every year. It is the important wintering area for the wintering waterfowls and it is the breeding area for summer resident birds with the largest number and the most concentrated population in China.



青海湖大面积的湿地，以及丰富的水生动植物为水鸟提供了适宜的繁殖、栖息场所，每年在青海湖集中繁殖的水鸟种群数量在 6 万只左右，在青海湖越冬的水鸟种群数量在 6 千只左右，而每年在青海湖迁徙停留的水鸟种群数量更多达 10 多万只。

The large area of wetlands and the rich aquatic animals and plants in Qinghai Lake provide the waterfowls with suitable breeding area and inhabitation. Every year, the population quantity of waterfowls that gather in Qinghai Lake to reproduce is about 60,000; the population quantity of waterfowls that overwinter in Qinghai Lake is about 6,000; and the population quantity of waterfowls that inhabit in Qinghai Lake during their migrations is more than 100,000.



# 鸟类分类

## 涉禽 (Wading bird)

喙长、颈长、后肢长，这是它的最典型特征，因此适于在深水区捕食。它之所以叫“涉禽”，就是因为它只涉不游，它的趾间蹼膜常退化，因此不会游泳。

Possessing long beaks, long necks and long legs is their most typical characteristics, so it's quite suitable for them to prey in the deep-water areas. The reason why they are called 'wading birds' is that they merely wade but don't swim. The palama between their toes is usually degenerated. That's why they're not able to swim.



# 鸟类分类

## 游禽 (Swimming bird)

趾间具蹼，善于游泳和潜水。由于尾部脂质分泌发达，因此全身羽毛布满油脂，防水能力很强。另外嘴形或扁或尖，适于在水中滤食或啄鱼。

They have well-developed palama between their toes, making them very good at swimming and diving. They have very powerful lipid-secreting glands in their tails, so the feather all over the body are covered with lipid, making it a waterproof coat. Additionally, their beak is flat or sharp, which makes them adapted to filtering food or pecking fish.



# 鸟类分类

## 陆禽 (Terrestrial bird)

后肢十分强壮，所以擅长在陆地上行走。翅退化常呈短圆形，不太善于飞翔，但也不乏善于飞翔的陆禽。喙常呈弓形，善于啄食。

Their legs are quite muscular and powerful, and therefore they are quite skilled in walking on the land. Their wings are degenerated and look short and round, which is the reason why they are not very expert in flying despite the fact that some terrestrial birds do expert in it. Last but not least, their beaks look like bows, contributing to their great skills in pecking food.



# 鸟类分类

## 猛禽 (Raptor)

善于飞翔，视力极好，善于发现猎物；羽色暗淡，喙爪锐利，善于潜伏而出其不意地发起攻击。

Raptors have extraordinary soaring ability. Besides, they have perfect eyesight and are good at finding prey. The color of their feathers is dull and their beaks and claws are sharp. They are good at lurking and launching attacks by surprise.



# 鸟类分类

## 鸣禽 (Songbird)

种类十分多样，平日里我们听到的婉转的鸟鸣，均是鸣禽的杰作。它们鸣叫器官（鸣肌和鸣管）十分发达，并且具有很好的多样性。另外有趣的一点是，小鸣禽在巢中只有得到亲鸟的哺育才能正常发育成鸟。

There are various types of Songbirds. The sweet twitter we hear on daily basis is all the masterpiece of Songbirds. Their singing organs (singing muscle and syrinx) are extraordinary developed and possess great diversity. Another interesting fact is that little songbirds will mature only when they are fostered by their parents in the nest.



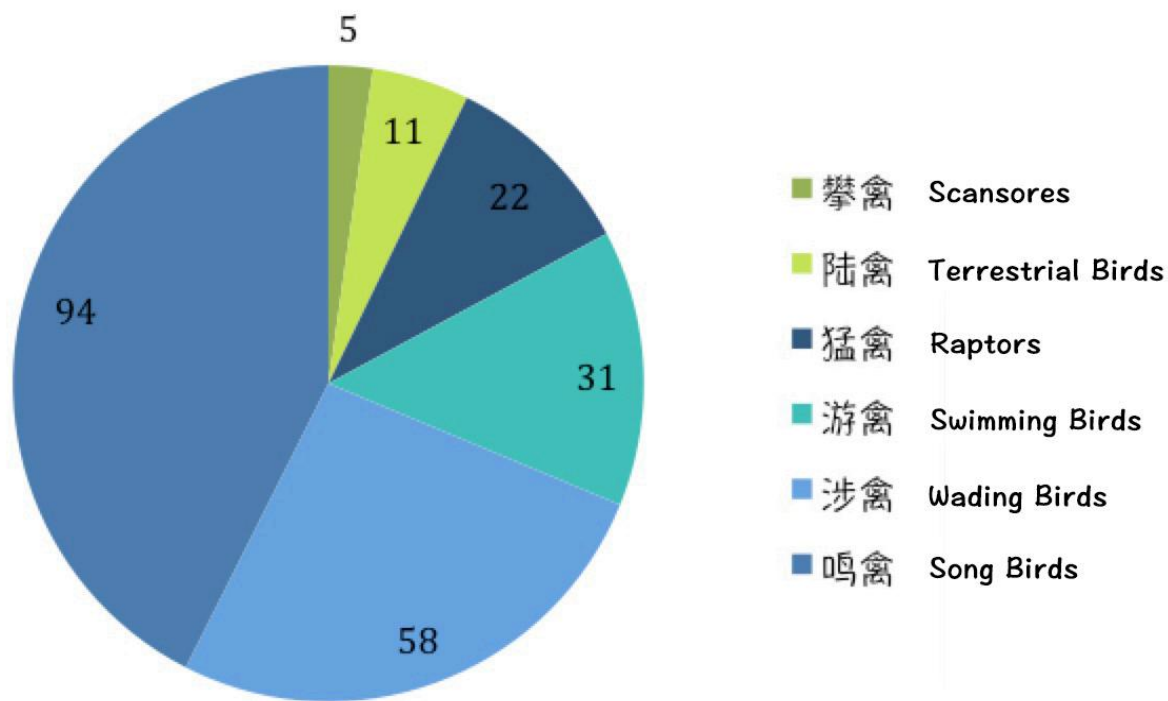
# 鸟类分类

## 攀禽 (Scansore)

攀禽的脚趾多富于变化，因为它们要适应不同地形的攀爬，比如岩壁、树干，石壁，土壁。因而有些攀禽四趾朝前，有些两前两后，有些基部并联。

The toes of Scansores are rich in variation because they have to adapt to shinning in different terrains like palisades, trunks, precipices and soil walls. As a result, some songbirds' four toes point forward, some have two toes pointing forward and the other two pointing back and some others have the toes whose roots are combined.

# 青海湖鸟类六大生态类群数量



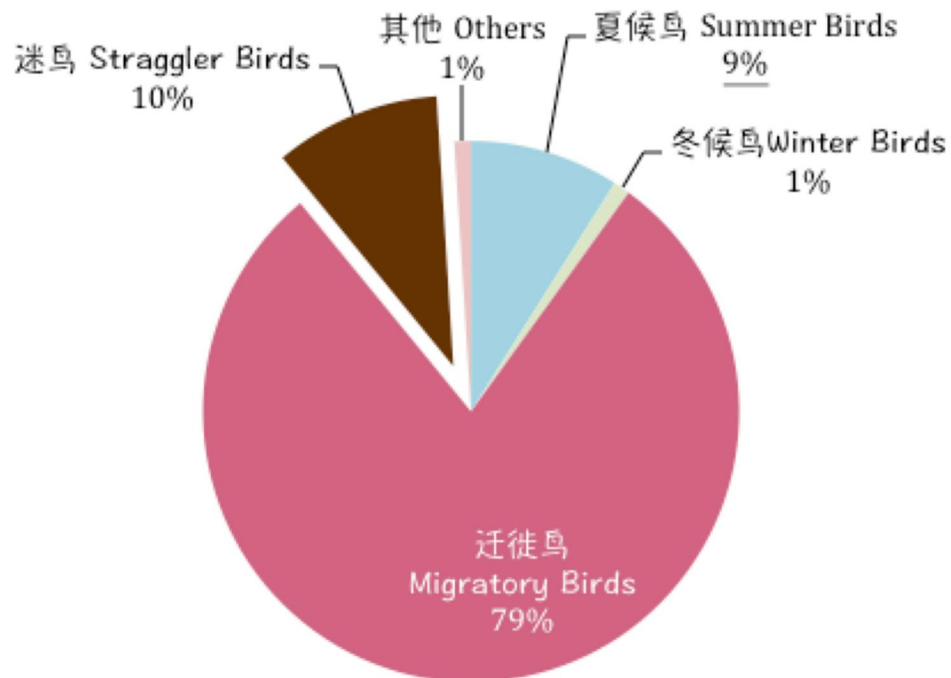
The quantities of six ecological groups of birds in Qinghai Lake

