

Fisheries and Aquaculture

Ministry of
Agriculture, Food
& Fisheries

[The Minister](#)
[News](#)
[Search](#)
[Reports & Publications](#)
[Contacts](#)

Contents

- [Sea Lice](#)
 - [Management Strategy](#)
 - [Monitoring Results](#)
 - **UPDATED**
 - [Management Strategy Review 03/04](#) **NEW!**
 - [Broughton Archipelago Sea Lice Action Plan](#)
 - [Sea Lice Identification Workshop](#)
 - [FAQ](#)
 - [Fish Health Index](#)
 - [Fisheries & Aquaculture Homepage](#)

BCSFA Sea Lice Monitoring Results


Salmon farms report lice levels on all farms within specific fish health zones/areas as part of the Sea Lice Management Strategy 2004. Monitoring began in October 2003.

In British Columbia, lice from wild salmon returning from the ocean to spawn can result in an increase in the levels of lice on fish farms in the fall and early winter. Veterinarians treat these fish to reduce lice levels.

The program uses internationally accepted standards for sea lice monitoring.

- [Map of Fish Health Zones \(165 kb\)](#) .pdf
- [Map of Fish Health Zones \(5.5mb\)](#) .jpg


Atlantic Salmon Farms

For each zone there is a graph for salmon one year or less in seawater (year class 1) and another for salmon two years or more in seawater (year class 2). All graphs are in .pdf format.

Zone	Oct. 2003 - Oct. 2004
2.3	Graphs
2.4	Graphs
3.1	Graphs
3.2	Graphs
3.3	Graphs
3.4	Graphs
3.5	Graphs

- [Monthly Summary \(numbers/tables\) \(50.56kb\)](#) .pdf

Pacific Salmon Farms

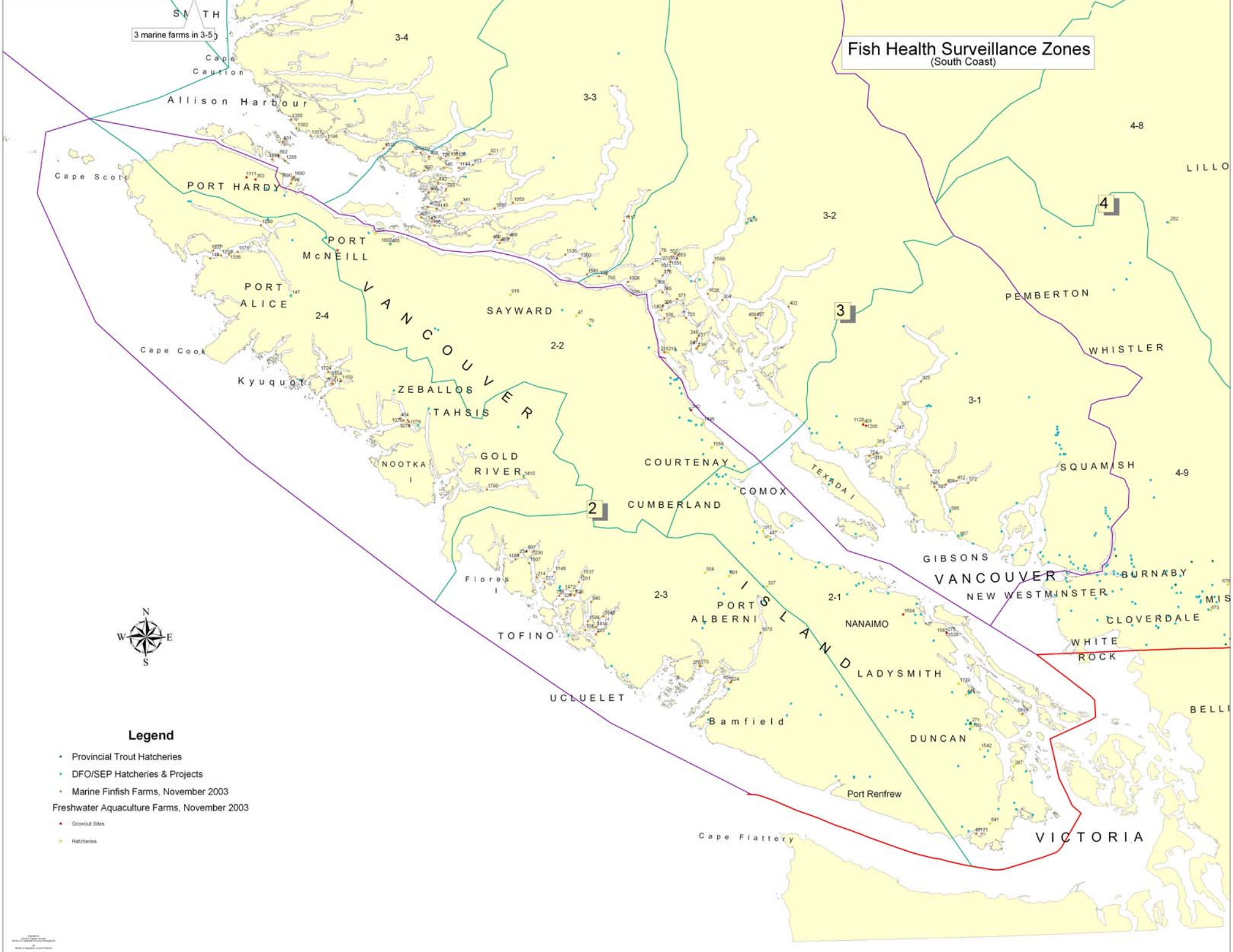
Sea lice on Pacific salmon are reported quarterly. All graphs are in .pdf format.

Zone	Quarter 4, 2003 - Quarter 3, 2004
2	Graphs
3	Graphs

- [Quarterly Summary \(numbers/tables\) \(55.51KB\)](#) .pdf

Updated: November 17, 2004

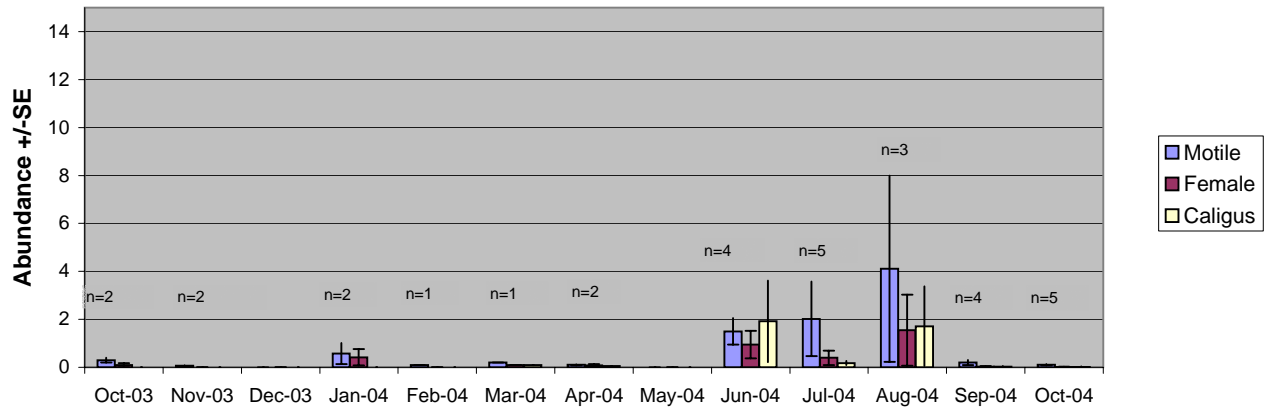
Fish Health Surveillance Zones (South Coast)



