Table S1

Organisations represented at the workshop, not all individuals returned questionnaires, but were involved in formulating research gap list.

Organisation	**Sector**	**Country**
Akvaplan-niva	Consultant	Norway
BMT	Consultant	UK
BMT Australia	Consultant	Australia
Callander McDowell	Consultant	UK
CCN	Consultant (Community Group)	UK
mts-cfd.com	Consultant	UK
Institute of Marine Research	Government Research	Norway
Marine Scotland Science	Government Research	UK
Cooke Aquaculture Scotland Ltd	Industry	UK
Keen Marine Ltd	Industry	UK
Mowi Scotland Ltd	Industry	UK
NeemCo Limited	Industry	UK
SAIC	Industry	UK
Scottish Sea Farms	Industry	UK
The Scottish Salmon Company	Industry	UK
Crown Estate Scotland	Policy	UK
JNCC	Policy	UK
Marine Scotland	Policy	UK
NatureScot	Policy	UK
Orkney Islands Council	Policy	UK
Scottish Environment Protection Agency (SEPA)	Policy	UK
Scottish Government	Policy	UK
Bangor University	University	UK
Fiskaaling	Government Research	Faroe Islands
London School of Hygiene and Tropical Medicine and University of Edinburgh	University	UK
Natturustofa Vestfjarda	University	Iceland
Nigerian Institute for Oceanography and Marine Research	University	Nigeria
MASTS	University	UK
Scottish Association for Marine Science	University	UK
Scotland's Rural College	University	UK
Shetland UHI	University	UK
ULL	University	
National Autonomous University of Mexico	University	Mexico
University of Aberdeen	University	UK
University of Crete	University	Greece

University of Dar es Salaam	University	Tanzania
University of Stirling	University	UK
University of Strathclyde	University	UK
University of the Highlands and Islands	University	UK

Table S2

Full table of research gaps identified during workshop – ranked highest first.

Gaps in Highest Ranking order	Average Immediacy	Average Magnitude	Overall average
A2.1 For on farm lice counts, higher quality and frequency of data required along with better sharing of data	4.53	4.63	4.58
B1.3 Better tools and methodology in place to help make good choices for sea lice management	4.43	4.43	4.43
E1.1 Investigate the impact on host i.e. what threshold of lice in the environment will be deadly for host	4.31	4.48	4.40
C1.7 We need a better understanding of migration path of wild salmon/sea trout through new tracking studies.	4.11	4.37	4.24
A2.6 Improved data sharing and provision must be made a priority	4.31	4.07	4.19
B2 Increased knowledge on lice survival from field and experimental work for parameter estimation.	4.00	4.34	4.17
E1.4 Better understanding critical lice thresholds for fish, seasonal effects and interaction between sublethal lice impacts and other stressors	3.94	4.13	4.03
A1.2 Increased knowledge on production of nauplii	3.97	4.04	4.01
E1.3 There are gaps on information on response to high/low infestation for individual fish and populations. What information is needed to inform appropriate local management?	3.91	4.09	4.00
B1.1 Efficient methods for getting good samples of planktonic salmon lice are required	3.92	4.07	3.99
B1.4 Development of appropriate sensitivity analyses for coupled hydrodynamic – dispersal models	3.77	4.13	3.95

