

North American Commission

NAC(05)4

NAC Scientific Working Group on Salmonid Introductions and Transfers

Report of Activities - 2004 /2005

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The Scientific Working Group on Introductions and Transfers (SWG) dealt with issues and produced this report through correspondence. The North American Commission requested that the SWG be convened in 2004 to prepare a revised version of the NAC protocols to reflect changes noted in the NAC in 2004 (2004 NAC Report Items 8.2-8.4). This meeting did not occur and no further action was taken to revise the protocols in 2004. The SWG's activities focused on updating its three databases: 1) inventory of introductions and transfers; 2) table on the status of disease occurrences within the NAC Area; and 3) occurrences of farmed salmonids in rivers.

1. Update of the database for the inventory of introductions and transfers of salmonids within the NAC area

Salmonid introduction and transfer information was obtained from federal, provincial and state agencies and added to the database. Information was received on Atlantic salmon transfers from Maine from the USA and all Canadian agencies except Prince Edward Island. No data on fish or egg movements were provided from the other States. A summary of the introductions and transfers information for 2001 to 2004 is provided in Table 1; and a list of the individual shipments for 2004 is provided in Appendix 1. The database information includes a listing of shipments across international, provincial, or state boundaries. Prior to 2003 the inventory also included a summary of movements within states in the USA. Those data were not provided by those jurisdictions for the past two years.

The current database contains an inventory of introductions and transfers of salmonids from 1996 to the present. A summary of prior activity since the protocols were developed in 1986 has been presented in previous reports to the NAC. The database resides at the Department of Fisheries and Oceans office in Dartmouth, Nova Scotia.

Salmonid movements in 2004 were limited in the NAC area to four (4) species. The majority of shipments were Atlantic salmon eggs or fish which accounted for 83% of all reported activity (Table 1). The transfer or release of rainbow trout accounted for 15% of reports. The remainder of activity was limited to less than 2% combined for Arctic char and brook trout. Most of the transfers were for aquaculture purposes (99%).

- Research into performance of aquaculture strains continued in the NAC area in contained land-based facilities in 2004. There was a single reported shipment of Icelandic "Mowi" strain Atlantic salmon juveniles from PEI to NB. No authorization will be given for these fish to be used in freshwater or marine cage rearing.

- A single shipment of transgenic Atlantic salmon eggs occurred in 2004. Eggs were transferred from PEI into NF for research where the risk of escape is considered low.
- The NASCO Introduction and Transfer Protocols prohibit the use of reproductively viable strains of non-indigenous salmonids for enhancement purposes or marine culture in areas where wild Atlantic salmon populations exist. This continues to occur in some areas of the NAC where rainbow trout are released to provide public fisheries or are reared in sea pens. The presence of multiple year-classes of rainbow trout in some NF streams in recent years is evidence that escapes have successfully reproduced.

2. Update of the databases for fish disease occurrences within the NAC area

The database on the historic occurrences of fish pathogens in the NAC area has been updated and a summary provided in Table 2. The database is not complete because it includes principally a record of Federal Fish Health Officer Information and does not include data from many provincial or private fish health professionals.

ISA management is being handled in NB and NS through a joint federal, provincial, industry committee. Officials from Canada and the USA remain in close communication on the management of this disease. Clinical ISA was confirmed in 2003 in NS and was reported again in 2004. The strain of ISA detected in NS is genetically distinct from the strain found in the Bay of Fundy. Evidence of the NS strain of ISA was first found in 1999 from an Atlantic salmon broodstock population at a marine farm which showed no clinical signs of infection. Other non-clinical reports of detection since 1999 indicate there may be a lower level of virulence associated with the NS strain of the virus.

3. Update database of numbers Atlantic salmon aquaculture escapees and observations of rainbow trout in Atlantic salmon rivers

Each year, the SWG compiles a summary of reports of escaped cultured salmonids in the NAC area. This data is often difficult to obtain because there are: (1) a variety of regulatory policies regarding the reporting of escapes; (2) different levels of interest of reporting agencies; (3) variability in monitoring stations or activities within years and between jurisdictions; and (4) multiple agencies within jurisdictions to seek information from. In addition, escapes may not be easily distinguished from wild fish, particularly when the escape occurs from a hatchery at a relatively young age. Consequently, the summary is incomplete and should be considered an underestimate and only a sample of the escapees in the wild.

Data has been compiled for rivers where reports are available. Some of the information presented was prepared by Canada and USA for ICES. A summary of the data obtained on escapes of Atlantic salmon and rainbow trout has been compiled for rivers in Maine, New Brunswick, Nova Scotia and Newfoundland (Tables 3, 4 and 5).