候鸟又可以分为夏候鸟、冬候鸟、旅鸟三类。夏候鸟是那些夏季飞来繁殖，秋季南去越冬的鸟。渔鸥、斑头雁、棕头鸥、普通鸬鹚这四种鸟都是青海湖的夏候鸟。冬候鸟是那些秋冬季飞来越冬，春季北去繁殖的鸟。大天鹅是青海湖的冬候鸟。旅鸟是迁徙时途经本地，暂时栖息的鸟。灰雁、针尾鸭等是青海湖的旅鸟。

Migratory birds can be divided into 3 categories: summer resident birds, winter resident birds and passing migrant birds. Summer resident birds are the birds that come to reproduce in summer and migrate southwards to overwinter in fall. *Larus ichthyæetus*, *Anser indicus*, *Larus brunnicapillus*, *Phalacrocorax carbo* are all summer resident birds of Qinghai Lake. Winter resident birds are the birds that come to overwinter in fall or winter, and migrate northwards to reproduce in spring or summer. *Cygnus cygnus* is the winter resident bird of Qinghai Lake. Passing migrant birds are the birds that pass by during their migration and inhabit temporarily. *Anser anser*, *Anas acuta*, etc. are passing migrant birds of Qinghai Lake.

## 青海湖水鳥各居留型比例

The ratio of residential types of water birds in Qinghai Lake



渔鸥、斑头雁、棕头鸥、普通鸬鹚这 4 种水鸟构成了青海湖夏候鸟繁殖种群的主体，约为所有繁殖种群的 95% 以上，它们在青海湖的分布范围也最广，在各种湿地类型中均有分布，它们的繁殖巢区面积最大且最为集中、在青海湖停留活动时间最长，每年从三月至十月有长达八个月的时间。

*Larus ichthyaetus*, *Anser indicus*, *Larus brunnicephalus* and *Phalacrocorax carbo*, these 4 waterfowls compose the major part of the breeding populations of the summer resident birds in Qinghai Lake, approximately more than 95% of the whole breeding population. They have the most widely distribution range in Qinghai Lake, distributed in all kinds of wetlands. They also have the largest and the most concentrated breeding area and spend the longest time in Qinghai Lake, from March to October every year, 8 months in total.



# 水鸟综述

水鸟往往指的是生活在湿地上的鸟儿，它们的形态和行为具有很多对湿地环境的适应特征。比如在水中游泳或潜水的鸟儿，往往腿比较短而且趾间会有各种类型的蹼以便于快速地拨水前行。而主要在泥滩或浅水里行走的鸟儿，就具有长长的腿以便于奔跑和涉水。而还有些鸟儿，如鸬鹚，则采用在水面上空飞行的方式寻找食物。一旦发现食物，便如箭般迅速潜入水中捕获它，他们往往善于飞行，有着强壮的钩状的嘴，有利于捕食。

Waterfowls usually refer to the birds that inhabit on wetlands. Their appearances and behavior have a lot of adaptive features that suit the wetland environment. For example, the birds that swim or dive in water often have short legs and various types of webs between toes so that they can paddle the water fast. Those birds that mainly wade in mudflats or in shallow water have long legs for easier running and wading. Other birds, like cormorants, choose the way of flying over water to look for food. Once they find the food, they will dive into the water like an arrow to catch it. Moreover, they are usually good at flying and have strong hooked beaks that suitable for predation.



在长期的进化中，湿地水鸟逐渐形成了不同的类型，其中主要有游禽和涉禽两类。他们大多为迁徙性鸟类，通常从一个半球飞到另外一个半球，而且大多在北半球繁殖，秋季南迁到比较温暖的湿地区越冬，第二年春季再返回北方进行繁殖。中国最大的内陆咸水湖泊——青海湖，则是青藏高原上重要的水鸟繁殖地和迁徙中途停歇地，其中青海湖鸟岛自然保护区主要孕育了斑头雁、棕头鸥、渔鸥和普通鸬鹚这四种珍贵的水鸟。每当春天来临时，这些水鸟便从南方飞来，为鸟岛增添了盎然的生机。

Wetland birds gradually formed different types in the long-term evolutionary process, which mainly contain swimming birds and wading birds. Most of them are migratory birds that usually migrating from one hemisphere to another and reproduce in the northern hemisphere. They migrate southwards to warm and wet areas in fall to overwinter and back to the north to reproduce the following spring. Qinghai Lake, the largest inland saline lake of China, is an important area for waterfowls on the Qinghai-Tibet plateau to reproduce and stop during migration. The Qinghai Lake Bird Island Nature Reserve mainly gestates 4 precious waterfowls: bar-headed goose, brown-headed gulls, great black-headed gulls and ordinary cormorants. Every spring, the waterfowls fly to the Bird Island from the south, adding exuberant vitality to the Bird Island.

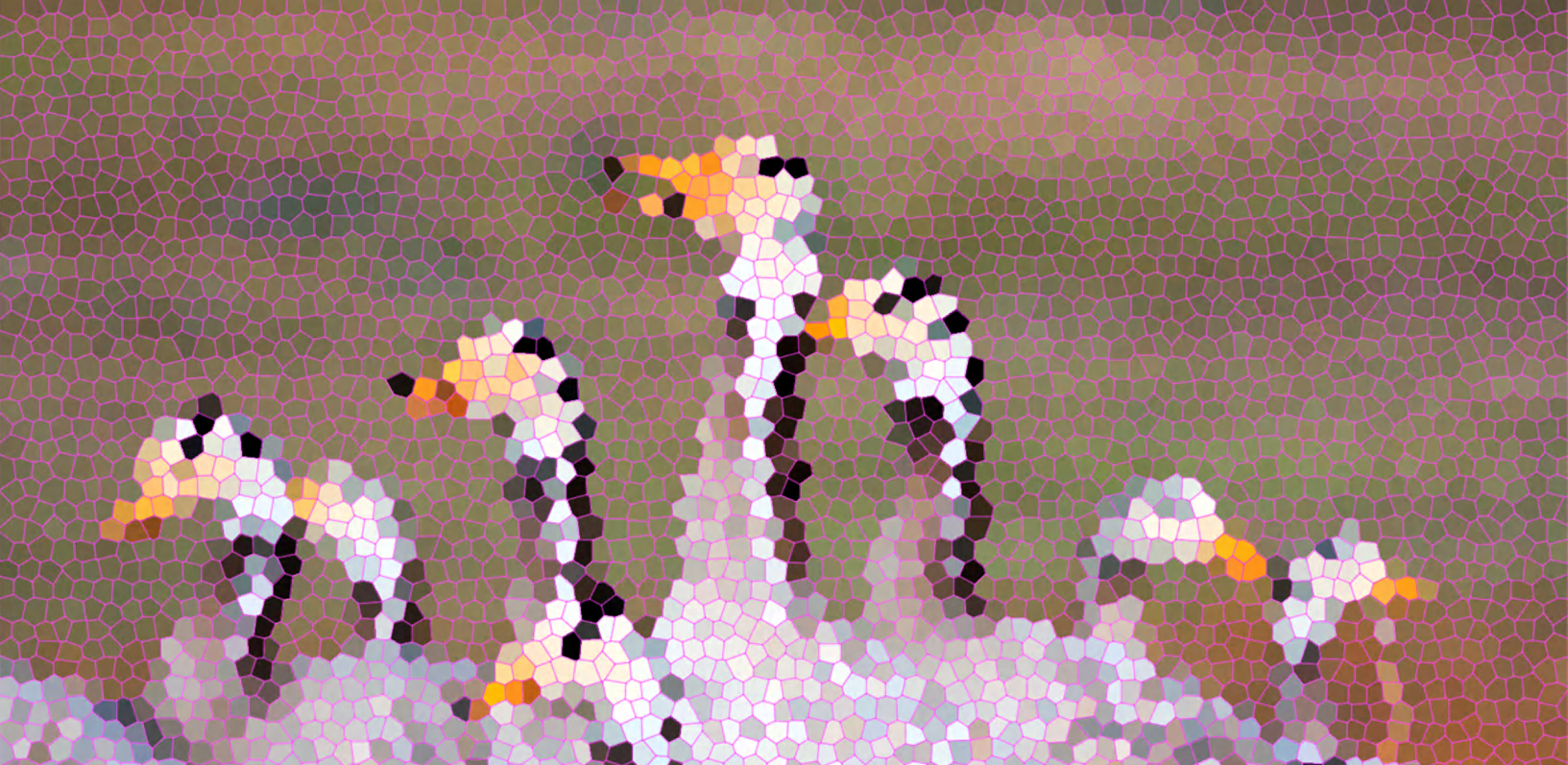


这四种水鸟各具鲜明的“个性”，他们的生活又彼此紧密地联系在一起。鸬鹚有着黑色而富有光泽的外表，他们善于潜水和捕鱼。斑头雁生性温和，团结友爱，同时也是飞行能手。渔鸥则生性狡猾，他们会抢走鸬鹚的食物，有时也偷食斑头雁的蛋。棕头鸥往往姗姗来迟，他们的捕食能力不及渔鸥和斑头雁，所以食物匮乏时只好捡其他水鸟剩下的食儿吃。“性格迥异”的他们构成了鸟岛最亮丽的风景，而我们接下来要讲的故事也正是因他们的加入而格外精彩。

