Table S1. Number of active farms in each of the four regions by year. The 'Overall' figure denotes the total number of active farms throughout this timeframe.

Region	2016	2017	2018	2019	2020	2021	2022	2023	Overall
Clayoquot Sound	12	12	11	13	10	13	11	8	14
Quatsino Sound	2	3	3	4	4	4	4	4	4
Discovery Islands	11	11	11	11	11	7	2	1	13
Broughton Archipelago	14	15	14	17	15	16	9	4	20

Table S2. Sampling details of wild juvenile Pacific salmon (Chinook, Chum, Coho, Pink and Sockeye salmon) by region, ISO week and year. ISO weeks are ordinal weeks of the year. These figures are the number of all sampled fish before applying the filtering procedure described in Section 2.3 of the main text.

Region	ISO week	2016	2017	2018	2019	2020	2021	2022	2023	Total
Clayoquot Sound	**12**	0	0	0	0	0	179	0	0	179
	13	0	0	0	0	228	0	0	0	228
	14	351	0	224	0	0	241	238	0	1,054
	15	0	366	0	297	222	0	0	105	990
	16	311	483	226	0	0	194	214	0	1,428
	17	0	0	7	0	0	0	0	197	204
	18	243	395	211	132	198	148	156	0	1,484
	19	0	0	0	0	0	0	0	191	191
	20	0	0	0	0	69	124	178	0	371
	21	0	0	74	0	0	0	0	0	74
	22	0	0	0	0	8	0	67	109	184
	Total	**905**	**1,244**	**742**	**429**	**725**	**886**	**853**	**602**	**6,386**
Quatsino Sound	**14**	193	202	110	0	0	0	223	73	801
	15	0	0	0	250	125	0	0	0	375
	18	64	335	289	241	0	0	270	214	1,413
	19	0	0	0	0	260	0	0	0	260
	22	0	0	0	0	0	227	0	0	227
	27	0	0	0	0	0	236	0	0	236
	Total	**257**	**537**	**399**	**491**	**385**	**463**	**493**	**287**	**3,312**
Discovery Islands	**14**	-	245	0	0	0	0	0	0	245
	15	-	295	0	0	0	0	0	0	295
	16	-	0	776	0	643	1,050	596	387	3,452
	17	-	0	0	594	0	0	0	0	594
	20	-	0	0	0	0	2	612	398	1,012
	21	-	890	167	0	538	714	0	0	2,309
	22	-	0	327	547	0	0	0	0	874
	23	-	0	0	0	0	0	0	329	329
	Total	**-**	**1,430**	**1,270**	**1,141**	**1,181**	**1,766**	**1,208**	**1,114**	**9,110**
Broughton Archipelago	**14**	0	431	0	0	261	0	0	0	692
	15	189	0	239	320	0	376	0	0	1,124
	16	366	0	85	0	349	0	0	165	800
	17	0	0	0	0	0	0	337	0	337
	20	412	563	324	0	294	182	0	473	1,775
	21	0	0	0	0	0	0	371	0	371

	23	0	0	0	181	0	0	0	0	181
	24	0	0	0	0	0	0	0	156	156
	25	0	0	0	0	0	0	0	25	25
	Total	**967**	**994**	**648**	**501**	**904**	**558**	**708**	**819**	**6,099**
Total in all regions		**2,129**	**4,205**	**3,059**	**2,562**	**3,195**	**3,673**	**3,262**	**2,822**	**24,907**

Table S3. Sampling details of wild juvenile Pacific salmon by region, salmon species and year. These figures are the number of all sampled fish before applying the filtering procedure described in Section 2.3 of the main text.

