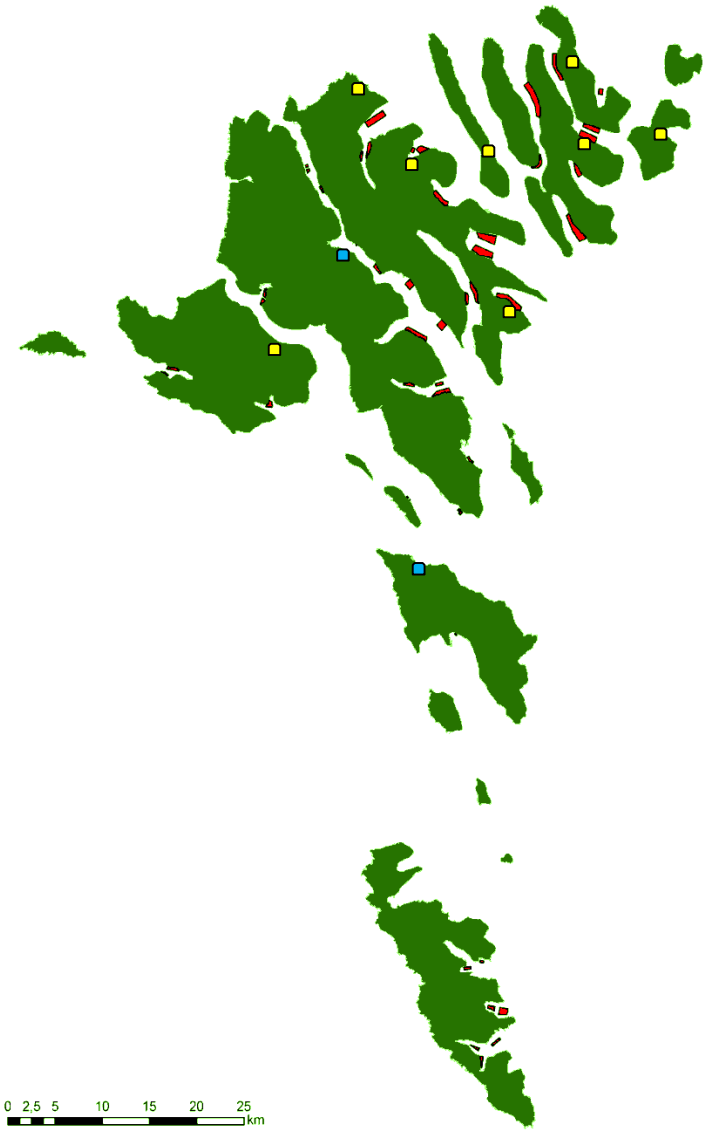
Kan ILAV-HPR0 spres med stamfisken ?

Debes Hammershaimb Christiansen
Senior forsker & afdelingsleder
Færøernes Nationale Referencelaboratorium for Fiskesygdomme

ILA Workshop, Trondheim 3. – 4. April 2017

Faroese Atlantic salmon Aquaculture

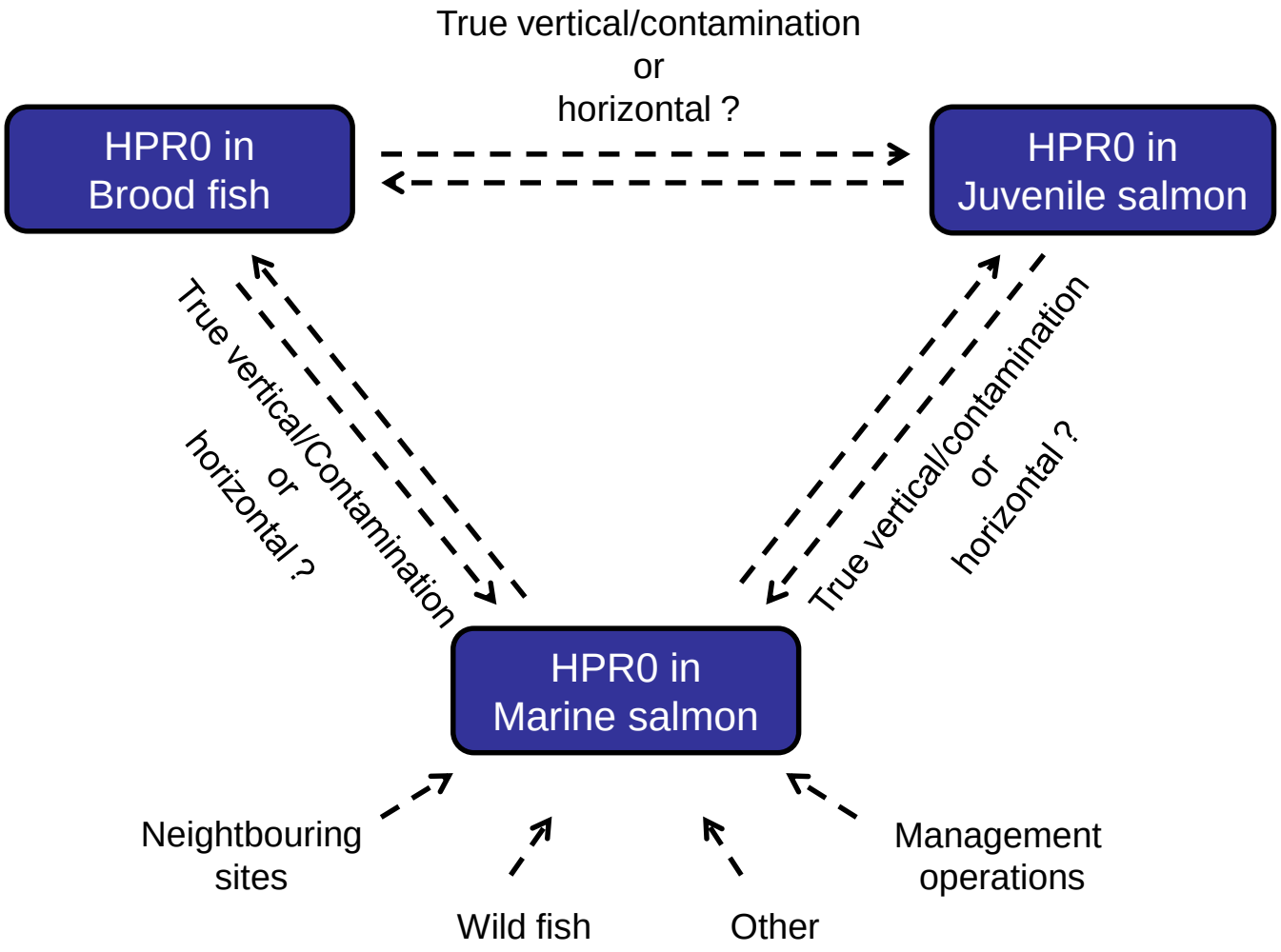


- One landbased brood stock company
- Eight fresh water (Fw) farms with juveniles
- 26 marine (Sw) production sites with Atlanic salmon