These 4 waterfowls have distinctive "personality" while their lives are closely linked with each other. The cormorants have black and shiny appearance. They are good at diving and fishing. The bar-headed geese have moderate natural dispositions and they are united to a union. Meanwhile, they are the masters of flying. Great black-headed gulls are wily. They can steal the food of cormorants. Sometime they also steal bar-headed geese's eggs. Brown-headed gulls come to Bird Island relatively late and their predation ability is weaker than great black-headed gulls and bar-headed geese, so they have to eat the food left by other waterfowls when the food source is scarce. Due to their "distinctive personalities", they constitute the most beautiful scenery of the Bird Island. Our following stories become more brilliant because of their attendance.

# 斑头雁





中文学名

斑头雁

目

雁形目

拉丁学名

*Anser indicus*

科

鸭科

英文名

Bar-headed Goose

属

鸭属

命名人及年代

Latham, 1790

种

斑头雁

俗名

白头雁、黑纹头雁

亚种

无亚种



每年三月中旬，青海湖还是冰雪皑皑，一片寂静。突然，一声雁鸣响彻长空，青海湖睁开惺忪的双眼，看到她的第一个孩子回来了，她微笑着醒过来——开湖！而这些最早回来的孩子，便是斑头雁。它们回到自己出生的地方，进行生命的延续。斑头雁们先飞到黑马河湿地、布哈河口、蛋岛等处，在那里梳理羽毛，大量摄食委陵菜的根茎，慢慢地恢复着自己的体力并为接下来的繁殖积蓄能量。

In the mid of March every year, still covered with ice and snow, the silent Qinghai Lake is waken by a sudden and strong chirping of the wild goose. With a gentle smile, she opens her eyes to welcome her children home. Among these children, it is the bar-headed geese that come back first to breed. They first fly to Heima River Wetland, Buha River Estuary and Egg Island for food to regain their strength.



等到了四月，已经茶足饭饱的斑头雁们就开始忙着谈婚论嫁了，鸟岛上弥漫着浓郁的爱的芬芳。虽然多数斑头雁在迁徙之前已经有了伴侣，但也有迁到青海湖后再考虑婚事的雁，“帅小伙们”在“姑娘们”面前卖力地展示着自己，以期得到“意中人”的芳心。已经结为夫妻的斑头雁们会成双成对地在淡水中尽情地嬉戏游泳，情至深处，准爸爸便会攀上准妈妈的背，咬住脖子，扇动翅膀，昂首挺胸，开始交配，新的生命由此诞生。

As April draws near, love starts to capture bar-headed geese's heart. The romance can be sensed everywhere on the Bird Island. While some have already found their lover, others are expecting true love at Qinghai Lake. Boys pay every effort in showing off and attracting the girls they admire. Couples in deep love have fun in the water and mate with the father-to-be on his wife's back whose neck is seized by his mouth, his wings beating and his chest up. New lives start right from there.



为了让即将出生的小雁有一个温暖的家，成雁们便开始在淡水旁的沙地中忙活起来。雁妈妈用喙和爪在沙地刨出一个坑，雁爸爸则四处收集筑巢的材料，偶尔还会从其他巢穴中偷一些材料。巢穴主体完成后，雁妈妈在坑里垫上草茎草叶，产下垫窝蛋，再铺上自己胸前的绒羽，之后，产下的 4 到 8 枚卵便安静地躺在这个温暖巢中等待破壳之日。雁妈妈负责孵卵，雁爸爸负责保护家庭。经历 28 到 30 天的时间，幼雁们便迫不及待地出壳观望这美丽的青海湖。

In order to give their coming babies a warm home, adult geese start to make nests in the sandy area near the water. Mother geese make holes using their mouths and claws while father geese travel everywhere to collect the needed material or even steal some from other nests. Once the main part is finished, dry grasses are placed at the bottom; one or two eggs used to pad the nests are laid. Covered with quill-coverts, the eggs, about four to eight, will be laid and wait in the warm bed to become birds. Mother geese do the hatch work with all her heart, while their husbands protect the family. After twenty-eight to thirty days, out came the young geese to see the beautiful lake.



当然,大自然是残酷的。渔鸥、棕头鸥筑巢时经常偷取斑头雁的巢材,一些兽类、猛禽甚至渔鸥、棕头鸥都会偷食鸟蛋,也会捕食幼鸟……而作为素食者的斑头雁,只能默默地忍受这一切。每当卵不能孵化或者被偷食、幼鸟被捕杀时,成雁眼中流露出的哀伤的眼神,阵阵哀鸣,让人心痛……

However, the nature is cruel —— Great Black-Headed Gulls and Brown-Headed Gulls often steal the materials found by the bar-headed geese to build their own nests. Some beasts, raptors even gulls steal their eggs and children for food. As a herbivore, the bar-headed geese could do nothing but endure everything. Every time eggs are stolen or destroyed, every time babies are preyed, the pain in their eyes and the wail in desperation cannot be more heart-breaking.



四、五月份孵卵期间，青海湖经常突降大雪，一颗颗卵的孵化面临威胁。但是，爱的力量往往可以战胜一切！雁妈妈一动不动地趴在巢上，头缩在翅膀里，默默忍受着狂风暴雪，用自己生命做赌注死死地守护者身下的卵。风雪过后，雁妈妈们变成了一座座雪雕，身上结满了冰霜，但是瑟瑟发抖的雁妈妈们看着身下完整的卵，再多心酸也值得了……

In April and May, when they are hatching, snow usually visits Qinghai Lake and thus threatens the new born babies. But nothing can be stronger than the power of love! When the snow storm comes, mother geese lean on the nest, put their heads under their wings and protect the babies against the fierce storm with their own body, totally ignoring the danger. When the snow storm is over, the female geese are always buried under the snow, frozen ice all over, but when the sun shines again on their face, feeling the eggs safe in the nest, the mothers know everything is worthy.



而当猛禽侵入巢区试图捕食幼雁时，群居的斑头雁们便会组织起来向猛禽发起反攻。几十只雁爸爸迅速升空将猛禽团团包围，拼命地轮流向猛禽发起攻击。猛禽被包围在这个由斑头雁组成的网中难以脱身，只得被迫改变航向逐渐远离巢区。

When a raptor breaks into the nesting area of the geese trying to prey the babies, the gregarious geese will organize an attack. Tens of father geese fly up into the sky rapidly to besiege the raptor and fight without fear. Trapped by a net of bar-headed geese with no way to get out, the raptor is finally forced to change its direction and give up the tasty baby geese.



而此时在巢区，雁妈妈们护送着小雁们前往沼泽湿地避险。等到猛禽逃离，雁爸爸归来，一场惊险的保卫战就圆满结束了。在这期间如果有成雁因意外而死去的话，其他成雁会无私地将幼雁孤儿带到自己巢穴里，如亲生儿一般疼爱。就这样，善良的斑头雁靠着团结的精神和爱的力量，在青海湖不断地繁衍生息！

Meanwhile, the mother geese accompany the children to the wetland shelter. When the raptor leaves and the fathers return, the breathtaking battle ends perfectly. If adults died of honor in the battle, other adult geese will adopt the orphans with selfless love and the power of unity, treating them like their own children. In this way, the kind bar-headed geese reproduce constantly by the side of Qinghai Lake.



