Publisher homepage: www.universepg.com, ISSN: 2663-6913 (Online) & 2663-6905 (Print)

https://doi.org/10.34104/ajpab.024.01330151

American Journal of Pure and Applied Biosciences

Journal homepage: www.universepg.com/journal/ajpab

# Preservation of Natural History and Biodiversity of Bangladesh: Effort of Bangladesh National Museum

**Faria Fairooz[1], Md. Anisul Islam[2], Nazmul Haither[2], Mamata Rani Das[2], and Mohammad Ahsan Uddin[3]***

[1]Department of International Relations, Bangladesh University of Professionals, Dhaka, Bangladesh; [2]Department of Natural History, Bangladesh National Museum, Dhaka, Bangladesh; and [3]Department of Statistics, University of Dhaka, Dhaka, Bangladesh.

*Correspondence: munna_stat@yahoo.com (Dr. Mohammad Ahsan Uddin, Professor, Department of Statistics, University of Dhaka, Dhaka, Bangladesh).

Received Date: 24 June 2024 Accepted Date: 23 August 2024 Published Date: 30 August 2024

## ABSTRACT

The study of nature has likely been one of humanity's earliest pursuits, considering that a natural inclination for humans, even in a primitive state, is to pay attention to the environment, appreciating the flora, fauna, and the earth beneath their feet. This study aims to assess the role and contributions of the Department of National History of Bangladesh National Museum in preserving the natural history, heritage and biodiversity of Bangladesh through analysis of gathered exhibits, specimens, and input from diverse sources, including general visitors, field experts, and researchers. Additionally, this research seeks to identify potential avenues of future growth and development within the department. The Natural History department has meticulously gathered a treasure trove of ancient animals, plants, and geological fossils, butterflies, live snakes, snails, and oysters. The scope of Bangladesh's biodiversity and natural history is far too broad to be fully represented within limited galleries. As such, it is imperative to consider establishing a separate Natural History Museum. Additional recommendations from the participants include creating a separate herb gallery consisting of diverse collection of medicinal herbs and other plants for greater conservation of plant species. The usage of diorama and semi-dioramas in representing the biodiversity of Bangladesh is not only very appealing to the visitors but also expressive of the natural habitats of the wildlife. As such, modernizing the other galleries and incorporating dioramas as medium of display might be taken into consideration. There have been calls from the participants to incorporate modern technology, in particular 3D visuals.

**Keywords:** Diorama, Taxidermy, Biodiversity, Wildlife, Heritage, Herbs, and Bioarchaeological Map.

## INTRODUCTION:

Being located in Ganges - Brahmaputra delta, the largest deltaic plains in the world, Bangladesh has a diverse geography as well as biodiversity (see Mukul *et al.,* 2017). Believed to be the home to over 7,000 endemic plant species, Bangladesh's geography has three distinctive ecological orientation: Sundarbans on its southwestern part, hill tracts in the southeast and lastly low-lying plains in the north. Close to 2,260 species of plant is found in the Chattogram Hill Tracts alone, whereas the Sundarbans is the home to the largest known population of Royal Bengal Tiger (Mukul *et al.,* 2018). According to Gopal and Chauhan, (2006) about 350 species of vascular plants, 250 fishes and 300 birds, and a vastly diverse species of phyto-plankton, fungi, bacteria, zooplankton, benthic invertebrates, mollusks, reptiles, amphibians and

mammals make their home in the Sundarbans. The unique saline waters of Sundarbans make the forest a breeding ground of rare saltwater fish species (Roy *et al.,* 2016).

The Indian subcontinent's highly contrasting climate has also contributed to its avian diversity, as Grimmett *et al.* (2011:18) identifies, as many as 13% of the world's bird species had been recorded in the region as of 2011, which also included 157 endemic species. Asian elephants, the Royal Bengal Tiger, the Gangetic Gharial, the Ganges river dolphin and the hoolock gibbon are some of the rare faunal species unique to Bangladesh (Reza, 2004). Asian elephants were wildly available all over Bangladesh in the past however; currently their population has been reduced to the Southeastern part of Bangladesh, namely Chittagong Hill Tracts and Cox's Bazar area (Islam *et al.,* 2011, Islam and Aziz, 2023). As of 2023, the estimated total count of microbial, plant, and animal species in Bangladesh falls within the range of 10,606 to 14,913 (Bhuiyan and Bashar, 2023; Fairooz *et al.,* 2024).

Furthermore, aside from the biodiversity, Bangladesh also has diverse forestry. According to Reza and Hasan, (2019) roughly 11% of the country's total landmass is covered with four distinctive types of forestry: mixed-evergreen forests, deciduous forests, mangrove forests, and freshwater swamp forests. As a coastal country, Bangladesh is also blessed with lush reservoir of marine biodiversity. For instance, the St. Martins Island is home to a myriad of coral reefs (Akhter, 2019). Bangladesh is also blessed with distinctive kinds of minerals. The Sylhet region of Bangladesh is particularly well-endowed with rocks, glass sand, peat coals and limestone (Islam, 2014). Presence of radioactive elements like uranium and thorium have also been traced from the Zircon and Monazite found in the sand of Cox's Bazar sea beach, although the there is little information as to what extent (Zaman *et al.,* 2016)

## Review of Literature

### Development of Natural History

The study of nature has likely been one of humanity's earliest pursuits, considering that a natural inclination for humans, even in a primitive state, is to pay attention to the environment, appreciating the flora, fauna, and the earth beneath their feet, as can be inferred from the works of ancient philosophers like Aristotle and Theophrastus (Smith, 1791). The name "natural history" itself originates from one of the earliest and most celebrated work of natural history, attributed to Pliny whose Historia naturalis continued to influence later generations of scholars delving into the study of nature (Gudger, 1924). Wilcove and Eisner, (2000) defines natural history as "the close observation of organisms; their origins, their evolution, their behavior, and their relationships with other species (Wilcove and Eisner, 2000)." The comprehensive guide on natural history from the Smithsonian Institute, (2010) defines Natural History as "a general introduction to life on Earth" and understanding "the geological foundations of life, the evolution of life forms, and how organisms are classified."

According to Conniff, (2011), the earliest group of people who could be credited for the pursuit of nature study is "naturalists", who could at best be described as "nature philosophers" rather than nature scientists. There was nothing scientific about nature study. It was Conrad Gessner who first introduced a system of arrangement based on classification of plants (Smith, 1791). Gessner's teachings within the realm of Renaissance zoology reinforce the importance of the natural sciences as a significant domain of knowledge in his era (Findlen, 2006). According to Findlen, (2006) during the early modern period, natural history stood as a crucial and contentious form of knowledge. It functioned as an expansive, encyclopedic science that engaged various segments of society, albeit without complete unity. After Carolus Linnaeus invented a system for identifying and classifying species, the great age of discovery about the natural world commenced as Linnaeus' followers undertook a hunt for new species to every corner of the world (Conniff, 2011). The uncountable number of specimens sent back by the professionally trained overzealous naturalists, expert collectors, and species seekers facilitated thorough investigations into species variations based on sexuality, seasons, and geography (Farber, 1982). Furthermore, the empirical foundation of natural history experienced a significant improvement, both in terms of quantity and quality (Farber, 1982).

However, it was not until the early 1990s did the historians of science find it necessary to focus on the

developments of natural history, in opposition the more developed scientific fields of physics and mathematics (Findlen, 2006). According to Llana, (2000) the prevailing rationalism throughout the 17th century played some part in the diminishing interest in natural history as a science despite the great age of "non-scientific" discovery in the preceding century. However, Joannes Jonston's six volume Historia naturalis published around this time marked a departure from a non-pragmatic exploration of natural history to the beginning of a more empirical natural history (see Llana, 2000). Following that trend, natural history began to develop as a science as collecting, observing, selling, drawing, as well as writing and publishing became the defining methodologies of nature scientists.

**Natural History Museums: West vs the Sub-continent**

Although interests in study of nature has been prevalent among men since the ancient times, there had been little to no attempt at preserving specimens in conducting the study of nature, as Farrington, (1915) points out. It was only after scientific interests in natural history grew did museums of natural history began to form in various parts of the world in an attempt to actually preserve nature. The Chicago Columbian Museum established in 1893, for example, was one such nineteenth century institution dedicated to exhibiting the natural world (Fowler, 2003). By mid-1997, over 750 museums of natural history had been established across the world (Fowler, 2003). One of the reasons behind the growth of natural history museums, according to Farrington, (1915), is plainly for appeal's sake. Another reason is the successful generation of widespread public interest in natural history which resulted from blending art with exhibition as methods of preservation. Rogers, (2013) contends that using dioramas to display three-dimensional specimens of animals and plants from every corner of the world had a deeper sentimental impression on the museum visitors that served to remind them that a lot of it was in danger of being lost.

Coupled with growing interests in natural history museums in urban communities owing to the drastic changes in nature visible due to rapid development, Farrington, (1915) concludes that although earlier natural sciences and nature contributed significantly to the development of natural history museums, it is now necessary to acknowledge that natural history museums have grown into major institutions responsible for contributing to the knowledge of nature themselves. Sforzi *et al.* (2018) corroborates the sentiment while acknowledging that natural history museums nowadays are not only engaged with conservation of collections, but also for engaging society in the knowledge production venture based on informed and scientific under-standing of the natural world. However, as Nair, (2007) points out the bitter truth of the matter, colonial museums scarcely received any attention from historians. Dedicated museums for natural history were non-existent; instead, some of the earliest museums in India were established as multi-purpose museums through collaborations with scientific societies such as the Asiatic Society of Bengal. Therefore, these museums were hybrid in nature; their contents ranging from natural history specimens to economic products as well ancient artifacts (see Nair, 2007). Bangladesh National Museum too, is one such heterogeneous museum. As Awwal, (2003) aptly points out, Bangladesh spent a considerable time of over two centuries under colonial and semi-colonial rule, which left its economic opulence and cultural vestiges in ruins. It had been an arduous task for a newly independent Bangladesh to develop its cultural arena while rebuilding a war-torn country, let alone dedicate itself to preservation of natural history. Irrespective of the circumstances, Bangladesh National Museum emerged and dedicated an entire department to the conservation of natural history.

