1	ELECTRONIC SUPPLEMENTARY MATERIALS						
2							
3	Assessing introduction risk using species' rank-abundance distributions						
4							
5	Farrah T. Chan <sup>1*</sup> , Johanna Bradie <sup>2</sup> , Elizabeta Briski <sup>3</sup> , Sarah A. Bailey <sup>4</sup> , Nathalie Simard <sup>5</sup> , and						
6	Hugh J. MacIsaac <sup>1</sup>						
7							
8	<sup>1</sup> Great Lakes Institute for Environmental Research, University of Windsor, Windsor, Ontario,						
9	N9B 3P4, Canada						
10	<sup>2</sup> Department of Biology, McGill University, Montreal, Québec, H3A 1B1, Canada						
11	<sup>3</sup> GEOMAR, Helmholtz Centre for Ocean Research Kiel, Düsternbrooker Weg 20, D-24105 Kiel,						
12	Germany						
13	<sup>4</sup> Great Lakes Laboratory for Fisheries and Aquatic Sciences, Fisheries and Oceans Canada,						
14	Burlington, Ontario, L7R 4A6, Canada						
15	<sup>5</sup> Maurice Lamontagne Institute, Fisheries and Oceans Canada, Mont-Joli, Québec, G5H 3Z4,						
16	Canada						
17							
18	Number of tables: 1						
19	Number of figures: 8						

## 20 Supplementary Table

- 21 Table S1. Results of linear mixed-effects models testing the fixed effects of time, quadratic term of time (time<sup>2</sup>), BWE status, and the
- 22 interaction term between time and BWE status (time × BWE status) for colonization pressure and total propagule pressure
- 23 associated with invertebrate and diatom assemblages in control and exchanged tanks during trans-Atlantic and trans-Pacific
- 24 voyages after BWE. Time was defined as the number of days since BWE. Time × BWE status was not retained in any model.

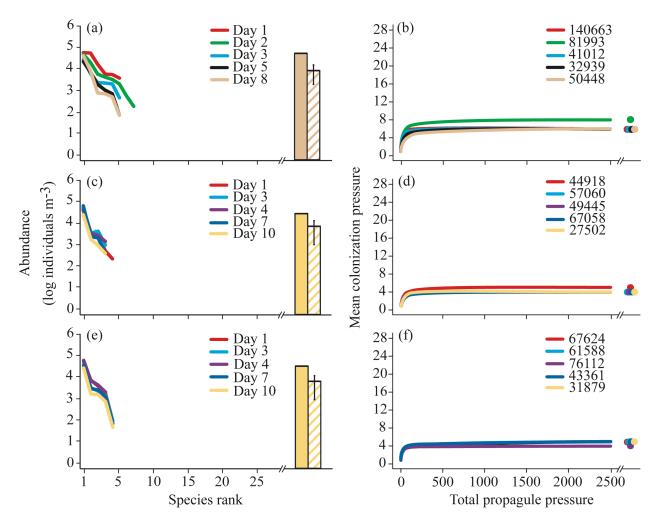
	invertebrates				diatoms			
	d.f.	β	t	Р	d.f.	β	t	Р
colonization pressure (Atlantic)								
time	36	-0.2	-2.1	0.04	-	-	-	-
time <sup>2</sup>	-	-	-	-	-	-	-	-
BWE status	36	1.9	5.2	< 0.01	-	-	-	-
total propagule pressure (Atlantic)								
time	36	-2083.5	-2.8	< 0.01	30	-2061.1	-2.0	0.05
time <sup>2</sup>	-	-	-	-	-	-	-	-
BWE status	36	-25360.5	-7.3	< 0.01	30	-21832.5	-2.2	0.03
colonization pressure (Pacific)								
time	20	1.3	5.0	< 0.01	14	-0.3	-7.2	< 0.01
time <sup>2</sup>	-	-	-	-	-	-	-	-
BWE status	20	2.1	3.4	< 0.01	-	-	-	-
total propagule pressure (Pacific)								
time	-	-	-	-	16	-5485.3	-2.7	0.02
time <sup>2</sup>	-	-	-	-	16	683.3	3.1	< 0.01
BWE status	-	-	-	-	-	-	-	-