Region	Salmon Species	2016	2017	2018	2019	2020	2021	2022	2023	Total
Clayoquot Sound	**Chinook**	0	0	0	0	0	0	0	0	0
	Chum	905	1,122	696	428	696	854	808	560	6,069
	Coho	0	84	45	1	29	32	45	42	278
	Pink	0	0	1	0	0	0	0	0	1
	Sockeye	0	38	0	0	0	0	0	0	38
	Total	**905**	**1,244**	**742**	**429**	**725**	**886**	**853**	**602**	**6,386**
Quatsino Sound	**Chinook**	19	0	6	6	5	3	0	5	44
	Chum	235	479	325	441	301	417	438	185	2,821
	Coho	1	58	37	35	79	42	54	52	358
	Pink	2	0	0	7	0	1	1	0	11
	Sockeye	0	0	31	2	0	0	0	45	78
	Total	**257**	**537**	**399**	**491**	**385**	**463**	**493**	**287**	**3,312**
Discovery Islands	**Chinook**	-	26	79	9	6	0	42	66	228
	Chum	-	942	722	599	564	918	652	454	4,851
	Coho	-	88	34	21	33	0	44	31	251
	Pink	-	374	434	510	578	848	470	562	3,776
	Sockeye	-	0	1	2	0	0	0	1	4
	Total	**-**	**1,430**	**1,270**	**1,141**	**1,181**	**1,766**	**1,208**	**1,114**	**9,110**
Broughton Archipelago	**Chinook**	0	2	0	1	0	0	0	5	8
	Chum	512	562	281	246	497	249	330	301	2,978
	Coho	25	19	11	24	5	0	115	62	261
	Pink	430	411	356	230	402	309	263	436	2,837
	Sockeye	0	0	0	0	0	0	0	15	15
	Total	**967**	**994**	**648**	**501**	**904**	**558**	**708**	**819**	**6,099**
Total in all regions		**2,129**	**4,205**	**3,059**	**2,562**	**3,195**	**3,673**	**3,262**	**2,822**	**24,907**

Table S4. The number of unique sampling events organized by sampling week and year, region, and fish species. Sampling events with less than ten fish were excluded. Total 903 sampling events consist of 21,180 sampled fish. ISO week*s* are ordinal weeks of the year.

Region	Fish Species	ISO week	2016	2017	2018	2019	2020	2021	2022	2023	Total
Clayoquot Sound	Chum	12	0	0	0	0	0	12	0	0	12
		13	0	0	0	0	8	0	0	0	8
		14	11	0	8	0	0	15	15	0	50
		15	0	11	0	10	7	0	0	6	28
		16	10	14	8	0	0	12	13	0	57
		17	0	0	0	0	0	0	0	11	11
		18	9	12	6	5	7	9	8	0	56
		19	0	0	0	0	0	0	0	9	9
		20	0	0	0	0	3	6	10	0	19
		21	0	0	2	0	0	0	0	0	2
		22	0	0	0	0	0	0	3	5	8
		Total	30	37	24	15	25	54	49	31	265
Quatsino Sound	Chum	14	6	6	3	0	0	0	8	2	25
		15	0	0	0	8	4	0	0	0	12
		18	2	9	7	8	0	0	7	4	37
		19	0	0	0	0	6	0	0	0	6
		22	0	0	0	0	0	7	0	0	7
		27	0	0	0	0	0	7	0	0	7
		Total	8	15	10	16	10	14	15	6	94
Discovery Islands	Chum	14	-	7	0	0	0	0	0	0	7
		15	-	6	0	0	0	0	0	0	6
		16	-	0	13	0	12	18	11	9	63
		17	-	0	0	9	0	0	0	0	9
		20	-	0	0	0	0	0	11	6	17
		21	-	20	3	0	8	13	0	0	44
		22	-	0	6	10	0	0	0	0	16
		23	-	0	0	0	0	0	0	3	3
		Total	-	33	22	19	20	31	22	18	165
	Pink	14	-	3	0	0	0	0	0	0	3
		15	-	4	0	0	0	0	0	0	4
		16	-	0	10	0	11	18	9	8	56
		17	-	0	0	9	0	0	0	0	9
		20	-	0	0	0	0	0	7	6	13
		21	-	8	3	0	11	10	0	0	32
		22	-	0	3	8	0	0	0	0	11
		23	-	0	0	0	0	0	0	5	5
		Total	-	15	16	17	22	28	16	19	133
Broughton Archipelago	Chum	14	0	10	0	0	5	0	0	0	15
		15	3	0	3	9	0	10	0	0	25