**Bangladesh National Museum: Representing Bangladesh' Natural History**

The Natural History Department of Bangladesh National Museum covers each of the above aspects in its collection and exhibition of the country's natural heritage. For starter, the department's collection includes 444 types of molluscan shells, which sheds light upon the reach diversity of mollusks found in the country (Ahmed, 2016). In 2007, approximately 20 lands, 22 freshwater and 437 marine and brackish water mollusk species belonging to 210 genera, 105 families and 23 orders under 4 classes had been recorded in Bangladesh (Ahmed, 2007). The department's total collection of specimens is 2,562, and out of this vast collection, only 376 are presented in the gallery. In order to exhibit animal specimens, Bangladesh

National Museum employs taxidermy on dead or accidentally killed animals through the process of skinning, alcohol treatment and other necessary procedures to complete a taxidermied animal specimen (Kabir *et al.,* 2021). With the aim to represent the harmony between the people and the environment, the ecosystem, and natural life of Bangladesh, the Department of Natural History began its journey in 1975 with the first 10 galleries of Bangladesh National Museum. These 10 galleries have an enriched exhibition encompassing objects of nature like precious rocks and minerals, soil diversity, specimens of petrified wood, corals, species of rare mollusk, fossil organisms, marine specimens, tropical plants, flowers and fruits, medicinal herbs and spice plants, reptiles, mammals, a gigantic skeleton of a whale, and birds. There is also a diorama gallery designed to emulate the ecosystem of the Sundarbans, which provides a lucrative glimpse into the state of the mangrove forests and the plants and animal lives living there. Given the country's war-torn past and short history of a little more than 50 years, Bangladesh has had little scope to develop its own institutions dedicated to natural history. Regardless of the limitation, Bangladesh National Museum, albeit functioning as a hybrid institution, now boasts an extensive collection of specimen representing the rich biodiversity found in every corner of the country

The literature discussed thus far provides us with a general idea of the evolution of natural history from a simple curiosity-driven pursuit to a formal scientific discipline. Although the study of nature has ancient roots, the empirical methodologies distinctive to natural history emerged following the significant age of discovery in the 16$^{th}$ century, and by the 18$^{th}$ century, natural history museums had already began to emerge across the world.

### Objectives of the Study

This study aims to assess the role and contributions of the Department of National History of Bangladesh National Museum in preserving the natural history, heritage and the biodiversity of Bangladesh through analysis of gathered exhibits, specimens, and input from diverse sources, including general visitors, field experts, and researchers. Additionally, this research seeks to identify potential avenues of future growth and development within the department. The findings of this study will offer valuable insights to the general public, civil society, experts, and researchers, and contribute to the enhancement of the department's activities.

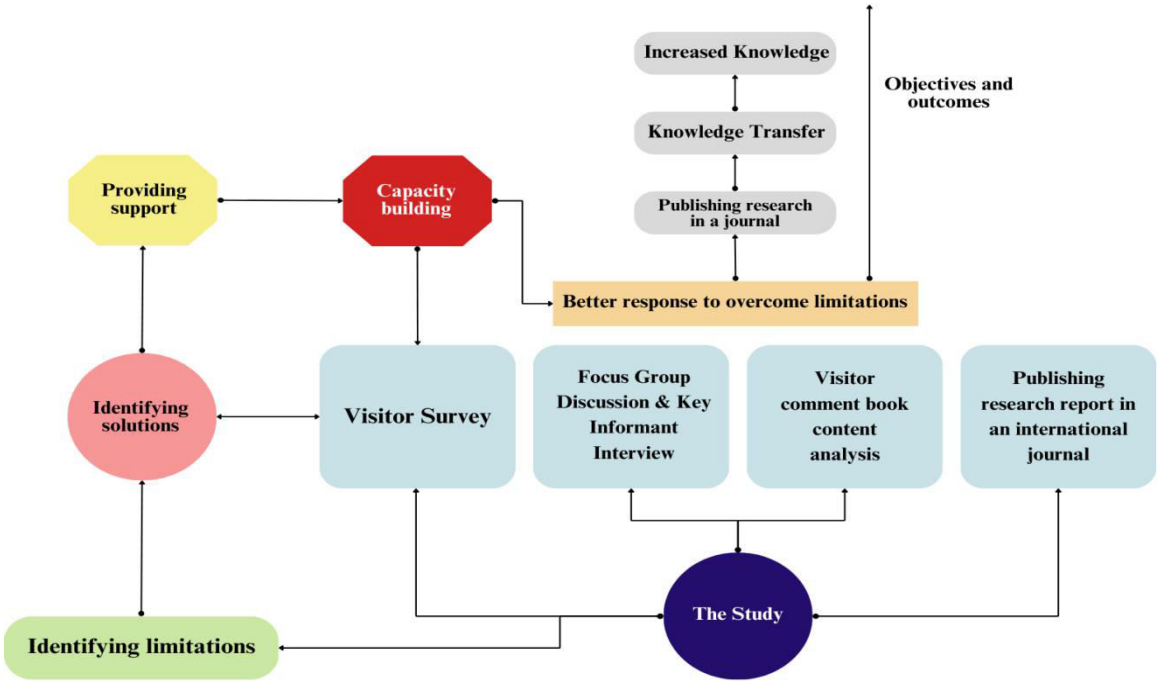


**Fig. 1:** Expected outcome of the study.

## MATERIALS AND METHODS:

This study adopts a comprehensive analytical approach, employing qualitative research methods to delve into the underlying meanings and concepts associated with the main issues. The effectiveness of the research relies on the meticulous analysis of the

gathered data. Therefore, this paper will employ a qualitative research method to develop its findings. The primary data sources include interviews with museum visitors, focus group discussions involving visitors and stakeholders, and key informant interviews with experts and specialists. Secondary data sources consist of museum visitors' comment books, previous stakeholders' opinions, and comment books from mobile exhibitions. An inductive thematic approach will be employed to analyze the data and derive research outcomes. Additionally, quantitative data will be analyzed using the statistics software SPSS. The data collection methodology has been outlined in the following map.

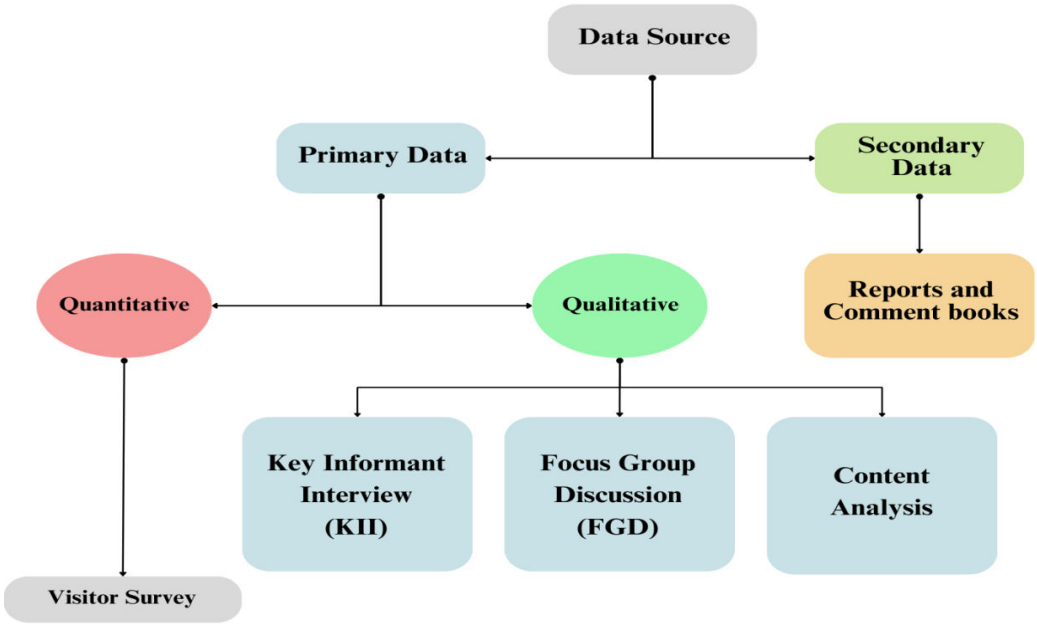


**Fig. 2:** Data Collection Methodologies.

## RESULTS AND DISCUSSION:

### Opinion on the 'Bangladesh in Map' Gallery

The survey responses reveal that 81% visitors liked the displays in Gallery 1: Bangladesh in Map embellished with information on Bangladesh's topography, soil variety, population expansion, archaeological locations, mineral resources and forestry very much. 17% visitors claimed to somewhat like the display. In contrast, only 1% respondent was uncertain and another 1% did not find the display to their liking. The statistics suggest that a vast majority of the visitors are highly satisfied with the diverse display of Bangladesh's topography, soil variety, population expansion, archaeological locations, mineral resources and forestry through maps. According to the survey data, 67% visitors came to have an understanding of the Earth's structure through the tectonic plate map displayed in the Gallery 1: Bangladesh in Map. However, 33% of the visitors failed to grasp the concept.

The responses from the Focus Group Discussion on this issue resulted in several crucial points to address which would allow this gallery to play a more prominent role in shaping the geo-natural history of Bangladesh. Since the museum's inception in 1983, this gallery's district-based map of Bangladesh displayed on the floor has not undergone any renovation. Consequently, a comprehensive plan for the renovation, development, and modernization of Gallery-1 must now be adopted. To execute this endeavor, a participant recommended that a team of experts from various institutions, as well as current and former museum employees, should be assembled. Another suggestion include the incorporation of a digital map of the different districts of Bangladesh, allowing children and teenagers to virtually visit their respective districts by pressing a switch within the gallery. Furthermore, current infrastructure developments in Bangladesh, such as the Padma Bridge, can be effectively represented through interactive maps. The government's delta plan for the country's development over the next 50 or 100 years can also be vividly showcased through advanced mapping techniques. Another set of suggestions detail that Bangladesh's participation in international climate conferences and its experiences with cyclones, storms, and climate change issues could be effectively conveyed through digitization. A dedicated state-of-the-art gallery focused on the

effects of climate change could be thoughtfully planned and incorporated. Measures should be taken to present the diverse aspects of Bangladesh's map more simply through digital means for visitors who are not well-versed in map-reading. Participants have pointed out that the maps adorning the walls containing information on Bangladesh's topography, soil, population distribution, major industries, archaeological sites, mineral resources and forest areas have faded in color, which requires attention.

