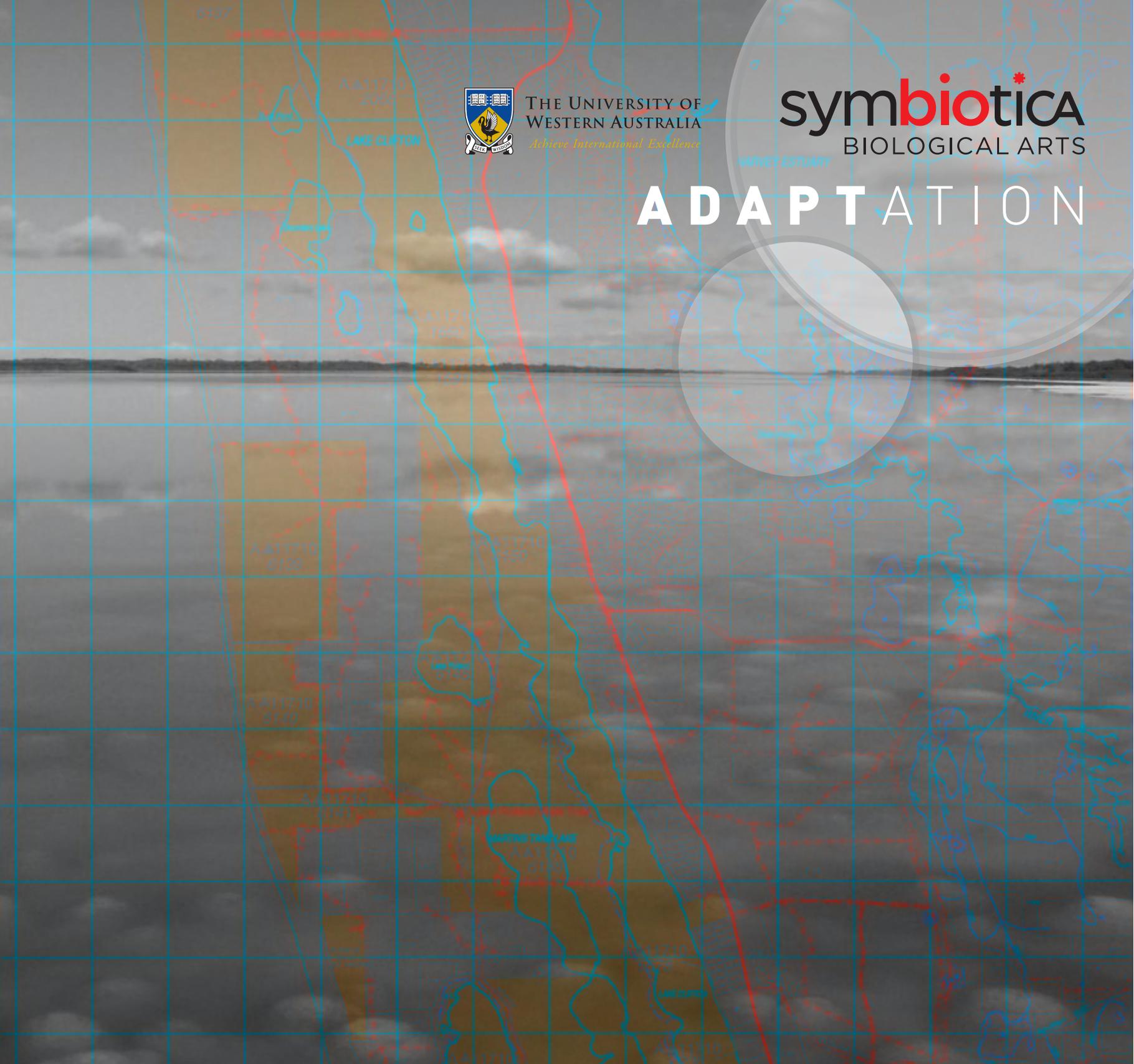




THE UNIVERSITY OF  
WESTERN AUSTRALIA  
*Able to International Excellence*

**symbiotica**  
BIOLOGICAL ARTS

# ADAPTATION





The City of Mandurah is acutely aware of the fragility of the Lake Clifton environment and the impact of climate change and human activity. The *Adaptation* exhibition being shown at the City's contemporary arts space INQB8.mandurah highlights the issues from a different perspective—that of the project's artists in residence. Through their eyes we have learned to appreciate other subtle, intricate and complex aspects of the lake's ecology and to get a better understanding of the strong interest the lake and its thrombolite reef is held in international scientific circles.

Since its inception the *Adaptation* project has inspired a number of community arts projects in Mandurah that explore the stories of the lake. For example, two significant grant funded projects to be held during Mandurah's 2012 *Stretch Festival* take inspiration, in different ways, from the thrombolite reef and its links to the production of the first oxygen on earth.

The City thanks SymbioticA for the opportunity to be part of this incredible journey of discovery—working to save this precious part of our heritage through art.

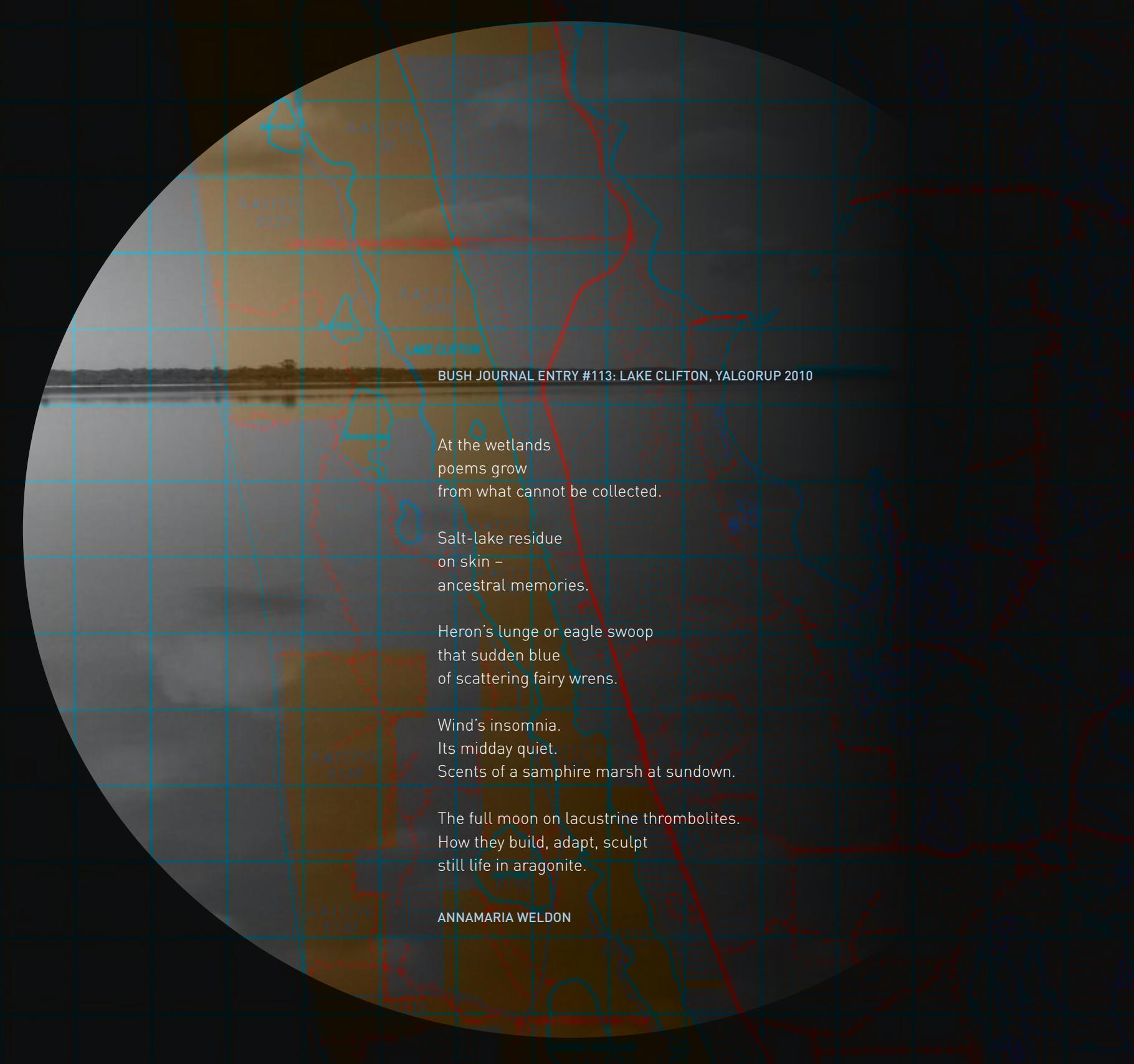
**Paddi Creevey, OAM**  
**Mayor, Mandurah City Council**

SymbioticA is the first research laboratory of its kind, enabling artists and researchers to engage in wet biology practices in a biological science department. It hosts residents, workshops, exhibitions and symposiums with an emphasis on experiential practice.

