North American Commission

NAC(04)6

NAC Scientific Working Group on Salmonid Introductions and Transfers
Report of Activities – 2003/2004

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Members:

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The Scientific Working Group (SWG) did not meet during this past year, but rather conducted its business through correspondence. The NAC did not make any specific request to the SWG in 2003. Thus, the only task conducted by the Working Group was to up-date 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. The SWG is waiting for direction from the NAC, with respect to recommended revisions to the NAC Protocols.

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

Information for the inventory of introductions and transfers of salmonids for 2003 was solicited from federal, state and provincial agencies. To date, we have received information from all of the Canadian agencies, except Prince Edward Island; from the USA, we have only received information on transfers of Atlantic salmon for the State of Maine. No information was received for other species or other States. A summary of the introductions and transfers information for 2001 to 2003 is provided in Table 1; and, a list of the individual shipments for 2003 is provided in Appendix 1. It should be noted those introductions and transfers shown for 2003 are only for shipments that crossed provincial or state boundaries and the US-Canada border; in previous years the shipments shown for USA included within-State shipments. Inventory information for years 1986 to 2002 are in previous reports to the NAC. The database resides at the Department of Fisheries and Oceans office in Dartmouth, Nova Scotia.

There were only four (4) salmonid species reported introduced or transferred in 2003; Atlantic salmon and rainbow trout made up about 90% of the shipments, with brook trout and Arctic char making up the other 10%. Of the total number of eggs or fish shipped about 83% were Atlantic salmon and 16% were rainbow trout. Approximately 85% of all shipments primarily were for aquaculture purposes. The remaining 15% were for research and education or for stock enhancement. Several shipments are noteworthy.

- There was one shipment of Icelandic "Mowi" strain Atlantic salmon eggs from PEI to NB. They are being used in growth performance experiments in land-based facilities, in which the risk of escapement is low. No authorization will be given for these fish to be used in freshwater or marine cage rearing.

- There were 3 shipments of transgenic salmonids (one each of Arctic charr, rainbow trout and Atlantic salmon) from PEI to NF. These transgenic fish are being used by

private industry for research, which is being conducted in a land-based facility with very low risk of escape.

- Reproductively viable mixed-sexed diploid rainbow trout continues to be used in some marine aquaculture sites in Atlantic Canada, which is contrary to the NAC Protocols. It is believed that the establishment of one or more reproducing populations of rainbow trout on the west coast of Newfoundland was the result of rainbow trout that escaped from marine aquaculture cages.

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 provided in Table 2. This database is incomplete since it only includes disease occurrences reported by the Federal Fish Health Officers; diseases may have been detected by provincial and/or private veterinarians and not reported to Federal agencies.

ISA continues to be of concern in New Brunswick, Nova Scotia and Maine. There is a joint federal, provincial, industry committee overseeing the control and management of the disease. Officials from Canada and the USA are in close communication on the management of this disease.

A New Strain of Infectious Salmon Anemia virus (ISAV) detected

A suspected presence of ISAV was reported at one site near Jonesport, Maine in November 2003. Intensive testing and research was initiated, and results identified an apparently new strain of ISAV. The new strain appears to have different effects on salmon compared to the New Brunswick strain of ISAV that has been detected in recent years at several sites in Maine and Canada. The new strain did not result in any increased mortality of salmon at the Jonesport site.

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

The SWG compiled the most recent information available to the Group on occurrences of Atlantic salmon and rainbow trout believed to be aquaculture escapees in rivers within Maine, New Brunswick, Nova Scotia, and Newfoundland (Tables 3, 4, and 5). It is recognized that the information is incomplete, considering the difficulty in identifying escaped-farmed fish, and information is primarily obtained from field investigations on a relatively small number of rivers or from reports from anglers.

In 2003, Atlantic salmon aquaculture escapees were reported in four (4) rivers in New Brunswick and Maine (Table 3). The greatest number (22) was reported in the Magaguadavic River with the escapees representing 81% of the salmon entering the river. Although only small numbers of aquaculture escapees were observed in the St. Croix (9) and the Dennys River (2), they represent a 38% and 18% of the salmon run to these rivers respectively. The total number (36) of Atlantic salmon of aquaculture origin observed in 2003 was 36% less than observed in 2002 and 88% less than observed in 2001.

Several salmon (adults and juveniles) with European alleles were identified from samples collected in several rivers in the Bay of Fundy. These salmon were captured in the

Magaguadavic River, one of the most proximate rivers to the aquaculture industry, the Black River, Chamcook stream, and the Upper Salmon River. The presence of these non-indigenous strains is of concern, particularly in the Upper Salmon River, since this River is one of the 32 rivers of the Inner Bay of Fundy in which the population was listed as endangered in May 2001 by the Committee on the Status of Endangered Wildlife in Canada. Some hatchery-origin juvenile Atlantic salmon obtained from the Magaguadavic River were of partial European ancestry (probable North American/European hybrids), suggesting that these fish escaped from a hatchery on the river system.