High prevalence and transient infection with HPR0 in all compartments

	Marine salmon		Juvenile salmon		Brood stock	
Year	Total N	HPR0 %	Total N	HPR0 %	Total N	HPR0 %
2008	9066	12	732	5	474	40
2009	8847	10	1917	4	50	0
2010	5574	3	1792	16	427	93
2011	4346	3	2150	6	210	35
2012	2553	4	406	18	263	0.3

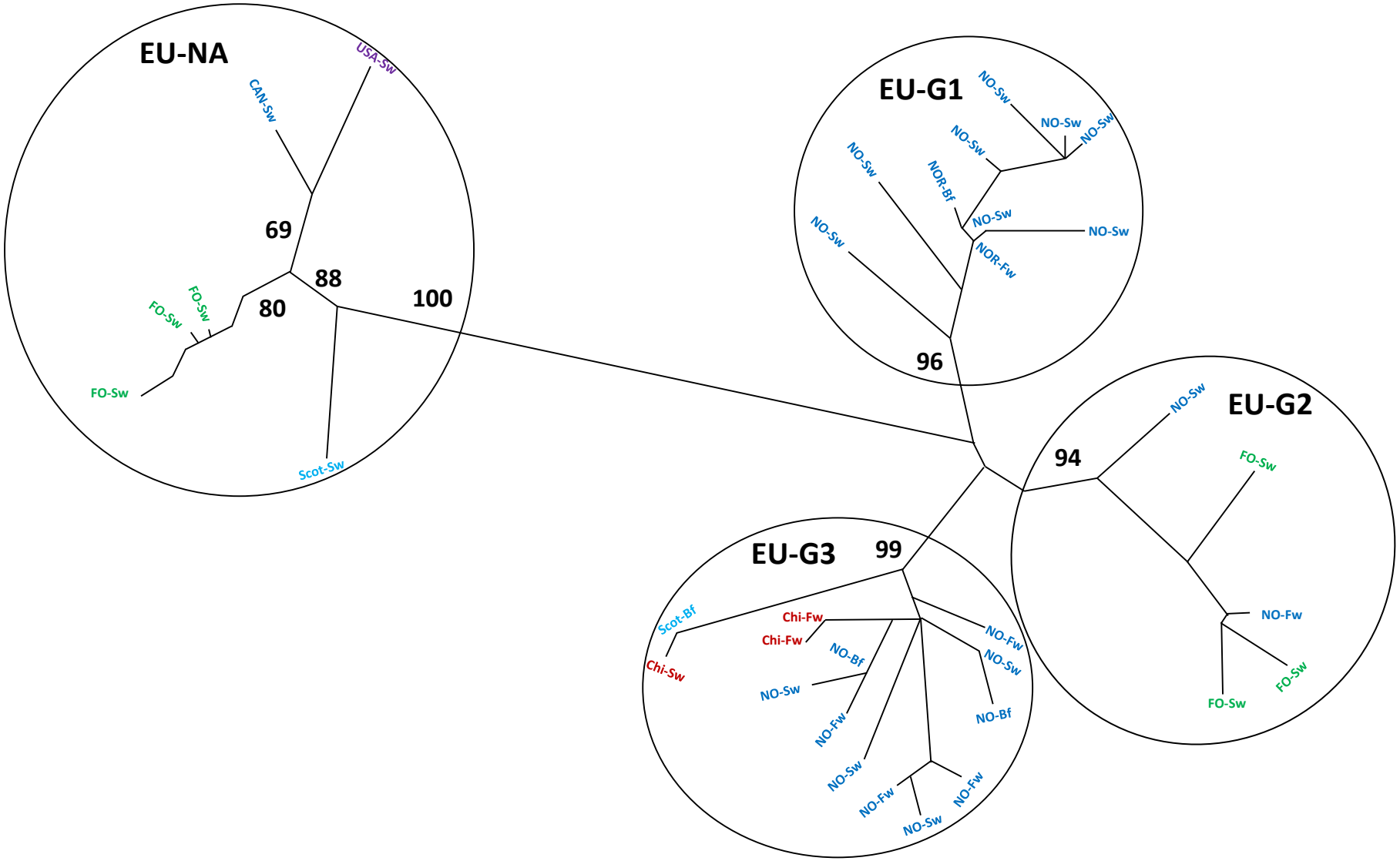
Very little is known about how HPR0 is transmission between the three compartments

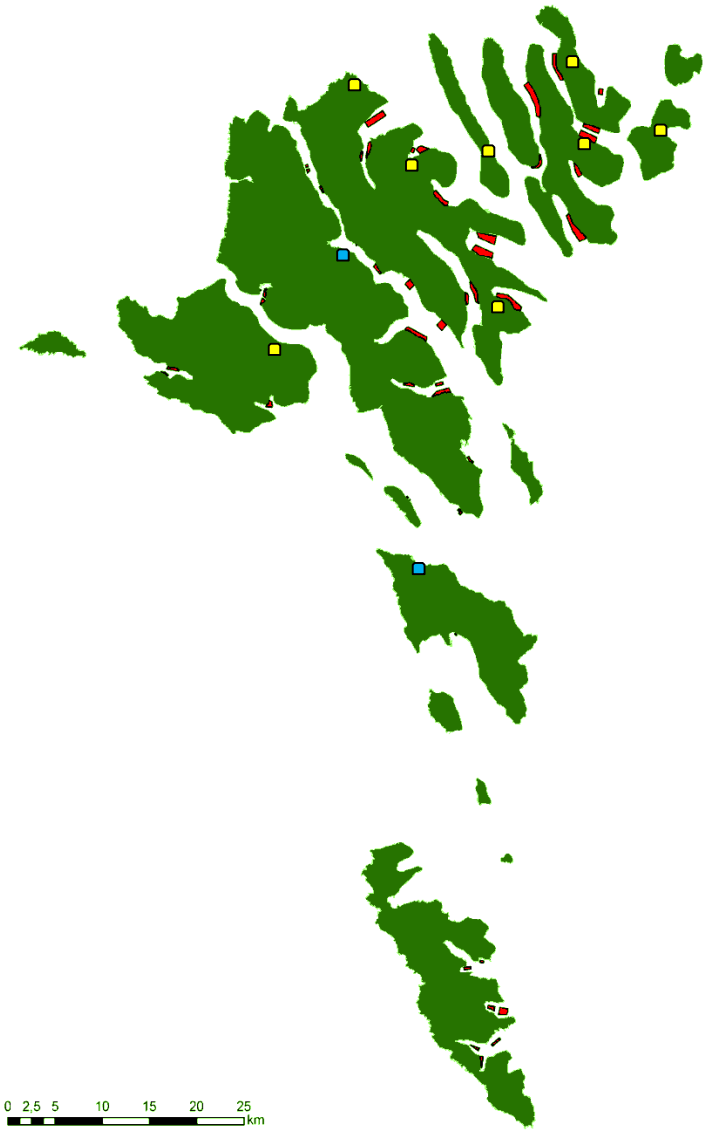


Purpose of the study

- investigate the genetic relationship between HPR0 circulating in the three compartments
- The phylogenetic analysis is based on 1051 bp of the *HE* gene including the HPR.

