

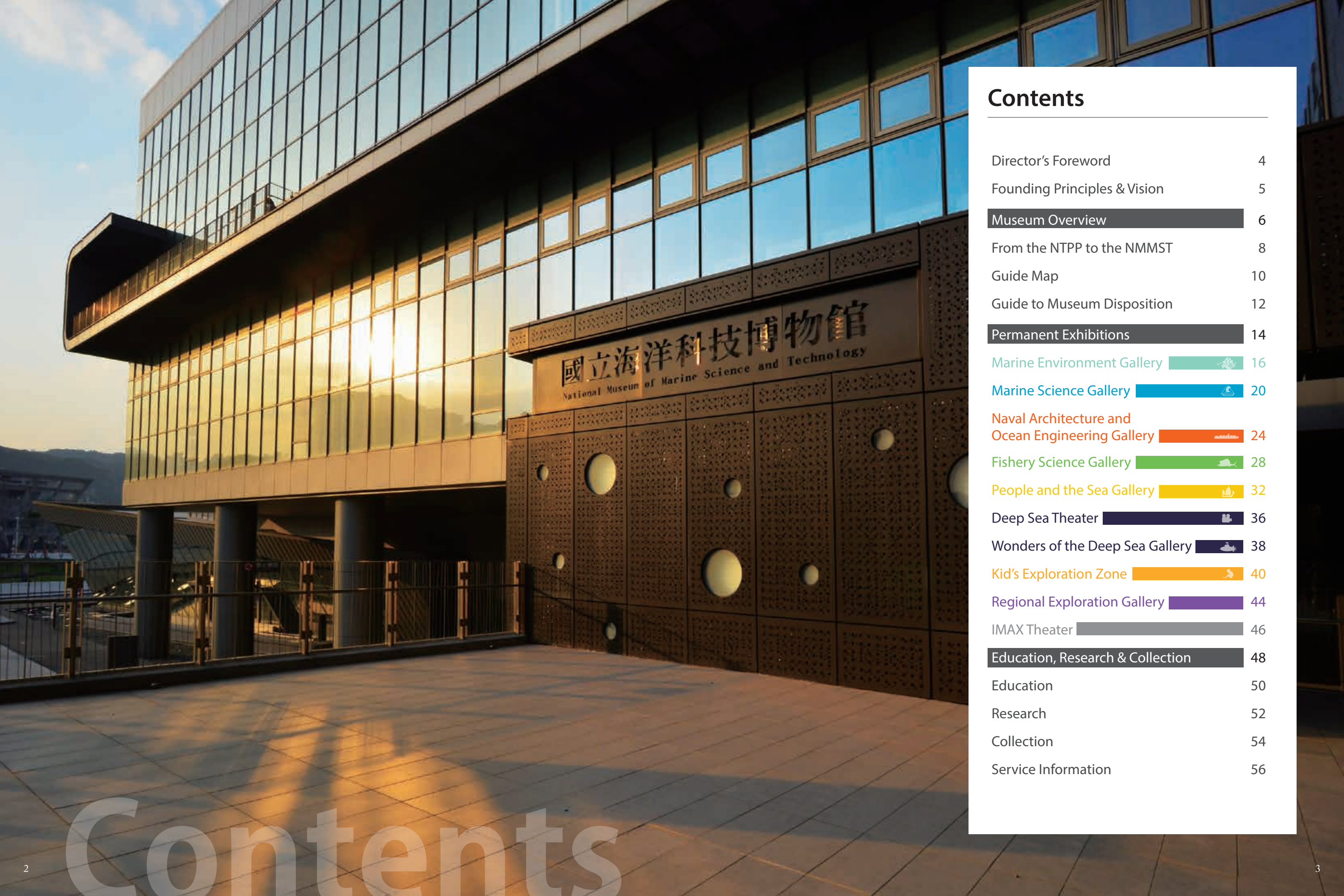
NATIONAL MUSEUM OF MARINE SCIENCE & TECHNOLOGY



NATIONAL MUSEUM OF MARINE SCIENCE & TECHNOLOGY

INTRODUCTION





國立海洋科技博物館
National Museum of Marine Science and Technology

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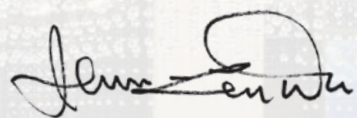
Foreword

Director's Foreword

The one-of-a-kind National Museum of Marine Science & Technology (NMMST) looks out across a vast bay in Keelung City's picturesque Badouzi Harbor. Boasting various national and international firsts, the NMMST is a unique museum worth visiting. It is the first museum transformed from a historical building—the North Thermal Power Plant. It is the only Taiwanese museum that encloses a train platform and that is tightly connected with its neighborhood. Its Main Exhibition Building is the only one on the island to have received a top honorary award from the American Institute of Architects' New York Chapter, and it is also the only exhibition center worldwide that combines the diverse fields of marine science, technology, ecology, culture and environmental affairs under one roof. With these notable characteristics and its seashore scenery, the NMMST, in cooperation with the Keelung City Government, National Taiwan Ocean University (NTOU) and the surrounding fishing communities, hopes to create a world-class Marine Education & Tourist Park renowned for its philosophy of "embracing", "appreciating" and "sustaining" the ocean.

The construction of the NMMST achieves the goal of the Ministry of Education to promote museum education and strike a balance in the disposition of the museum establishments in the country. Thanks to the tireless efforts of the museum's previous Provisional Office Directors—Professors Sun Pan Bonnie, Huang Shyh-chang, Kehr Young-zehr, and their colleagues. The setup of the NMMST not only shoulders the responsibility of promoting Northeast Coastal Scenic Area and marine education, but also, with the continued diligence of the museum's personnel and volunteers, carries the functions of display, research, collection and entertainment facilities.

The museum is expected to enhance marine researches, education and conservation, and to publicize the ocean's invaluable worth in the future.



Director, National Museum of Marine Science & Technology
January 2014

Vision

Founding Principles & Vision

The plan for the construction of the NMMST was first drawn up in 1979 when the Executive Yuan laid out Twelve New Development Projects, and its aim is enhancing the public's knowledge and awareness with regard to marine science and technology. By making use of cutting-edge display, research, collection and entertainment facilities, and by collaborating with similar institutes worldwide, the museum is envisioned as the ideal venue for encouraging visitors to "embrace", "appreciate" and "sustain" the ocean, which is a living museum for all humankind. Various activities and exhibitions will be employed for this purpose, in order to showcase numerous aspects of marine science, technology, culture and ecology, as well as man's relationship with the ocean.

Situated in Badouzi, a local community boasting a rich history of marine research, industry and culture, the NMMST is designed, on purpose, without fences to tightly connect with its neighboring areas—Badouzi Fishing Village, Bisha Tourist Fishing Port, and Coastal Recreation Park. It also cooperates with the Fisheries Agency, the Fisheries Research Institute, National Taiwan Ocean University, the China Shipbuilding Corporation of Taiwan, the Keelung City Government, the New Taipei City Government and various local fishery associations to bring visitors closer to the mysteries and wonders of the ocean.

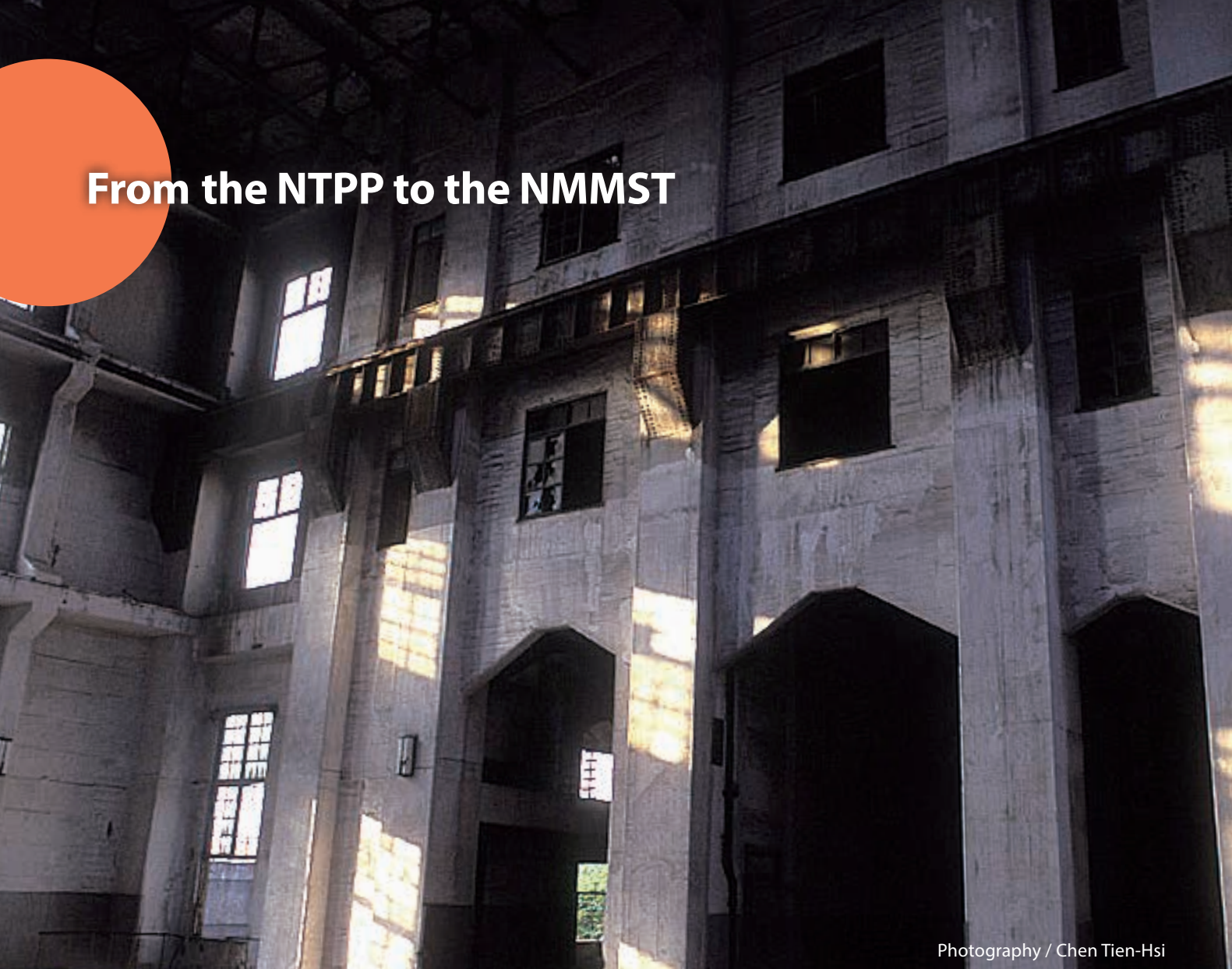
Lying at the heart of a renowned Northeast Coastal Scenic Area that incorporates Jiufen, Jinguashi, Ruifang, Jinshan and Wanli, the NMMST forms a pivotal attraction in the region. With visitors flocking to this world-class seaside tourist and recreation area for a unique marine experience, it also plays a major role in the economic development of the area.



