

Research Article SUPPLEMENTARY MATERIAL

Fouling around: vessel sea-chests as a vector for the introduction and spread of aquatic invasive species

Melissa A. Frey^{1*}, Nathalie Simard², David D. Robichaud³, Jennifer L. Martin⁴ and Thomas W. Therriault⁵

¹Royal British Columbia Museum, 675 Belleville Street, Victoria BC, V8W 9W2, Canada

²Maurice Lamontagne Institute, Fisheries and Oceans Canada, 850 Route de la Mer, Mont-Joli QC, G5H 3Z4, Canada

³LGL Limited, 9768 Second Street, Sidney BC, V8L 3Y8, Canada

⁴St. Andrews Biological Station, Fisheries and Oceans Canada, 531 Brandy Cove Road, St. Andrews NB, E5B 2L9, Canada

⁵Pacific Biological Station, Fisheries and Oceans Canada, 3190 Hammond Bay Road, Nanaimo BC, V9T 6N7, Canada

E-mail: mfrey@royalbcmuseum.bc.ca (MAF), nathalie.simard@dfo-mpo.gc.ca (NS), drobichaud@lgl.com (DDR), jennifer.martin@dfo-mpo.gc.ca (JLM), thomas.therriault@dfo-mpo.gc.ca (TWT)

*Corresponding author

Received: 20 July 2013 / Accepted: 19 November 2013 / Published online: 1 February 2014

Handling editor: Alisha Dahlstrom

Supplementary material

The following supplementary material is available for this article:

Appendix 1. Supplementary data for vessels and sea-chests sampled.

Appendix 2. Non-indigenous (including non-established and established), cryptogenic, indigenous, and unknown taxa found in the sea-chests of vessels sampled while in dry dock on the West Coast and East Coast of Canada.

Recommended Citation

Please consider using the following citation for this material: Frey MA, Simard N, Robichaud DD, Martin JL, Therriault TW (2014) Fouling around: vessel sea-chests as a vector for the introduction and spread of aquatic invasive species. *Management of Biological Invasions* 5: 21-30

Online article is available at http://www.reabic.net/journals/mbi/2014/1/MBI_2014_Frey_etal.pdf

Appendix 1. Supplementary data for vessels and sea-chests sampled, including vessel specifications, voyage history, taxonomic richness (# taxa), and abundance (% cover). Vessel codes (EC = East Coast, WC = West Coast).

Vessel Code	Sampling Location	Vessel Type	Size (gt)	Port Duration (days)	In-service (months)	Origin	Sea-chest Code	# Taxa	% Cover
EC-01	Les Méchins QC	cargo	4529	3.6	24.1	domestic	S1	4	15
							S2	3	20