Likely sources of these European and partial European ancestry salmon found in the Bay of Fundy rivers are escapees from the American aquaculture industries and/or from a Canadian hatchery.

The USA industry has been screening their salmon for European ancestry for several years. Some of the aquaculture industry in the Maritime Provinces has begun screening their broodstock for fish of European ancestry; these analyses are required by the USA before eggs, fry and smolt produced in Canada may be exported to Maine for eventual rearing in sea pens. This genetic screening is based on seven microsatellite loci used by US Fish & Wildlife Services. These analyses will permit detection of European, North American/European hybrids and salmon with lower levels of European ancestry. Additional screening will likely occur in the coming year.

Rainbow trout, believed to be of aquaculture origin or originating from aquaculture escapees, were reported from eight (8) rivers on the west and south coast of Newfoundland in 2003, which is 2 more rivers than in 2002 (Table 4). These rainbow trout were either caught by anglers, or captured or observed during scientific surveys. Both male and female rainbow trout have been confirmed. A research project conducted on Trout River, western Newfoundland, confirmed that successful reproduction has occurred and at least three year-classes were present. Anglers have reported rainbow trout spawning in three (3) other rivers, on the west coast of Newfoundland, but this has not been confirmed. Figure 1 is a map showing the distribution of rivers in which rainbow trout have been observed. The Scientific Working Group reiterates its concern that if rainbow trout becomes established, it could negatively impact on the Atlantic salmon and brook trout populations.

Some information, albeit incomplete, was available on observations of rainbow trout in rivers of New Brunswick and Nova Scotia (Table 5). No information was available as to the origin of these fish. In 2003, rainbow trout were reported in only one (1) river in Nova Scotia and one (1) river in New Brunswick.

There were only two reports of escapements of Atlantic salmon from aquaculture sites in the NAC Area in 2003. One was an escapement of 6,500 market-size fish in Newfoundland in May; and the other was an escapement of approximately 2,000 fin-clipped Atlantic salmon from a Maine site in November. There were no reports of escapements of rainbow trout in 2003.

4. Other Items of Interest

Triploidy:

Triploid Atlantic salmon have been imported into New Brunswick and Nova Scotia for culture trials to examine performance relative to diploid fish. It is anticipated that fish in land-based facilities will be placed in sea-cages in the coming year. Culture of triploid salmon has been encouraged as an alternate means of reducing the risk of negative interactions with wild Atlantic salmon. However, past trials have shown poor performance of triploid compared to diploid salmon.

Containment Measures:

The containment measures currently being used in the marine cage rearing operations in the NAC area appear to have reduced the number of escapements. The Code of Practice implemented in Newfoundland in recent years appears to be working very well, with noticeable improvement in monitoring, enforcement, and a reduction in the number of fish escaping.

Current Status of US Efforts to Protect Wild Salmon from Potential Impacts from Aquaculture

The U.S. Endangered Species Act requires that all federal agencies consult with NOAA Fisheries and/or US Fish and Wildlife Service on any action they intend to carry out, fund, or permit, to evaluate the impacts to threatened and endangered species. The US Army Corps of Engineers issues permits to aquaculture facilities for the placement of their cages in marine waters. In conjunction with the US Fish and Wildlife Service, NOAA Fisheries completed a consultation on the existing aquaculture facilities in Maine and issued a Biological Opinion on November 19, 2003, on the adverse effect that existing aquaculture sites have on endangered wild Atlantic salmon. This Opinion includes special conditions that the Army Corps of Engineers will incorporate as mandatory in permits that they issue authorizing the operation of aquaculture facilities. These mandatory conditions address issues that will improve the operation of aquaculture facilities and reduce threats to wild Atlantic salmon.

These conditions are also included in the Maine Department Environmental Protection Discharge Elimination System (MEPDES) permit. The special conditions in the Biological Opinion and MEPDES permit, include a prohibition on the use of reproductively viable Atlantic salmon originating from non-American stock, a prohibition on the use of transgenic salmonids, a requirement for a marine containment management system at each site and annual audits, mandatory reporting of known or suspected escapes, and mandatory marking of smolt stocked. Additional information on these conditions can be found at either of the following websites:

Biological opinion:
http://www.nmfs.noaa.gov/prot_res/readingrm/ESAsec7/7se_maine_aquaculture_2003.pdf
MPDES Permit: http://www.maine.gov/dep/blwq/docstand/wastepage.htm

The framework for Containment Management System (CMS) plans were developed for both marine sites and freshwater hatcheries. State MEPDES permits require a CMS plan in place prior to placement of fish. Site-specific CMS plans for all active aquaculture sites in Maine are currently being implemented. Each facility is required to develop and utilize a CMS consisting of management and auditing methods to include: inventory control procedures, predator control procedures, escape response procedures, unusual event management, severe weather procedures, and training. The CMS will be audited at least once per year.