Museum Overview

The NMMST is situated in the Badouzi Peninsula and Wanghaixiang Bay, an idyllic natural setting blessed with beauty and ecological abundance. What's more, the Main Exhibition Building, uniquely converted from the historic North Thermal Power Plant, along with the Administration Center, Education Center and Research Centers form the core of the museum. To the north and northwest of the Main Exhibition Building, we can find the Chaojing Park and Chaojing Ocean Center. These two highly informative exhibition venues incorporate the near-lying harbor, bay areas, the reclamation of land and Badouzi parks. To the south of the Main Exhibition Building lies Rongxuan Park, as well as a large parking lot for buses and coaches. An auxiliary parking lot and the Coastal Recreation Park are situated to the southeast.

From the NTPP to the NMMST



Photography / Chen Tien-Hsi



Originally established during the Japanese occupation of the island, construction on the 35,000 kW North Thermal Power Plant (NTPP) commenced in 1937 and was completed two years later. After the Taiwanese Retrocession, the government expanded the plant in 1953, which boosted the facility's total power output to 40,000 kW. Operations continued until 1981 when the Keelung City Government rented the site with the Taiwan Power Company. In 1993, the property was granted to the Ministry of Education and became the venue for the NMMST. Following the principles of fusion of technology and culture, as well as a symbiotic harmony between the natural and man-made environments, the Provisional Office cultivated out of a historic power plant a brand new museum, which combines marine technology and research, education and recreational facilities.



Photography / Chen Tien-Hsi

Land
Reclamation

the Largest

Natural
Cooling

Economic
Development

Abandoned
and Forgotten

Glorious
Revival

North Thermal Power Plant: Then & Now

The island of Taiwan was once separated from Badouzi Isle by a long, narrow water channel. The construction of the North Thermal Power Plant was an unprecedented engineering feat involving extensive land reclamation, which resulted in the connection of Taiwan and Badouzi, and Asia's largest thermal power plant at the time. The North Thermal Power Plant was also the first thermal power plant to use seawater as its cooling agent. This power plant, equipped with the latest production machinery, not only made itself an important and reliable source of power, but also laid a solid foundation of economic development and industrialization in the country. After years of loyal service, a closing ceremony for the plant was finally held in 1981. The site was then abandoned and forgotten. However, an agreement signed between the Ministry of Education and the Keelung City Government marked the site's glorious revival in 1997. A Provisional Office was set up to transform the relic, which was proclaimed a national historical building in 2004, into the NMMST.

Guide Map

Guide map

Estimate walking time

Regional Exploration Building (B2)

10 min

Main Exhibition Area (C2)

15 min

Chaojing Park (D2)

5 min

Chaojing Ocean Center (D2)

5 min

Eco Park (D1)

20 min

101 Highland (C1)

15 min

Badouzi Park (C2)

15 min

80 Highland (C1)

15 min

Wangyou Valley (C1)

25 min

65 Highland (C1)

20 min

Sijie Pingtai Park (C2)

20 min

Dutian Temple (C2)



圖例 Legend

| | |
|--------------------------|--------------------|
| 省道 Provincial Highway | 停車場 Parking Lot |
| 其他道路 Other Roads | 涼亭 Pavilion |
| 快速道路 Expressway | 廁所 Toilet |
| 入口 Entrance | 步道 Trail |

0 20 40 80
(公尺) 10 30 40 80

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Guide to Museum Disposition



Main Exhibition Building, Administration Center, Education Center and Archive & Research Center

The Main Exhibition Building comprises ten exhibitions halls, which are the "Marine Environment Gallery", "Marine Science Gallery", "Naval Architecture & Ocean Engineering Gallery", "Fishery Science Gallery", "People and the Sea Gallery", "Wonders of the Deep Sea Gallery", "Deep Sea Theater", "Kid's Exploration Zone" and "Regional Exploration Gallery". Beside the Main Exhibition Building stands a 3D IMAX Marine Theater.

The Administration Center is for the NMMST staff only. The Education Center consists of a public library housing an impressive collection of works related to marine studies, a discovery classroom where children can enjoy exploring stuff related to the sea or storytelling, and also a large conference hall. The Conference Hall can accommodate as many as 120 people. Inside the Education Center, there are also two science classrooms and two marine laboratories, where teaching and research activities can be held.

The Collection & Research Center, located to the north of the Main Exhibition Site, will act mainly as a storage location for documents and items related to marine science, technology, ecology and culture.



Rongxuan Park

Rongxuan Park includes a parking lot, in which there is Taiwan's Bench mark altitude measuring sites, Bishui Accommodation and the only railway "Museum Station" in Taiwan. The park's greatest attractions are the "Green Tunnel" made up of a large number of tall trees on both sides of the road, and a platform on the top of a nearby hill which gives visitors a bird's-eye view of the Main Exhibition Building as well as the beautiful Wanghaixiang Bay.



Chaojing Ocean Center & Coastal Ecology Exploration Area

The Chaojing Ocean Center is situated beside the Chaojing Park. It monitors the marine environment closely, restore the ecology, conducts the breeding of marine organisms, and develop undersea technology. The Center is divided into five sections, namely the Chaojing Aquaculture Station, the Laboratory & Collection Building, the research offices, the Laboratory & Science Classroom, and the Seawater Reservoir & Pumping Station.

As for the Coastal Ecology Exploration Area, it is mainly composed of the Chaojing Park, Eco Park and Badouzi Park.



Coastal Recreation Park & Auxiliary Parking Lot

The Coastal Recreation Park is an ideal location for marine activities and tidal observation.



Permanent Exhibitions

The "Marine Environment Gallery", "Marine Science Gallery", "Naval Architecture & Ocean Engineering Gallery", "Fishery Science Gallery", "People and the Sea Gallery", "Deep Sea Theater", "Wonders of the Deep Sea Gallery", "Kid's Exploration Zone" and "Regional Exploration Gallery", as well as an exclusive Marine IMAX Theater form part of the museum's permanent exhibitions. The NMMST is the world's only exhibition center that showcases various aspects of marine science, technology, ecology, culture and environmental affairs within a single venue.



Marine Environment Gallery



Our Ocean: the Mother of Taiwan

Taiwan owes its bounty to its mother, the ocean, with its climate being profoundly influenced by the large volume of warm water that is brought by the Kuroshio Current. Growth of all things on the island finds nourishment from the abundant rainfall generated by changes in the winds. Moreover, given the rich marine life also brought by the current, Taiwan's diet and culture have also been deeply affected by the ocean and all kinds of marine related industries have become major contributors to the nation's economy.

However, we also have to ask how well this surrounding marine environment is understood by denizens of this land? Before jumping into the vast topics of marine science and technology, the initial exhibition of the "Marine Environment Gallery" asks visitors to first stop and appreciate the unique richness and beauty of the oceans surrounding Taiwan. Furthermore, they should come to understand that the marine environment is becoming increasingly vulnerable: the ocean is a mother that needs our care and protection.

Entering the Ocean Realm

Embracing the dynamic ocean's sounds

Even before entering the Gallery, the visitor will immerse in different sounds of the ocean, which vary according to climate. In times of fine sunny weather, they will hear warm and gentle waves chase along the reefs and beaches, interspersed with the calling of friendly seabirds. At the arrival of the northeastern monsoon, the power of the darkened skies shall lash the earth with a roar. Surrounded by the drama of the ocean's sounds and images, you should find a heightened awareness of Taiwan's surrounding marine environment in all its rich diversity.

The Ever-Changing Ocean

The ocean plays the lead in a one man show

This section features an environmental theater that utilizes an innovative composite screen and model of Taiwan's seabed terrain; additional information appears on either side of the screen. You will come



to understand the various factors that affect marine diversity, as you gradually travel down from the air to the ocean surface, then underwater, and finally down to the seabed. This includes the formative and destructive power of typhoons. By observing the data, you will learn the close relationship between sea surface temperature and currents and movements of the earth. During the presentation of the sea, the projection screen itself gradually rises to exhibit a complex sea bottom topography whose variations exceed those of the land. Viewers will thus fully observe the rich diversity of Taiwan's marine ecology.



Understanding the Waters Surrounding Taiwan

Exploring the Kuroshio Current

When you enter this gallery, you will first encounter the seabed floor topography maps of regions surrounding Taiwan; and you'll find that each location of exhibit item has a basis on its actual physical location around the island. An interactive exhibit leads visitors to explore familiar features of Taiwan's marine environment. Visitors will find themselves tracing the path of the Kuroshio Current, feeling the changes in flow rates and temperatures. They will learn to identify the sources of changing monsoon patterns and explore their impact on marine productivity. With a deeper understanding of the ocean, they can avoid dangerous currents and ultimately deduce how events and drifting objects can give a clue to changes in currents and seawater conditions through the year. More than anything else, they will come to understand how our daily life bears the ocean's deep influence.



