

Supplementary Table S2. Median egg and fish biomass difference (Δ ; *twB*) and percentage change (*PC*; %) in individual Large Marine Ecosystems summed over the three size spectrum groups in model year 150 in the no-harvest simulation.

Large Marine Ecosystem	Egg Biomass Mean $_{\Delta}$ (SD)	Egg Biomass Mean $_{PC}$ (SD)	Fish Biomass Mean $_{\Delta}$ (SD)	Fish Biomass Mean $_{PC}$ (SD)
Agulhas Current	-1e-07 (2.5e-06)	-3.47 (15.75)	0 (0.17)	-1.12 (5.38)
Aleutian Islands	3e-07 (7e-07)	3.15 (5.74)	0.04 (0.09)	0.97 (1.71)
Antarctica	0e+00 (0e+00)	0.65 (145.79)	0 (0.01)	0 (12.87)
Arabian Sea	0e+00 (1.4e-06)	-1.1 (5.24)	0 (0.05)	-0.33 (1.71)
Baltic Sea	0e+00 (2.4e-06)	-1.14 (5.58)	-0.12 (0.49)	-0.42 (2.36)
Barents Sea	0e+00 (4e-07)	-1.13 (17.34)	-0.01 (0.13)	-0.75 (11.99)
Bay of Bengal	-1e-07 (1.7e-06)	-1.86 (7.83)	0 (0.04)	-0.53 (2.26)
Beaufort Sea	0e+00 (0e+00)	-1.74 (12.31)	0 (0.03)	-0.93 (7.48)
Benguela Current	6e-07 (1.27e-05)	4.66 (14.23)	0.03 (0.72)	1.1 (3.34)
California Current	0e+00 (8e-07)	-0.6 (3.32)	0 (0.06)	-0.21 (0.91)
Canadian Eastern Arctic - West Greenland	0e+00 (2e-07)	0.07 (30.53)	0 (0.08)	0.16 (17.43)
Canary Current	0e+00 (6.1e-06)	0.15 (8.23)	0 (0.26)	0.04 (1.97)
Caribbean Sea	0e+00 (2.4e-06)	-1.42 (28.02)	0 (0.07)	-0.41 (4.31)
Celtic-Biscay Shelf	0e+00 (2.1e-06)	-0.67 (3.79)	-0.01 (0.16)	-0.2 (1.31)
East Bering Sea	0e+00 (9e-07)	0.47 (5.87)	0 (0.13)	0.11 (2.1)
East Brazil Shelf	-1e-07 (2.4e-06)	-4.02 (10.8)	0 (0.09)	-1.03 (2.98)
East Central Australian Shelf	-1e-07 (1e-06)	-2.47 (14.43)	0 (0.03)	-1 (4.39)
East China Sea	-3e-07 (5.8e-06)	-3.93 (13.13)	-0.02 (0.24)	-1.2 (3.61)
East Siberian Sea	0e+00 (1e-07)	1.65 (9.81)	0 (0.05)	1.14 (6.26)
Faroe Plateau	0e+00 (2e-07)	-0.25 (5.73)	0 (0.04)	-0.03 (2.63)
Greenland Sea	0e+00 (1e-07)	-0.76 (18.41)	0 (0.04)	-0.46 (11.07)
Guinea Current	-1e-07 (3.8e-06)	-1.03 (5.33)	0 (0.13)	-0.41 (1.64)
Gulf of Alaska	0e+00 (1.5e-06)	0.03 (10.28)	0 (0.19)	-0.14 (3.58)
Gulf of California	-4e-07 (5e-07)	-3.82 (3.21)	-0.03 (0.02)	-1.25 (1.04)
Gulf of Mexico	0e+00 (2.1e-06)	-0.81 (11.2)	0 (0.06)	-0.21 (3.45)
Gulf of Thailand	0e+00 (2.1e-06)	1.05 (15.52)	0 (0.04)	0.29 (2.87)
Hudson Bay Complex	0e+00 (6e-07)	-3.36 (37.01)	-0.01 (0.2)	-1.61 (16.12)
Humboldt Current	0e+00 (2.4e-06)	-1.04 (6.46)	0 (0.13)	-0.24 (2.15)
Iberian Coastal	0e+00 (2e-07)	0.02 (1.72)	0 (0.01)	0.01 (0.56)

