http://www.MetaPathogen.com:

Argulus sp., fish louse

cellular organisms - Eukaryota - Fungi/Metazoa group - Metazoa - Eumetazoa - Bilateria - Coelomata - Protostomia - Panarthropoda - Arthropoda - Mandibulata - Pancrustacea - Crustacea - Maxillopoda - Branchiura - Arguloida - Argulidae - Argulus

- **Brief facts**
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Brief facts

- Argulids are obligate fish ectoparasites, commonly called **fish lice**. In wild populations where the parasite's burden is low, it usually does not cause death. However, the infection increases susceptibility of the fish to bacterial pathogens such as [i]Flavobacterium columnare[/i] which can lower survival rates.
- In closed systems (ponds, fish farms, ornamental fish tanks) argulid species can pose a substantial threat to fish health and survival. Under artificial conditions *Argulus spp.* are known to cause large economic loss for fish farms where they are able to destroy fish very quickly.
- Argulids are quite large and are easily

observed bye naked eye. For example, *Argulus japonicus* body average length is 6.5 mm for females, and 3.6 mm for males.

- *Argulus* species were extensively studied. However, many aspects of their life cycle and physiology remain unknown and being disputed.
- *Argulus* species cause skin lesions by their suckers and proboscis while feeding. The lesions can be infected by bacteria. The infection also causes reduced appetite, weight loss and anemia in fish. *Argulus* can be a vector of some viruses and parasitic nematode larvae.

Best known species

- *Argulus foliaceus* prefers to parasitize percids and cyprinids. The species is widely spread in temperate zones and frequently found in shipments of ornamental tropical fish. Their vision in combination with olfaction and mechanoreception in the dark provide the highest host searching rate.
- *Argulus coregoni* is an important parasite that infects mostly salmonids. *Oncorhynchus mykiss* is a typical salmonid host for this species. The boreal *A. coregoni* relies primarily on vision when searching for the host and is most active in transparent waters during long polar days in summer. Very young *A. coregoni* readily infects roach (*Rutilus rutilus*) because of non-specific visual stimulus of the roach's coloration (white disc over dark background). The initial preference of the parasites for brighter roach, changes at the age of 2 weeks (at the size of about 2 mm) for duller trout. However, when the

main salmonid hosts are rare or temporarily missing *A. coregoni* can complete its life cycle on cyprinids. In wild populations the parasite burden is relatively low (less than one parasite per fish). According to studies in Central Finland, usually one main generation occurs annually.

- *Argulus japonicus* Thiele, 1900 is an exotic fish parasite species was originally described in China, and later, it has spread to Europe, Africa, Australia, and North America through the importation of carp and gold fish.
- *Argulus izintwala* was identified in lake St. Lucia, Africa. This species was only recorded to parasitize the clupeoid *Hilsa kelee* (mainly an inshore and pelagic species).
- *Argulus kosus* is an argulid from Lake St. Lucia. It was collected from eight different hosts including freshwater, estuarine and marine species of fish.

Methods for control

- salt (NaCl)
- formaldehyde
- potassium permanganate
- powered quicklime
- formalin
- trichlorfon
- emamectin benzoate
- dimilin

Developmental stages

Life Cycle Stages

Based mostly on developmental stages of *A. foliaceus* and *A. japonicus*.

- egg

  Argulids deposit eggs in clutches on bottom of the water reservoir.

- larval

  hatching stage; early free-swiming pelagic, presumably non-feeding stage; also sometimes called *metanauplius*; lasts up to 6 days in *A. foliaceus*; at the end of the stage larva attaches itself to the host and molts; the stage is absent in some species of argulids that hatch as a juveniles morphologically

- juvenile

  sexually immature actively feeding fish louse; the stage lasts for a couple of weeks

- adult

  sexually mature fish louse; if the fish is infected with only one sex of the louse the male lice may disengage from the host seeking a mate

References

PubMed articles

- Tam Q, Avenant-Oldewage A. The ultrastructure of the digestive cells of Argulus japonicus, Thiele 1900 (Crustacea: Branchiura). *Arthropod Struct Dev. 2009 Jan* **PMID: 18678280**

- Wadeh H, Yang JW, Li GQ. Ultrastructure of Argulus japonicus Thiele, 1900 (Crustacea: Branchiura) collected from Guangdong, China. *Parasitol Res. 2008 Mar;102(4):765-70. Epub 2007 Dec 18.* **PMID: 18094998**
- Mo (o s kosoy chertoy)ller OS, et al. Swimming and cleaning in the free-swimming phase of Argulus larvae (crustacea, branchiura)--appendage adaptation and functional morphology. *J Morphol. 2007 Jan;268(1):1-11.* **PMID: 17163491**
- Pettersen RA et al. Effects of aqueous aluminium on four fish ectoparasites. *Sci Total Environ. 2006 Oct 1;369(1-3):129-38. Epub 2006 Aug 14.* **PMID: 16904736**
- Bandilla M et al. A link between ectoparasite infection and susceptibility to bacterial disease in rainbow trout. *Int J Parasitol. 2006 Aug;36(9):987-91. Epub 2006 May 16.* **PMID: 16750536**
- Taylor NG et al. The epidemiology of Argulus spp. (Crustacea: Branchiura) infections in stillwater trout fisheries. *J Fish Dis. 2006 Apr;29(4):193-200.* **PMID: 16635059**
- Hakalahti T et al. Efficacy of emamectin benzoate in the control of Argulus coregoni (Crustacea: Branchiura) on rainbow trout Oncorhynchus mykiss. *Dis Aquat Organ. 2004 Sep 8;60(3):197-204.* **PMID: 15521318**
- Pasternak A et al. Growth and development of Argulus coregoni (Crustacea: Branchiura) on salmonid and cyprinid hosts. *Dis Aquat Organ. 2004 Mar 10;58(2-3):203-7.* **PMID: 15109143**
- Mikheev VN et al. Tuning host specificity during the ontogeny of a fish ectoparasite: behavioural responses to host-induced cues. *Parasitol Res. 2004 Feb;92(3):220-4. Epub 2004 Jan 8.* **PMID: 14712391**
- Hakalahti T, Valtonen ET. Population structure and recruitment of the ectoparasite Argulus coregoni Thorell (Crustacea: Branchiura) on a fish farm.

Parasitology. 2003 Jul;127(Pt 1):79-85. **PMID: 12885191**

- Mikheev VN et al. How do fish ectoparasites Argulus spp. (Crustacea: Branchiura) match with their hosts at the behavioural and ecological scales? *Zh Obshch Biol. 2003 May-Jun;64(3):238-47.* **PMID: 12815941**
- Thilakaratne ID et al. Parasitic infections in freshwater ornamental fish in Sri Lanka. *Dis Aquat Organ. 2003 Mar 31;54(2):157-62.* **PMID: 12747641**
- Van As JG, Van As LL. Argulus izintwala n. sp. (Crustacea: Branchiura) from Lake St Lucia, South Africa. *Syst Parasitol. 2001 Jan;48(1):75-9.* **PMID: 11213207**
- Van As JG et al. Description of the previously unknown male of Argulus kosus Avenant-Oldewage, 1994 (Crustacea : Branchiura). *Syst Parasitol. 1999 May;43(1):75-80.* **PMID: 10613534**

Other resources

- **ASPECTS OF THE BIOLOGY OF Argulus by QUINTON TAM, DISSERTATION**

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nemose@live.com

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