© privat

Daniel Robert Colaco Osorio, Ph.D.

Professor of Neuroscience

Universität Sussex

Born in 1959 in London
Studied Natural Sciences at the University of Cambridge and Neurobiology at the Australian National University

SCHWERPUNKT

ARBEITSVORHABEN

Colour Vision and Colour Communication in Water

Colour signalling is important to aquatic animals. We know this from the brilliant colours of many fish and invertebrates, from the fact that they evolved multiple spectral photoreceptors, allowing excellent colour vision, and from behavioural studies. But there is a paradox: on land, colour vision is important because colour (i.e. reflectance spectra) is a reliable signal for recognizing objects: when we look at an object it is relatively easy to identify the colour. In water, colour is much less robust, because water is a spectrally selective filter: pure water is blue, while dissolved organic matter colour water green or red. Consequently, viewing conditions, such as depth and distance, strongly alter colour, as is obvious in colour photographs taken in water. There are likely to be profound consequences both for the mechanisms of colour vision and for the operation of colour signals in water. I will use theoretical models of colour vision and colour constancy and empirical data to make predictions about how colour signals and colour vision should have evolved for communication in water and about the likely effects of failures of colour constancy.

Recommended Reading

Osorio, D. and A. Kelber (2010). "From spectral information to animal colour vision: experiments and concepts." Proceedings of the Royal Society B: Biological Sciences 277: 1617-1625.
Osorio, D., R. J. Baddeley, and C. D. Jones (2007). "Generalization of color by chickens: experimental observations and a Bayesian model." American Naturalist 169, S27-S41.