

Annual and perennial life history strategies of *Zostera marina* populations under different light regimes

Seung Hyeon Kim¹, Jong-Hyeob Kim¹, Sang Rul Park², Kun-Seop Lee^{1,*}

¹Department of Biological Sciences, Pusan National University, Pusan 609-735, South Korea

²School of Marine Biomedical Sciences, Jeju National University, Jeju 690-756, South Korea

*Corresponding author: klee@pusan.ac.kr

Marine Ecology Progress Series 509: 1–14 (2014)

Supplement. Life tables of 2 *Zostera marina* populations at different water depths (shallow and deep) in Jindong Bay, Korea

Table S1. *Zostera marina*. Monthly recruitment and mortality of vegetative and reproductive shoots and seedlings at the shallow population in Jindong Bay on the southern coast of Korea from January 2008 to December 2009. Rates of monthly recruitment and mortality were estimated as the number of shoots recruited or dead per unit area (m^{-2}) each month

Duration	No. of vegetative shoots (m^{-2})			No. of reproductive shoots (m^{-2})			No. of seedlings (m^{-2})		
	Density	Recruitment	Mortality	Density	Development	Mortality	Density	Recruitment	Mortality
Dec. (2007)	$96.0 \pm 10.5^{\text{a}}$			0.0 ± 0.0			$487.0 \pm 35.7^{\text{a}}$		
Jan. (2008)	104.0 ± 7.1	29.0 ± 3.0	21.0 ± 3.8	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	413.0 ± 26.7	55.0 ± 2.5	129.0 ± 21.6
Feb.	112.0 ± 7.1	36.0 ± 4.6	28.0 ± 5.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	268.0 ± 24.4	27.0 ± 1.9	172.0 ± 18.1
Mar.	113.0 ± 3.4	20.0 ± 4.3	19.0 ± 3.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	124.0 ± 15.7	10.0 ± 5.3	154.0 ± 18.9
Apr.	89.0 ± 6.2	10.0 ± 1.2	9.0 ± 1.9	25.0 ± 5.7	25.0 ± 5.7	0.0 ± 0.0	98.0 ± 7.7	8.0 ± 2.8	34.0 ± 6.0
May	81.0 ± 3.4	9.0 ± 1.0	15.0 ± 3.4	25.0 ± 3.8	2.0 ± 1.2	2.0 ± 1.2	84.0 ± 6.9	0.0 ± 0.0	14.0 ± 1.2

Jun.	74.0 ± 4.2	6.0 ± 2.6	13.0 ± 1.9	19.0 ± 3.4	0.0 ± 0.0	6.0 ± 1.2	35.0 ± 1.9	0.0 ± 0.0	49.0 ± 5.7
Jul.	68.0 ± 2.8	10.0 ± 1.2	16.0 ± 2.8	3.0 ± 1.9	0.0 ± 0.0	16.0 ± 4.3	26.0 ± 2.0	0.0 ± 0.0	9.0 ± 3.0
Aug.	79.0 ± 5.3	22.0 ± 2.0 (19 ^b)	11.0 ± 1.0	0.0 ± 0.0	0.0 ± 0.0	3.0 ± 1.9	0.0 ± 0.0	0.0 ± 0.0	7.0 ± 1.9
Sep.	68.0 ± 4.3	5.0 ± 1.0	16.0 ± 2.3	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Oct.	59.0 ± 3.8	5.0 ± 1.0	14.0 ± 2.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Nov.	60.0 ± 2.8	10.0 ± 2.0	9.0 ± 3.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Dec.	67.0 ± 4.4	14.0 ± 3.5	7.0 ± 1.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	110.0 ± 12.7	110.0 ± 12.7	0.0 ± 0.0
Jan. (2009)	124.0 ± 18.5	76.0 ± 11.7	19.0 ± 3.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	74.0 ± 8.9	18.0 ± 2.6	54.0 ± 7.4
Feb.	136.0 ± 19.3	44.0 ± 4.0	32.0 ± 8.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	70.0 ± 12.3	20.0 ± 3.3	24.0 ± 3.7
Mar.	102.0 ± 13.7	12.0 ± 3.7	31.0 ± 7.7	15.0 ± 3.4	15.0 ± 3.4	0.0 ± 0.0	54.0 ± 6.6	5.0 ± 1.9	21.0 ± 6.0
Apr.	82.0 ± 13.6	9.0 ± 3.0	19.0 ± 1.0	24.0 ± 4.3	10.0 ± 2.0	1.0 ± 1.0	37.0 ± 3.8	5.0 ± 1.9	22.0 ± 5.3
May	70.0 ± 9.6	12.0 ± 0.0	19.0 ± 2.5	28.0 ± 5.2	5.0 ± 1.9	1.0 ± 1.0	25.0 ± 3.0	0.0 ± 0.0	12.0 ± 1.6
Jun.	61.0 ± 7.0	13.0 ± 1.0	22.0 ± 3.5	23.0 ± 2.5	0.0 ± 0.0	5.0 ± 3.0	16.0 ± 1.6	0.0 ± 0.0	9.0 ± 2.5
Jul.	53.0 ± 5.7	9.0 ± 1.9	17.0 ± 1.9	0.0 ± 0.0	0.0 ± 0.0	23.0 ± 2.5	11.0 ± 1.9	0.0 ± 0.0	5.0 ± 1.0
Aug.	48.0 ± 4.9	9.0 ± 3.0 (7 ^b)	14.0 ± 2.6	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	4.0 ± 0.0
Sep.	6.0 ± 2.6	0.0 ± 0.0	42.0 ± 3.8	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Oct.	5.0 ± 3.0	1.0 ± 1.0	2.0 ± 1.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Nov.	20.0 ± 1.6	18.0 ± 2.6	3.0 ± 1.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	102.0 ± 14.1	102.0 ± 14.1	0.0 ± 0.0
Dec.	31.0 ± 2.5	22.0 ± 2.6	11.0 ± 2.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	149.0 ± 8.1	83.0 ± 3.4	36.0 ± 4.9