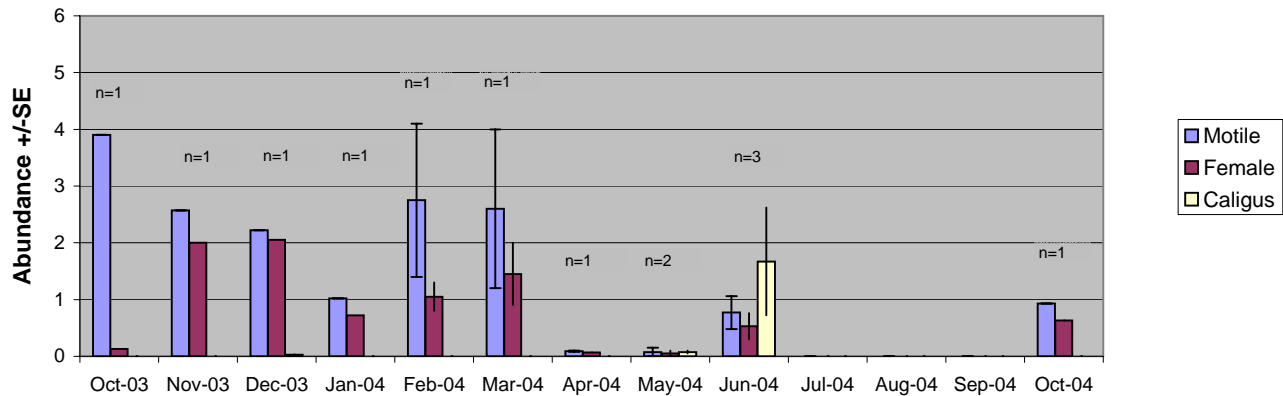
Legend

- Provincial Trout Hatcheries
- DFO/SEP Hatcheries & Projects
- Marine Finfish Farms, November 2003
- Freshwater Aquaculture Farms, November 2003
- Growout Sites
- Hatcheries

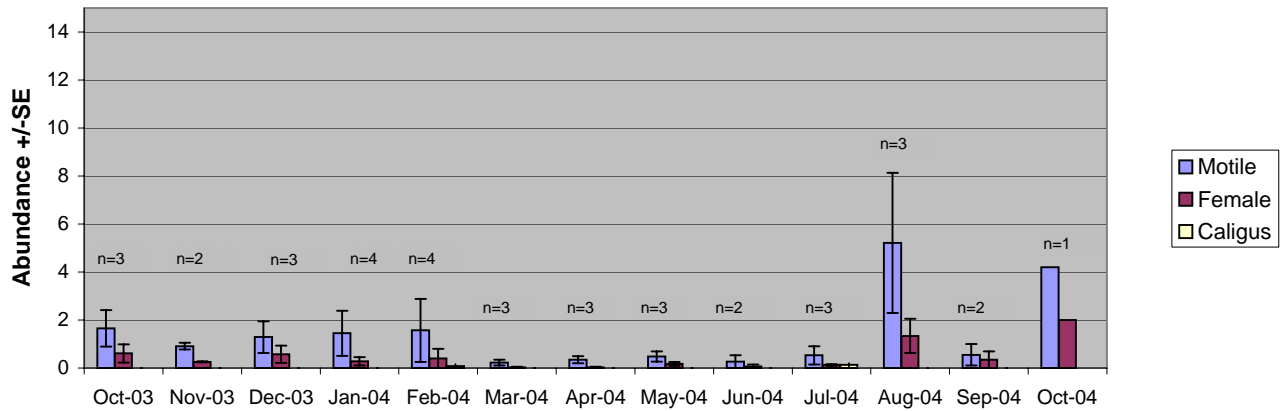
**Average monthly sea lice counts on farmed Atlantic Salmon
(1 year or less in seawater) located in
BCMAFF subzone 2.3**



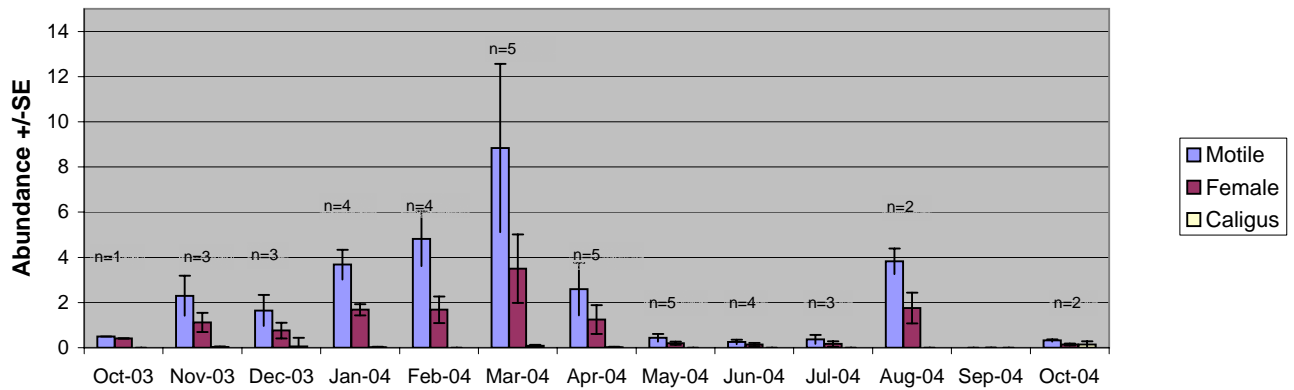
**Average monthly sea lice counts on farmed Atlantic Salmon
(greater than 1 year in seawater) located in
BCMAFF subzone 2.3**