Taking an Ecological Tour

Experience the vitality of the ocean

Realistic ecological landscaping portrays a variety of marine ecosystems around Taiwan, extending from rocks and sediment wetlands to estuarine mangroves, lagoons and so on. Take a look into our ecological observation lenses and learn how various organisms adapt to the environment. Our dimensional spaces also allow you to learn more about environmental distribution and characteristics of ecosystems. Furthermore, our educational videos show us how numerous tiny ecosystems exist beyond the ken of the naked eye, whose food web plays an indispensable role in the production and decomposition of matter. You won't believe your eyes!

Understanding Environmental change

Experience the silence and solitude of the seas

Taiwan's marine environment has experienced significant changes in the past hundred years, and now faces a period of unprecedented crisis as symbolized by an enormous landscape of concrete wave dissipation barriers at the end of the Hall. Through maps and photos, one gains a tangible sense of the changes on Taiwan's coast from the past to present; and the beautiful ocean, nurturing its myriad creatures, is actually very fragile. Once destroyed, it must take a long time before it can recover, and so marine protection needs immediate action by you and me. The wounded sea waits patiently in silence to hear our response. Let us give voice on her behalf while we still have a chance!



Marine Science Gallery



Friendly Scientific Concepts of Ocean

In order to make marine science more approachable, the Museum uses lively and engaging methods to convey this subject's importance and encourage exploration of relevant topics. In doing so, we hope to create common understanding of developments in this field and the benefits marine science has brought us.

Oceanic Appearances

This exhibition allows visitors to gain an overall perspective on the world's oceans. The Museum has set up all kinds of global models and imaging devices to introduce the different features of oceans across the world. At the entrance, ocean imagery is presented using a seven-LED columnar data pole display. Inside, four repeating videos show vivid scenes of marine ecosystems, helping visitors to understand the diversity of ocean life. In "Marine Ecology Silhouettes" we catch glimpses of flying fish bursting forth from the water accompanied by foraging whale sharks at the ocean's surface, followed by fluorescent jellyfish. Watching the movie on "Tsunamis", we watch how fractures in the undersea crusts generate huge rushes of waves along the coast. In "Sea Ice and Icebergs",

a sudden avalanche will split off a huge chunk of ice, plummeting into the ocean with an enormous splash while simultaneously creating another iceberg. Meanwhile a polar bear and her cubs chase after a sea lion, while an icebreaker slowly paves its way across the water.

Having explored the Earth's waters, the distribution and depth of ocean, its cross-section and crustal thickness, the global ocean puzzle and other topics, the "Science on a Sphere" (SOS) display now allows us to view the overall global air-sea phenomenon. This "Oceanic Photo Album" can further advance visitors' understanding of the changing marine environment.





Oceanic Exploration

This area introduces the scientific characteristics of the ocean and the current status of marine science; it demonstrates how ocean waves are generated and how light and sound is transmitted in the ocean. It also exhibits experimental apparatuses used to simulate the pressure of the deep sea and equipment used in oceanographic surveys and resource exploration.

"[Characteristics of Seawater](#)" describes the various characteristics of seawater and how the differing nature of seawater impacts the survival of a variety of marine life.

"[Seawater Ingredients](#)" explores the composition and proportion observed in seawater analysis, and compares their similarities to corresponding substances and proportions in the human body.

"[Ocean Productivity](#)" introduces the tiny planktons that constitute the most basic level of sea life, and how they convert carbon dioxide, sunlight and inorganic materials into nutrients that benefit other organisms. This exhibit also explores the role of marine organisms in the global ecosystem.

"[Ocean Movement](#)" Thanks to this exhibition feature, visitors can investigate and learn more about the dynamic side of seawater right here in the museum. Aquatic phenomena, such as whirlpools and waves and their interaction with one another are analyzed in detail in this section.

"[Oceanographic Survey Ship Exploration](#)" shows visitors the construction of Taiwan's latest ship, R/V Ocean Researcher V. Visitors can get a clear idea of what a marine survey is like by learning about the vessel's structure and the activities and instruments featured on these kinds of ships.



Oceanic Resources

In order to illustrate the importance of marine resources, this area shows daily life in the application of marine resources and manufactured products. The ocean's resources are rich and diverse, encompassing mineral, spatial and energy resources and many more. A large number of marine resources have been applied as a manufacturing feedstock, going into industries such as chemicals, textiles, paper, dyes, ceramics, soaps, glass, pharmaceuticals, agriculture and fisheries, and even the food industry. Marine spatial resources, on the other hand, include items such as artificial islands, offshore airports, tunnels, sea resorts and so on, which are becoming increasingly important in a crowded world.

Oceanic Information

In the Ocean Information area, visitors can gain an understanding of basic marine science in order to help advance their investigation of important marine issues. This exhibit selects a number of important international and domestic marine scientific research topics and describes the current status as well as development history of marine research.

Future of the Ocean

Entering the fifth floor corridor, the Marine Science Gallery concludes its exhibitions with an exploration of "Future of the Ocean". It begins by introducing the issue of a "Warming Earth" and its effect on global sea temperatures, fostering a concern for the ocean and a reminder for visitors that "We only have one blue Earth". It then further explores the four main themes of "Man and the sea," namely those of environment, science, technology and energy, so as to help visitors understand those ongoing efforts around the world to protect the oceans and further oceanic research. Finally, let us agree to enter a new "Covenant with the ocean" together: visitors can use their own words or drawings to submit a "Letter to the ocean" to convey their hopes and reflections on the ocean's future.



Naval Architecture and Ocean Engineering Gallery



Thanks to our increasingly sophisticated global ocean science and technology, significant advances have been made in fields ranging from maritime transport and underwater exploration technology to academic and military research. This unique exhibit demonstrates this progress and Taiwan's fruitful role in the development of shipbuilding and port planning technologies.

The Gallery is constructed with metal, glass, water and other elements, coupled with projections in shades of greenish blue, creating a serene, hi-tech ambience. Its exhibits are centered on seven marine engineering topics, incorporating the three themes of "Understanding," "Development" and "Reflections and Prospects." Furthermore, a mockup of a 1/10 scale, 8,600 TEU container ship is featured in the center of the Gallery. You will also learn about the domestic yacht construction process in Taiwan by strolling through a yacht's opulent living quarters. You are sure to gain a deep sense of the importance of marine engineering technology development in Taiwan.

Living and Shipping

This exhibition leads visitors to understand how we all benefit from marine transport, with everyday life inextricably linked to the sea. Such a concept is illustrated by a giant propeller, with a map of the world laid out below. Think about all the things Taiwan depends on that are transported over the sea, from imported goods and components to a variety of raw materials and energy sources—what would our lives be like without marine transportation?



Ships and Harbors

Ports serve as kind of a transfer station between the sea and the land transportation. They can be distinguished by use, including commercial ports, fishing ports, military ports, yacht marinas, industrial harbors and so on. These classifications largely governed by their respective settings and vessel types. Aside from exhibiting models of different harbors and ships, the exhibit further seeks to illustrate the interdependent relationship between ships and marine engineering.

Construction and Maintenance of a Port

Here you may learn about the design and construction of ports, starting with the all-important consideration of where a port should be located. You may also reflect on issues of port maintenance and technological applications, and gain awareness of environmental impact of port construction.





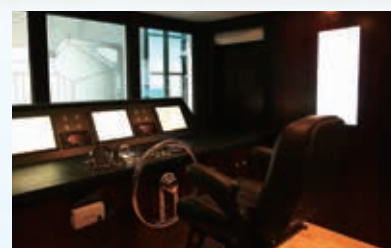
Theory, Design and Construction of a Ship

Starting from basic principles, this exhibit educates visitors on the design principles and construction complexity of shipbuilding. Come to the center of the Gallery and observe the 8,600 TEU container ship built by CSBC Corporation, Taiwan. To maximize effective use of space, the model is cut away to illustrate the layouts of the engineering room and of deck outfitting equipment, as well as the structural arrangements of the three types of marine transport vessels (container ships, oil tankers and bulk carriers).

This exhibit demonstrates the buoyancy, stability, structure strength, and resistance of ships. At the same time, visitors can understand the process of ship design and construction.

Technology Applied in Modern Ships

This exhibit allows visitors to experience the various new technologies that are applied on modern ships, for example the global positioning systems (DGPS) and automatic radar plotting aids (ARPA) that are used to enforce ship safety, or the ships that hover above surface water as well as underwater reconnaissance and stealth technology that are under military development. The exhibit also exhibits real torpedoes as well as models and demonstrates the functionality of each part of the torpedo. Finally, you may linger in the "Magnificent Cruise" exhibition area to appreciate the world-famous Taiwanese yacht construction art.



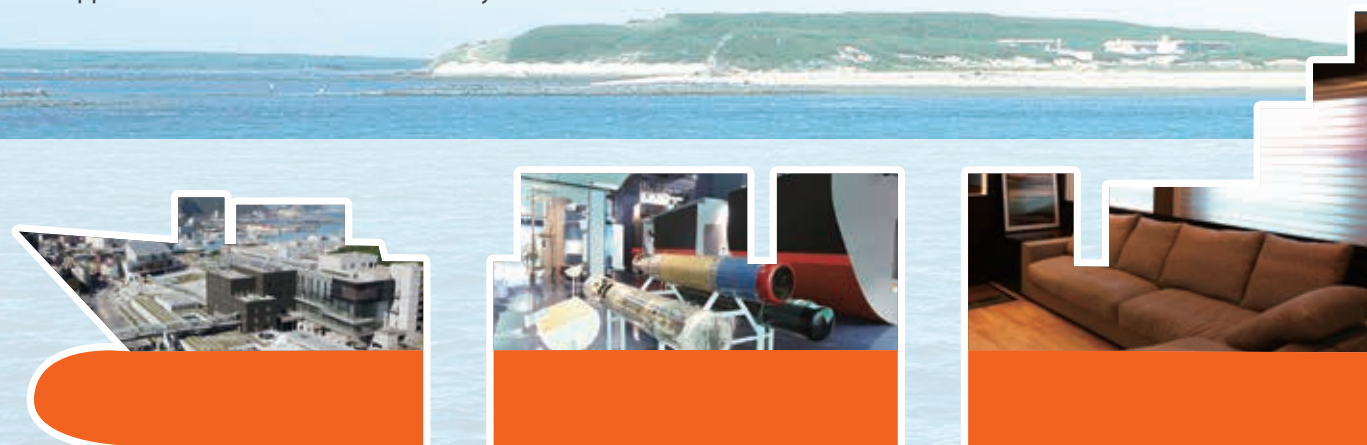
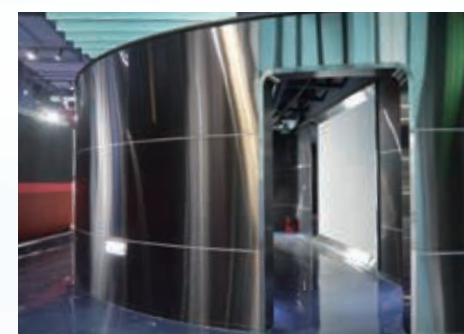
Undersea Technology

Visitors can learn about all sorts of undersea marine technology and equipment, such as unmanned undersea vehicles (e.g. ROV, AUV, and AUG), Air-lift pump, and Dynamic Positioning System. Interactive devices and video playback demonstrate various underwater exploration equipment and technological applications.