^aNumber of initial shoots; ^bnumber of surviving seedlings considered to be mature shoots

Table S2. *Zostera marina*. Monthly recruitment and mortality of seedlings and vegetative and reproductive shoots in the deep population in Jindong Bay on the southern coast of Korea from January 2008 to December 2009. Rates of monthly recruitment and mortality were estimated as the number of shoots recruited or dead per unit area (m^{-2}) each month

Month	No. of seedlings and vegetative shoots (m^{-2})			No. of reproductive shoots (m^{-2})		
	Density	Recruitment	Mortality	Total	Development	Mortality
Dec. (2007)	$718.0 \pm 32.7^{\text{a}}$				0.0 ± 0.0	
Jan. (2008)	758.0 ± 34.0	107.0 ± 11.5	67.0 ± 6.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Feb.	619.0 ± 57.1	32.0 ± 6.3	171.0 ± 25.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mar.	466.0 ± 28.6	17.0 ± 3.8	170.0 ± 32.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Apr.	254.0 ± 17.9	12.0 ± 2.8	123.0 ± 8.2	101.0 ± 12.2	101.0 ± 12.2	0.0 ± 0.0
May	92.0 ± 7.1	4.0 ± 1.6	40.0 ± 6.9	222.0 ± 15.2	126.0 ± 5.3	5.0 ± 3.0
Jun.	57.0 ± 6.6	1.0 ± 1.0	33.0 ± 1.9	189.0 ± 13.3	3.0 ± 1.9	36.0 ± 5.2
Jul.	33.0 ± 2.5	0.0 ± 0.0	24.0 ± 6.7	17.0 ± 2.5	0.0 ± 0.0	172.0 ± 12.5
Aug.	17.0 ± 1.9	0.0 ± 0.0	16.0 ± 2.3	0.0 ± 0.0	0.0 ± 0.0	17.0 ± 2.5
Sep.	8.0 ± 2.3	0.0 ± 0.0	9.0 ± 2.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Oct.	0.0 ± 0.0	0.0 ± 0.0	8.0 ± 2.3	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Nov.	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Dec.	333.3 ± 47.1	333.3 ± 47.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Jan. (2009)	460.0 ± 28.5	181.3 ± 42.1	54.7 ± 20.8	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Feb.	492.0 ± 25.4	74.7 ± 8.7	42.7 ± 1.3	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mar.	337.3 ± 14.7	6.7 ± 1.3	105.3 ± 5.3	56.0 ± 10.1	56.0 ± 10.1	0.0 ± 0.0
Apr.	166.7 ± 15.4	6.7 ± 1.3	117.3 ± 17.5	100.0 ± 12.2	60.0 ± 0.0	16.0 ± 2.3
May	44.0 ± 2.3	0.0 ± 0.0	66.7 ± 9.6	140.0 ± 14.0	56.0 ± 6.9	16.0 ± 4.6
Jun.	22.7 ± 2.7	0.0 ± 0.0	14.7 ± 2.7	104.0 ± 14.4	6.7 ± 1.3	42.7 ± 3.5
Jul.	17.3 ± 1.3	0.0 ± 0.0	5.3 ± 3.5	1.3 ± 1.3	0.0 ± 0.0	102.7 ± 13.1
Aug.	6.7 ± 1.3	0.0 ± 0.0	10.7 ± 2.7	0.0 ± 0.0	0.0 ± 0.0	1.3 ± 1.3
Sep.	0.0 ± 0.0	0.0 ± 0.0	6.7 ± 1.3	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Oct.	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Nov.	283.0 ± 58.7	283.0 ± 58.7	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Dec.	381.0 ± 43.4	138.0 ± 8.7	40.0 ± 7.8	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

^aNumber of initial shoots (seedlings only)