



Genetic parameters for AGD-resistance in Atlantic salmon

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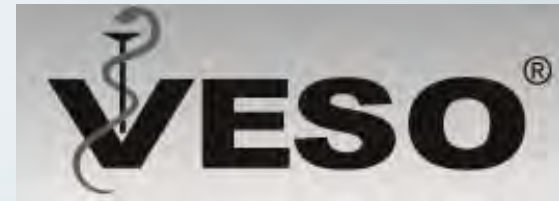
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Genetics of amoebic gill disease resistance in Atlantic salmon (2014 -2016)

- **Main objective**
Identify the best approach for increasing AGD-resistance in Atlantic salmon by selective breeding



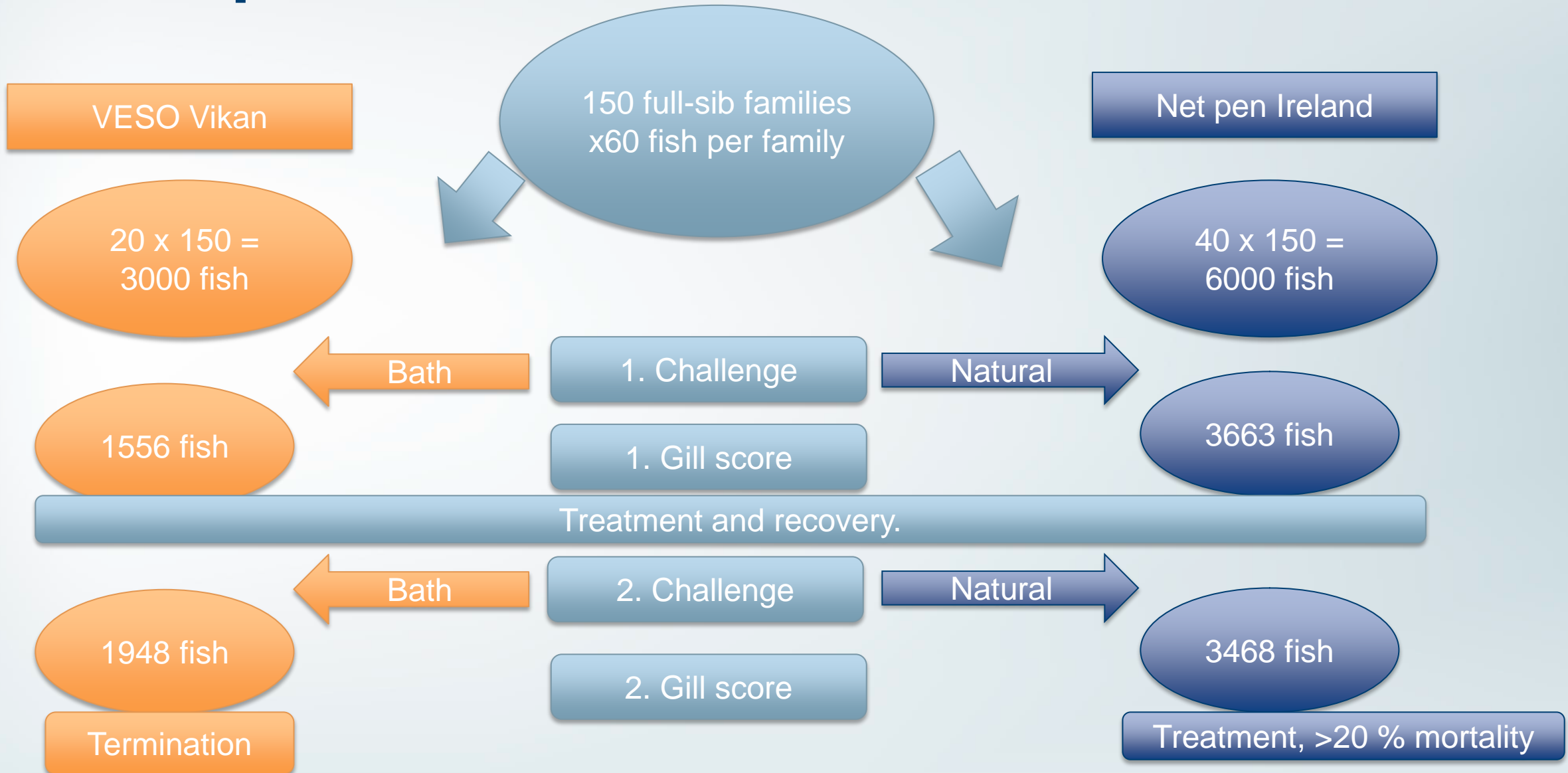
SalmoBreed



Specific research questions

- Estimate genetic parameters for AGD resistance under field and controlled conditions.
- Validate the challenge test at VESO.