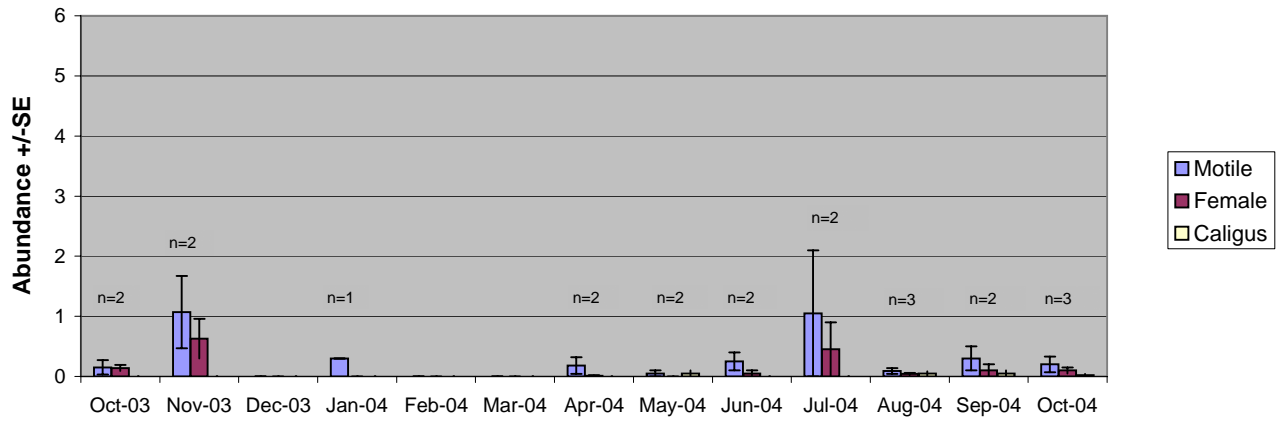
**Average monthly sea lice counts on farmed Atlantic Salmon
(1 year or less in seawater) located in
BCMAFF subzone 2.4**



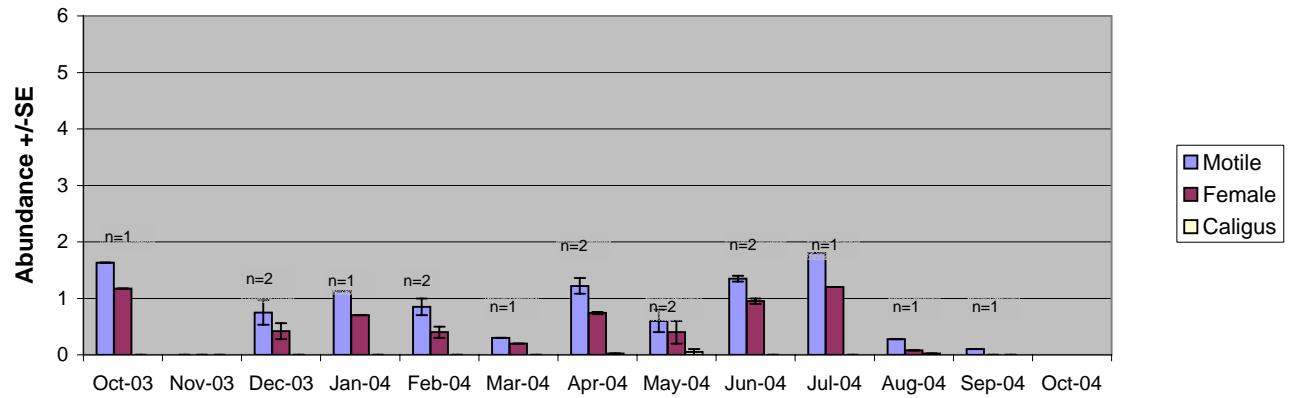
**Average monthly sea lice counts on farmed Atlantic Salmon
(greater than 1 year in seawater) located in
BCMAFF subzone 2.4**



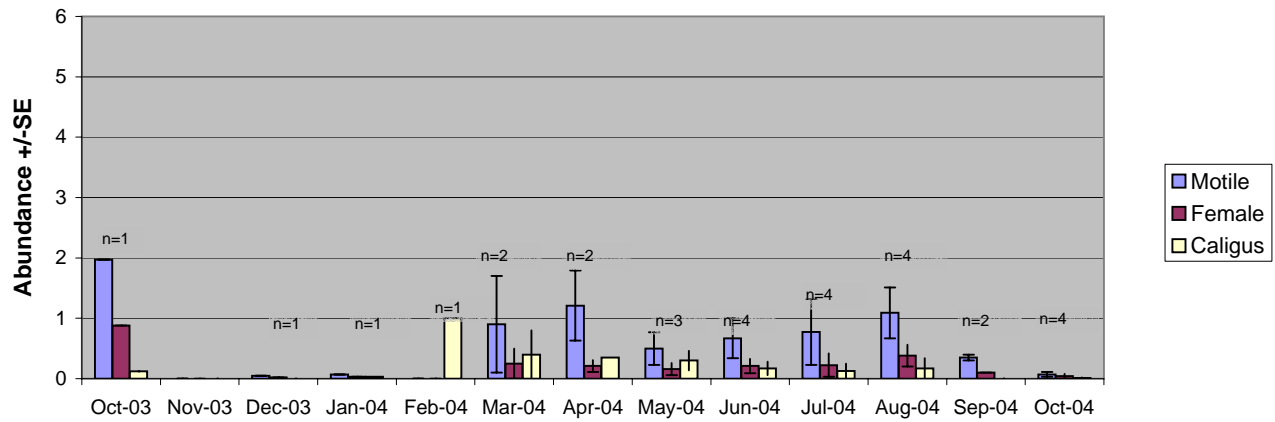
**Average monthly sea lice counts on farmed Atlantic Salmon
(1 year or less in seawater) located in
BCMAFF subzone 3.1**



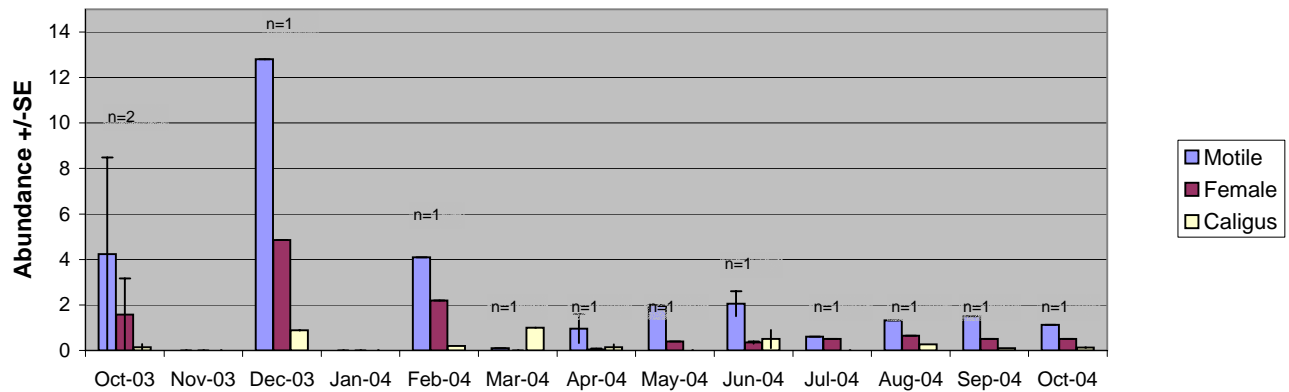
**Average monthly sea lice counts on farmed Atlantic Salmon
(greater than 1 year in seawater) located in
BCMAFF subzone 3.1**



