



# SYDNEY HARBOUR UNDER the MICROSCOPE

The Sydney Institute of Marine Science is leading the way in ground-breaking marine research that will unlock the secrets of the ocean, tackle climate change and help to save species under threat. Jane Goe takes a closer look.

**N**estled high on a hill with magnificent views over Sydney Harbour and Mosman's Chowder Bay, the Sydney Institute of Marine Science (SIMS) is establishing its scientific credentials as a national and global marine research facility, currently supporting the work of over 80 marine scientists.

SIMS was founded in 2005, in partnership with four major NSW universities, bringing together the work of marine biologists, ecologists and oceanologists in one of the most spectacular and historic locations on the Australian coastline.

Professor Peter Steinberg, who has taken on the mantle of SIMS director, says the work will help put the health of Sydney Harbour under the microscope, tackling the natural and man-made stresses that are affecting marine ecology and pinpointing what is needed to undertake future rehabilitation.

"In the short-term we are establishing a unique marine facility located on one of the most beautiful harbours in the world, with many people on board to deliver our desired outcomes and programs," Professor Steinberg tells *North Shore Living*.

"It's tough to continue to find the resources necessary to

maintain a world-class centre and that's probably one of our greatest challenges here in Mosman," he concedes.

To help enhance SIMS' financial viability, a combined grant of \$1.2 million was given in early 2009 by the former NSW Labor Government and the Ian Potter Foundation. This is being used to pay for a significant infrastructure upgrade at the Chowder Bay laboratories and help fund early research projects.

Professor Steinberg says one of the major missions of the institute is to track the onset of climate change, rising water temperatures and the effects on marine life. Former SIMS Chairman Frank Talbot said at the time the grant was given, that although no-one really knew what all the marine changes were likely to be – they would certainly hit hard and "the extra funding would allow positive responses, helping achieve sustainability".

For University of Technology Sydney (UTS) PHD student Hayden Beck, tracking the root causes and consequences of rising temperatures and the effects on marine life is of vital significance and something he's passionate about.

His research, through UTS, is being supervised by Professor David Booth who



**SIMS Director, Professor Peter Steinberg**



**“Increases in water temperatures are likely to lead to the establishment of tropical fish populations along the NSW coast.”**

**Marine science PHD student Hayden Beck**



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is chairman of the SIMS Scientific Advisory Committee. "Already the Tasman Sea, off the east coast of Australia, has warmed approximately two degrees over the past 100 years," Mr Beck says.

Mr Beck's new research is set to examine the extent to which an increase in tropical fish populations, because of the higher water temperatures, will impact on the present marine life along Australia's east coast.

"Increases in the abundance and diversity of tropical fish may have a significant impact on local-temperate marine communities through competition for resources such as habitat and food," he claims.

The first part of Mr Beck's landmark research project will involve major dive surveys in reefs and estuaries along the NSW coast to determine the habitats that tropical fish use and identify the potential impacts these new fish may be having on the local marine ecosystem.

Over the past few years, scientists say there is no doubt marine diversity has returned to the waters of Sydney Harbour, however their job in the next decade will be to chart and follow any changes and put together a comprehensive inventory of the biodiversity in the harbour. So far this has never been done, despite records dating back over 130 years.

Regardless of these clean-up attempts, a combination of urban and industrial development pollution still feeds into the harbour waters

creating a potentially damaging mix of heavy metals, sewage, plastics and chemicals. Professor Steinberg says there is still not enough knowledge about the impact this marine pollution is having on the harbour's various inhabitants.

The rich kaleidoscope of Chowder Bay's marine life consists of miniature seahorses, weedy sea-dragons, decorator crabs, rays, eels and the rare anglerfish that can be seen in diving or snorkeling expeditions.

Chowder Bay plunge diving instructor Ronnie Daly, who has been taking individuals and groups for the past four years to discover the magical waters, says there are now many exciting species to discover that have not been seen for many years.

"Visibility does vary according to the weather and the time of year but generally, we can see for up to 12 metres which gives people a great view of sea life," he tells *North Shore Living*.

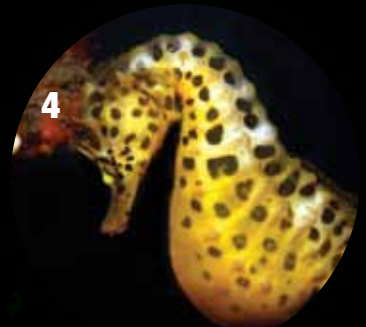
The waters around the Sydney Institute of Marine Science are considered to be some of the best diving locations in Sydney and provide the perfect microcosm to view the harbour's biodiversity.

Professor Steinberg says the institute is set to play an important role in understanding the ocean environment. With a new building on the foreshore, experienced staff and new research projects in the pipeline, SIMS will contribute to our knowledge and understanding of the precious marine ecosystems that are in a constant change of flux. ■



## SIMS VISIONARY PROGRAM WILL FOCUS ON THE LONG-TERM HEALTH OF SYDNEY HARBOUR

- Documenting for the first time the full range of marine species in Sydney Harbour and its valuable marine habitats
- Exploring the natural and man-made stresses on marine populations and pinpointing the greatest negative impact
- Developing the knowledge and skills to undertake the rehabilitation of degraded areas
- Monitoring the health of the harbour over ten years and formulating a report card on how it is coping with remediation measures



1 : Hayden Beck who will research the significance of climate change on tropical fish populations

- 2 : Dusky Whaler and swimmer
- 3 : Sea Cucumber, Chowder Bay
- 4 : Seahorse, Chowder Bay

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