

JAMES RENNIE BEQUEST

REPORT ON EXPEDITION/PROJECT/CONFERENCE

Expedition/Project/Conference Title: First European Conference of Poeciliid Biologists: Past, Present, Future of Poeciliid Research

Travel Dates: 30/11/03 – 03/12/03

Location: Zurich, Switzerland

Group Member(s): Helen Simcox

Aims: To present my work to a highly specialised international audience and gain advice for my final season of fieldwork.....

OUTCOME (not less than 300 words):-

Poeciliid fish are a favourite study organism for behavioural ecologists. One species in particular, the guppy, has been used in several classic studies of sexual selection, mating tactics and life-history evolution. Today, poeciliid fish are used in very diverse studies, and this first European conference provided a much-needed opportunity for researchers to meet, discuss their work and exchange ideas.

Male poeciliid fish exhibit two tactics when trying to mate with females. For co-operative matings, males may first court the females before trying to mate. In contrast, sneaky matings are coercive with the males trying to inseminate the females without their consent. Several variables predict what tactics a male will use (for example, risk of predation, male size, female receptivity) and a number of delegates presented research exploring the diversity in male mating tactics.

One of the key-note speakers, Michael Ryan, described how genetics control the age of maturity in male swordtails. Variation at the P (pituitary) gene results in variation to the age of maturity in males and is also correlated with mating behaviour and body size. Large males, that take longer to mature, exhibit courtship behaviour but small males only attempt to sneak- they have lost both courtship behaviour and the P genes for large body size. In guppies, males can switch between courtship and sneaking. Alfredo Ojanguren showed that larger females, particularly those from high predation sites, received a greater number of sneaky mating attempts. Courtship, however, is directed towards non-pregnant females.

Poeciliid fish are used not only to address evolutionary and ecological questions, but are being increasingly used in studies of developmental biology, genomics and molecular biology. Felix Breden told us how molecular tools are being developed to examine the genetic mechanisms that underlie phenotypic variation. One such example looked at the development of the 'sword', a sexually selected trait, in male swordtails. By examining the regulation of *msx* genes during sword development, Gerrit Begemann suggested that parts of the signalling pathway used in sword growth may have evolved from the pathway used in the development of the gonadopodium¹.

1. The gonadopodium is a modified anal fin, possessed by all mature male poeciliid fish, used to transfer sperm to females.

A particularly fascinating presentation, given by Manfred Schartl, described how poeciliid fish have provided several models of human diseases. In particular, poeciliids have been used in studies of cancer such as environmental carcinogenicity, and genetic and molecular factors of tumour formation. Future research may investigate bone diseases and pigmentation disorder.

I received positive feedback on my own presentation, which examined the role of familiarity in male mate choice. A closely related project, but from the perspective of female mate choice, was presented by Katherine Akre. The discussions on experimental designs and potential problems proved to be beneficial to both of us. Additionally, I was able to discuss my plans for the forthcoming field season with a number of delegates who gave me useful advice on techniques and equipment that I was likely to need.

The success of this conference will hopefully be repeated in two years time, with researchers from Norway as the hosts. I would like to thank the James Rennie Bequest for the financial support that enabled me to attend this conference.