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This is Your Brain on Aquariums

New research finds aquariums deliver health and wellbeing benefits

Posted on Jul 30th, 2015



PRESS RELEASE

People who spend time watching aquariums and fish tanks could see improvements in their physical and mental wellbeing, according to new research published in the journal *Environment & Behavior*.

In the first study of its kind, experts from the National Marine Aquarium, Plymouth University and the University of Exeter assessed people's physical and mental responses to tanks containing varying levels of fish.

[Deborah Cracknell \(1,2\)](#), [Mathew P. White \(3\)](#), [Sabine Pahl \(2\)](#), [Wallace J. Nichols \(4\)](#), and [Michael H. Depledge \(3\)](#). 2015. *Marine Biota and Psychological Well-Being: A Preliminary Examination of Dose–Response Effects in an Aquarium Setting*. *Environment and Behavior* 1–28.

1 National Marine Aquarium, Plymouth, UK 2Plymouth University, UK

3 University of Exeter Medical School, UK

4 California Academy of Sciences, San Francisco, USA

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The team found that viewing aquarium displays led to noticeable reductions in blood pressure and heart rate, and that higher numbers of fish helped to hold people's attention for longer and improve their moods.

Whilst spending time in 'natural' environments has been shown to provide calming effects on humans, there has been very little research into the role that underwater settings could have on health and wellbeing. Deborah Cracknell, PhD Student and Lead Researcher at the National Marine Aquarium, conducted the study and believes it provides an important first step in our understanding:

"Fish tanks and displays are often associated with attempts at calming patients in doctors' surgeries and dental waiting rooms. This study has, for the first time, provided robust evidence that 'doses' of exposure to underwater settings could actually have a positive impact on people's wellbeing."

The researchers benefited from a unique opportunity in order to conduct their study when the National Marine Aquarium refurbished one of its main exhibits – in a large 550,000 litre tank – and began a phased introduction of different fish species.

They were able to assess the mood, heart rate and blood pressure of study participants in precisely the same setting as fish numbers in the exhibit gradually increased.

Dr Sabine Pahl, Associate Professor in Psychology at Plymouth University, said: "While large public aquariums typically focus on their educational mission, our study suggests they could offer a number of previously undiscovered benefits. In times of higher work stress and crowded urban living, perhaps aquariums can step in and provide an

oasis of calm and relaxation.”

Dr Mathew White, an environmental psychologist at the University of Exeter, said: “Our findings have shown improvements for health and wellbeing in highly managed settings, providing an exciting possibility for people who aren’t able to access outdoor natural environments. If we can identify the mechanisms that underpin the benefits we’re seeing, we can effectively bring some of the ‘outside inside’ and improve the wellbeing of people without ready access to nature.”

Notes to Editors

The study Marine biota and psychological well-being: A preliminary examination of dose-response effects in an aquarium setting is published in the journal Environment & Behavior on Thursday 30th July.

For further information please contact Alex Smalley on a.j.smalley@exeter.ac.uk or 01872 258131.

For the National Marine Aquarium contact Josh McCarty on josh.mccarty@national-aquarium.co.uk or Rachel Hadfield on Rachel@mckennatownsends.com or call 01425 472330.

For Plymouth University contact Alan Williams on alan.williams@plymouth.ac.uk or call 01752 588004.

The University of Exeter Medical School’s European Centre for Environment and Human Health is part financed by the European Regional Development Fund Programme 2007 to 2013 and European Social Fund Convergence Programme for Cornwall and the Isles of Scilly.

The Department for Communities and Local Government is the managing authority for the European Regional Development Fund Programme, which is one of the funds established by the European Commission to help local areas stimulate their economic development by investing in projects which will support local businesses and create jobs.

For more information visit www.communities.gov.uk/erdf

European Social Fund Division, part of the Department of Work and Pensions, is the managing authority for the European Social Fund (ESF) Convergence, which is one of the funds established by the European Commission to help local areas stimulate their economic development. ESF Convergence invests in the economic regeneration of Cornwall & Isles of Scilly, investing in people, their jobs and skills.