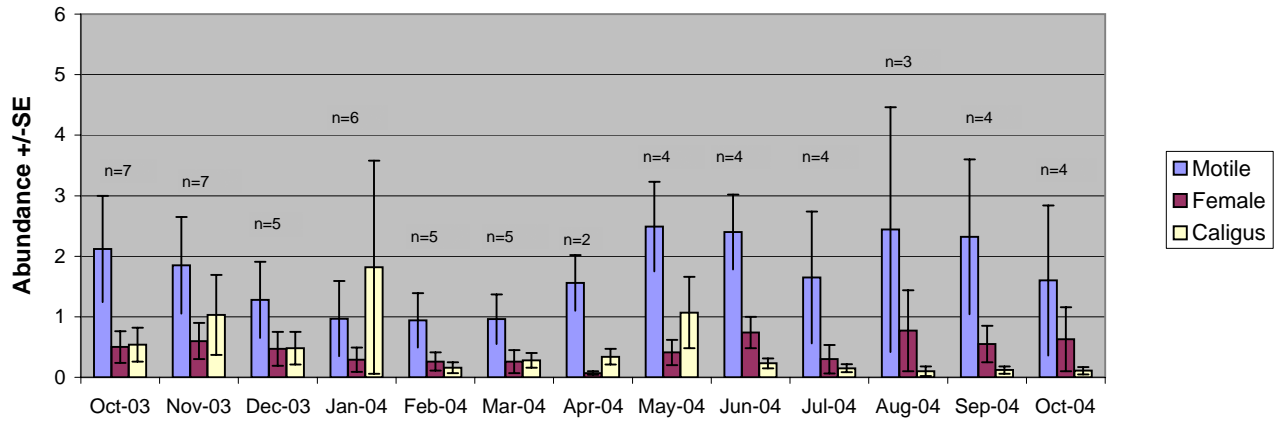
**Average monthly sea lice counts on farmed Atlantic Salmon
(1 year or less in seawater) located in
BCMAFF subzone 3.2**



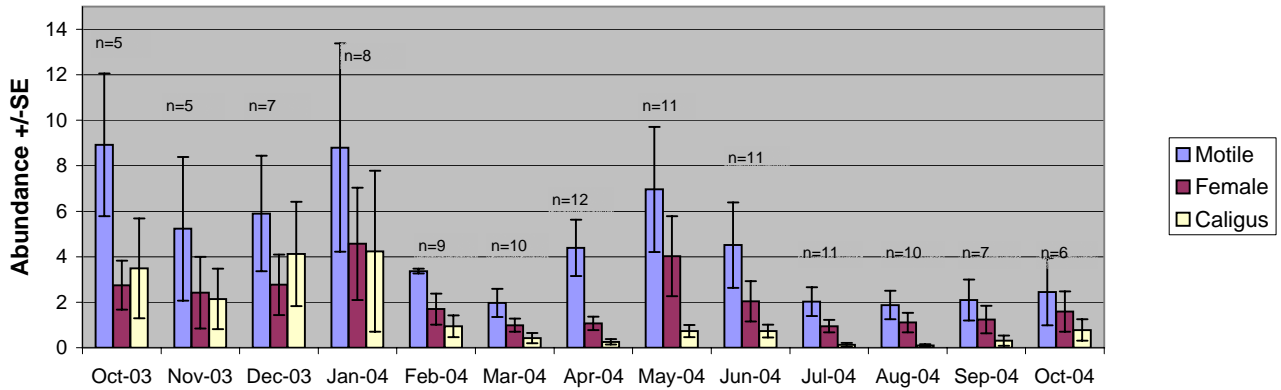
**Average monthly sea lice counts on farmed Atlantic Salmon
(greater than 1 year in seawater) located in
BCMAFF subzone 3.2**



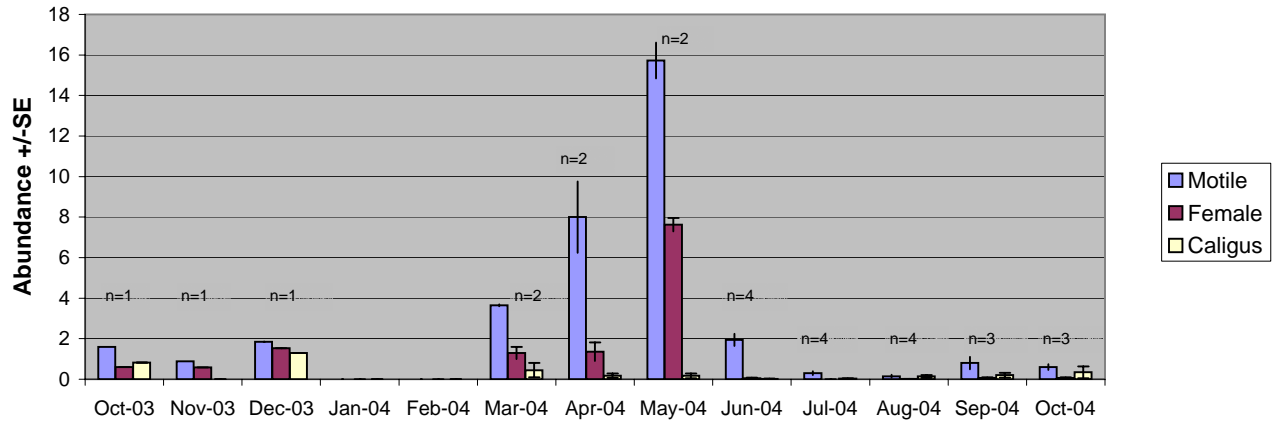
**Average monthly sea lice counts on farmed Atlantic Salmon
(1 year or less in seawater) located in
BCMAFF subzone 3.3**



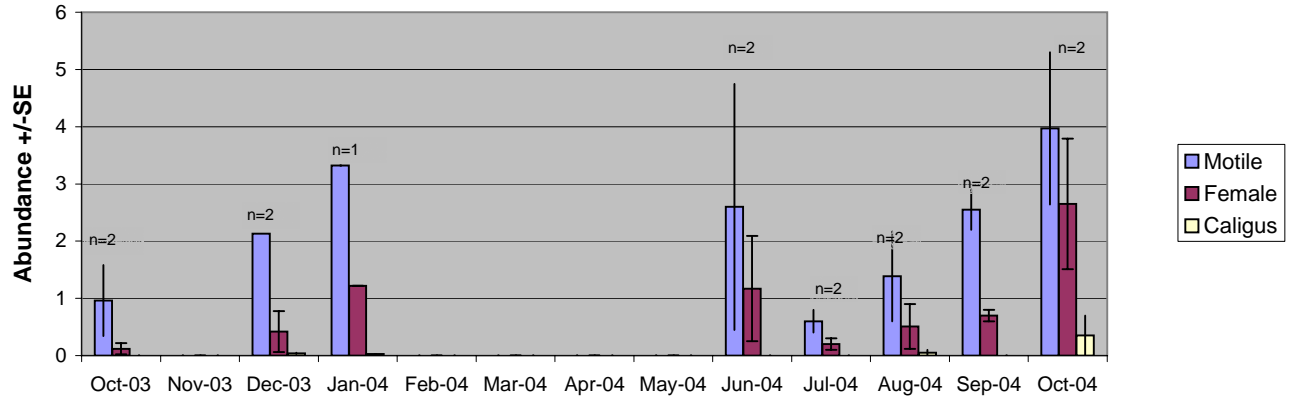
**Average monthly sea lice counts on farmed Atlantic Salmon
(greater than 1 year in seawater) located in
BCMAFF subzone 3.3**