	16	6	0	1	0	7	0	0	3	17
	17	0	0	0	0	0	0	8	0	8
	20	7	9	5	0	6	4	0	11	42
	21	0	0	0	0	0	0	12	0	12
	23	0	0	0	2	0	0	0	0	2
	24	0	0	0	0	0	0	0	1	1
	25	0	0	0	0	0	0	0	1	1
	Total	16	19	9	11	18	14	20	16	123
Pink	**14**	0	6	0	0	2	0	0	0	8
	15	3	0	5	4	0	12	0	0	24
	16	6	0	1	0	7	0	0	4	18
	17	0	0	0	0	0	0	10	0	10
	20	5	9	5	0	7	6	0	14	46
	21	0	0	0	0	0	0	6	0	6
	23	0	0	0	4	0	0	0	0	4
	24	0	0	0	0	0	0	0	6	6
	25	0	0	0	0	0	0	0	1	1
	Total	14	15	11	8	16	18	16	25	123
Total of Chum salmon		54	104	65	61	73	113	106	71	647
Total of Pink salmon		14	30	27	25	38	46	32	44	256
Total number of Chum and Pink salmon combined		68	134	92	86	111	159	138	115	903

Table S5. Estimates of weekly mean numbers of farm-derived *Lepeophtheirus salmonis* copepodids (in millions) per farm by juvenile Pacific salmon migration window: non-migration window (July 1 to January 31; typically ISO weeks 27 to 5), pre-migration window (February 1 to February 29; typically ISO weeks 6 to 9) and out-migration window (March 1 to June 30; typically ISO week 10 to 26). Note that ISO weeks may differ by one week depending on the year.

Region	Non-migration	Pre-migration	Out-migration
Clayoquot Sound	142	114	152
Quatsino Sound	240	192	119
Discovery Islands	171	85	66
Broughton Archipelago	73	72	49