Man and Marine Technology

The final exhibition items utilize theatrical performances to show the relationship between human activities and marine technology development. Visitors are invited to ponder upon past progress and future developments in this field, so as to facilitate further reflection on the past, present and future relationship between man and the sea.

With funding of nearly NT\$80 million, the Gallery accounts for 13% of the Museum's exhibition space and benefits from many years of research by numerous experts in the field. We aim to share with you Taiwan's proud and rich heritage of shipbuilding and marine technology achievements. We believe the National Museum of Marine Science & Technology will become your basis for learning about ship and ocean engineering and technology applications.



Fishery Science Gallery



Sustainable Fishery Resources

Unlike traditional fishing culture shows, the Fishery Science Gallery combines science, technology and the culture in an interdisciplinary fashion, with a vivid interpretation of how the three factors of "people", "organisms" and "environment" interact over time. By demonstrating the food chain association between people and marine resources, we can understand that just as humanity depends on the ocean for survival, the sustainability of marine organisms is a mission of humanity.

Life in the Ocean

This area boasts huge interactive displays, providing the public with a close-up experience of marine biodiversity. In this exhibition we see a microcosm of living marine resources; with a high-ceilinged spatial atmosphere surrounded with ecological landscaping, vibrant jellyfish and magnificent large-scale projections, you will experience first-hand the beauty of sea life. The sudden appearance of divers from above will suggest that your next exploration will be from the perspective of the fish.



From fish to Fishing

Here we come to understand how humans observed fish and their habits to develop a variety of very efficient fishing methods. Among the fishing gear and fishing methods exhibited here, the exhibit incorporates the important concepts of our predecessors' "observation of organisms", "discovery of causes of behavior", and "development of technology". Through a trip into a static display of traditional fisheries, viewers can fully appreciate this activity's joys and challenges as well as the wisdom that has gone into the development of these fishing methods.





The Depletion of Fishery Resources

Man's aggressive pursuit of ever more efficient fishing practices have led to the destruction of marine habitats. The resulting aquatic resource depletion has resulted in scarcity and has endangered marine life. It's time for us to wake up to the gravity of this problem and consider how to coexist with marine life and the ocean environment.

Aquaculture

Aquaculture presents one solution to the problem of scarce marine resources. Taiwan's aquaculture technology represents a forward-looking, blue ocean industry, with more than 150 species being farmed. Perhaps to the surprise of visitors, Taiwan is world famous for its advanced aquaculture, with a high degree of species diversity and a level of breeding technology that is second to none.

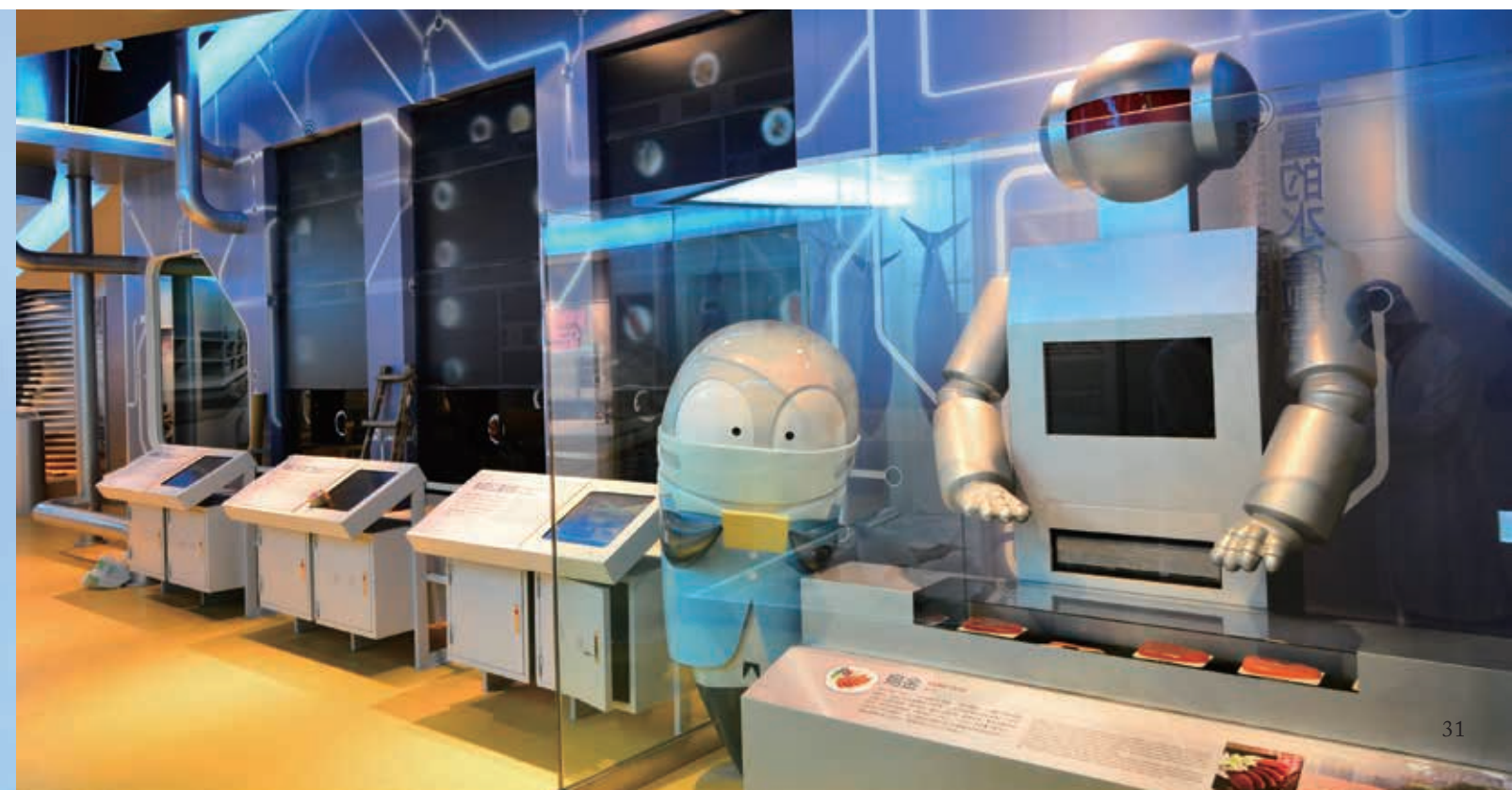


Fishery Products in Daily Life

This high-tech experimental factory serves as an introduction to the principles and application of aquatic food processing technology and how it enriches our lives. In addition, through advanced processing techniques, aquatic resources can be applied in health, medicine and materials science, which may in turn lead to new aquatic products.

Healthy and Sustainable Fishery Resources

Comprised of numerous interactive activities, an educational trip to this museum gives visitors a far greater understanding of man's impact on the oceans. A game (for up to eight people) centering on the theme of ocean resource preservation was in fact created especially for this purpose. During the game, choices made by players will affect the sustainability of oceanic resources, thereby illustrating that our influence on the environment, even as individuals, is often far greater than we imagine.





People and the Sea Gallery



Prologue—The Happiness Realm of Ocean

The moment one ventures into the People and the Sea Gallery through its conch-shaped entryway, every visitor's heart will be kindled with a secret yearning for the sea and a passion to learn more. With walls filled with memories, "Joy of the Ocean" introduces diplomas, postcards and other artifacts that serve as a forerunner of the main exhibits of the Museum.

Follow the Heartbeat of the Ocean

Taiwan has woven a long and rich tapestry of ocean-borne encounters and this exhibit's geographical and historical elements examines the different strands of its intricate weaving. From prehistoric times to the sixteenth century, ocean currents bore all kinds of people to Taiwan's shores, making the island an important geographical trade stronghold. From the Dutch and Spanish occupation of Taiwan, through late Qing and Japanese colonial times, on to the current era of the national government, each period featured different uses of marine organisms and inorganic resources, forming even more diverse sea-related materials. Through different kinds and specimens the exhibit demonstrates every aspect of material culture in the interaction of man and the sea.



The Face under the Sea Wind

The sea not only gives us a bounty of resources and foodstuffs, but also yields beauty and memory that impacts our lives in innumerable ways as people meet, understand and depend on one another as they are borne along its currents. Its daunting, turbulent waves not only bring us obstacles and tests, but also lead us towards more open horizons and opportunities. Vibrant sea-dwelling creatures reveal an aspect of the sea that is both touching and perseverant.



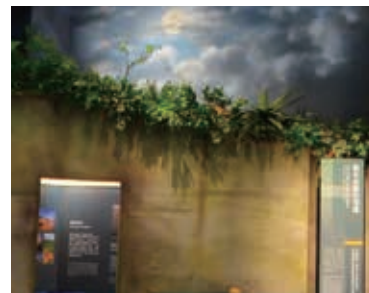


People Who Respect Water and Fear the Sea

With the ocean so central to Taiwan's daily life, a plethora of associated cultural beliefs have naturally sprung up among its peoples. This exhibit will introduce different ethnic groups in Taiwan and their development of marine-related beliefs, showing people's spiritual and cultural encounters with the sea. This is accomplished not only through the use of exquisite miniatures showing Matsu ceremonies and burning boat festival scenes, but also through live presentation of aboriginal sea festivals and other special ceremonies.

