



The Blue Planet section of the exhibition.
Photo: Courtesy American Museum of Natural History

Water is life

This year saw the 40th anniversary of the first Moon landing. There were all those great images of Armstrong and Aldrin making history, and the famous statements like ‘One small step...’. There were also those wonderful images of Earth away off in space, such a contrast with the Moon’s starkness. The Earth always looks so beautiful from space, not just because it is ‘ours’, but because it is that exquisite blue. Why is it blue? Because of water. Why is there life on earth? Because of water. Earth is the blue planet. Earth is a water planet. Earth is the life planet.

This relationship between water and life is the focus of an exciting exhibition at the National Museum of Australia in Canberra. *Water: H₂O = Life* was created by the American Museum of Natural History (AMNH) in New York (assisted by the Science Museum of Minnesota), and is travelling the world to various international partners. The National Museum of Australia is the sole Australian venue. Water was curated by the AMNH’s Dr Eleanor Sterling, and as the exhibition travels to each partner, they add modules telling their own water story. We have added an Australian component to the show for its Canberra season.

The National Museum, in hosting *Water*, has joined an elite group of international museums around the globe. These include North American institutions such as Cleveland’s Great Lakes Science Centre, Chicago’s Field Museum, the San Diego Natural History Museum, and Toronto’s Royal Ontario Museum. Other partners include the Instituto Sangari in Sao Paulo, Brazil, the Singapore Science Centre, and others. The exhibition will have completed its Istanbul show shortly before coming to Australia.

Water: H₂O = Life is both an ode to the beauty and wonder of water, and a penetrating look at the way humans have used water for thousands of years. It is an analysis of the natural and cultural sides of the fluid that underpins life on Earth. The challenge of good, sustainable stewardship of finite water resources is a key theme. Using imaginative presentations,

multimedia, live animals, soundscapes, objects and dioramas, the exhibition will make people more aware of water's key role on the planet, and of the need for it to be valued highly rather than simply taken for granted.

All life on Earth needs water, yet water availability varies greatly around the globe. So, plants and animals have evolved adaptations to water scarcity and abundance, temperature range and varying fresh/salt levels. Live specimens help to convey these adaptations in the exhibition. Water is also a climate driver and a landscape shaper. 'Science on a Sphere' is a large globe in the display onto which projections highlight the ceaseless cycle of water around the Earth and the way it helps regulate the natural climate system. Visitors can also experience the three states of water (vapour, liquid, ice) at a special installation. A fog screen at the exhibition's entrance reveals water's wonder.

'Water works' is a section showing how civilisations have depended on water for thousands of years. Several examples of irrigation and damming are highlighted, from a 2200-year-old weir to China's Three Gorges Dam. Over 60 per cent of the world's rivers are dammed, indicating the environmental impact of humans' water use. Here, families can play a game-style quiz asking questions about the water consumed in the production of everyday products, from T-shirts to take-aways.

Video interviews with water experts from around the world are part of the exhibition. As well as hearing from the American curators of *Water*, visitors hear from Australian waterbird expert Professor Richard Kingsford (University of NSW) and the current status of waterbirds in Australia's arid regions.

Of course, some parts of the Earth have heaps of water, others almost nil. Half the Earth's freshwater is found in

only six countries. How humans and other species have adapted to wet places is a fascinating story, and is told in part via a diorama of Cambodia's Tonle Sap freshwater lake on the Mekong River which has a very diverse ecosystem as well as a rich human culture. On the other hand, over a billion people around the world live without safe drinking water. The exhibition looks at how people have amazingly adapted to and been shaped by water-poor areas. The physical impact of carrying water in many Third World countries (and its impact on women especially) is examined in detail. The importance of clean water is reinforced with a video microscope through which visitors see some of the microorganisms that live in a single water drop. Protection of groundwater supplies and the role of wetlands as natural purifiers are examined. Exhibits tell these sorts of stories from places as diverse as North America and India.

Partner museums had the opportunity to contribute short sections on their host city's own water supply. So, Canberra's water supply – one of the purest in Australia and perhaps the world – is explained, alongside the supply systems from the other museum cities around the globe. It's a revealing comparison.

Water really exemplifies the ecological fact that all living things are connected. In the section 'Restoring ecosystems', visitors learn how our water sources are both fragile and resilient. Three examples from North America and the Middle East show how previously degraded aquatic ecosystems are being rehabilitated. Fantastic mineral formations (the famed tufa towers) at Mono Lake in California have been saved by Los Angeles' decision to take less water.