The experiment



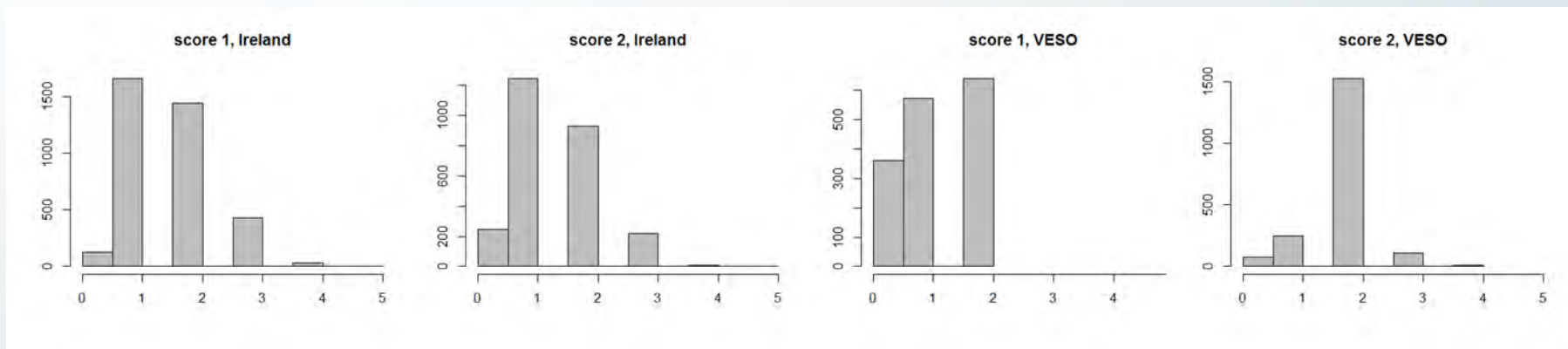
The field challenge

- MHI south west farm
– Inishfarnard



Summary of data

Scoring	Antall fisk	Gj. Sn. Score
IR – 1	3663	1.6
IR – 2	3468	1.4
IR - total	5794	
VESO – 1	1556	1.2
VESO – 2	1948	1.9
VESO - total	2087	
Totalt	7881	



What were we looking for?

- **Heritability** (0-1):
 - Fraction of the total variation explained by genes.
 - Higher heritability – more effective selective breeding
- **Genetic correlation** between two traits (-1 - 1)
 - Are there common genetic causes for these two traits?

Results

	IR - 1	IR - 2	VESO - 1	VESO - 2
IR - 1	0.20 ± 0.03	0.70 ± 0.10	0.38 ± 0.18	0.07 ± 0.17
IR - 2	0.05	0.13 ± 0.03	0.22 ± 0.21	0.25 ± 0.18
VESO - 1	-	-	0.10 ± 0.03	-0.01 ± 0.23
VESO - 2	-	-	0.00	0.12 ± 0.03

- Heritabilities on the diagonal
- Genetic correlations above the diagonal
- Residual correlations below the diagonal

Mortality

- Field test Ireland: Mortality (>20 %) after treatment after second infection
- Heritability on observed scale: 0.06
- Genetic correlation to gill scores: 0.03 – 0.45

Summary

- Heritability significantly different from 0 for all gill scores
- Genetic correlation between 1. and 2. score was high in field, but low in the controlled challenge test.
- Genetic correlation between challenge test and field gill score was low to moderate
- Mortality after treatment had low heritability and low genetic correlations to gill scores
- Low phenotypic variation in second gill score in the controlled challenge test can explain the low heritability of this test and low genetic correlations to the other tests.



Takk for oss

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