*Adaptation* represents an expansion of SymbioticA's interest in life, moving out of the biological labs and into ecological systems. The original intention was to artistically investigate the curious case of the Thrombolites in Lake Clifton; however, as more stories about the lake have been revealed, we realised that the lake has great potential for much broader artistic inquiry. SymbioticA developed the *Adaptation* project to explore other approaches for its own research, but more than that, *Adaptation* provided SymbioticA the privilege of working with new partners and artists.

I would like to express my sincere gratitude to the City of Mandurah and all the artists, scientists and engineers who worked with us on this project and in particular I would like to thank the Nyungar people and the community of Mandurah and Lake Clifton who supported our efforts of telling the different stories of the Lake.

**Oron Catts**  
**Director, SymbioticA**



BUSH JOURNAL ENTRY #113: LAKE CLIFTON, YALGORUP 2010

At the wetlands  
poems grow  
from what cannot be collected.

Salt-lake residue  
on skin –  
ancestral memories.

Heron's lunge or eagle swoop  
that sudden blue  
of scattering fairy wrens.

Wind's insomnia.  
Its midday quiet.  
Scents of a sapphire marsh at sundown.

The full moon on lacustrine thrombolites.  
How they build, adapt, sculpt  
still life in aragonite.

ANNAMARIA WELDON

# ADAPTATION

The lead character in *Adaptation* is Lake Clifton where SymbioticA began the project in 2008 with the City of Mandurah and interested artists.

To respond artistically to environmental concerns is a long standing interest for many artists, however, to do so in a way that goes beyond the didactic or descriptive is the challenge. Working with SymbioticA provides a way into artistic interpretation through biology and scientific methods. *Adaptation* took art practice out of the laboratory and into the field and back to the lab again.

Daniel Bozhkov  
*Darth Vader Tries to Clean the Black Sea With Brita Filter*, 2000  
Representation: Andrew Kreps Gallery, New York

The role of the artist is multifaceted and often debated, but one of the roles is to shine the light in places little known, open up discussions that somehow don't get to happen in a community otherwise. Their role is not to necessarily solve the problem, but lead to greater curiosity and awareness in society that in turn generates greater confidence to enable more active engagement. We are realists as well, and part of opening up questions highlights that futility also has a place here—Daniel Bozhkov's image, *Darth Vader Tries to Clean the Black Sea With Brita Filter*,<sup>1</sup> captures this perfectly.

The French based duo Art Orienté objet (AOo), Marion Laval-Jeantet & Benoît Mangin, places ecology, defined as the scientific interrogation of the conditions of our existence, at the centre of its artistic preoccupations. They draw on biology, behavioural sciences, ecology and ethnology. A strong animal presence can be found in their work, which we see recur for *spaced*<sup>2</sup> and *Adaptation* through the unplanned experience of witnessing the death of a kangaroo—a 'roadkill'—whilst they were travelling by car to Lake Clifton.

AOo links to a craftwork tradition in which recycling and reusing are akin to tinkering. In the case of the work shown in Europe, coming out of *Adaptation*, the re-use includes a buried, exhumed and carved kangaroo skeleton. Their activist tools use popular media and direct action. AOo has produced a film for exhibition in *Adaptation—Plutôt que tout (More than everything)*—which includes their investigations into the process for Lake Clifton to be registered as a UNESCO world heritage site. AOo facilitated meetings between the mayors of their home-town in France and Mandurah to develop an international dialogue between the two towns.

The *Autotroph* responds to Lake Clifton and its inhabitants, including the thrombolites, that are under threat from pressures such as increased salinity, urban development



and inadequate protection around the Lake. Oron Catts has made a machine that uses a solar still and electronics and runs on solar panels to filter water in its immediate vicinity. This 'autotroph' machine is a futile de-salination fountain/kinetic sculpture, raising the dilemmas about techno-fixes that have rarely achieved what their designers claim they are able to do. Technically it works as a machine and appears to be a domestic scale de-salination plant, but it is a futile machine.

At Mandurah it sits in the rather murky cul-de-sac pool, aptly named 'Administration Bay' near the INQB8 gallery. This is the perfect position for the sculpture, as it brings into sharp relief the relevant environmental issues as well as highlighting that romantic notions of salvation for the planet are unachievable. Catts' machine points to these complexities, questions our arrogance that has led to environmental degradation in the first place and our continued misplaced faith in technology to deal with that degradation in any meaningful way.

*Heliotropika* by Juan M Castro (founder of Biodynamic geometry) in its true incarnation is a biomedial interactive installation. We are showing the process and installation documentation of the *Heliotropika* project in *Adaptation*. The actual piece integrates biological processes, environmental conditions and technological functions as an installation that creates an interactive interface between the audience and a group of cyanobacteria.

*Heliotropika* employs the photosynthetic activity of these micro-organisms, the dynamics of environmental light, bio-electrical activity via the human fingertip and the cyanobacteria as they influence each other, producing a dynamic feedback system in real time. This beautifully realised work relates to research undertaken by one of SymbioticA's research partners Hideo Iwasaki of Waseda University, Tokyo.

Oron Catts, *The Autotroph*, 2010



Galliano Fardin's accomplished abstract paintings are renowned for their scope and subject matter.

A quote from 2010 provides insight into his motivations:

"The workings of nature through its endless mutations and adaptations to changing circumstances are a creative endeavour which has inspired humanity on our journey through history. The realization that we humans can unleash so much destructive power on a global scale, implies that we may also have the means to make some necessary corrections. Through this we could reconnect our creativity to the creative power of nature."<sup>3</sup>

Fardin does not depict landscape in the traditional sense. His intention is that the abstract works elicit a direct and physical response in the viewer. The viewer has a palpable response to his visual patternings drawn from his observations. He has lived near Lake Clifton since the 1980s and has a daily encounter with the life in it and around it. The Lake is the inspiration for many of his works and his environmental observations through his writings.

Catherine Higham is interested in water as a subject of scientific research. *still life* is a short documentary film composed of still images taken over a two year period that makes links between bioindicators<sup>4</sup> and water quality in Australia. A bioindicator shows the response in organisms, populations or ecosystems caused or influenced by humans in biomolecular, biochemical, or physiological levels. Catherine's sound/still/video essay walks us through a landscape observed both at a human scale and at the microbiological level. This piece encourages the viewer/listener to engage sensorially with these landscapes. *still life* generates a sense of unquiet, asking us to consider the personal roles played,

domestic and industrial, in ecological impacts and what our short or long term responses will be.

Gloria Kearing and Rob Ewing's *River of Spirits* is based on the site of the Pinjarra Massacre.