EC-02	Halifax NS	fishing	2337	11.4	59.1	domestic	S1	5	5
							S2	7	5
EC-03	Halifax NS	cargo	16522	1.8		domestic	S1	1	1
							S2	0	0
EC-04	Halifax NS	ferry	10051	1.0	24.2	domestic	S1	5	10
EC-05	Halifax NS	cargo	8848	3.0	29.6	domestic	S1	0	0
							S2	0	0
EC-06	Halifax NS	fishing	3380	5.4	24.7	domestic	S1	16	40
							S2	9	--
EC-07	Halifax NS	research	4770	3.0	48.5	international	S1	1	0
							S2	14	5
							S3	20	20
EC-08	Halifax NS	cargo	7580	1.6	15.1	international	S1	3	5
EC-09	Halifax NS	cargo	22388	2.2	25.5	international	S1	2	5
							S2	0	0
							S3	0	0
WC-10	Victoria BC	ferry	1476	7.6	36.2	domestic	S1	0	0
							S2	0	0
WC-11	Victoria BC	research	970	3.8	54.2	domestic	S1	0	0
							S2	0	0
							S3	32	50
WC-16	Victoria BC	ferry	1458	1.0	30.7	domestic	S1	44	85
							S2	9	10
WC-17	Victoria BC	ferry	6551	1.0		domestic	S1	0	0
							S2	0	0
							S3	0	0
WC-19	Victoria BC	ferry	9844	9.6	22.4	domestic	S1	0	0
							S2	5	1
							S3	1	0
WC-21	Victoria BC	ferry	297	1.2	24.1	domestic	S1	0	0
WC-22	Victoria BC	research	210	16.4	0.5	domestic	S1	0	0
WC-23	Victoria BC	barge	6092	5.5	36.3	international	S1	21	5
WC-24	Victoria BC	cargo	65314			international	S1	12	--
							S2	8	--
WC-25	Victoria BC	ferry	9304	1.0	12.5	domestic	S1	7	15
							S2	4	1
WC-27	Victoria BC	ferry	18747	1.0	36.5	domestic	S1	0	0
							S2	5	5
							S3	7	30
							S4	7	30
WC-28	Victoria BC	research	4770			international	S1	2	80
WC-29	Victoria BC	research	4770			international	S1	8	80
WC-30	Victoria BC	barge	6092	5.0	48.0	international	S1	14	1
WC-32	Victoria BC	ferry	9844	0.0	3.8	domestic	S1	0	0
							S2	0	0
							S3	0	0
WC-34	Victoria BC	ferry	1476		48.1	domestic	S1	8	1
							S2	0	0
							S3	32	80
WC-35	Victoria BC	ferry	839			domestic	S1	0	0
							S2	0	0
							S3	3	1
WC-36	Victoria BC	fishing	5007			international	S1	8	1
							S2	3	1
WC-37	Victoria BC	cruise	109000	1.0	24.6	international	S1	47	90
							S2	40	90
WC-38	Victoria BC	tug	394	1.2	46.5	domestic	S1	0	0
							S2	0	0
EC-39	Halifax NS	cargo	10085	2.4	24.9	international	S1	38	90
							S2	11	5
WC-40	Victoria BC	cruise	86700			international	S1	23	10
							S2	24	10
WC-42	Victoria BC	ferry	279	1.0	12.3	domestic	S1	1	2
							S2	1	2
WC-43	Victoria BC	ferry	9844	5.0	2.3	international	S1	0	0
							S2	0	0
							S3	0	0