Seems Near but Far Away

Come and see a sad time in maritime history, when ordinary people were blocked from enjoying the seashore during the 38 years of martial law. Signs commanding "Idlers Keep Out", and "Drawing and Photography Prohibited" were a common sight at that time, and people were forced to repress their passion and love for the ocean. When the martial law era came to an end, defensive ocean side barriers from Kinmen bore testimony of that period of history. Entering the simulated bunkers featured in the exhibit, you can feel yourself surrounded by history.



Listen to the Sigh of the Ocean

People can now enjoy the ocean freely and the beach had become a place to relax and enjoy good food. But their enjoyment has brought sadness to the ocean itself, due to poor planning that has resulted in overfishing and environmental destruction. Taiwanese like to eat seafood, but incorrect consumption, and the allowance of marine resource depletion, threatens marine ecosystems to collapse. Humans and marine life are interdependent as they form parts of the same food chain. We should therefore establish concepts of a correct "seafood culinary culture", and learn how to wisely select and enjoy seafood so that a sustainable balance of the marine ecosystem could be maintained.



Friendly Interactions between Man and Sea

People must understand and partake in a sustainable symbiotic relationship with the sea in order to better enjoy its resources. Writers, artists, scientists and explorers have taken the initiative to demarcate the appropriate interaction between man and sea. This is a new "Blue Campaign" to reverse our attitudes so that our children and grandchildren may share the gift of the ocean.

Sail to the Future

At the end of the show, visitors are encouraged to commit themselves to the ocean's cause. They are led into a serene space to sit and reflect upon the ocean. As they exit, they may leave a word or two about their impressions of the ocean.





Deep Sea Theater

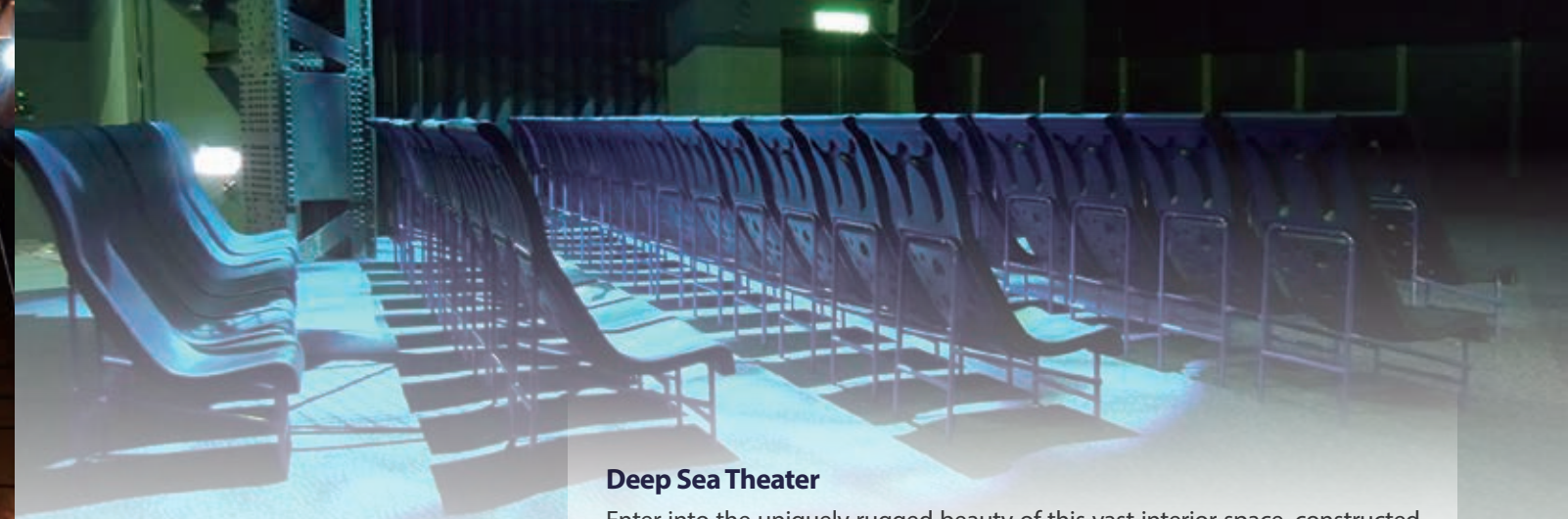


The Largest Miracle Ecosystem on Earth

Located in the former boiler room of the North Thermal Power Plant, the "Deep Sea Theater" utilizes its high, wide-ceilinged space to create a fantastic journey of exploration via special lighting and a surround sound experience. Come embark on an unforgettable deep sea adventure, crossing from past to future and from sky and land to the uttermost depths, all the while accompanied by the exceptional ambiance of the ocean!



Photography / Chen Tien-Hsi



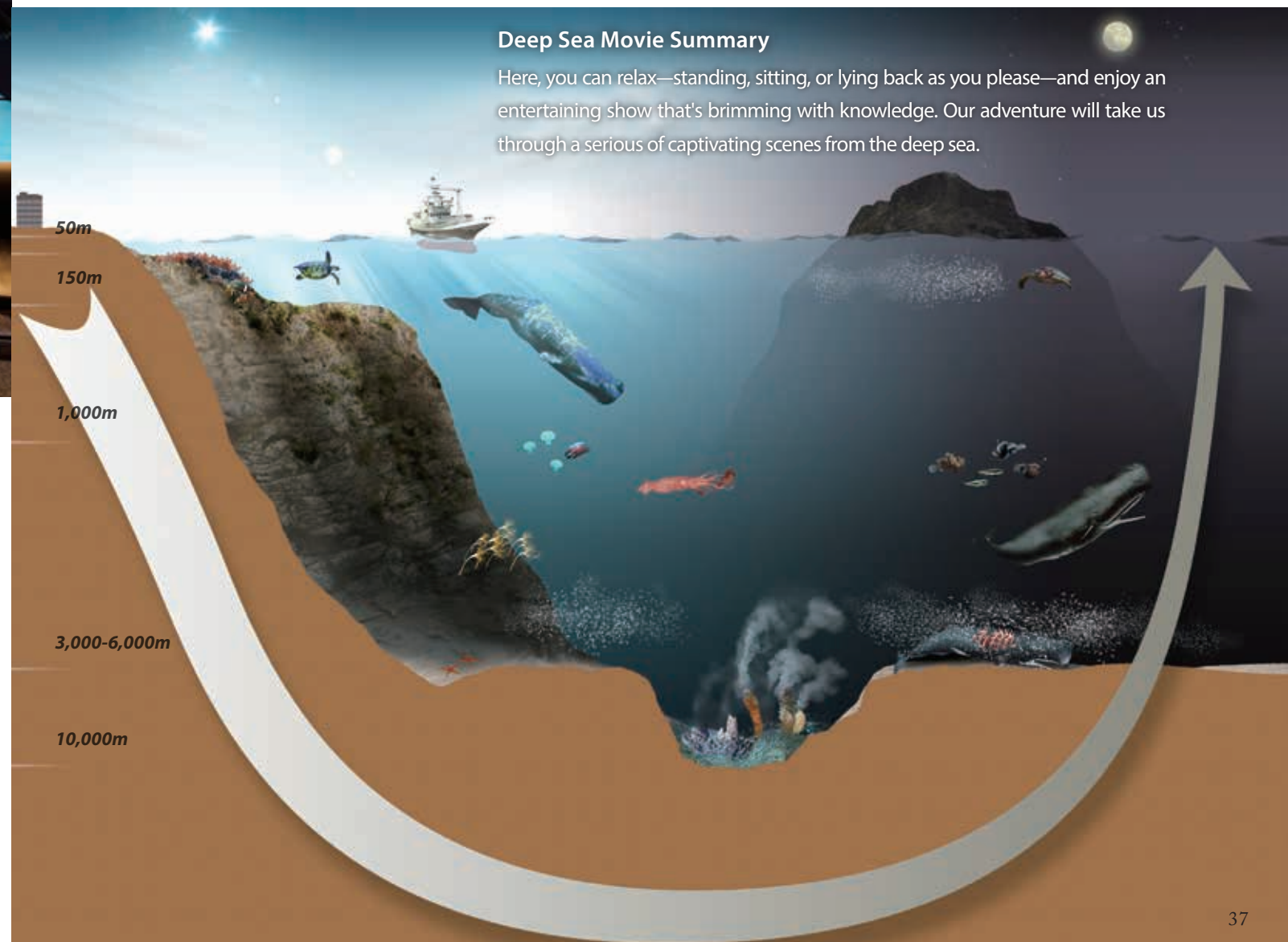
Deep Sea Theater

Enter into the uniquely rugged beauty of this vast interior space, constructed amid the massive unadorned steel structure of the power station's original boiler room. Wonder at the sights and sounds provided by the theater's advanced dynamic projection equipment, as it creates an immersive sense of space with exotic deep-sea creatures appeared and disappearing as you embark on a fantastical voyage!

Through the "Deep Sea Theater", the audience will experience a series of captivating scenes: "Sea Level", "Photic zone", "Deep middle layer", "Deep bottom layer", "Return to surface".

Deep Sea Movie Summary

Here, you can relax—standing, sitting, or lying back as you please—and enjoy an entertaining show that's brimming with knowledge. Our adventure will take us through a series of captivating scenes from the deep sea.