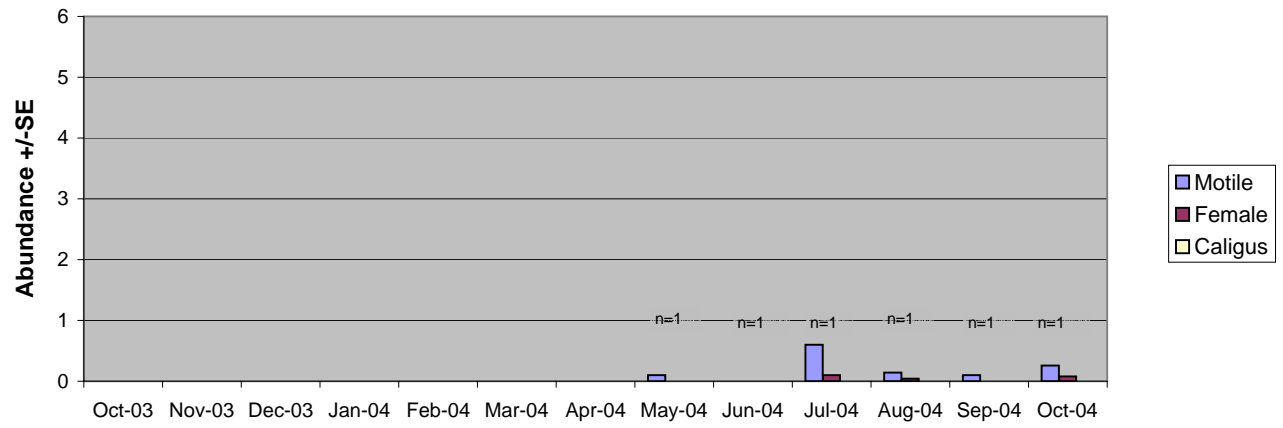
**Average monthly sea lice counts on farmed Atlantic Salmon
(1 year or less in seawater) located in
BCMAFF subzone 3.4**



**Average monthly sea lice counts on farmed Atlantic Salmon
(greater than 1 year in seawater) located in
BCMAFF subzone 3.4**



Average monthly sea lice counts on farmed Atlantic Salmon
(1 year or less in seawater) located in
BCMAFF subzone 3.5



Summary of Sea Lice Data Collected on Atlantic Salmon Farms

KEY

Mobile ~ Lepeophtheirus sp (pre adult and adult stages) **Yearclass 1** n seawater.
Female ~ Adult female Lepeophtheirus sp (adult female) **Yearclass 2** n seawater.
Caligus ~ sp. (pre adult and adult)

Atlantic Salmon Sea Lice Abundances

Yearclass 1				
ZONE/SUBZONE 2.3	Mobile	Female	Caligus	n
Oct-03	0.30	0.09	0.00	2
std error	0.10	0.09	0.00	
Nov-03	0.07	0.00	0.00	2
std error	0.01	0.00	0.00	
Dec-03	*	*	*	*
std error				
Jan-04	0.58	0.42	0.00	2
std error	0.44	0.34	0.00	
Feb-04	0.10	0.00	0.00	1
std error				
Mar-04	0.20	0.10	0.10	1(2)
std error				
Apr-04	0.11	0.08	0.05	2(2)
std error	0.02	0.05	0.00	
May-04	*	*	*	*
std error				
Jun-04	1.50	0.95	1.92	4(4)
std error	0.55	0.57	1.70	
Jul-04	2.02	0.40	0.18	5
std error	1.55	0.30	0.09	
Aug-04	4.11	1.55	1.71	3
std error	3.88	1.48	1.66	
Sep-04	0.20	0.03	0.03	4
std error	0.11	0.03	0.03	
Oct-04	0.11	0.02	0.02	5
std error	0.03	0.01	0.02	
Nov-04				
std error				
Dec-04				
std error				

Yearclass 2				
ZONE/SUBZONE 2.3	Mobile	Female	Caligus	n
Oct-03	3.90	0.13	0.00	1
std error				
Nov-03	2.57	2.00	0.00	1
std error				
Dec-03	2.22	2.05	0.03	1
std error				
Jan-04	1.02	0.72	0.00	1
std error				
Feb-04	2.75	1.05	0.00	2
std error	1.35	0.25	0.00	
Mar-04	2.60	1.45	0.00	2(3)
std error	1.40	0.55	0.00	
Apr-04	0.09	0.07	0.00	1(2)
std error	0.01	0.00	0.00	
May-04	0.08	0.05	0.08	2(2)
std error	0.08	0.05	0.03	
Jun-04	0.77	0.53	1.67	3(3)
std error	0.29	0.23	0.95	
Jul-04	*	*	*	*
std error				
Aug-04	*	*	*	*
std error				
Sep-04	*	*	*	*
std error				
Oct-04	0.93	0.63	0.00	1
std error				
Nov-04				
std error				
Dec-04				
std error				

ZONE/SUBZONE 2.4	Mobile	Female	Caligus	n
Oct-03	1.65	0.61	0.00	3
std error	0.76	0.38	0.00	
Nov-03	0.91	0.26	0.00	2
std error	0.14	0.02	0.00	
Dec-03	1.29	0.58	0.00	3
std error	0.66	0.36	0.00	
Jan-04	1.45	0.28	0.00	4
std error	0.94	0.18	0.00	
Feb-04	1.57	0.40	0.08	4
std error	1.31	0.40	0.08	
Mar-04	0.23	0.03	0.00	3(6)
std error	0.12	0.03	0.00	
Apr-04	0.35	0.03	0.00	3(6)
std error	0.15	0.03	0.00	
May-04	0.48	0.17	0.00	3(6)
std error	0.21	0.08	0.00	
Jun-04	0.27	0.07	0.00	2(3)
std error	0.27	0.07	0.00	
Jul-04	0.53	0.13	0.13	3
std error	0.38	0.03	0.07	
Aug-04	5.22	1.34	0.00	3
std error	2.92	0.72	0.00	
Sep-04	0.55	0.35	0.00	2
std error	0.45	0.35	0.00	
Oct-04	4.20	2.00	0.00	1
std error				
Nov-04				
std error				
Dec-04				
std error				

ZONE/SUBZONE 2.4	Mobile	Female	Caligus	n
Oct-03	0.50	0.41	0.00	1
std error				
Nov-03	2.30	1.12	0.03	3
std error	0.88	0.42	0.03	
Dec-03	1.65	0.76	0.06	3
std error	0.69	0.35	0.38	
Jan-04	3.68	1.68	0.02	4
std error	0.66	0.25	0.02	
Feb-04	4.82	1.68	0.00	4
std error	1.21	0.59	0.00	
Mar-04	8.84	3.50	0.08	5(10)
std error	3.72	1.52	0.05	
Apr-04	2.59	1.25	0.02	5(9)
std error	1.16	0.64	0.02	
May-04	0.44	0.20	0.00	5(8)
std error	0.17	0.07	0.00	
Jun-04	0.26	0.14	0.00	4(7)
std error	0.10	0.07	0.00	
Jul-04	0.37	0.17	0.00	3
std error	0.20	0.12	0.00	
Aug-04	3.82	1.76	0.00	2
std error	0.57	0.68	0.00	
Sep-04	*	*	*	*
std error				
Oct-04	0.32	0.14	0.14	2
std error	0.05	0.04	0.14	
Nov-04				
std error				
Dec-04				
std error				