Containment Management System audits were completed for all active sites in 2003. Non North American Atlantic salmon were used commercially within the U.S. aquaculture industry through 2003. Recently, a court order and injunction pursuant to US Clean Water Act violations, issued in May, 2003, to two large aquaculture companies operating in Maine requires stocking only North American Atlantic salmon in Maine waters. State MEPDES permits require that after July 31, 2004 all reproductively viable Atlantic salmon stocked into Maine waters for the purpose of aquaculture must be of North American origin. All reproductively viable non North American Atlantic salmon must be removed from net pens prior to March 1, 2006.

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

	Number of Shipments			Number of Eggs or Fish		
	2001	**2002**	**2003**	**2001**	**2002**	**2003**
Arctic Char						
Canada	2	7	2	20,000	116,300	122,000
USA	N/A	N/A	N/A	N/A	N/A	N/A
Atlantic Salmon						
Canada	60	61	51	31,459,000	43,760,400	30,727,750
USA	27	31	11	8,408,631	16,745,183	3,341,216
Total	87	91	62	39,867,631	60,505,583	34,068,966
Brook trout						
Canada	14	13	12	437,050	225,035	313,500
USA	N/A	N/A	N/A	N/A	N/A	N/A
Brown trout						
Canada	0	1	0	0	10,000	0
USA	N/A	N/A	N/A	N/A	N/A	N/A
Rainbow trout						
Canada	37	40	59	5,003,075	8,679,590	6,482,409
USA	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 2003. See footer for explanation of "occurrence Codes"

State or Province	Bacterial Kidney Disease (BKD)	Ceratomyxosis X	Enteric Redmouth (ERM)	Furunculosis	Infectious Hematopoietic Necrosis (IHN) X	Infectious Pancreatic Necroisis (IPN)	Infectious Salmon Anemia (ISA)	Oncorhynchus Masou Virus X	Viral Hemorrhagic Septicemia (VHS) X	Whirling Disease	Other CPE viruses (except IPN) X	Salmon Swimbladder Sarcoma**
CT	1	0	1	2	0	0	0	0	0	2	0	0
Lab	0	0	0	0	0	0	0	0	0	0	0	0
MA	1	0	1	1	0	1	0	0	0	1	0	1
ME	2	0	1	3	0	2	3	0	0	0	3	1*
NB	3	0	3	3	0	3	3	0	2***	0	3	0
NFLD	1	0	2	2	0	3	0	0	0	0	0	0
NH	1	0	1	2	0	3	0	0	0	1	1	0
NJ	No information for 2003											
NS	3	0	3	3	0	3	3	0	0	0	2	0
NY	1	0	1	3	1	1	0	0	0	2	0	0
ONT	3	0	3	3	0	1	0	0	0	0	2	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 2003											
VT	2	0	0	3	0	1	0	0	0	2	2	0

Occurrence
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 Salmonids

*Virus found present, but no disease symptoms ever detected.

** New virus: not currently included in the NAC Protocols

*** "North American Strain", Not "European" or "Salmonid" strain

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 - 1997	1998	1999	2000	2001	2002	2003	
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								1SW & MSW
Conne (NF)		13	2(1)	1(>1)	5(2.3)	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)				MSW
Indian Brook (NS)					1				1SW & MSW
LaHave (NS)	1 (<1)	0	0						1SW & MSW
Magaguadavic (NB)		2,383	223 (8)	79(77)	30(68)	132(94)	35 (83)	22 (81)	1SW & MSW
Magaguadavic (NB)						35			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)		1990, Belle		R******	R******	14	8	3 (<1)	1SW & MSW
Salmon Digby (NS)				2	0				1SW & MSW
St. Croix (NB/ME) *		258	25 (38)	23(64)	30(60)	58(75)	5 (20)	9 (38)	1SW & MSW
Tusket (NS)			2 (<1)						MSW
Waewig (NB)	juvniles below hatch. 1 adult								Juveniles and adults
Stewiacke (NS)		7 (33)							MSW
UNITED STATES									
Penobscot River						1(0.1)			
Dennys (ME)**		69	1(100)		29(94)	65(79)	4 (67)	2 (18)	Sexually mature & immature
Narraguagus (ME)		9****	0	3 (9)	0	0	0	0	
Union (ME)				63(90)*****	6(75)	2(100)	6 (55)	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 form 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 progency of aquaculture escapees.

