



## Can open net-pen salmon farming be sustainable? The Loch Duart reality.

Choosing sustainable seafood can be pretty confusing with all the things to consider -- how it's caught, where it's from, how it's farmed, etc. The type of seafood and the fishing or production practices used are both key for environmental sustainability.

The following information is provided to answer the question – are some open net-pen salmon farms really better than others – and to help you decide what is best for your customers and our oceans.

### Who is Loch Duart?

Loch Duart is an aquaculture company that raises farmed Atlantic salmon in Scotland. Although Loch Duart charges a premium for so-called sustainably farmed salmon, they aren't doing things very differently from the industry at large. They still use open net-pen production systems.

The weight of independent scientific evidence is overwhelming: net-pens create problems that cannot be effectively controlled. Disease and parasite transfer to wild fish, reliance on chemical inputs, escapes of farmed fish, reliance on wild fisheries for feed, and the near and far-field effects of waste on the marine ecosystem are some of the impacts that are not adequately managed in open systems. This means choosing farmed salmon is adding to rather than alleviating the pressures on declining wild stocks.

Loch Duart emphasizes they do a few things differently than many salmon farming companies. Perhaps any amount of effort over the norm may be laudable, but these measures do not constitute a significant improvement in their operations' ongoing ecological impacts. One is left to wonder what their product's "premium" price is based on.

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**Areas of particular concern:**

- » Loch Duart routinely uses chemicals to treat for parasitic sea lice: Exis, or cypermethrin, and SLICE, or emamectin benzoate. The active ingredient of SLICE is a pesticide and it belongs to a class of poisonous chemicals that affect nerve cells. It is not recommended by the manufacturer for use in the marine environment as it can accumulate in sediments and is a known toxin to fish, birds, mammals and aquatic invertebrates. Exis's active ingredient is also a marine pollutant, toxic to shellfish, and affects wild salmon's sense of smell and reproduction.
- » **Escapes** are a big concern. Loch Duart has had thousands of fish escape from their net-pens. These escaped farmed salmon can not only compete with already threatened wild Atlantic salmon for food and habitat, they could also interbreed with the genetically similar wild salmon. Based on existing studies, interbreeding threatens the genetic diversity needed to keep native stocks healthy. Loch Duart has reported escapes every year since 2002 (when the Scottish Executive started requiring this reporting), except for 2006.
- » Many industrial net-pens are fallowed periodically in an attempt to avoid overloading surrounding water with nutrients from the **farm wastes**. Fallowing simply relies on the ocean currents and tides to carry farm waste "away" into the broader ocean environment. Loch Duart may fallow more frequently or longer than most companies, but it still allows its farmed fish waste, including feces and uneaten food, to flow freely—untreated—into the surrounding marine ecosystem.

» Contrary to claims of relieving pressure on the world's fisheries, the salmon farming industry is *increasing* the pressure on global fish stocks. This is occurring in two ways. First, the salmon farming industry currently feeds high-quality protein, much of which would be available for direct human consumption (e.g. anchovy, sardine, herring, mackerel), to farmed salmon at **a net protein loss**. That is, it takes on average between two and five kilograms of wild fish, processed into fish meal and fish oil, to produce one kilogram of farmed salmon. And second, the risk of **disease and parasite** transfer between open systems and the surrounding environment threatens wild stocks. Farm stock is vulnerable to anything carried by nearby wild fish or other farms, and wild populations are at risk to anything that the farmed fish contract. With denser concentrations of fish on Loch Duart farms than the surrounding waters, the farm site becomes a place where disease and parasite problems can quickly escalate to serious proportions. This dynamic is why Loch Duart continues to depend on harmful chemicals to treat sea lice.

**There is a better model.** Closed containment offers a promising solution to many of the problems caused by open net-pen farming. In closed containment systems, a barrier between the farmed fish and the marine environment helps protect the ecosystem and its wild stocks from the wastes, disease, parasites and other impacts of industrial salmon farming. In turn, closed systems protect the aquaculture industry from toxic algae blooms, storms and costly escapes, and predators. Not until the industry moves away from net-pens into closed containment can the salmon farming industry begin to move towards true sustainability.

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