

## Clams as CO<sub>2</sub> generators: The *Potamocorbula amurensis* example in San Francisco Bay

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Web Appendix 1. Computational procedures for estimating the total CO<sub>2</sub> generation rate from bivalve mollusks, using the reported biomass from different ecosystems. Bold quantities are reported in table 4 of Chauvaud et al. (2003).

Location	Years	Bivalves*	Measured: biomass	Measured units†	Conversion factor‡	Computed <i>B</i> (g C m <sup>-2</sup> )§	<i>P</i> : <i>B</i> ratio	<i>P</i> <sub>min</sub> (g C m <sup>-2</sup> yr <sup>-1</sup> )¶
Seneca River	1993	<i>Dreissena</i> (1)	717	g DW m <sup>-2</sup>	0.41	<b>294</b>	0.8	<b>235</b>
Lake St. Clair	1994	<i>Dreissena</i> (2)	3.1	g DW m <sup>-2</sup>	0.41	<b>1.3</b>	0.8	<b>1</b>
Lake St. Clair	1986	Unionidae (3)	4.4	g DW m <sup>-2</sup>	0.41	<b>1.8</b>	0.2	<b>0</b>
Lake St. Clair	1994	Unionidae (3)	0.1	g DW m <sup>-2</sup>	0.41	<b>0.02</b>	0.2	<b>0</b>
Lake Erie	1979	Sphaeridae (4)	29.2	mg DW m <sup>-2</sup>	0.0004	<b>0.01</b>	4.5	<b>0</b>
Lake Erie	1993	Sphaeridae (4)	13.2	mg DW m <sup>-2</sup>	0.0004	<b>0.01</b>	4.5	<b>0</b>
Lake Erie	1993	<i>Dreissena</i> (4)	10,946	mg DW m <sup>-2</sup>	0.0004	<b>4</b>	0.8	<b>4</b>
Ohio River	1983	Unionidae (5)	600	g WW 0.25 m <sup>-2</sup>	0.0656	<b>39</b>	0.2	<b>8</b>
Ohio River	1983	<i>Corbicula</i> (5)	951	g WW 0.25 m <sup>-2</sup>	0.0656	<b>62</b>	4.45	<b>278</b>
Ohio River	1983–1992	Unionidae (6)	39.7	g DW m <sup>-2</sup>	0.41	<b>16</b>	0.2	<b>3</b>
Ohio River	1983–1992	<i>Corbicula</i> (6)	128	g DW m <sup>-2</sup>	0.41	<b>53</b>	4.45	<b>234</b>
Delta Mendota	1973–1974	<i>Corbicula</i> (7)						<b>105</b>

\* Numbers in parentheses indicate source of original biomass data: (1) Effler and Siegfried (1994), Table 2; (2) Nalepa et al. (1996), Table 1; (3) Nalepa et al. (1996), Table 3; (4) Dermott and Kerec (1997), Table 2; (5) Miller and Payne (1994), Table 2; (6) Miller et al. (1986), Table 2; (7) Eng (1977), values estimated from size frequency histograms.

† Biomass units reported in the original data source (DW: dry weight of soft tissue, WW: wet weight of whole animal).

‡ Conversion factor applied to transform all biomass measurements into common units g C m<sup>-2</sup>: g DW = 0.04 g WW; g C = 0.41 g DW.

§ Measured biomass × conversion factor.

|| Ratio of minimum reported annual secondary production (g C m<sup>-2</sup> yr<sup>-1</sup>) divided by mean annual biomass (g C m<sup>-2</sup>) for each taxon.

¶ Estimated minimum annual secondary production = computed *B* × *P*:*B* ratio.

# Ratio of shell production (g CaCO<sub>3</sub> yr<sup>-1</sup>) to tissue production (g C yr<sup>-1</sup>) for each taxon.

\*\* *C*<sub>min</sub> = CO<sub>2</sub> production from shell production = [*P*<sub>min</sub> × shell:tissue ratio (g CaCO<sub>3</sub> yr<sup>-1</sup>)] × [12 g C:100 g CaCO<sub>3</sub>].

†† Minimum secondary production in kcal m<sup>-2</sup> yr<sup>-1</sup>, under the assumption that 1 g C = 11.4 kcal (Platt and Irwin 1973).

‡‡ Logarithm<sub>10</sub> of minimum annual respiration in kcal m<sup>-2</sup> yr<sup>-1</sup>, where log<sub>10</sub>*R*<sub>min</sub> = 0.367 + 0.993log<sub>10</sub>*P*<sub>min</sub> (Schwinghamer et al. 1986).

§§ Minimum annual respiration in kcal m<sup>-2</sup> yr<sup>-1</sup>.

||| Minimum annual respiration in g C m<sup>-2</sup> yr<sup>-1</sup>, under the assumption 1 g C = 11.4 kcal (Platt and Irwin 1973).

¶¶ Sum of *C*<sub>min</sub> and *R*<sub>min</sub>.

Web Appendix 1. Extended.

Location	Shell : tissue#	$C_{\min}$ (g C m <sup>-2</sup> yr <sup>-1</sup> )**	$P_{\min}$ (kcal m <sup>-2</sup> yr <sup>-1</sup> )††	$\log R_{\min}$ (kcal m <sup>-2</sup> yr <sup>-1</sup> )‡‡	$R_{\min}$ (kcal m <sup>-2</sup> yr <sup>-1</sup> )§§	$R_{\min}$ (g C m <sup>-2</sup> yr <sup>-1</sup> )	CO <sub>2</sub> produc- tion (g C m <sup>-2</sup> yr <sup>-1</sup> )¶¶
Seneca River		<b>198</b>	2,681	3.77	5,906	<b>518</b>	<b>716</b>
Lake St. Clair	7	<b>1</b>	11.7	1.43	26.7	<b>2</b>	<b>3</b>
Lake St. Clair	7	<b>1</b>	4.2	0.98	9.57	<b>1</b>	<b>1</b>
Lake St. Clair	15	<b>0</b>	0.1	-0.88	0.13	<b>0</b>	<b>0</b>
Lake Erie	15	<b>0</b>	0.6	0.16	1.43	<b>0</b>	<b>0</b>
Lake Erie	15	<b>0</b>	0.3	-0.19	0.65	<b>0</b>	<b>0</b>
Lake Erie	15	<b>3</b>	40.9	1.97	92.8	<b>8</b>	<b>11</b>
Ohio River	7	<b>14</b>	89.8	2.31	202	<b>18</b>	<b>32</b>
Ohio River	15	<b>500</b>	3,164	3.84	6,963	<b>611</b>	<b>1,110</b>
Ohio River	15	<b>6</b>	37.1	1.93	84.2	<b>7</b>	<b>13</b>
Ohio River	15	<b>421</b>	2,666	3.77	5,874	<b>515</b>	<b>936</b>
Delta Mendota	15	<b>189</b>	1,197	3.42	2,652	<b>233</b>	<b>422</b>