鸟岛上植被丰富，幼雁们有充足的食物可以摄取。在成雁们的精心呵护下，两至三个月后，幼雁就长到了成雁的大小，跟着成雁学习飞翔。而此时，成雁们也换下繁殖羽换上飞羽为南迁做准备——到了八月，青海湖即将变冷，刚刚长成的幼雁们需要跟随父母飞往拉萨河谷等地越冬。等到次年三月，青海湖，又将迎来她新的孩子……

The great variety and amount of plants provide the children with an abundant supply of food. Along with the care and protection of their parents, two or three months is enough for the young geese to grow into the full size and learn to fly from their parents. At the same time, the adult birds also change their breeding plumage into flight feathers to prepare for the migration to the south —— in August, when it gets cold at the Qinghai Lake, these young geese will fly to the Lhasa River Valley following their parents to overwinter. By March in the next year, the Qinghai Lake will welcome her new children.....



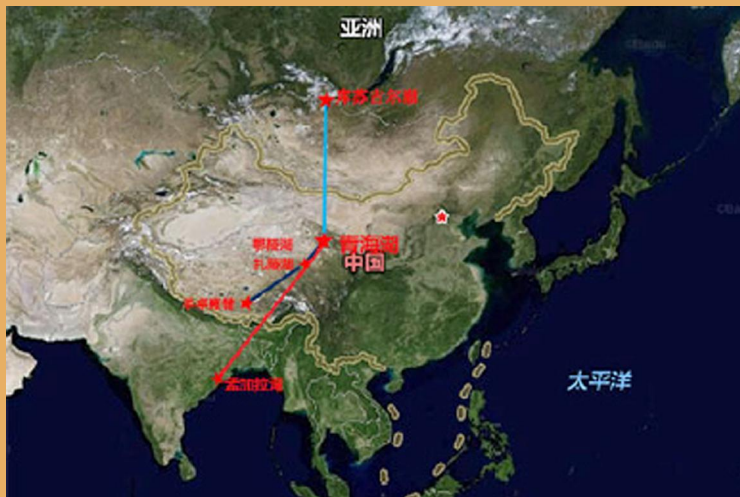
年复一年，在四季的交替中，在黄昏与黎明的流转中，斑头雁家族的故事从不间断，从不停止。它们的阵列在大地的上空往返，在岁月的流转间来去。斑头雁坚守着这延续生命的迁徙之路，与流云、虹霓、雾霭、风雪、雷电作伴。

Year after year, in the change of seasons and the cycle dawn and dusk, the story of the bar-headed geese family never stops. Their arrays soar back and forth above the terra firma; appear and vanish in the flit of time. The bar-headed geese stick to the migration with the accompany of the flowing clouds, the splendid rainbows, the mysterious mist, the fierce winds, the crystal snows and the angry thunders.

# 世界上最艰难的迁徙

The roughest migration in the world

**斑**头雁不远万里在青海和冬季聚集地之间不断地迁徙，翻越喜马拉雅山脉，可日行八百里。这是世界上最艰难的迁徙。



迁徙路线	起点 (时间)	终点 (时间)
1	青海湖 (3月)	库苏古尔湖 (5月)
2	青海湖 (8月)	孟加拉湾 (12月)
3	青海湖 (8月)	拉萨河谷 (11月)

每年秋天，斑头雁离开青海湖，飞向温暖的南方。它们途径扎陵湖、鄂陵湖，飞越拉萨平原，跨过喜马拉雅山脉，到达冬季觅食地——孟加拉湾。来年春天3月初到3月中旬，斑头雁将再次经过漫长的旅途，回到它们的“家”——青海湖。斑头雁有多条迁徙路线，都需要越过喜马拉雅山口，因此，斑头雁被誉为“世界上飞得最高的鸟”。

Bar-headed geese don't bother migrating tens of thousands of miles between Qinghai and their winter habitats. They fly over the Himalayas, and progress 400 kilometers every day, which is the roughest migration in the world.

Every winter, bar-headed geese leave Qinghai Lake for the warm south. They fly via Zhaling Lake, Eling Lake, over Lhasa Flat Plain, cross the Himalayas and finally arrive at their winter habitat-the Bay of Bengal. From the beginning to the middle of March in the spring of the next year, bar-headed geese will go through the endless travel again, and return to their 'home'-Qinghai Lake. Bar-headed geese have discovered several migrating routes, but all of them have to go across the Himalayas. Therefore bar-headed geese are honored 'the bird which flies highest in the world'.



## 斑头雁为什么能飞那么高？

1. 有力的翅膀——斑头雁拥有比其他鸟类更长的翅膀、更强壮的飞行肌，挥动翅膀时能产生更强的推举力，推动它在高空飞翔。

2. 效率极高的呼吸系统——斑头雁拥有强大的肺部，密集的血管和丰富的血红素。斑头雁还有一个特殊之处，它的血红蛋白分子里包含一个特有的氨基酸，增强了对氧气的亲和力，使它可以在高空低氧的环境中自由翱翔。

## Why are bar-headed geese capable of flying so high?

1. They have strong wings: bar-headed geese have longer wings, stronger flying muscles than other kinds of birds. So when they flap their wings, they will produce much stronger elevating forces, which give them the motivation to fly high in the sky.

2. They have a respiratory system with very high efficiency: bar-headed geese have powerful lungs, dense vessels and abundant ferroheme. In addition, they also have another unique characteristic that their hemoglobins contain a unique amino acid, which increases its binding with oxygen. Therefore the bar-headed geese can fly freely in the oxygen-deficient level environment.



3. 强大的“羽毛衣”——“高隔热”的内层羽毛保护它们不被冻僵，坚硬的外层羽毛则是一层“防水衣”，防止身体外部结冰。

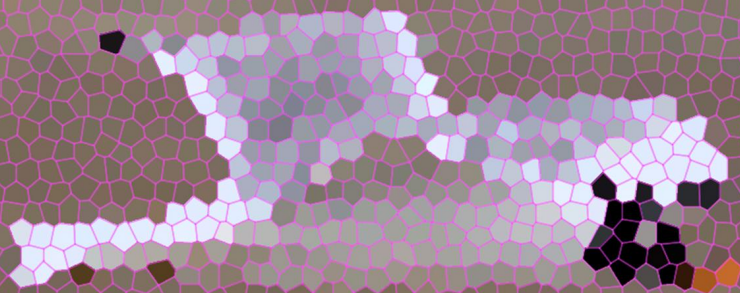
4. 轻便的身体——斑头雁的骨多空隙，内充空气，大大减轻了身体的重量。同时，鸟类的直肠极短，不贮存粪便，这样的消化系统结构也为减轻重量做出了巨大贡献。

3. Useful 'feather coat': on one hand, the inner feather is highly thermal insulative which protects the geese from being frozen; on the other, the strong outer feather is a waterproof coat, which prevents the body from being iced up.

4. Swift figure: the bones of bar-headed geese have a lot of interspace filled with air, so that the weight of each goose is largely reduced. In addition, the colons of birds are so short that they are not suitable for storing waste. In this case, this kind of digestive system makes great contributions to the reduction of weight.

# 渔鸥





中文学名

渔鸥

目

鸽形目

拉丁学名

*Larus ichthyaetus*

科

鸥科

英文名

Great Black-headed Gull

属

鸥属

命名人及年代

Pallas,1773

种

渔鸥

俗名

贼鸥

亚种

无亚种



青海湖中，海心山和三块石上，群群渔鸥在晴朗的蓝天下展翅而起，扎入淡绿色的湖水中捕食美味的裸鲤。雌雄两只渔鸥正在巢穴边翩翩起舞，在最原始的神圣仪式下孕育爱情的结晶。而不远处，一只渔鸥妈妈正慈爱地孵化着刚刚诞生的那枚卵，那是跃动的生命，崭新的希望。而我们的故事，就在青海湖五月的阳光下开始。

Either in the Qinghai Lake, or on the Haixin Mountain and Three Stones, lots of Great Black-headed Gulls flutter their wings up straight into the blue sky, duck under green water and search for the delicious scaleless carp. A female and a male gull are dancing by their nest, giving birth to the fruit of their love under the original sacred ceremony. Not far away, a mother gull is hatching its new-born egg with loving tenderness. That is vigorous life! That is new hope! And our story is beginning under the soft sunshine in Qinghai Lake.