Wonders of the Deep Sea Gallery



A Realm of Inner Space You've Never Seen

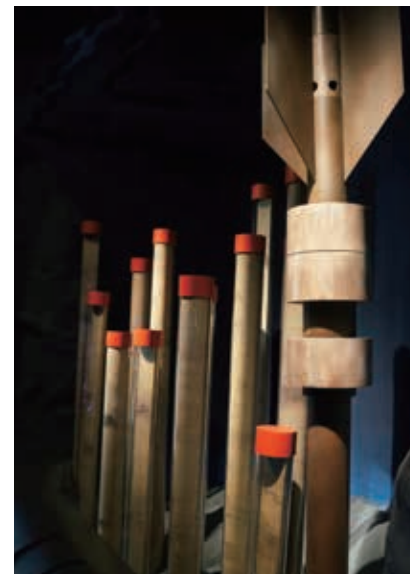
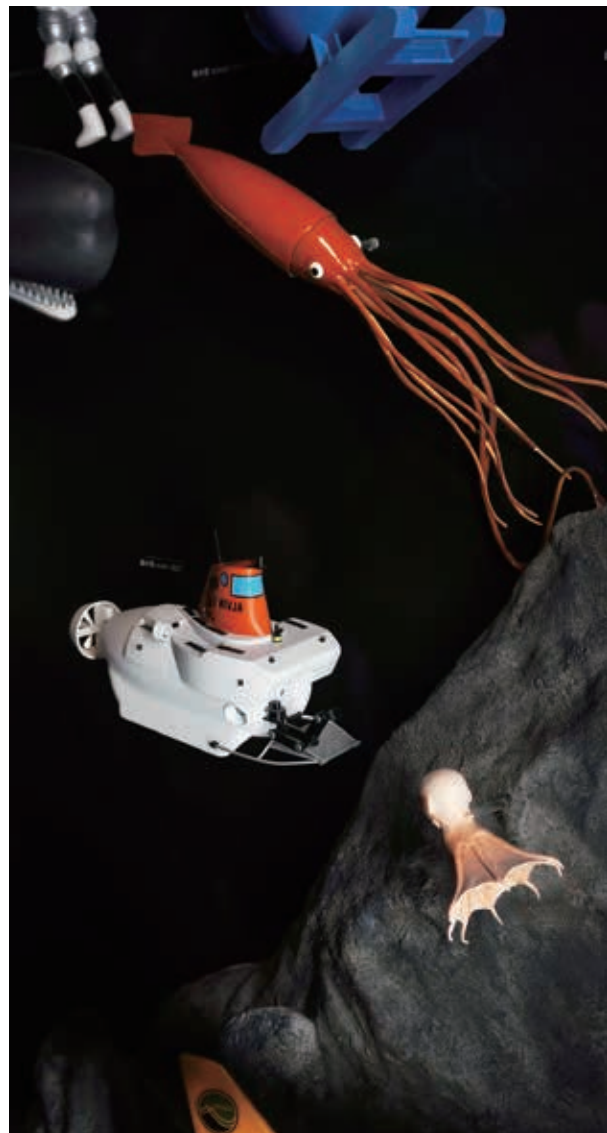
Explore the mysterious, unfathomable deep in a unique setting. Within the former boiler room of the historic "North Thermal Power Plant" we have the opportunity to search out the mysterious, uncharted depths of the oceans and uncover a glimpse of mysterious deep-sea organisms and ecosystems as well as precious resources essential for humankind.

Do You Know the Deep Sea?

A real eye opener! You begin your deep sea foray by first entering a dark tunnel—as the depth increases, you feel the cold and increased pressure around you as it becomes darker and darker. Then, swirling all around you find yourself enveloped by a wondrous "marine snow" floating down, through which you catch intermittent glimpses of strange denizens of the deep!

Deep Dark

Look above you—what's that? The "underwater fireworks" are lighting your way. But they are all sorts of varieties of oddly shaped, luminous deep-sea creatures never before seen by humans. How do they survive in the inky depths? Everyone is welcome to take their time and explore these deep sea mysteries through a variety of interactive games.



Amazing Ecosystems of the Deep Sea

As we descend our underwater vehicle to the ocean floor, we enter a world without light where photosynthesis is totally unneeded. Touching the bottom, we gain amazing glimpses of this deep sea ecosystem. In the "Origin of Life" unit, we encounter organisms living off a deep sea "Hydrothermal Vent" ecosystem, including microbes, mollusks, crabs, shrimps, tube worms and other fantastic creatures. Scientists thus believe that such deep sea hydrothermal vents may have been the origin of life on Earth.

Sources of food in the deep sea include organic particles that descend from the surface and the carcasses of large creatures that sink to the seafloor. The special "Whale Carcass Ecosystem" attracts a series of deep sea fishes, crabs, invertebrates, and invisible microbes. There they are before you—having a feast in the deep sea!

Deep Sea Survey

How could we gather information of this hidden world? Sonar equipment facilitates deep seabed topography mapping surveys, and sampling equipment can collect tens of centimeters of the seabed's surface sediments. Meanwhile, core-sampling devices can extract seabed core samples that length up to thousands of meters. Finally, deep-sea submersible vehicles allow us to dive down for direct observations, and also to collect samples of sediments.

Information from the Core

These cores can teach us much about events occurring on the earth from its past to modern climate eras, allowing us to track environmental changes.

Resource from the Deep Floor

Widely distributed deep sea methane hydrates—flammable ice—may serve as energy in the future.

Vibrations from the Deep Floor

By tracking earthquake vibrations from the deep seabed, we can better understand the "Plate Tectonics" and the connection between "Earthquakes" and "Tsunamis".





Kid's Exploration Zone



Exploring the Oceans with Wonder and Joy

In this fun-filled playground, kids can get to know a rich variety of marine life and learn about the ocean's exploration and use. The playground offers simulated coasts, sea and fishing landscapes as well as fun and creative interactive games. Static and dynamic game areas fill this nautically themed children's hall, demonstrating the close relationship between life on land and in the sea. Children can roam from the mountains to the sea through a lively entertainment show, capturing their fascination with marine education. Please do give your kids free reign to explore and experience it!

Sea Adventure

A variety of games allow children to see and learn about a variety of sea creatures, exposing them to the mystery of diverse marine life.

Touch them if you dare

Children feel the shapes of creatures in a box, and then guess what they are!

Sea race

Children can stand at the starting point of the game and run together with a wide variety of marine life. After you finish, don't forget to check your own speed. In this way you can understand and appreciate the speeds of different sea creatures swimming in different configurations.

Bigger and Smaller

In this area, small and large varieties of marine life are lined up together, where children can stand beside these sea creatures and see their different sizes first hand. Lined up at the back you will see a whale shark; look up at the ceiling and you'll find a huge blue whale and a gigantic deep sea squid.



Ocean hide and seek

Alongside rocky and sandy coasts, many creatures await discovery. In the warm jungle of a coral reef, there are various shapes of coral, shaped like trees, tables or big buns. Among them you will find many marine organisms including auriga butterfly fish, black side hawkfish, crown-of-thorns starfish, cushion stars and more—can you find where they're hiding? On the other side there are temperate kelp forests, where cute sea otters roll in a seaweed bed. You'll also find abalone kelp forests, garibaldi damselfish, spider crabs and sea urchins.

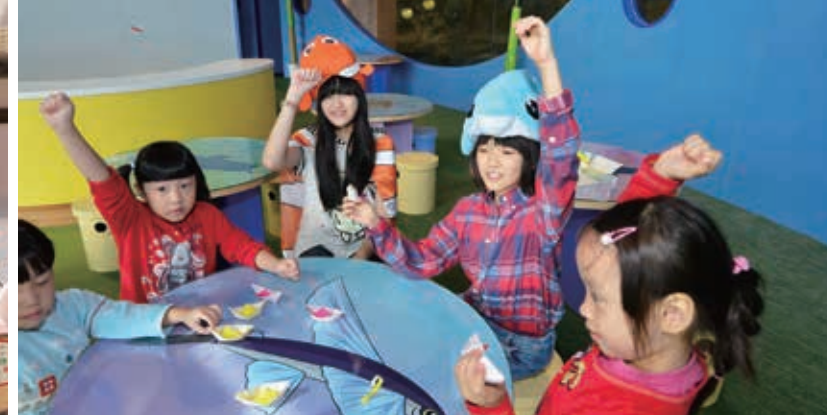
Beach Treasure Hunt

Find the crabs living in the sand and clean up the beach through five interactive computer games. After the garbage is cleared, baby turtle can find their way back to the sea. And keep a sharp lookout—valuable buried treasure may be waiting for you!

Following suit

Hermit crabs usually choose an appropriately sized shell to live in. Here, there are large shells that will allow children to live like hermit crabs, selecting one to hide in to protect their soft bodies. If you do not want to be a hermit crab, you can also go to be a red frog crab, a clownfish, or a colorful moray eel. You may also experience their different color vision: some only see in blue-green, some have a lattice-like view, and some see the world in color as we do.





Air Adventure

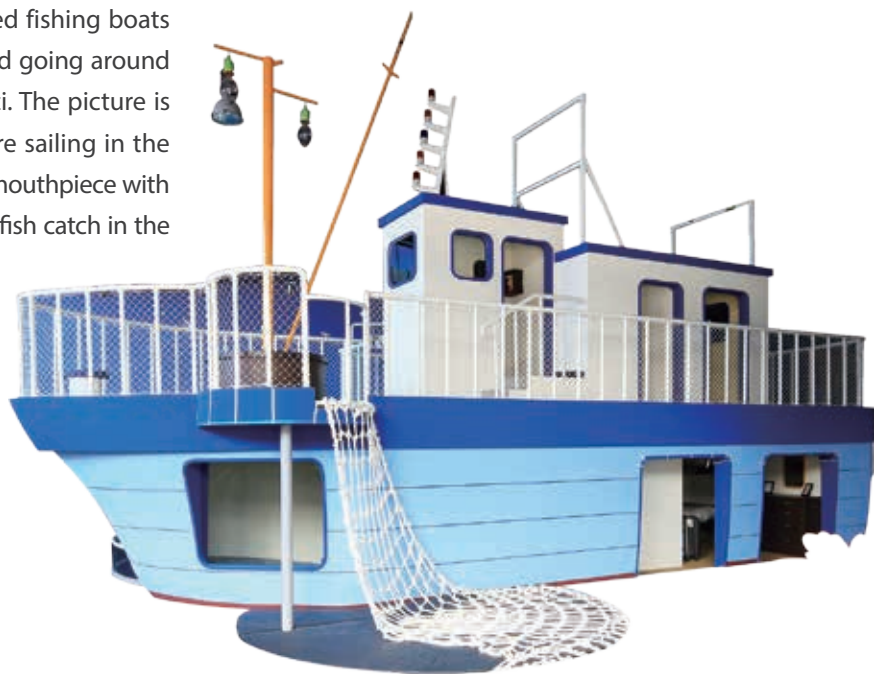
Going round in circles (The journey of water)

Here, children learn all about the water cycle as they follow water's path over sea, air and land. With a large slide as its centerpiece, the game kicks off with kids pretending to be ground water, then evaporating into steam and going up the stairs, then experiencing thunder, lightning and rain in the clouds. Children then find themselves transformed into droplets along the surface of the mountain, and "slip" down the land, or else become groundwater and make their way down the inside of the mountain.