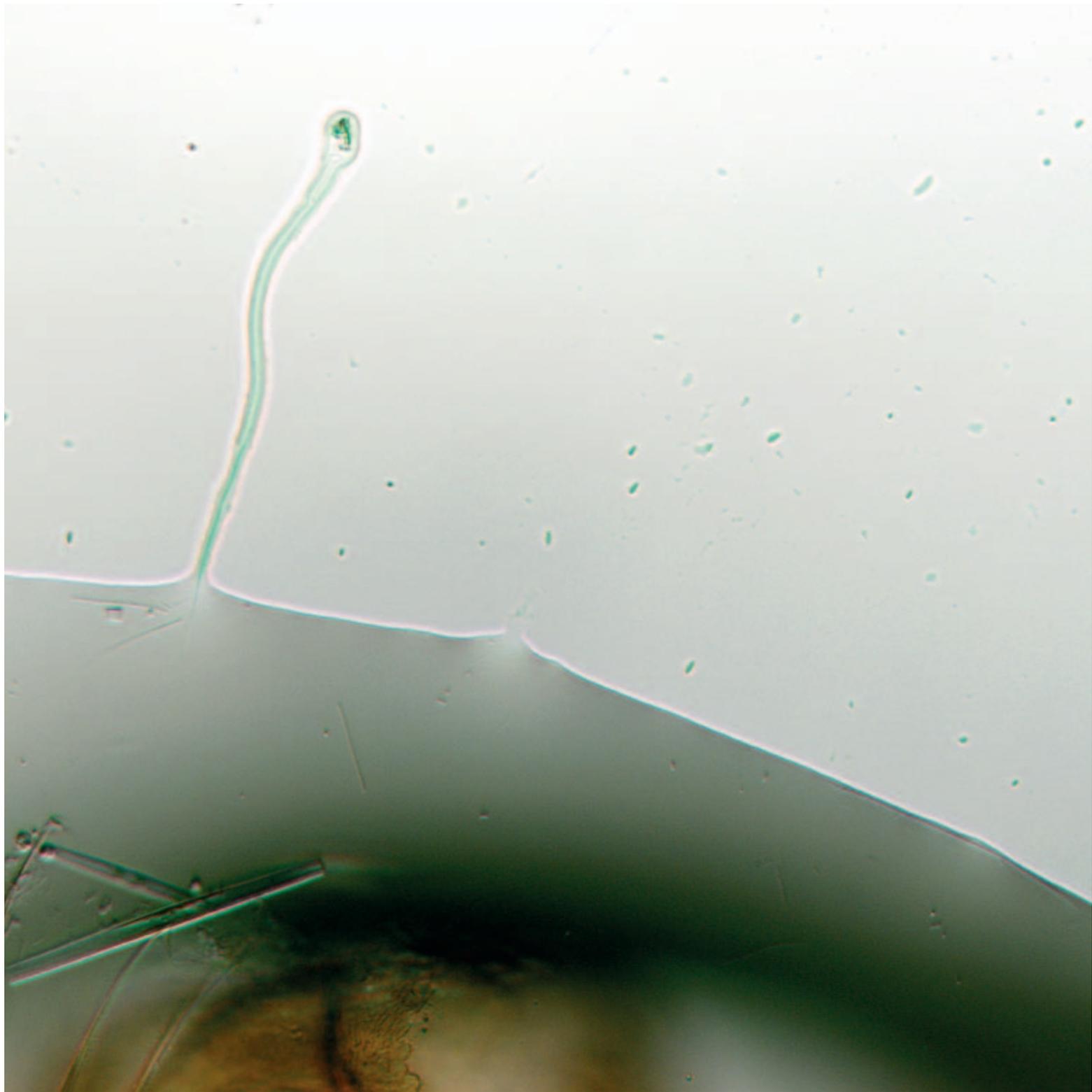
"It is about the spirits of the people killed, whom Kearing believes are still there. The painting depicts the area, complete with totems and vegetation and serves as a reminder of the Massacre."<sup>5</sup>

The work is included in *Adaptation* to acknowledge the deep knowledge and experiences Indigenous people have of the area around the Lake. The work may generate uncomfortable responses but is an important reminder that "the consequences of ignorance and greed" continue to touch us all.

Perdita Philips is interested in words, sounds and birds. Her blog contains the following 'words/phrases for 2012': situation awareness; resilient buffering; safe to fail; cross-scale interactions. Phillips' sound piece, *The Sixth Shore*<sup>6</sup>, explores deep thrombotic time and shifting shorelines. She describes this work as wanting to "articulate competing agents at Lake Clifton in a way that decentres the current environmental impasse to encourage new solutions to human-nonhuman interactions."<sup>7</sup> Her technique includes listening walks that enable participants to tune into unfrequented places. Complexity and sensitivity combine in her work to freshen our aural, and hence, intimate and deep awareness.

Vyonne Walker is interested in how integrating artistic and scientific explorations help us to engage with and understand our relationship to the environment. *The Slowest Growing Sculpture* explores the human perception of 'climate'. Initially developed with the SymbioticA Research Group, the sculptural structure,





incorporating aspects of biomimicry and biotechnology will “take decades to evolve, growing at a rate of approximately 1 mm a year.”

What we see in the gallery may appear completely banal and unworthy of the attentive treatment received by the gallery context. And that would be correct. However, the concept belies the look of the work. Muddy stuff in a small aquarium mainly left to its own devices in an art/science laboratory asks big questions. What is growing here? How different is it to what grows in the lab and what continues to grow in Lake Clifton? Is it art? Is it science? What do we witness? Bringing the mud into the gallery elevates the status of the mud and microbial actors, to where we witness, however minutely and slowly, a small part of the lake grow and mutate.

It is disarmingly humbling.

Carmel Wallace’s *Visualising Adaptation: Surface and Beyond* series brings a new repertoire to her art practice. Her investigations at the microbial level via the detail afforded by microscopy have broadened her methods. She includes studies of water samples from the Lake which have evaporated on the slide, enhancing the crystalline structures and micro-organisms. The technique shows another layer of inhabitants within this evolving environment of her making. Wallace has also delved into the thrombolites, investigating their structures. Her microscopic image of the water droplet can be read as a poetic visual metaphor for the run-off into the lake from surrounding areas, one of the most contentious issues facing the farmers and residents living close-by.

Annamaria Weldon is a highly regarded poet and author. Her work, the artist’s book, *Sharing the Edge*, combines her evocative writings and beautifully composed photographs. Her work exemplifies a contradiction I heard about the Lake: it is a place

of deep serenity that elicits very strong emotional responses by many people who go there. Annamaria has become a frequent visitor and member of the communities in Mandurah since beginning her initial engagement through Symbiotica. The relationships that have formed over these years are evidence of her deep commitment to the area and the people who are responsible for it.

All artists in *Adaptation* have undertaken field work appropriate to their practice—sampling with care and knowledge is an intrinsic part of the artist’s research.

## Cecelia Cmielewski

Cecelia Cmielewski is the Manager of Symbiotica. Her background includes strategic development and capacity building of the Australian creative sector, through policy implementation at the Australia Council. Her media curating experience includes two Adelaide Festival of Arts, several media festivals and as a chief investigator/curator on an ARC Linkage Project, *Large Screens and the Transnational Public Sphere*. Cecelia presents on a regular basis at national and international forums including at the inaugural World Forum for Environmental Sciences, Venice, on the relationship between culture and the environment.

### NOTES:

- 1 Daniel Bozhkov, *Darth Vader Tries to Clean the Black Sea With Brita Filter*, C print mounted on aluminium, 2000
- 2 *spaced: art out of place*; IASKA, 2012. A0o participation was a partnership with Symbiotica, City of Mandurah and IASKA
- 3 [www.galeriedusseldorf.com.au/GDArtists/Fardin/GFExh2010/GFardinExhGD2010/index.html](http://www.galeriedusseldorf.com.au/GDArtists/Fardin/GFExh2010/GFardinExhGD2010/index.html) [viewed 26/03/12]
- 4 [www.esd.ornl.gov/programs/bioindicators/whatare.htm](http://www.esd.ornl.gov/programs/bioindicators/whatare.htm) [viewed 25/03/12]
- 5 [www.pinjarramassacresite.com/content/products/?ecpage=2&category\\_id=199](http://www.pinjarramassacresite.com/content/products/?ecpage=2&category_id=199) [viewed 29/03/12]
- 6 [www.perditaphillips.com/index.php?option=com\\_content&view=article&id=313:the-sixth-shore-details&catid=17:now-news&Itemid=31](http://www.perditaphillips.com/index.php?option=com_content&view=article&id=313:the-sixth-shore-details&catid=17:now-news&Itemid=31)
- 7 [www.perditaphillips.com/index.php?option=com\\_content&view=article&id=404:clotted-life-and-brittle-waters&catid=25:writings-by&Itemid=45](http://www.perditaphillips.com/index.php?option=com_content&view=article&id=404:clotted-life-and-brittle-waters&catid=25:writings-by&Itemid=45) [viewed 26/03/12]

# THE MICROBIAL COMMUNITIES OF LAKE CLIFTON

Microbialites were once abundant in the early stages of life on earth and can still be found in several coastal salt lakes of Western Australia. There are two types of microbialites: stromatolites and thrombolites; the former are clearly laminated and the latter are characterised by internal clotted structures. There are only very few locations on this planet where such structures are still found, Lake Clifton is one of them. Lake Clifton is part of a chain of 11 salt lakes in the Yalgorup National Park, the largest conservation reserve in the Swan Coastal Plain in Western Australia. It is well known for the largest array of thrombolites in the world and is of high conservation value.

