NATURE TALK TO ME:

Digital Landscape Science Popularization System of Ecological and Cultural in Bogong Island, Wuxi, China

Project Statement

Bogong Island is the largest island in Lihu Lake, Wuxi, China, covering an area of about 37 hectares with a length of about 1700 meters from north to south. Although Bogong Island is rich in landscape resources, currently, the number of science popularization facilities is very limited, and the methods are very monotonous, resulting in the long-term lack of public awareness of these landscape resources. There is a lack of a ＂TALK＂ channel between humans and nature, and a direct connection cannot be established.

We have innovatively designed a digital ecological and cultural landscape science popularization system, using digital technology as a new interactive carrier and medium. This system conducts science popularization through both online and offline dimensions, allowing people to re-experience the landscape from 7 aspects: "Roaming" Bogong Island, "Seeing" Bogong Island, "Hearing" Bogong Island, "Talking" to Bogong Island, "Touching" Bogong Island, "Observing" Bogong Island, "Exploring" Bogong Island. This system has received positive feedback from the citizens and enhanced the social service value of the landscape, promoting the protection and dissemination of local ecological and cultural resources.

Project Narrative and Contents

1.BACKGROUND

Wuxi Lihu Lake is an inner lake of Taihu Lake, the third largest freshwater lake in China. Among them, Bogong Island is the largest island in Lihu Lake, with an area of about 37 hectares and a north-south length of about 1700 meters. The island's landscape is rich in natural ecology and cultural history: it boasts abundant animal and plant resources. According to statistics, there are 182 species of birds with a total of more than 10,000, and 13 rare, endangered and national key protected species. The island's cultural history is long-standing. Bogong Island is named in memory of Zhang Bo (also known as Bogong), a hero who controlled floods in the Eastern Han Dynasty. The architectural scenic spots such as pavilions, terraces, and porches are all related to the flood control legend of Zhang Bo observing the celestial phenomena and inspecting the water situation at that time.

Although Bogong Island is rich in landscape resources, currently, the number of science popularization facilities is very limited, with only 3 science popularization points. And the way of science popularization is very single, still relying on the most common promotional signs, which can carry very limited science popularization content. Due to this, the rich landscape resources have long been unable to be "seen", "heard", or "perceived". The public's sense of experience and sense of gain are very poor, and there is a lack of a "TALK" channel between humans and nature, and a direct connection cannot be established.

2.DESIGN CONCEPT

Centering around the landscape resources and spatial design of Bogong Island, we have designed a digital ecological and cultural landscape science popularization system. This system innovatively using digital technology as a new interactive carrier and medium, conducting landscape science popularization from both online and offline dimensions. This allows people to re-perceive the landscape from 7 aspects: "Roaming" Bogong Island, "Seeing" Bogong Island, "Hearing" Bogong Island, "Talking" to Bogong Island, "Touching" Bogong Island, "Observing" Bogong Island, "Exploring" Bogong Island. By applying various digital technologies such as augmented reality, artificial intelligence, human-computer interaction, and large language model , Bogong Island is transformed into a large outdoor "digital science popularization museum". The science popularization system presents a wealth of hidden information in the landscape to the public, expanding their cognitive boundaries of the landscape, and reopening the window of dialogue between human and nature.

3.DETAILED DESIGN

3.1 Online Science Popularization System
It includes four parts: "Roaming" Bogong Island, "Seeing" Bogong Island, "Talking" to Bogong Island, and "Observing" Bogong Island.

3.1.1 "Roaming" Bogong Island - Online virtual science popularization tour.
We have developed a "roaming" Bogong Island mobile phone app, which serves as the online gateway for the public to virtually tour Bogong Island. The public enters the virtual science popularization scene through it to freely explore and obtain various science popularization knowledge. The applet can generate personalized offline tour routes according to users' interests and behavior data using AI technology, thereby creating a seamless link between online and offline experiences.

3.1.2 "Seeing" Bogong Island - Reproduction of ecological and cultural landscape scenes.
By utilizing AR technology, it breaks the limitations of time and space on the landscape, enabling the display of Bogong Island's history, present, and future of Bogong Island from multiple perspectives. This technology presents the "invisible" content to the public's eyes, enhancing the interactive science popularization experience of the landscape. We have established 8 AR science popularization points, each telling the story of Zhang Bo incarnating as the Zhupolong to control the flood legend, the biodiversity of the Oulu Island, the sponge wetland of Bogong Island, and so on.

3.1.3 "Talking" to Bogong Island - 100 kinds of digital biological knowledge bases.
We have selected 100 local characteristic and rare animals and plants to build a 100-species digital biological knowledge base. For each creature, we have developed a "digital creature" image for each creature. Based on the large language model (LLM), these creatures can freely "talk" with the public through voice or text, explaining the biological habits, characteristics, distribution locations and other knowledge to the public. They also guide people to explore and observe in the site.