渔鸥又有一个更为大家熟知的名称——贼鸥，顾名思义，渔鸥的行为特别狡猾。青海湖是渔鸥的重要繁殖地，渔鸥们往往成对来到这里筑巢繁殖。此时它们的主要食物裸鲤还没有洄游到青海湖，而斑头雁们已经开始交配、产卵。所以，机智的渔鸥们往往会跑来蛋岛偷吃斑头雁的卵。渔鸥还常常与鸬鹚们混居，每当鸬鹚从水中捕获鲜美的鱼类，三五只渔鸥便一齐冲上去抢夺，鸬鹚往往被迫放弃好不容易到手的美食。

The Great Black-Headed Gull has a more well-known name, jager. As the name implies, the Great Black-Headed Goose is really sly. Qinghai Lake is its main breeding region, where Great Black-Headed Gulls always come in couples to nest and breed when its staple food, scaleless carps, has not arrived yet. But Bar-headed Gulls have already begun to mate and lay eggs. Therefore, slippery Great Black-Headed Gulls will come to Egg Island to steal Bar-headed Gulls' abandoned eggs. Also, Great Black-Headed Gulls live with cormorants. When cormorants get delicious fish from the river, several Great Black-Headed Gulls will rush up to grab the fish. So the cormorants have to give up the food they got.



这天清晨，天空在太阳的照耀下微微泛蓝，这只雌性渔鸥刚刚在温暖的窝里产下一枚浅灰色的卵，成功晋级为渔鸥妈妈。这枚椭圆形的卵，遍布着好看的茶褐色斑点，也是故事的主人公——拉瑞。渔鸥妈妈顾不上产后的疲惫，温柔的用蓬松的腹羽盖住拉瑞，为它保持足够的体温，避免寒冷的空气摧残这才诞生的弱小生命。不知不觉，太阳已高悬于湖畔，昭示着中午的到来。觅食了一上午的渔鸥爸爸体贴地换下了渔鸥妈妈，接替这项需要耗费大量体力的工作。

This morning, sun shines and blue sky glints. A female gull has just laid a light grey egg in her warm nest and become a mother with great pride. The oval egg, which is sparked with brown dots, is our hero: Larry. The mother gull at once covers Larry under her abdominal hairs softly to protect Larry against the killing coldness, totally ignoring her tiredness after childbirth. Time slipped by and there comes the noon. The father gull who has been searching food for the whole morning, flies back and takes over this exhausting job from the mother gull.



拉瑞从一枚刚刚诞生的卵到破壳而出需要一个月的时间，这段时间它由爸爸妈妈轮流照料，始终处在一个温暖舒适的环境之中。在六月的一个午后，拉瑞渐渐从父母的怀抱中苏醒，却发现周围是一片黑暗。迷茫的拉瑞开始试着用嘴四处探寻，但总是碰到坚硬的屏障。在经历一阵慌乱之后，它发现这种屏障似乎并不坚硬，拉瑞试着用它的嘴啄破蛋壳，开始了它人生中第一次历练。这一艰难过程大约持续一天。破壳而出的拉瑞发出第一声啼鸣，回应着青藏高原上亘古不变的长风。

It takes Larry a whole month to break off from an egg. During this time, he is being taken care of by his mother and father in turns and is under a comfortable environment continuously. In an afternoon of June, Larry wakes up to face the dark all around. Scared and curious, Larry begins to explore with his beak, but always hits something rigid. After a while, he finds out that the obstacle seems to be breakable. He tried and succeeded. He made it! The first challenge of his life is beaten! Larry makes his first twitter joyfully, responding to long-lasting soaring wind on the Qinghai-Tibetan Plateau.



当拉瑞破壳而出时，黏糊糊的羽毛在青藏高原阳光的照耀下逐渐变得干燥。黑黄交织的蓬松绒羽为它抵御高原上的寒冷。它好奇地望向四周，发现了其他四个仍然蜷缩在蛋壳中的弟弟妹妹和温情地凝望着小拉瑞的爸爸妈妈。经过了一天的辛劳，拉瑞已是饥肠辘辘，它通过清脆的啼叫向父母求食。一旁的爸爸妈妈给它衔来了半消化的鱼肉，拉瑞张大嘴巴急不可耐的吞下。之后的一个星期，拉瑞的弟弟妹妹接连出生，而它也学会了啄食父母吐落在地上的食物。

After Larry breaks out of the shell, his wet feathers gradually become dry under the sunshine. Fluffy black and brown hairs are cold-proof. He looks around in curiosity, and finds his four siblings still inside eggs and his parents staring at him in great gentleness and pleasure. Starving as he is, Larry crows to his parents to ask for food. His parents give him semi-digested fish, and Larry can't wait to swallow it. In the following week, Larry's siblings come out one after another and Larry has learned to peck food on the ground that is thrown by his parents.



当拉瑞一个月大时，它学会了离开父母自己觅食。七月逐渐临近，天气不断转暖，水温也随之升高。拉瑞和它的弟弟妹妹们在爸爸妈妈的带领下开始下水，学习作为一只渔鸥的必备技能。而到七月末，拉瑞已经长出了强健的肌肉和代表成长的羽毛，尝试着和父母一起翱翔于青海湖上的碧蓝天空。在九月到来时，渔鸥们又开始了新的迁徙，它们要去遥远的孟加拉湾的越冬地躲避中亚地区寒冷的冬天。

When he is one-month-old, Larry has learnt to search food on his own. July is around the corner. The weather gets warmer and water temperature is high enough for little Larry and his siblings to swim. They learn from their parents swimming which is a vital skill for a Great Black-headed Gull. At the end of July, Larry has already been equipped with strong muscle and feathers, representing his growth—he is ready for soaring in the blue sky above the Qinghai Lake. When September comes, Great Black-headed Gulls begin a new migration. They are heading distantly for the Bay of Benga to avoid cold winter in mid-Asian area.



这时的拉瑞还身披着作为新生渔鸥的第一年羽，喙的顶端还没有代表着成熟的红色。在孟加拉湾度过了漫长的越冬季后，它的翅膀长成了与成鸟一样的黑色，标志着它的性成熟。在这之后，拉瑞将要向北迁徙，途径位于甘肃，西藏和青海等处的中转点。等到次年三月青海湖完全解冻之后，它回到青海湖畔，寻找心仪的配偶，开始孕育新的生命。

At this time, Larry still has the primal feathers representing his newly birth as well as the lack of red region on the tip of his beak which will represent his maturity. After spending a long winter season in the Bay of Benga, the wings of Larry get dark as fully-grown gulls, marking his sexual maturity. After that, Larry is going to migrate towards north, via Gansu, Tibet and Qinghai. In the March of next year, after the lake water of Qinghai Lake melts completely, he will come back to Qinghai Lake searching for ‘the one’ and have his own babies.