For more information visit <http://www.dwp.gov.uk/esf> and www.inspiringwork.org

This year we are joined by the Royal Cornwall Hospital Trust and Plymouth University in celebrating 10 years of delivering education and research at our Truro campus.

About the University of Exeter Medical School

The University of Exeter Medical School is improving the health of the South West and beyond, through the development of high quality graduates and world-leading research that has international impact.

As part of a Russell Group university, we combine this world-class research with very high levels of student satisfaction. The University of Exeter Medical School's Medicine programme is ranked 7th in the Guardian University Guide 2015. Exeter has over 19,000 students and is ranked 7th in The Times and The Sunday Times Good University Guide league table, and 10th in The Complete University Guide and 12th in the Guardian University Guide 2015. In the 2014 Research Excellence Framework (REF), the University ranked 16th nationally, with 98% of its research rated as being of international quality. Exeter's Clinical Medicine research was ranked 3rd in the country, based on research outputs that were rated world-leading. Public Health, Health Services and Primary Care research also ranked in the top ten, in joint 9th for research outputs rated world-leading or internationally excellent. Exeter was The Sunday Times University of the Year 2012-13.

www.exeter.ac.uk/medicine

About the National Marine Aquarium

The National Marine Aquarium is a registered charity committed to promoting a sympathetic understanding of the sea through programmes of education, conservation and research. With a mission to drive marine conservation through engagement, the National Marine Aquarium operates the largest public aquarium in the UK and is the lead partner in Just Add H₂O, a programme for schools that aims to bring the marine curriculum alive.

Opened in 1998, the National Marine Aquarium is based in Plymouth, marine centre of the UK, and has since become one of the most popular attractions in the region.

With over 4,000 marine animals and Britain's deepest tank – measuring 10.5m deep – the National Marine Aquarium facilities includes the Eddystone tank and a state-of-the-art learning centre, as part of Just Add H₂O programme.

More information about National Marine Aquarium is available at www.national-aquarium.co.uk

About Plymouth University

We are one of the leading modern universities in the UK, ranked in the top four institutions in the country under the age of 50 by Times Higher Education. Twice awarded the Queen's Anniversary Prize for Higher and Further Education, we have won numerous awards and accolades in respect of our teaching, research and sustainability, and were the first

university in the world to receive the Social Enterprise Mark.

Our 28,000 students, which include those at our partner colleges across the South West, are enrolled on courses from farming to pharmacy, business to biology, and design to dentistry. And the 12,000 paid internships we provide every year for our students is just one of the many ways that we help them to develop new skills and graduate ready-for-work.

We have invested more than £150 million in our campus over the past seven years and are the first modern university to launch a medical school. And through our £100 million network of support facilities and services, we are growing hundreds of businesses across the region and beyond.

To find out how Plymouth is making a difference to its communities, please visit www.plymouth.ac.uk

Author Biographies

Deborah Cracknell is a marine biologist and lead researcher at the National Marine Aquarium, Plymouth, United Kingdom. She is also undertaking a psychology-based PhD student at Plymouth University researching the relationship between aquarium environments (specifically, types and levels of subaquatic biodiversity), and human health and well-being outcomes.

Mathew P. White is an environmental/health psychologist interested in the impacts different types and quality of environment have on people's health and well-being. He is particularly interested in the role of aquatic environments.

Sabine Pahl is an associate professor (reader) in the School of Psychology at Plymouth University. Her research interests are social cognition, restorative effects of natural environments, and the psychology of sustainable attitudes and behavior especially applied to energy and protecting the marine environment.

Wallace J. Nichols is a marine biologist interested in ocean conservation, especially relating to sea turtles. He is also interested in the psychological benefits and cognitive effects of engaging with aquatic environments.

Michael H. Depledge holds the chair of environment and human health at the University of Exeter Medical School and is visiting professor at University College, London. He is a former commissioner of the Royal Commission on Environmental Pollution and former chief scientist of the Environment Agency of England and Wales. His research interests include the impact of environment on health and well-being, the effects of chemical body burdens on human health and the environment, and finding ways of communicating scientific information to policymakers and politicians.