River (St/Prov)	Number of rainbow trout							Life Stage
	Prior to 1990	1990 - 1998	1999	2000	2001	2002	2003	
Watts Bight Bk (NF)	3							adult
Green Island Cove						1		adult
Western Arm Brook					1		1	adult
River of Ponds (NF)	1+	4+*	24	2****	6			adult
Portland Creek (NF)			1					adult
Parsons Pond (NF)		1						adult
Deer Arm Brook					1	1		adult
Lomond River					1			adult
Trout River (NF)	4	2+	1+**	2***	97+	55+	122	adult+juv
Bay of Islands						1		adult
Hughes Brook							1	adult
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+	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

* 1 Male (interally 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 maybe from directed stocking programs. Table is incomplete.

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

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

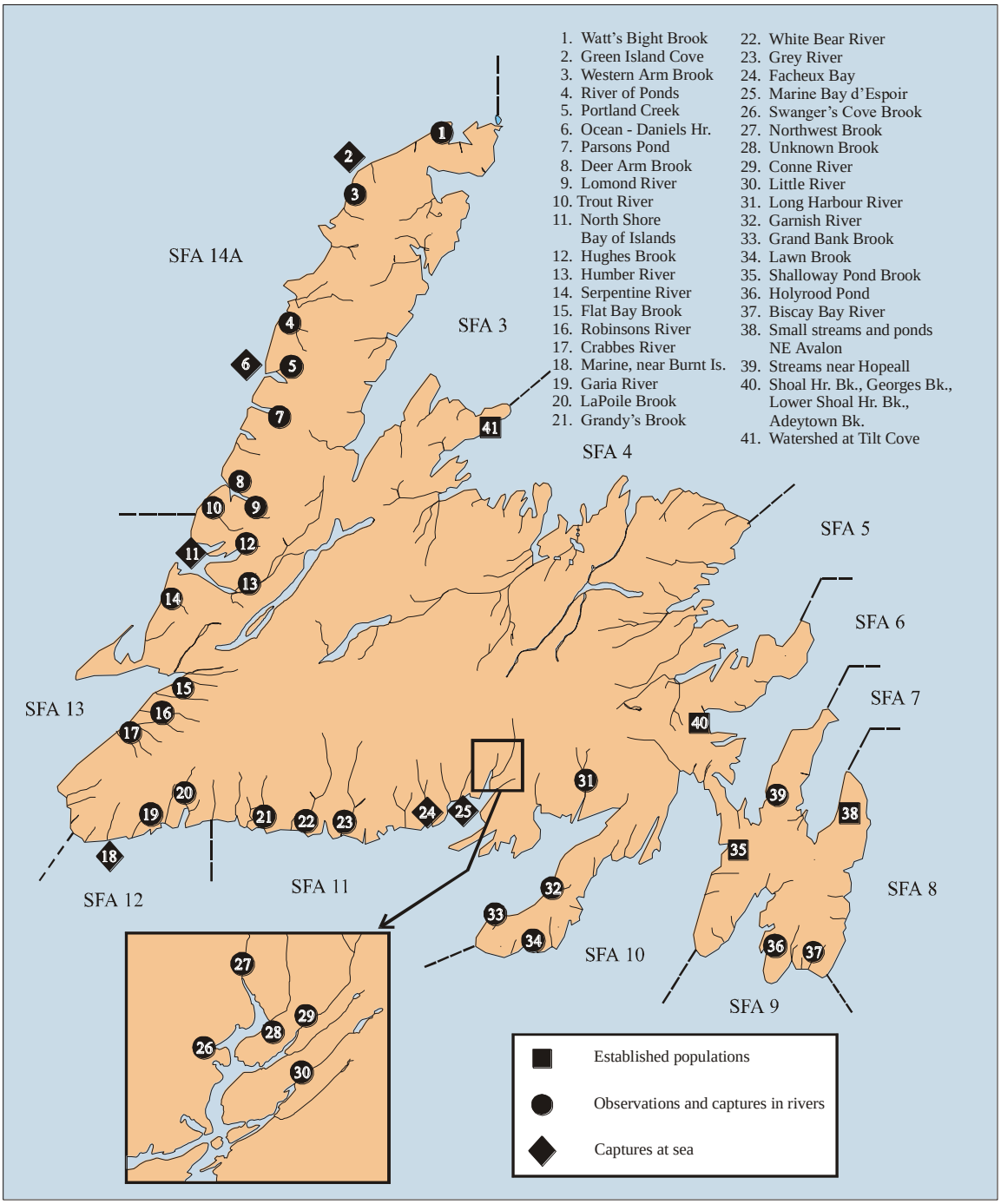

Figure 1 . Locations of Rainbow trout sightings in Newfoundland, 1979-2003..