Phylogenetic relationship between representative HPR0 of the four major EU subgroups

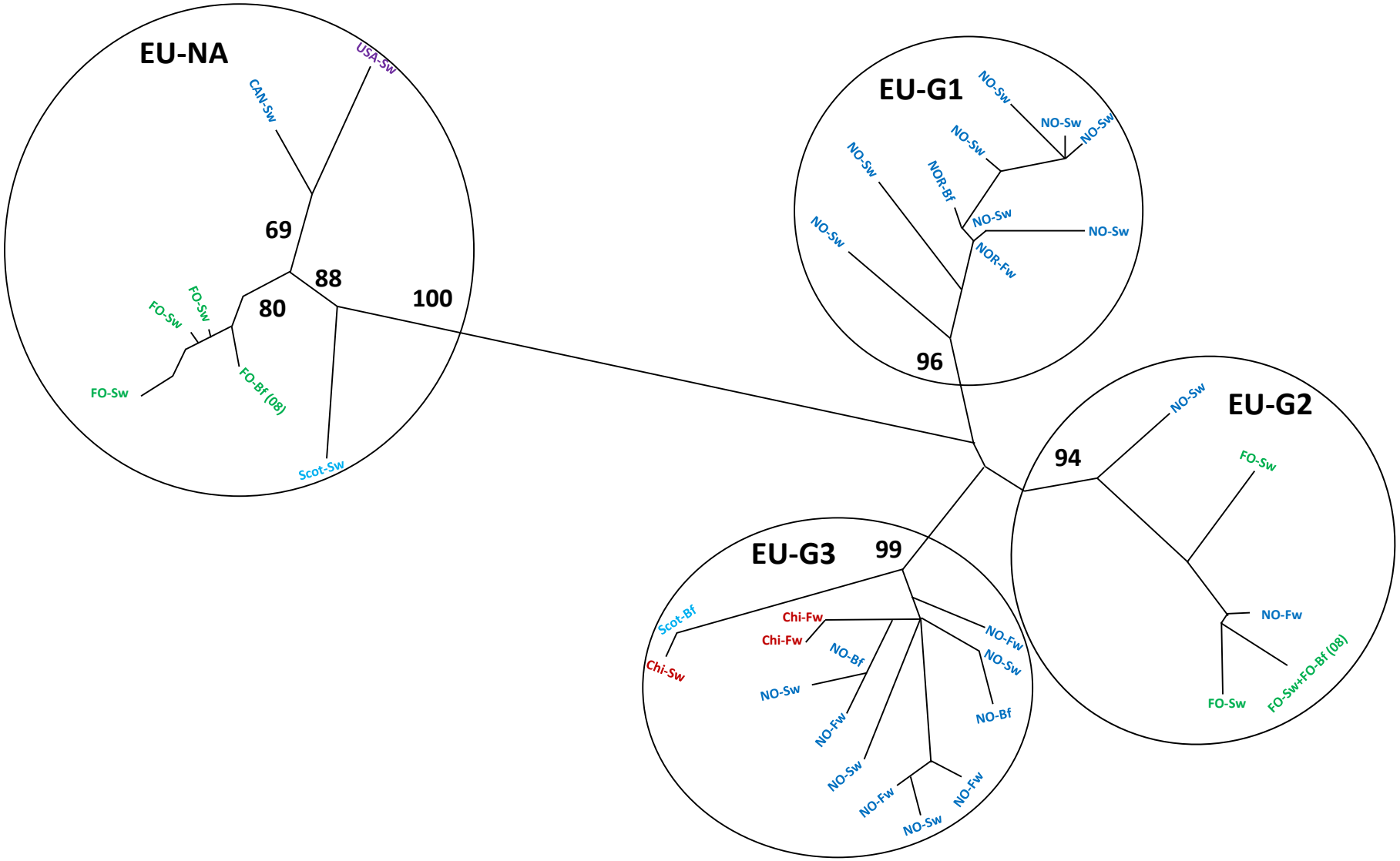




Sequencing of 20 HPR0 positive brood fish at stripping in 2008

Year	Total N	HPR0 N	HPR0 %
2008	474	210	40
2009	50	0	0
2010	427	395	93
2011	210	73	35
2012	263	1	0.3