Appendix 1 (continued).

Vessel Code	Sampling Location	Vessel Type	Size (gt)	Port Duration (days)	In-service (months)	Origin	Sea-chest Code	# Taxa	% Cover
WC-44	Victoria BC	research	4770			international	S1	1	60
							S2	14	2
WC-46	Victoria BC	research	1313			domestic	S1	29	30
							S2	21	20
EC-47	Les Méchins QC	research	2130	16.6	44.0	international	S1	26	20
							S2	20	5
EC-48	Les Méchins QC	cargo	4529	4.8	36.3	domestic	S1	21	--
							S2	9	--
							S3	45	40
EC-49	Les Méchins QC	research	139	8.8		domestic	S1	16	45
EC-50	Halifax NS	cargo	23955	2.8	34.4	international	S1	5	5
							S2	2	1
							S3	5	1

Appendix 2. Non-indigenous (including non-established and established), cryptogenic, indigenous, and unknown taxa found in the sea-chests of vessels sampled while in dry dock on the West Coast and East Coast of Canada. # is the number of vessels in which each organism was present.

Classification	Species	West Coast	East Coast	#
Heterokontophyta				
	Chordariales sp.		unknown	1
	Ralfsiaceae sp.		unknown	1
	<i>Sargassum muticum</i> (Yendo) Fensholt, 1955	non-indigenous (established)		1
Rhodophyta				
	<i>Antithamnion</i> sp.		unknown	1
	Ceramiales sp.		unknown	1
	<i>Neosiphonia harveyi</i> (Bailey) Kim, Choi, Guiry and Saunders, 2001		non-indigenous (established)	1
	<i>Polyides</i> sp.		unknown	1
	<i>Polysiphonia fucoides</i> (Hudson) Greville, 1824		indigenous	1
	<i>Ptilota serrata</i> Kützting, 1847		indigenous	1
	<i>Ptilota</i> sp.		unknown	1
Magnoliophyta				
	<i>Zostera cf. marina</i> Linnaeus, 1753	indigenous		1
	<i>Zostera marina</i> Linnaeus, 1753	indigenous	indigenous	3
Foraminifera				
	Foraminifera sp.		unknown	2
Porifera				
	<i>Halichondrida</i> sp.		unknown	1
	Porifera sp.	unknown		1
Cnidaria				
Hydrozoa				
	Antoathecatae sp.		unknown	1
	<i>Bougainvillia muscus</i> (Allman, 1863)		indigenous	1
	<i>Campanularia</i> sp.		unknown	1
	Campanulariidae sp.		unknown	1
	<i>Coryne eximia</i> Allman, 1859	indigenous		3
	<i>Gonothyrea loveni</i> (Allman, 1859)	indigenous		1
	Hydrozoa sp.	unknown	unknown	7
	Hydrozoa sp. 1		unknown	2
	Hydrozoa sp. 2		unknown	2
	Hydrozoa sp. 3		unknown	1
	Hydrozoa sp. 4		unknown	3
	<i>Obelia dichotoma</i> (Linnaeus, 1758)	cryptogenic		11
	<i>Obelia</i> sp.	unknown	unknown	5
	<i>Plumularia lagenifera</i> Allman, 1885	indigenous		1
	<i>Sarsia tubulosa</i> (Sars, 1835)		indigenous	1
	<i>Sertularia</i> sp.		unknown	1
	Sertulariidae sp.		unknown	2
	<i>Tubularia</i> sp.		unknown	3
Anthozoa				
	Actinaria sp.	unknown	unknown	3
	Actiniidae sp.		unknown	1
	<i>Diadumene</i> sp.	unknown		1
	<i>Metridium senile</i> (Linnaeus, 1761)		indigenous	2
	Thenaria sp.		unknown	2
	<i>Urticina crassicornis</i> (Müller, 1776)	indigenous		1
Arthropoda				
Copepoda				
	Calanoida sp.	unknown	unknown	3
	<i>Calanus finmarchicus</i> (Gunnerus, 1770)		indigenous	2

