

NEWS

A Tribute to Dave Randall

In April 2013, Dave Randall was elected as a member of the Brazilian Academy of Sciences for his exceptional scientific contribution to the field of comparative physiology and, in celebration of this event, Adalberto Val, Vera Almeida-Val and Chris Wood organized a three-day mini-symposium, 'Frontiers in Tropical Aquatic Physiology: A Tribute to David Randall', on a boat in the Amazon to commemorate his lifetime achievement.

Dave Randall is renowned for his expertise in the field of comparative physiology and fish physiology, in addition to founding (with William Hoar) the 44-year-running multi-volume treatise '*Fish Physiology*' – 34 volumes to date – for which he remains the honorary editor. In the more general field of comparative physiology, Dave Randall is the lead author of the textbook '*Eckert's Animal Physiology, Mechanisms and Adaptations*', which has been translated into several languages and is the cornerstone of many courses around the world.

In 1976, Dave Randall and the late Peter Hochachka organized the now legendary expedition to the Amazon aboard the R/V *Alpha Helix* – a National Science Foundation facility that was based at the Scripps Institution of Oceanography, UC San Diego. The expedition lasted two months (September–October 1976) and consisted of an eclectic group of 33 international researchers and graduate students who lived and worked aboard the floating lab on Lake Janauaca, 1200 km up the Amazon River.

The Amazon is an incredible hotspot for fish biodiversity and adaptation. It is home to a remarkable 20% of the world's freshwater fishes that not only live, but also thrive, in challenging environments consisting of low pH, high CO₂, low ion concentrations and severe hypoxia and even anoxia. The mechanisms of adaptation that allow organisms to survive these

challenges are diverse and impressive. One of the most extreme of these is the evolution of air-breathing. The Amazon has the greatest number of air-breathing fishes in the world and it was this ability that was the focus of the research on the *Alpha Helix* expedition. The compiled findings were published in a single volume of the *Canadian Journal of Zoology* in 1978 ('Water–air breathing transition in vertebrates of the Amazon', 56, 713-1016) consisting of 44 journal articles. These articles were subsequently translated into Portuguese and appeared in a special issue of *Acta Amazonica*. They remain a key resource for Brazilian graduate students researching in this area and the body of work still represents a significant amount of what we know about the respiratory physiology of fishes of the Amazon. The expedition continues to be an inspiration to younger researchers and a reminder of the amazing possibilities offered by the style of international collaboration that was supported and encouraged in scientific research until just a few decades ago.

To commemorate Dave Randall's election to the Brazilian Academy of Sciences, the organisers hired a four-deck vessel (*Helio Gabriel*) to hold a mini-symposium on Lake Janauaca, the same historical location where 37 years earlier the *Alpha Helix* expedition conducted research. Attendees of the mini-symposium (Fig. 1) consisted of Dave Randall and his former graduate students, post-doctoral fellows and close collaborators, four of whom were participants of the original expedition (see Fig. 2). After sailing up the Amazon from Manaus to Lake Janauaca, we enjoyed a stunning day and a half of fascinating presentations on fish physiology, ranging from various aspects of gas exchange, ionoregulation and acid–base regulation to ammonia excretion in fish. In addition, we were also lucky enough to participate in two excursions in small



Fig. 1. Participants at the venue of 'Frontiers in Tropical Aquatic Physiology: A Tribute to David Randall'.



Fig. 2. Dave Randall and his former graduate students. From left to right: (seated) Don Stevens*, Dave Randall*, Steve Perry, George Iwama; (standing) Jonathan Wilson, Tony Farrell*, Colin Brauner, Chris Wood*, David McKenzie, Nicholas Bernier. *Participants of the original *Alpha Helix* expedition in 1976.

boats: one in daylight to explore the surrounding flooded forest and another at night to search for caiman. And, although we were sad when the symposium finished and the time came to return to Manaus, Pat Walsh gave us a rousing send off. Despite being unable to attend, Pat despatched a CD to the *Helio Gabriel* with a song that he had written in homage to Dave Randall and his amazing career ['The Fish Whisperer (Dave Randall)' by p. j. walsh].

En route we also celebrated another significant event that occurred on the *Alpha Helix* expedition, when the *Helio Gabriel* paused at a small town where a legendary football match had been played between the researchers and the village inhabitants in 1976. On that occasion the researchers were victorious, although there was speculation that this had been the result of an act of

kindness. To commemorate the contest, the four participants of the original *Alpha Helix* expedition revisited the town, which had been virtually isolated from the world in 1976. Just as the world has changed in the way science is conducted, the smallest villages of the Amazon have also changed. Today's village inhabitants have mobile phones, the settlement has Wi-Fi and Dave Randall arranged to pick up the local Twitter feed reporting the outcome of local matches, rekindling the relationship that was forged 37 years ago.

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