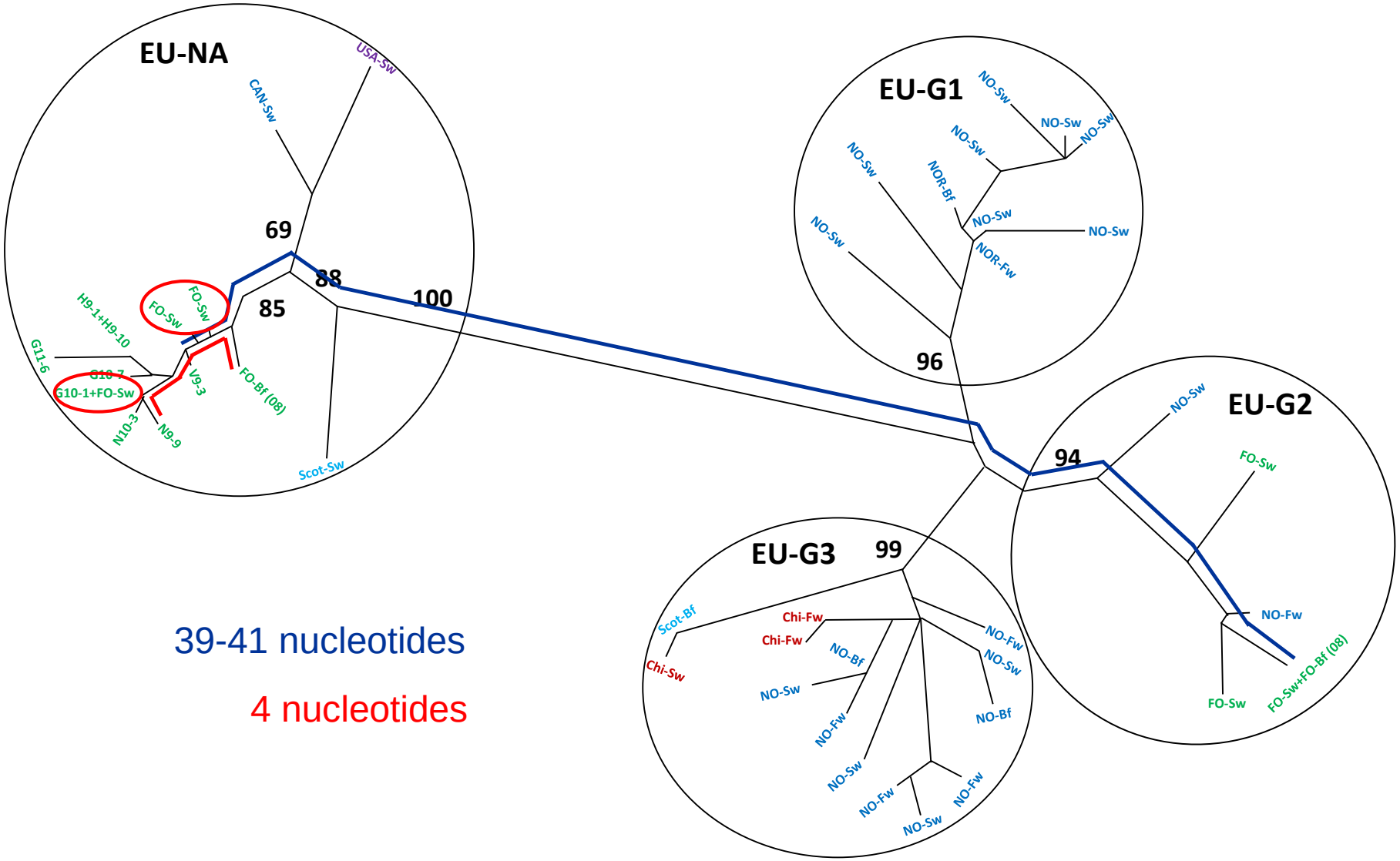
The HPR0 identified in brood fish at stripping in 2008 cluster in either EU-G2 or EU-NA

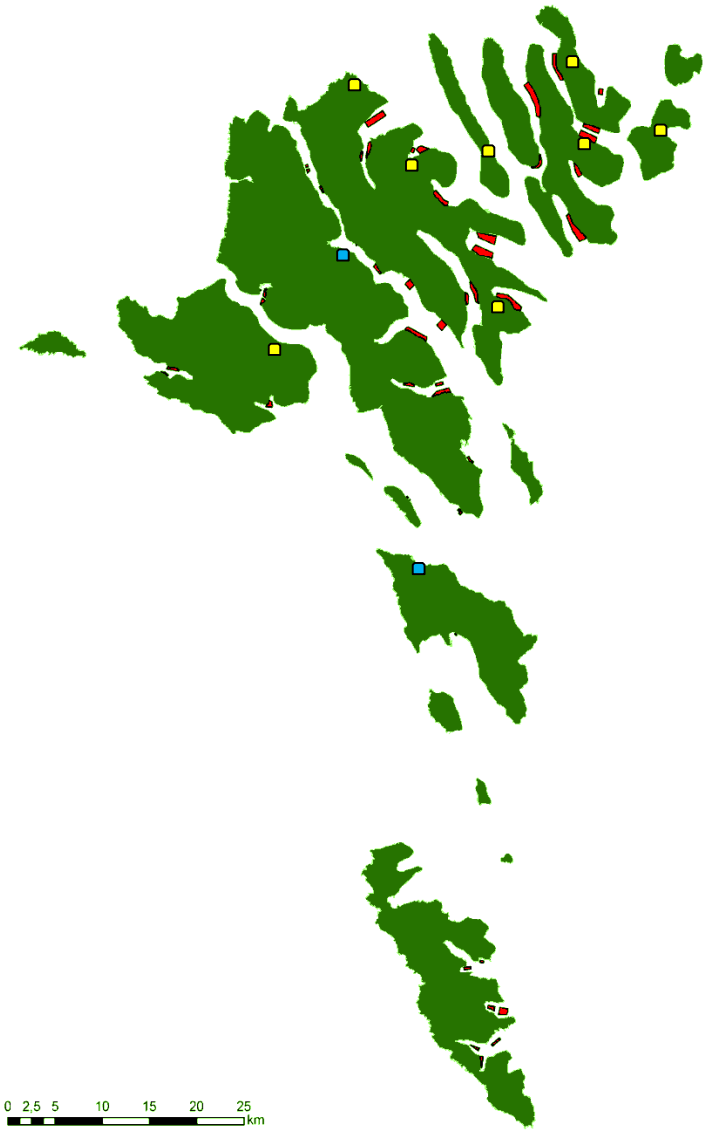


Five fresh water smolt farms received eggs from HPR0 positive brood fish stripped in 2008

Stripping No	Stripping (month)	HPR0 BF (%)	Eggs (10E6)	Fw-smolt farms	2009 HPR0 (%)	2010 HPR0 (%)
1+2	Sept.	8	1.3	G	0	30
2+3	Oct.	15	0.9	N+H	3	28
4	Oct.	36	0.8	V	17	11
7+8	Oct.	68	1.4	F	0	0

Little genetic evidence that HPR0 was transmitted vertically from brood fish to juveniles