Appendix 2 (continued).

Classification	Species	West Coast	East Coast	#
	<i>Calanus hyperboreus</i> Krøyer, 1838		indigenous	1
	<i>Calanus marshallae</i> Frost, 1974	indigenous		1
	<i>Caligus elongatus</i> Nordmann, 1832		indigenous	1
	<i>Centropages typicus</i> Krøyer, 1849		indigenous	1
	Cyclopoida sp.	unknown		2
	Harpacticoida sp.	unknown	unknown	4
	<i>Metridia pacifica</i> Brodsky, 1950	indigenous		1
	<i>Neocalanus cristatus</i> (Krøyer, 1848)	indigenous		1
	<i>Neocalanus plumchrus</i> (Marukawa, 1921)	indigenous		1
	<i>Temora longicornis</i> (Müller, 1785)		indigenous	1
	Thalestridae sp.		unknown	1
Cirripedia	<i>Amphibalanus amphitrite</i> (Darwin, 1854)	non-indigenous (non-established)	non-indigenous (non-established)	4
	<i>Amphibalanus eburneus</i> (Gould, 1841)		indigenous	3
	<i>Amphibalanus improvisus</i> (Darwin, 1854)	non-indigenous (non-established)	indigenous	7
	<i>Amphibalanus reticulatus</i> (Utinomi, 1967)	non-indigenous (non-established)		2
	Balanomorpha sp.	unknown	unknown	5
	<i>Balanus balanus</i> (Linnaeus, 1758)		indigenous	2
	<i>Balanus crenatus</i> Bruguière, 1789	indigenous	indigenous	22
	<i>Balanus nubilus</i> Darwin, 1854	indigenous		2
	<i>Balanus cf. perforatus</i> (Bruguière, 1789)		non-indigenous (non-established)	1
	<i>Balanus</i> sp.	unknown	unknown	4
	<i>Balanus trigonus</i> Darwin, 1854	non-indigenous (non-established)		2
	<i>Chirona hameri</i> (Ascanius, 1767)		indigenous	1
	<i>Conchoderma virgatum</i> Spengler, 1789	indigenous		1
	<i>Dosima fascicularis</i> (Ellis and Solander, 1786)	indigenous		1
	<i>Hesperibalanus hesperius</i> (Pilsbry, 1916)	indigenous		1
	<i>Lepas anatifera</i> Linnaeus, 1758	indigenous		1
	<i>Lepas</i> sp.	indigenous		1
	<i>Megabalanus coccopoma</i> (Darwin, 1854)	non-indigenous (non-established)	non-indigenous (non-established)	2
	<i>Megabalanus peninsularis</i> (Pilsbry, 1916)	non-indigenous (non-established)		1
	<i>Megabalanus</i> sp.	non-indigenous (non-established)		1
	<i>Megabalanus spinosus</i> (Gmelin, 1791)		non-indigenous (non-established)	1
	<i>Semibalanus balanoides</i> (Linnaeus, 1767)		indigenous	1
	<i>Semibalanus cariosus</i> (Pallas, 1788)	indigenous		1
Amphipoda	<i>Americorophium spinicorne</i> (Stimpson, 1857)	indigenous		2
	<i>Ampelisca declivitatis</i> Mills, 1967		indigenous	1
	Amphipoda sp.		unknown	1
	<i>Aoroides columbiae</i> Walker, 1898	indigenous		1
	<i>Aoroides intermedius</i> Conlan and Bousfield, 1982	indigenous		1
	<i>Aoroides</i> sp.	unknown		1
	<i>Caprella kennerlyi</i> Stimpson, 1864	indigenous		1
	<i>Caprella linearis</i> (Linnaeus, 1767)		indigenous	1
	<i>Caprella mendax</i> Mayer, 1903	indigenous		1
	<i>Caprella mutica</i> Schurin, 1935	non-indigenous (established)	non-indigenous (established)	6
	<i>Caprella</i> sp.	unknown		3
	Caprellidae sp.		unknown	2
	<i>Corophium</i> sp.	unknown	unknown	4
	<i>Crassikorophium bonelli</i> (Milne Edwards, 1830)		indigenous	1
	<i>Desdimelita californica</i> (Alderman, 1936)	indigenous		1
	<i>Desdimelita desdichada</i> (Barnard, 1962)	indigenous		1
	<i>Elasmopus rapax</i> Costa, 1853	non-indigenous (non-established)		1
	<i>Elasmopus</i> sp.	unknown		1
	<i>Eogammarus confervicolus</i> (Stimpson, 1856)	indigenous		2
	<i>Erichthonius</i> sp.	unknown		1
	Gammaridae sp.	unknown	unknown	5
	Gammaridea sp.		unknown	1
	<i>Gammarus mucronatus</i> Say, 1818		indigenous	1
	<i>Gammarus oceanicus</i> Segerstråle, 1947		indigenous	2
	<i>Gammarus setosus</i> Dementieva, 1931		indigenous	1
	<i>Gnathopleustes pugettensis</i> (Dana, 1853)	indigenous		2
	Ischyroceridae sp.	unknown		2
	<i>Ischyrocerus</i> sp.		unknown	1