A1.1 Increased knowledge on lice biology from field and experimental work for parameter estimation.	3.98	3.90	3.94
E1.5 Climate change impact on lice, predators, and hosts should be investigated	3.50	4.38	3.94
C1.2 Better empirical data on infective dose (distribution of copepodids in water) including updating the parameter values for lice contact with hosts, and lice attachment rates, including data on lice age, water temperature.	3.84	3.99	3.92
C1.6 Investigate how densities in water relate to infection rates/pressures.	3.82	3.92	3.87
E1.2 Better quantification of the infective dose through data collection and numerical modelling is needed	3.87	3.77	3.82
A.2.3 Investigate how the infectivity of sea lice to host and attachment success is affected by environmental conditions such as temperature and salinity.	3.80	3.79	3.79
B1.2 Increased knowledge of how environmental parameters impact larval movement	3.76	3.82	3.79
B1. 5 Improved hydrodynamic modelling for complex environments	3.78	3.73	3.76
C1.1 Attachment rate success parameters and impact of temperature and salinity on viable egg release.	3.72	3.77	3.75
A2.4 What is the swimming behaviour of sea lice in the sea?	3.57	3.74	3.66
B3.3 Development and standardisation of sampling methods for planktonic stages is needed.	3.52	3.77	3.64
C1.10 Investigate ways for farms to avoid cross infecting.	3.60	3.66	3.63
A2.5 Chalimus/planktonic counts: can counting be improved to gain better insights?	3.72	3.49	3.60
C1.9 Investigate the parasite attachment onto the fish, in terms of the fishes behaviours.	3.35	3.82	3.58
C1.5 Analysis of reinfections in pens is needed.	3.39	3.66	3.52
B3.9 Understanding lice behaviour in ocean conditions should be prioritized	3.43	3.53	3.48
B3.4 Better data streams are required for sources of lice.	3.52	3.42	3.47
B1.8 Increase environmental data provision needed for hydrodynamic modelling validation	3.47	3.42	3.44
C1.8 We should rethink degree of source control.	3.25	3.33	3.29

B3.7 Develop more new automated technology with optical sensors to better sample lice in the environment.	3.04	3.53	3.29
A2.2 Better data to identify source of sea lice and information on what are the other sources (wild fish assumed to be less than 10%)	3.02	3.44	3.23
B1.10 Understanding cross boundary lice transport should be prioritized	3.07	3.38	3.23
B3.11 Interactions of different species of hosts salmonids and parasites sea lice needs further investigation	3.02	3.33	3.18
B3.2 Development of genetic methods for identification of larvae to support/replace current techniques	3.01	3.30	3.16
D1 Develop general models to predict variation among populations	3.05	3.26	3.15
B1.9 Develop drifter tech to help hydrodynamic model dispersal studies	2.93	3.28	3.11
B1.7 Investigation of sources of stochasticity in model and environmental data.	2.91	3.19	3.05
B1.6 Consideration of data presentation of mapped results from coupled hydrodynamic-dispersion modelling output	3.02	2.98	3.00
C1.4 Investigating geographical difference in exposures and infestation between countries	2.92	3.05	2.99
B3.10 Understanding of potential differences between populations in different locations	2.83	3.13	2.98
B3.1 Development of methodologies for species identification of larvae in situ is required.	2.85	3.05	2.95
C1.11 How do lice sense fish? How important is this behaviour and can therapies be developed to block this type of behaviour?	2.61	3.15	2.88
C1.3 Develop understanding on how fish genetics and feeds can impact exposure and infestation of new hosts	2.58	2.98	2.78
B3.5 Differentiation between natural lice and farmed derived lice levels needs investigation.	2.60	2.63	2.62
B3.8 Better understanding of genetic differences in various locations is required	2.51	2.54	2.53
B3.6 Information on interactions between different lice species should be collected	2.25	2.29	2.27

Table S3

Minimum, maximum and mean scores and standard deviations for each of sector groups. a = immediacy of concern, b = magnitude of concern

	Industry		Consultants		University		Government		Policy	
	a	b	a	b	a	b	a	b	a	b
Min score	1.00	1.00	2.33	2.50	2.00	2.00	2.00	1.80	1.75	1.50
Max score	5.00	5.00	5.00	5.00	4.46	4.42	5.00	5.00	5.00	5.00
Mean score	3.02	3.40	3.61	3.70	3.60	3.73	3.21	3.36	3.79	3.88
Standard deviation	1.06	1.11	0.68	0.69	0.50	0.45	0.82	0.76	0.73	0.78