3.1.4 "Observing" Bogong Island - Digital ecological management platform.
Breaking the traditional reliance on manual on-site investigation and identification in biological research, we apply infrared cameras, high-definition cameras, sensors, and other equipment. Combined with AI recognition algorithms, this approach efficiently and accurately identifies the species, quantity, and population dynamics of both terrestrial and aquatic organisms. It provides valuable image data for ecological science popularization and enhances the level of biodiversity protection.

3.2 Offline Science Popularization System

It includes three parts: "hearing" Bogong Island, "exploring" Bogong Island, and "touching" Bogong Island.

3.2.1 "Hearing" Bogong Island –Honeycomb Habitat Interactive Device

The Honeycomb Habitat Interactive Device is designed to simulate the hexagonal shape of the honeycomb and is placed in the area of the ecological knowledge classroom in the site. The sounds of various animals collected by ecologists on-site are recorded into the modules of the corresponding animals in the device. In the process of interacting with different modules, the public can hear the sounds of their respective animals. Moreover, this device is also an "insect hotel", providing a habitat for small insects.

3.2.2 "Touching" Bogong Island - Landscape interactive science popularization sign

We have designed 4 landscape interactive science popularization signs, including wetland bird knowledge, wetland plant knowledge, etc. Each science popularization sign custom-designed different interaction methods according to different contents. The public, especially children, can more vividly learn science popularization knowledge through "touching" by means of pushing, pulling, flipping, sliding, rotating, etc.

3.2.3 "Touching" Bogong Island - Ecological science popularization corridor

Surrounding the landscape corridor frame of Bogong Island, a 300-meter-long ecological science popularization corridor has been built, featuring carefully drawn pictures of animals and plants and ecological knowledge in the form of vivid and interesting stories.

3.2.4 "Exploring" Bogong Island - Immersive science popularization tour route
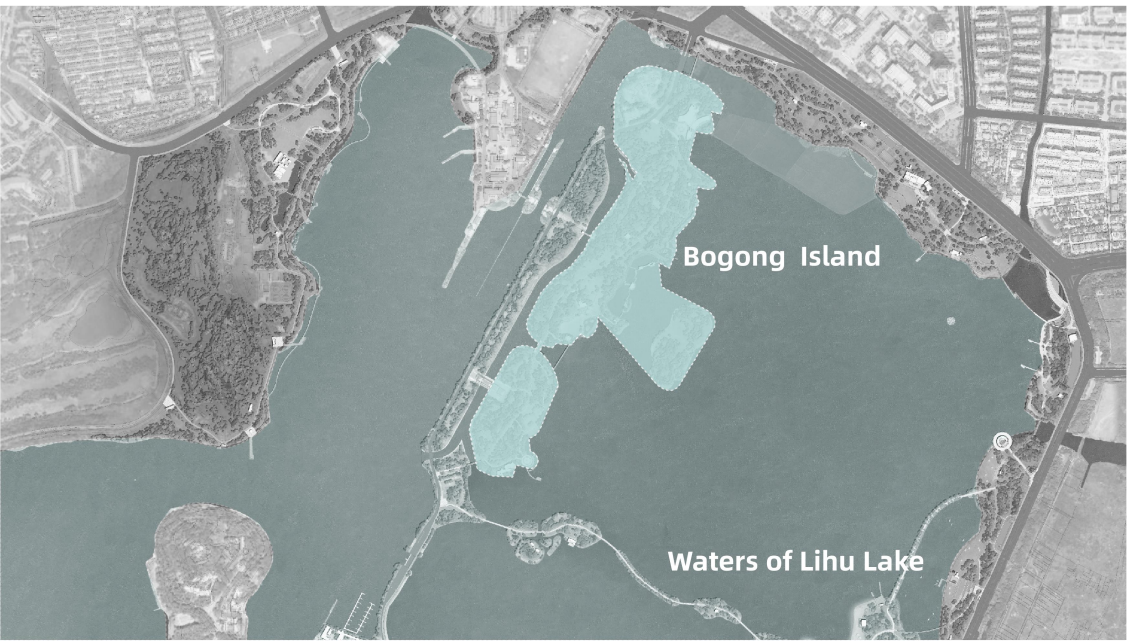
In addition to the online virtual tour route, we have also designed an offline popular science tour route in the venue. We have established 13 hidden check-in points in the venue and marked these points on the map. Visitors can learn science popularization knowledge as they search for the check-in points and collect the corresponding puzzle pieces. Once they complete all the check-in tasks, they will receive a complete puzzle. This gamified approach encourages the public to actively participate in the offline science popularization activities, stimulating the vitality of the venue and allowing them to acquire knowledge through exploration.