Appendix 1. Report of Salmonid Introductions and Transfers in NAC Area - 2003

File #	Facility Of Origin	Stock/Strain	LifeStage	Reprod.	Number Shipped	Receiving Facility Type	Planned Use	Monosex
MAINE								
ATLANTIC SALMON								
1307	Stolt Sea Farms (NB)	St John R	Smolt	Y	187,957	Private	Aquaculture (sea pen)	N
1304	Digdequash hatchery (NB)	St John R	Fry	Y	247,400	Private	Aquaculture (misc. inland)	N
1305	Chamcook-ASF (NB)	St John R	Fry	Y	82,000	Private	Aquaculture (misc. inland)	N
1306	Digdequash hatchery (NB)	St John R	Smolt	Y	121,532	Private	Aquaculture (sea pen)	N
1300	Connors Bros (NB) Heritage S - Lake Utopia	St John R	Smolt	Y	286,346	Private	Aquaculture (sea pen)	N
1298	Connors Bros (NB) Heritage S - Lake Utopia	St John R	Smolt	Y	296,155	Private	Aquaculture (sea pen)	N
1309	Atlantic Ova Pro Ltd (NS)	St John R	Eggs	Y	1,622,250	Private	Aquaculture (misc. inland)	N
1303	Stolt Sea Farms (NB)	St John Dover	Fry	Y	200,000	Private	Aquaculture (misc. inland)	N
1302	Chamcook-ASF (NB)	St John R	Smolt	Y	4,000	Private	Brood Stock Dev.	N
1308	Chamcook-ASF (NB)	St John R	Smolt	Y	4,042	Private	Brood Stock Dev.	N
1301	Connors Bros (NB) Heritage S - Lake Utopia	St John R	Smolt	Y	289,534	Private	Aquaculture (sea pen)	N
NEW BRUNSWICK								
ATLANTIC SALMON								
1330	Atlantic Salmon Maine Starboard	St John R	Smolt	Y	400	Gov-Federal (Can)	Research/Education	
1345	Gardner Lake Hatchery (ME)	St John R	Fry	Y	600,000	Private	Aquaculture (FW pen)	
1335	Dartek (NS)	St John R	Smolt	Y	100,000	Private	Aquaculture (sea pen)	
1342	AKM Fisheries (NS)	St John R	Adults	Y	600	Private	Brood Stock Dev.	
1331	Aquaculture Acadie (NS)	St John R	Smolt	Y	210,000	Private	Aquaculture (sea pen)	
1328	Dover Hatchery (PEI)	Icelandic mowi	Eggs	Y	90,000	Private	Research/Education	
1350	Bingham Aquaculture Ltd. (ME)	St John R	Eggs	Y	2,000,000	Private	Aquaculture (FW pen)	

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File #	Facility Of Origin	Stock/Strain	LifeStage	Reprod.	Number Shipped	Receiving Facility Type	Planned Use	Monosex
1351	Dover Hatchery (PEI)	St John R	Eggs	Y	2,000,000	Private	Aquaculture (FW pen)	
1337	Gardner Lake Hatchery (ME)	St John R	Smolt	Y	200,000	Private	Aquaculture (sea pen)	
1368	Dover Hatchery (PEI)		Eggs	Y	1,000,000	Private	Aquaculture (FW pen)	
1336	Dartek (NS)	St John R	Smolt	Y	160,000	Private	Aquaculture (sea pen)	
1338	Merlin Fish Farms (NS)	St John R	Smolt	Y	145,000	Private	Aquaculture (sea pen)	
1344	Connors Aquaculture (ME)	St John R	Fry	Y	1,000,000	Private	Aquaculture (FW pen)	
1369	Little Harbour Hatchery (NS)		Eggs	Y	500,000	Private	Aquaculture (FW pen)	
1359	Little Harbour Hatchery (NS)		Eggs	Y	380,000	Private	Aquaculture (FW pen)	
1365	Atlantic Sea Smolt (PEI)		Eggs	Y	110,000	Private	Aquaculture (FW pen)	
1363	Atlantic Sea Smolt (PEI)		Parr	Y	100,000	Private	Aquaculture (FW pen)	
1352	Dover Hatchery (PEI)	St John R	Eggs	Y	10,000,000	Private	Aquaculture (FW pen)	
1341	Bingham Aquaculture Ltd. (ME)	St John R	Smolt	Y	208,850	Private	Aquaculture (sea pen)	
1329	Connors Aquaculture (ME)	St John R	Eggs	Y	2,000,000	Private	Aquaculture (misc. inland)	
1348	Bingham Aquaculture Ltd. (ME)	St John R	Fry	Y	950,000	Private	Aquaculture (FW pen)	
1340	Little Harbour Hatchery (NS)	St John R	Smolt	Y	160,000	Private	Aquaculture (sea pen)	
1362	Bingham Aquaculture Ltd. (ME)		Parr	Y	300,000	Private	Aquaculture (FW pen)	
1370	Bingham Aquaculture Ltd. (ME)		Eggs	Y	2,000,000	Private	Aquaculture (FW pen)	
1339	Bingham Aquaculture Ltd. (ME)	St John R	Smolt	Y	582,400	Private	Aquaculture (sea pen)	
1349	Bingham Aquaculture Ltd. (ME)	St John R	Smolt	Y	100,000	Private	Aquaculture (sea pen)	
1364	Atlantic Ova Pro Ltd (NS)		Eggs	Y	10,000	Research/Educ.	Research/Education	
BROOK TROUT								
1366	Pisciculture Alleghanys (QUE)		Eggs	Y	40,000	Private	Aquaculture (FW pen)	
1357	Pisciculture Alleghanys (QUE)		Eggs	Y	50,000	Private	Aquaculture (FW pen)	
1360	Pisciculture Alleghanys (QUE)		Eggs	Y	20,000	Private	Aquaculture (FW pen)	
1355	Pisciculture Alleghanys (QUE)		Juveniles	Y	5,500	Private	Aquaculture (FW pen)	
1361	Pisciculture Alleghanys (QUE)		Juveniles	Y	20,000	Private	Aquaculture (FW pen)	
1347	Pisciculture Alleghanys (QUE)		Eggs	Y	10,000	Private	Aquaculture (FW pen)	

