

色林错植物图鉴

羌塘「鬼湖」的
植物生灵

PLANT CREATURES AROUND SELIN CO

宋洪涛 高海峰 主编



科学出版社

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Plant Creatures around Selin Co: the Biggest Gost Lake of Qiangtang



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内 容 简 介

本书介绍了青藏高原腹地羌塘高原内流区色林错及其湖区周边主要的植物物种,并参照资料,对所有植物物种的辨识特征、生长习性和分布区域等作了详细描述。同时,本书还简要介绍了该区域的部分自然景观、动物、湖泊及冰川等,以帮助人们认识这块高原璞玉周边的植物、动物等自然资源,为高寒地区生态学及植物学科研工作者提供一份基础参考资料,并为植物爱好者或旅游爱好者提供一份有一定参考价值的观察指南或科普读物。

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色林错，曾名“奇林湖”，是西藏自治区的第一大湖，中国的第二大咸水湖。在藏语中，“色林错”意为“威光映复的魔鬼湖”。据传说，“色林”是古时居住在拉萨西面堆龙德庆的大魔鬼，以吞噬千万生灵为生，百姓对此束手无策。一个雷雨过后的良辰，在集智慧、慈悲和伏恶力量于一身的莲花生大师的紧追之下，魔鬼色林逃到岗尼羌塘南面的一面浩瀚浑浊的大湖里。大师命令他在湖中虔诚忏悔，永远不得离开，并且不许残害水族。莲花生大师将这个大湖命名为“色林堆错”，意为“色林魔鬼湖”。

色林错位于冈底斯山北麓班戈县和申扎县境内，湖面海拔 4530 米，湖体东西长 72 千米，南北宽约 22.8 千米，东部最宽处达 40 千米。主要有 4 条河流注入色林错，分别是扎加藏布、扎根藏布、波曲藏布和阿里藏布，其面积在历史上曾达到 1 万平方千米，后因气候变化，湖泊退缩，从中分离出格仁错、错鄂、雅个冬错、班戈错、吴如错、恰规错、孜桂错和越恰错等 23 个卫星湖泊，如同翡翠项链般环绕。1976 年以来，在气候变化大背景下，色林错湖面蒸发减少，而降水和冰川融水补给增多（郭燕红，2016）^①，导致作为内流湖的色林错不断扩张，尤其在近 10 年来扩张速率高达 30%。截至 2014 年 6 月，色林错面积已达 2391 平方千米，比纳木错多出 369 平方千米，是中国第二大咸水湖，西藏第一大湖泊。

色林错湖区属于半干旱草原地带，年均温 $-3\sim-0.6^{\circ}\text{C}$ ，最热月均温 9.4°C 。年降水量约 290 毫米，6~9 月降水量占全年的 90%，夏季多冰雹。湖积平原上砂砾堤发育，西侧多半岛和峡湾。湖周山地海拔 5100 米以下孕育了紫花针茅草原，4600 米以下湖积平原上孕育了固沙草和白草草原，山麓分布有羽状针茅和藏沙蒿草原，草原带以上有小蒿草和羊茅组成的高山草甸或高山草原化草甸。

整个色林错流域四面群山环抱，湖盆面积广阔，湖滨水草丰美。它是藏北重要的牧业基地之一，也是黑颈鹤、雪豹、藏羚羊、盘羊、藏野驴和藏雪鸡等国家一级保护动物的重要繁殖地和栖息地。色林错裸鲤是藏北色林错湖泊中唯一的一种鱼类，极为罕见。

由于所处海拔高，环境严酷，交通不便，加之人烟稀少，色林错及其流域内大部分区域尚为无人区，因此集砾滩、草场和滨湖于一体的藏北优美风光也极少有人能领略到。出于工作原因，我们所在的研究组自 2010 年开始深入色林错腹地，在惊叹和享受这里近乎原始美景的同时，也想利用专业所长，将长久守望这里的植物界的生灵一一介绍给想要了解它们的人们。