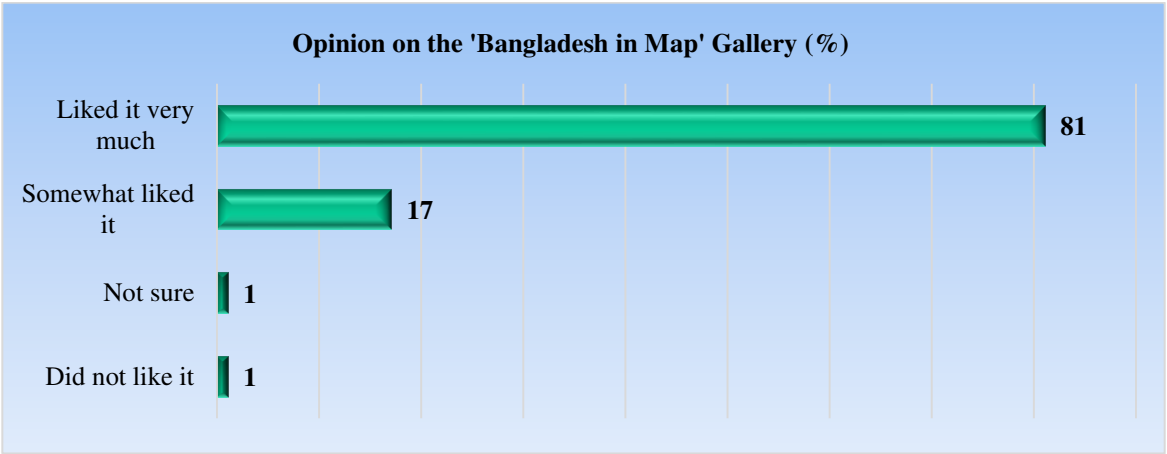


**Fig. 3:** Opinion on the 'Bangladesh in Map' Gallery (%).

These factors aside, some participants have recommended highlighting significant episodes of earthquake-related disasters, such as the Srimangal Earthquake in 1922 and the Saint Martin Earthquake in 1722, which has significantly altered the island's shape, in this gallery. Additionally, captivating photographs of earthquakes in different parts of the subcontinent, along with articles from earthquake awareness newspapers and magazines should be showcased. Participants remarked that bioarchaeological Map can be crucial tool for gaining an accurate understanding of environment from the past. There were also recommendations to incorporate 3D terrain mapping, earthquake mapping, disaster-prone area mapping, climate change mapping, and temperature and water stratification mapping.

**Opinion on the 'Rural Bangladesh' Gallery**

According to the survey data, 66% visitors found the depiction of the daily life of riverine, resourceful and rural Bangladesh located in Gallery 2: Rural Bangladesh Gallery to be very good. 28% respondents found the depiction somewhat good. However, 3% respondents were uncertain whereas another 3% did not find the depiction to be very good. The statistics indicate that the depiction is actually fairly popular among the visitors given the high percentage of positive rating and low percentage of negative rating. The participants have shared that Gallery-2, titled "Rural Bangladesh" is in need of modernization and reform, incorporating new digital presentations. A proposal has been forwarded aiming to showcase four distinct environments through dioramas: Cox's Bazar Beach, Chittagong Hill Tracts, Plains, and Tea Gardens of Sylhet. In the Cox's Bazar Beach diorama, the captivating beauty of the beach, encompassing its environment and lush vegetation, will be visually depicted. Meanwhile, the Chittagong Hill Tracts diorama will portray the mountainous setting and introduce some of the region's wildlife. A diorama focusing on the plains will showcase the landscape and cultivation practices characteristic of the plains. Similarly, the Tea Garden of Sylhet diorama will provide insight into the picturesque tea gardens, capturing the tea-picking process with vibrant tea leaves. In addition to the dioramas, semi-dioramas, oil paintings, and landscaping will be included to depict rural bazaars, rivers, boats, farming, and other relevant environments. The use of man figures and accessories will further accentuate the authentic representation of village life through artistry. A tender has been initiated for that purpose.

Participants have suggested highlighting various aspects of the 4th industrial revolution. Initially, the plan was to present a comprehensive history of human civilization, including the demonstration of the evolution of animals through Darwin's theory. This vision remains feasible and can be revisited to enrich the gallery's content. Other suggestions include displaying various types of animals, plants, and geological fossils with appropriate modi-

fications. 3D animated river maps can also be incorporated to provide an innovative and interactive experience for visitors

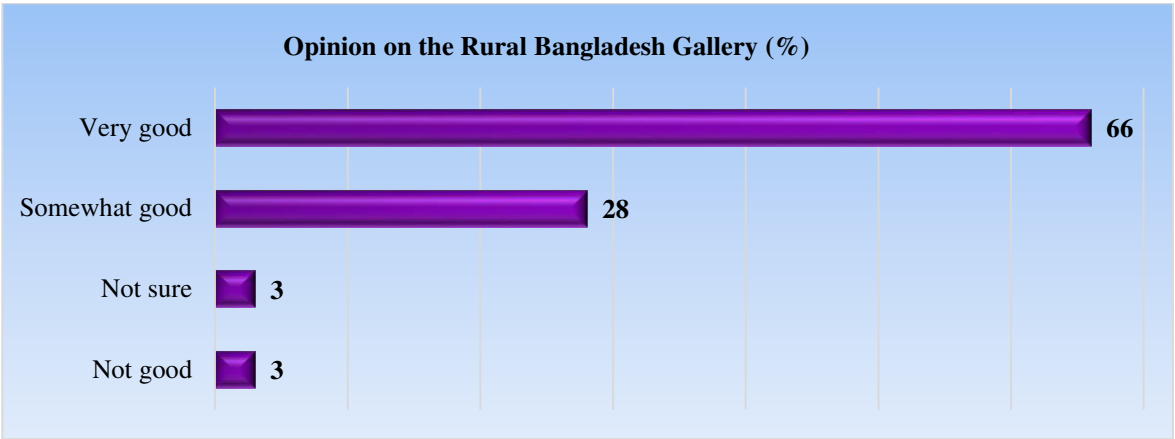


**Fig. 4:** Opinion on the Rural Bangladesh Gallery (%).

**Opinion on 'The Sundarbans' Gallery**

The survey responses reveal that nearly 66% visitors found the "Royal Bengal Tiger" displayed in the diorama exhibited in Gallery 3: The Sundarbans most appealing. On the other hand, around 14% visitors liked the "Various species of birds" and nearly 12% liked the "Deer with fawn". Only around 8% visitors liked the "Red monkey". The statistics indicate that the "Royal Bengal Tiger" is the most popular display of the diorama in Gallery 3 compared to the other taxidermied figures. Based on the percentage, the "Red Monkey" is the least popular among the taxidermied specimens displayed in the diorama. Sundarbans boasts an astonishingly rich biodiversity, with over 400 species of wildlife, including amphibians, reptiles, mammals, and an impressive 115 species of plants. The region is also home to 4,000 species of fish, further emphasizing its ecological significance as a sanctuary for diverse wildlife. However, despite its natural wealth, Sundarbans has witnessed a troubling decline in biodiversity over the past few decades. The preservation of wildlife in this unique ecosystem is of paramount importance to safeguard the delicate balance of its environment. Tigers, in particular, play a crucial role in the Sundarbans' ecological equilibrium. As 80 percent of a tiger's diet relies on deer, any disruption in the deer population can significantly impact the tiger's food supply. If deer are excessively hunted and their numbers dwindle, tigers may eventually go extinct from the region. Ironically, a surge in deer population due to the absence of tigers can lead to adverse consequences. The burgeoning deer population could lead to overgrazing of newly grown trees in the forest, hampering the growth of new plants and disrupting the ecosystem's natural dynamics. The delicate balance of the Sundarbans' forests, which relies on the interaction between wildlife and plant life, would be at risk. Preserving the wildlife of Sundarbans is thus vital to protect this unique and intricate ecosystem. Tigers are facing critical endangerment globally due to deforestation and poaching, which is a matter of grave concern. Tigers are recognized as an indicator species, reflecting the overall biodiversity health of a forest. Their abundance in a forest is often linked to its good condition. Sadly, the depletion of tigers signifies adverse conditions in their habitats and raises alarms about the Sundarbans' ecological well-being. Acting as the flagship species, tigers contribute to the ecological balance, regulating the populations of their prey, such as deer. Hence, the conservation of tigers is intrinsically linked to the preservation of the Sundarbans' ecological integrity.

Overexploitation and climate change are increasingly disrupting the balance of the world's largest mangrove forest. The Sundarbans of Bangladesh, renowned for its rich biodiversity, serves as a reservoir of invaluable natural treasures. This unique ecosystem supports 120 species of commercially important fish, 270 species of birds, 42 species of mammals, 35 species of reptiles, and 8 species of amphibians, showcasing its remarkable diversity. To raise awareness about the crucial role of the Sundarbans and its inhabitants, the museum has effectively utilized dioramas depicting Chitra deer and Royal Bengal tigers. One participant recommended efforts to dissuade harmful practices like

hunting and killing tigers can be undertaken through informative leaflet distribution.

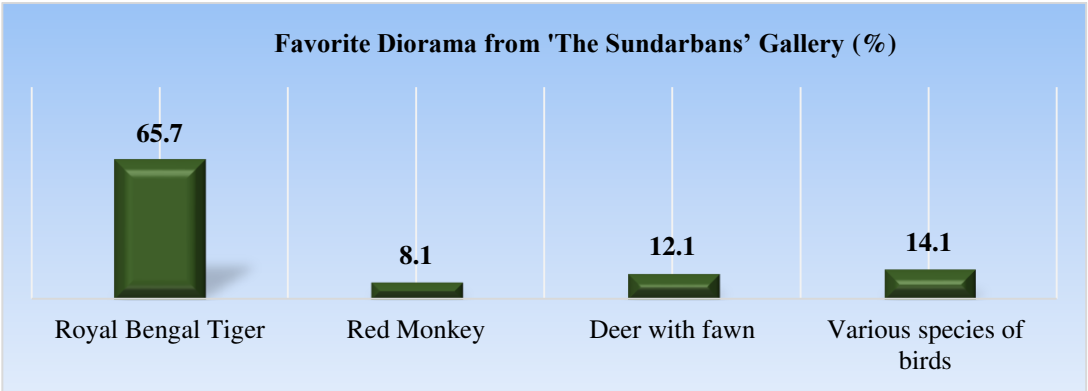


**Fig. 5:** Favorite Diorama from 'The Sundarbans' Gallery (%).

The museum's database can also include valuable information about extinct animals, such as the Rhinoceros. In line with conservation efforts, the critically endangered bird "Hargila", also known as greater adjutant, can be preserved through taxidermy and showcased in the "Sundarbans" gallery. Furthermore, promoting awareness of Sundarbans' significance among the public can be facilitated through innovative methods, such as apps disseminating information about the Wildlife Conservation Act. A well-crafted, informative documentary can also serve as a tool to raise awareness.