May 20, 2004

File #	Facility Of Origin	Stock/Strain	LifeStage	Reprod.	Number Shipped	Receiving Facility Type	Planned Use	Monosex
1356	Pisciculture Alleghanys (QUE)		Eggs	Y	20,000	Private	Aquaculture (FW pen)	
1354	Pisciculture Alleghanys (QUE)		Eggs	Y	20,000	Private	Aquaculture (FW pen)	
1371	Pisciculture Alleghanys (QUE)		Fingerlings	Y	3,000	Private	Aquaculture (FW pen)	
1353	Pisciculture Alleghanys (QUE)		Eggs	Y	50,000	Research/Educ.	Research/Education	
RAINBOW TROUT								
1332	Rainbow Springs Hatchery (ONT)		Fry	Y	16,500	Gov-Federal (Can)	Research/Education	
1367	Pisciculture Alleghanys (QUE)		Eggs	Y	30,000	Private	Aquaculture (FW pen)	
1346	Pisciculture Alleghanys (QUE)		Eggs	Y	10,000	Private	Aquaculture (FW pen)	
1358	Rainbow Springs Hatchery (ONT)		Eggs	Y	200	Research/Educ.	Research/Education	
1334	Cardigan Hatchery (PEI)		Adults	Y	100	Research/Educ.	Research/Education	
1343	Cardigan Hatchery (PEI)		Juveniles	Y	400	Research/Educ.	Research/Education	
1333	Cardigan Hatchery (PEI)		Juveniles	Y	180	Research/Educ.	Research/Education	
NEWFOUNDLAND								
ARTIC CHAR								
1278	Aqua Bounty Farms (PEI)	Transgenic	Eggs	Y	12,000	Research/Educ.	Research/Education	N
ATLANTIC SALMON								
1296	Cooke Aquaculture US Inc.	St John R	Eggs	Y	600,000	Private	Aquaculture (Unspecified)	N
1283	North River Fish Farm (NS)		Pre-smolt	Y	80,000	Private	Aquaculture (sea pen)	N
1282	Stolt Sea Farms (NB)		Pre-smolt	Y	300,000	Private	Aquaculture (sea pen)	N
1292	Aqua Bounty Farms (PEI)	Transgenic	Eggs	Y	500	Research/Educ.	Research/Education	N
RAINBOW TROUT								
1289	North River Fish Farm (NS)	All Female	Pre-smolt	Y	400,000	Private	Aquaculture (sea pen)	Y
1290	St Peter's Fish Hatchery (NS)	All Female	Pre-smolt	Y	150,000	Private	Aquaculture (sea pen)	Y
1297	Pisciculture St Damien (QUE)	All Female	Eggs	N	15,000	Private	Aquaculture (misc. inland)	Y