本书旨在介绍色林错及其湖区周边主要的草地植物物种以及部分自然景观，并参照资料，对所有植物物种的辨识特征、生长习性和分布区域等做了简要描述，帮助人们来认识这块高原璞玉周边的植物，也希望为植物爱好者和旅游爱好者提供一份具有一定参考价值的观察指南或科普读物。书中所有图片均为本课题组成员自行拍摄，作为热爱自然科学的非专业摄影人士，摄影技术拙劣，也请大家谅解和指正。

色林错区域属于半干旱草原地带，冬季漫长，植物生长季较短，罕见乔木和灌木分布，植物多样性相对较小，但对维持当地自然生态的完整性、野生动物栖息地及牧民生产生活起着不可或缺的作用。调查结果表明，环湖区域内共有 42 个植物种，呈现科数多但同科物种属、种少的状况。其中，菊科植物 8 种，毛茛科、景天科、紫草科和玄参科各 3 种，蓼科、石竹科、唇形科、禾本科和百合科各 2 种，荨麻科、藜科、十字花科、蔷薇科、豆科、柽柳科、瑞香科、报春花科、龙胆科、紫葳科、川续断科和莎草科各 1 种。

(1) 郭燕红. 色林错湖面蒸发对湖泊水量平衡贡献的观测与模拟研究 [D]. 北京: 中国科学院大学, 2016.

Introduction

Selin Co, once named Qilin Lake, is the largest lake in the Tibet Autonomous Region and the second largest salt lake in China. Literally, it means “the lake of a devil under the control of a divine power” in Tibetan language. In legends, “Seling” was a devil who lived in Doilundeqen County to the west of Lhasa. It lived by devouring all kinds of creatures, and people could do nothing to him. One day, after a thunderstorm, Seling the devil escaped to a vast muddy lake in the south of Gangni Qiangtang due to the hot pursuit by the wise and merciful Padmasambhava with the power of exorcism. The master commanded him to stay in the lake for sincere repentance and never to leave or kill aquatic animals. He called this lake “Seling Duizuo,” namely, “Devil Seling’s Lake.”

Selin Co is located in Baingoin County and Xainza County to the north of Gangdise Mountains, with its surface at an altitude of 4,530 meters above sea level. The lake is 72 km long from east to west and 22.8 km wide from north to south, and the widest point in the east is up to 40 km. Four major rivers flow into Selin Co, namely Za'gya Zangbo, Zagen Zangbo, Boqu Zangbo, and Ngari Zangbo. The rivers had once covered 10,000 square kilometers in history. However, owing to climate change, the lake retreated and was divided into 23 small satellite lakes including Gering Lake, Mtsho Sngon Lake, Yagedong Lake, Bange Lake, Urru Lake, Jargo Lake, Zigui Lake, and Yueqia Lake. The surrounding lakes resemble an emerald necklace. Since 1976, global climate change has affected the area. Water of the Selin Co has evaporated less and less, while precipitation and glacier melt has increased water supplement (Guo Yanhong, 2016)⁽¹⁾, resulting in constant expansion of the Lake as an inland lake. Especially in the past 10 years, the lake has expanded at a rate up to 30%. Until June 2014, Selin Co has expanded to 2,391 square kilometers, 369 square kilometers larger than Nam Lake, and has become the second largest salt lake in China and the largest lake in Tibet.

Selin Co is located in a semiarid steppe zone with an annual average temperature of -3 to -0.6°C and an average temperature of 9.4°C in the hottest month. The annual precipitation in the area is approximately 290 mm, in which the precipitation from June to September accounts for 90% of the annual precipitation and it often hails in summer. Gravel ridge developed on the lacustrine plain, and peninsulas and fjords are mostly located in the west. The *Stipa purpurea* steppe developed in the mountains around the lake below an altitude of 5,100 meters, whereas the *Stipa krylovii* and *Pennisetum centrasiaticum* steppe developed on the lacustrine plain below an altitude of 4,600 meters. The *Stipa basiplumosa* and *Artemisia wellbyi* steppe are distributed at the foot of the mountains, and the alpine meadow or alpine meadow steppe consisting of *Kobresia pygmaea* and *Festuca ovina* are distributed above the steppe zone.