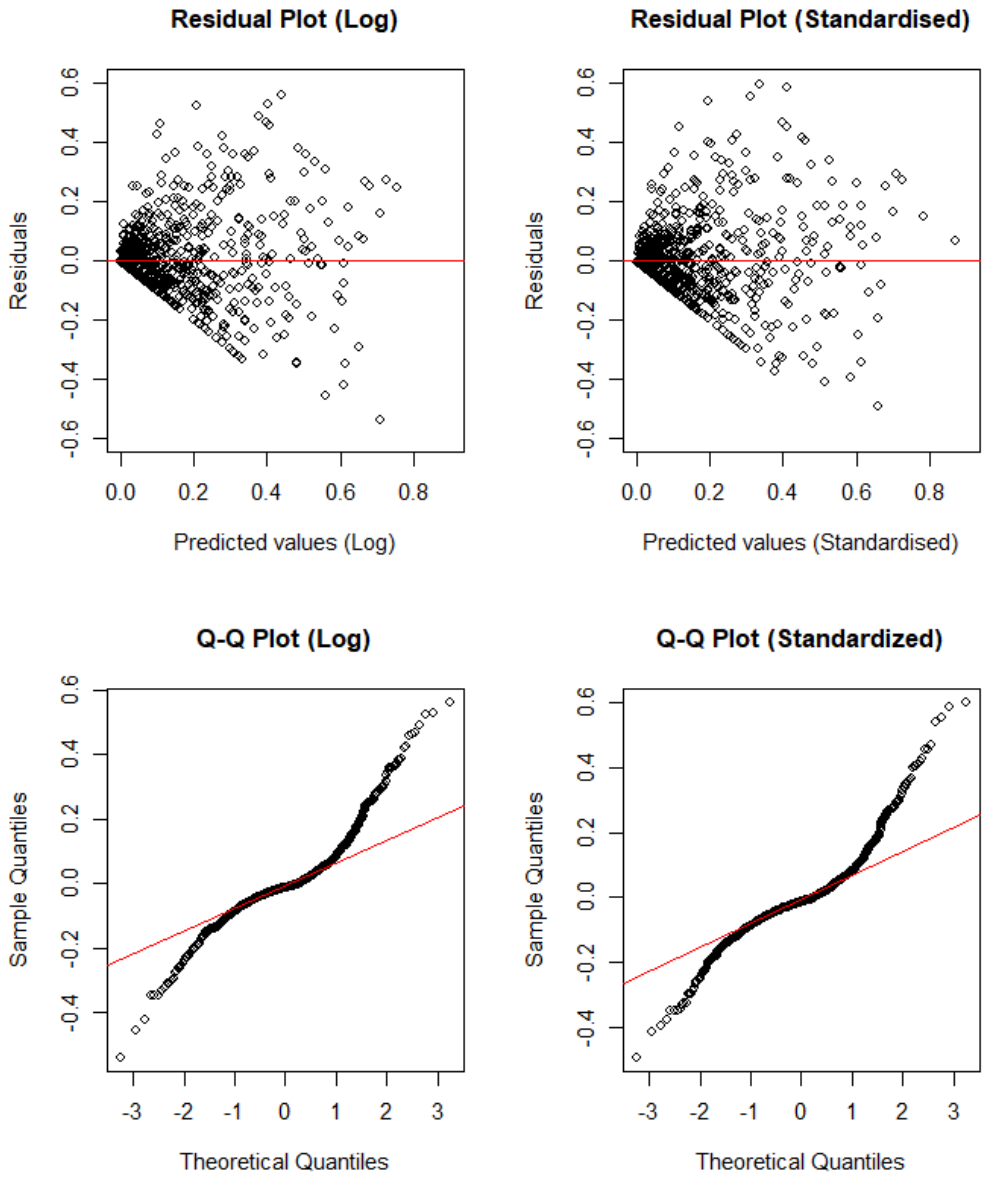

Fig. S1. Comparison of log-scaling and standardisation of infestation pressure in the mixed-effect regression model. The two scaling methods show minimal differences. In the upper panels, residuals should be centered around zero, indicating that the model does not systematically overpredict or underpredict. Placement of residuals close to the red line indicates better fit. Residuals are the differences between the observed values and the predicted values obtained from the mixed-effect regression model. Predicted values are the values that the mixed-effect regression model estimates based on the explanatory variables in the dataset. In the lower panels, Q-Q plots compare the distribution of residuals to a normal distribution. If residuals are normally distributed, the points will lie approximately along the red line. Theoretical quantiles are values derived from a specified theoretical distribution, representing what we would expect the data to look like if it perfectly followed that distribution, while sample quantiles are values derived from the actual sample data, representing the observed distribution.