## 近几年来为什么渔鸥数量有所减少？

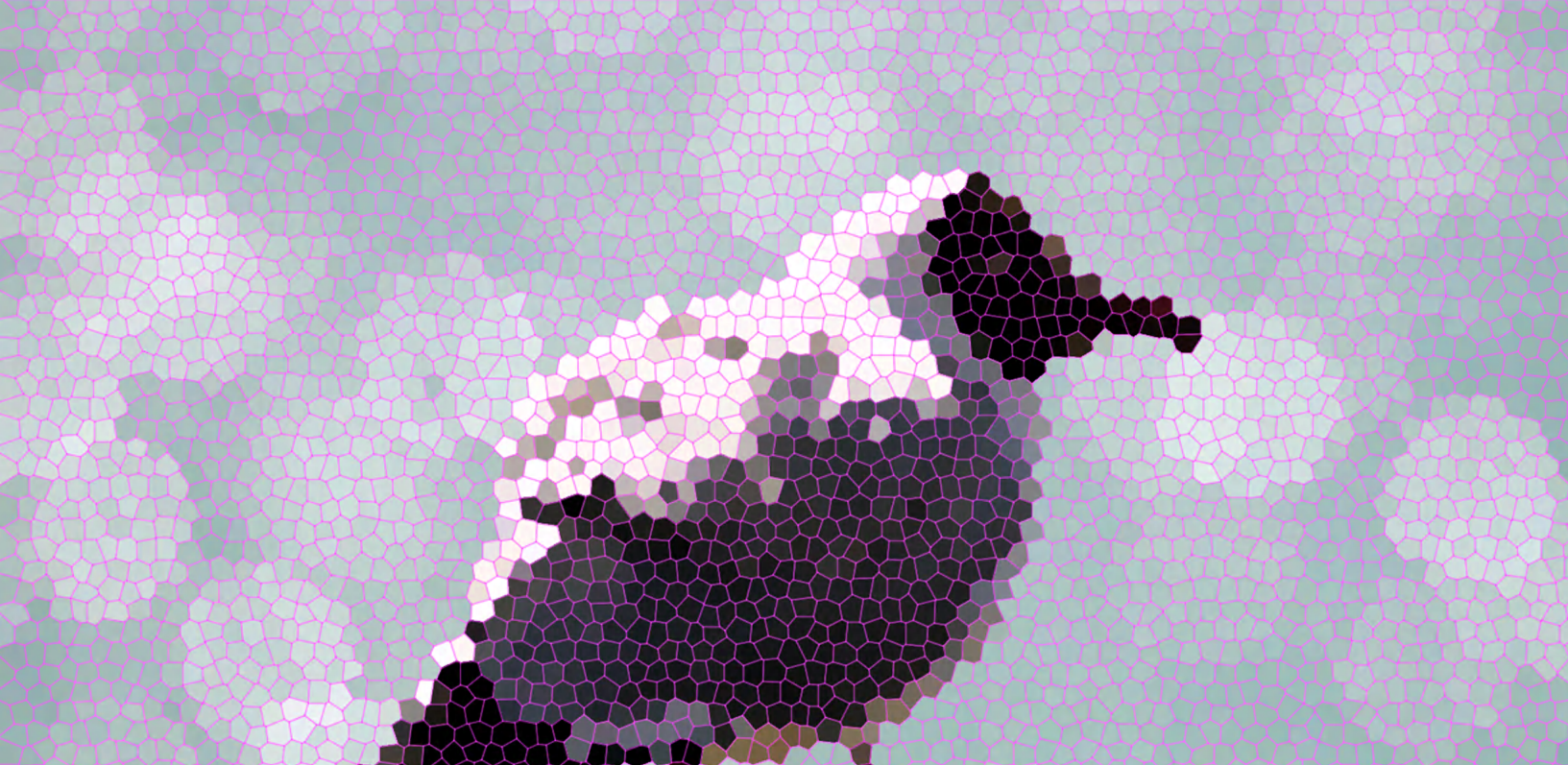
05年后，青海湖的水位逐渐上升，淹没了渔鸥主要繁殖地三块石和海心山的部分区域。由于巢区面积的减少，渔鸥数量下降。

## Why the population of Black-headed Gulls decrease in recent years?

After 2005, the water level of Qinghai Lake is rising gradually, submerging the breeding area, including Three-Stone and some part of Haixin Mountain. The population of Black-headed Gulls has decreased because of the reduction of nesting area.

# 棕头鸥





中文学名

棕头鸥

目

鸻形目

拉丁学名

*Larus brunnicapillus*

科

鸥科

英文名

Brown-headed Gull

属

鸥属

命名人及年代

Jerdon, 1840

种

棕头鸥

俗名

水鸽子、海鸥

亚种

无亚种



三月的青海湖，其他鸟儿都已来此定居。然而直到这冰海雪原从冬蛰中醒来，处处冰消雪化，一群姗姗来迟的朋友才掠波翩翩，徜徉至此。它们，就是青海湖四大夏候鸟之一 --- 棕头鸥。棕头鸥，就像它的名字那样，有着棕色的头和颈。每年三月下旬，大约有 5000 只棕头鸥从南方飞到青海湖，与其他水鸟一起栖息于湖滨与河口的湿地中。

Every March, other birds have already settled down at Qinghai Lake while the Brown-headed gull, one of the four kinds of migratory birds in Qinghai Lake, doesn't arrive until this icy area has been awakened from hibernation. Just as its name implies, the Brown-headed gull owns brown head and neck. About 5000 Brown-headed gulls from the south fly to Qinghai Lake every late March, dwelling in the wetlands around lakeside and estuaries together with other waterfowls.



青海湖里数量众多的裸鲤以及其他的鱼类为棕头鸥提供了丰富的食物来源。但是棕头鸥的捕食能力不如邻居渔鸥和鸬鹚：三四月份食物不多的时候，棕头鸥常常跟在它们的邻居身后捡剩下的食儿吃；有的时候急起来，也会做把“小强盗”，围在一起抢邻居的食物。近几年，聪明的棕头鸥们又发现了新的食物来源 --- 游客手中的零食。它们开始活跃在游客多的地方，享用远方的客人们带来的食物，人鸟同乐。

The large amount of scaleless carps and other fishes in Qinghai Lake provide an abundant food supply for brown-headed gulls. However, as their foraging ability is inferior to that of their neighbors Great Black-headed gull and Cormorants, in March and April when there is a lack of food, the Brown-headed gulls often have to follow their neighbors and pick up their leftovers. When situation gets critical, they may also become ‘robbers’, clustering around their neighbor to grab their food. It is in recent years that the smart Brown-headed gulls have discovered a new food resource —— the tourists. They begin to appear around them and share both the food and the joy.



每年四月初到四月中旬，三岁大的棕头鸥们基本发育成熟了，开始像姑娘和小伙子一样羞涩了起来。它们换上了和爸爸妈妈一样的新衣裳 --- 棕色的头，洁白的身体，黑色的翼尖点缀着白色的斑点，尾尖上还装饰有黑色横带，用自己漂亮的外表吸引着“心上人”。小伙子会翩然起舞，抓来鱼儿给献给姑娘，讨姑娘的欢心。两情相悦之时，小伙子就会踩上姑娘的背进行交配。

In every early to middle April, the Brown-headed gulls around 3-year-old, who are as shy as girls and boys, become mature. Changing into new clothes like their dad and mom's —— with brown head, white body, white spots embedded in black wing tips and a black band decorating the tail, they attract their lover with the beautiful appearance. The boy dance elegantly and present the girl fishes caught for her to win her heart. After they have fallen in love with each other, the boy will step on the girl's back and mate.



四月中旬，成双成对的棕头鸥新婚夫妇们就会飞到繁殖地，精心挑选安全且食物丰富的地方，在那里为它们未来的宝宝们搭筑温暖的窝。近年来棕头鸥的巢区位置虽然频频改变，但无论是鸬鹚岛、蛋岛还是布哈河口三角洲，都总是在布哈河附近。棕头鸥夫妇们成群的在一片片挑选好的小沙地上筑起巢，在小沙坑上垫一些苔藓和枯草，场面非常壮观。近几年搬迁到新沙地，看到人们固沙用的麦草方格子，就聪明地就地取材，用麦草筑巢。

In mid April, numerous new couples of Brown-headed gulls fly to the breeding area and carefully select a safe place with abundant food as their nesting area where they build a warm home for their coming babies. Recent years, they keep relocating their nesting area —— the Cormorant Island, the Egg Island and Buha River delta, which are all around Buha River. Lots of couples building their nests on small pieces of sand and putting the selected moss and grass onto it, makes a very spectacular scene. In recent years, they moved to new sand where they see the wheatgrass people use to make plaids in order to fix sands. Smart as they are, the Brown-headed gulls also begin to use wheatgrass to stabilize their own nests.



筑巢后的棕头鸥夫妇开始承担起身为父母的责任，但在它们真正的成为爸爸妈妈之前，还会经历一段艰辛的过程。在五月中旬，雌鸟会产下3-4枚蛋，在25个孵化的日子里，无论风吹雨打，鸟爸爸和鸟妈妈都会轮流趴在蛋上，孵育它们未来的宝宝。在此期间，棕头鸥还会不时地翻动它们的蛋使其均匀受热。繁殖圈外围，还有成年的棕头鸥们在警惕地巡逻，用低空盘旋、俯冲、嘶叫或排便等方式赶走入侵者，构筑起保护宝宝的又一道安全线。

The Brown-headed gull couples who have built their nests begin to take the responsibility as parents. But there is still an arduous journey to go before they actually become parents. In mid May, the female birds will lay 3-4 eggs. In the 25 incubation days, no matter how terrible the weather becomes, the male and female birds will lie on the eggs persistently. During this period, the Brown-headed gulls turn the eggs over from time to time to incubate them evenly. Outside their nesting area, guard gulls are patrolling vigilantly and driving away the intruders by hovering, down thrusting, screaming and shitting, building another guarding line for the baby gulls.