Iceland Shelf and Sea	0e+00 (2e-07)	-1.04 (5.54)	-0.01 (0.05)	-0.52 (2.68)
Indonesian Sea	0e+00 (3.3e-06)	-1.61 (9.81)	0 (0.09)	-0.71 (3.32)
Insular Pacific-Hawaiian	0e+00 (1e-07)	0.36 (2.36)	0 (0)	0.06 (0.61)
Kara Sea	0e+00 (1e-07)	-3.31 (11.96)	-0.01 (0.06)	-2.3 (7.9)
Kuroshio Current	0e+00 (1.6e-06)	1.29 (17.57)	0 (0.09)	0.02 (5.44)
Labrador - Newfoundland	-1e-07 (1.2e-06)	-2.45 (13.72)	-0.04 (0.24)	-0.61 (5.01)
Laptev Sea	0e+00 (0e+00)	-1.28 (11.5)	0 (0.03)	-0.68 (6.43)
Mediterranean Sea	0e+00 (1e-06)	-1.16 (4.31)	0 (0.03)	-0.35 (1.15)
New Zealand Shelf	0e+00 (4e-07)	-0.75 (4.55)	0 (0.03)	-0.23 (1.44)
North Australian Shelf	0e+00 (9e-07)	-0.77 (3.91)	0 (0.02)	-0.28 (1.09)
North Brazil Shelf	-1e-06 (4.41e-05)	-11.2 (17.7)	-0.05 (1.19)	-3.63 (7.79)
North Sea	0e+00 (4.3e-06)	-0.41 (7.47)	-0.01 (0.35)	-0.26 (2.69)
Northeast Australian Shelf	0e+00 (1.2e-06)	0.75 (19.27)	0 (0.03)	0.15 (3.35)
Northeast U.S. Continental Shelf	0e+00 (1.62e-05)	-1.87 (6.82)	-0.11 (0.61)	-0.66 (2.15)
Northern Bering - Chukchi Seas	0e+00 (5e-07)	-0.34 (8.37)	0 (0.17)	-0.14 (4.42)
Northwest Australian Shelf	-1e-07 (5e-07)	-2.08 (3.23)	0 (0.01)	-0.6 (0.93)
Norwegian Sea	0e+00 (3e-07)	-1.9 (9.02)	-0.01 (0.07)	-0.79 (4.99)
Oyashio Current	-5e-07 (1.5e-06)	-3.6 (9.67)	-0.07 (0.23)	-1.18 (3.04)
Pacific Central-American Coastal	0e+00 (1.8e-06)	-1.73 (6.6)	0 (0.07)	-0.45 (2.22)
Patagonian Shelf	0e+00 (4.5e-06)	-0.12 (9.41)	0 (0.27)	-0.04 (2.99)
Red Sea	-1e-07 (1.5e-06)	-2.68 (2.31)	0 (0.04)	-0.78 (0.69)
Scotian Shelf	0e+00 (3.2e-06)	0.24 (7.01)	0 (0.45)	0.07 (1.89)
Sea of Japan	-1e-07 (1.1e-06)	-2.56 (4.59)	-0.04 (0.09)	-0.83 (1.45)
Sea of Okhotsk	0e+00 (1.5e-06)	0.04 (8.34)	0 (0.31)	0.05 (3.04)
Somali Coastal Current	-5e-07 (1.5e-06)	-7.71 (11.95)	-0.02 (0.05)	-2.57 (4.1)
South Brazil Shelf	-5e-07 (2.52e-05)	-8.84 (8.24)	-0.02 (1.21)	-2.89 (3.28)
South China Sea	-1e-07 (4.7e-06)	-2.78 (11.47)	0 (0.1)	-0.96 (3.78)
South West Australian Shelf	0e+00 (3e-07)	-1.04 (4.21)	0 (0.01)	-0.28 (1.19)
Southeast Australian Shelf	0e+00 (6e-07)	-0.47 (6.66)	0 (0.03)	-0.19 (2.23)
Southeast U.S. Continental Shelf	0e+00 (4.1e-06)	2.31 (30.17)	0 (0.11)	0.94 (7.64)
Sulu-Celebes Sea	-3e-07 (2.6e-06)	-9.66 (24.07)	-0.01 (0.07)	-2.88 (5.06)
West Bering Sea	-1e-07 (1.1e-06)	-2.5 (8.01)	-0.03 (0.24)	-0.98 (3.3)
West Central Australian Shelf	0e+00 (4e-07)	-0.81 (5.63)	0 (0.01)	-0.28 (1.41)

Yellow Sea	0e+00 (6.3e-06)	0.22 (6.15)	0 (0.39)	0.02 (1.7)
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Supplementary Table S3. Median harvest ($twB\ m^{-2}\ yr^{-1}$) and fish biomass (twB) difference (Δ) and percentage change (PC ; %) in individual Large Marine Ecosystems summed over the three size spectrum groups in 2039 in the open-access simulations.