Chan et al. 3

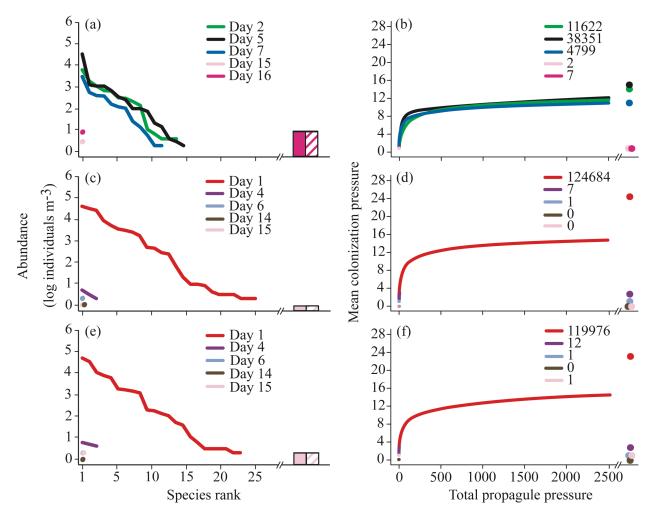
## 26 Supplementary Figure Legends

Fig. S1. Rank-abundance distributions (left panels) and corresponding colonization pressure:total 27 28 propagule pressure curves (CP:total PP; right panels) highlighting changes in the structure 29 of invertebrate assemblages in unexchanged ballast water of ships during trans-Atlantic 30 voyages. The five lines on each graph depict rank-abundance distributions of CP:total PP 31 relationships on five different days. Colour scheme for different days of the voyages 32 applies to the entire figure. Also shown in each left panel are total PP (solid bar) and mean 33 PP (± S.E.M; hatched bar) recorded at the last time point. Numeric values and circles in 34 each right panel indicate observed total PP and estimated asymptotic species richness (Chao-1). Circles are offset when values overlap. 35 36 Fig. S2. Rank-abundance distributions (left panels) and corresponding CP:total PP curves (right 37 panels) showing changes in the structure of invertebrate assemblages in unexchanged 38 ballast water of ships during trans-Pacific voyages. Descriptions of symbols used are given 39 in figure S1. Fig. S3. Rank-abundance distributions (left panels) and corresponding CP:total PP curves (right 40 41 panels) illustrating changes in the structure of diatom assemblages in unexchanged ballast 42 water of ships during trans-Atlantic (a-f) and trans-Pacific (g-h) voyages. Descriptions of 43 symbols used are given in figure S1. 44 Fig. S4. Rank-abundance distributions (left panels) and corresponding CP:total PP curves (right 45 panels) demonstrating changes in the structure of dinoflagellate assemblages in 46 unexchanged ballast water of ships during trans-Atlantic voyages. Descriptions of symbols used are given in figure S1. 47

48	Fig. S5. Rank-abundance distributions (left panels) and corresponding CP:total PP curves (right
49	panels) highlighting changes in the structure of invertebrate assemblages in ships' ballast
50	water before and after ballast water exchange during trans-Atlantic voyages. Descriptions of
51	symbols used are given in figure S1.
52	Fig. S6. Rank-abundance distributions (left panels) and corresponding CP:total PP curves (right
53	panels) illustrating changes in the structure of invertebrate assemblages in ships' ballast
54	water before and after ballast water exchange during trans-Pacific voyages. Descriptions of
55	symbols used are given in figure S1.
56	Fig. S7. Rank-abundance distributions (left panels) and corresponding CP:total PP curves (right
57	panels) demonstrating changes in the structure of diatom assemblages in ships' ballast water
58	before and after ballast water exchange trans-Atlantic (a-d) and trans-Pacific (e-f) voyages.
59	Descriptions of symbols used are given in figure S1.
60	Fig. S8. Rank-abundance distributions (left panels) and corresponding CP:total PP curves (right
61	panels) showing changes in the structure of diatom assemblages in ships' ballast water
62	before and after ballast water exchange trans-Atlantic voyages. Descriptions of symbols
63	used are given in figure S1.