While acknowledging the adequacy of representation, the participants recommended that in the Sundarbans Gallery, documentaries providing crucial information about the Sundarbans should be digitally projected on wall screens using projectors. The key labels of the gallery should display lists of endangered, threatened, and critically endangered species of fish, amphibians, reptiles, birds, and mammals. Specific data forms must be prepared for wildlife conservation, recording pertinent information accordingly. Additionally, these animals should have their global locations documented. Public awareness about the significance of various critically endangered species in the Sundarbans should be emphasized. Information regarding extinct animal species should be preserved in the database. Commemorating different national days annually, such as "World Tiger Day" on 29th July, can help raise public awareness about animal conservation. Moreover, mentioning other species like the lesser adjutant, masked finfoot, and brackish water crocodile might be beneficial in this context. According to the data, around 62% visitors were aware that the Sundarbans is a natural heritage listed as a "World Heritage". On the contrary, nearly 38% visitors were unaware of the fact.

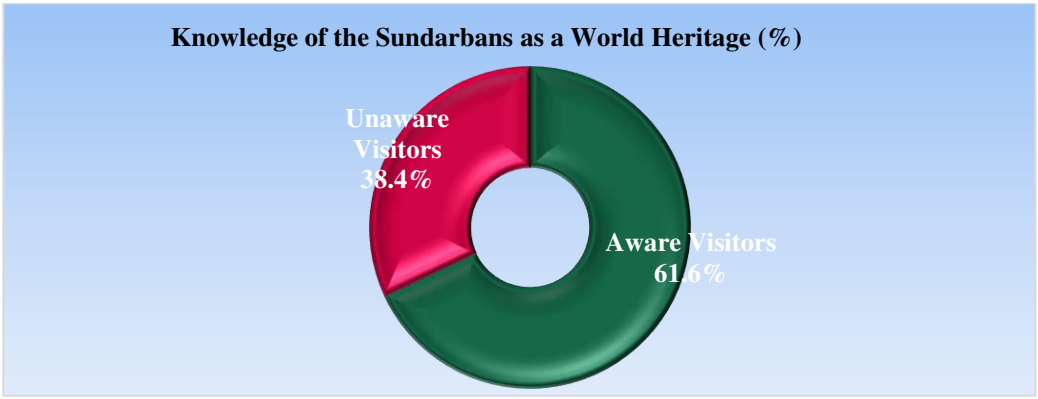


**Fig. 6:** Knowledge of the Respondents on Sundarbans as a World Heritage (%).

The participants asserted that Sundarbans' environment must be safeguarded from various poachers. To counter the detrimental impacts of global warming and climate change, sustainable action plans should be put into effect, focusing on conserving the biodiversity of natural forests and preserving the habitats of extinct animal species. Addressing the conflicts between tigers and humans requires the creation of widespread awareness,

providing relevant training, and implementing timely scientific measures.

**Opinion on 'The Rocks & Minerals' Gallery**

Based on the responses to the survey questionnaire, among the artifacts displayed in Gallery 4: Rocks & Minerals, 44% visitors could identify the "Petrified wood", 30% visitors could identify the "China clay", and 12% visitors could identify the "Peat coal". Only 7% visitors could identify the "Modhupur clay" and "limestone" respectively.

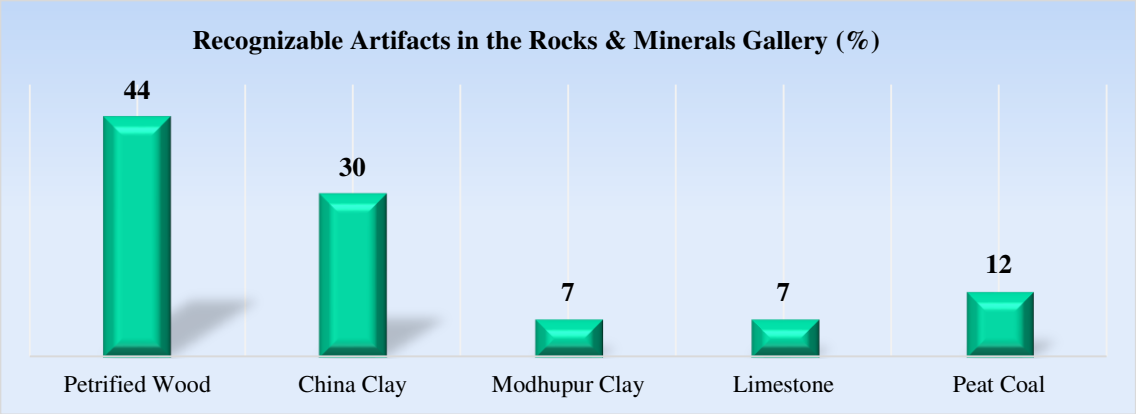


**Fig. 7:** Recognizable Artifacts in the Rocks & Minerals Gallery (%).

Participants suggested that among the collection of mineral ores, the number of quartz could be further expanded. Another participant pointed out that during the months of December, January, and February, mineral sand is abundantly found in the Padma and Meghna river beds. However, during the monsoon season, different types of mineral sands are washed away with rain water, resulting in wastage of valuable mineral resources. These mineral sands can be collected. One of the participants also pointed out that Cox's Bazar holds the potential for extracting various mineral sands. Some suggestions also included focusing on coal extraction. The gallery can showcase models depicting the processes of coal extraction from mines in different coal fields. To provide comprehensive information, an Index Map illustrating the mineral resources of various districts in Bangladesh can be developed and presented in the gallery. Participants remarked that the importance of different types of mineral resources must be mentioned to familiarize the public with the abundance of mineral resources in Bangladesh.

**Opinion on 'The Plants of Bangladesh' Gallery**

The survey responses reveal that among the exhibits of Gallery 5: Plants of Bangladesh, 34% visitors found the "Rubber and dye" the most appealing, 29% visitors liked the "Oil and spices" the most, and 19% liked the "Fiber and paper-producing plants". Only 10% visitors liked the "Lentil" and 8% liked the "Sugar and liquor". The statistics indicate that the "Rubber and dye" is the most popular among the objects displayed in Gallery 5: Plants of Bangladesh closely followed by "Oil and spices". "Fiber and paper-producing plants" is also significantly popular. The "sugar and dye" appears to be least popular among the objects displayed in Gallery 5: Plants of Bangladesh.

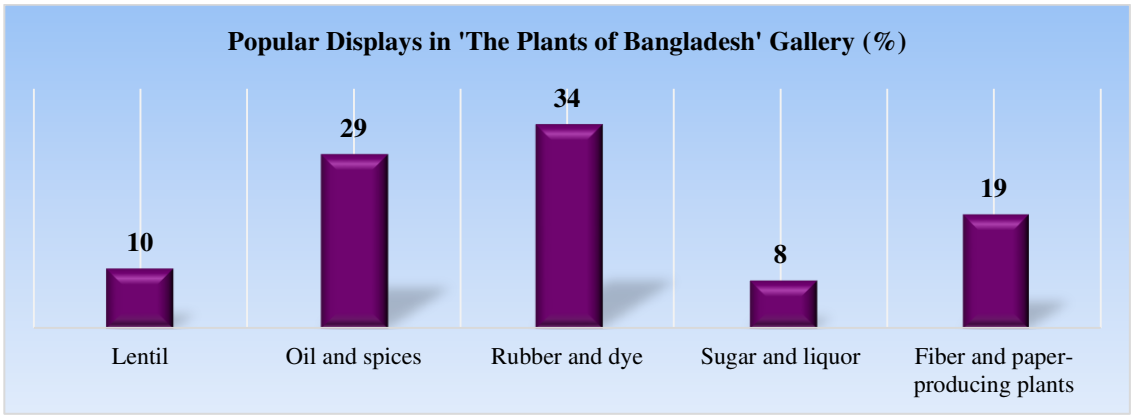


**Fig. 8:** Popular Displays in 'The Plants of Bangladesh' Gallery (%).

Based on the responses to the survey questionnaire, among crop specimens displayed in Gallery 5: Plants of Bangladesh, 49% visitors liked the "Golden fiber" the most. Around 18% visitors found the "Carpus cotton" and 14.3% visitors found the "Rubber tree" most appealing. Only around 9% visitors took a liking to "tea" and "Coffee" respectively. The statistics indicate that the "Golden fiber" is the most popular crop exhibits displayed in Gallery 5: Plants of Bangladesh. The "Carpus Cotton" and "Rubber tree" are also quite popular. "Tea" and "coffee" appears to be least popular among the objects put up for display.

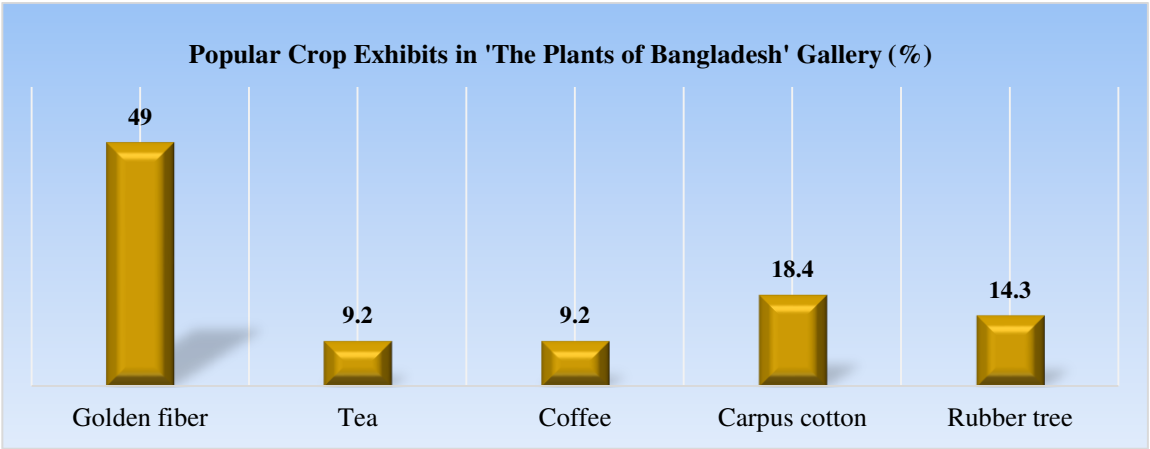


**Fig. 9:** Popular Crop Exhibits in 'The Plants of Bangladesh' Gallery (%).

The survey responses reveal that according to 88% of the visitors, the display consisting of colorful photographs and herbarium sheets in Gallery 5: Plants of Bangladesh could be improved further by making it more informative and appealing. On the other hand, 12% visitors think there is no necessity for further improvement. The majority of participants expressed the idea of establishing a dedicated gallery that showcases the significance of different types of herbs, such as Tulsi leaves, Basak leaves, Thankuni leaves, etc., through vibrant and informative photographs. This gallery would serve to emphasize the importance of herbal plants to the public, and special exhibitions can be organized for this purpose. The gallery can also feature exhibits of various endangered herbs. Bangladesh is traditionally rich in herbs. More herbs and extinct plants can be collected by traveling to different hilly regions across the country.