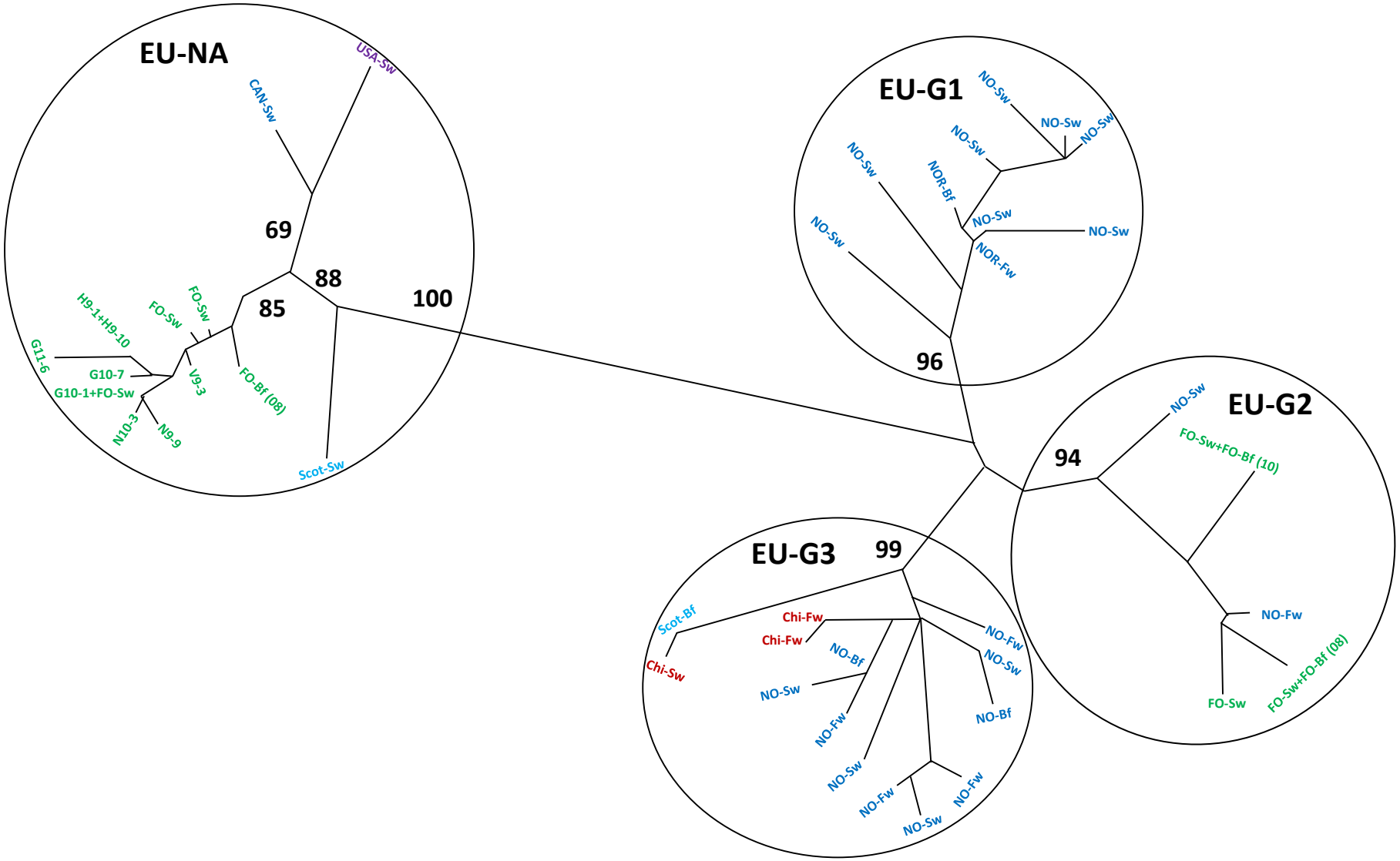




Sequencing of 20 HPR0 positive brood fish at stripping in 2010

Year	Total N	HPR0 N	HPR0 %
2008	474	210	40
2009	50	0	0
2010	427	395	93
2011	210	73	35
2012	263	1	0.3

The HPR0 identified in Faroese brood fish (2010) cluster all in EU-G2

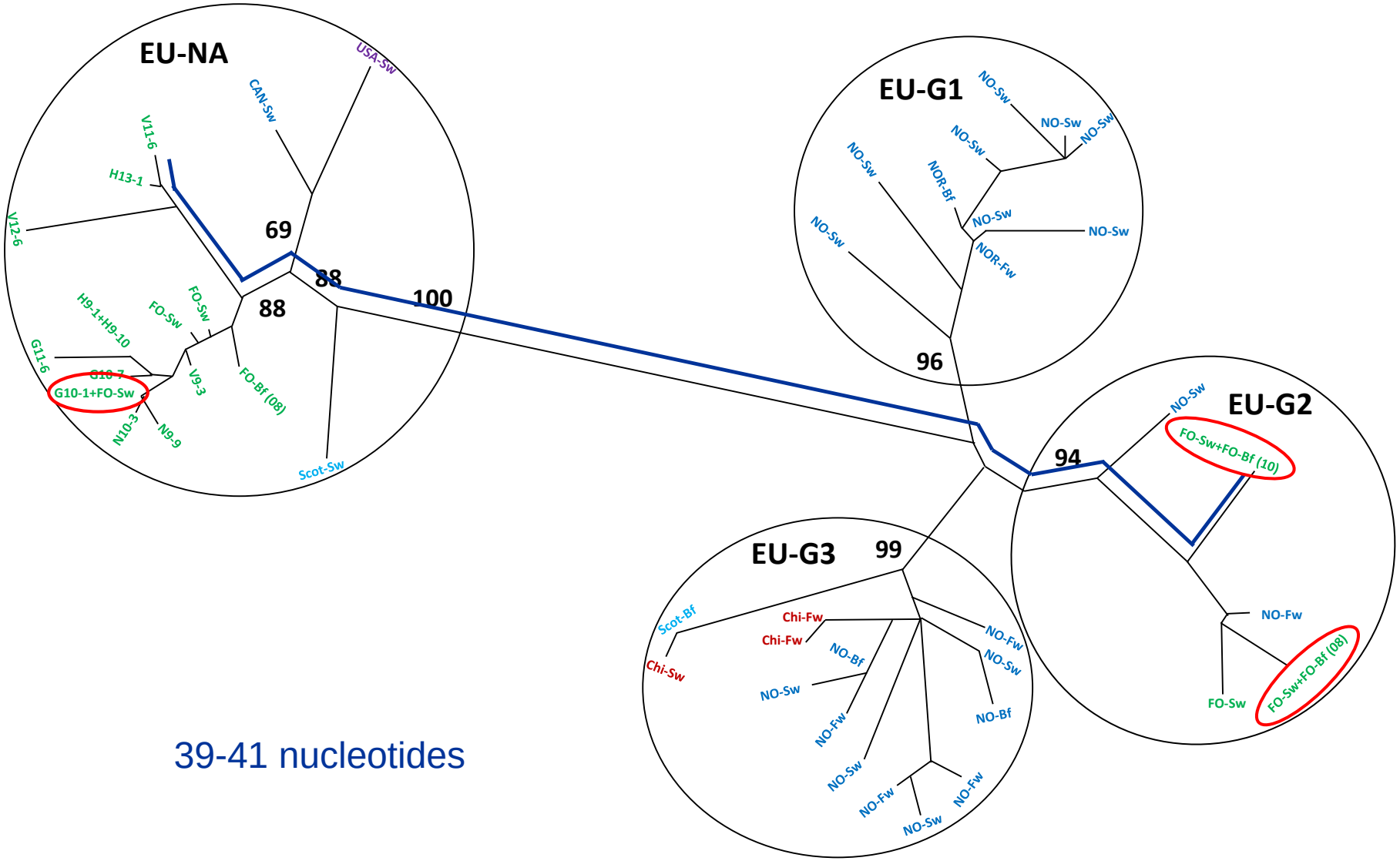


Five fresh water smolt farms received eggs from HPR0 positive brood fish stripped in 2010