Boat Adventure

Here, kid-sized boats beckon children to come and pretend to be a fisherman in battle with the sea, or a sailing captain, or a master angler—only watch out and be careful not to hook a piece of trash instead of a fish! There is a cockpit computer screen that displays simulated fishing boats departing from Badouzi Fish Harbor and going around Keelung Islet and coming back Badouzi. The picture is continually changing, as if the boats are sailing in the sea. The captain can speak through the mouthpiece with the cabin crew to hear their reports of a fish catch in the cockpit. In addition, you explore the crew's lives by looking around the ship's berth, kitchen and catch cabin.



Overland Expedition

Here, kids can get a feel for our connection with marine life as they become little traders in the "Fish Market" area: pretending to be owners and fish purchasers, they can experience the fun of trading. Buy some seafood to cook in the play house activities! If you get tired of that, try opening your own little seafood restaurant and role-play as a cook, server or customer to enjoy a seafood dinner here.

Parent-child reading

"The Ocean Story" movie area not only plays a marine video, but also offers a wonderful Sea Illustrated Story Time. This area features seats in the shape of many different marine organisms, which are available for parent-child reading of picture books and e-books.



Labo Island

There are different to do courses, where kids can make their own boats and where they can emboss or paint their own fabulous sea creatures. Offering all sorts of parts and materials, children assemble and try out their own boats, floating them in an outdoor pool. The island also features "marine instruments" that children can use together to partake in rhythm games.

Water Plaza

Featuring a constantly flowing boat pool, the outdoor Water Plaza allows children to get their hands wet in playing with their own hand-made boats. Kids can watch them drift, guess which of their friends made which boat, and compete to see which boat can drift the farthest and the fastest. In addition, children can also experience unique vortex experiments, observing the different sizes of vortices formed behind barriers of different shapes. The vortex can an even make unpowered boats go against the current.



Regional Exploration Gallery

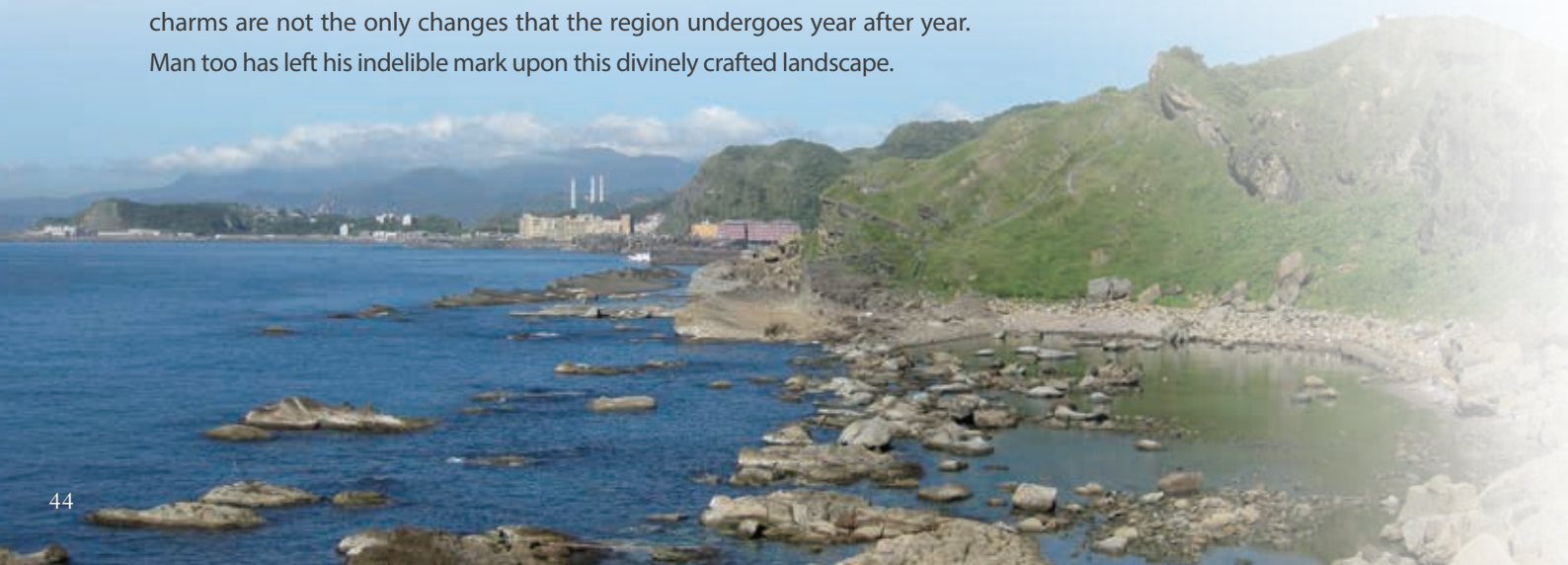


Photography / Chen Tien-Hsi

Centered mainly around the "Ocean: Mother to this Land" exhibit, and capturing the essence and interrelationships of the three core themes of landscape, culture and industry, this hall displays the region's unique and breathtaking attractions in a thought-provoking and engaging fashion. By enabling visitors to identify with simple fishing village life, and by also bringing to life local residents' memories, the gallery provides a perfect preamble to a more in-depth exploration of the area's history, culture and development.

Beauty & Changes

The port of Badouzi lies on Taiwan's Northeast Coast, a winding shoreline of connected capes and dreamy sunsets uniquely sculpted by wind and wave. Spring often shrouds the ocean in a thick veil of mist, whilst summer showers bring with them the promise of a lofty rainbow. Autumn gusts excite the sea into a frenzy of foam and froth, and winter's biting winds and icy rains add a severe harshness to the scenery. Sadly, these diverse seasonal splendors and charms are not the only changes that the region undergoes year after year. Man too has left his indelible mark upon this divinely crafted landscape.



A Vibrant Fishing Village

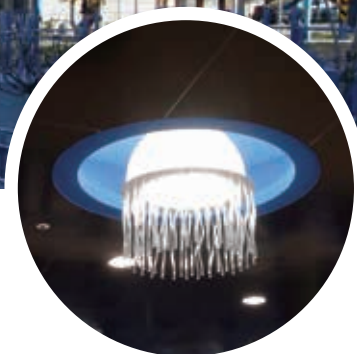
Thanks to extensive reconstruction and a theatrical touch, visitors are able to get up close and personal with the local coral stone fishing huts and a largely forgotten way of life. This animated display affords guests with a far greater understanding of the area's rich history and culture, and explorers are treated to rare insights into Badouzi's traditional "Light fisheries". Early inhabitants of the village depended solely on the sea for their livelihoods and fishing boats could once be seen entering and exiting the industrious little harbor at all hours of the day. The distant flares and sounds of vessels returning at night would streak across the horizon before being welcomed into the brightly lit bay. In the bustling fish market, young and old alike would take to inspecting, gutting, cleaning, selling and cooking the day's catch, and the village would be suffused in the distinctive odor of the sea's bounty. At midday, drying fish could be seen hanging in the sun, alongside spirited and tireless fishermen mending their nets and filling the vibrant air with resilient laughter.



Our Story

A small, but moving and nostalgic mural display showcasing the ebb and flow of village life, along with man's love affair with the Northeast Coast, rounds off the exhibit and gives visitors a final glimpse into the region's unique history.

IMAX Theater



The IMAX Theater, situated on Badou Street, is currently home to the country's largest IMAX 3D movie theatre. The design of the latter was based on the ocean and its currents. With walls decorated in stone pebbles to resemble fish scales, and with its unique wave-shaped roof, the exterior of the theater is just as eye-catching as the films screened inside.

Thanks to the latest 3D and digital sound technology, visitors are treated to incredibly life-like and fully immersive showings. This unforgettable viewing experience is further aided by the entire theatre's rich ocean blue interior. Jellyfish lamps overhead and walls reflecting wave patterns sink the viewer even deeper into this magnificent mini marine world.



Special IMAX Theater Features

Equipment for the 300-seater theater was supplied by Canada's IMAX Corporation. Its giant screen (currently Taiwan's largest) is approximately 22m in height and 29m in width, and provides unparalleled picture quality and digital effects. Accompanying this is the venue's state-of-the-art, near seismic digital sound system. It's easy to see how viewers can enjoy an incredibly vivid experience of the ocean's awesome beauty and power.

IMAX Theater screenings focus on marine science, environmental conservation, ecology and other educational content. Through this engaging and fun "edutainment", the theater aims to give visitors an unrivalled marine experience and to encourage them to learn more about the secret wonders of the ocean.





Education, Research & Collection

A comprehensive museum of this nature would not be complete if it failed to provide educational, research and storage facilities in addition to its world-class exhibitions and entertainment features. The abundant oceanic resources and the unique local environmental attributes not only enabled the NMMST to develop an exceptional learning atmosphere, but it has also made the museum a northern Taiwan trendsetter in terms of (especially deep-sea) research and archiving.