Large Marine Ecosystem	Harvest Mean Δ (SD)	Harvest Mean $_{PC}$ (SD)	Fish Biomass Mean Δ (SD)	Fish Biomass Mean $_{PC}$ (SD)
Agulhas Current	3e-13 (3.3e-12)	1.93 (232.15)	4e-13 (3.6e-12)	1.41 (33.3)
Aleutian Islands	1.3e-12 (4.9e-12)	10.52 (355.87)	5e-12 (1.86e-11)	11.06 (68.63)
Antarctica	0e+00 (0e+00)	0 (60.21)	0e+00 (8e-13)	0 (28.93)
Arabian Sea	0e+00 (6e-13)	1.67 (26.01)	0e+00 (6e-13)	-0.01 (5.11)
Baltic Sea	0e+00 (2e-13)	0.25 (27.22)	0e+00 (3e-13)	-0.37 (2.26)
Barents Sea	0e+00 (3e-13)	-0.35 (113.19)	-1e-13 (2e-12)	-0.41 (13.67)
Bay of Bengal	6e-13 (1.2e-12)	5.36 (145.77)	6e-13 (1.5e-12)	3.4 (22.51)
Beaufort Sea	0e+00 (0e+00)	-1.12 (70.24)	-2e-13 (6e-13)	-0.99 (13.39)
Benguela Current	0e+00 (3.3e-12)	-1.74 (132.19)	0e+00 (7.1e-12)	-0.77 (49.82)
California Current	-1e-13 (2.9e-12)	-0.63 (214.17)	-2e-13 (7.6e-12)	-0.61 (33.65)
Canadian Eastern Arctic - West Greenland	0e+00 (3e-13)	-0.79 (67.92)	-1e-13 (2e-12)	-0.52 (10.76)
Canary Current	0e+00 (1e-12)	0.28 (201.23)	0e+00 (2.3e-12)	0.18 (37.29)
Caribbean Sea	1e-13 (2.5e-12)	0.67 (163.6)	2e-13 (2.1e-12)	1.14 (18.45)
Celtic-Biscay Shelf	0e+00 (3.5e-12)	0.87 (249.9)	3e-13 (8.8e-12)	1.29 (33.72)
East Bering Sea	0e+00 (2.2e-12)	-0.12 (191.28)	0e+00 (7.6e-12)	0 (35.74)
East Brazil Shelf	-4e-13 (2.4e-12)	-2.02 (125.67)	-3e-13 (2.1e-12)	-1.12 (15.99)
East Central Australian Shelf	3e-13 (2.3e-12)	1.66 (127.55)	1e-13 (2.7e-12)	0.28 (22.55)
East China Sea	1e-13 (5.6e-12)	18.45 (348.31)	5e-13 (7.5e-12)	7.45 (62.37)
East Siberian Sea	0e+00 (0e+00)	-0.28 (5.76)	0e+00 (4e-13)	-0.08 (1.94)
Faroe Plateau	0e+00 (2e-13)	-0.52 (3.58)	-1e-13 (9e-13)	-0.34 (2.64)
Greenland Sea	0e+00 (2e-13)	-1.78 (5.97)	-3e-13 (1.4e-12)	-1.29 (4.67)
Guinea Current	5e-13 (1.1e-12)	14.11 (234.1)	6e-13 (2.1e-12)	5.08 (38.57)
Gulf of Alaska	0e+00 (4.2e-12)	0.67 (276.32)	4e-13 (1.19e-11)	1 (51.61)
Gulf of California	0e+00 (7e-13)	-0.98 (15.75)	0e+00 (1.4e-12)	-0.55 (9.16)
Gulf of Mexico	4e-13 (1.9e-12)	3.13 (121.85)	4e-13 (1.7e-12)	1.77 (12.36)
Gulf of Thailand	4e-13 (1.7e-12)	19.01 (121.02)	2e-13 (1.6e-12)	1.79 (12.83)
Hudson Bay Complex	0e+00 (6e-13)	-1.75 (79.12)	-3e-13 (3.9e-12)	-1.19 (14.91)

