

Obituary

Dr. Robert J. Wootton (1942–2014)

On the 3rd March 2014, at his home in the town of Aberystwyth, Wales, passed away Dr. Robert J. Wootton. He was a prominent, world-renowned fish ecologist. Although his contribution to fish science has been outstanding—he was always a modest person, known to his peers simply as Bob. The main subject of Bob's research was the three-spined stickleback, *Gasterosteus aculeatus*—a small fish species widely distributed on the northern hemisphere and inhabiting both marine and fresh waters. The characteristic features of this species, such as morphology, behaviour, and easiness of rearing, made it a convenient 'supermodel' for experimental biologists. This 'scientific career' of the stickleback was in large extent aided by Bob Wootton, who, beside abundant articles dealing with stickleback biology (from behaviour through physiological ecology to life history), was also an author of commonly cited books, i.e., *The biology of the sticklebacks* (1976) or *A functional biology of sticklebacks* (1984). His discussion of the role of the stickleback in understanding biological phenomena was also reflected in his 2009 article, in which Bob presented the history of stickleback investigations, paying particular attention to the role of this species as a model species for evolutionary biologists (The Darwinian stickleback *Gasterosteus aculeatus*: a history of evolutionary studies, DOI: 10.1111/j.1095-8649.2009.02412.x). The importance of the three-spined stickleback for the development of evolutionary biology, which may also be inferred from reading *The evolutionary biology of the threespine stickleback* from 1994, in which Bob was the author of a chapter on energy allocation, is particularly conspicuous in the second, mentioned earlier, 1984 book. It initiated a sequence of publications in the *Functional biology series*, which according to the intent of its editor (Peter Calow) was to summarise the knowledge of the functioning of organisms, i.e., how resources are allocated to fundamental life functions, such as metabolism, movement, reproduction, and how other taxonomic groups realise their life histories in a diverse environment. The stickleback was perfect for such purpose, while Bob was the most suitable person to present the current state of knowledge on the biology of the species. He was also a co-editor of an important monograph on *Fish reproduction: Strategies and tactics* that was published in 1994.

Today, when over a dozen studies on stickleback biology are published annually, and their total number has exceeded 2000, we are convinced that only Bob, who possessed a profound knowledge and reflexive ability, would be able to write an updated version of *Stickleback biology*. We know that he had planned to do this and it is a pity that there was not enough time for him to complete it.

Although the evolutionary biology of sticklebacks was Bob's main occupation, he was interested in numerous aspects of ecology/biology of bony fish, which resulted in the extraordinary book of *Ecology of teleost fishes* (1990,

second edition in 1998). It was there where Bob presented his vision of scientific research, which in former times would be named a research program or school of thought. His 'philosophy' was that understanding of fish biology should begin with explaining growth as a process determining body size, and thus impacting reproduction, mortality, behaviour, and in this way having decisive effect on the evolution of such features as life history. Gaining understanding of the growth process, which is dependent mostly on foraging, requires the bioenergetic approach, and this is the origin of many fundamental studies that Bob wrote on numerous aspects of stickleback foraging. According to Google Scholar the book has now been cited almost 3000 times, and thus has undoubtedly become a citation classic in ecology.

While writing the *Ecology of teleost fishes*—and no publication similar in clarity has been written in this field—Bob declared that it was there where he was able to deal with what he liked best: a combination of the theory of evolution and wide aspects of the biology of species. An extension of his understanding of the evolutionary ecology of fish is a study published in 1992 (Constraints in the evolution of fish life histories, DOI: 10.1163/156854291X00342), in which Bob presented his vision of an important trend of ecology, i.e., evolution of fish life history traits. The printing of the publication co-occurred with the appearance of two important books on the evolution of these features (Roff 1992—*Evolution of life histories: theory and analysis*; Stearns 1992—*The evolution of life histories*).

Although the *Ecology of teleost fishes*, written extremely clearly, has been the basic text book for those who study the ecology of this animal group as well as of those who carry on their specific investigations, Bob has also written for the needs of students a formally abridged, but in fact an expanded version, i.e., *Fish ecology* (1992), which was published as part of the *Tertiary level biology series*.