六月初，一群可爱的小生灵在青海湖鸟岛破壳而出。鸥宝宝们长着杂有黑色斑纹的褐色绒毛，小嘴红红的，从鸟妈妈身下探出头来好奇的东张西望。大概 10 天之后，它们就可以离开窝巢，跟爸爸妈妈们到水上学习觅食。这时候正赶上大批的裸鲤洄游，密密匝匝的湖鱼成了小鸥们最营养可口的食物。小家伙们茁壮成长，逐渐羽翼丰满，开始像爸爸妈妈一样在天空中飞翔。美丽的八月，澄澈的青海湖面上映着这些自由飞翔的生灵的倒影，构筑成一道亮丽的风景线。

Early in June, the lovely little creatures are born in the bird Island of Qinghai Lake. The baby gulls have brown velvet hair with black speckles and red little mouth. They reach out their tiny head from under their mother's body and gaze around curiously at the beautiful world. About 10 days later, they are able to leave the warm nests and learn hunting on the water from their parents. At this time, shoals of scaleless carps migrating back become the most nutritious and palatable food for the babies. It was not long before the little gulls grow vigorously and become full-fledged so that they could begin the lessons on flying like their parents. In beautiful August, the glittering and translucent water in Qinghai Lake reflects the figures of these free creatures, composing a beautiful landscape.



在九、十月份，小鸥们随着爸爸妈妈南迁，到达南方更温暖的地方越冬，但它们还会再次回到它们诞生的地方，在美丽的青海湖畔孕育新的生命。当稚嫩的小鸥们破壳而出时，棕头鸥爸爸妈妈们，是不是又看到了自己当年的影子呢？

In September and October, the baby gulls head south with their parents to warm places for overwintering. However, they will come back to their birthplace and create new lives in the beautiful Qinghai Lakeside. When the tender little gulls break the shells and come out, do parent gulls see the reflections of themselves from their children?



### **为什么三、四月份时棕头鸥要捡食鸬鹚和渔鸥剩下的食物？**

因为棕头鸥是最晚来到青海湖的夏候鸟，加上又是小个子，捕食能力比不上它们的邻居鸬鹚和渔鸥们，所以它们常常处于劣势。在三月下旬到四月下旬，大批的裸鲤还未洄游的时候，它们的食物很匮乏，不得不去捡鸬鹚和渔鸥剩下的食物吃。但是到了裸鲤洄游的时候，大量的湖鱼让捕食容易了起来，它们就不再需要吃邻居们的残羹冷炙了。

### **Why do brown-headed gulls take the leftovers from the Cormorants and Great Black-headed Gull in March and April?**

Brown-headed gulls are the last summer migratory birds that come to Qinghai Lake, and their body size is comparatively small so their foraging capability cannot compete with their neighbors---Cormorants and Great Black-headed Gulls. As a result, they are often in an inferior state. During the late March and late April, before the shoals of scaleless carps migrate through their dwelling places, the lack of food force them to pick up the leftovers from their neighbors. However, in June when it is easier to catch the scaleless carps, there is no longer need for them to count on the leftovers.



## **为什么棕头鸥的巢区会频频搬迁，但总是不离开布哈河？**

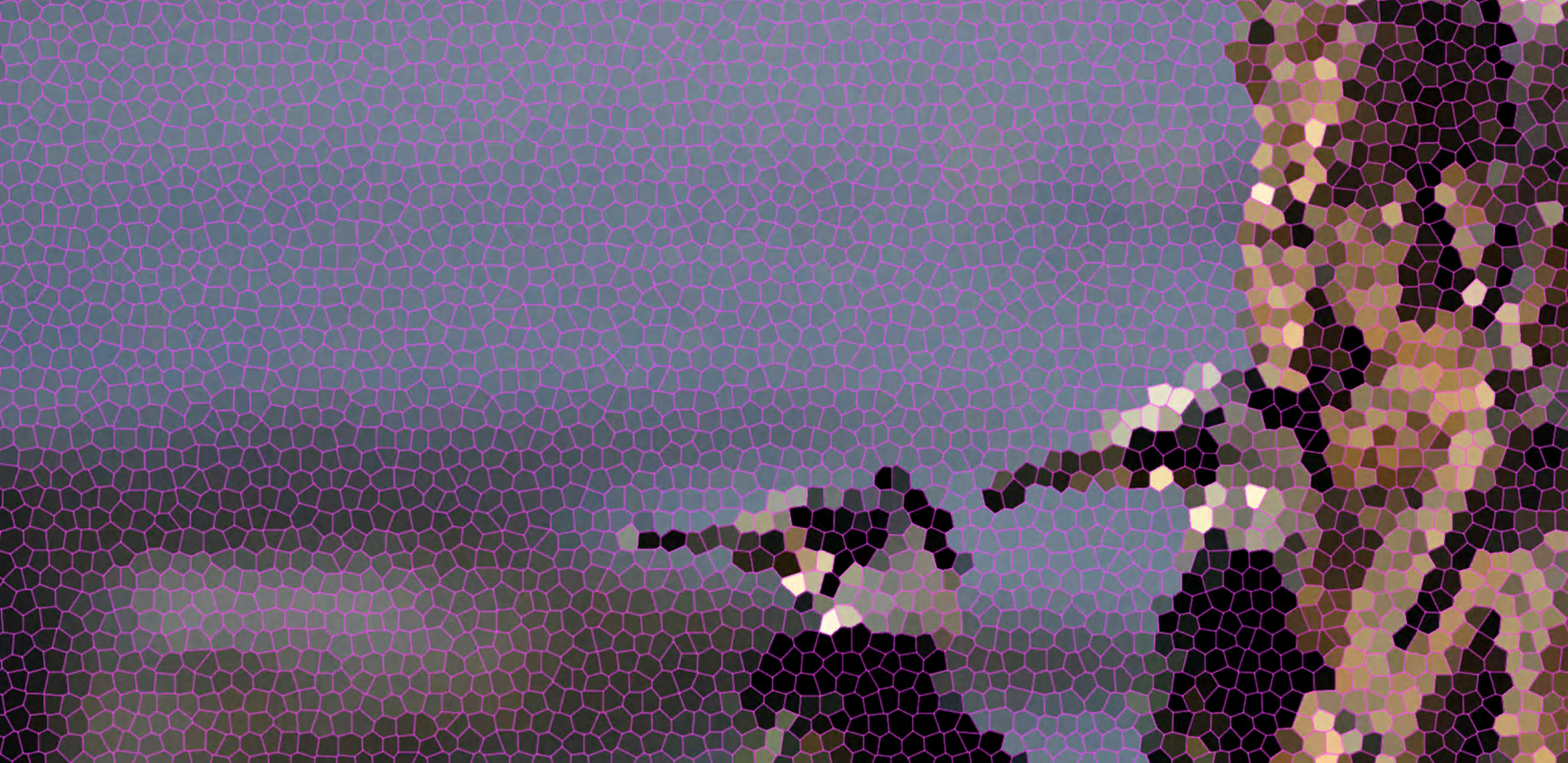
由于棕头鸥会精心挑选安全且食物丰富的地方作为它们的巢区，这些因素很容易受环境影响，所以它们的巢区在近年来频频搬迁。而在六月份，布哈河将有大批的裸鲤洄游，可以为棕头鸥宝宝们提供丰富的营养供应，所以它们的巢区一直在布哈河附近。

## **Why do the Brown-headed gulls move their nesting areas frequently, but always around the Buha River?**

Brown-headed gulls will select their nesting areas in safe places with abundant food carefully. These factors are easily influenced by environment, and that's why they move their nesting areas frequently. However, in June there will be great shoals of scaleless carps migrating through the Buha River, which provide nutritious food for baby gulls, so they never leave the Buha River to build their nests.

# 普通鸬鹚





中文学名	普通鸬鹚	目	鸬鹚形目
拉丁学名	<i>Phalacrocorax carbo</i>	科	鸬鹚科
英文名	Cormorant	属	鸬鹚属
命名人及年代	Linnaeus,1758	种	普通鸬鹚
俗名	鱼鹰、水老鸦	亚种	6个亚种



一千多年以前，一种被称为“鱼鹰”的鸟儿便被唐朝的渔民用来捕鱼。而现在，这样的捕鱼方式在慢慢减少，但是这群可爱的生灵却成为了青海湖畔一道美丽的风景，这就是普通鸬鹚。每年夏季，在鸬鹚岛，在海心山，在那由七块礁石组成的三块石岛上，我们都可以看到鸬鹚们群聚而栖，在他们光泽的黑色身体上，两颊和喉部点缀着白色的羽毛。

More than a thousand years ago, a kind of bird named “fish hawk” was used to catch fish in Tang Dynasty. Nowadays, although fishermen barely use this method any more, this adorable kind of creature, the Great Cormorant, has become a beautiful scene at Qinghai Lake. In summer every year, crowds of c can be seen inhabiting on Cormorant Island, Haixin Mountain and Three Stones, their shining black body decorated with white feathers on the cheeks and necks.