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File #	Facility Of Origin	Stock/Strain	LifeStage	Reprod.	Number Shipped	Receiving Facility Type	Planned Use	Monosex
1274	Pisciculture St Damien (QUE)	All Female	Eggs	N	20,000	Private	Aquaculture (misc. inland)	Y
1284	Big Falls Fish Growers (NS)	All Female	Pre-smolt	Y	400,000	Private	Aquaculture (sea pen)	Y
1295	Big Falls Fish Growers (NS)	All Female	Pre-smolt	Y	400,000	Private	Aquaculture (sea pen)	Y
1286	North River Fish Farm (NS)	All Female	Pre-smolt	Y	315,000	Private	Aquaculture (sea pen)	Y
1279	St Peter's Fish Hatchery (NS)	Silver bullets	Pre-smolt	Y	70,000	Private	Aquaculture (sea pen)	Y
1281	North River Fish Farm (NS)	All Female	Pre-smolt	Y	90,000	Private	Aquaculture (sea pen)	Y
1275	Pisciculture St Damien (QUE)	Triploid	Eggs	N	60,000	Private	Aquaculture (misc. inland)	Y
1285	North River Fish Farm (NS)	All Female	Pre-smolt	Y	70,000	Private	Aquaculture (sea pen)	Y
1280	Big Falls Fish Growers (NS)	Silver bullets	Pre-smolt	Y	70,000	Private	Aquaculture (sea pen)	Y
1294	Cardigan Hatchery (PEI)	Silver bullets	Pre-smolt	Y	64,000	Private	Aquaculture (sea pen)	Y
1293	River Bend Fish Farm (NS)	Silver bullets	Pre-smolt	Y	200,000	Private	Aquaculture (sea pen)	Y
1291	Big Falls Fish Growers (NS)	Silver bullets	Pre-smolt	Y	250,000	Private	Aquaculture (sea pen)	Y
1288	Rainbow Springs Hatchery (ONT)	All Female	Adults	Y	15	Research/Educ.	Research/Education	N
1277	Aqua Bounty Farms	Transgenic	Eggs	Y	12,000	Research/Educ.	Research/Education	N
1276	Pisciculture St Damien (QUE)		Eggs	Y	75,000	Research/Educ.	Research/Education	N
1287	Rainbow Springs Hatchery (ONT)	All Female	Adults	Y	14	Research/Educ.	Research/Education	N

NOVA SCOTIA

ARTIC CHAR

1254	Pisciculture Alleghanys (QUE)		Eggs	Y	60,000	Private	Aquaculture (sea pen)	
1246	Icy Waters (YUK)		Eggs	Y	50,000	Private	Aquaculture (sea pen)	

ATLANTIC SALMON

1258	Atlantic Sea Smolt (PEI)	St John R	Eggs	Y	150,000	Private	Aquaculture (sea pen)	
1239	Thomaston Corner H (NB) - Cooke Aquaculture	St John R	Smolt	Y	200,000	Private	Aquaculture (sea pen)	
1240	Oak Bay Hatchery (NB)	St John R	Smolt	Y	50,000	Private	Aquaculture (sea pen)	
1235	Connors Aquaculture (ME)	St John R	Eggs	Y	1,000,000	Private	Aquaculture (sea pen)	

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1241	Tay Falls Cooke Aquaculture (NB)	St John R	Smolt	Y	50,000	Private	Aquaculture (sea pen)	
1234	Connors Aquaculture (ME)	St John R	Eggs	Y	1,000,000	Private	Aquaculture (sea pen)	
1238	Aqua Fish Farms Penobquis (NB)	St John R	Smolt	Y	170,000	Private	Aquaculture (sea pen)	
1244	Connors Bros (NB) Heritage S - Lake Utopia	St John R	Smolt	Y	20,000	Private	Brood Stock Dev.	
1256	North Water Products Ltd (NF)	St John R	Fingerlings	Y	150,000	Private	Aquaculture (sea pen)	
1243	Oak Bay Hatchery (NB)	St John R	Smolt	Y	50,000	Private	Aquaculture (sea pen)	
1242	Thomaston Corner H (NB) - Cooke Aquaculture	St John R	Smolt	Y	280,000	Private	Aquaculture (sea pen)	
1250	Oak Bay Hatchery (NB)	St John R	Smolt	Y	100,000	Private	Aquaculture (sea pen)	
1248	Thomaston Corner H (NB) - Cooke Aquaculture	St John R	Smolt	Y	100,000	Private	Aquaculture (sea pen)	
1245	Chamcook-ASF (NB)	St John R	Fry	Y	70,000	Private	Aquaculture (sea pen)	
1260	Oak Bay Hatchery (NB)	St John R	Parr	Y	200,000	Private	Aquaculture (sea pen)	
1253	Oak Bay Hatchery (NB)	St John R	Fingerlings	Y	100,000	Private	Aquaculture (sea pen)	
1247	Oak Bay Hatchery (NB)	St John R	Fry	Y	400,000	Private	Aquaculture (sea pen)	
1259	Atlantic Sea Smolt (PEI)	St John R	Eggs	Y	500,000	Private	Aquaculture (sea pen)	
1255	Stolt Sea Farms (NB)	St John R	Fingerlings	Y	150,000	Private	Aquaculture (sea pen)	
1249	Tay Falls Cooke Aquaculture (NB)	St John R	Smolt	Y	100,000	Private	Aquaculture (sea pen)	
RAINBOW TROUT								
1252	Rainbow Springs Hatchery (ONT)		Eggs	Y	100,000	Gov-Provincial	Pop. Enhanc. (Inland)	
1236	Rainbow Springs Hatchery (ONT)		Eggs	Y	20,000	Gov-Provincial	Pop. Enhanc. (Inland)	
1237	Trout Lodge (WA)		Eggs	Y	145,000	Private	Aquaculture (sea pen)	
1251	Rainbow Springs Hatchery (ONT)		Fingerlings	Y	5,000	Private	Aquaculture (sea pen)	
1257	Trout Lodge (WA)		Eggs	Y	375,000	Private	Aquaculture (sea pen)	
ONTARIO								
BROOK TROUT								
1271	Pisciculture St Damien (QUE)		Eggs	Y	60,000	Private	Aquaculture (misc. inland)	