Stripping No	Stripping (month)	HPR0 (%)	Eggs (10E6)	Fw Smolt farms	2011 HPR0 (%)	2012 HPR0 (%)	2013 HPR0 (%)
1-3 8+9 19	Sept. Oct. Nov.	91 98	0.6 0.4 2.1	N+H	0	38	6
4+5	Oct.	80	1.2	G	19	4	18
6+7	Oct.	80-100*	0.7	V	15	48	8
14	Nov.	80-100*	0.6	F	0	0	0

*Not tested for HPR0

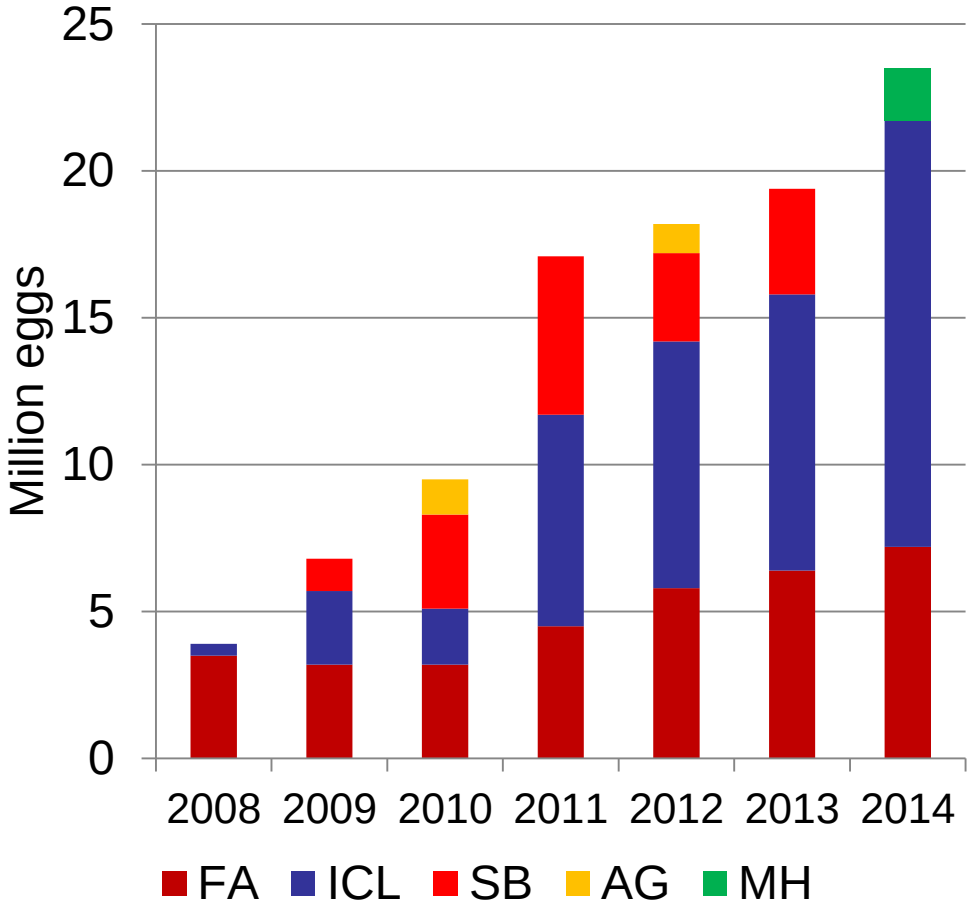
Close genetic link between HPR0 in marine salmon and in Brood fish or in juveniles



39-41 nucleotides

0.01

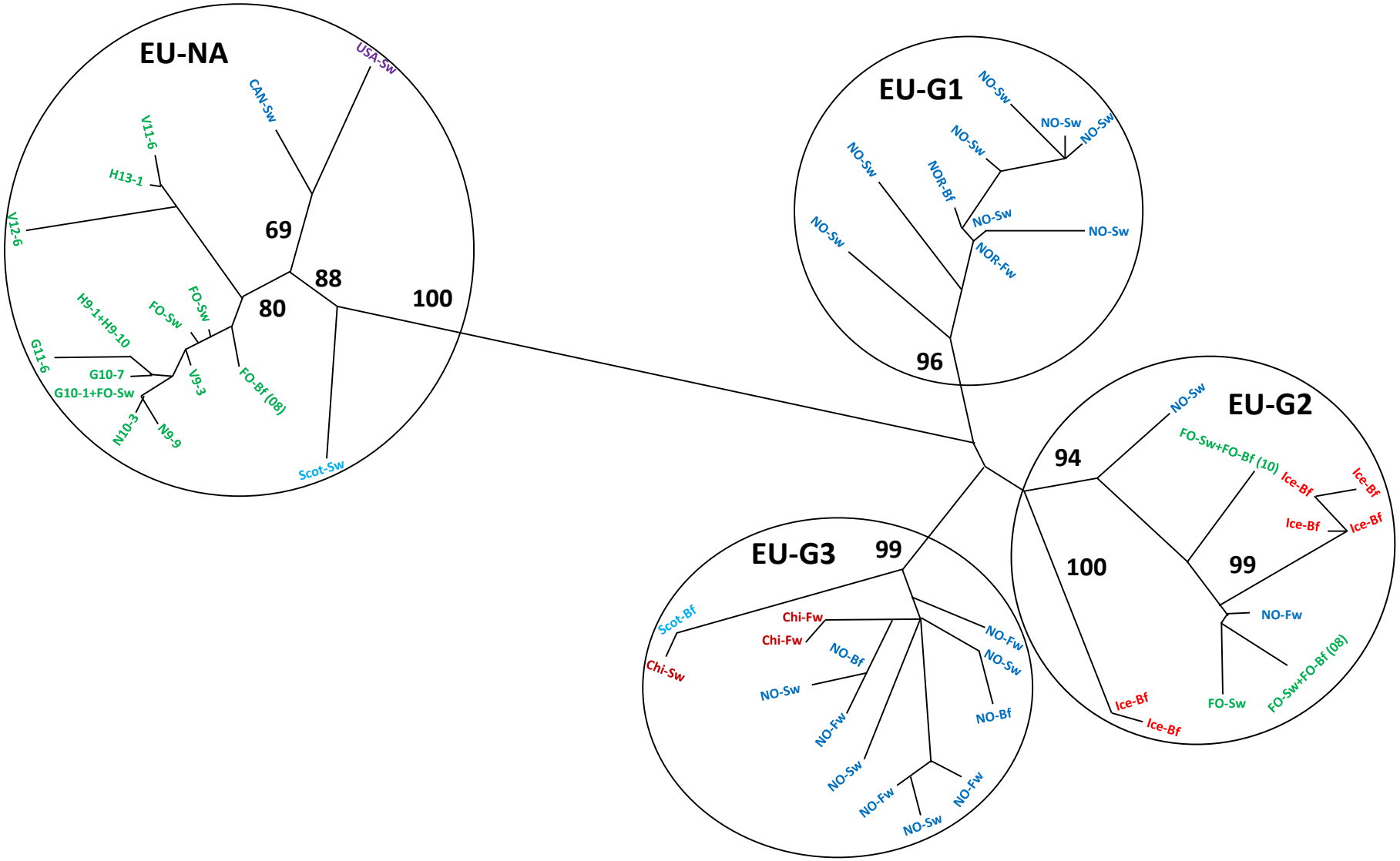
All fresh water smolt farms have received eggs from Norway, Faroes Island and Iceland