Aboriginal women carrying water, Northern Territory.
Photo: Herbert Basedow Collection, National Museum of Australia)

Australia's water story

Left: Hume Dam is one of Australia's major pieces of irrigation infrastructure, yet is less than five per cent full.

Photo: Matthew Higgins

Right: A Dethridge Wheel in use at a farm in northern Victoria.

Photo: Matthew Higgins



The Australian module added by the Museum focuses on the fact that Australia is the driest inhabited continent. Australia also has one of the most variable rainfall patterns of any landmass. Why do we have so many dams? Because we've chosen to catch the water during those unpredictable times it actually rains, and use it to try to 'drought-proof' the land.

Looking at water in nature, there are animals, birds and plants that reflect remarkable adaptation to a dry continent. Fat-tailed dunnarts and Kowaris are two small mammals that obtain all their water from their food – they don't need to drink, which is just as well as they inhabit some of the most arid parts of Australia. Somehow pelicans, straw-necked ibis, yellow-billed spoonbills and other waterbirds fly huge distances to find water after rainfall. Floods boost food sources and thus the birds' breeding opportunities. How they find the water is still a mystery. Plants have adapted with root systems, leaf forms and hard seed cases which combine to give advantages in a dry environment.

Indigenous people have been in Australia for at least 60,000 years, learning how to live in a continent where the fundamental fluid of life can so often be in short supply. From coolamons and canoes to fishtraps, Aboriginal material culture illustrates the triumph of one of the world's oldest civilisations. Perhaps more importantly, water wasn't just a resource. It was part of culture too. One of the most pervasive figures in Indigenous spiritual life is the Rainbow Serpent, strongly associated with rain and a giver of life. The Museum's

art collection contains many examples of Indigenous cultural interpretations of water.

European settlers soon discovered that Australia's rain clouds were capricious, so they started developing water resources to overcome drought. Irrigation schemes began in the late 1800s, and one of the most iconic features of Australia's irrigation areas – the water-metering Dethridge Wheel, produced in tens of thousands but now becoming obsolete – is a central element in the display. Dreams of turning rivers inland became reality with the world-renowned Snowy Mountains Hydro-Electric Scheme. Among the wonderful array of objects from the scheme, we exhibit the scheme model presented to Prime Minister Ben Chifley back when the Snowy was inaugurated near Adaminaby in October 1949.

But following all those water wonders, we now experience water woes. Under the influence of climate change, one of the worst droughts in recorded history prevails. Simultaneously, we scrutinise agricultural use of water as never before. Regulation of rivers through dams, and extractions for irrigation have had profound impacts. Changed flow patterns have contributed to declines in native fish numbers, waterbird populations have decreased, wetlands have shrunk, and salinity caused by clearing and irrigation has worsened. The biggest blue-green algae outbreak seen anywhere on Earth occurred on the Darling River in 1991, and another one bloomed this year over hundreds of kilometres of the Murray River.



The Murray's flow is now only 27 per cent of pre-European levels; constant dredging (seen here) is required to keep the mouth open. Photo: Matthew Higgins



Top: Salinity is a major land and water problem in many parts of Australia. Numerous initiatives have been launched to combat it, such as here at Loxton in South Australia. Photo: Matthew Higgins
 Above: The Kowari is an Australian desert mammal which gets all its water from its food. As well as taxidermy mounts like this one, the exhibition features live animals too.
 Photo: Matthew Higgins; specimen from the Australian Museum

But despite the gloom, there are positives. A salinity research instrument is displayed, underlining the work done there; a live Murray Cod serves to remind us what is at stake in our rivers and is accompanied by images of newly constructed fish ladders on dams, and fisheries research initiatives. A short film, made by me, and featuring an Archie Roach soundtrack, encourages visitors to enjoy the beauty of our rivers, while episode one of the TV series, *Two men in a tinnie*, provides an engaging way for the public to learn of some key issues in the Murray-Darling Basin.

At the end of the Australian module a series of 'closing questions' gives visitors the opportunity to ponder a broad range of water issues at the personal level: from dual flush toilets to water as a vote-swing at federal and state elections. Above all, the exhibition will, we hope, show people that our water future is not simply something imposed on us, but is created by us and by the decisions we make now.

Matthew Higgins
 Senior Curator, National Museum of Australia