在每年的三至四月份，数以千计的鸬鹚会飞到青海湖，在鸬鹚岛高高的岩石上，在沼泽地的芦苇丛中，他们群聚而居，找到自己去年留下的住所，修修补补便开始新一年的繁殖生活。我们如何辨认鸬鹚的巢穴呢？鸬鹚巢穴外部通常涂有白色的粪便，我们可以根据这个特点找到鸬鹚的巢穴。

In March and April every year, thousands of cormorants fly to Qinghai Lake. They construct their nests together on the base of the ones they left last year on the high rocks of Cormorant Island or in the reeds in the marsh and begin to breed. The nests of the Great Cormorants can be distinguished from others by the white feces smeared on the surface.



时间进入五月，鸬鹚夫妇便开始产卵了。每两天的早上四五点钟，鸬鹚妈妈都会产下一枚灰绿色的卵，卵慢慢变成灰白色，预示着小鸬鹚即将诞生了。在鸬鹚妈妈孵卵的时候，鸬鹚爸爸会耐心的守护在它的身边，保护着爱人和孩子。一旦鸬鹚妈妈饿了想要出去觅食，鸬鹚爸爸则会帮助鸬鹚妈妈继续孵卵，直至鸬鹚妈妈觅食归来。

As May comes, cormorant couples begin to lay eggs. At four or five o'clock every other morning, the female bird will lay an egg in greyish green. The birth of baby cormorants is presaged by the change of color of the eggs—from greyish green to greyish white. Farther bird keeps guarding his wife and their children when mother hatch the eggs and once the mother feels hungry and leaves the nest for food, father bird will take over the hatching job till mother comes back.



当卵产下 28 天的时候，新的生命就要破壳而出了，小鸬鹚出生 2 天后眼睛会慢慢睁开，5 天后绒羽渐渐变得丰满起来，8 天后就可以在巢中站立。3 周后，新生小鸬鹚就有和父母一样的漂亮羽毛了。小鸬鹚通常是由双亲喂养，双亲觅食归来后，小鸬鹚会将嘴伸入亲鸟的咽部，从食道中获取初步消化的小鱼。

28 days after the cormorants' eggs are laid, new lives will break out of the shells. The little cormorants open their eyes two days right after their birth; their quill-coverts become plump three days later and in another three days they will be able to stand up in the nest. Three weeks after their birth, the body of the child will be covered with feather as beautiful as their parents'. Little cormorants are often fed by their parents. They stretch their mouth into their parents' throat and get the preliminarily digested fish.



七月中下旬，鸬鹚夫妇便会带着出生几个月的小鸬鹚们离开自己的巢穴，迁徙到中国南方、印度等地，度过漫长的秋冬季节。等到第二年的三四月份，又可以飞回青海湖，开始新一轮的繁衍生息，让青海湖畔变得生机勃勃。

After the middle of July, the cormorant couples will lead their children out of their nest and migrate to the south of China or India to spend the long autumn and winter months. In March or April next year, they will fly back to Qinghai Lake and start a new turn of breeding, making the lakeside of Qinghai teemed with life.



## 鸬鹚为什么又叫“鱼鹰”呢？

鸬鹚是捕鱼能手，以前常常作为渔民的捕鱼鸟，因此鸬鹚又称“鱼鹰”。首先是鸬鹚的双翅在接近水面时可以用于划水，其次它的双脚有着与众不同的蹼，蹼将四只脚趾连到了一起，即全蹼足，也可以帮助它们在捕鱼时划水。这些特征可以使他们在水面低飞，并将脑袋扎在水里寻找猎物。当鸬鹚发现猎物的时候，就会悄悄的靠近猎物，然后突然伸长脖子，用嘴对猎物发出致命一击，无论多么灵活的猎物都很难逃脱。

## Why is cormorant also called ‘fish hawk’?

Cormorant is good at catching fish, and thus times ago it was used by fishermen for fishing, which is why it's also called ‘fish hawk’. First of all, their wing can be used as oars when they are near the water. Secondly, with their toes bound together with web, their totipalmate foot can also help stirring water. These characteristics enable them to fly low over the water fast and immerse their heads into the water to search their preys. When cormorant finds its target, it will fly close to it quietly and attack the prey suddenly with the mouth. No matter how swift the prey is, an escape is barely possible.

## 为什么这些水鸟的幼鸟的颜色都普遍地和栖息地颜色接近？

其实这是一个很普遍的现象。以斑头雁为例，小小的斑头雁幼鸟并没有爸爸妈妈那样强壮的体魄，势单力薄的小斑头雁很容易受到天敌的攻击。翱翔的草原雕虎视眈眈地盯着斑头雁的队伍，正找准时机攻击队伍中势单力薄小斑头雁。但映入他们眼帘的却首先是小斑头雁的爸爸妈妈——因为他们实在是太显眼了，金黄色的绵沙地上赫然两个白色斑点，斑点的顶端还有一道黑色的纹路。而幼鸟在草原雕的视线里却十分模糊，他们披覆着黄黑相间绒毛的幼小的身躯仿佛与周围的环境融为一体，就像在金黄色的绵沙地里隐藏起来了一样。其实多年以前，并不是所有的小斑头雁都有黑黄相间的绒毛，没有黄白外套的小斑头雁们更易被天敌作为捕食的目标，因此黄黑相间的幼鸟才能有更多机会存活下来。多少年以后的今天，经过长期的自然选择，呈现在我们眼前的便是那大黄鸭似的可爱的小斑头雁。这种幼鸟拥有的与栖息地相近的颜色，我们称之为保护色。它能让弱小的幼鸟更好地躲避天敌的追杀，因而有更大的机会生存下去，这是长期自然选择的结果。

## **Why do the juveniles have essentially similar colors with their habitats?**

In fact this is a universal phenomenon. For example, Tiny little bar-headed geese are not as strong as those adults. Therefore, they're more likely to be attacked by their enemies, but they have the golden coats which have nearly the same color with sand. Enemies like *Aquila nipalensis*, which fly in the sky, stare at their prey fiercely, looking for a perfect opportunity to begin an attack on the little bar-headed geese. However, the very first creature they see is not the juveniles, but the white-black adults. The adults are so obvious against the golden beach that the juveniles become comparatively vague in the enemies' eyes, because the colors of the juveniles and the environment are so close that it's hard for the flying organisms to distinguish the prey from the environment in the distance. Those colors of the juveniles are called protective colors. Long time ago, not necessarily all the juveniles had the protective colors, but after an endless natural selection, where those juveniles which didn't wear the protective colors were sifted out, most of the juveniles now wear the protective colors which are similar to the surrounding environment and therefore have a larger chance to survive.

# 后记

青海湖国家级自然保护区以鸟类而闻名，保护区与多个机构合作，在鸟类方面的研究已有了丰硕的成果。作为保护区，将科研成果科普化，以通俗易懂的方式让更多的非专业人员了解保护区在做什么事情，是实现社区共管、推广全民生态保护的上解。中小學生正处于认识世界的初步阶段，我们希望能够通过通俗易懂、活泼生动的语言向小朋友们介绍自己家园的鸟类，从了解自己的家园开始认识自然、亲近自然，进而将尊敬自然、保护自然的理念种进小朋友们的心里。

清华大学青海湖鸟岛实践支队的小伙伴们分成了两个队来完成编写，一队的小伙伴们完成了初步的编写，二队的小伙伴们则进行了进一步的修改与完善，最终在侯元生老师的指导下定稿，并且设计了相应地电子版书籍。我们衷心的希望这本书可以在小朋友们的心理种下一颗绿色的种子，在他们未来的人生旅途中生根、发芽、开花、结果。

# Afterword

Qinghai lake area is famous for birds, the protection agency cooperates with multiple agencies having made fruitful achievements in the study of birds. As a reserve, it's a fantastic way for universal ecological protection to inform non-profession people what the reserve have done. Primary and middle school students are in the preliminary stage of learning about the world, we hope to use vivid language to introduce the birds in their home, let them get to meet nature and close to nature from the understanding of their own place, then, takes the concept of respect for nature and nature conservation into their heart.

As a Tsinghua-university-qinghai-lake-bird-island-practice team, we divided ourselves into two parts to finish writing. A group of members were responsible for completing the preliminary writing, another parts of the team completed the further modification and perfection, finally we finished the whole writing under the guidance of teacher Hou Yuansheng. What's more, we designed the electronic books according to the writing. We sincerely wish that this book could plant the seeds of a green which then begins to take root, sprout, blossom and bear fruit.