4.SOCIAL BENEFITS

The digital ecological and cultural landscape science popularization system of Bogong Island has re-established the way of "TALKING" between nature and people. Approximately 2 months after the design was completed, it has cumulatively served more than 60,000 citizens and received positive feedback from the citizens. The design results have been reported by Wuxi Daily, Jiangnan Evening News and other local mainstream media in Wuxi, as well as professional media such as Landscape Architecture Magazine, New Youth of Landscape Architecture, and Wuxi Cultural Tourism, achieving good social benefits. Additionally, it has enhanced the public's service value of the landscape, fostering greater awareness and interest in the landscape, and also contributed to the protection and dissemination of local ecological and cultural resources.

Wuxi Lihu Lake is an inner lake of Taihu Lake, the third largest freshwater lake in China. Among them, Bogong Island is the largest island in Lihu Lake, with an area of about 37 hectares and a north-south length of about 1700 meters.

According to statistics, there are 182 species of birds with a total of more than 10,000, and 13 rare, endangered and national key protected species. The island's cultural history is long-standing. Bogong Island is named in memory of Zhang Bo (also known as Bogong), a hero who controlled floods in the Eastern Han Dynasty.

Jiangsu, China   **Wuxi Taihu basin**   **Bogong Island**

Although Bogong Island is rich in landscape resources, currently, the number of science popularization facilities is very limited. And the way of science popularization is very single.

Bogong Island
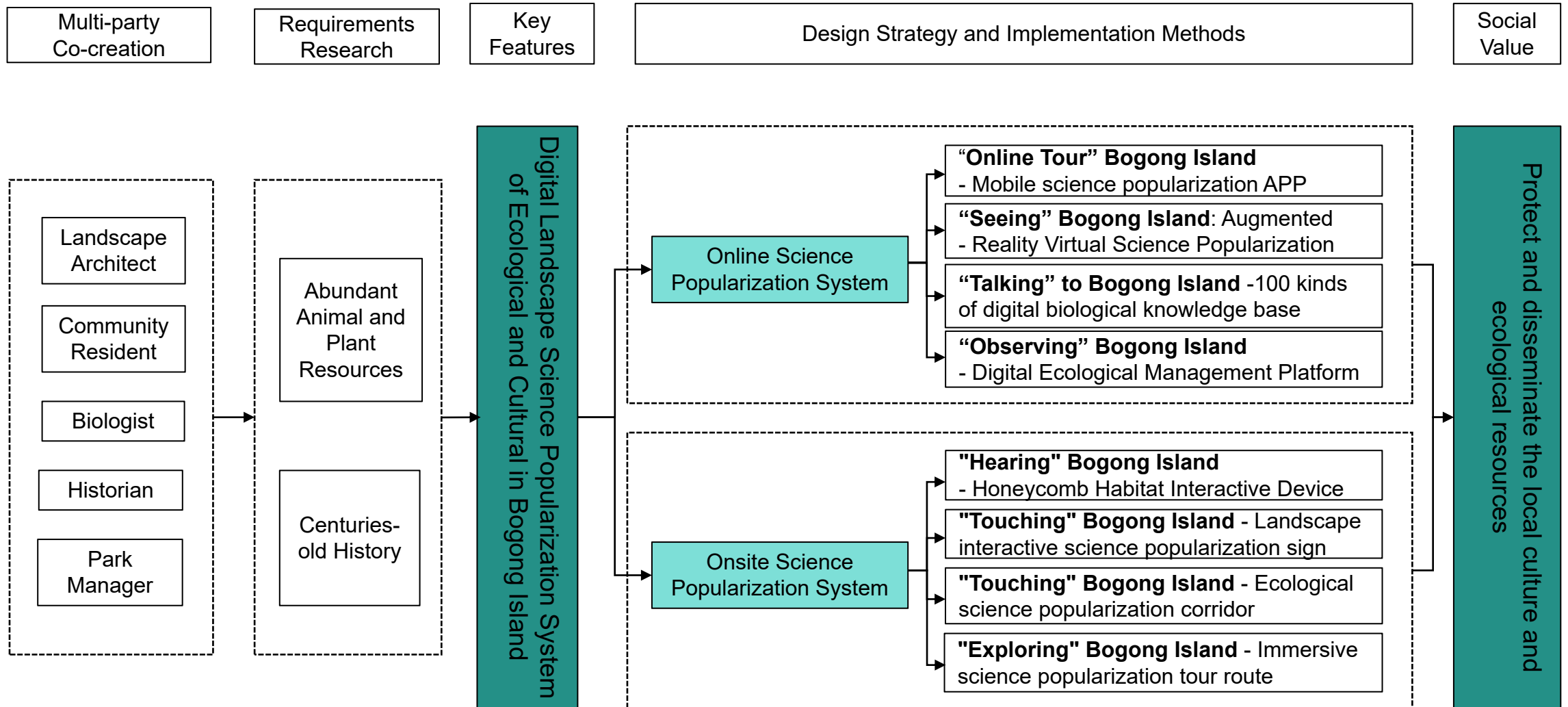
Waters of Lihu Lake

BACKGROUND

The rich landscape resources of Bogong Island have long been unable to be "seen", "heard", or "perceived". The public's sense of experience and sense of gain are very poor, and there is a lack of a way of "TALKING" between people and nature, and a direct connection cannot be established.