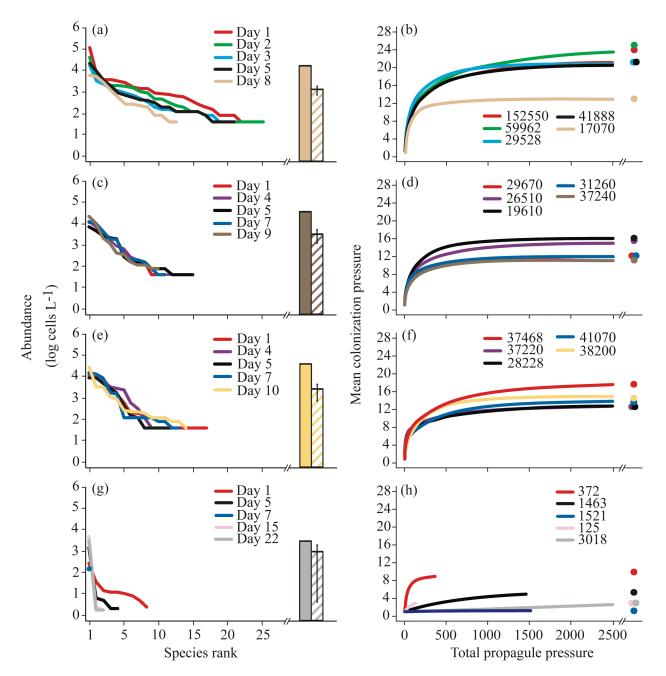


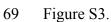
65 Figure S1.

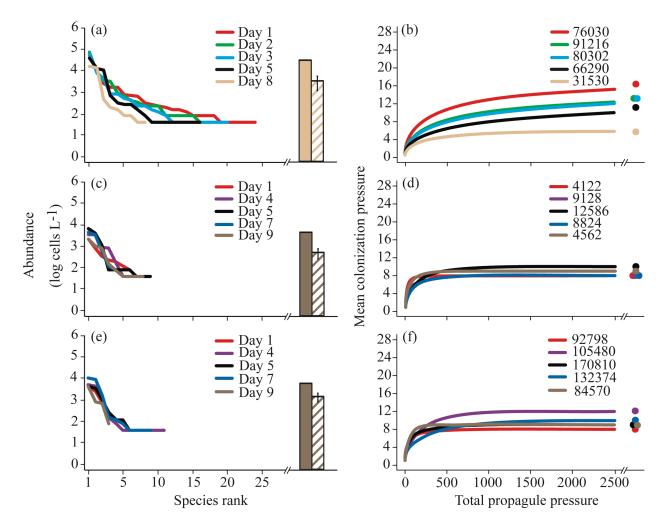


66

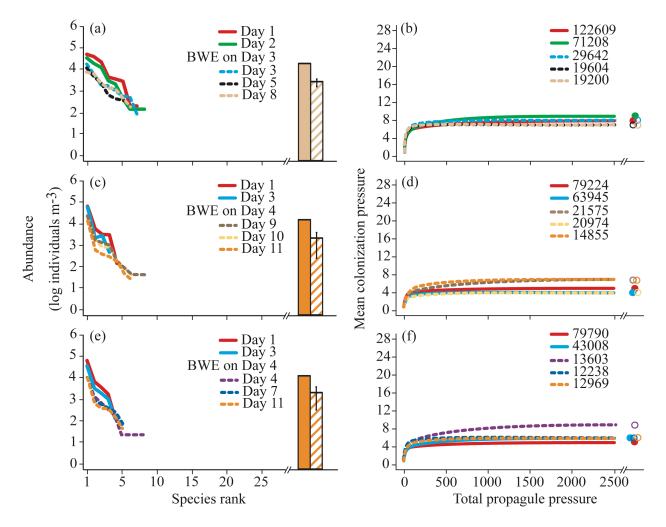
67 Figure S2.