The precision of presenting his thoughts was the reason of bestowing on him the function of a subject editor of two main scientific journals on fish ecology, i.e., *Journal of Fish Biology* and *Ecology of Freshwater Fish*. Bob's experience, including his comprehensive ecological knowledge was reflected also in his reviews of newly published books. It is just these publications—most frequently not included in the basic scientific achievement—where Bob meticulously presented the scientific value of a discussed publication, by neither puffing nor depreciating it, but by meritoriously listing advantages and shortcomings of the discussed publication. In recognition of his significant contribution to fish ecology Bob was elected as a Fellow of the Linnean Society and awarded the Le Cren Medal by the Fisheries Society of the British Isles.

Similarly as many other scientists, Bob spent most of his life as an academic teacher (lecturer), in his case, at the University of Wales, in Aberystwyth. He delivered lectures in such fields of biology as ecology, ethology, zoology, and of course fish biology, but also in fundamentals of mathematics for ecologists. His presentations were

masterpieces of clarity. He set aside all pedantic and oratorical flourishes, including excessive digressions into irrelevant details, which for many academic teachers constitute the core of a lecture. While teaching students, or supervising doctoral students Bob put into practice the Chinese adage of supplying the angling rod and not the fish, and the strategy was unusually fruitful. Bob's laboratory was eagerly frequented by students, and by young scientists just beginning their career, including many foreigners, for example those from China. Many of them now hold significant positions in Chinese science, such as Professor Yibo Cui, who established a major research centre on fish ecology and biotechnology at the Institute of Hydrobiology in the town of Wuhan.

Privately, Bob was a quiet, self-effacing man, of left-wing political views, as is typical for an English professor (he supported the Labour Party). He was courteous and understanding, which has been indicated by the fact that while publishing the results of common research with his doctoral students he never assumed the senior author position, making it possible for the students to gain a better recognition and esteem in the scientific community.

Beside ecology and evolutionary biology Bob liked jazz, in particular that of John Coltrane. Bob's family, mainly his wife Maureen and his twin children, Sean and Siobhan, had overwhelming importance for him. He dedicated many of his books to them. Mountaineering was also Bob's passion, and he was an accomplished climber. Bob successfully ascended Mont Blanc, the highest peak in the Alps. In Wales, where he lived, no high mountains are located, but Bob was able to pursue his hobby in Snowdonia (now Snowdonia National Park). As a scientist Bob was active to the end of his life. From 2009 until a few weeks before his death, Bob worked together with Carl Smith, his former doctoral student and now a well known specialist in the biology of the bitterling and sticklebacks, on a new book on fish reproduction entitled *Reproductive biology of teleost fishes*, which Bob saw successfully to completion.

Bob's contacts with Poland and Polish scientists were numerous. We met Bob as early as 1985 during the *First International Symposium on the Ecology of Fluvial Fishes* (Łódź, 3–6 September 1985), which was devoted to *Fish Production in Rivers*, and whose convener was Professor Tadeusz Penczak. About two dozen western fishery scientists attended the above-mentioned meeting. Today, this may be perceived as a modest number, but we need to remember that during the times of the 'iron curtain' and especially the martial law imposed to counteract the democratic Solidarity movement, western scientists were generally reluctant to visit Poland. Bob was the opposite, eager to come and to deliver a lecture. Several years later, Bob was a participant of the third meeting of the series (Łódź, 2–6 September 1991), and on that occasion he performed the task of a Guest Editor of a special volume of *Polish Archive of Hydrobiology*, where papers presented at the meeting were published. One of the authors of manuscripts included in the volume later complained (with

a smile) that he had never worked so hard editing any of his other manuscripts as he did while preparing the one published in the journal.

The second author of this obituary was last in touch with Bob in 2011, on the occasion of submitting a manuscript to the *Journal of Fish Biology*, where Dr Wootton was an editor. We did not know then that Bob was already seriously ill, even though he invested really a lot of his time and effort into editing the above-mentioned manuscript. The amount of work Bob did to improve the paper was amazing, especially for an author from a distant country!

It is said that there are no irreplaceable people. A number of ichthyologists, including us, may challenge this proverb having in mind Dr Robert Wootton and his contribution to fisheries science. Bob's successors have appeared or will soon appear, but he will be missed by anybody who has ever met him.

by:

Mirosław Przybylski and Łukasz Głowacki

Department of Ecology and Vertebrate Zoology, Faculty of Biology and Environmental Protection, University of Łódź, Poland.