Mini-workshop to discuss if anti-parasitic chemicals used in salmon aquaculture can affect local populations of crustaceans

Agenda

10:00	Registration & Coffee
10:15 11:00	**Presentations – Background for group discussions** 1. Les Burridge will present an overview of current practices and possible environmental effects of chemicals used to treat infestations of salmon lice. Burridge is an expert on the effects of different anti-parasitic chemicals on crustaceans (see selected references below). He has worked many years at Fisheries and Oceans Canada and is now running a consulting firm, and we are happy to have him as our international scientific advisor in the ongoing project PestPuls, "Effects of pulsed exposures to combinations of pesticides used as anti-parasitic medicines in aquaculture", financed by Marinforsk. 2. Shrimp news: Effects of Paramove (hydrogen peroxide), AlphaMax (deltamethrin), Salmosan and Releeze on Northern shrimp *Pandalus borealis* (Renée Bechmann, IRIS).
11:30 – 15:00 Including lunch at 12:00 and guided tour of the facility	**Group discussions, tour of the facility and lunch** I will put together six groups with a good mix of people and invite you to discuss the topics suggested below. There will be both Norwegian-speaking and English-speaking groups. To kick-start the discussion, I have put up some slightly provocative statements (see table below). Please focus on what should be done to reduce the (potential) impact on the coastal environment. In parallel with the group discussions we will invite the groups for a short, guided tour of our facility. Group 1 and 2 at 11:30, Group 3 and 4 at 13:00 and Group 5 and 6 at 13:30.
15:00 – 16:00	**Presentation of group discussions**
After the meting	Please tell me asap if you want to meet downtown for a drink or dinner after the meeting and I will book a table. Unfortunately, I cannot pay for this, but I will be happy to join you ;)

Topics for group discussions

	Provocative (?) statements to discuss in groups. At the end of the meeting the groups will be asked to give a summary of their discussion. Please focus on what should be done to reduce the (potential) impact on the coastal environment.	Agree	Not sure	Disagree
1	We have sufficient information from laboratory experiments, field monitoring and dispersion modelling to conclude that the current discharge of (certain or all) chemicals is a risk to local population of shrimp. Agree/disagree? *Please discuss this:* • Do we need further restrictions on certain chemicals? Example: Is hydrogen peroxide (Paramove) better or worse than diflubenzuron (Releeze)? • Do you recommend to only allow non-chemical treatment of salmon? • Are semi-/closed farms the best solution?			
2	Further restrictions of the use of chemicals should be based on field monitoring of local populations of crustaceans combined with analysis of chemicals in water, sediment and organisms. Agree/disagree? *Please discuss this:* • Local fishermen could, in cooperation with researchers, monitor local populations of shrimp and other crustaceans. When monitoring of shrimp populations and/or concentration of chemicals indicate that shrimps are at risk, no further use of chemicals is allowed. Agree/disagree? • What is an acceptable change in a local population of shrimp? What concentrations of chemicals are acceptable? • How close to a salmon farm do we expect to maintain healthy populations of shrimp? • How can reduced populations of crustaceans affect the coastal ecosystem?			
3	The discharge of chemicals used against salmon lice has not, and will not, reduce local populations of shrimp and other crustaceans. The current restrictions on the use of such chemicals adequately protect the environment including local populations of crustaceans. Agree/disagree? *Please discuss this:* • Will all the chemicals be diluted or degraded fast enough to avoid damage to non-target crustaceans? • Even if a few shrimp are killed by the chemicals, the shrimp population will not be significantly reduced. Agree/disagree?			
4	It is acceptable that local shrimp populations are reduced, since the economic value of salmon farms is higher than the value of local shrimp fisheries. Agree/disagree? *Please discuss this.*			

Deltagerliste / Participants

Name	Company
Jan Fredrik Børseth, Silje-Kristin Jensen	Fiskeridirektoratet
Martine Muusse, Tonje Høy	Statens legemiddelverk
Kirsten Redmond Kristiansen	Fylkesmannen i Rogaland
Maria Dam	Umhvørvisstovan, Environment Agency, Faroe Islands
Stian Mørch Aaen, Madeline French	Solvay
Eivind Solheimsnes	Chemco AS
Amund Litlabø	Aqua Pharma AS
Catarina Martins, Gordon Ritchie	Marine Harvest ASA
Kristin Almås	Cargill Aqua Nutrition Norway
One from Skretting	Skretting
John Marshall or Rune Stigum Olsen	Benchmark Animal Health
Nils Steine, Kathrin Ellesat, xx	Pharmaq
Wolfgang Koppe	Simplyfish AS and 10% IRIS
Britt Sæle Instebø	Fiskarlaget Vest
Sigmund Moe	Kystfiskarlaget
Les Burridge	Burridge Consulting Inc.
Jannicke Moe, Adam Lillicrap	Norsk Institutt for Vannforskning
Bjørn Einar Grøsvik, Ann-Lisbeth Agnalt, Ole Samuelsen, Guldborg Søvik, Rosa Escobar-Lux	Havforskningsinstituttet
Kristine Ertnæs Brokke	Aqua Kompetanse AS
Gro Harlaug Refseth, Kristin Sæther	Akvaplan NIVA
Helge Avlesen (on skype)	Uni Research
Renée Bechmann, Maj Arnberg, Elisa Ravagnan, Shaw Bamber, Alessio Gomiero, Thorleifur Agustsson, Susanne Gitlesen, Emily Lyng, Mark Berry, Stig Westerlund, Fiona Provan, Sree Ramanand	IRIS Biomiljø