Atlantic salmon aquaculture escapes were reported captured and identified on 3 rivers in the NAC area in 2004, the Magaguadavic and Saint John rivers in New Brunswick, and the St. Croix River which is located on the Maine – New Brunswick border (Table 3). As has been the case in many years, the greatest numbers of escapes of salmon have been reported on the Magaguadavic River, where smolt (129) and adults (17) were recovered. This river is closest

to the concentration of industry net pens in southwest NB and is also where several industry-based hatcheries are located. The number and location of Atlantic salmon escapes being reported has declined. This apparent decrease may be due to several factors and it is difficult to assign to any one reason.

As previously indicated, rainbow trout continue to be used for enhancement and marine-cage culture in the NAC area. In 2004, escaped rainbow trout were observed in seven (7) rivers in insular Newfoundland (principally on the west and south coasts; Table 4). This is similar to the incidence in previous years. Rainbow trout were noted on 8 rivers in 2003 and 6 in 2002. A relatively large number of rainbow trout continue to be observed at monitoring traps and from a research effort on Trout River where multiple year-classes have been confirmed on more than one occasion.

The number and locations where rainbow trout have been reported on rivers in New Brunswick and Nova Scotia, has been sporadic over the years. Only two (2) reports were received in 2004, for the Saint John and Big Salmon rivers, in NB (Table 5).

4. Other Items of Interest

Triploidy:

In 2003 it was reported that triploid Atlantic salmon were imported into New Brunswick and Nova Scotia for culture trials to examine performance relative to diploid fish. Although data were not available for review on performance of the fish grown in NS, no additional triploid fish were imported into the province in 2004. Triploid fish are currently being grown in sea-cages in NB. Culture of triploid salmon can be seen as a form of biological containment and the practice has been encouraged as a means of reducing the risk of negative interactions with wild Atlantic salmon.

Genetic screening for non-indigenous strains of salmon:

The USA industry has finalized a protocol which the industry must use to screen their salmon to ensure that any of European ancestry are not stocked into marine cages. In Canada, several companies in the Maritime Provinces have instituted genetic screening of Atlantic salmon for strain to meet criteria for movement of fish across the border into the USA. In 2004, a more broadly based industry-government research project began to conduct sampling and screening of Atlantic salmon broodstock that are used to supply the industry in NB, NS and PEI. Genetic analysis is being conducted to determine strain to ensure European strain salmon are not among those in use. Another component of the project is the sampling of wild salmon from tributaries to the Bay of Fundy. Samples from these fish will also be tested for European alleles. Previous work has indicated the presence of fish with evidence of European ancestry in tributaries to the Bay of Fundy. This project is ongoing and results are expected to be reported in the coming year.

Table 1. Summary of total numbers of eggs and fish transferred between Provinces and/or States within the NAC Area from 2001 to 2004. USA transfers also include within state transfers prior to 2003.

	Number of Shipments				Number of Eggs or Fish			
	2001	2002	2003	2004	2001	2002	2003	2004
Arctic Char								
Canada	2	8	3	9	20,000	116,300	122,000	261,900
USA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Atlantic Salmon								
Canada	60	30	47	41	31,459,000	43,760,400	30,844,350	34,792,100
USA*	<u>27</u>	<u>31</u>	<u>11</u>	<u>4</u>	<u>8,408,631</u>	<u>16,745,183</u>	<u>3,341,216</u>	<u>807,050</u>
Total	87	61	58	55	39,867,631	60,505,583	34,255,566	35,599,150
Brook trout								
Canada	14	13	12	13	437,050	225,035	313,500	300,000
USA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Brown trout								
Canada	0	1	0	0	0	10,000	0	0
USA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rainbow trout								
Canada	37	41	61	44	5,003,075	9,379,590	7,207,409	6,698,800
USA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 2. Summary of fish disease or agent occurrence for each State and Province within the NAC Area at end of calendar year 2004. See foot note for explanation of “occurrence Codes.”