| Multi-party Co-creation | Requirements Research | Key Features | Design Strategy and Implementation Methods | Social Value |

Multi-party Co-creation
- Landscape Architect
- Community Resident
- Biologist
- Historian
- Park Manager

Requirements Research
- Abundant Animal and Plant Resources
- Centuries-old History

Key Features

Digital Landscape Science Popularization System of Ecological and Cultural in Bogong Island

Design Strategy and Implementation Methods

Online Science Popularization System
- "Online Tour" Bogong Island - Mobile science popularization APP
- "Seeing" Bogong Island: Augmented - Reality Virtual Science Popularization
- "Talking" to Bogong Island -100 kinds of digital biological knowledge base
- "Observing" Bogong Island - Digital Ecological Management Platform

Onsite Science Popularization System
- "Hearing" Bogong Island - Honeycomb Habitat Interactive Device
- "Touching" Bogong Island - Landscape interactive science popularization sign
- "Touching" Bogong Island - Ecological science popularization corridor
- "Exploring" Bogong Island - Immersive science popularization tour route

Social Value

Protect and disseminate the local culture and ecological resources

DESIGN STRATEGY AND IMPLEMTNTATION METHOD

MASTER PLAN

Plant QR Code Identification - PrunusXintrorsa cv.Introrsa

AI Culture Popularization - The Origin of Runxue Pavilion

AI Culture Popularization - The Legend of Zhang Bo's Daughter

Plant QR Code Identification - Metasequoia glyptostroboides Hu

AI Cultural Popularization - The Origin of Wangtian Pavilion

AI Cultural Popularization - The Origin of Guanshui Pavilion

Interactive Science Popularization Logo - Plant Community in Bogong Island Wetland

Interactive Science Popularization Logo - Where Are Birds' Homes

Scanning Science Popularization Identification - Egret

Plant QR Code Identification - Acer palmatum Thunb.