Humboldt Current	0e+00 (2.7e-12)	1.69 (205.59)	2e-13 (5.9e-12)	1.28 (39.26)
Iberian Coastal	0e+00 (1.2e-12)	6.88 (54.08)	3e-13 (3.7e-12)	2.36 (13.28)
Iceland Shelf and Sea	0e+00 (2e-13)	-1.57 (3.93)	-3e-13 (1e-12)	-1.38 (3.23)
Indonesian Sea	3e-13 (3.6e-12)	4.21 (201.68)	3e-13 (4.6e-12)	2.07 (30.5)
Insular Pacific-Hawaiian	0e+00 (3e-13)	0.11 (2.01)	0e+00 (3e-13)	0.06 (1.05)
Kara Sea	0e+00 (1e-13)	-1.34 (5.19)	-2e-13 (7e-13)	-0.97 (3.65)
Kuroshio Current	1e-12 (3e-12)	11.86 (241.02)	1e-12 (5e-12)	4.94 (35.4)
Labrador - Newfoundland	0e+00 (2.9e-12)	-2.36 (246.7)	-1e-13 (1.01e-11)	-1.11 (37.26)
Laptev Sea	0e+00 (0e+00)	-0.46 (7.85)	-1e-13 (7e-13)	-0.29 (5.52)
Mediterranean Sea	0e+00 (1.4e-12)	0.08 (52.53)	0e+00 (3.3e-12)	-0.05 (17.63)
New Zealand Shelf	0e+00 (3.3e-12)	0.16 (149.12)	-2e-13 (7.1e-12)	-0.74 (26.2)
North Australian Shelf	0e+00 (1e-12)	3.41 (133.16)	0e+00 (8e-13)	0.22 (9.91)
North Brazil Shelf	1.2e-12 (6.2e-12)	76.93 (393.92)	1.3e-12 (5.6e-12)	15.67 (62.9)
North Sea	0e+00 (3.5e-12)	2.43 (265.91)	1e-13 (1.08e-11)	1 (51.42)
Northeast Australian Shelf	0e+00 (1.7e-12)	1 (137.56)	1e-13 (1.5e-12)	0.51 (12.3)
Northeast U.S. Continental Shelf	0e+00 (2e-13)	-0.15 (385.44)	2e-13 (3.2e-12)	2.16 (68.06)
Northern Bering - Chukchi Seas	0e+00 (2e-13)	-0.59 (12.34)	-1e-13 (1.6e-12)	-0.41 (5.09)
Northwest Australian Shelf	0e+00 (1.8e-12)	0.22 (234.78)	0e+00 (1.5e-12)	0.15 (15.86)
Norwegian Sea	0e+00 (3e-13)	-0.97 (6.83)	-2e-13 (1.3e-12)	-0.9 (4.59)
Oyashio Current	0e+00 (4.2e-12)	0.53 (330.01)	0e+00 (1.43e-11)	-0.25 (56.03)
Pacific Central-American Coastal	0e+00 (2.1e-12)	0.75 (111.67)	1e-13 (3.1e-12)	0.59 (24.12)
Patagonian Shelf	0e+00 (2.4e-12)	-1.65 (225.59)	-1e-13 (6.1e-12)	-0.75 (45.93)
Red Sea	0e+00 (2e-13)	0.58 (12.4)	1e-13 (5e-13)	0.5 (5.3)
Scotian Shelf	0e+00 (1e-13)	-2.74 (56.19)	1e-13 (7e-13)	0.9 (9.59)
Sea of Japan	0e+00 (6e-13)	-1.61 (67.43)	-1e-13 (3.4e-12)	-0.75 (25.09)
Sea of Okhotsk	1e-13 (1.3e-12)	1.55 (151.46)	3e-13 (6e-12)	0.88 (31)
Somali Coastal Current	6e-13 (3.1e-12)	37.72 (122.56)	6e-13 (3.3e-12)	5.67 (26.31)
South Brazil Shelf	0e+00 (3.1e-12)	-0.01 (389.63)	-4e-13 (4.3e-12)	-1.33 (53.47)
South China Sea	2e-13 (4e-12)	1.86 (218.47)	3e-13 (3.9e-12)	1.63 (32.31)
South West Australian Shelf	-1e-13 (1.5e-12)	-0.71 (61.17)	-3e-13 (3e-12)	-0.72 (14.23)
Southeast Australian Shelf	0e+00 (3.3e-12)	0.22 (125.01)	-5e-13 (5.3e-12)	-1.2 (16.88)
Southeast U.S. Continental Shelf	1e-13 (3.6e-12)	2.55 (308.37)	-1e-13 (3.9e-12)	-0.59 (36.6)
Sulu-Celebes Sea	1.2e-12 (3.8e-12)	7.45 (217.92)	1e-12 (3.3e-12)	4.63 (26.62)

West Bering Sea	-1e-13 (1.3e-12)	-1.1 (152.79)	-2e-13 (6.1e-12)	-0.71 (32.62)
West Central Australian Shelf	3e-13 (9e-13)	1.82 (90.12)	4e-13 (1.2e-12)	1.35 (12.78)
Yellow Sea	0e+00 (1e-13)	0 (239.62)	1e-13 (2.1e-12)	1.05 (65.53)