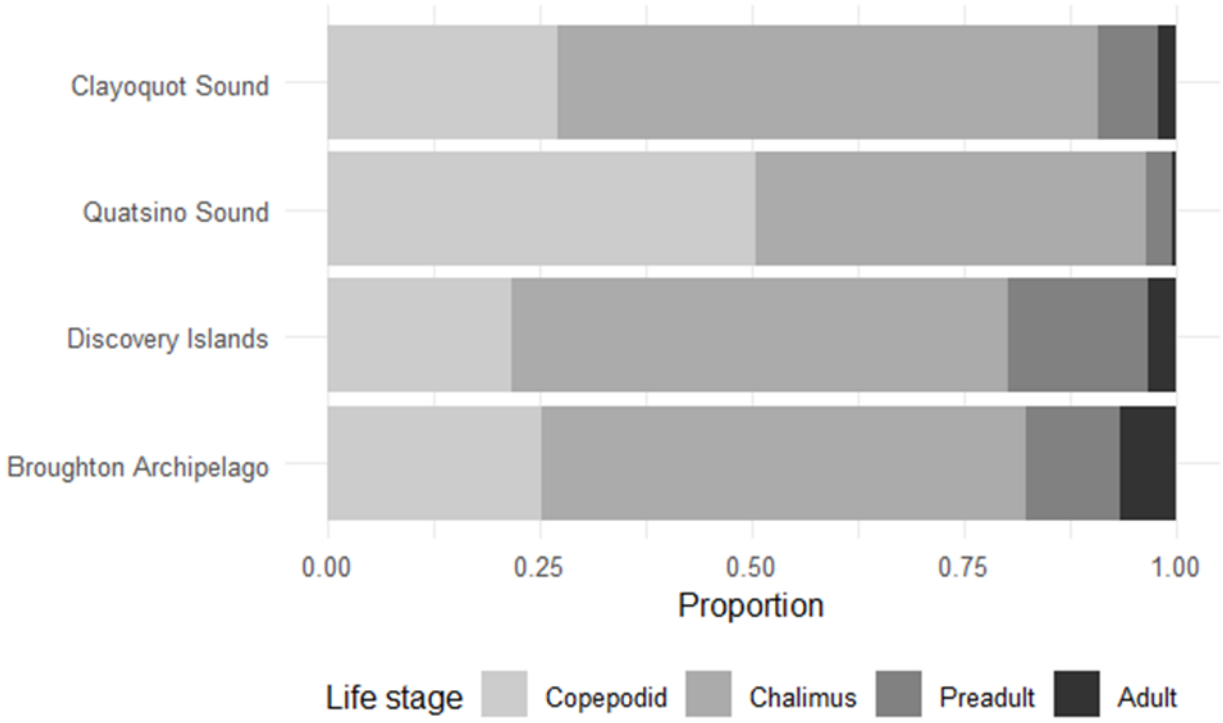

Fig. S2. Proportion of *Lepeophtheirus salmonis* developmental stages found on wild juvenile out-migrating Chum and Pink salmon captured in four regions of British Columbia between 2016 and 2023. The counts in Clayoquot Sound and Quatsino Sound are solely from Chum salmon, while the counts from Discovery Islands and Broughton Archipelago include both Chum and Pink salmon.