Plant QR Code Identification - lotus

AR Ecological Interactive Display – Heron Island

AR Ecological Interactive Display –Wetland of Lake LI

Honeycomb Habitat Interactive Device

AR Ecological Interactive Display –Ecological management

AR Ecological Interactive Display –Sponge City Technology of Lake LI

Plant QR Code Identification - Malus spectabilis

AI Cultural Popularization - The Legend of Zhang Bo's Flood Control
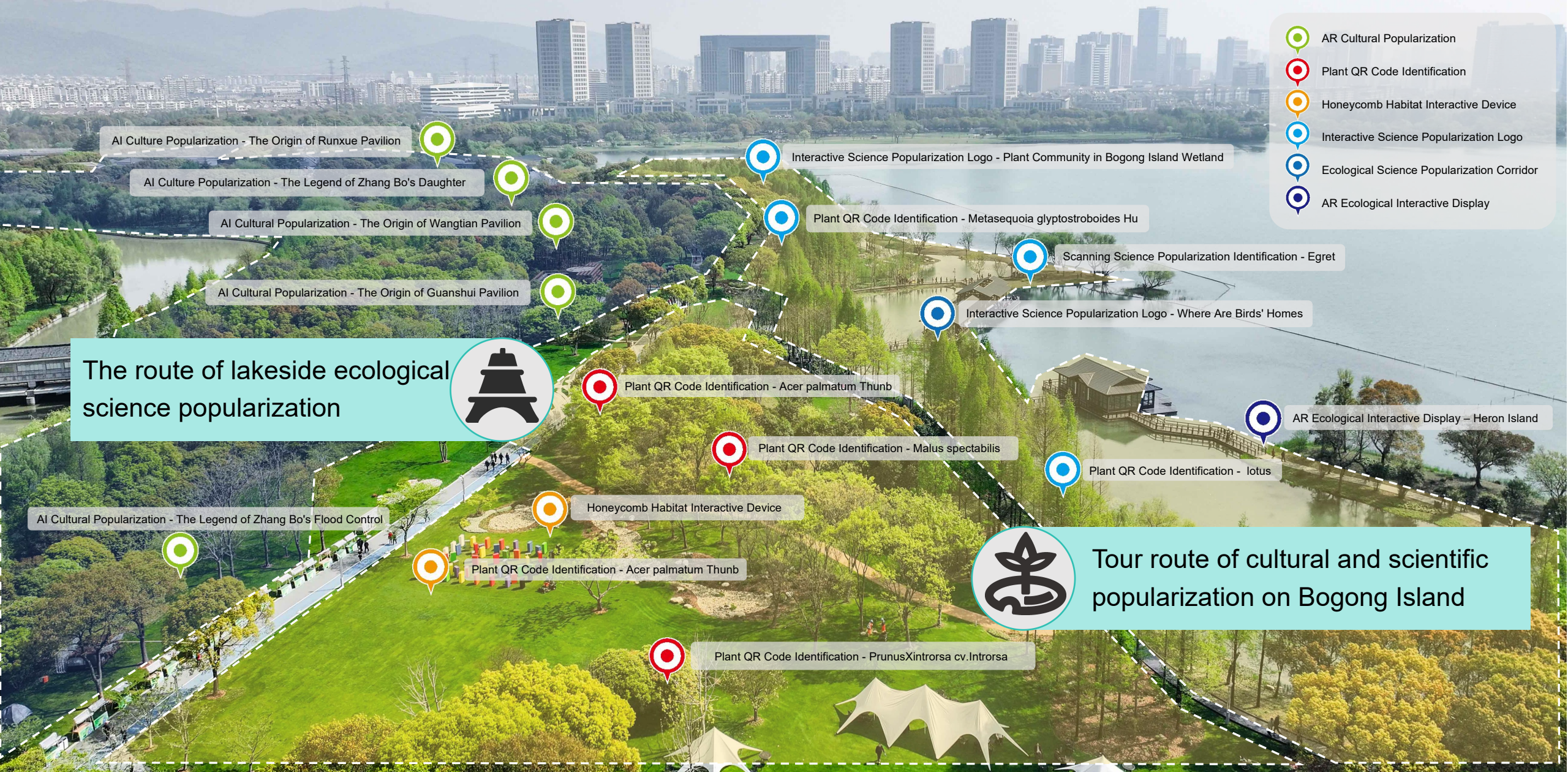
The route of lakeside ecological science popularization