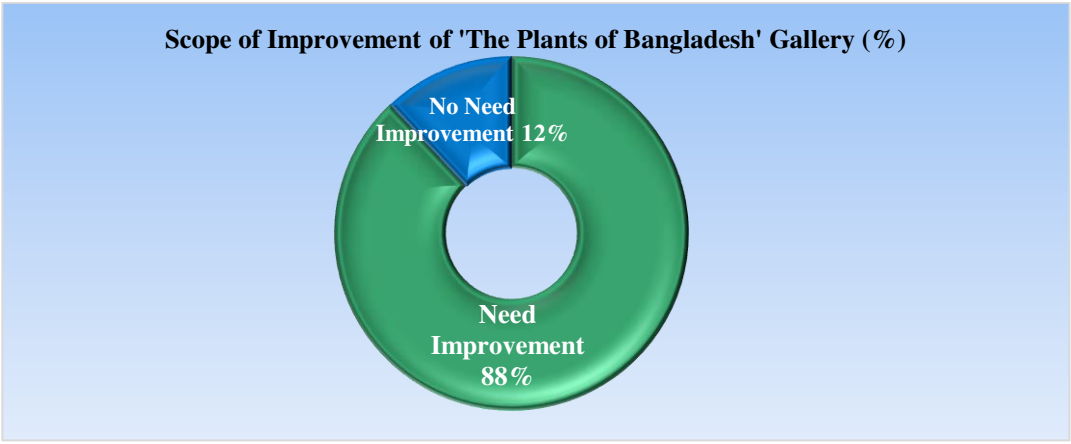


**Fig. 10:** Opinion of the Respondents about Scope of Improvement of 'The Plants of Bangladesh' Gallery (%).

**Opinion on 'The Flowers, Fruits and Creepers' Gallery**

The survey responses reveal that among the exhibits displayed in Gallery 6: Flowers, Fruits & Creepers, 44% of the visitors took a liking to the "National flower White Water Lily". 37% of the visitors liked the "National fruit Jackfruit" the most. On the other hand, 11% visitors liked "Different types of flowers". Only 8% visitors liked the "Mango and other seasonal fruits". The statistics indicate that

among the exhibits displayed in Gallery 6: Flowers, Fruits & Creepers, the "National flower White Water Lily" and the "National fruit Jackfruit" are most popular among visitors. The other objects are comparatively less popular, "Mango and other seasonal fruits" being the least popular based on its low percentage.

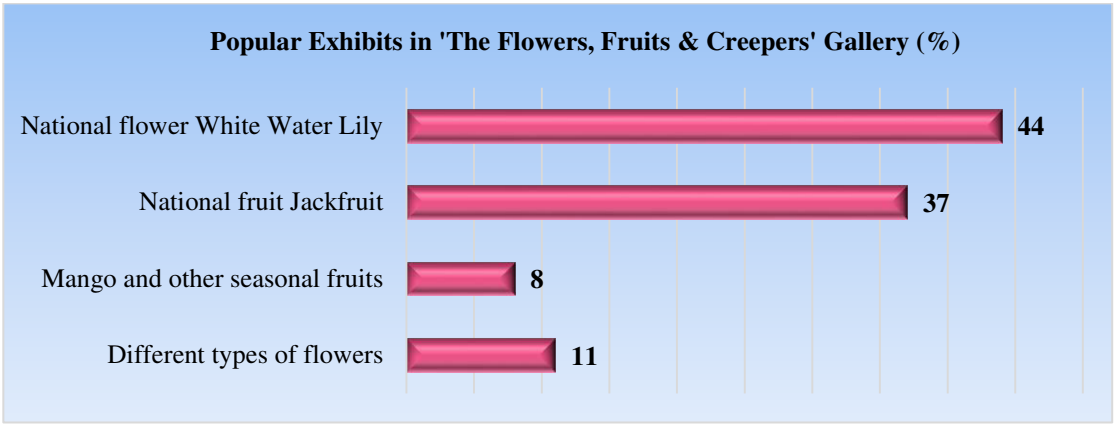


**Fig. 11:** Popular Exhibits in 'The Flowers, Fruits & Creepers' Gallery (%).

Several participants have raised concerns about the state of the gallery, emphasizing the need for renovation and modernization. A suggestion has been made to introduce bioarchaeological elements and showcase diverse flower-fruits for the audience. Additionally, the gallery can feature displays of various endangered flowers. In this regard, participants have showcasing various bioarchaeological food crops using modern models or replicas. Additionally, the gallery can feature a diverse array of flower models representing the rich flora of Bangladesh. The inclusion of color photographs and models can be utilized to present different extinct species of flowers from the region.

Based on the responses to the survey questionnaire, among the objects displayed in Gallery 7: Animals, 52% of the visitors liked the taxidermied figures of "Different types of snakes" the most. 24% visitors found the figures of "Snails-Oysters" most likeable, whereas 18% visitors preferred the "Butterfly". On the other hand, only 5% visitors liked the "Coral" and 1% liked the "Frogs". The statistics indicate that among the taxidermied animals displayed in Gallery 7: Animals, the "Different types of snakes" and the "Snails-Oysters" are most popular among visitors. The "Butterfly" is also quite popular. However, the figures of "Coral" and "Frogs" appear to be the least popular.

**Opinion on 'The Animals' Gallery**

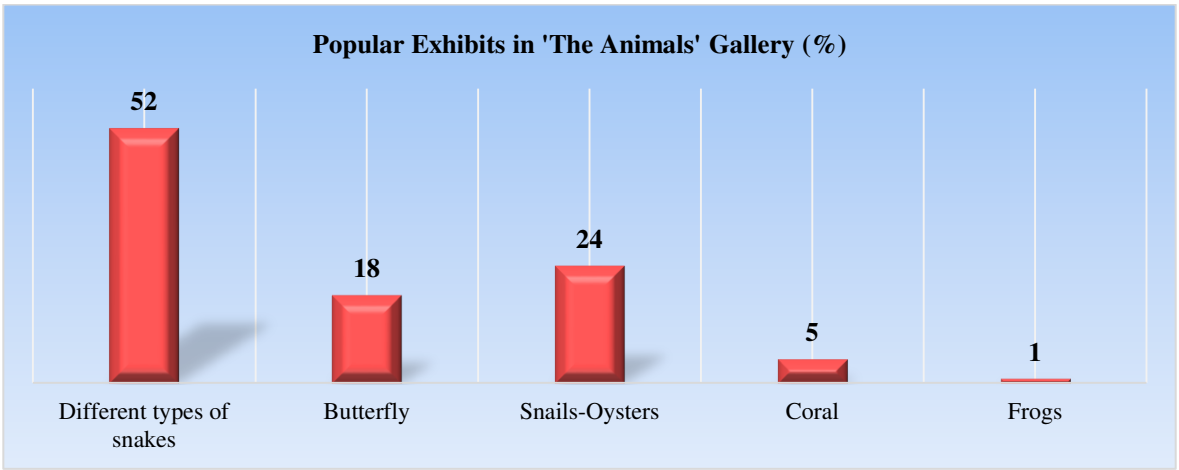


**Fig. 12:** Popular Exhibits in 'The Animals' Gallery (%).

The feedbacks from the participants suggest that the gallery can benefit from highlighting the ecological significance of certain animal species rather than solely providing a brief description of endangered animals. For instance, showcasing how snakes and monitor lizards play a crucial role in controlling rat

populations can enhance the understanding of their ecological importance. One of the participants recommended including endangered bird species like the "Hargila". Enhancing the diorama featuring the swordfish with a diverse range of small and large fish can create a more captivating display. The survey responses reveal that 95% of the visitors share the opinion that it is necessary to collect more marine species of snails and oysters. Only 5% visitors think otherwise.

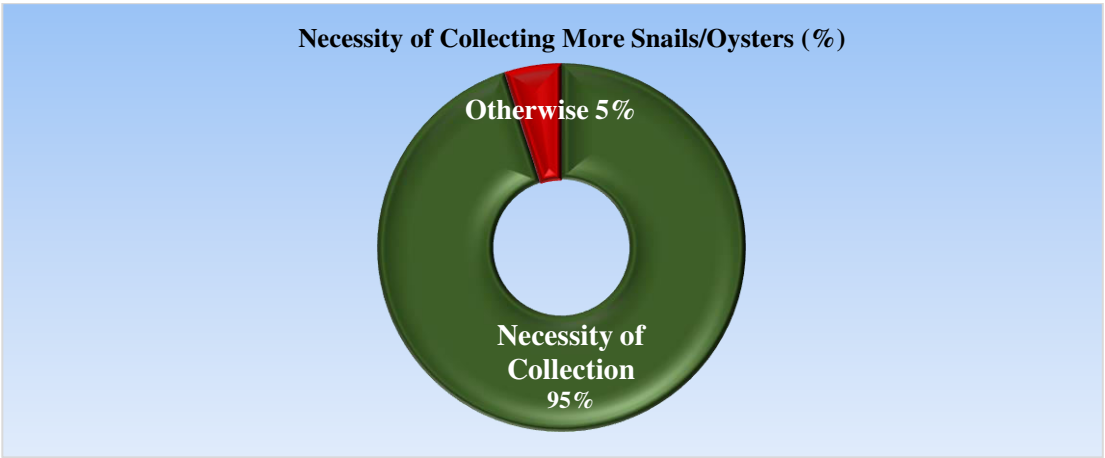


**Fig. 13:** Opinion of the Respondents about necessity of collecting More Snails/Oysters (%).

**Opinion on 'The Birds of Bangladesh' Gallery**

According to the survey data, among the taxidermied figures of mounted birds displayed in Gallery 8: Birds of Bangladesh, the "National bird Doel" was liked by nearly 63% visitors. Around 14% visitors liked the "Woodpecker" the most. On the other hand, Around 8% visitors liked the "Shalik" and "Neelkontho" respectively, whereas around 7% liked the "Parrot". The statistics indicate that among the taxidermied figures displayed in Gallery 8: Birds of Bangladesh, the "National bird Doel" is the most popular among visitors. The "Woodpecker" is also quite popular. However, the other exhibits appear to be comparatively less popular in contrast to the previous ones.