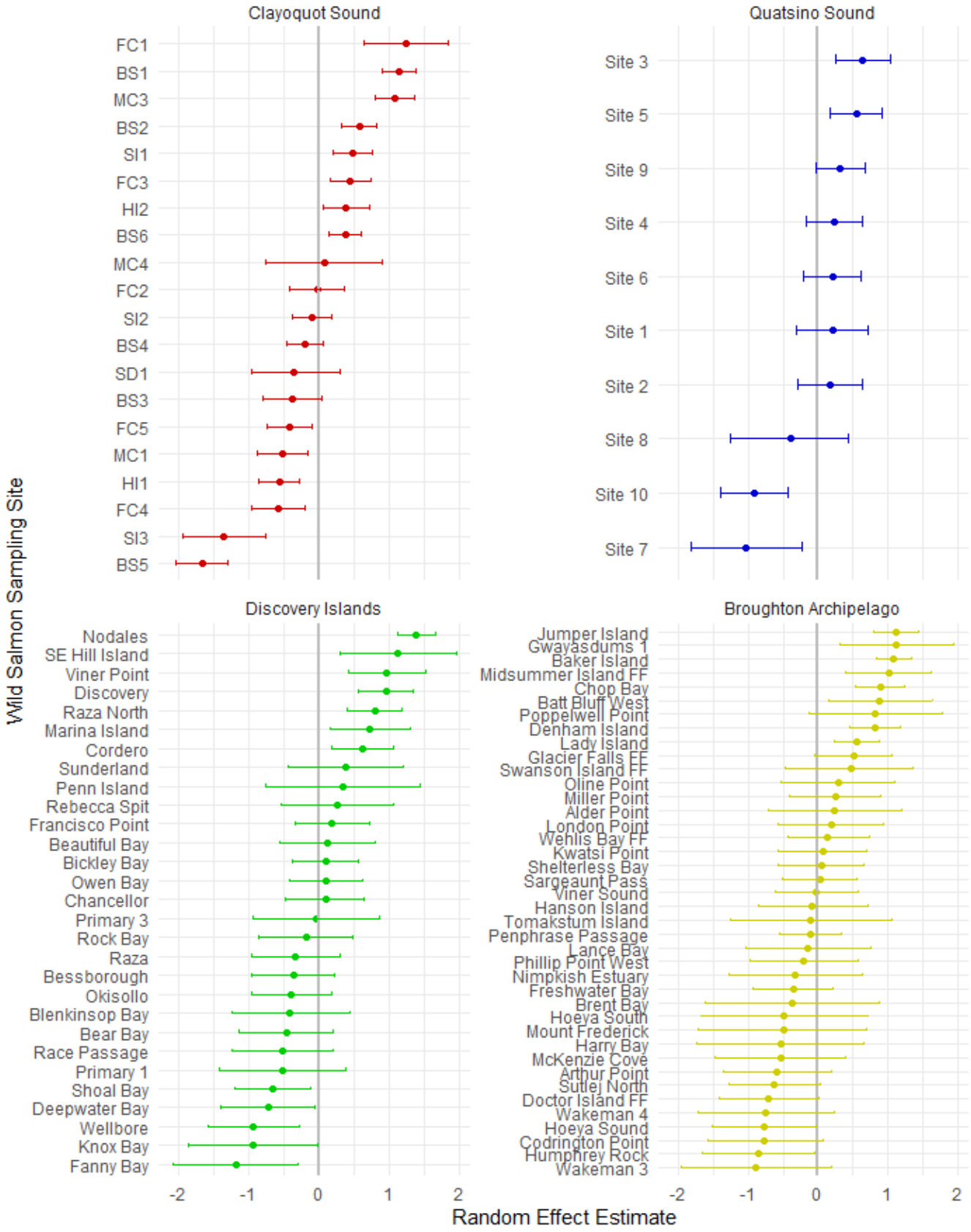
Clayoquot Sound
FC1
BS1
MC3
BS2
SI1
FC3
HI2
BS6
MC4
FC2
SI2
BS4
SD1
BS3
FC5
MC1
HI1
FC4
SI3
BS5
Quatsino Sound
Site 3
Site 5
Site 9
Site 4
Site 6
Site 1
Site 2
Site 8
Site 10
Site 7
Discovery Islands
Nodales
SE Hill Island
Viner Point
Discovery
Raza North
Marina Island
Cordero
Sunderland
Penn Island
Rebecca Spit
Francisco Point
Beautiful Bay
Bickley Bay
Owen Bay
Chancellor
Primary 3
Rock Bay
Raza
Bessborough
Okisollo
Blenkinsop Bay
Bear Bay
Race Passage
Primary 1
Shoal Bay
Deepwater Bay
Wellbore
Knox Bay
Fanny Bay
Broughton Archipelago
Jumper Island
Gwayasdums 1
Baker Island
Midsummer Island FF
Chop Bay
Batt Bluff West
Poppelwell Point
Denham Island
Lady Island
Glacier Falls FF
Swanson Island FF
Oline Point
Miller Point
Alder Point
London Point
Wehlis Bay FF
Kwatsi Point
Shelterless Bay
Sargeaunt Pass
Viner Sound
Hanson Island
Tomakstum Island
Penphrase Passage
Lance Bay
Phillip Point West
Nimpkish Estuary
Freshwater Bay
Brent Bay
Hoeya South
Mount Frederick
Harry Bay
McKenzie Cove
Arthur Point
Sutlej North
Doctor Island FF
Wakeman 4
Hoeya Sound
Codrington Point
Humphrey Rock
Wakeman 3
Wild Salmon Sampling Site
-2
-1
0
1
2
Random Effect Estimate

Fig. S3. Random effect estimates for sampling sites across regions from the mixed-effects model (Eq. 9). The plot displays the random effect estimates for individual sampling sites within four regions: Clayoquot Sound, Quatsino Sound, Discovery Islands, and Broughton Archipelago. Error bars represent 95% credible intervals. Positive estimates indicate sites with higher infestation prevalence than the average predicted by fixed effects, while negative estimates indicate lower prevalence. The variation among sites reflects unmeasured site-specific factors influencing infestation prevalence. The locations of the sites are provided in DFO (2023).