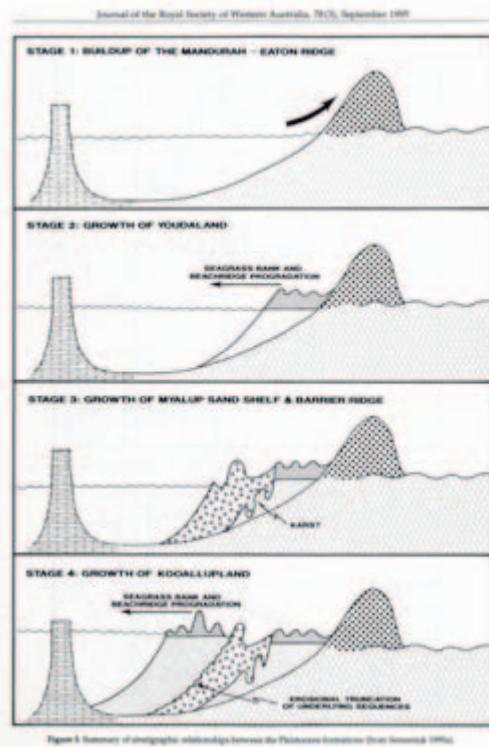
Vic Semeniuk, *New Pleistocene and Holocene stratigraphic units in the Yalgorup Plain area, southern Swan Coastal Plain, 1995 in the "Journal of the Royal Society of Western Australia" no. 78:67-79*

Microbialites are built by a community of microorganisms, predominantly cyanobacteria. Microbialites provide the oldest fossil evidence of life on Earth and are valuable indicators of past environments as they hold information of the environment in which they existed. Microbial communities have the ability to photosynthesize and have been attributed with creating the atmosphere we know today, as oxygen photosynthesis would also have increased free oxygen content in the earth's atmosphere.

Lake Clifton is described as one of the rare hyposaline water bodies in the world with living microbialites. The benthic microbial communities, which build these structures, are believed to have evolved in low nutrient conditions. Additionally, there are benthic microbial mats—multi-layered sheets of micro-organisms at the lowest level of a body of water—which are not involved in the building of microbialites. These microbial mats in the lake are also adapted to low nutrient conditions similar to those in coastal salt lakes and serve as nutrient sinks.

Within the last 20 years, Lake Clifton's seasonal salinity range has shifted dramatically. Additionally, there have been massive break ups of thick benthic microbial mats from the bottom of the lake to the surface, discolouring and adding nutrients to the lake. Massive deaths of the fish population have also been associated with the breakup of these algal mats. The origin, development, composition and spatial distribution of these large benthic algal mats and how their disintegration adds to the nutrient enrichment of the lake and its possible impacts on the conservation of the microbialites, remains unknown.

Between 2007 and 2012, the microbial mats in the lake, including those responsible for the growth of thrombolites, have been investigated in conjunction with environmental factors. The results indicate that the system is becoming eutrophic and hypersaline.





The structure of the dislodged microbial mats, in relation to the ecology of the Lake Clifton was also investigated, along with the impact of increasing salinity and eutrophication on the health and biodiversity of the microbial communities.

Cyanobacterium with mucilage secretion predominantly formed the bulk of the dislodged benthic microbial mats and other diatoms, a common type of phytoplankton, found in the mat included species which are known to secrete mucilage. The only remnants of animals found in the mats were ostracods, a type of crustacean, which could be identified as distinct white layers within the brownish algal mat. As the benthic algal mat grows by addition of new layers from the top, the older layers get compressed and gradually decompose. The decomposition of the lower layers by bacterial activities may result in the dislodgement of the whole mats, probably induced by storm events. The black bream death is attributed to pockets of anoxic regions due to decomposing algal mats or hyper-salinity beyond the tolerance levels of this species.

The microbial communities associated with the thrombolites were dominated by a species of *Phormidium*: a filamentous, sheathed cyanobacterium woven into a compact mat. The salinity ranged from 29 g L<sup>-1</sup> in the winter of 2008 to 104 g L<sup>-1</sup> in autumn 2012. The nutrients in the standing water were at eutrophic levels. Compared with historical records of salinity and nutrients, it is

clear that the lake has become eutrophic and salinity has almost doubled in the last 20 years.

Prolonged decline in rainfall and increased nutrient enrichment form a rapidly developing catchment area and a lack of outlet and flushing, seemed to be responsible for the degradation of the system. The cyanobacteria *Scytonema* and *Chroococcus*, the dominant components of the microbial communities, are no more to be found. Currently there is no evidence of any growth occurring in the thrombolites.

These once stable microbial communities are now facing increased pressure and are at risk of several irreversible impacts. Although once dominant on ancient Earth, today modern analogues of these microbial ecosystems are relegated to a few locations around the globe.

### JENNIFER ALEXANDER

Jennifer Alexander is a research scientist and has a scientific background in marine biology, zoology and environmental science. She has worked in a variety of fields and locations and has been conducting research at Lake Clifton since 2007 as part of her PhD.

# WAGYL NOOROOK

## INTERVIEW WITH GLORIA KEARING

The artist Gloria Kearing, known respectfully as Auntie Gloria among Bindjareb people, told me that Nyungar creation stories are powerful teachings which discourage their youngsters from damaging the environment, or coming to harm themselves.

For thousands of years, when Mandjoogoordap's<sup>1</sup> indigenous people literally depended on the health of the river system and water bodies for wellbeing and survival, they learned conservation and interdependence at an early age. As her nephew George Walley recounts (speaking in the film *Barragup Yarns*, an indigenous history film project 2012), little children were told that the fringing reeds of lakes like Lake Clifton, rivers and swamps were “the Wagyl’s whiskers, so you leave them alone.” They treated this vital buffer zone with appropriate caution, staying clear of quicksands, leaving healthy vegetation to filter run-off and provide shelter for snakes, frogs and all the other creatures vital to an ecosystem or food supply.

Kearing’s painting *Yarnup*<sup>2</sup>, made a strong impression on me as did *River of Spirits*<sup>3</sup>. Both pictures reflect the context of our conversation about the thrombolites and Lake Clifton, for though they depict the Murray River, all these waterways and wetlands “are connected in culture, as are the creatures of the water, of the land and of the sky who depend on them, and humans present, past and future. I truly believe their spirits are still there,” said Gloria.

I learn a lesson about the traditional approach to environment immediately from Kearing, for when I say (and think!) that what I’m seeking are stories specific to Lake Clifton, she broadens the conversation to include the estuary, the Murray river (Bilya Maadjit), other lakes and many swamps of Mandurah (Mandjoogoordap). As the Bindjareb people moved across the land according to the seasons and weather conditions, they gained embodied knowledge: first-hand, physical experience of the ways in which nature works, how eco-systems are connected, our place in them.

In Bindjareb tradition the female creation serpent, coming through and creating the estuary and all waterways linked to it, left her eggs at Lake Clifton. Cultural law included strong warnings against disturbing the beds of rivers and lakes. “They are made by the great female Wagyl, it’s where she went, part of her journey, making everything,” Gloria explained. “So that

Vyonne Walker, *Lake Clifton*, 2008



Yalgorup National Park map, as at May 2007  
used with permission from the Department of  
Environment and Conservation.

[following page]

Carmel Wallace, [detail] *Lake Life series #14*, 2010

if anyone interfered with the river, pushed things into the lakebed, or dug them up, someone of their family could expect to fall ill.”