Tour route of cultural and scientific popularization on Bogong Island

AR Cultural Popularization

Plant QR Code Identification

Honeycomb Habitat Interactive Device

Interactive Science Popularization Logo

Ecological Science Popularization Corridor

AR Ecological Interactive Display

14:55

蠡湖渤公岛

全部　景点　打卡　卫生间　停车场　搜索

打卡集拼图
游蠡湖·涨知识

点名称打卡！

流云轩
水杉　红梅　三角塘湿地　鸥鹭岛
莲
椿寒樱　润雪楼　濯雨楼　白鹭　张渤治水
观水亭　海棠
望天亭　鸡爪槭

首页　云游蠡湖　发现蠡湖　我的

Puzzle integral
Collect progress
0/13

Puzzle integral
Collect progress
2/13

Puzzle integral
Collect progress
13/13

AR Cultural Popularization

Plant QR Code Identification

Honeycomb Habitat Interactive Device

Interactive Science Popularization Logo

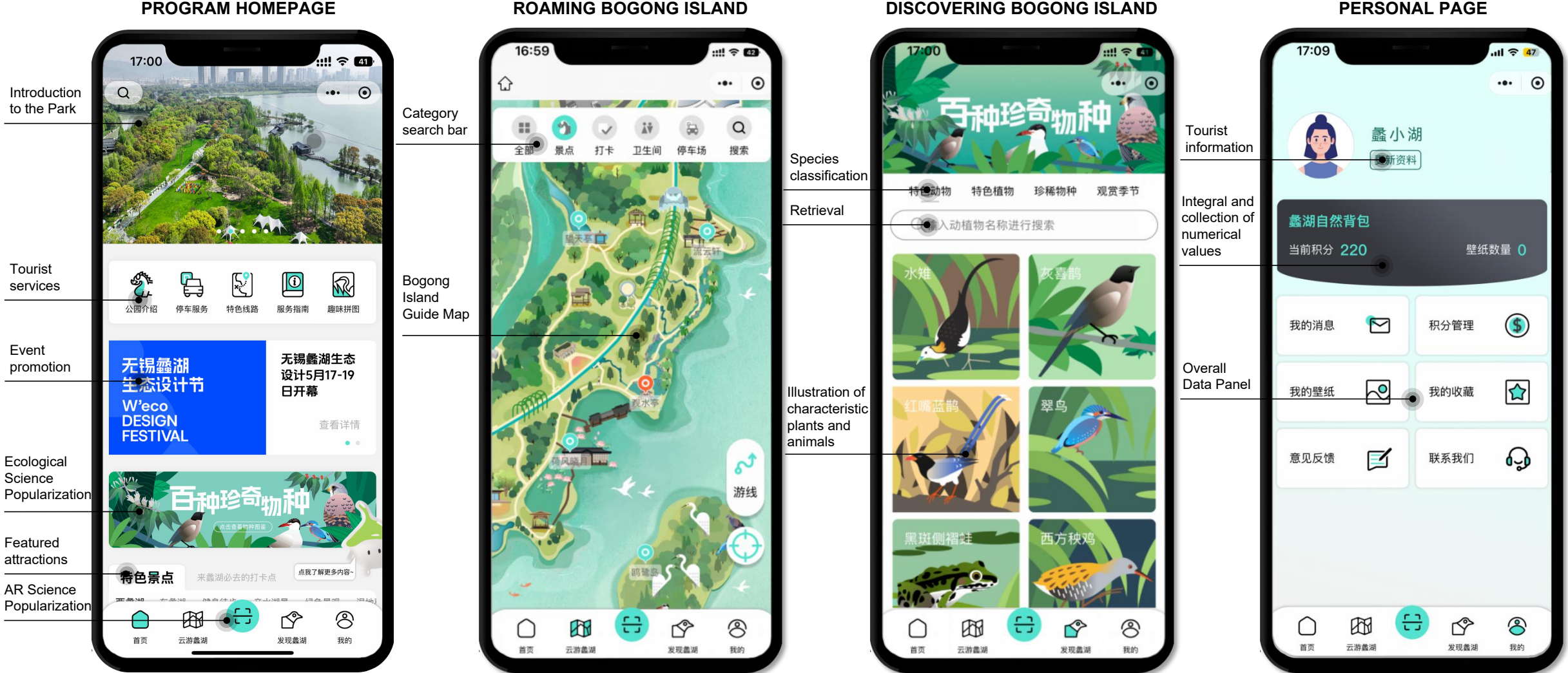Ecological Science Popularization Corridor

AR Ecological Interactive Display

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AI Culture Popularization - The Legend of Zhang Bo's Daughter

AI Cultural Popularization - The Origin of Wangtian Pavilion

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Plant QR Code Identification - Malus spectabilis

AR Ecological Interactive Display – Heron Island

Plant QR Code Identification - lotus

AI Cultural Popularization - The Legend of Zhang Bo's Flood Control

Honeycomb Habitat Interactive Device

Plant QR Code Identification - Acer palmatum Thunb

Tour route of cultural and scientific popularization on Bogong Island

Plant QR Code Identification - PrunusXintrorsa cv.Introrsa

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We have designed a digital ecological and cultural landscape science popularization system. This system innovatively using digital technology as a new interactive carrier and medium, conducting landscape science popularization from both online and offline dimensions. This allows people to re-perceive the landscape from 7 aspects. The system presents a wealth of hidden information in the landscape to the public, expanding their cognitive boundaries of the landscape, and reopening the window of dialogue between human and nature.
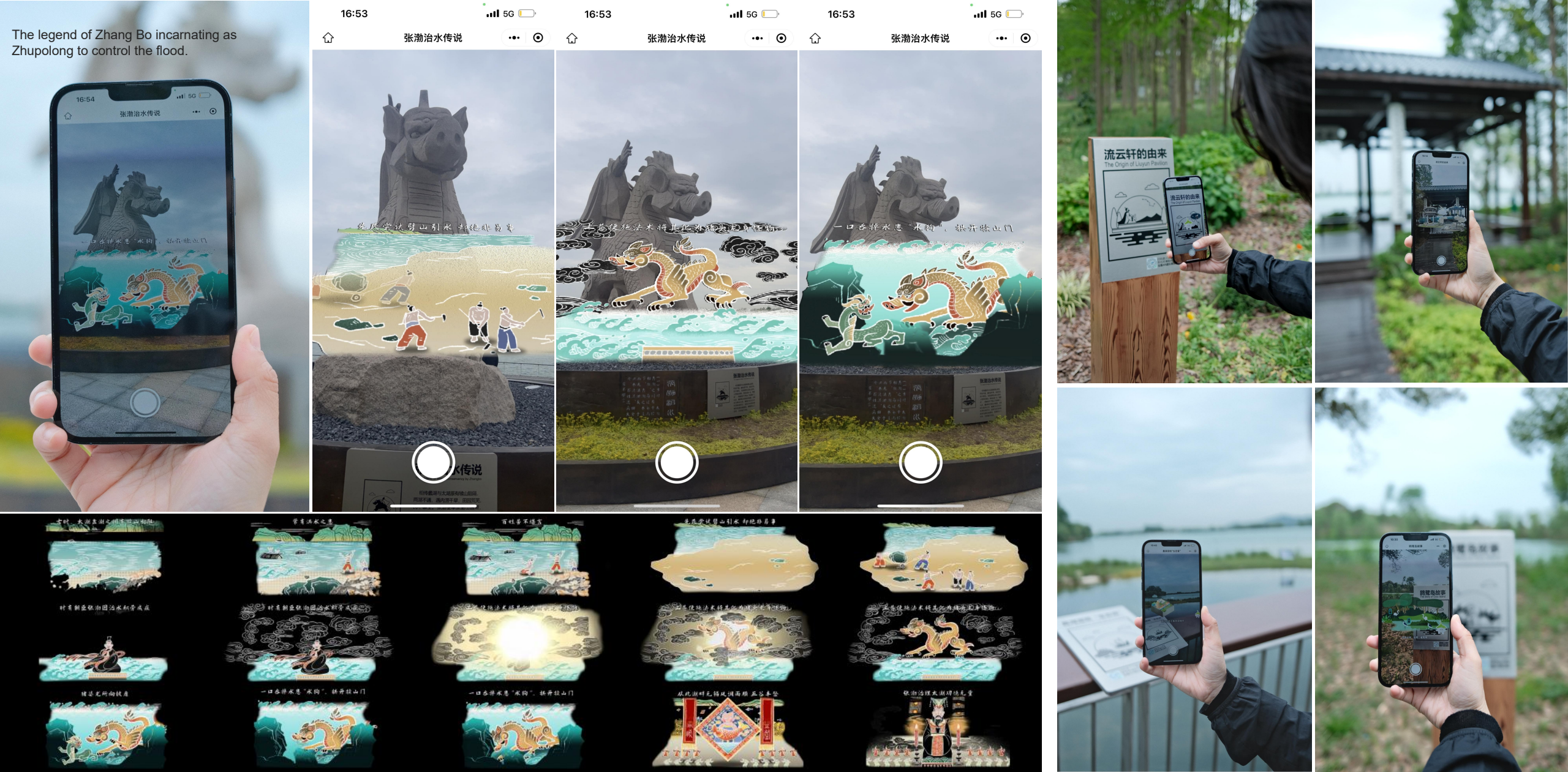
PROGRAM HOMEPAGE