ZONE/SUBZONE 3.1	Mobile	Female	Caligus	n
Oct-03	0.15	0.14	0.00	2
std error	0.12	0.05	0.00	
Nov-03	1.07	0.63	0.00	2
std error	0.60	0.33	0.00	
Dec-03	*	*	*	*
std error				
Jan-04	0.30	0.00	0.00	1
std error				
Feb-04	*	*	*	*
std error				
Mar-04	*	*	*	*
std error				
Apr-04	0.18	0.01	0.00	2(2)
std error	0.14	0.01	0.00	
May-04	0.05	0.00	0.05	2(2)
std error	0.05	0.00	0.05	
Jun-04	0.25	0.05	0.00	2(2)
std error	0.15	0.05	0.00	
Jul-04	1.05	0.45	0.00	2
std error	1.05	0.45	0.00	
Aug-04	0.09	0.04	0.05	3
std error	0.05	0.02	0.04	
Sep-04	0.30	0.10	0.05	2
std error	0.20	0.10	0.05	
Oct-04	0.20	0.10	0.02	3
std error	0.13	0.05	0.02	
Nov-04				
std error				
Dec-04				
std error				

ZONE/SUBZONE 3.1	Mobile	Female	Caligus	n
Oct-03	1.63	1.17	0.00	1
std error				
Nov-03	*	*	*	*
std error				
Dec-03	0.75	0.42	0.00	2
std error	0.22	0.14	0.00	
Jan-04	1.13	0.70	0.00	1
std error				
Feb-04	0.85	0.40	0.00	2
std error	0.15	0.10	0.00	
Mar-04	0.30	0.20	0.00	1(1)
std error				
Apr-04	1.22	0.74	0.02	2(2)
std error	0.14	0.02	0.00	
May-04	0.60	0.40	0.05	2(2)
std error	0.20	0.20	0.05	
Jun-04	1.35	0.95	0.00	2(2)
std error	0.05	0.05	0.00	
Jul-04	1.80	1.20	0.00	1
std error				
Aug-04	0.28	0.08	0.02	1
std error				
Sep-04	0.10	0.00	0.00	1
std error				
Oct-04	*	*	*	*
std error				
Nov-04				
std error				
Dec-04				
std error				

ZONE/SUBZONE 3.2	Mobile	Female	Caligus	n
Oct-03	1.97	0.88	0.12	1
std error				
Nov-03	*	*	*	*
std error				
Dec-03	0.05	0.02	0.00	1
std error				
Jan-04	0.07	0.03	0.03	1
std error				
Feb-04	0.00	0.00	1.00	1
std error				
Mar-04	0.90	0.25	0.40	2(3)
std error	0.80	0.25	0.40	
Apr-04	1.21	0.21	0.35	2(3)
std error	0.58	0.10	0.00	
May-04	0.50	0.16	0.30	3(5)
std error	0.27	0.10	0.16	
Jun-04	0.67	0.21	0.17	4(7)
std error	0.33	0.12	0.11	
Jul-04	0.78	0.23	0.13	4
std error	0.55	0.19	0.13	
Aug-04	1.09	0.38	0.17	4
std error	0.42	0.18	0.17	
Sep-04	0.35	0.10	0.00	2
std error	0.05	0.00	0.00	
Oct-04	0.07	0.04	0.01	4
std error	0.04	0.04	0.01	
Nov-04				
std error				
Dec-04				
std error				

ZONE/SUBZONE 3.2	Mobile	Female	Caligus	n
Oct-03	4.24	1.58	0.14	2
std error	4.24	1.58	0.14	
Nov-03	*	*	*	*
std error				
Dec-03	12.80	4.85	0.88	1
std error				
Jan-04	*	*	*	*
std error				
Feb-04	4.10	2.20	0.20	1
std error				
Mar-04	0.10	0.00	1.00	1(2)
std error				
Apr-04	0.96	0.04	0.14	1(2)
std error	0.64	0.04	0.13	
May-04	2.00	0.40	0.00	1(1)
std error				
Jun-04	2.05	0.35	0.50	1(2)
std error	0.55	0.05	0.40	
Jul-04	0.60	0.50	0.00	1
std error				
Aug-04	1.32	0.65	0.27	1
std error				
Sep-04	1.50	0.50	0.10	1
std error				
Oct-04	1.13	0.50	0.13	1
std error				
Nov-04				
std error				
Dec-04				
std error				

ZONE/SUBZONE 3.3	Mobile	Female	Caligus	n
Oct-03	2.12	0.50	0.54	7
std error	0.88	0.26	0.28	
Nov-03	1.85	0.60	1.03	7
std error	0.80	0.30	0.66	
Dec-03	1.28	0.47	0.48	5
std error	0.63	0.28	0.27	
Jan-04	0.97	0.29	1.82	6
std error	0.62	0.20	1.76	
Feb-04	0.94	0.26	0.16	5
std error	0.45	0.15	0.09	
Mar-04	0.96	0.26	0.28	5(10)
std error	0.41	0.19	0.12	
Apr-04	1.56	0.07	0.34	2(4)
std error	0.46	0.03	0.13	
May-04	2.49	0.41	1.07	4(8)
std error	0.74	0.21	0.59	
Jun-04	2.40	0.74	0.23	4(7)
std error	0.62	0.26	0.08	
Jul-04	1.65	0.30	0.15	4
std error	1.09	0.23	0.06	
Aug-04	2.44	0.77	0.10	3
std error	2.02	0.67	0.08	
Sep-04	2.32	0.55	0.12	4
std error	1.28	0.30	0.06	
Oct-04	1.60	0.63	0.11	4
std error	1.24	0.53	0.06	
Nov-04				
std error				
Dec-04				
std error				

ZONE/SUBZONE 3.3	Mobile	Female	Caligus	n
Oct-03	8.92	2.75	3.49	5
std error	3.14	1.08	2.20	
Nov-03	5.23	2.42	2.14	5
std error	3.16	1.57	1.33	
Dec-03	5.90	2.77	4.12	7
std error	2.54	1.33	2.29	
Jan-04	8.80	4.57	4.24	8
std error	4.58	2.47	3.54	
Feb-04	3.37	1.70	0.94	7
std error	0.10	0.68	0.48	
Mar-04	1.97	0.99	0.42	10(19)
std error	0.62	0.29	0.23	
Apr-04	4.39	1.07	0.26	12(24)
std error	1.24	0.30	0.12	
May-04	6.96	4.03	0.73	11(19)
std error	2.75	1.76	0.27	
Jun-04	4.51	2.04	0.73	11(20)
std error	1.88	0.89	0.28	
Jul-04	2.03	0.95	0.13	11
std error	0.63	0.28	0.08	
Aug-04	1.88	1.11	0.10	10
std error	0.63	0.43	0.06	
Sep-04	2.10	1.24	0.31	7
std error	0.90	0.60	0.23	
Oct-04	2.45	1.59	0.78	6
std error	1.47	0.88	0.47	
Nov-04				
std error				
Dec-04				
std error				