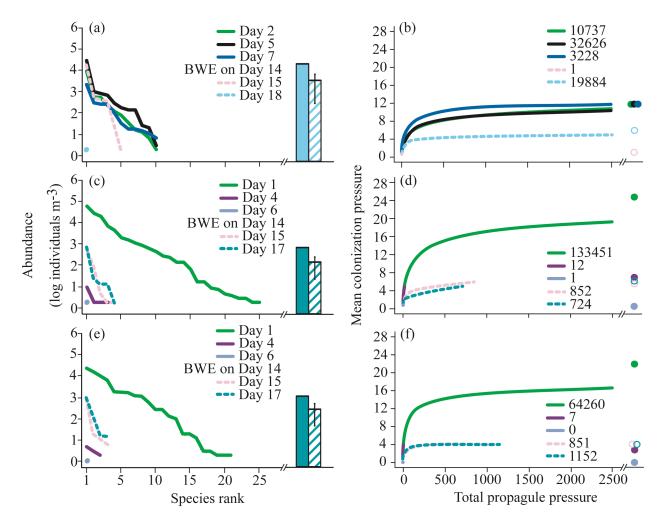




71 Figure S4.

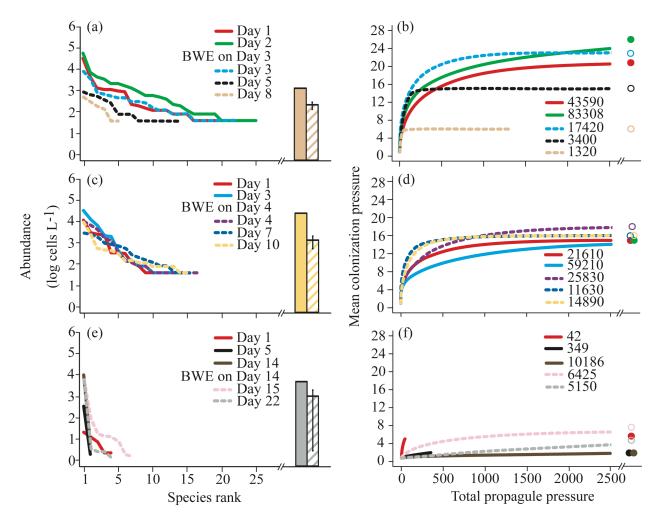


73 Figure S5.

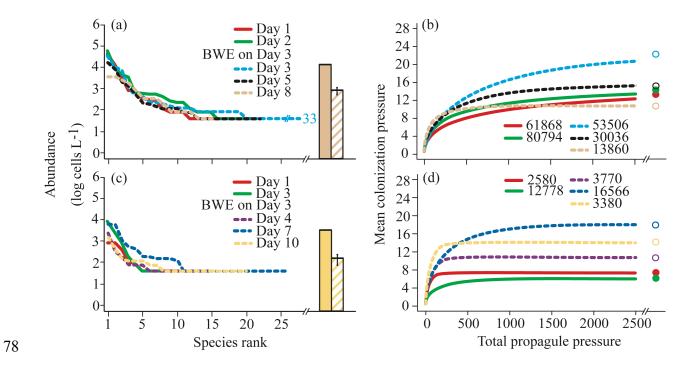


74

75 Figure S6.



77 Figure S7.



79 Figure S8.