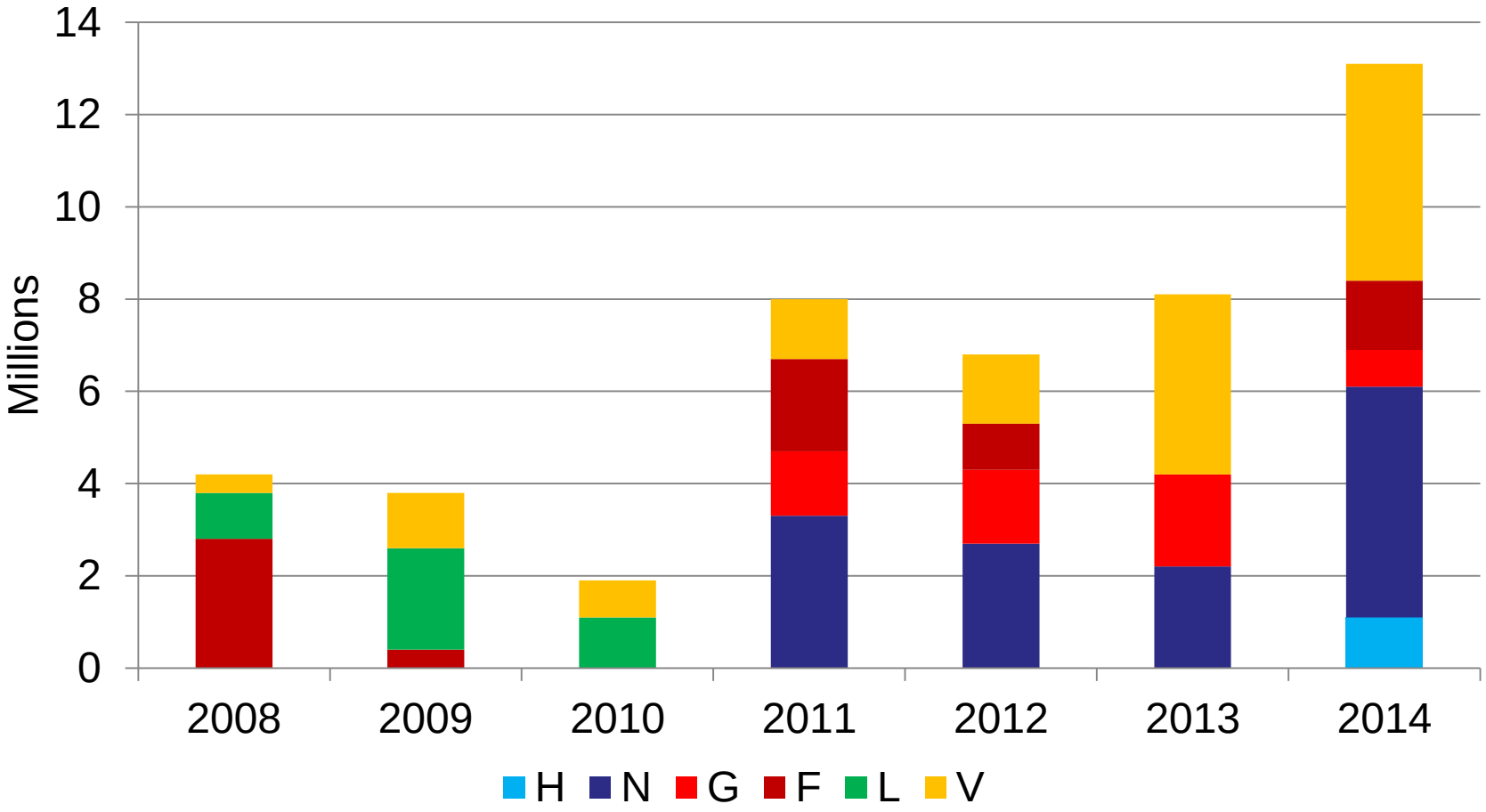
HPR0 in Icelandic brood fish

Year	Samples N	HPR0 +ve %
2009	2374	19
2010	4502	4
2011	6120	2
2012	2320	0,3

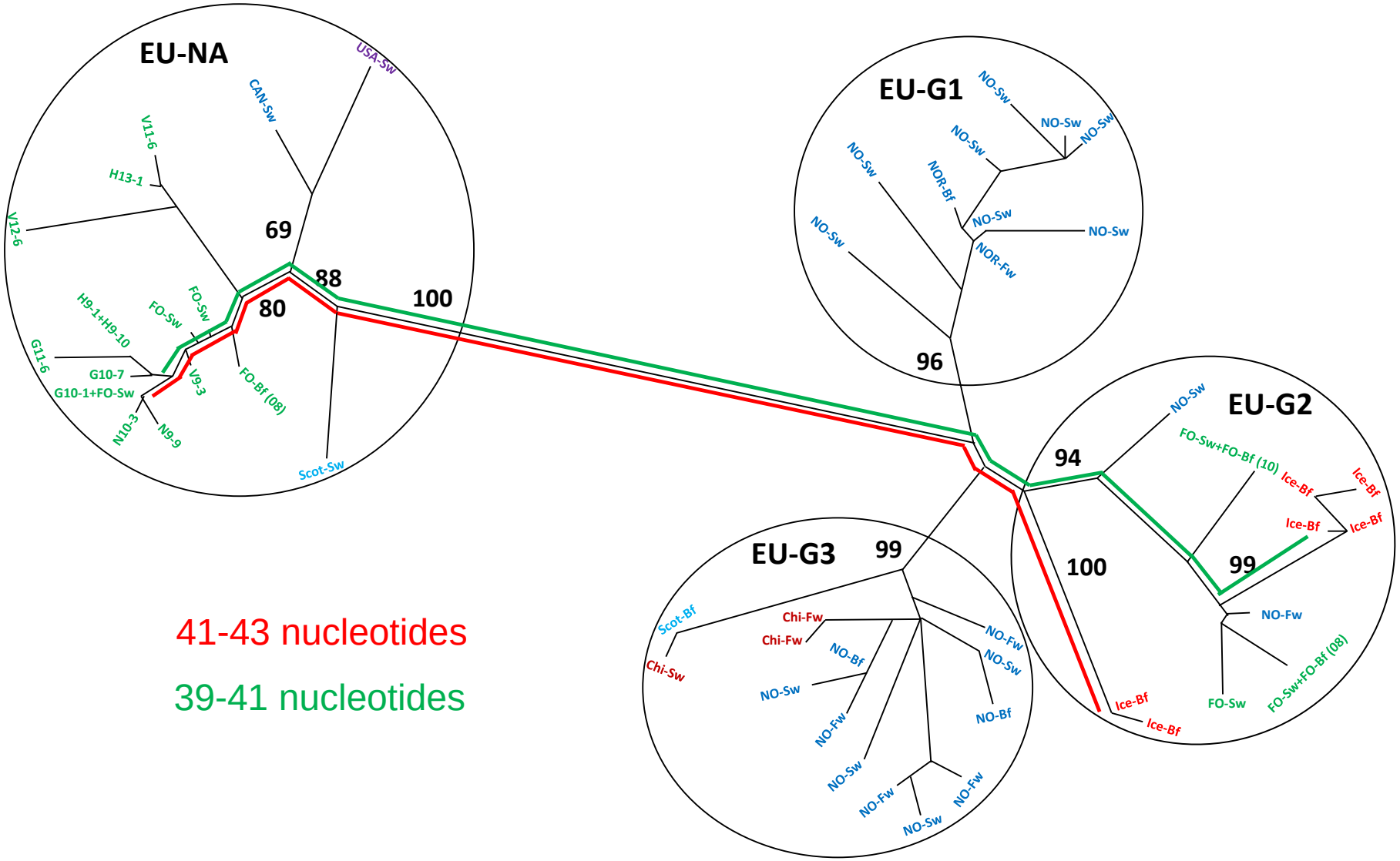
HPR0 detected in Iceland cluster in EU-G2