ZONE/SUBZONE 3.4	Mobile	Female	Caligus	n
Oct-03	1.60	0.60	0.82	1
std error				
Nov-03	0.88	0.59	0.00	1
std error				
Dec-03	1.84	1.53	1.29	1
std error				
Jan-04	*	*	*	*
std error				
Feb-04	*	*	*	*
std error				
Mar-04	3.65	1.30	0.45	2(4)
std error	0.05	0.30	0.35	
Apr-04	8.00	1.36	0.17	2(4)
std error	1.76	0.46	0.11	
May-04	15.73	7.63	0.17	2(3)
std error	0.88	0.33	0.12	
Jun-04	1.94	0.05	0.02	4(10)
std error	0.30	0.03	0.01	
Jul-04	0.30	0.00	0.03	4
std error	0.10	0.00	0.03	
Aug-04	0.15	0.01	0.14	4
std error	0.07	0.01	0.07	
Sep-04	0.80	0.07	0.20	3
std error	0.31	0.03	0.12	
Oct-04	0.60	0.07	0.34	3
std error	0.14	0.03	0.29	
Nov-04				
std error				
Dec-04				
std error				

ZONE/SUBZONE 3.4	Mobile	Female	Caligus	n
Oct-03	0.96	0.12	0.00	2
std error	0.62	0.10	0.00	
Nov-03	*	*	*	*
std error				
Dec-03	2.13	0.42	0.04	2
std error	0.00	0.36	0.01	
Jan-04	3.32	1.22	0.03	1
std error				
Feb-04	*	*	*	*
std error				
Mar-04	*	*	*	*
std error				
Apr-04	*	*	*	*
std error				
May-04	*	*	*	*
std error				
Jun-04	2.60	1.17	0.00	2(3)
std error	2.15	0.92	0.00	
Jul-04	0.60	0.20	0.00	2
std error	0.20	0.10	0.00	
Aug-04	1.39	0.51	0.05	2
std error	0.79	0.39	0.05	
Sep-04	2.55	0.70	0.00	2
std error	0.35	0.10	0.00	
Oct-04	3.97	2.65	0.35	2
std error	1.33	1.14	0.35	
Nov-04				
std error				
Dec-04				
std error				

ZONE/SUBZONE 3.5	Mobile	Female	Caligus	n
Oct-03	*	*	*	*
std error				
Nov-03	*	*	*	*
std error				
Dec-03	*	*	*	*
std error				
Jan-04	*	*	*	*
std error				
Feb-04	*	*	*	*
std error				
Mar-04	*	*	*	*
std error				
Apr-04	*	*	*	*
std error				
May-04	0.10	0.00	0.00	1(1)
std error				
Jun-04	0.00	0.00	0.00	1(2)
std error	0.00	0.00	0.00	
Jul-04	0.60	0.10	0.00	1
std error				
Aug-04	0.14	0.04	0.00	1
std error				
Sep-04	0.10	0.00	0.00	1
std error				
Oct-04	0.26	0.08	0.00	1
std error				
Nov-04				
std error				
Dec-04				
std error				

ZONE/SUBZONE 3.5	Mobile	Female	Caligus	n
Oct-03	*	*	*	*
std error				
Nov-03	*	*	*	*
std error				
Dec-03	*	*	*	*
std error				
Jan-04	*	*	*	*
std error				
Feb-04	*	*	*	*
std error				
Mar-04	*	*	*	*
std error				
Apr-04	*	*	*	*
std error				
May-04	*	*	*	*
std error				
Jun-04	*	*	*	*
std error				
Jul-04	*	*	*	*
std error				
Aug-04	*	*	*	*
std error				
Sep-04	*	*	*	*
std error				
Oct-04	*	*	*	*
std error				
Nov-04				
std error				
Dec-04				
std error				

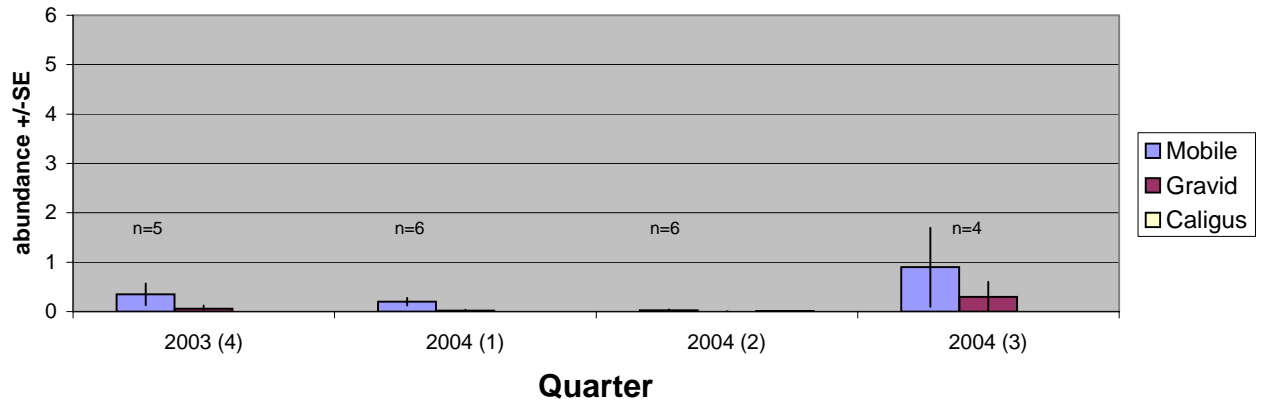
() - total number of site counts for months where two counts have been requested.

* Reasons for missing site lice counts

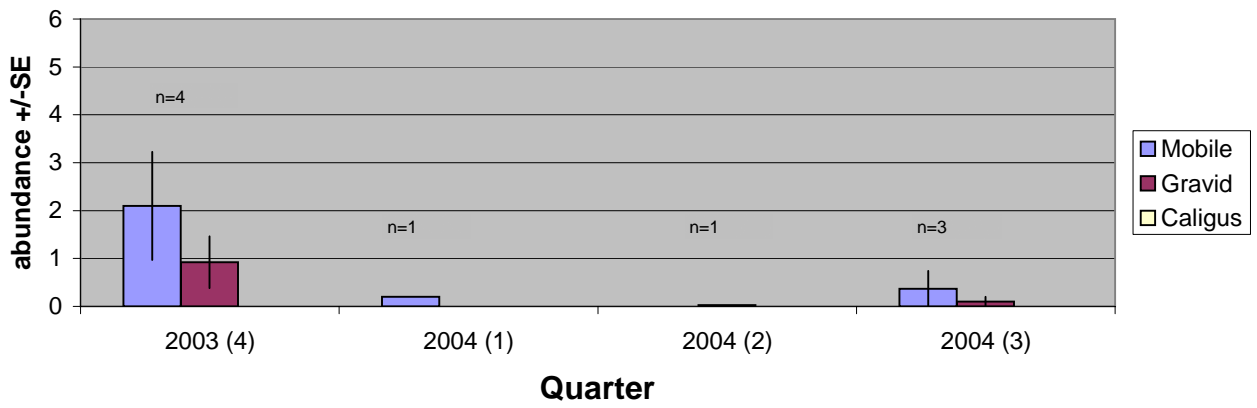
- ~Site is fallow
- ~Site is harvesting and < 3 pens left on site
- ~Smolt entry and < 3 pens on site, or <1 month since third smolt pen entered