Introduction to the Park

Tourist services

Event promotion

Ecological Science Popularization

Featured attractions

AR Science Popularization

ROAMING BOGONG ISLAND

Category search bar

Bogong Island Guide Map

DISCOVERING BOGONG ISLAND

Species classification

Retrieval

Illustration of characteristic plants and animals

PERSONAL PAGE

Tourist information

Integral and collection of numerical values

Overall Data Panel

"Roaming" Bogong Island - Online virtual science popularization tour.

The app serves as the online gateway for the public to virtually tour Bogong Island. The public enters the virtual science popularization scene through it to freely explore and obtain various science popularization knowledge.

The legend of Zhang Bo incarnating as Zhupolong to control the flood.

"Seeing" Bogong Island - Reproduction of ecological and cultural landscape scenes.

By utilizing AR technology, it breaks the limitations of time and space on the landscape, enabling the display of Bogong Island's history, present, and future of Bogong Island from multiple perspectives.

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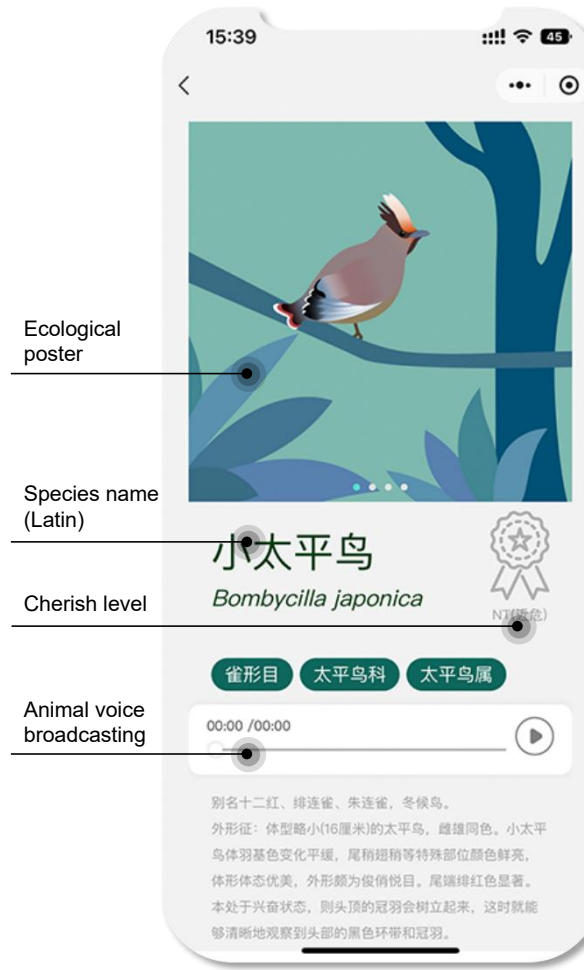
DISCOVERING BOGONG ISLAND

