

Summary of Opinions on Wild Salmon-Sea Lice Interactions in the Broughton Archipelago from Independent Expert Dr. Fred Whoriskey

Independent expert, Dr. Frederick Whoriskey, recently reviewed key scientific evidence supporting a recent private prosecution instigated by Alex Morton against the Burdwood fish farm under Section 55(1) of the Fishery (General) Regulation, in which Morton alleged that the Burdwood farm released deleterious numbers of sea lice into the surrounding waters.

Whoriskey was retained by special prosecutor Bill Smart on behalf of the BC provincial government. Whoriskey's report and opinion were based on his experience (including visits to BC), and scientific evidence from the Broughton Archipelago and around the world, and included background information on the biology of sea lice and pink salmon, and descriptions of the Broughton Archipelago and Burdwood fish farm (previously owned by Heritage Salmon Limited).

Whoriskey described sea lice as ectoparasitic crustaceans “that can infect salmon reared in sea cages, and cause serious disease and economic problems for the farmed fish industry.” Whoriskey noted that epidemics of sea lice in salmon farms have occurred in many areas such as New Brunswick, Ireland, Scotland, and Norway, and that the narrow channels of the Broughton Archipelago constrain wild salmon smolt migration, forcing these small fish to pass near salmon farms on their way to open waters, which maximizes the potential for interactions between smolts and infective stages of lice from farms.

Whoriskey described the capacity of fish farms to produce prodigious quantities of lice, and listed several published examples from Ireland, Scotland, and Norway. He estimated that sea louse egg production at the Burdwood farm could approach 60 million lice—each year. Since sea lice do not have the ability to propel themselves quickly, their dispersal is largely controlled by water currents. One reason the Broughton Archipelago is well suited for fish farms is because there is sufficient current to dilute farmed salmon waste and to replenish the oxygen required by densely farmed salmon. Such currents also facilitate the dispersal of farm-produced lice into open water.

Whoriskey referenced several published studies from the Broughton Archipelago as important evidence supporting the likelihood that lice from farms infect migrating juvenile salmon (including several by Morton and her colleagues). One study described higher levels of the youngest stages of lice on juvenile pink salmon caught close to fish farms (compared with salmon caught farther away). A second study monitored lice levels on wild salmon before, during, and after the fallowing of several fish farms in a migration corridor, and found significantly reduced lice levels during the fallow. A link between sea lice infection and wild Pacific salmon mortality was established in an experimental study involving lice and captive juvenile salmon, and additional research showed that *Lepeophtheirus* species (the “leps” commonly associated with fish farms) were dominant on wild salmon from the farming area, while less-problematic *Caligus* species dominated fish samples from areas distant to farms.

In summary, Dr. Whoriskey concluded that there is substantial evidence of: large-scale production of sea lice eggs from fish farmed at the Burdwood site; dispersal of infectious lice from Broughton Archipelago farms into open water; a potential for infection of wild juvenile salmon migrating past farms; vulnerability of wild juvenile pink salmon to lice infection; and resultant large-scale mortality. With regards to the allegation that lice have and will continue to have adverse effects on pink salmon populations in the area, Dr. Whoriskey stated that certain studies provide correlative evidence linking lice infections with decreased salmon populations, though “this does not necessarily imply cause and effect.” He maintained that, “credible correlations with supporting experimental evidence have been made between pink salmon losses and sea lice infections. No alternate explanation with similar levels of support has been presented.” Dr. Whoriskey concluded that “the evidence shows that sea lice in the Broughton Archipelago are infecting and killing salmon.”

Stan Proboszcz, Watershed Watch, September 14, 2006