- ~Fish being treated for sea lice
- "Fish being treated/ managed for other fish health problem
- ~Fish could not be handled due to environmental concerns, e.g. low DO

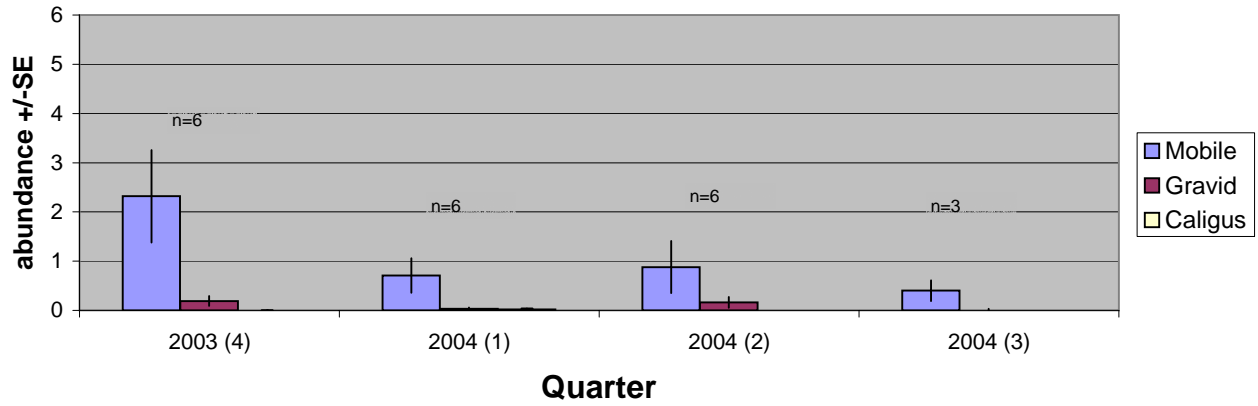
Sea lice averages for farmed Pacific salmon (1 year or less in SW) located in zones 2



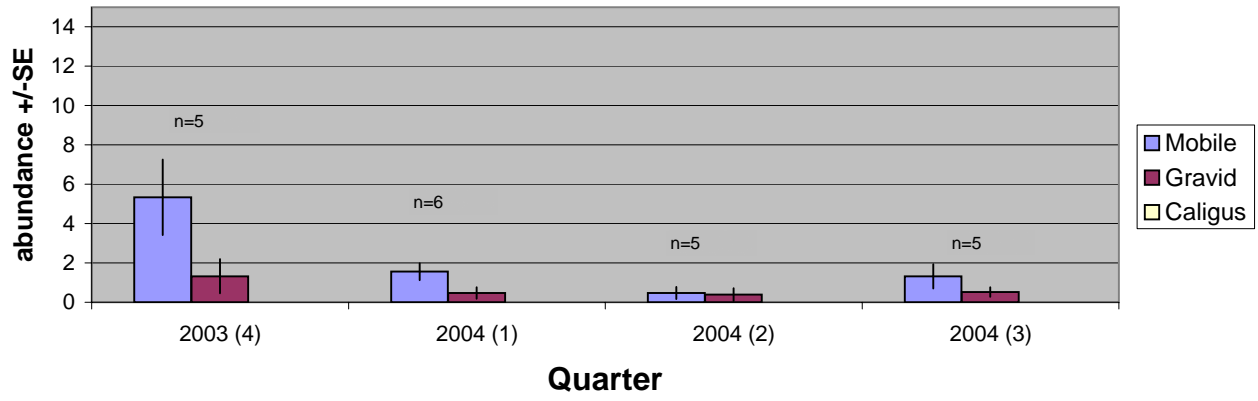
Sea lice averages for farmed Pacific salmon (greater than 1 year in SW) located in zones 2



Sea lice averages for farmed Pacific salmon (1 year or less in SW) located in zones 3



Sea lice averages for farmed Pacific salmon (greater than 1 year in SW) located in zones 3



Summary of Sea Lice Data Collected on Pacific Salmon Farms

KEY

Mobile ~ Lepeophtheirus sp (pre adult and adult stages)
Gravid ~ Gravid adult female Lepeophtheirus sp (adult female)
Caligus ~ sp. (pre adult and adult)

Yearclass 1 ~ For salmon 1 year or less in seawater.
Yearclass 2 ~ For Salmon 1 year or more in seawater.

Pacific Salmon Sea Lice Abundances

Yearclass 1				
ZONE 2	Mobile	Gravid	Caligus	n
2003 (4)	0.35	0.06	0.00	5
std error	0.22	0.06	0.00	
2004 (1)	0.20	0.02	0.00	6
std error	0.08	0.02	0.00	
2004 (2)	0.03	0.00	0.01	6
std error	0.02	0.00	0.01	
2004 (3)	0.90	0.30	0.00	4
std error	0.80	0.30	0.00	
std error				

Yearclass 2				
ZONE 2	Mobile	Gravid	Caligus	n
2003 (4)	2.10	0.92	0.00	4
std error	1.13	0.54	0.00	
2004 (1)	0.20	0.00	0.00	1
std error				
2004 (2)	0.00	0.03	0.00	1
std error				
2004 (3)	0.37	0.10	0.00	3
std error	0.37	0.10	0.00	
std error				

Yearclass 1				
ZONE 3	Mobile	Gravid	Caligus	n
2003 (4)	2.32	0.19	0.00	6
std error	0.94	0.10	0.00	
2004 (1)	0.71	0.03	0.02	6
std error	0.35	0.03	0.02	
2004 (2)	0.88	0.16	0.00	6
std error	0.53	0.11	0.00	
2004 (3)	0.40	0.3	0.00	3
std error	0.21	0.03	0.00	
std error				

Yearclass 2				
ZONE 3	Mobile	Gravid	Caligus	n
2003 (4)	5.34	1.32	0.00	5
std error	1.92	0.87	0.00	
2004 (1)	1.56	0.47	0.00	6
std error	0.43	0.29	0.00	
2004 (2)	0.47	0.39	0.00	5
std error	0.31	0.32	0.00	
2004 (3)	1.32	0.52	0.00	5
std error	0.62	0.24	0.00	
std error				

() - total number of site counts for months where two counts have been requested.

*** Reasons for missing site lice counts**

- Site is fallow
- Site is harvesting and < 3 pens left on site
- Smolt entry and < 3 pens on site, or <1 month since third smolt pen entered

- Fish being treated for sea lice
- *Fish being treated/ managed for other fish health problem
- Fish could not be handled due to environmental concerns, e.g. low DO

