Everyone wants a window seat

The life cycle of 

begins as an egg in the faeces of a piscivorous bird, such as a gull or a pelican, as a definitive and unaffected host. It is in this host that the sexual phase occurs and the adult parasite lays its eggs in the bird’s gastrointestinal tract. The excrement containing the eggs is deposited in a fresh water lake or stream. As the faeces drop to the floor of the lake or stream, perhaps on the northern Canadian shield where they are prevalent, the eggs embryonate for approximately 3 weeks and then hatch when exposed to light. The photonegative and short lived miracidia exit the eggs, find their way to a snail, often of the Lymnaea genus, and penetrate the flesh. In the snail, the miracidia penetrate the hepatopancreas and undergo metamorphosis into sporocysts which develop into larvae, called cercaria. Within approximately 40 days, the cercaria exit the molluscan host. The cercariae usually enter the fish (a definitive host) as it feeds, often near the surface. Phototaxis may be a more likely mechanism although this would still present a puzzle as the parasite enters the flesh of the fish and must find its way to the lens. 

and related species parasitise a large variety of freshwater fish in North America and Europe—at least 105 species including important aquaculture species such as perch, roach, rainbow trout, bream, dace, gudgeon, and eel. Some authors report a female preponderance of infected individuals, although this may be an artefact of collection. Nevertheless, the benthic nature of the first intermediate host, the snail, and the proximity of the nesting female fish may put her at greater risk of infection.

This trematode (fluke) can and does infect humans although such infection is surprisingly rare. can apparently be capable of penetrating the cornea and infecting the lens of frogs, turtles, birds, and even mammals although some experimental controversy exists. Interestingly, the cercariae can penetrate into, but not through, adult human corneas, and probably do not enter the anterior chamber in most instances. In some rabbits, corneal nebulae were produced by cercariae that did not penetrate. Perhaps these creatures are responsible for certain forms of nummular keratitis.

There are other piscine ocular parasites including the copepod parasites, and . Both of these can penetrate the eyes of various species and may destroy the eye or blind the fish although these have not so common or so bizarre a life cycle as .

All of these parasites seem to jockey for a window seat.

Rainbow trout photograph (top left) by the author taken at the American River Trout Hatchery with thanks to Dennis A Redfern. Thanks to Jerold Thice, PhD, for his review of the essay. Sucker photograph (bottom left) by JD McLaughlin with thanks to Ron Hedrick and Thomas Waltzek for the pathological specimen.

I R Schwab
University of California, Davis, Sacramento, CA, USA; irschwab@ucdavis.edu
Everyone wants a window seat

I R Schwab

Br J Ophthalmol 2004 88: 455
doi: 10.1136/bjo.2003.041327

Updated information and services can be found at:
http://bjo.bmj.com/content/88/4/455

These include:

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/