All six smolt farms have received eggs from Iceland



No genetic evidence that HPR0 is transmitted vertically from Icelandic brood fish to Faroese juvenile salmon



41-43 nucleotides

39-41 nucleotides

0.01

Conclusions

- HPR0 is prevalent in all three compartments of Atlantic salmon production in the Faroe Islands

- HPR0 infection is highly contagious and transient in all three compartments suggesting salmons are not long term carriers

Conclusions

Little or no genetic link between HPR0 in

- Faroese brood fish and Faroese juvenile salmon
- Icelandic brood fish and Faroese juvenile salmon
- Norwegian brood fish and Faroese juvenile salmon

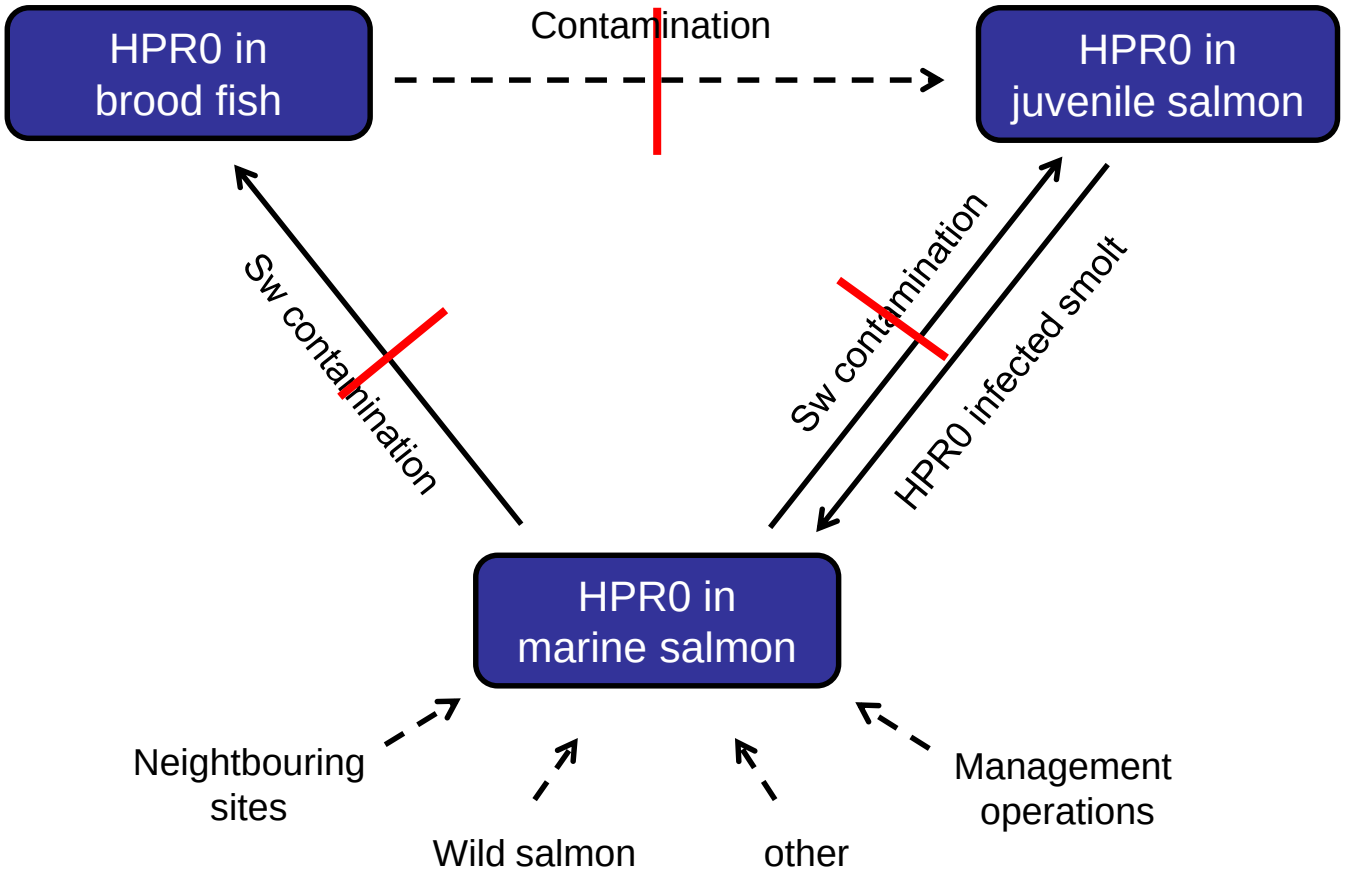
Conclusions

Close genetic link between HPR0 in

- Faroese marine salmon and juvenile salmon
- Faroese marine salmon and brood fish

Food and Veterinary Authority
Faroe Islands

Strick disinfection of HPR0 contaminated eggs prevents transmission of HPR0 to smolt farms



Tak for jeres opmærksomhed