State or Province	Bacterial		Enteric		Infectious Hematopoietic Necrosis (IHN)	Infectious Pancreatic Necrosis (IPN)	Infectious Salmon Anemia (ISA)	Oncorhynchus Masou Virus	Viral Hemorrhagic Septicemia (VHS)	Whirling Disease	Other CPE viruses (except IPN)	Salmon Swimbladder Sarcoma ¹
	Kidney Disease (BKD)	Ceratomyxosis	Redmouth (ERM)	Furunculosis	(IHN)	(IPN)	(ISA)	Masou Virus	(VHS)		(except IPN)	Sarcoma ¹
CT	No information for 2004											
LAB	No information for 2004											
MA	No information for 2004											
ME	3	0	1	3	0	2	3	0	0	0	2	1
NB	3	0	3	3	0	2	3	0	3 ²	0	2	0
NFLD	No information for 2004											
NH	1	0	1	2	0	0	0	0	0	1	1	0
NJ	No information for 2004											
NS	3	0	3	3	0	3	2 ³	0	3 ²	0	2	0
NY	1	0	1	3	0	1	0	0	0	2	0	0
ONT	3	0	3	3	0	1	0	0	0	0	1	0
PEI	1	0	0	0	0	1	0	0	0	0	0	0
QUE	3	0	3	3	0	3	0	0	0	0	0	0
RI	No information for 2004											
VT	1	0	0	3	0	1	0	0	0	3	2	0

Occurrence Codes: 0 = No known historical occurrence within State/Province
 1 = Historical occurrence but no known occurrence within the last 5 years
 2 = Has occurred during the past 5 years but not during the last Calendar Year
 3 = Verified occurrence during the last Calendar Year within State/Province
 X indicates an "EMERGENCY DISEASE" under NAC Protocols for the Introduction and Transfer of salmon

¹ New virus: not currently included in the NAC Protocols.

² North American strain found in striped bass. Not the European or “salmonid” strain.

³ Nova Scotia strain; distinct from strain found in Bay of Fundy area.

Table 3. Known occurrences of Atlantic salmon aquaculture escapees in salmon rivers within the NAC area.

River (St/Prov)	Number of escapees (escapees as percent of total sample)										Life Stage	
	Prior to 1990	1990 - 1996	1997	1998	1999	2000	2001	2002	2003	2004		
CANADA												
Annapolis (NS)		1			R*****	15						MSW
Baddeck (NS)		23 (6)***		5 (3)								1SW & MSW
Bear (NS)	Many angled in early 1990's										1SW & MSW	
Big Salmon (NB)	1									0		1SW & MSW
Conne (NF)		3	10(2)	2(1)	1(>1)	5(2.3)	0	0	0	0		1SW & MSW
Conne (NF)		71										smolt
Dennis (NB)	R*****											1SW & MSW
Digdeguash (NB)	below hatchery					0						juveniles
Gaspereau (NS)		5		1 (4)		1(2)				0		MSW
Indian Brook (NS)						1						1SW & MSW
LaHave (NS)	1 (<1)	0	0	0								1SW & MSW
Magaguadavic (NB)		2,301	82 (58)	223 (8)	79(77)	30(68)	132(94)	35 (83)	22 (81)	17 (89)		1SW & MSW
Magaguadavic (NB)							35				129	smolt
Mersey (NS)						1						1SW & MSW
Meteghan (NS)						1						1SW & MSW
Middle (NS)				9 (4)								1SW & MSW
North (NS)		14 (8)***		55 (11)								1SW & MSW
Saint John (NB)		several in 1990, Belle Isle Bay			R*****	R*****	14	8	3 (<1)	1 (<1)		1SW & MSW
Salmon Digby (NS)					2	0						1SW & MSW
St. Croix (NB/ME) *		231	27 (39)	25 (38)	23(64)	30(60)	58(75)	5 (20)	9 (38)	4 (31)		1SW & MSW
Tusket (NS)				2 (<1)								MSW
Waewig (NB)	juveniles below hatch. 1 adult											Juveniles and adults
Stewiacke (NS)		7 (33)	0									MSW
UNITED STATES												
Penobscot River							1(0.1)					
Dennys (ME)**		67	2 (100)	1(100)		29(94)	65(79)	4 (67)	2 (18)	0		Sexually mature & immature
Narraguagus (ME)		9****	0	0	3 (9)	0	0	0	0	0		
Union (ME)					63(90)*****	6(75)	2(100)	6 (55)	0	0		
Other Maine Rivers	Unofficial reports of escapes in various eastern coastal rivers, especially Cobscott Bay area											

* 1994-96 aquaculture fish were estimated to be 13-54% of the run.

** Partial counts in Dennys

*** Includes 1995 only; no earlier data

**** includes 1995 and 1996 only.

***** based on scale samples from 11 of 22 adults

R***** escapees reported but number or presence not confirmed

Table 4. Known occurrences of rainbow trout observed in Newfoundland rivers, believed to be aquaculture escapees or progeny of aquaculture escapees.

