Cohort study of effect of vaccination on pancreas disease in Norwegian salmon aquaculture

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Supplement. Supplementary maps and tables

Fig. S1. *Salmo salar.* All cohorts south of Hustadvika from spring 2007 to spring 2009. Both cohorts included in the study (✚) and those not included (▲) are shown. Red and black color marks PD-case cohorts, green and gray marks cohorts without pancreas disease (PD)
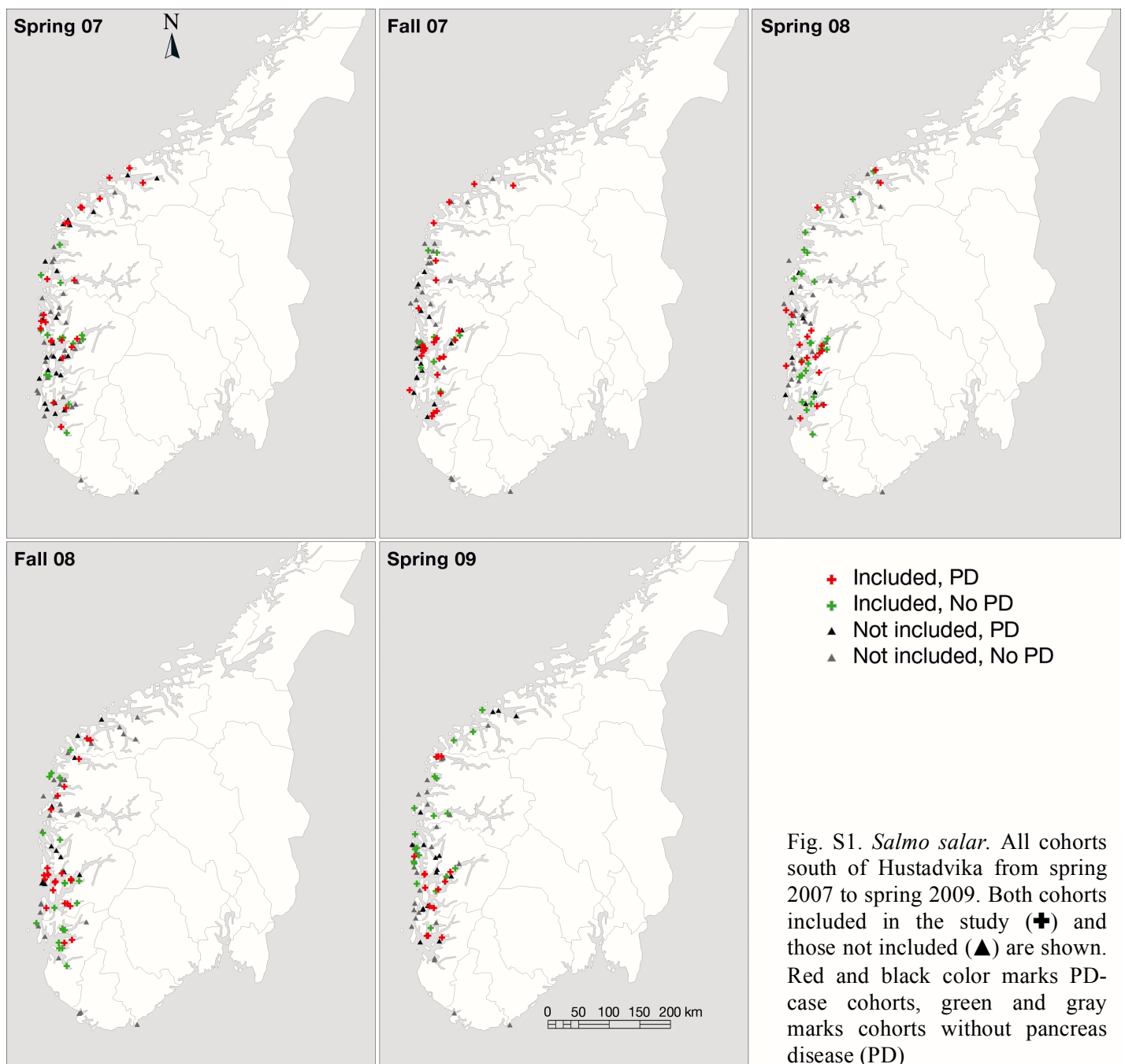
Table S1. Results from the mixed-effect logistic regression, modeling the probability of a pancreas disease (PD) outbreak for only the generations spring 2007 to spring 2008. The odds ratio for each estimate is also given. AUC from this model was 0.71

	Estimate	p	Odds ratio
Intercept	1.37	<0.001	
PD vaccination	−1.42	<0.001	0.24
Spring smolt	−0.91	0.030	0.40
SD random effect	0.000063		
SD residuals	1.00		
ICC	<0.001		

Table S2. Final models for the response variables cumulative mortality, growth rate, feed factor and discarded for the generations spring 2007 to spring 2008 for all cohorts and for pancreas (PD) case cohorts only. The number of reports included in the model varies since not all response variables are reported for each cohort. ICC: intraclass correlation coefficient; HSMI: heart and skeletal muscle inflammation; CMS: cardiomyopathy syndrome; IPN: infectious pancreatic necrosis; na: not applicable; ni: not included because the Akaike's information criterion (AIC) value did not decrease; ns: not significant

	All cohorts			PD case cohorts		
	Value	(SE)	p	Value	(SE)	p
Cumulative mortality	**(n = 119)**			**(n = 68)**		
Intercept	14.5	(2.26)	<0.001	27.2	(1.76)	<0.001
PD	9.51	(2.17)	<0.001	na		na
PD vaccination	−4.19	(2.05)	0.049	−10.5	(3.39)	0.003
IPN	4.35	(2.08)	0.039	ni		ni
SD random effect	1.47			1.13		
SD residuals	11.0			11.7		
ICC	0.02			0.01		
Growth rate	**(n = 111)**			**(n = 65)**		
Intercept	0.79	(0.02)	<0.001	0.75	(0.02)	<0.001
PD	−0.053	(0.018)	0.003	na		na
PD vaccination	0.042	(0.019)	0.024	ni		ni
Density	−0.005	(0.001)	<0.001	−0.0058	(0.001)	<0.001
SD random effect	0.025			0.033		
SD residuals	0.084			0.095		
ICC	0.08			0.11		
Feed factor	**(n = 116)**			**(n = 71)**		
Intercept	1.18	(0.015)	<0.001	1.17	(0.013)	<0.001
HSMI or CMS	−0.037	(0.012)	0.004	−0.049	(0.015)	0.002
Gill inflammation	0.029	(0.014)	0.045	0.057	(0.021)	0.008
Spring smolt cohort	ni			0.044	(0.017)	0.012
SD random effect	0.021			0.012		
SD residuals	0.064			0.058		
ICC	0.10			0.04		
No. of fish discarded	**(n = 118)**			**(n = 67)**		
Intercept	1.78	(0.46)	0.009	2.71	(0.80)	0.001
PD	0.86	(0.67)	0.039	na		na
PD vaccination	−1.09	(0.37)	0.015	ni		ni
IPN	0.85	(0.39)	0.034	ni		ni
SD random effect	0.94			1.29		
SD residuals	2.07			2.51		
ICC	0.17			0.16		