Kearing remembers following the Murray River to the Estuary, as a child and “being handed over my uncles’ shoulders, piggy back, where it was deep.” It is how she learned the significance of waterways, a time when her family “camped at the swamps and lived off their abundant food. I was taught that there’s a law for the fish, a law for the land creatures, a law for humans. And we each have to obey the law, then everything goes fine and there’s enough for everyone.” As an example she explains the prohibition on catching fish swimming upriver: “We understood that they were going to spawn. Then later, when the fish swam downriver, they knew we could catch them. That it was right according to the law. That it was their last time, swimming the river”.

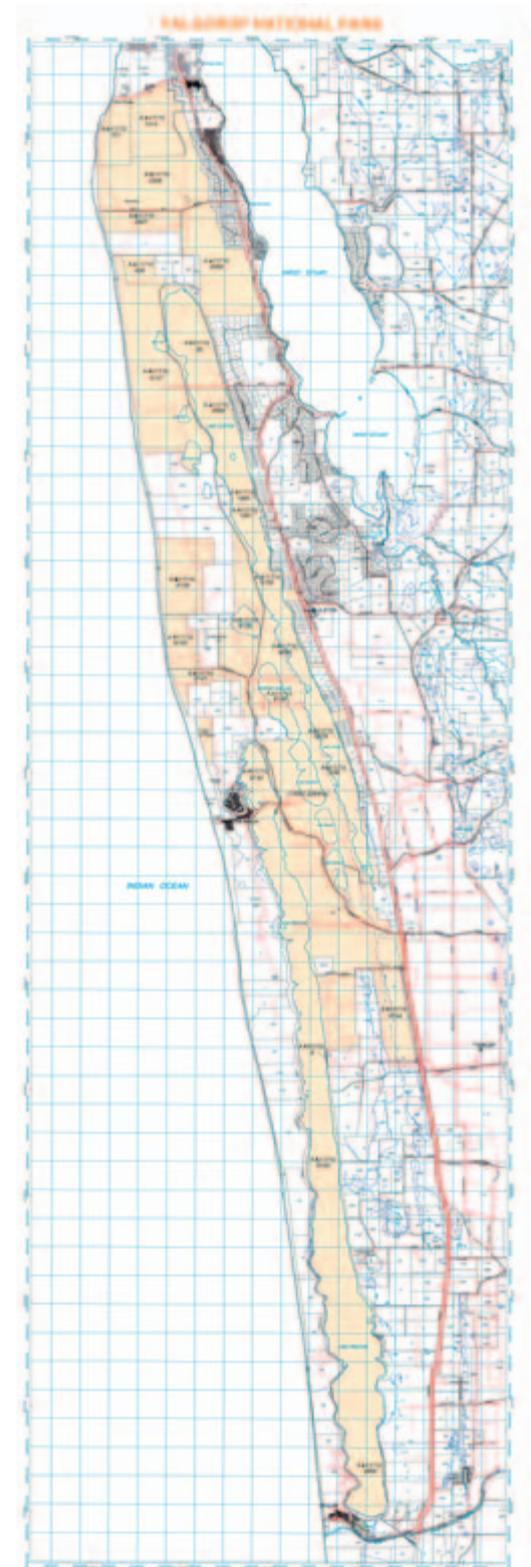
Many generations have camped in the Yalgorup, including at Lake Clifton, as evidenced, said Gloria “by the places where flint is found, which was carried there from the Hills, and used to make tools<sup>4</sup>.” And there were places especially helpful at different stages of the human journey, like a sheltered cove at the estuary, along the scenic drive (over the hill which separates it from Lake Clifton), where the land juts out and there’s a freshwater spring. It’s the place women went to have their babies, for “it was away from wind, near water, near freshwater springs too, and they say there were caves in the limestone, private for birth.”

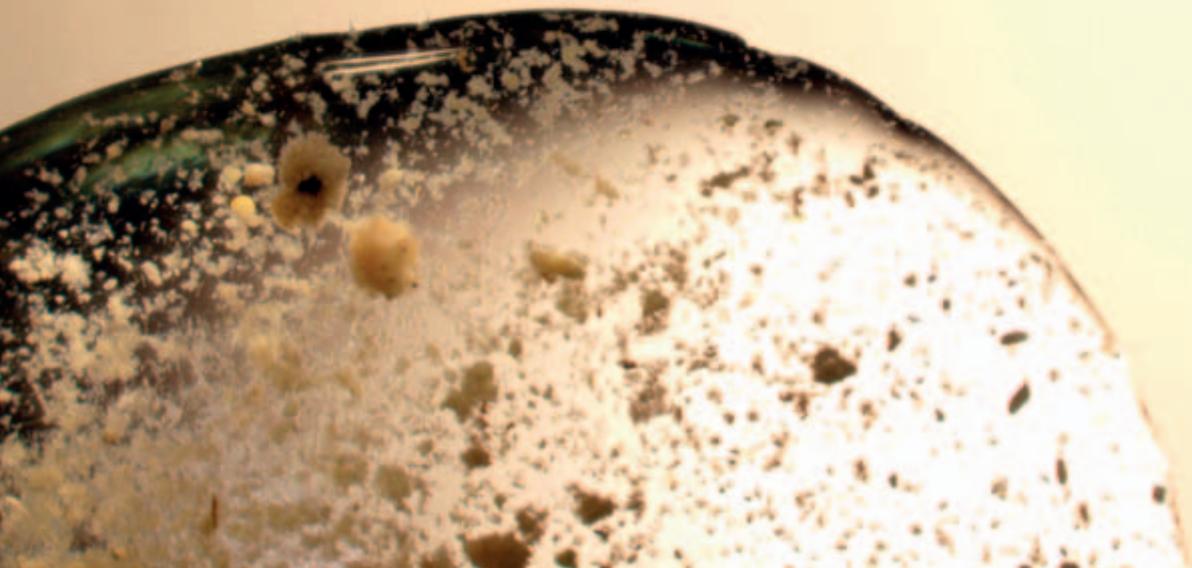
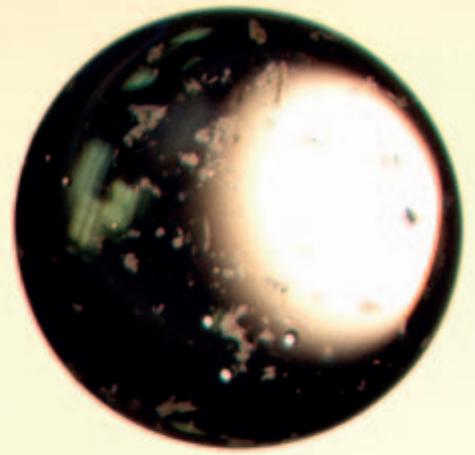
Lake Clifton, she said many times, was always regarded as “very special, very significant”. It is distinguished from the great network of rivers and water bodies, destined for special regard, because of its thrombolites. Known as Wagyl Noorook, “eggs of the great female serpent, they are not to be damaged or disturbed in any way. And the lake bed, which is alive, must not be broken.”

## ANNAMARIA WELDON

### NOTES

- 1 Traditional name for Mandurah
- 2 Acrylic on aluminium 120 x 85 cm Pinjarra Massacre Memorial Art Exhibition (Art on the Move),
- 3 Oil and acrylic on board 180 x 120 cm with Rob Ewing (as above)
- 4 The Bindjareb were renowned spearmakers.







# EXHIBITION

ART ORIENTÉ OBJET

JUAN M. CASTRO

ORON CATTS

GALLIANO FARDIN

CATHERINE HIGHAM

GLORIA KEARING AND ROB EWING

PERDITA PHILLIPS

YVONNE WALKER

CARMEL WALLACE

ANNAMARIA WELDON

CURATOR: CECELIA CMIELEWSKI—SYMBIOTICA

## PLUTÔT QUE TOUT (MORE THAN EVERYTHING)

French collective, Art Orienté objet, were originally invited by SymbioticA, a leading international bio-art organisation located at the University of Western Australia, to propose an artistic project that responded to Mandurah's unique wetland environment, specifically Lake Clifton, home to living thrombolites, one of the earliest known life forms on earth.

Art Orienté objet immersed themselves in the cultural and ecological environs of Lake Clifton, conducting scientific investigations, interviews with local Indigenous people and learning more about this unusual site. Long interested in the intersections between art, science and technology, they were drawn to the many questions that Lake Clifton raises around endangered ecosystems and cultural anthropology.