The entire Selin Co area is surrounded by mountains on four sides. With a vast lake basin area and abundant grass land at the lakeside, it is one of the most important animal ranch base in North Tibet as well as the major breeding place and habitat for first class national protected animals such as *Grus nigricollis*, *Panthera uncia*, *Pantholops hodgsonii*, *Ovis ammon*, *Equus kiang*, and *Tetraogallus tibetanus*. *Gymnocypris selincuoensis* is the only and extremely rare fish in the Selin Co.

Owing to the high altitude, harsh environment, and inconvenient transportation in addition to sparse population, Selin Co and most regions within its drainage basin are still unpopulated. Therefore, few people are able to appreciate the beautiful harmony of gravel banks, meadows, and lakes in North Tibet. For work reasons, our study group has gone deep into the hinterland of Selin Co since 2010. We were stunned by the almost primitive beauty untouched by the world as we utilized our expertise to observe the plants and introduce them to people who desire to know them.

This book aims to introduce the major species of grassland plants and some natural landscape around Selin Co and its peripheral regions. In addition, the book refers to the data and related materials to identify the features, growth habits, and location of the plants to help in the understanding of the plants in the plateau of North Tibet. Furthermore, we also hope to provide plant enthusiasts or tourists with an observation guide or a science book that has a reference value. All pictures in the book were taken by our team. As amateur photographers who love natural science, we do not have professional skills and trainings for photography and we would like to ask for your understanding and welcome any corrections and suggestions to this book.

Located in a semiarid steppe zone, Selin Co experiences long winter each year. The growing season for plants is very short, and trees and shrub are rarely seen; hence, the environment allows less diversity in terms of plant species. However, this feature is indispensable in maintaining the local natural ecological integrity, wildlife habitats, and the life of farmers. The survey discovered that there is a total of 42 plant species in the lake area, indicating more families and fewer genera and species. The plants discovered include Compositae (8 spp.), Ranunculaceae (3 spp.), Crassulaceae (3 spp.), Boraginaceae (3 spp.), Scrophulariaceae (3 spp.), Polygonaceae (2 spp.), Caryophyllaceae (2 spp.), Labiatae (2 spp.), Poaceae (2 spp.), Liliaceae (2 spp.), Urticaceae (1 sp.), Chenopodiaceae (1 sp.), Cruciferae (1 sp.), Rosaceae (1 sp.), Leguminosae (1 sp.), Tamaricaceae (1 sp.), Thymelaeaceae (1 sp.), Primulaceae (1 sp.), Gentianaceae (1 sp.), Bignoniaceae (1 sp.), Dipsacaceae (1 sp.), and Cyperaceae (1 sp.).

(1) Yanhong Guo. 2016. Observation and simulation of lake evaporation over the Lake Silin Co in the Tibetan Plateau and its role in recent rapid lake expansion [D]. Beijing: University of Chinese Academy of Sciences.

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第一章

色林错简介

An aerial photograph showing a vast, rugged landscape with numerous lakes and rivers. The terrain is brown and rocky, with patches of snow or ice. The lakes are dark blue and green, scattered across the landscape. The text '色林错' is visible on one of the larger lakes.