River (St/Prov)	Number of rainbow trout								Life Stage
	Prior to 1990	1990 - 1998	1999	2000	2001	2002	2003	2004	
Watts Bight Bk (NF)	3								adult
Green Island Cove						1			dult
Western Arm Brook					1		1		
River of Ponds (NF)	1+	4+*	24	2****	6			5	adult
Portland Creek (NF)			1					6	adult
Parsons Pond (NF)		1						1	adult
Deer Arm Brook					1	1			adult
Lomond River					1				
Trout River (NF)	4	2+	1+**	2***	97+	55+	122	43	adult+juv
Bay of Islands						1			adult
Hughs Brook							1		
Humber River (NF)			3	1**	1	1+	3		adult
Serpentine (NF)	2								adult
Flat Bay Brook (NF)		1*	2				5		adult
Robinsons River (NF)			2				1		adult
Crabbes R (NF)				2					immature
La Poila River (NF)			3						adult
Garia Brook (NF)			3						adult
Grandys River (NF)			2	3*****	3				adult
Unnamed Bk (Bay de Vieux)					1				
White Bear River					1+				
White Bear R Estuary					1+				
Grey River (NF)				1			1		immature
Northwest Bk				3					adult
Jeddore lake				3					juvenile
Conne River (NF)		245	21	45	18+	1	15+	36+	adult
Little River (NF)		5	1						adult
Garnish River (NF)		2+							
Long Harbour R (NF)		1+			2				adult
Grand Bank Bk (NF)		1+							adult
Lawn Bk (NF)				1					adult
Holyrood Pond				3					adult
Biscay Bay Bk (NF)		2							adult
Torrent River								3	
Little Barachois Brook								1	

* 1 Male (internally sexed)

** 1 Female (internally sexed)

*** 2 females, immature

**** 1 was a spent female, and 1 was a male

***** 1 was a ripe male

Table 5. Reports of rainbow trout observed in New Brunswick and Nova Scotia rivers. Rainbow trout in some Nova Scotia rivers may be from directed stocking programs. Table is incomplete.

River (Prov)	Number of Rainbow trout							Life Stage
	1995 - 1998	1999	2000	2001	2002	2003	2004	
Saint John (NB)	13		1	2			10	
Nashwaak (NB)								
Big Salmon (NB)			18	8		25	9	
Shepody (NB) *			1					juvenile
Upper Salmon (NB)				1				juvenile
Sutherlands (NS)	1							
Salmon (NS)		2 - 4						immature
Mersey (NS)		2						
Tusket (NS)		5+						
Middle (NS)		2		11		2+		adult
North (NS)		1+			2			juvenile
St. Mary's (NS)		1						juvenile
River Tillard (NS)								
Baddeck (NS)			1+					1 adult + juvenile
Musquodoboit (NS)			8	2+				adult
River Philip (NS)				12				30 cm

* Shepody River has a self-sustaining population of rainbow trout. Rainbow trout angled annually.

Appendix 1. Report of Salmonid Introductions and Transfers in NAC Area - 2004

<i>File #</i>	<i>Facility Of Origin</i>	<i>Stock/Strain</i>	<i>LifeStage</i>	<i>Reprod.</i>	<i>Number Shipped</i>	<i>Receiving Facility Type</i>	<i>Planned Use</i>	<i>Monosex</i>
<u>MAINE</u>								
<u>ATLANTIC SALMON</u>								
1385	Stolt Sea Farms (NB)	St John R	Smolt	Y	219,050	Private	Aquaculture (sea pen)	N
1386	Stolt Sea Farms (NB)	St John R	Fry	Y	550,000	Private	Aquaculture (sea pen)	N
1387	Chamcook-ASF (NB)	St John R	Smolt	Y	15,000	Private	Brood Stock Dev.	N
1384	Stolt Sea Farms (NB)	St John R	Eggs	Y	23,000	Research/Educ.	Research/Education	N
<u>NEW BRUNSWICK</u>								
<u>ARCTIC CHAR</u>								
1401	Icy Waters (YUK)		Eggs	N	1,000	Private	Aquaculture (FW pen)	Y
1501	Pisciculture Alleghanys (QUE)		Eggs	Y	5,000	Research/Educ.	Research/Education	Y
<u>ATLANTIC SALMON</u>								
1405	Gardner Lake Hatchery (ME)	St John R	Smolt	Y	450,000	Private	Aquaculture (sea pen)	N
1409	Atlantic Salmon of Maine-Oquossoc (ME)	St John R	Smolt	Y	120,000	Private	Aquaculture (sea pen)	N
1407	Bingham Aquaculture Ltd. (ME)	St John R	Fry	Y	500,000	Private	Aquaculture (FW pen)	N
1410	Bingham Aquaculture Ltd. (ME)	St John R	Smolt	Y	300,000	Private	Aquaculture (sea pen)	N
1491	Bingham Aquaculture Ltd. (ME)	St John R	Smolt	Y	175,000	Private	Aquaculture (sea pen)	Y
1499	Dover Hatchery (PEI)	St John R	Eggs	Y	5,000,000	Private	Aquaculture (FW pen)	Y
1408	Hassett Lake Hatchery (NS)	St John R	Smolt	Y	200,000	Private	Aquaculture (sea pen)	N
1414	Novagro Aquanauts (NS)	St John R	Smolt	Y	50,000	Private	Aquaculture (sea pen)	N
1398	Little Harbour Hatchery (NS)	St John R	Fry	Y	250,000	Private	Aquaculture (FW pen)	N
1396	Bingham Aquaculture Ltd. (ME)	St John R	Parr	Y	275,000	Private	Aquaculture (FW pen)	N