The artists developed several projects out of their residency, including a sculpture of carved kangaroo bones and an 'anthropological movie', documenting the community around the lake, leading to a proposal that the thrombolites be recognised for its environmental and cultural value via UNESCO's World Heritage listing. They also initiated: two TV programs in a French art centre; an online petition to give the thrombolites World Heritage listing, and the symbolic twinning between Montreuil (France) and Mandurah, in a 'glocal' attempt—that is, "think local, act global"—to reconsider our responsibility towards Nature.

## ART ORIENTÉ OBJET

Art Orienté objet, *Plutôt que tout (More than everything)*, 2012

High Definition video, 35:00 mins

Sponsor: IASKA and SymbioticA

Founded in 1991 Art Orienté objet, (Marion Laval-Jeantet and Benoit Mangin), place the scientific interrogation of ecology and human existence at the centre of their art practice. Working across installation, performance, video and photography, they conduct ongoing experiments in which biology, psychology and ethnology intersect. Solo exhibitions include *Plutôt que tout*, La Maison Populaire, Montreuil, France, 2011; *L'Alalie*, Le Magasin, Grenoble, France, 2010; and *Le Pensador*, Palais de Tokyo, Paris, 2006. Group exhibitions include *Second Life*, Casino Luxembourg, Luxembourg, 2011; *Synthetic*, Naturhistorisches Museum, Wien, Autriche, 2011; and *CyberArts 2011*, Prix Ars Electronica, Linz, Austria, 2011.

[www.artorienteeobjet.com](http://www.artorienteeobjet.com)



Art Orienté objet, *Pieta Australiana*, 2011

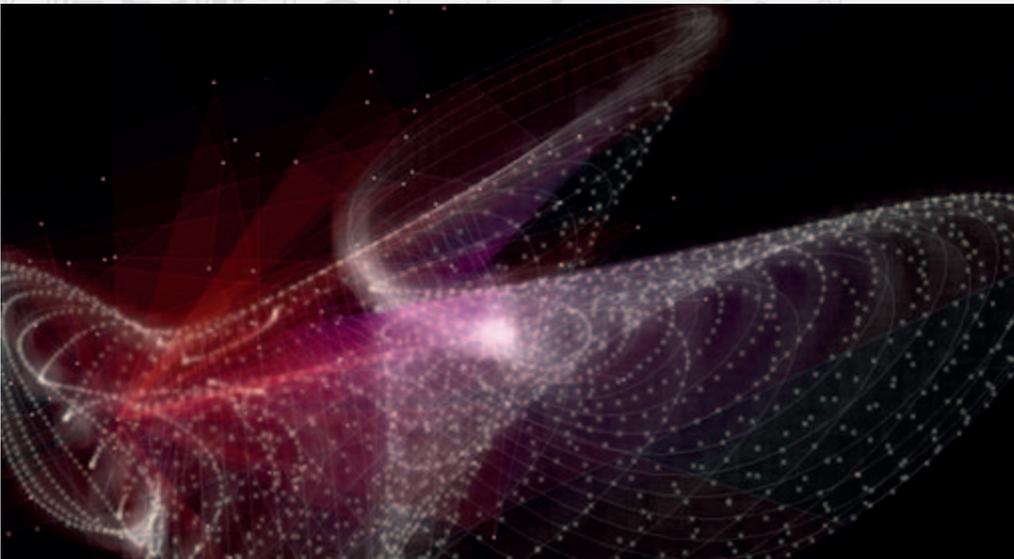


## HELIOTROPIKA

The *Heliotropika* video documents the installation that interacts between micro-organisms, humans and light energy. The project creates an interface between the visitors and a group of cyanobacteria by integrating the photosynthetic activity of these cells, the dynamics of environmental light and the bioelectrical activity of the participants. Using cell culture and computer vision, this work renders the photosynthetic activity of cyanobacteria in the form of an organic structure. It also produces dynamic geometries of solar energy by analysing environmental data. Simultaneously, this work transforms the activity of the nervous system of each participant into 'light' to stimulate the cells. As a result, the visitors and cyanobacteria influence each other giving subsistence to a dynamic feedback system. This assembly, thus, questions the possibility of an interkingdom interaction system that could provide insight into the patterns orchestrating the complex coexistence of organic life.

## JUAN M. CASTRO

Juan M. Castro, *Heliotropika*, 2011  
High Definition video, 6:00: mins



As well as interactive installations, Juan M. Castro has been working in real-time visualization of organic information and the creation of hybrid architectures with bio-materials. Born in Bogota, Colombia, he is currently living and working in Tokyo, Japan. In 2008 he founded 'Biodynamic geometries' as a unit for experimental creative projects. Since its inception it has developed an exhibition program of biomedica art installations. As a postdoctoral research fellow, he is investigating the impact of 'synthetic ecosystems' and 'interkingdom communication' upon artistic practice in the laboratory for molecular cell network—department of electrical engineering and biology—at Waseda University.

[www.biodynamicgeometries.com](http://www.biodynamicgeometries.com)

## THE AUTOTROPH

The *Autotroph* is a solar powered kinetic sculpture and fountain. It ironically explores the problems and possibilities of technological solutions to human induced climate change. The *Autotroph* is an overly technological and playful exploration of the immense complexity of dealing with ecological issues. Any action postulated raises possibilities of good and harm to different aspects of the ecology, and this is without even considering the unknown unknowns (to quote Rumsfeld). The challenge of this project is to tell the stories of these complexities, but not to solve them.

The *Autotroph* consists of a floating solar still; in this exhibition the *Autotroph* floats in Administration Bay, Mandurah, using the rays of the sun. The still deploys a computer controlled focussing mirror to achieve sufficient heat to evaporate water. The steam generated is condensed and flows to a Japanese style water feature back into the body of water.

The work is inspired by Lake Clifton, south of Perth, Western Australia. The lake and its inhabitants, including the Thrombolites, are under threat due to salinity, urban development pressures, global warming and land misuse.

## ORON CATTs

Oron Catts, *The Autotroph*, 2010

Floating solar still, condenser, solar tracking system, boiler, turntable, pumps, plastic, aluminium and marine ply, 150 cm x 180 cm x 80 cm

Engineered by Design Feat

Sponsor: Australia Council for the Arts and the Sidney Myer Foundation



Oron is the Director of SymbioticA: The Centre of Excellence in Biological Arts, School of Anatomy, Physiology and Human Biology, The University of Western Australia. Under Oron's leadership, SymbioticA has gone on to win the Prix Ars Electronica Golden Nica in Hybrid Art (2007) and became a Centre for Excellence in 2008.

Oron is an artist, researcher and curator whose work with the Tissue Culture and Art Project (which he founded in 1996 with Ionat Zurr) has exhibited and presented internationally. The latest show he curated was *Viseral—the Living Art Experiment* at the Science Gallery, Dublin, 2011.

[www.symbiotica.uwa.edu.au/residents/catts](http://www.symbiotica.uwa.edu.au/residents/catts)

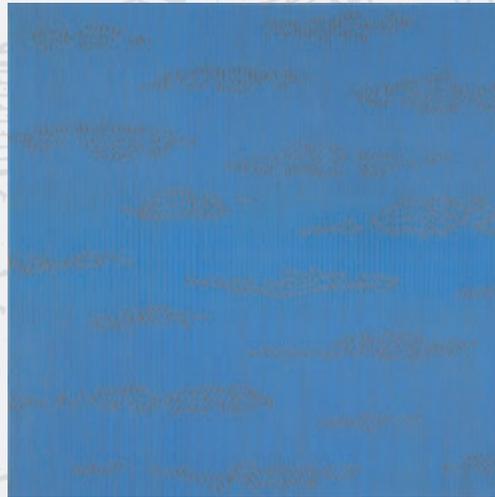


## YALGORUP

The Lake Clifton area has been my home base since the eighties. In this place I have had the opportunity to witness and to reflect on the changes that are continuously affecting everything around us.

The northern end of Lake Clifton was connected to the ocean only a few thousand years ago. The thrombolites which inhabit the eastern shore owe their existence to the freshwater runoff from the higher ground to the east. In nature nothing is static, adaptations happen whenever opportunities arise or when circumstances change. These natural changes are 'evolution' at work. We owe our existence to these processes but changes of a different nature are taking place all over the planet. Certain human activities, often driven by greed or lack of foresight are undermining the natural order of things. Introduced weeds and pests follow in the wake of new developments everywhere. The interference and disruption of the habitat is not evolutionary; it is destructive.