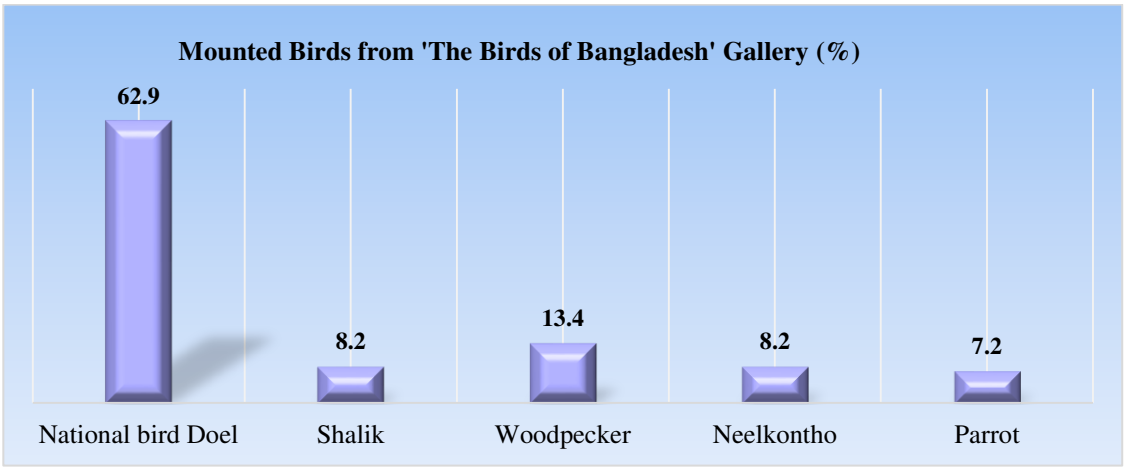


**Fig. 14:** Mounted Birds from 'The Birds of Bangladesh' Gallery (%).

The participants proposed a multitude of prospective initiatives which might further elevate the role of Gallery 8 in raising awareness among people regarding the destruction of bird habitats. Efforts can be made to increase the collection of rare bird species. Creating bird habitats with artificial plants will provide a more natural setting for the showcased birds. Organizing the bird displays according to their respective habitats in different parts of Bangladesh will offer a comprehensive representation of the country's avian diversity. Different species of peacocks, including those from India and domesticated ones from hilly regions like Bandarban, should be introduced. Moreover, the inclusion of endangered bird species, such as the Spoon-billed sandpiper, various cranes, large hornbills, and gray hornbills, will serve to raise awareness about bird conservation. To accurately

represent the migratory nature of certain bird species, one participant recommended that the label should read "Migratory Bird" instead of "guest bird." To ensure a harmonious display, birds should not be shown on wires but rather in tandem with its natural habitats in trees or through diorama show-cases, with sketches of birds swimming on water to create a more lifelike presentation. It would be beneficial to prepare and distribute informative leaflets about birds, particularly among students. Engaging students from the zoology departments of different colleges and universities in this endeavor can yield fruitful results for the initiative.

**Opinion on 'The Mammals of the Bangladesh' Gallery**

The survey responses reveal that around 66% visitors found the giant whale skeleton and dolphin displayed in Gallery 9: Mammals of Bangladesh very much to their liking. Around 31% visitors claimed to like the whale skeleton and dolphin exhibits. On the other hand, there have been no respondents who did not like them, with 3% of them choosing to not comment on their preferences. The statistics indicate that the giant specimen of whale skeleton and dolphin specimen displayed in Gallery 9: Mammals of Bangladesh are highly popular attractions for the visitors. According to the survey data, nearly 45% visitors found the "Capped Langur" displayed in the diorama exhibited in Gallery 9: Mammals of Bangladesh most appealing. On the other hand, around 27% visitors took a liking to the "Pangolin". Nearly 10% visitors liked the "Leopard Cat". Around 8% visitors liked the "Red Monkey" and nearly 6% liked the "Porcupine". Only 3% visitors liked the "Crab-Eating Mongoose". The statistics indicate that the "Capped Langur" is the most popular display of the diorama in Gallery 9: Mammals of Bangladesh compared to the other taxidermied figures. The "Pangolin" also appears to be quite popular among the visitors. The other exhibits, in contrast, are comparatively less popular, the "Crab-Eating Mongoose" having the least popularity.

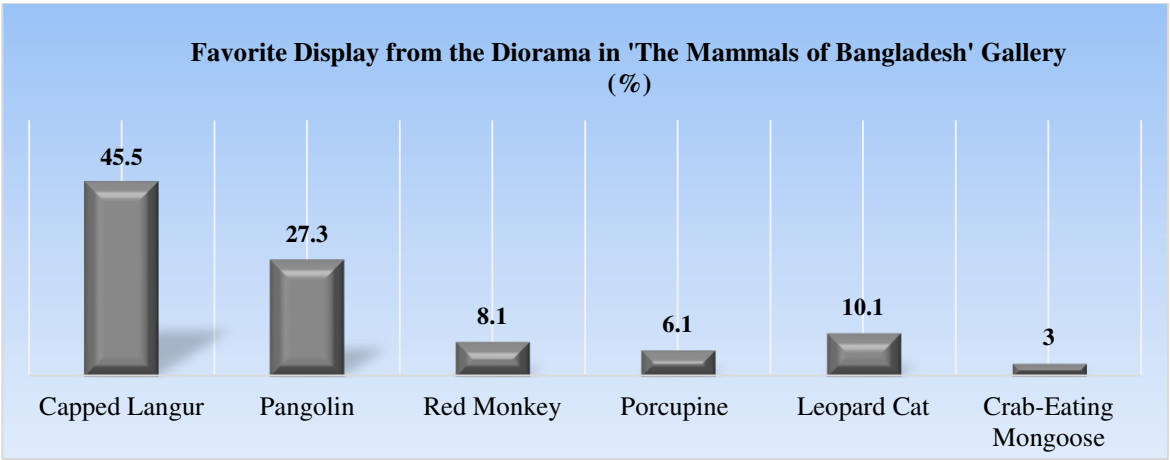


**Fig. 15:** Favorite Display from the Diorama in 'The Mammals of Bangladesh' Gallery (%).

**Opinion on 'The Elephant' Gallery**

The survey responses reveal that among the colored photographs displayed in Gallery 10: Elephant, almost 31% visitors liked the photo of "Difference between African and Asian elephant", and nearly 27% liked the photo of "Asian elephant" the most. Around 14% found the photo "Evolution of elephants" and nearly 12% found the photo "Elephant at the service of mankind" to their liking. In contrast, only around 9% visitors liked the photo of "Circus elephant" and around 6% liked the photo "Distribution of Asian Elephant in Bangladesh". According to the survey data, nearly 84% of the visitors have seen the display of taxidermied elephants and their tusks in the diorama showcased in Gallery 10: Elephant. On the other hand, around 16% have yet to see the display. The statistics indicate that the "Difference between African and Asian elephant" and "Asian elephant" are the most popular photographs among the visitors. The photographs "Evolution of elephants" and "Elephant at the service of mankind" are also fairly popular. The other two photographs are not as popular as the previous ones, "Distribution of Asian Elephant in Bangladesh" being the least popular. Several participants have expressed their growing concerns regarding the elephants and their habitat in Bangladesh. The current number of elephants in the

country is significantly low, with approximately 200 remaining. Elephants often descend from the hills to the locality, which leads to concerns among the people in the hilly areas about potential crop damage and invasion.

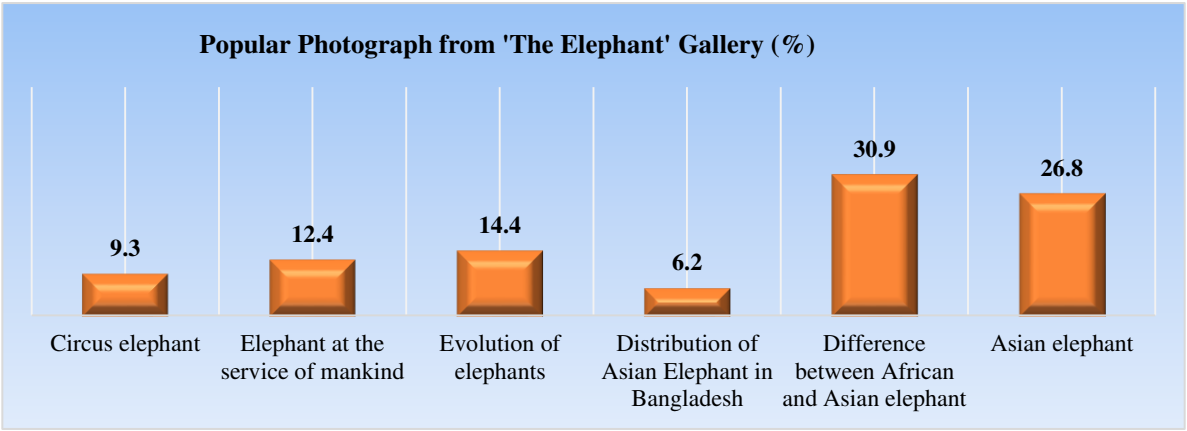


**Fig. 16:** Popular Photograph from 'The Elephant' Gallery (%).

It is crucial to raise awareness among the public about the importance of elephants and the potential consequences of harming them. Killing these elephants could have severe long-term effects that people do not fully comprehend for many decades. To address these issues, participants have suggested the creation of "Elephant Corridors" as a means to educate people about the significance of these magnificent creatures and their role in the ecosystem. Participants have recommended not displaying the photograph titled "Elephants in the Circus" in the gallery due to concerns about animal cruelty. Instead, elephants should be presented in their natural environment to promote respect and understanding for these majestic animals. Furthermore, participants have proposed collecting and displaying a complete skeleton of an adult elephant or elephant fossils through color photographs to provide a comprehensive perspective on the significance of elephants in the natural world.