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<i>File #</i>	<i>Facility Of Origin</i>	<i>Stock/Strain</i>	<i>LifeStage</i>	<i>Reprod.</i>	<i>Number Shipped</i>	<i>Receiving Facility Type</i>	<i>Planned Use</i>	<i>Monosex</i>
1493	Cobequid Smolt Farms (NS)	St John R	Fry	Y	300,000	Private	Aquaculture (FW pen)	Y
1403	Scotia Aqua Inc (NS)	St John R	Smolt	Y	125,000	Private	Aquaculture (sea pen)	N
1411	River Bend Fish Farm (NS)	St John R	Smolt	Y	400,000	Private	Aquaculture (sea pen)	N
1494	River Bend Fish Farm (NS)	St John R	Smolt	Y	100,000	Private	Aquaculture (sea pen)	Y
1412	Little Harbour Hatchery (NS)	St John R	Smolt	Y	90,000	Private	Aquaculture (sea pen)	N
1413	Strickland Salmon (NS)	St John R	Smolt	Y	50,000	Private	Aquaculture (sea pen)	N
1489	Novagro Aquanauts (NS)	St John R	Smolt	Y	40,000	Private	Aquaculture (sea pen)	Y
1507	Dover Hatchery (PEI)	St John R	Eggs	Y	600,000	Private	Aquaculture (FW pen)	Y
1492	Heritage Salmon (PEI) (Connors Brothers)	St John R	Fry	Y	1,500,000	Private	Aquaculture (FW pen)	Y
1488	Atlantic Salmon of Maine-Oquossoc (ME)	St John R	Smolt	Y	230,000	Private	Aquaculture (sea pen)	Y
1503	Bingham Aquaculture Ltd. (ME)	St John R	Fry	Y	450,000	Private	Aquaculture (FW pen)	Y
1506	Bingham Aquaculture Ltd. (ME)	St John R	Parr	Y	600,000	Private	Aquaculture (FW pen)	Y
1404	Dartek (NS)	St John R	Smolt	Y	70,000	Private	Aquaculture (sea pen)	N
1391	Atlantic Ova Pro Ltd (NS)	St John R	Eggs	Y	1,500,000	Private	Aquaculture (FW pen)	N
1394	Dover Hatchery (PEI)	St John R	Eggs	Y	200,000	Private	Aquaculture (FW pen)	N
1406	Aquaculture Acadie (NS)	St John R	Smolt	Y	20,000	Private	Aquaculture (sea pen)	N
1390	Atlantic Ova Pro Ltd (NS)	St John R	Eggs	Y	1,000,000	Private	Aquaculture (FW pen)	N
1508	Bingham Aquaculture Ltd. (ME)	St John R	Eggs	Y	1,000,000	Private	Aquaculture (FW pen)	Y
1498	Aqua Fish Farms (NS)	St John R	Eggs	Y	5,000,000	Private	Aquaculture (FW pen)	Y
1392	Atlantic Ova Pro Ltd (NS)	St John R	Eggs	Y	2,500,000	Private	Aquaculture (FW pen)	N
1395	Dover Hatchery (PEI)	St John R	Eggs	Y	100,000	Private	Aquaculture (FW pen)	N
1510	Atlantic Ova Pro Ltd (NS)	St John R	Eggs	Y	3,000,000	Private	Aquaculture (FW pen)	Y
1511	Atlantic Ova Pro Ltd (NS)	St John R	Eggs	Y	2,000,000	Private	Aquaculture (FW pen)	Y
1397	Little Harbour Hatchery (NS)	St John R	Fry	Y	250,000	Private	Aquaculture (FW pen)	N
1393	Bingham Aquaculture Ltd. (ME)	St John R	Fry	Y	50,000	Private	Aquaculture (FW pen)	N
1509	Atlantic Ova Pro Ltd (NS)	St John R	Eggs	Y	10,000	Research/Educ.	Research/Education	Y
1400	Atlantic Ova Pro Ltd (NS)	St John R	Adults	Y	1,600	Research/Educ.	Research/Education	N