Lake Clifton is a small body of water of great significance, it has become a test case for the way we deal with threatened ecosystems. This is my 'small' version of the story; the big picture belongs to the Nyungar people of this region.



## GALLIANO FARDIN

Galliano Fardin, *Yalgorup*, 2011

oil on canvas, 101 x 101 cm

Represented by Galerie Düsseldorf

BASSENDAN  
SAND

Galliano Fardin was born in Mogliano Veneto, Italy in 1948 and arrived in Australia in 1972. He lives and works Lake Clifton, Western Australia. The paintings of Galliano Fardin are a consequence of memories and impressions of the Western Australian landscape. Fardin's essential concern is to find a physical experience and understanding of the land, rather than the traditional need to characterize landscape in a literal sense. Fardin's memories and notions of the land are translated onto canvas as marks, textures and colour, which echo the experience of living and working in the environment.

[www.galeriedusseldorf.com.au](http://www.galeriedusseldorf.com.au)

## still life

The short film *still life* connects a drying summer creek line to Lake Clifton thrombolites, some of the earliest known life forms on the planet. This ongoing work follows my research as a resident artist with SymbioticA, on the project *Adaptation* based at Lake Clifton.

The film engages with the relationship between human behaviour and ecology, through the observation of bioindicators in situ and possible impacts of a domestic and industrial scale. Using video editing software, I have connected digital stills and sound recordings that document changes in water quality to 14 Mile Brook. The images have been taken over a two year period, and observe bioindicators such as algae and arthropods, organisms that indicate the health or otherwise of local ecosystems.

Research has followed three waterways on the farm including: 14 Mile Brook, Congelin Creek and the Upper Crossman that all join the Hotham and Murray Rivers and flow into the Peel Harvey Inlet, next to Lake Clifton. Artistically this project aims to make the personal universal by linking Lake Clifton to my home hundreds of kilometres upstream.

## CATHERINE HIGHAM

Catherine Higham, *14 Mile Brook, Congelin Creek and Upper Crossman* series, 2010 – 2011

3 x digital image series hand mounted on aluminium, 30 x 36 cm; 28 x 42 cm

*still life*, 2010, High Definition video, 7:00 mins

Sponsor: Country Arts WA



Catherine Higham has a multidisciplinary approach to her work and is interested in the connection between human behaviour and ecology. Catherine exhibits regularly and has recently returned from Ireland where she is exhibiting her film *still life* for the Science Gallery's exhibition *Surface Tension—Future of Water*. Catherine also lectures in Visual Arts for C.Y.O'Connor Institute in Narrogin. Catherine married Williams farmer, Geoff Higham, in 1991 and has lived with him on a family farm since then.

## THE RIVER OF SPIRITS

Massacre site, Murray River, Pinjarra, Western Australia

Heritage Statement:

'The Pinjarra massacre site is important because it's part of our culture and history. It's a place where I can pay my respects. I truly believe the spirits are still there. (Gloria Kearing)

It's a place of life-giving beauty as a river, also a place of great sadness because of the poignant tragedy that was the massacre of the Bindjareb Tribe. We need to remember the consequences of ignorance and greed. (Rob Ewing)



## GLORIA KEARING AND ROB EWING

Gloria Kearing and Rob Ewing, *The River of Spirits*, 2000  
print, 60 x 90 cm

The artist Gloria Kearing is a well-respected Bindjareb woman of the Nyungar nation. Her works have been included in Pinjarra Massacre Memorial exhibition and tour. Since January 2011, Gloria Kearing and Karrie-Anne Kearing-Solomon, have been collaborating with Caroline Nilson of the Nursing Program at Murdoch University. Both women are committed to establishing programs in their community: to develop health literacy; health awareness; and skills to engage in healthy lifestyle choices

She has collaborated on many projects and exhibitions with Rob Ewing including:

- *Travel Lines Erskine*, commissioned by National Lifestyle Villages, Mandurah in 2009.
- *The Art of Place*, The Fifth national Indigenous Heritage Art Award, Reconciliation category, Australian Heritage Commission in 2000.
- Santalum Circus Park commission for MIRVAC Mandurah WA.
- Mural and relief artworks for the Tour Reception Centre commissioned by Alcoa World Alumina, Pinjarra WA in 1996.

## THE SIXTH SHORE

The Sixth Shore is a site-specific spatial sound installation for Lake Clifton. It introduces people to the soundscapes of the natural world that we normally ignore and investigates the pressing problem of how to bring together different stories and perspectives about a complex environmental issue. The work involves six refrains:

- thrombotic time
- shifting shores: lake formation and seashore changes
- cultivated landscapes: indigenous cultures
- a time of clearing
- bird migration and hooded plovers
- futures

The six strands of sound are woven together, challenging the participants to think through the conceptual 'interference' of different levels of time and space.

Presented at the gallery is a small sampling of the soundtrack and documentation of the installation at Lake Clifton. In this work, beach cusp sound moves through different speakers in a sequence similar to the way waves come up a beach before washing back out into the sea.

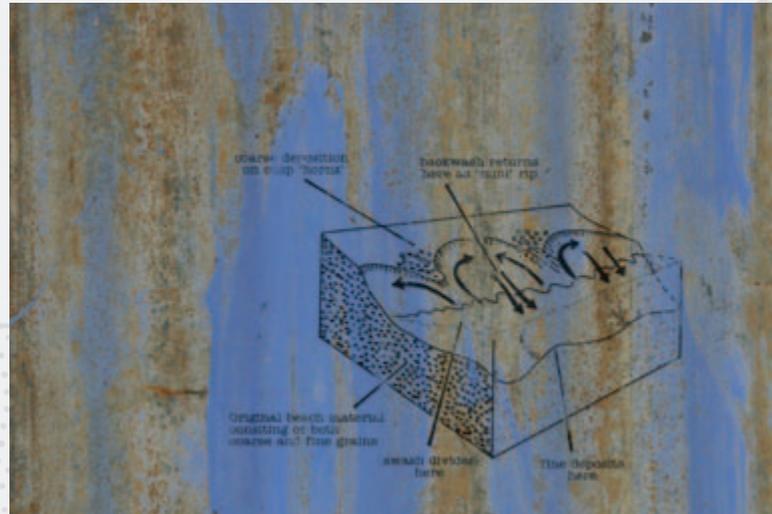
Explanation for the formation of beach cusps remains inconclusive and may involve the formation of standing edge waves or, alternatively, can be understood as a paradigm of self organisation or as an analogy for how we may reset our environmental and cultural priorities.

## PERDITA PHILLIPS

Perdita Phillips, *cusp* (*The Sixth Shore*), 2012

floor sound work, 300 x 300 cm

Sponsors: Australia Council for the Arts, Sidney Myer Foundation



Perdita Phillips is a Western Australian artist working across the media of walking, sound, installation, photography and digital media. Through her work she explores the mutual relationships between people and the nonhuman world. Exhibitions include *In Vetland* (solo, Murdoch University 2009), *Home Open*, (Fremantle Arts Centre 2010–2011) and *Visceral: The Living Art Experiment*, (Science Gallery, Dublin 2011). As founder and co-editor of Lethologica Press she has designed, contributed and published various books including *A simple rain* (with Vivienne Glance 2012) and *The Estrildid Orchestra* (with Thea Costantino 2012) and *birdlife* (various authors 2011).