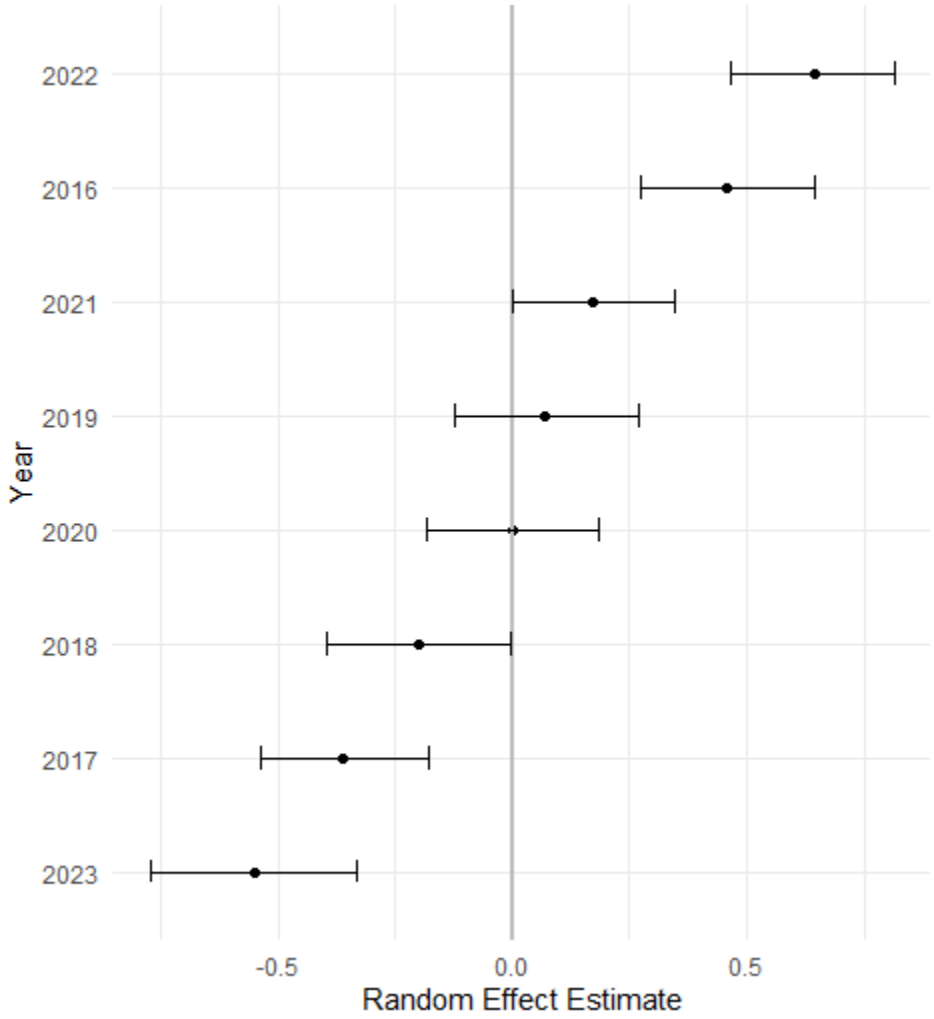

Fig. S4. Random effect estimates by year from the mixed-effects model (Eq. 9). The plot shows the random effect estimates for each year, with error bars representing the 95% credible intervals. Estimates near zero indicate little deviation from the overall mean, while positive and negative estimates indicate years with higher or lower infestation prevalence, respectively, compared to the overall average.

LITERATURE CITED

DFO (2023) Association between sea lice from Atlantic Salmon farms and sea lice infestations on wild juvenile Pacific Salmon in British Columbia. *DFO Can. Sci. Advis. Sec. Sci. Resp.* 2022/045.