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CONSERVING BIODIVERSITY

NATION NEEDS NATURAL HISTORY MUSEUM

It will educate people about using natural resources in a sustainable manner



ZAKRI ABDUL HAMID

MALAYSIA makes up only 0.2 per cent of the global landmass but the level of abundance of its flora and fauna on land and in its inland waters, seas and oceans render it the world's 12th megadiverse country.

According to the *Global Biodiversity Outlook*, the flagship publication of the United Nations Convention on Biological Diversity, Malaysia has an abundance of species consisting invertebrates (150,000), plants (15,000), birds (742), reptiles (567), marine fish (500), freshwater fish (450), mammals (306) and amphibians (242).

With that kind of natural endowment, it's only fitting for the country to have its own natural history museum (NHM) to showcase to the people its rich natural resources and, in particular, to educate the public as to why they need to conserve and use the resources in a sustainable manner.

Conserving biodiversity first requires an understanding and measurement of it, which in turn requires the collection and scientific description of specimens.

Beyond public education, natural history collection plays a vital role in understanding evolution, population genetics and the environmental impacts of climate change, pesticide use, and other concerns.

Historical collections provide baseline data against which modern observations can be compared and to produce predictive models.

The most fundamental role of

natural history collections is preserving and safeguarding the individual specimens used to describe and name a species.

Every plant, fungus and animal you see in your garden has a scientific name that comes from such a description, and each new proposed species needs to be compared to the preserved types of other similar organisms in order to ensure that it is in fact different from anything already described.

Things around our neighbourhood are mostly well known but there are still parts of the earth that have not been thoroughly investigated and new species are coming to light all the time, particularly in the oceans and tropical forests.

According to a study by the Census of Marine Life, the estimated number of species on Earth is about 8.7 million (give or take 1.3 million – the most precise calculation ever offered), with 6.5 million species on land and 2.2 million (roughly one quarter) in the oceans.

However, the number of species documented by scientists over the last 250 years is only around 1.8 million – a mere 20 per cent of the total estimate.

Beyond the important type specimens, museums also hold voucher specimens which are examples of organisms collected during biological recording and other research.

These specimens are physical proof that work has been conducted and that species have been described accurately.

Most importantly, they have good information about where and when the specimens were collected.

Every natural history specimen with good data provides a physical snapshot of a species or community at a particular point in time and space.

It is this physical record that makes museum collections so valuable – you can't extract DNA from a photograph and you can't test a written description for pesticide residues, but a physical specimen can provide a wealth of unexpected information.

Specimens collected before the science of DNA are now able to pro-

vide information about how populations have changed over time and how that might influence conservation of threatened species.

This kind of study is of particular interest where populations have suffered dramatic decline and face genetic bottlenecks, as with several beleaguered bird species from New Zealand.

But it's not just preserved DNA that can be useful. Much of the research that led to tighter controls on pesticide use in agriculture (including the banning of DDT) came about by comparing the thickness of eggshells in museum collections from the 19th-20th centuries.

In this country, there has been a strong advocacy, in particular among the fellows of the Academy of Sciences Malaysia, on the need to establish a fully-fledged natural history museum.

In 2008, a well researched volume, *Natural History Museum Malaysia: Planning and Development*, was released jointly by the Forest Research Institute Malaysia and the United Nations Development Programme.

The book strongly argued the case for a NHM Malaysia which, "through its location and operations in one of the richest biodiversity regions of the world, plays a vital role in strengthening the knowledge base for sustainable management of the tropical environment for the benefit of Malaysia and the world".

For the record, the project above was at the behest of a decision taken at the fifth National Biodiversity and Biotechnology Council meeting chaired by the prime minister on Sept 29, 2006 to set up a NHM Malaysia.

Almost every country in the world has at least one natural history museum and these are nearly always prominent cultural, scientific, educational and architectural landmarks. What are we waiting for?

The writer is a fellow of the Washington-based Global Federation of Competitiveness Councils and former director of the United Nations University's Institute of Advanced Studies in Tokyo