LIST OF RARE SPECIES

Ecological poster

Species classification

Retrieval

Illustration of characteristic plants and animals

DETAILS PAGE

Ecological poster

Species name (Latin)

Cherish level

Animal voice broadcasting

小太平鸟
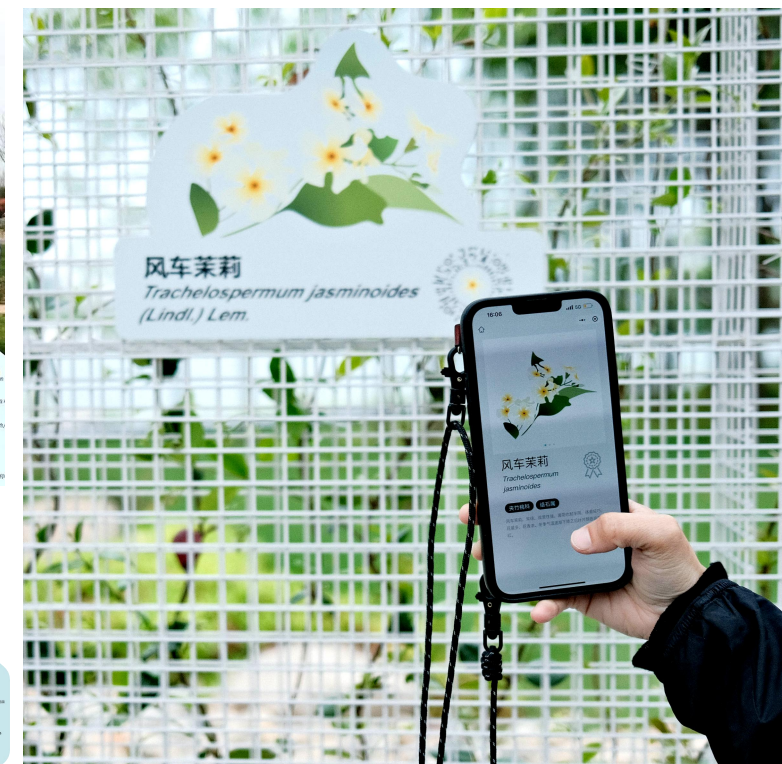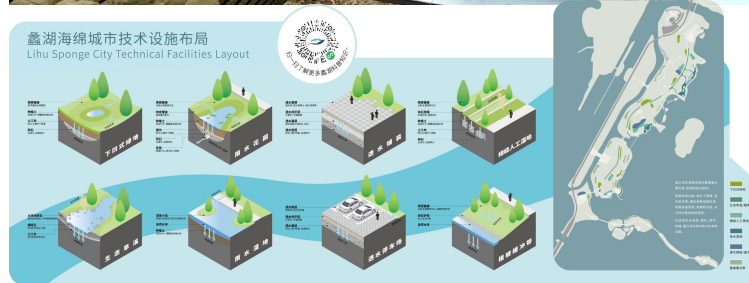*Bombycilla japonica*
NT(近危)

POINTS PAGE

Ecological poster

Get points prompt

小太平鸟
Bombycilla japonica
NT(近危)

"Hearing" Bogong Island

The popular science information of 100 kinds of organisms is detailedly displayed in the app, and the sounds of animals are also recorded in the app to enhance the interestingness and immersion sense of people's experience.

"Touching" Bogong Island - Landscape interactive science popularization sign and corridor.

We have designed 4 landscape interactive science popularization signs, including wetland bird knowledge, wetland plant knowledge, etc. And a 300-meter-long ecological science popularization corridor has been built, featuring carefully drawn pictures of animals and plants and ecological knowledge in the form of vivid and interesting stories.

Ecological digital management platform - biodiversity monitoring

Ecological digital management platform - water environment monitoring

Rich AI recognition model library for accurate identification of species

Through AI algorithms, it is possible to identify and monitor floating debris, blue-green algae, etc. On the water surface

"Observing" Bogong Island - Ecological digital management platform.

Combined with the AI recognition algorithm, we apply equipment such as infrared cameras, high-definition cameras, sensors, etc., which provides image materials for ecological science popularization and also improves the level of biodiversity protection.

SOCIAL BENEFITS

Approximately 2 months after the design was completed, it has cumulatively served more than 60,000 citizens and received positive feedback from the citizens. It has contributed to the protection and dissemination of local ecological and cultural resources.

THANK YOU

NATURE TALK TO ME:

Landscape Science Popularization System of
Ecological and Cultural in Bogong Island, Wuxi, China