Appendix 2 (continued).

Classification	Species	West Coast	East Coast	#
		non-indigenous		
	<i>Jassa marmorata</i> Holmes, 1905	(established)	indigenous	3
	<i>Jassa shawi</i> Conlan, 1990	indigenous		1
	<i>Jassa staudei</i> Conlan, 1990	indigenous		3
		non-indigenous		
	<i>Melita nitida</i> Smith, 1873	(established)		1
		non-indigenous		
	<i>Monocorophium acherusicum</i> (Costa, 1853)	(established)		5
		non-indigenous		
	<i>Monocorophium insidiosum</i> (Crawford, 1937)	(established)	indigenous	7
	<i>Monocorophium</i> sp.	unknown		3
	Pleustidae sp.	unknown		1
	Stenothoidae sp.	unknown		2
	<i>Themisto compressa</i> Goës, 1865		indigenous	1
Isopoda	Isopoda sp.	unknown		2
	<i>Gnorimosphaeroma oregonensis</i> (Dana, 1853)	indigenous		3
	Janiridae sp.	unknown		1
	<i>Synidotea nebulosa</i> Benedict, 1897	indigenous		1
Mysida	Mysida sp.		unknown	1
Tanaidacea	Tanaidacea sp.	unknown		1
Euphausiidae	<i>Euphausia pacifica</i> Hansen, 1911	indigenous		1
	<i>Thysanoessa spinifera</i> Holmes, 1900	indigenous		1
Decapoda	Decapoda sp.	unknown		2
Brachyura	Brachyura sp.	unknown		2
	<i>Hemigrapsus nudus</i> (Dana, 1851)	indigenous		1
	<i>Metacarcinus magister</i> (Dana, 1852)	indigenous		1
Caridea	Caridea sp.	unknown		1
	<i>Pandalus cf. danae</i> Stimpson, 1857	indigenous		1
	<i>Pandalus danae</i> Stimpson, 1857	indigenous		1
		non-indigenous		
Pycnogonida	<i>Ammothea hilgendorfi</i> (Böhm, 1879)	(non-established)		1
	<i>Ammothella pacifica</i> Hilton, 1942	non-indigenous		1
		(non-established)		
	<i>Anoplodactylus viridintestinalis</i> (Cole, 1904)	indigenous		3
		non-indigenous		
	<i>Endeis spinosa</i> (Montagu, 1808)	(non-established)		1
			indigenous	
Arachnida	<i>Phoxichilidium femoratum</i> (Rathke, 1799)		indigenous	1
	<i>Bradyagaue</i> sp.	unknown		1
	Halacaridae sp.		unknown	2
Insecta	Chironomidae sp.	unknown		1
	Coleoptera sp.	unknown		1
Nematoda	Nematoda sp.	unknown	unknown	7
Platyhelminthes	Platyhelminthes sp.		unknown	1
Nemertea				
	<i>Emplectonema gracile</i> (Johnston, 1837)	indigenous		3
	Palaeonemertea sp.	unknown		1
Annelida				
Clitellata	Enchytraeidae sp.	unknown		1
Polychaeta	<i>Armandia brevis</i> (Moore, 1906)	indigenous		4
	Autolytinae sp.	unknown		1
	<i>Boccardia columbiana</i> Berkeley, 1927	indigenous		2
	<i>Capitella</i> sp.	cryptogenic	unknown	7
	Capitellidae sp.		unknown	1
	<i>Cauterella pacifica</i> Berkeley, 1929	indigenous		1
	<i>Chone</i> sp.	unknown		1
	<i>Cirratulus cirratus</i> (Müller, 1776)		indigenous	2
	<i>Cirratulus spectabilis</i> (Kinberg, 1866)	indigenous		1
	<i>Dipolydora brachycephala</i> (Hartman, 1936)	indigenous		1
	Dorvilleidae sp.	unknown		1
		non-indigenous		
	<i>Ectopleura crocea</i> (Agassiz, 1862)	(established)		1
	<i>Eulalia quadrioculata</i> Moore, 1906	indigenous		4
	<i>Eulalia viridis</i> (Linnaeus, 1767)		indigenous	3
	<i>Eunoe oerstedii</i> Malmgren, 1866		indigenous	1
	<i>Eusyllis blomstrandii</i> Malmgren, 1867	indigenous		1
	<i>Exogone dwisula</i> Kudenov and Harris in Blake, Hilbig and Scott, 1995	indigenous		2
	<i>Glycinde</i> sp.	unknown		1
	<i>Halosydna brevisetosa</i> Kinberg, 1856	indigenous		2
	<i>Harmothoe extenuata</i> (Grube, 1840)		indigenous	2
	<i>Harmothoe imbricata</i> (Linnaeus, 1767)	cryptogenic	cryptogenic	4

Appendix 2 (continued).