<i>File #</i>	<i>Facility Of Origin</i>	<i>Stock/Strain</i>	<i>LifeStage</i>	<i>Reprod.</i>	<i>Number Shipped</i>	<i>Receiving Facility Type</i>	<i>Planned Use</i>	<i>Monosex</i>
1399	Dover Hatchery (PEI)	European/Icela	Fry	N	3,000	Research/Educ.	Research/Education	Y
<u>BROOK TROUT</u>								
1505	Pisciculture Alleghanys (QUE)		Eggs	Y	30,000	Private	Aquaculture (misc. inland)	Y
1490	Pisciculture Alleghanys (QUE)		Eggs	Y	61,000	Private	Aquaculture (misc. inland)	Y
1496	Pisciculture Alleghanys (QUE)		Eggs	Y	20,000	Private	Aquaculture (misc. inland)	Y
1500	Pisciculture Alleghanys (QUE)		Eggs	Y	20,000	Private	Aquaculture (FW pen)	Y
1389	Pisciculture Alleghanys (QUE)		Parr	Y	6,000	Private	Pop. Enhanc. (Inland)	N
1495	Pisciculture Alleghanys (QUE)		Eggs	Y	20,000	Private	Aquaculture (misc. inland)	Y
1502	Pisciculture Alleghanys (QUE)		Eggs	Y	15,000	Private	Aquaculture (FW pen)	Y
1504	Pisciculture Alleghanys (QUE)		Eggs	Y	20,000	Research/Educ.	Research/Education	Y
<u>RAINBOW TROUT</u>								
1388	Rainbow Springs Hatchery (ONT)		Eggs	Y	15,000	Gov-Federal (Can)	Bio-monitoring	N
1497	Pisciculture Alleghanys (QUE)		Eggs	Y	100,000	Private	Aquaculture (misc. inland)	Y
<u>NEWFOUNDLAND</u>								
<u>ATLANTIC SALMON</u>								
1422	Stolt Sea Farms (NB)	St John R	Smolt	Y	175,000	Private	Aquaculture (sea pen)	N
1423	Stolt Sea Farms (NB)	St John R	Smolt	Y	300,000	Private	Aquaculture (sea pen)	N
1429	Stolt Sea Farms (NB)	St John R	Parr	Y	200,000	Private	Aquaculture (FW pen)	N
1416	Dover Hatchery (PEI)	St John R	Eggs	Y	50,000	Private	Aquaculture (sea pen)	N
1430	Dover Hatchery (PEI)	St John R	Eggs	Y	600,000	Private	Aquaculture (sea pen)	N
1417	Oak Bay Hatchery (NB)	St John R	Eggs	Y	600,000	Private	Aquaculture (sea pen)	N
1420	Cascade Aqua Farms (WA)	Gaspé	Eggs	Y	400,000	Private	Aquaculture (sea pen)	N
1432	Aqua Bounty Farms (PEI)	Transgenic	Eggs	Y	12,000	Research/Educ.	Research/Education	N

<i>File #</i>	<i>Facility Of Origin</i>	<i>Stock/Strain</i>	<i>LifeStage</i>	<i>Reprod.</i>	<i>Number Shipped</i>	<i>Receiving Facility Type</i>	<i>Planned Use</i>	<i>Monosex</i>
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BROOK TROUT

1431	Pisciculture St Damien (QUE)	Unknown	Eggs	Y	5,000	Research/Educ.	Research/Education	N
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RAINBOW TROUT

