What are Freshwater Lice?

Introduction
Three species of freshwater lice occur in the UK, *Argulus coregoni*, *Argulus foliaceus* and *Argulus japonicus*. They live on the skin of many species of fish and feed on their blood. Freshwater lice are convex-shaped, grow to about 1cm in size and resemble a blob of jelly. Under closer inspection two black eye ‘spots’ can be seen. Freshwater lice lay eggs that survive through the winter to hatch out in spring, and can produce several broods in a single year. Several hundred lice can be found on an individual fish.

Freshwater lice should not be confused with the sea lice (*Lepeophtheirus salmonis* and *Caligus elongatus*) found on sea trout and salmon. Freshwater lice do not have tails (egg strings), and they are almost transparent and are more mobile than sea lice.

What harm can freshwater lice cause?
Freshwater lice and those fish infested with them do not harm people, and normally these lice do little harm to their fish hosts. However, the wounds they make can allow the introduction of diseases and fungus that may cause fish to die. Since 1994, serious outbreaks of *Argulus coregoni* and *Argulus foliaceus* have occurred in some stocked still water rainbow trout and brown trout fisheries in Scotland, and the parasite is spreading.

Why are we concerned about these lice in Scotland?
Freshwater lice have devasted still water fisheries elsewhere in the UK and abroad, and it is important that we control their spread in Scotland. In general, these lice prefer game fish (such as salmon, brown trout and rainbow trout) to coarse fishes, and flourish in places where stocking occurs at high densities.

Salmon, brown trout and rainbow trout contribute to the Scottish economy through both angling tourism and aquaculture. Much employment is dependent on game fishing and fish farming*, and both industries are expanding. Furthermore, angling fisheries are important recreational attractions which must be safeguarded for the future.

* Scottish Fish Farms Annual Production Survey 2002
Freshwater Lice Can Seriously Damage Our Fisheries — Do Not Introduce Them

What methods are available for controlling freshwater lice?
Although management methods are available, they may be costly, can disrupt fishing, could destroy fish, and ultimately, may not eradicate the infestation. Some methods currently available include:

- draining and drying the fishery in **summer** to kill eggs and lice
- draining and freezing the fishery in **winter** to kill eggs and lice
- rotenone treatment may sometimes be permitted under licence, and used to kill fish hosts, (this should be followed by a fallow period, so that the next generation of lice which hatch have no hosts to feed on).

Recent research into the control of freshwater louse outbreaks using in-feed chemical treatment of trout prior to stocking with a chitin synthesis inhibitor (which prevents the lice from moulting successfully) has shown promising results. This method of treatment may only be sanctioned for use in fresh water under the veterinary cascade system (see box), and requires a significant withdrawal period during which captured trout may not be eaten. Fish species, such as minnows, perch and roach, that remain in the affected fisheries, will remain a reservoir for louse infection. Where this treatment is proposed, (as with rotenone treatment) the Scottish Environment Protection Agency (SEPA) is the main regulating authority.

How can we avoid spreading freshwater lice?
Fishery owners and operators should avoid importing live fish, aquatic plants and wet boats from infected sources.

Anglers can limit the spread of freshwater lice by drying their fishing tackle, nets, waders and clothing thoroughly between venues, and by not introducing live bait.

Who to contact:
If you notice large numbers of freshwater lice anywhere in Scotland, please phone, fax, or e-mail the Duty Inspectors at the FRS Marine Laboratory, Aberdeen.

**Telephone**: 01224 295525  
**Fax**: 01224 295620  
**E-mail**: fishhealth@marlab.ac.uk

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**The Cascade**

The cascade was established by The Medicines (Restrictions On The Administration of Veterinary Medicinal Products) Regulations 1994 (SI 1994/2987), as Amended by SI 1997/2884. In outline, under the cascade when no authorised veterinary medicinal product exists for a condition in a particular species, veterinary surgeons may prescribe a veterinary medicine authorised for use in another food producing species, or for a different use in the same species (“off-label use”).

The cascade specifies minimum withdrawal periods. For a product used for fish this is 500 degree days. Usage records have to be maintained as specified in the Regulations.

The details of the cascade are covered by The Medicines (Restrictions On The Administration of Veterinary Medicinal Products) Regulations 1994 (SI 1994/2987), as Amended by SI 1997/2884 Guidance to the Veterinary Profession, published by the Veterinary Medicines Directorate. VMD Guidance Note AMELIA 8.