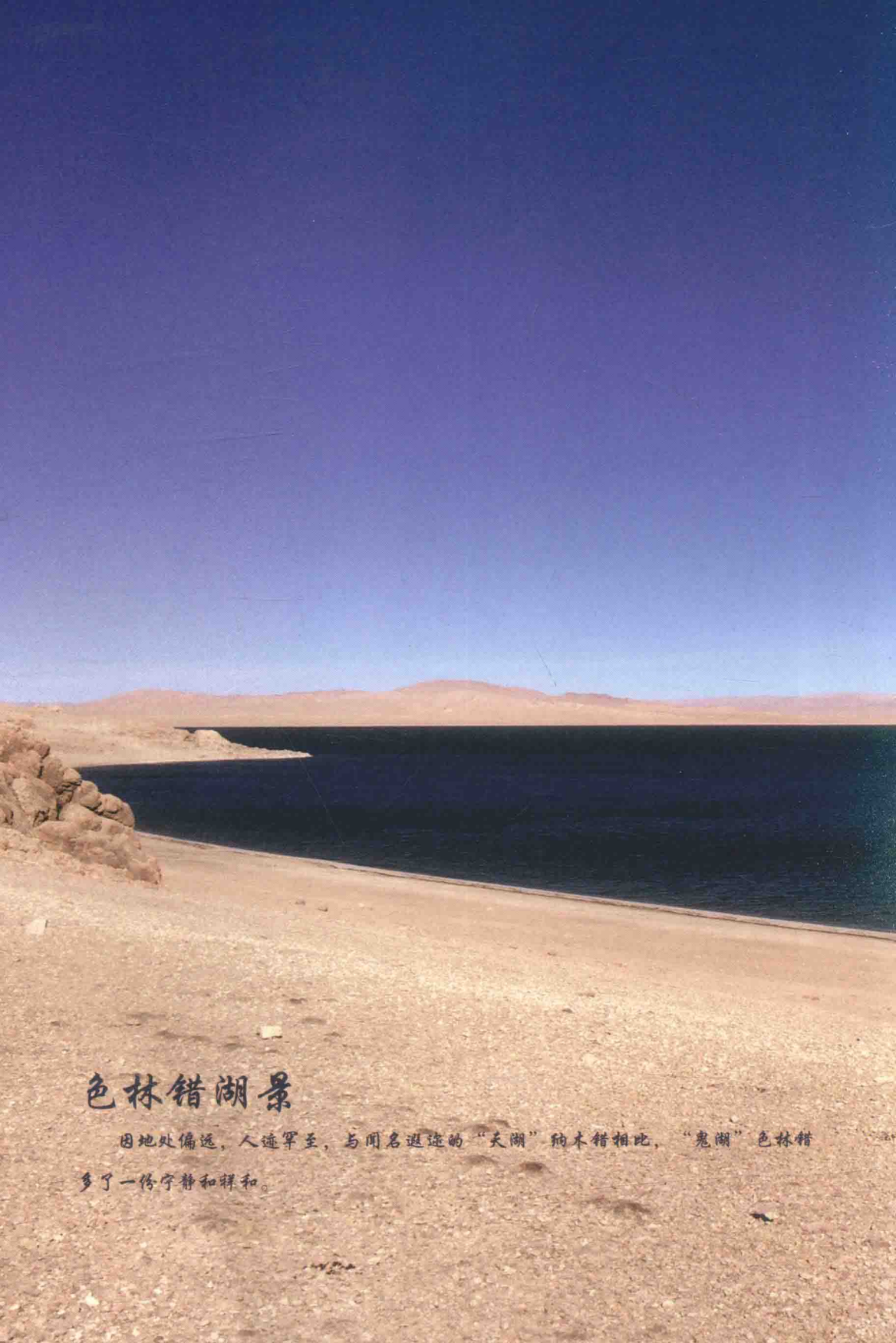
色林错

色林错全貌

色林错位于冈底斯山北麓班戈县和申扎县境内，申扎县以北，湖体东西长72千米，南北宽约22.8千米，东部最宽处达40千米。



纳木错



色林错湖景

因地处偏远，人迹罕至，与闻名遐迩的“天湖”纳木错相比，“鬼湖”色林错多了一份宁静和祥和。







宋洪涛（摄）

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