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1273	Pisciculture St Damien (QUE)		Eggs	Y	15,000	Research/Educ.	Research/Education	
RAINBOW TROUT								
1269	Troutsprings (WA)		Eggs	Y	27,000	Gov-Federal (Can)	Pop. Enhanc. (Inland)	
1270	Troutsprings (WA)		Eggs	Y	173,000	Gov-Federal (Can)	Pop. Enhanc. (Inland)	
1262	Troutsprings (WA)		Eggs	Y	150,000	Gov-Provincial	Aquaculture (FW pen)	
1267	Troutsprings (WA)		Eggs	Y	440,000	Gov-Provincial	Aquaculture (FW pen)	
1265	Troutsprings (WA)		Eggs	Y	25,000	Gov-Provincial	Pop. Enhanc. (Inland)	
1266	Troutsprings (WA)		Eggs	Y	300,000	Private	Aquaculture (misc. inland)	
1272	Troutsprings (WA)		Eggs	Y	250,000	Private	Aquaculture (misc. inland)	
1261	Troutsprings (WA)		Eggs	Y	220,000	Private	Aquaculture (misc. inland)	
1263	Troutsprings (WA)		Eggs	Y	150,000	Private	Aquaculture (misc. inland)	
1268	Troutsprings (WA)		Eggs	Y	125,000	Private	Unspecified	
1264	Troutsprings (WA)		Eggs	Y	227,000	Private	Aquaculture (misc. inland)	
QUEBEC								
RAINBOW TROUT								
1321	Trout Lodge (WA)	Triploid	Eggs	N	80,000	Private	Aquaculture (Unspecified)	
1324	Trout Lodge (WA)	Unknown	Eggs	N	100,000	Private	Aquaculture (Unspecified)	
1325	Trout Lodge (WA)	Unknown	Eggs	Y	100,000	Private	Aquaculture (Unspecified)	
1313	Trout Lodge (WA)		Eggs	Y	100,000	Private	Aquaculture (Unspecified)	
1315	Trout Lodge (WA)		Eggs	Y	75,000	Private	Aquaculture (Unspecified)	
1312	Trout Lodge (WA)		Eggs	N	65,000	Private	Aquaculture (Unspecified)	
1323	Trout Lodge (WA)	All Female	Eggs	Y	40,000	Private	Aquaculture (Unspecified)	Y
1322	Trout Lodge (WA)		Eggs	Y	100,000	Private	Aquaculture (Unspecified)	
1310	Trout Lodge (WA)		Eggs	Y	100,000	Private	Aquaculture (Unspecified)	
1311	Trout Lodge (WA)	All Female	Eggs	Y	50,000	Private	Aquaculture (Unspecified)	Y

File #	Facility Of Origin	Stock/Strain	LifeStage	Reprod.	Number Shipped	Receiving Facility Type	Planned Use	Monosex
1314	Trout Lodge (WA)		Eggs	Y	10,000	Private	Aquaculture (Unspecified)	
1320	Trout Lodge (WA)		Eggs	Y	60,000	Private	Aquaculture (Unspecified)	
1319	Trout Lodge (WA)	Triploid	Eggs	N	10,000	Private	Aquaculture (Unspecified)	
1318	Trout Lodge (WA)	All Female	Eggs	Y	15,000	Private	Aquaculture (Unspecified)	Y
1316	McKenzie Fish (MIN)		Eggs	Y	5,000	Private	Aquaculture (Unspecified)	
1326	Trout Lodge (WA)	Triploid	Eggs	N	100,000	Private	Aquaculture (Unspecified)	
1317	McKenzie Fish (MIN)		Eggs	Y	22,000	Private	Aquaculture (Unspecified)	