



UNSW Library
Special Collections & Exhibitions

Living Water

Large print
Exhibition guide

UNSW Paddington Library

Introduction

Water is an ancient, living thing. It has cycled through the atmosphere, soil, oceans, and bodies for billions of years – shaping the land, creating habitats, and sustaining life. As a crucial resource covering over 70% of the planet's surface, water is at the centre of every community, holding social, economic, and cultural importance. Extreme shifts in water patterns, from floods to droughts, disrupt an ecosystem's delicate balance and impact the interconnected relationships among all forms of life. Yet, water remains adaptable and resilient. Despite growing threats posed by pollution, misuse, and climate change, researchers remain committed to discovering solutions to safeguard our marine, freshwater, and urban water systems.

Living Water: 75 years of water research at UNSW connects water research across various environments and disciplines. From seagrass reforestation to aquafarming, hydrology to art, this research speaks to the multitude of ways water shapes existence and impacts survival. By drawing together breakthrough studies, technological innovations, and community engagement efforts, we gain insight into how scientists, engineers, artists, and researchers address

complex challenges related to the stewardship of the planet's water systems. *Living Water* highlights significant contributions made by UNSW toward water governance and security, the support of healthy oceans and resilient coastlines, ensuring safe and equitable access to water, and sharing the knowledge we need to protect this vital resource into the future.

Many of the water systems featured in *Living Water* flow through Aboriginal Land, inscribed with more than 65,000 years of rich history and heritage. We recognise the ongoing relationship the Traditional Owners have with these lands and waters and thank them for their care and protection of these ecosystems for generations. This exhibition takes place on unceded lands of the Bedegal and Gadigal peoples. Always was, always will be, Aboriginal Land.

In celebration of UNSW's 75th anniversary, this exhibition is a collaboration between UNSW Library and UNSW Global Water Institute with funding support from the Faculty of Arts, Design & Architecture, Faculty of Business, Faculty of Engineering, Faculty of Law & Justice, Faculty of Science, and UNSW Library. *Living Water* is presented across all three UNSW Libraries: Main Library, Level 5; Law Library; Art & Design Paddington Library.

Photogrammetry

Display case contents (left to right):

Book: *Introductory course photogrammetry*, 2nd edition, 1967
by International Institute for Aerial Survey and Earth Sciences
Printed in Delft by International Institute
PX 526.982/15 /(1)

Image: Photograph of Manly Beach taken from CoastSnap station.

Credit: CoastSnap anonymous contributor.

Project title: CoastSnap.

Image: Two-dimensional rectified photograph of Manly Beach, processed using photogrammetry to extract three-dimensional information.

Credit: Dr Mitchell Harley, UNSW Water Research Lab.

Project title: CoastSnap.

Book: *Elements of photogrammetry*, 1941

by George Dewey Whitmore

Printed in Scranton, Pa by International Textbook Press

P 526.982/36

As a tool for art and science, photography plays a crucial research role by providing visual documentation, aiding analysis, and fuelling breakthroughs in understanding the world. From depicting changes over time to perceiving details invisible to the naked eye, photographs tell stories beyond data. One form of analysis, photogrammetry, extracts spatial data from photos. As a practice used to survey and map environments, it combines science and technology to obtain precise measurements and generate complex 2D or 3D models from photographs. UNSW Water Research Laboratory's (WRL) "CoastSnap" project utilises photogrammetry to transform crowd-sourced smartphone photos into satellite views of the coastline. Photographs supplied by the public via designated CoastSnap stations support WRL's coastal monitoring work and contribute toward the ongoing documentation of shoreline changes.

For the full display about the "CoastSnap" project, visit UNSW Main Library, Level 5 Exhibition Space.

Above/Below

Display case contents (left to right):

Image: Drone photograph of an Australian pelican breeding colony nesting in the wetlands of the Murray-Darling Basin.

Credit: Photographer and drone pilot: Dr Roxane Francis.

The image was collected by an experienced and licenced drone pilot with required animal ethics, regulatory, and landholder approvals.

Project title: Surveying waterbird colonies with a drone (on view UNSW Main Library).

Object: Drone (DJI Phantom 3).

Courtesy of Dr Roxane Francis.

Project title: Surveying waterbird colonies with a drone.

Image: Scientists securing crayweed to the seafloor along the Sydney coastline.

Credit: Tom Burd.

Project title: Operation Crayweed

From vantage points high in the sky to deep underwater, advances in photographic technology enable scientists to further their work and research. Drone photography aids in biodiversity assessments and environmental monitoring

and, as a research tool, offers unique perspectives and access to locations that are typically out of reach. The Centre for Ecosystem Science's research project, "Surveying waterbird colonies with a drone", enables scientists to complete their work with minimal human interference on the large bird colonies. While some research is best completed from the air, other scientists perform their work underwater. The "Operation Crayweed" project at the Centre for Marine Science and Innovation restores Sydney's crayweed ecosystems through the transplantation of this once locally endangered seaweed species. Capturing images beneath the water's surface, often while scuba diving, enables scientists to document changing underwater habitats and monitor its effect on marine diversity.

For the full display about "Surveying waterbird colonies with a drone" and "Operation Crayweed" projects, visit UNSW Main Library, Level 5 Exhibition Space.

Micro/Macro

Display case contents (left to right):

Image: Microscopic image of the marine sponge
Cymbastela concentrica.

Credit: Yunke Jia.

Project title: The microscopic world of marine sponges.

Object: Dried marine sponge.

Courtesy of Professor Torsten Thomas.

Project title: The microscopic world of marine sponges.

Book: *Microphotography: photography and photofabrication at extreme resolutions*, 2nd edition, 1968

by Guy William Willis Stevens

Printed in London by Chapman and Hall

PX 778.315/8

Diagram: The electromagnetic spectrum, with the visible portion highlighted. The bottom graph (Visible spectrum) is wavelength in units of nanometres (nm).

Credit: Philip Ronan (CC BY-SA 3.0)

Images: Infrared and drone photographs of Straw-necked ibis colony nesting in the wetlands of the Murray-Darling Basin.

Credit: Photographer and drone pilot: Dr Roxane Francis.

The images were collected by an experienced and licenced drone pilot with required animal ethics, regulatory, and landholder approvals.

Project title: Surveying waterbird colonies with a drone.

Researchers studying population growth utilise specialised photography techniques to see groups of organisms on both the micro and macro scales. Microscopic photography records highly magnified images of tiny subjects by using a microscope as a camera to reveal details invisible to the naked eye. The Centre for Marine Science and Innovation's project, "The microscopic world of marine sponges", employs microscopic photography and specialist dyes to expose microbes living in the bodies of marine sponges. Similarly, infrared photography captures images using light wavelengths beyond the visible spectrum. In scientific studies, it can be used to reveal subtle temperature variations and hidden details. In the Centre for Ecosystem Science's research project, "Surveying waterbird colonies with a drone", scientists employ infrared photography

to monitor waterbird populations, using the bright heat signature of the birds to assess the bird colony's size from a distance.

For the full display about “The microscopic world of marine sponges” and “Surveying waterbird colonies with a drone” projects, visit UNSW Main Library, Level 5 Exhibition Space.

UNSW Library Special Collections and Exhibitions

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