1419	Pisciculture St Damien (QUE)	Unknown	Eggs	N	50,000	Private	Aquaculture (sea pen)	Y
1425	North River Fish Farm (NS)	Unknown	Smolt	Y	350,000	Private	Aquaculture (sea pen)	Y
1428	North River Fish Farm (NS)	Unknown	Parr	Y	500	Private	Unspecified	Y
1424	River Bend Fish Farm (NS)	Unknown	Smolt	Y	300,000	Private	Aquaculture (sea pen)	Y
1426	North River Fish Farm (NS)	Unknown	Smolt	Y	200,000	Private	Aquaculture (sea pen)	Y
1418	Pisciculture St Damien (QUE)	Unknown	Eggs	N	30,000	Private	Unspecified	Y
1427	St Peter's Fish Hatchery (NS)	Unknown	Smolt	Y	150,000	Private	Aquaculture (sea pen)	Y
1421	North River Fish Farm (NS)	Unknown	Smolt	Y	150,000	Private	Aquaculture (sea pen)	Y

NOVA SCOTIA

ARCTIC CHAR

1453	Icy Waters (YUK)		Eggs	Y	50,000	Private	Aquaculture (misc. inland)	N
1462	Pisciculture Alleghansys (QUE)		Eggs	Y	50,000	Private	Aquaculture (sea pen)	N
1447	Aquarium et Centre Marin NBDAFA (NB)		Fingerlings	Y	900	Research/Educ.	Research/Education	N

ATLANTIC SALMON

1457	Oak Bay Hatchery (NB)	St John R	Smolt	Y	150,000	Private	Aquaculture (sea pen)	N
1452	Aqua Fish Farms Penobquis (NB)	St John R	Smolt	Y	500	Private	Aquaculture (sea pen)	N
1450	North Water Products Ltd (NF)	St John R	Fry	Y	50,000	Private	Aquaculture (sea pen)	N
1454	Gardner Lake Hatchery (ME)	St John R	Smolt	Y	20,000	Private	Aquaculture (misc. inland)	N
1456	Oak Bay Hatchery (NB)	St John R	Fry	Y	400,000	Private	Aquaculture (sea pen)	N
1461	Atlantic Sea Smolt (PEI)	St John R	Eggs	Y	2,000,000	Private	Aquaculture (sea pen)	N
1448	Bingham Aquaculture Ltd. (ME)	St John R	Fry	Y	25,000	Private	Aquaculture (sea pen)	N
1464	Stolt Sea Farms (NB)	St John R	Eggs	Y	1,000,000	Private	Aquaculture (sea pen)	N
1455	Stolt Sea Farms (NB)	Triploid	Smolt	Y	300,000	Private	Aquaculture (sea pen)	N

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<i>File #</i>	<i>Facility Of Origin</i>	<i>Stock/Strain</i>	<i>LifeStage</i>	<i>Reprod.</i>	<i>Number Shipped</i>	<i>Receiving Facility Type</i>	<i>Planned Use</i>	<i>Monosex</i>
<u>BROOK TROUT</u>								
1458	Wild broodstock (NFLD) Cape Race		Eggs	Y	3,000	Research/Educ.	Research/Education	N
<u>RAINBOW TROUT</u>								
1459	Rainbow Springs Hatchery (ONT)		Eggs	Y	125,000	Gov-Provincial	Pop. Enhanc. (Inland)	N
1463	Trout Lodge (WA)		Eggs	Y	900,000	Private	Aquaculture (sea pen)	N
1460	Brookvalley Marine Farm (PEI)		Smolt	Y	300	Private	Aquaculture (Unspecified)	N
1446	Brookvalley Marine Farm (PEI)		Fingerlings	Y	55,000	Private	Aquaculture (Unspecified)	N
1451	Trout Lodge (WA)		Eggs	Y	240,000	Private	Aquaculture (sea pen)	N
1449	Brookvalley Marine Farm (PEI)		Fingerlings	Y	570,000	Private	Aquaculture (sea pen)	N
<u>ONTARIO</u>								
<u>ARCTIC CHAR</u>								
1436	Icy Waters (YUK)	Unknown	Eggs	Y	10,000	Private	Aquaculture (Unspecified)	N
<u>BROOK TROUT</u>								
1444	Pisciculture Alleghanys (QUE)	Unknown	Eggs	Y	10,000	Private	Aquaculture (Unspecified)	N
1443	Pisciculture Alleghanys (QUE)	Unknown	Eggs	Y	75,000	Private	Aquaculture (Unspecified)	N
1442	Pisciculture Alleghanys (QUE)	Unknown	Eggs	Y	15,000	Research/Educ.	Aquaculture (Unspecified)	N
<u>RAINBOW TROUT</u>								
1441	Troutsprings (WA)	Unknown	Eggs	Y	184,000	Gov-Federal (Can)	Aquaculture (misc. inland)	N
1434	Troutsprings (WA)	Unknown	Eggs	Y	256,000	Private	Aquaculture (Unspecified)	N
1438	Troutsprings (WA)	Unknown	Eggs	Y	300,000	Private	Aquaculture (Unspecified)	N
1433	Troutsprings (WA)	Unknown	Eggs	Y	500,000	Private	Aquaculture (Unspecified)	N
1435	Troutsprings (WA)	Unknown	Eggs	Y	225,000	Private	Aquaculture (Unspecified)	N
1437	Troutsprings (WA)	Unknown	Eggs	Y	100,000	Private	Aquaculture (Unspecified)	N