**Visitor satisfaction on Natural History Department**

The works responses reveal that 80% of the visitors believe that the vast collection of the Department of Natural History displayed across the galleries invoke the memory of Bangladesh's lost natural opulence. 15% of the visitors believe it to be somewhat reminiscent of that era. In contrast, only 4% respondents were uncertain and 1% visitors believe it did not particularly remind them of such sentiments. The statistics indicate that the Department of Natural History has been successful in reintroducing the visitors to the bygone era of Bangladesh's natural opulence through the displays of multitude of extinct species, flora and fauna, vegetations, fossilized timbres, birds and animals, and so on.

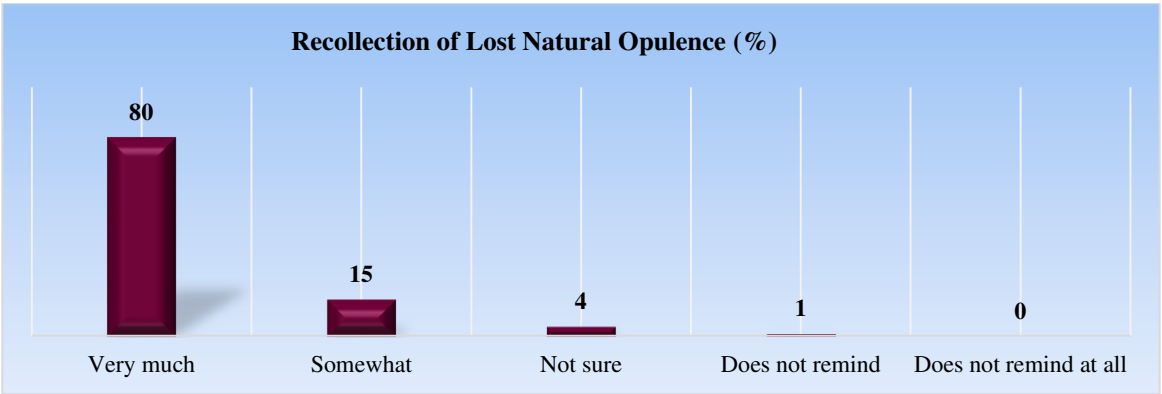


**Fig. 17:** Recollection of Lost Natural Opulence (%).

According to the survey data, 68% of the visitors are very much satisfied with the aesthetics and decorations of the galleries under the Department of Natural History. On the other hand, 26% of the visitors consider it somewhat satisfactory. Only 3% visitors are uncertain and dissatisfied with the

aesthetics and decorations respectively. The statistics indicate that the Department of Natural History has been successful with its layout of the galleries and providing most of the visitors with a pleasant experience, although scopes for improve-ment still exist. The survey responses reveal that nearly 86.9% of the visitors share the opinion that the Department of Natural History should take adequate steps to preserve the natural environment and nearly extinct species of plants and animals. On the other hand, around 13.1% do not find it necessary.

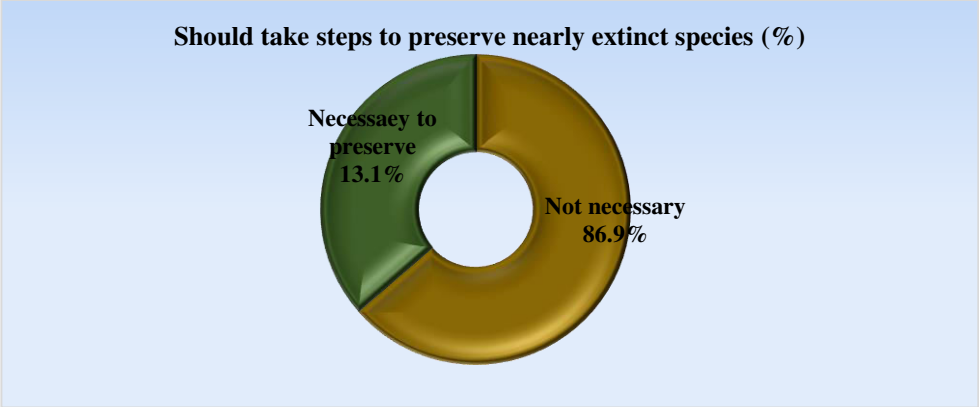


**Fig. 18:** Opinion of the Respondents about taking steps to preserve nearly extinct species (%).

The survey includes a segment dedicated to evaluating the visitors' opinion on each of the gallery managed by the Department of Natural History. The ratings reflect the appeal of each gallery to the visitors, the general perception pertaining to the artifacts displayed within, the facilities, and overall impression as well as any dissatisfaction a visitor might have after their visits to these galleries. The ratings have been provided in the form of a Likert scale ranging from 1 to 5 to indicate the overall level of satisfaction of the visitors. A comprehensive summary of the ratings provided by the participants of the survey has been presented below.

**Table 1:** Rating of the Galleries under the Department of Natural History.

| Gallery Information | | Rating (Rounded %) | | | | | |
|---|---|---|---|---|---|---|---|
| **Gallery Number** | **Name of Galleries** | **5** | **4** | **3** | **2** | **1** | **Weighted Avg.** |
| 1 | Bangladesh in Map | 42 | 37 | 12 | 2 | 7 | 4.05 |
| 2 | Rural Bangladesh | 20 | 24 | 47 | 8 | 1 | 3.54 |
| 3 | Sundarbans | 68 | 23 | 8 | 1 | 0 | 4.58 |
| 4 | Rocks & Minerals | 45 | 40 | 11 | 3 | 1 | 3.95 |
| 5 | Plants of Bangladesh | 21 | 47 | 25 | 7 | 0 | 3.82 |
| 6 | Flowers, Fruits & Creepers | 24 | 41 | 26 | 6 | 3 | 3.77 |
| 7 | Animals | 59 | 24 | 13 | 2 | 2 | 4.36 |
| 8 | Birds | 58 | 31 | 3 | 6 | 2 | 4.37 |
| 9 | Mammals | 51 | 40 | 5 | 2 | 2 | 4.36 |
| 10 | Elephant | 42 | 37 | 13 | 5 | 3 | 4.1 |

Based on a weighted average calculation of the ratings for each gallery, *Gallery 3 : Sundarbans* has the highest weighted average, indicating its high popularity among the visitors. Based on the high weighted average, it is notable that the galleries dedicated to animals, namely Gallery 7, 8 and 9, are also very popular. *Gallery 2 : Rural Bangladesh* appears to be the least popular among the 10 galleries under the Department of Natural History, its weighted average rating being the lowest.

**Enhancing Conservation Effort of Natural History Department**

The participants proposed several supplementary suggestions to enhance the conservation efforts of Bangladesh's diverse wildlife. They recommended disseminating information about the Wildlife (Conservation and Safety) Act, 2012 to the public through leaflets to raise awareness about wildlife conservation in the country. They also emphasized the need to increase penalties for wildlife killings

under the existing wildlife laws to ensure effective enforcement. Furthermore, they suggested raising awareness among visitors to prevent illegal trafficking, sale, and display of wildlife. Another recommendation pertaining to the gallery includes showcasing marine dolphins and other small carnivorous mammals. To enhance public awareness and understanding of dioramas, semi-dioramas, and taxidermy, the participants put forward a series of proposals. They suggested implementing various training programs for taxidermy practitioners within Bangladesh National Museum, both locally and internationally, to improve their skills and knowledge in this field. Additionally, organizing seminars and symposiums on taxidermy would help provide a clear and comprehensive understanding of this art to the public. Moreover, offering fieldwork opportunities on taxidermy for students from different colleges and universities would allow them to gain practical experience and insights into this artistic technique. To further engage and educate visitors, the participants recommended showcasing videos related to taxidermy on small monitors. The participants have concurred that it is indeed necessary to establish a dedicated museum to preserve the country's natural environment. To establish a comprehensive natural history museum dedicated to preserving the rich biodiversity and environmental heritage of the country, the museum staff should undertake visits to various natural history museums in different countries worldwide. By studying and gaining insights from established institutions, they can gather valuable knowledge and best practices. The establishment of a natural history museum is feasible in any suitable location within Bangladesh, provided there is sufficient land allocation for this purpose. Collecting fossils of various species of animals can be a crucial addition to the museum's exhibits. Some participants noted that in the pursuit of establishing a Smart Bangladesh, it is imperative to incorporate innovative and interactive gallery patterns through 3D Visual Art. This can enhance the visitor's experience and understanding of the exhibits. To achieve this, a diverse collection of deceased animals from various regions of the country should be procured and thoughtfully integrated into the exhibits. The Padma Bridge Museum can serve as a key platform in this endeavor. The participants unanimously acknowledged significant transformations in the galleries of the Natural History department over the past decade. During this period, extensive renovation and modernization efforts have been successfully undertaken, resulting in remarkable improvements across various galleries. Particular attention has been given to enhancing the showcases, dioramas, and galleries, with notable changes observed in Gallery 3: Sundarbans, Gallery 4: Rocks & Minerals, Gallery 7: Animals, Gallery 9: Mammals of Bangladesh, and Gallery 10: Elephants as they were newly decorated.

The participants, in response to this query, have provided an array of interesting topics of possible exhibition they would like to see in Bangladesh National Museum. The Natural History department has meticulously gathered a treasure trove of ancient animals, plants, and geological fossils, butterflies, live snakes, snails, and oysters, which would make excellent subjects for exhibition. Various migratory birds and aquarium fish can also be considered for such exhibitions. Few other intriguing recommendations include ikebana and oshibana, the artful arrangements of flowers. The participants shared that as a multi-dimensional institution, Bangladesh National Museum's departments are in charge of representing different aspects of history, Department of Natural history being in charge of human civilization. Their exhibits include animals, birds, and plants. To preserve our heritage, the ten galleries of the department can be merged into a thematic gallery. Additionally, exploring natural history museums worldwide online can offer valuable insights into their past exhibits and presentations.