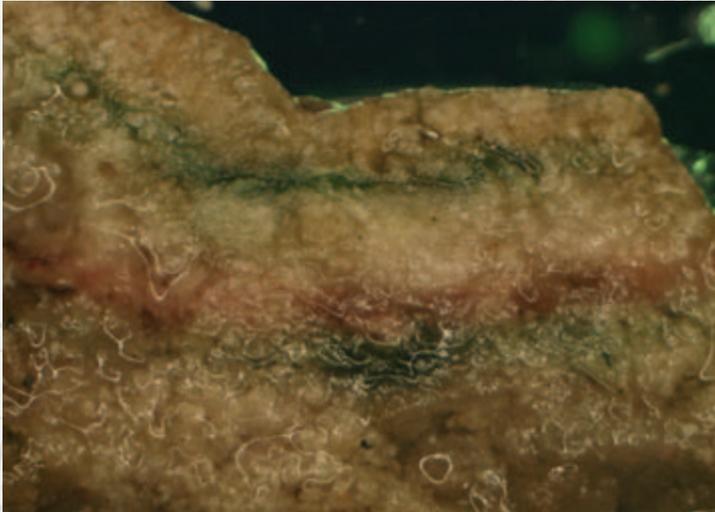
[www.perditaphillips.com](http://www.perditaphillips.com)



## THE SLOWEST GROWING SCULPTURE

Windswept, Lake Clifton's low lying coastal dunes intertwine with the Yalgorup Lake system. An Indigenous culture with connections interwoven with land, water and sky has marked this place over time. The rocks are literally alive: thrombolites, benthic microbial accretions, growing at increments of less than 1 mm per year. A thrombolite the size of one's hand could take at least 200 years to form.

The architectonic structures and the communities of microbial organisms that create them are what interest me as an artist. My formal studies in sculpture tune the sensibilities to an appreciation of form and structure. These sculptures do not need the artist's hand. Natural systems have a way of organising; a lot like a society there is an interdependency of one on another. At the global scale these interdependencies now extend to a shared responsibility of the health of the planet. Thrombolites in their contribution to the development of life on earth have become a silent witness to nearly every stage of our planet's evolution. As a community these organisms work together and helped create our world. The thrombolites live, they have much to teach, if we listen quietly to the silence in the pause.



## YVONNE WALKER

and SymbioticA Research Group

Yvonne Walker, *Slowest Growing Sculpture*, 2012  
sculptural works  
27 cm x 27 cm x 27 cm

## BASSENDAN SAND

Yvonne Walker an artist, researcher, engaging in an exploration of the inherent underlying form and structures of nature's systems. Yvonne creates art with an acute sense of a world unseen. Sculptures, photo media, and text combine in an evocative practice. Working outside of the norms of the atelier artist, Yvonne's projects engage and provoke. Formal studies include; Advanced Diploma of Art and Design, Central College of TAFE, Perth; Bachelor of Fine Arts, University of Western Australia and UCLA, Los Angeles, California. Yvonne has been artist in resident at SymbioticA at the University Western of Australia since 2009.

[www.symbiotica.uwa.edu.au/residents/walker](http://www.symbiotica.uwa.edu.au/residents/walker)

## VISUALISING ADAPTATION: SURFACE AND BEYOND

My research focused on the thrombolites populating Lake Clifton. Familiar processes of studying particular environments and acquiring information through sensual immersion and visual interpretation were expanded during my time at SymbioticA. My usual repertoire of tools of capture—cameras, pencil, paint, found materials—were reprioritised as I focused on the microscopic detail of my subject: initially, the water-borne organisms surrounding the thrombolites, followed by the surface and internal structure of a particular thrombolite sample. Whilst attempting to visualise a journey into the past, from the outer layers to the centre of this life form, my investigation encompassed the aesthetics of microscopic detail as I explored ways of transferring knowledge gained scientifically into my visual vocabulary and artworks. The outcomes include film clips, suites of digital images and prints.



## CARMEL WALLACE

Carmel Wallace, *Lake Life* series #1–14, 2010  
14 digital photos, 42 x 59.4 cm

*Lake Life* 2010 –12

High Definition video, edited by Peter Corbett  
Powerhouse Productions, 4:00 mins



Carmel's art practice focuses on the advantages of multi-disciplinary exploration of place and its ramifications for environmental awareness and ethics. After gaining a PhD in this field in 1998, she has exhibited regularly in solo exhibitions at Gallery 101 in Melbourne and the Blake and Wynne Prizes in Sydney. Collections include The Silk Cut Collection, National Gallery of Australia and Carmel co-curated Surface Tension, a printmaking exchange exhibition shown in New York and Melbourne. Major projects include *Walk*, where eight artists explored the Great South West Walk track in Victoria and; the multi-disciplinary *Stoney Rises Project* developed by RMIT Design Research Institute

## SHARING THE EDGE

In poetry, prose and photographs, *Sharing the Edge* describes my relationship to the thrombolites and Lake Clifton. For three years I have known its shores at all seasons and different times of day or night, an immersion in landscape which transformed my creative writing and work in community.

As an *Adaptation* Resident, I met SymbioticA artists and scientists and was introduced to Mandurah residents who generously shared environmental insights, specialist knowledge and traditional stories of Bindjareb Nyungar culture. This opportunity for creative intimacy with Yalgorup's wetlands aroused a long-desired sense of place and homecoming, becoming the catalyst for nature-writing workshops and collaborative art projects, and the subject of prose and poetry which has been published nationally and internationally.

*Sharing the Edge* uses excerpts from my manuscript in progress, a landscape memoir, which includes *After Devotion* (shortlisted, Porter Poetry Prize 2012,) *Threshold Country* (awarded Nature Conservancy Australia's Essay Prize 2011), *The Memory of Earth* (winner, Tom Collins Poetry Prize), *Bush Journal* (audio-visual installation with artist Carolyn Marks for INQB8.exhibition), and *Sharing the Edge* (Adaptation R&D with naturalist Laurie Smith).



## ANNAMARIA WELDON

Annamaria Weldon, *Sharing the Edge*, 2009 –2012  
Limited edition art book, 15 cm x 42 cm;  
12 digital photos, 30 cm X 46 cm

Award-winning nature essayist and poet Annamaria Weldon began writing for publication in 1978. The former journalist and editor is author of two collections, *Ropes of Sand* (Associated Press Malta, 1983) and *The Roof Milkers* (Sunline Press 2008), her work has been recorded on CDs, broadcast on Radio National and published in literary journals. A *Stretch Festival* artist (2010, 2012), seasoned performer and community arts educator, Weldon is completing a landscape memoir about Lake Clifton and her *Adaptation* residency. She hopes to include her photographs of Yalgorup wetlands, previously published and exhibited by Artsource, Museums WA, New Science Library U.W.A., Terrain.org.

[www.annamariaweldon.com.au](http://www.annamariaweldon.com.au)

(opposite page)

Catherine Higham, *14 Mile Brook*, 2010 –2011

(inside front cover)

Annamaria Weldon, *Lake Clifton*, 2008

This publication supports the exhibition:

**ADAPTATION**

First shown at INQB8 Gallery, Mandurah, Western Australia. 6 May to 10 April 2012

Published and distributed by:

**SYMBIOTICA**

SymbioticA is the first research laboratory of its kind, enabling artists and researchers to engage in wet biology practices in a biological science department. Located within the School of Anatomy Physiology and Human Biology at the University of Western Australia, it also hosts residents, workshops, exhibitions and symposiums.

With an emphasis on experiential practice, SymbioticA encourages better understanding and articulation of cultural ideas around scientific knowledge and informed critique of the ethical and cultural issues of life manipulation.

[www.symbiotica.uwa.edu.au](http://www.symbiotica.uwa.edu.au)

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Permission sought to use the image by Daniel Bozhkov, *Darth Vader Tries to Clean the Black Sea with Brita Filter*, 2000.

ISBN: 978-0-9873082-0-7

*Adaptation* exhibition co-ordinator: Amanda Alderson

*Adaptation* exhibition curator: Cecelia Cmielewski (Manager, SymbioticA)

Catalogue editor: Michelle Francis

Catalogue Design: Square Peg Design

**Thanks...**

City of Mandurah: Jane Tillson, Carolyn Marks and Gary Aitken.

IASKA: Marco Marcon. A0o was sponsored through a partnership between SymbioticA, City of Mandurah and IASKA for the inaugural *spaced: art out of place* program.

Nyungar Community Mandurah: George Walley and Gloria Walley Kearing.

SymbioticA Director: Oron Catts and all staff working on the *Adaptation* project from 2008–2012 in particular Jane Coakely.

*Unruly Ecologies Symposium* 2010 co-ordinator: Perdita Phillips.

Annamaria Weldon for use of her image as part of the catalogue cover.

**Supported by funding from:**

Australia Council for the Arts

City of Mandurah

Country Arts WA

IASKA

Sidney Myer Foundation

University of Western Australia

WA Department of Culture and the Arts





INDIAN OCEAN