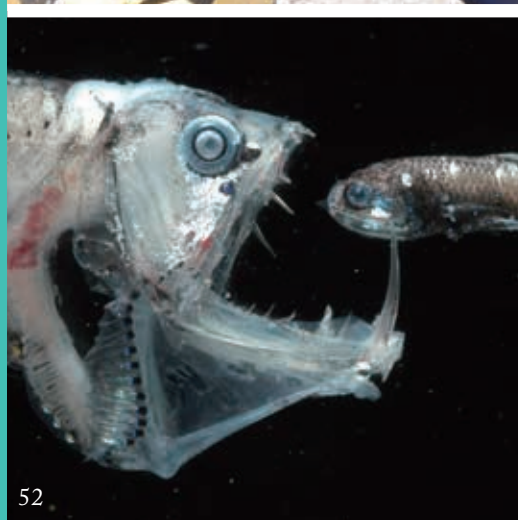
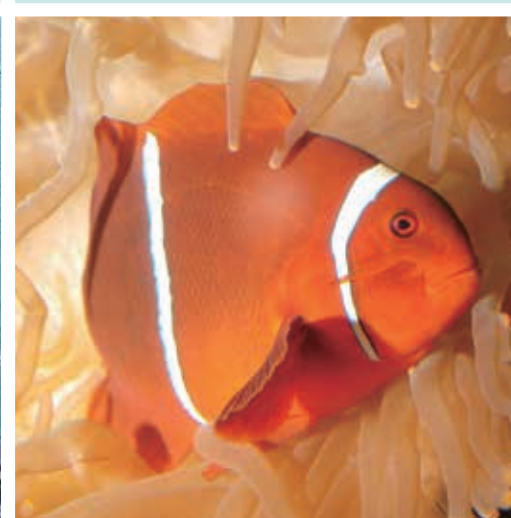
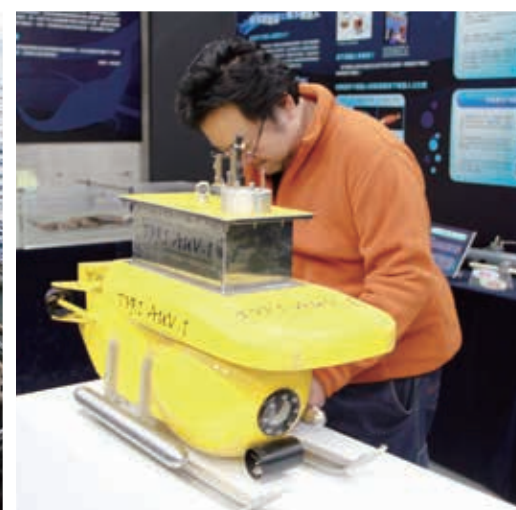
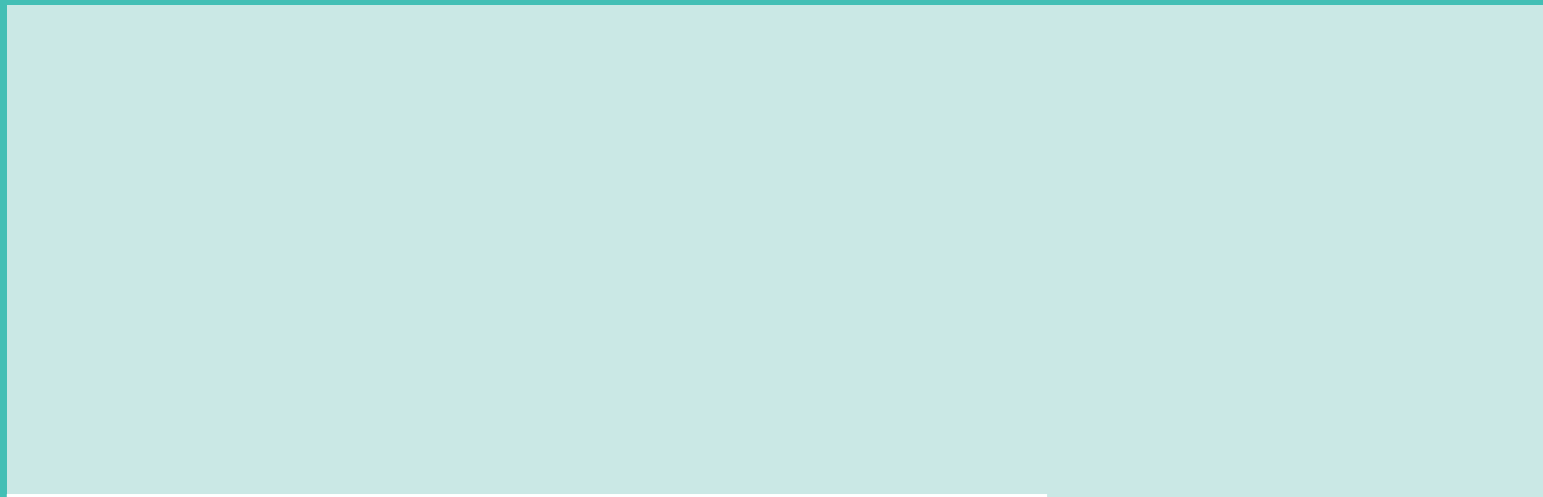
Education

The NMMST incorporates the surrounding bay, fishing villages, nature trails and a rich variety of exhibitions in order to create an amazingly diverse ecological journey for its visitors. Deductive and hand-on activities, such as ocean exploration camps, sailboat building, intertidal zone and microscopic marine organism observation, and breakwater construction challenges, ensure an even more enriching experience, especially for young learners.

In addition, the NMMST lies at the forefront of marine education on a national level. It continues to be one of the main driving forces behind determining the respective marine science and biology curricula for elementary, secondary and tertiary institutions around the country, even training the educators themselves. It also serves to promote the concept of marine conservation and sustainability, and nurtures a nationwide sense of the importance of environmental education.

Finally, by inviting and training volunteer staff to assist in conducting activities and exhibitions, and by having developed an informative and interactive online version of the museum, the NMMST is playing an ever more crucial role in expanding educational circles. The museum has, moreover, facilitated the publication of numerous works related to marine studies, and even boasts its very own quarterly "Chaojing" journal.





Research

The Chaojing Ocean Center is an integral part of the museum and is located beside Badouzi's Chaojing Park. The center's close proximity to the ocean allows it to accurately monitor and document changes in the marine environment on behalf of the museum. In addition, the center also heads research in fields such as ecological restoration, marine algae and deep-sea organism propagation, and advances in underwater technology. Currently, over 2,000 life forms belonging to 250 species are bred at the facility.

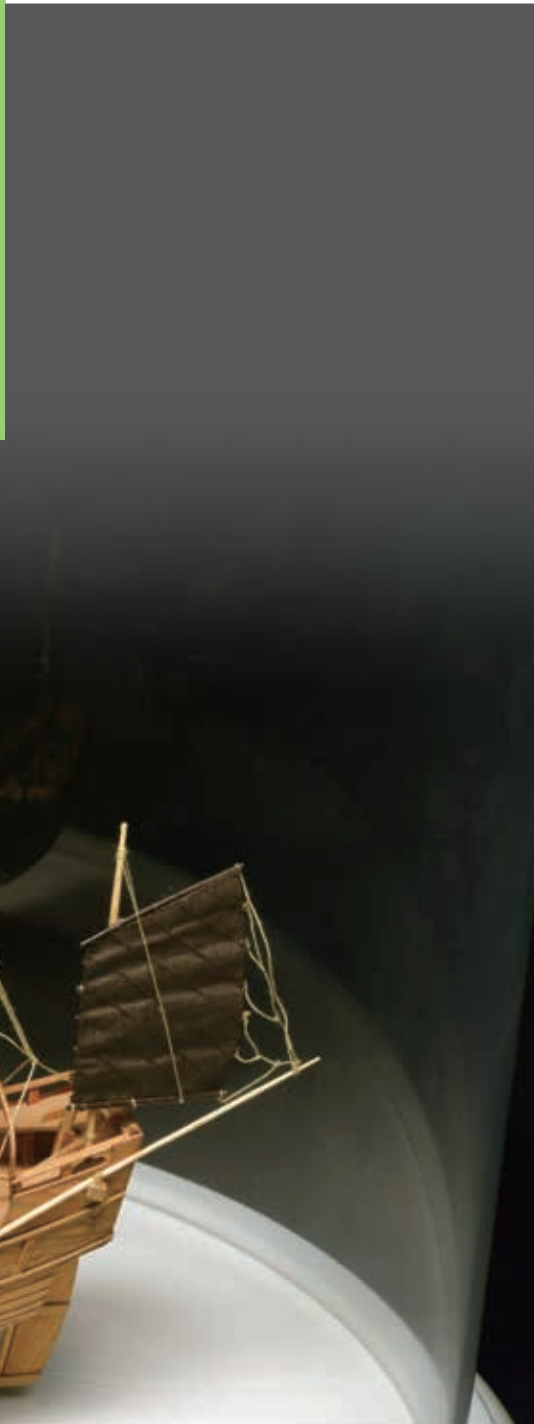
Apart from forming the perfect area in which to demonstrate various aspects of ecological restoration, and conducting numerous marine releasing and sea weed afforestation experiments, Wanghaixiang Bay is also ideal for developing marine and underwater technologies. Unmanned, underwater equipment, as well as marine-related artificial intelligence and bionics, can thus be developed in this very area in future. Given the close relationship between the ocean the welfare of the entire planet, the NMMST also hopes to expand its research to include even more aspects of marine ecology, science, biology and resources in the future.

Collection

Specializing in marine ecology, culture, science and technology, the NMMST is the only museum of its kind in the country and is thus expected to also play a major future role with regard to preserving and storing records, documents, specimens and historical relics related to these four main fields of study.

The NMMST has already set certain medium and long-term goals for collecting and categorizing marine-related data and materials in the years to come. It also plans to utilize its unique location, resources and cutting-edge facilities in order to ensure greater progress in terms of deep-sea organism and technology archiving in the future, thereby further distinguishing itself from the country's other marine museums. Various organizations and individuals that recognize NMMST as one of the island's top archiving centers, have in fact already donated valuable specimens and relics to the museum. Examples include Captain Liu Ning-sheng who presented the NMSST with numerous records and images documenting countless sea voyages, and the Yangming Marine Transport Corporation that donated a giant propeller to the museum.

The NMMST currently houses an impressive collection of 1,400 historic, ocean-related materials. It is also home to around 1,600 fish specimens, of which deep-sea fish is about 400 pieces. And crustacean specimens make up approximately 400 pieces, of which deep-sea crustacean specimens make up a total of around 100.



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