Classification	Species	West Coast	East Coast	#
	Hesionidae sp.	unknown	unknown	2
	<i>Hydroides elegans</i> (Haswell, 1883)	non-indigenous (non-established)		1
	<i>Hydroides norvegicus</i> Gunnerus, 1768		non-indigenous (non-established)	1
	<i>Lepidonotus</i> sp.	unknown		1
	<i>Lepidonotus squamatus</i> (Linnaeus, 1758)	indigenous	cryptogenic	4
	<i>Micropodarke dubia</i> (Hessle, 1925)	indigenous		1
	<i>Myxicola</i> sp.	unknown		1
	<i>Naineris dendritica</i> (Kinberg, 1867)	indigenous		1
	<i>Neanthes</i> sp.		unknown	1
	Nereidae sp.	unknown		3
	<i>Nereimyra aphroditoides</i> (Fabricius, 1780)		indigenous	1
	<i>Nereis</i> cf. <i>pelagica</i> Linnaeus, 1758	indigenous		1
	<i>Nereis</i> cf. <i>vexillosa</i> Grube, 1851	indigenous		1
	<i>Nereis pelagica</i> Linnaeus, 1758	indigenous	indigenous	6
	<i>Nereis</i> sp.	unknown	unknown	7
	<i>Nereis vexillosa</i> Grube, 1851	indigenous		5
	<i>Nerilla digitata</i> Wieser, 1957	indigenous		1
	<i>Odontosyllis</i> sp.	unknown		1
	<i>Oxydromus pugettensis</i> (Johnson, 1901)	indigenous		2
	<i>Paleanotus bellis</i> (Johnson, 1897)	indigenous		5
	<i>Paradialychone bimaculata</i> (Banse and Nicholls, 1968)	indigenous		1
	<i>Phyllochaetoperus</i> sp.	unknown		1
	<i>Phyllodoce maculata</i> (Linnaeus, 1767)		indigenous	3
	<i>Phyllodoce mucosa</i> Örsted, 1843		indigenous	1
	<i>Phyllodoce</i> sp.	unknown		1
	Phyllococidae sp.		unknown	1
	Phyllococinae sp.		unknown	1
	<i>Platynereis bicanaliculata</i> (Baird, 1863)	indigenous		1
	Polychaeta sp.	unknown	unknown	9
	<i>Polycirrus</i> sp.	unknown		1
	<i>Polydora aggregate</i> Blake, 1969		indigenous	1
	<i>Polydora</i> cf. <i>limicola</i> Annenkova, 1934	cryptogenic		1
	<i>Polydora</i> sp.	unknown	unknown	3
	Polynoidae sp.	unknown	unknown	3
	<i>Pomatoleios</i> sp.	non-indigenous (non-established)		1
	<i>Proceraea cornuta</i> (Agassiz, 1884)	indigenous		1
	<i>Proceraea</i> sp.	unknown		2
	<i>Protodorvillea gracilis</i> (Hartman, 1938)	indigenous		1
	<i>Serpula columbiana</i> Johnson, 1901	indigenous		1
	Serpulidae sp.	unknown	unknown	3
	<i>Sphaerosyllis californiensis</i> Hartman, 1966	indigenous		1
	<i>Spio</i> sp.		unknown	1
	Spirorbinae sp.	unknown		2
	Syllidae sp.	unknown		1
	<i>Syllis</i> cf. <i>variegata</i> Grube, 1860	non-indigenous (non-established)		1
	<i>Syllis hyalina</i> Grube, 1860	indigenous		1
	<i>Syllis</i> sp.	unknown		3
	<i>Typosyllis pulchra</i> (Berkeley and Berkeley, 1938)	indigenous		2
Mollusca				
Bivalvia	Arcidae sp.		unknown	1
	<i>Anomia simplex</i> d'Orbigny, 1853		indigenous	3
	Bivalvia sp.	unknown		1
	<i>Brachidontes</i> sp.	non-indigenous (non-established)		1
	<i>Chama</i> sp.	non-indigenous (non-established)	non-indigenous (non-established)	2
	Chamidae sp.		non-indigenous (non-established)	1
	<i>Crassostrea gigas</i> (Thunberg, 1793)	non-indigenous (established)		2
	<i>Crassostrea</i> sp.	non-indigenous (non-established)		1
	<i>Crassostrea virginica</i> (Gmelin, 1791)		indigenous	1
	<i>Hiatella arctica</i> (Linnaeus, 1767)	indigenous	indigenous	18
	<i>Hiatella</i> sp.		unknown	1
	<i>Isognomon</i> sp.	non-indigenous (non-established)		2
	<i>Kellia suborbicularis</i> (Montagu, 1803)	indigenous		1
	Leptonidae sp.		unknown	1

Appendix 2 (continued).