<i>File #</i>	<i>Facility Of Origin</i>	<i>Stock/Strain</i>	<i>LifeStage</i>	<i>Reprod.</i>	<i>Number Shipped</i>	<i>Receiving Facility Type</i>	<i>Planned Use</i>	<i>Monosex</i>
1440	Troutsprings (WA)	Unknown	Eggs	Y	250,000	Private	Aquaculture (Unspecified)	N
1439	Troutsprings (WA)	Unknown	Eggs	Y	500,000	Private	Aquaculture (Unspecified)	N

QUEBEC

ARCTIC CHAR

1485	Icy Waters (YUK)		Eggs	Y	5,000	Final Disp. (QUE)	Aquaculture (Unspecified)	N
1486	Aquarium et Centre Marin NBDAFA (NB)		Eggs	Y	10,000	Final Disp. (QUE)	Research/Education	N
1487	Arctic Ova (YUK)		Eggs	Y	130,000	Final Disp. (QUE)	Aquaculture (Unspecified)	N

RAINBOW TROUT

1477	Trout Lodge (WA)	All Female	Eggs	N	40,000	Final Disp. (QUE)	Aquaculture (Unspecified)	Y
1470	Trout Lodge (WA)		Eggs	Y	100,000	Private	Aquaculture (Unspecified)	N
1468	Trout Lodge (WA)	All Female	Eggs	N	105,000	Private	Aquaculture (Unspecified)	Y
1474	Trout Lodge (WA)	All Female	Eggs	N	10,000	Private	Aquaculture (Unspecified)	Y
1476	Trout Lodge (WA)	All Female	Eggs	N	81,000	Private	Aquaculture (Unspecified)	Y
1471	Trout Lodge (WA)	All Female	Eggs	N	67,000	Private	Aquaculture (Unspecified)	Y
1465	Trout Lodge (WA)	All Female	Eggs	N	100,000	Private	Aquaculture (Unspecified)	Y
1482	Trout Lodge (WA)	All Female	Eggs	N	30,000	Private	Aquaculture (Unspecified)	Y
1480	Trout Lodge (WA)	All Female	Eggs	N	40,000	Private	Aquaculture (Unspecified)	Y
1473	Trout Lodge (WA)	All Female	Eggs	N	40,000	Private	Aquaculture (Unspecified)	Y
1475	Trout Lodge (WA)		Eggs	Y	120,000	Private	Aquaculture (Unspecified)	N
1481	Trout Lodge (WA)	All Female	Eggs	N	60,000	Private	Aquaculture (Unspecified)	Y
1479	Trout Lodge (WA)	All Female	Eggs	N	35,000	Private	Aquaculture (Unspecified)	Y
1469	Trout Lodge (WA)	All Female	Eggs	N	60,000	Private	Aquaculture (Unspecified)	Y
1484	Trout Lodge (WA)	All Female	Eggs	N	55,000	Private	Aquaculture (Unspecified)	Y
1483	Trout Lodge (WA)	All Female	Eggs	N	15,000	Private	Aquaculture (Unspecified)	Y
1478	Trout Lodge (WA)	All Female	Eggs	N	30,000	Private	Aquaculture (Unspecified)	Y

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File #	Facility Of Origin	Stock/Strain	LifeStage	Reprod.	Number Shipped	Receiving Facility Type	Planned Use	Monosex
1472	Trout Lodge (WA)	All Female	Eggs	N	40,000	Private	Aquaculture (Unspecified)	Y
1466	Trout Lodge (WA)	All Female	Eggs	N	40,000	Private	Aquaculture (Unspecified)	Y
1467	Trout Lodge (WA)	All Female	Eggs	N	80,000	Private	Aquaculture (Unspecified)	Y

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