## CONCLUSION AND RECOMMENDATIONS:

Keeping future development in mind, the following proposals can be taken into consideration for the Department of Natural History to reach greater heights in its role. These recommendations offer avenues for the museum to further excel and contribute to the preservation of our natural heritage. Firstly, responses from the FGD and KII sessions have found it necessary to establish a separate Natural History Museum. The scope of Bangladesh's biodiversity and natural history is far too broad to be fully represented within limited galleries. As such, it is imperative to consider establishing a separate Natural History Museum. Secondly, as the research findings suggest, the usage of diorama and semi-dioramas in representing the

biodiversity of Bangladesh is not only very appealing to the visitors but also expressive of the natural habitats of the wildlife. As such, modernizing the other galleries and incorporating dioramas as medium of display might be taken into consideration. It is, however, to be noted that some participants have pointed out the necessity of encasing the whale skeleton in protective glass to ensure it is not exposed to dust and visitors' touch. Thirdly, there have been calls from the participants to incorporate modern technology, in particular 3D visuals. Merely displaying models of ecosystem and wildlife is not sufficient to provide the visitors' with extensive knowledge about the intricate balance of ecosystems, symbiotic relationships among multiple species and the natural history and heritage. Displaying 3D visuals or documentaries explaining such relationships or an audio-guide would make it easier for the visitors to absorb the knowledge compared to reading long texts in the labels. Lastly, an important finding throughout the research is the necessity of spreading awareness among the visitors to protect the environment, the wildlife, birds and other species that constitutes out natural heritage.

Educational documentaries, leaflets, publications, special exhibitions, and social media contents may prove fruitful in spreading awareness among the visitors. Conservation efforts also include instilling awareness of taxidermy, as highlighted by some of the responses from the FGD and KII. Some additional recommendations from the participants include creating a separate herb gallery consisting of diverse collection of medicinal herbs and other plants for greater conservation of plant species. There were also suggestions to further enrich the collection of mineral resources. Collaborations with research institutions are recommended for not only increasing the collection of the department but also information pertinent to them.

## ETHICAL APPROVAL:

Not Applicable.

## AUTHOR CONTRIBUTIONS:

All the authors contributed to conceptualize and design the study. F.F. contributed in data analysis and report writing of the study. M.A.I.; N. H.; L.B.; and M.R.D. contributed in data collection. M.A.U. supervised the overall research and prepared journal article from the research report.

## ACKNOWLEDGMENT:

First and foremost, the authors are grateful to Almighty Allah. The authors are also thankful to anonymous reviewers and editors for their helpful comments and suggestions.

## CONFLICTS OF INTEREST:

The author declares no conflict of interest.

## REFERENCES:

1) Ahmed, Abu Tweb Abu, (2016). "Mollusks Shells in Bangladesh National Museum," *Descriptive Catalogue Series,* **3**, 17-22. *Dhaka: Bangladesh National Museum*.
2) Ahmed, Zia Uddin, (2007). "Encyclopedia of Flora and Fauna of Bangladesh Mollusks." *Asiatic Society of Bangladesh,* **17**(415), 3-19.
3) Akhter, Shahana, (2019). "Marine Biodiversity and Ecosystem of the St. Martin's Island in Bangladesh: Perceived Threats and Vulnerabilities To Environmental Management." *Oriental Geographer,* **60**(1/2), 61-73.
4) Awwal, Iftikharul, (2003). "Heritage Management in Bangladesh: An Appraisal." *Jadughar Samachar (Bangladesh National Museum Newsletter),* **4**(4)-5(1), 7-10.
5) Conniff, Richard, (2011). Species Seekers: Heroes, Fools, and the Mad Pursuit of Life on Earth. *New York: W. W. Norton & Company, Inc*.
6) Fairooz F, Ferdousi A, Rahman MM, Biswas L, Nayem J, and Uddin MA. (2024). Contributions of Bangladesh National Mus-eum in preservation of Ethno-cultural diversity of Bengal, *Br. J. Arts Humanit*., **6**(1), 1-18. https://doi.org/10.34104/bjah.02401018
7) Farber, Paul L. (1982). "Discussion Paper: The Transformation of Natural History in the Nineteenth Century." *Journal of the History of Biology*, **15**(1), 145-152. https://www.jstor.org/stable/4330804
8) Farrington, Oliver Cummings, (1915). "The Rise of Natural History Museums." *Science,* **42**(1076), 197-208. https://www.jstor.org/stable/1638806
9) Findlen, Paula, (2006). "Natural History." In The Cambridge History of Science, **3**, Early Modern Science. Edited by Katherine Park and Lorraine Daston. *Cambridge: Cambridge University Press*.

10) Fowler, Don D. (2003). "A Natural History of Man: Reflections on Anthropology, Museums, and Science." *Fieldiana. Anthropology,* **36**, 11-21. https://www.jstor.org/stable/29782665
11) Gopal, Brij, and Malavika Chauhan, (2006). "Biodiversity and Its Conservation in the Sundarban Mangrove Ecosystem." *Aquatic Sciences,* **68**(3), 338-54. https://doi.org/10.1007/s00027-006-0868-8
12) Grimmett, Richard, Carol Inskipp, and Tim Inskipp, (2014). Birds of the Indian Subcontinent. *London: Bloomsbury Publishing Plc*.
13) Gudger, E.W. (1924). "Pliny's Historia naturalis. The Most Popular Natural History Ever Published." *Isis,* **6**(3), 269-81. http://www.jstor.org/stable/224311
14) Islam, Md. Anwarul, Md. Abdul Aziz, (2023). "Elephant Management in Bangladesh." In Trampled Boundaries: Understanding Elephants in the Indian Subcontinent. *Baherakhar, Madhyapradesh: The Corbett Foundation*.
15) Islam, Md. Anwarul, Samiul Mohsanin, and Isma Azam, (2011). "Current Status of Asian Elephants in Bangladesh." *Gajah,* **35**, 21-24.
16) Islam, Md. Shofiqul, (2014). "Major Natural Resource of Sylhet Region and its Economic Importance: A review." *SUST J. of Science and Technology,* **24**(1), 37-46.
17) Kabir, Ashraful, Mamata Rani Das, and Trevor J. Hawkeswood, (2021). "A Study on the Theoretical Concepts of Quality Mammalian Taxidermy: Clues for Conservation." *Calodema,* **854**, 1-10.
18) Khondker, M, MAH Bhuiyan, and MA Bashar, (2023). "Towards an Appraisal of Biodiversity in Bangladesh". *J. of Biodiversity Conservation and Bioresource Management,* **9**(1), 79-100. https://doi.org/10.3329/jbcbm.v9i1.66634.
19) Llana, James, (2000). "Natural History and the 'Encyclopédie.'" *J. of the History of Biology,* **33**(1), 1-25. https://www.jstor.org/stable/4331563
20) Mukul, S.A., Shekhar R. Biswas and A. Z. M. Manzoor Rashid, (2017). "Biodiversity of Bangladesh" *Preprints*. https://doi.org/10.20944/preprints201702.0045.v1
21) Mukul, S.A., Shekhar R. Biswas and A. Z. M. Manzoor Rashid, (2018). "Biodiversity in Bangladesh." In Global Biodiversity. Edited by T. Pullaiah. *New York: Apple Academic Press*.
22) Nair, Savithri Preetha, (2007). "Economic logic versus Enlightenment rationality: evolution of the museum-zoo-garden complex and the modern Indian city, 1843-1900." In Museum Revolutions: How Museums Change and are Chang*ed*. Edited by Simon J. Knell, Suzanne MacLeod and Sheila Watson. *New York: Routledge*.
23) "Natural History, (2010). The Ultimate Visual Guide to Everything on Earth." *London: DK Publishing*
24) Reza, Ahm Ali and Md. Kamrul Hasan, (2019). "Forest Biodiversity and Deforestation in Bangladesh: The Latest Update." In *Forest Degradation around the World*. Edited by Mohd Nazip Suratman, Zulkiflee Abd Latif, Gabriel De Oliveira, Nathaniel Brunsell, Yosio Shimabukuro and Carlos Antonio Costa Dos Santos.
25) Reza, Ahm Ali, (2004). "Natural Resources Management in Bangladesh: Linking National Priority to Global Perspective." *Tiger Paper: Regional Quarterly Bulletin on Wildlife and National Parks Management,* **31**(2), 1-16. https://www.researchgate.net/publication/313755521_Natural_resources_management_in_Bangladesh_linking_national_priority_to_global_perspective
26) Rogers, Elizabeth Barlow, (2013). "Representing Nature: The Dioramas of the American Museum of Natural History." *Site LINES: A Journal of Place,* **8**(2), 10-14. https://www.jstor.org/stable/10.2307/24889430
27) Roy, Suvra, Vikash Kumar, and V.R. Suresh, (2016). "Sundarbans Mangrove Deltaic System - An Overview of its Biodiversity with Special Reference to Fish Diversity." *J. of Applied and Natural Science,* **8**(2), 1090-1099.
28) Sforzi, Andrea, John Tweddle, and Katrin Vohland, (2018). "Citizen Science and the role of natural history museums." In Citizen Science: Innovation in Open Science, Society and Policy. Edited by Susanne Hecker, Muki Haklay, Anne Bowser, Zen Makuch, Johannes Vogel and Aletta Bonn. *London: UCL Press*.
29) Smith, James Edward, (1791). "Introductory Discourse on the Rise and Progress of Natural

History." *Transactions of the Linnean Society of London,* **1**(1), 11-31

30) Wilcove, David S and Thomas Eisner, (2000). "The Impending Extinction of Natural History." *The Chronicle of Higher Education*. https://www.chronicle.com/article/the-impending-extinction-of-natural-history/

31) Zaman, Md. Mashrur. Mohammad Rajib, and Md. Golam Rasul, (2016). "Presence of Uranium and Thorium in Zircon Assemblages Separated from Beach Sands of Cox's Bazar, Bangladesh." *Journal of Science, Technology & Environment Informatics,* **3**(1), 161-169. http://dx.doi.org/10.18801/jstei.030116.18

**Citation:** Fairooz F, Islam MA, Haither N, Das MR, and Uddin MA. (2024). Preservation of natural history and biodiversity of Bangladesh: effort of Bangladesh National Museum. *Am. J. Pure Appl. Sci.*, **6**(4), 133-151. https://doi.org/10.34104/ajpab.024.01330151