Classification	Species	West Coast	East Coast	#
	Limidae sp.		unknown	1
	<i>Lithophaga</i> sp.	unknown		1
	<i>Modiolus modiolus</i> (Linnaeus, 1758)	indigenous		1
	Mytilidae sp.	unknown	unknown	3
	<i>Mytilus edulis</i> Linnaeus, 1758		indigenous	7
	<i>Mytilus</i> sp.	unknown	unknown	19
	<i>Nutricola tantilla</i> (Gould, 1853)	indigenous		1
	Ostreidae sp.	unknown		3
	<i>Parvilucina multilineata</i> (Tuomey and Holmes, 1857)		indigenous	1
	Pinnidae sp.	non-indigenous (non-established)		1
	<i>Pteria</i> sp.	non-indigenous (non-established)		1
	<i>Pteria sterna</i> (Gould, 1851)	non-indigenous (non-established)		1
	<i>Semele</i> sp.		unknown	1
	<i>Septifer bilocularis</i> (Linnaeus, 1758)		non-indigenous (non-established)	1
	<i>Septifer</i> sp.	unknown		1
	<i>Sphenia</i> sp.	unknown		1
	Tellinidae sp.	unknown		1
Gastropoda	<i>Acanthodoris pilosa</i> (Abildgaard in Müller, 1789)		indigenous	1
	<i>Alvania compacta</i> (Carpenter, 1864)	indigenous		1
	<i>Alvania</i> sp.		unknown	1
	<i>Architectonica nobilis</i> Röding, 1798		non-indigenous (non-established)	1
	<i>Bostrycapulus aculeatus</i> (Gmelin, 1791)	non-indigenous (non-established)		1
	Buccinidae sp.		unknown	1
	<i>Calliostoma</i> sp.		unknown	1
	Fasciolaridae sp.		unknown	1
	Gastropoda sp.		unknown	2
	<i>Onchidoris bilamellata</i> (Linnaeus, 1767)	indigenous		1
	<i>Nucella</i> sp.		unknown	1
	<i>Polinices</i> sp.		unknown	1
	<i>Pseudomalaxis nobilis</i> Verrill, 1885		non-indigenous (non-established)	1
	<i>Pugilina morio</i> (Linnaeus, 1758)	non-indigenous (non-established)		1
	<i>Rissoella</i> sp.	unknown		1
	<i>Zafra troglodytes</i> (Souvierie in Souvierie and Montrouzier, 1866)		non-indigenous (non-established)	1
Ectoprocta	Bryozoa sp.	unknown		2
Cheilostomata	<i>Bugula neritina</i> (Linnaeus, 1758)	non-indigenous (non-established)	non-indigenous (non-established)	2
	<i>Bugula</i> sp.	unknown		1
	<i>Bugula stolonifera</i> Ryland, 1960	non-indigenous (non-established)		1
	<i>Bugula turrita</i> (Desor, 1848)		indigenous	1
	<i>Conopeum</i> sp.		unknown	1
	<i>Cradosrupocellaria reptans</i> (Linnaeus, 1758)		non-indigenous (non-established)	1
	<i>Cribrilina punctata</i> (Hassall, 1841)		indigenous	1
	<i>Cryptosula pallasiana</i> (Moll, 1803)		indigenous	2
	<i>Dendrobeatia lichenoides</i> (Robertson, 1900)	indigenous		1
	<i>Electra monostachys</i> (Busk, 1854)		indigenous	2
	<i>Electra pilosa</i> (Linnaeus, 1767)		cryptogenic	4
	<i>Lagenicella</i> sp.	unknown		1
	<i>Membranipora</i> cf. <i>membranacea</i> (Linnaeus, 1767)	indigenous		1
	<i>Membranipora membranacea</i> (Linnaeus, 1767)	indigenous		1
	<i>Membranipora</i> sp.	unknown	unknown	2
	<i>Schizoporella errata</i> (Waters, 1878)		indigenous	1
	<i>Schizoporella japonica</i> Ortmann, 1890	non-indigenous (established)		2
	<i>Tegella armifera</i> (Hincks, 1880)	indigenous		1
	<i>Tegella robertsonae</i> O'Donoghue and O'Donoghue, 1926	indigenous		1
	<i>Tegella</i> sp.	unknown		1
	<i>Tricellaria circumternata</i> Soule, Soule and Chaney, 1995	indigenous		1
Ctenostomata	<i>Alcyonidioides mytili</i> (Dalyell, 1848)		indigenous	1
	<i>Alcyonidium gelatinosum</i> (Linnaeus, 1761)		indigenous	1
	<i>Alcyonidium</i> sp. 1	unknown		3
	<i>Alcyonidium</i> sp. 2	unknown		2

Appendix 2 (continued).

Classification	Species	West Coast	East Coast	#
	<i>Alcyonidium</i> sp. 3	unknown		1
	<i>Bowerbankia gracilis</i> Leidy, 1855	cryptogenic	indigenous	4
Cyclostomata	<i>Lichenopora</i> sp.	unknown		8
Entoprocta				
	<i>Barentsia benedeni</i> (Foettinger, 1887)		non-indigenous (non-established)	1
Echinodermata				
Echinoidea	<i>Strongylocentrotus droebachiensis</i> (Müller, 1776)	indigenous		1
Asteroida	<i>Asterias rubens</i> Linnaeus, 1758		indigenous	1
	Asteriidae sp.		unknown	1
	Asterioidea sp.		unknown	1
	<i>Pisaster ochraceus</i> (Brandt, 1835)	indigenous		1
	<i>Pisaster</i> sp.	indigenous		1
Chordata				
Ascidiacea	<i>Ciona intestinalis</i> (Linnaeus, 1767)		cryptogenic	1
	<i>Ciona</i> sp.	non-indigenous (non-established)		2
	<i>Corella inflata</i> Huntsman, 1912	indigenous		1
Undetermined				
	eggs	unknown		1
	larvae	unknown		1