

A SAMPLING STRATEGY FOR RECENT AND FOSSIL BRACHIOPODS: SELECTING THE OPTIMAL SHELL SEGMENT FOR GEOCHEMICAL ANALYSES

MARCO ROMANIN, GAIA CRIPPA, FACHENG YE, UWE BRAND,
MARIA ALEKSANDRA BITNER, DANIELE GASPARD, VERENA HÄUSSERMANN
& JÜRGEN LAUDIEN

Supplementary information

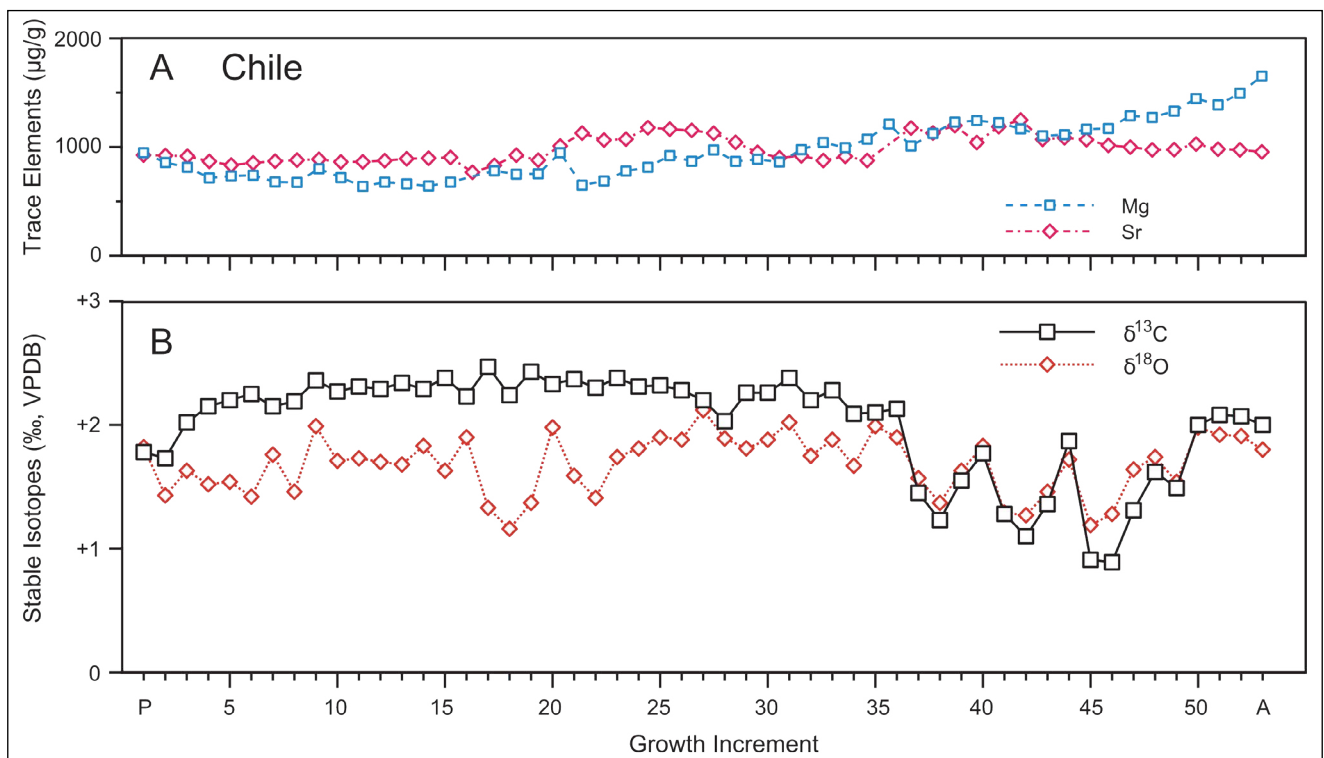


Fig. 1 - Geochemical profiles in a mature (adult) specimen of *M. venosa* from Chile. Trace element and carbon and oxygen isotope compositions (Table 1, Appendix 1).

Species	Provenance	Valve	ID number	Ca ($\mu\text{g/g}$)	Mg ($\mu\text{g/g}$)	Sr ($\mu\text{g/g}$)	Na ($\mu\text{g/g}$)	$\delta^{13}\text{Cc}$ ‰	$\delta^{18}\text{Oc}$ ‰	
<i>Magellania venosa</i>	Huinay, Chile 42.1620°S, 72.5985°W	ventral	MB 1787	a	393824	1176	1490		-4,93	-3,16
			MB 1788	m1	393984	1016	1268		-3,04	-2,35
			MB 1789	m2	393967	1033	1183		-1,33	-1,21
			MB 1790	m3	394063	937	1041		-0,05	-0,28
			MB 1791	m4	394096	904	1013		0,54	0,15
			MB 1792	m5	394171	829	983		0,45	-0,01
			MB 1793	m6	394211	789	962		0,69	0,14
			MB 1794	m7	394241	759	933		0,94	0,20
		MB 1795	p	394250	750	1159		0,78	0,12	
		MB 1779	a	393971	1029	1511		-3,29	-2,10	
		MB 1780	m1	393952	1048	1146		-2,04	-1,59	
		MB 1781	m2	393984	1016	1129		-0,58	-0,63	
		MB 1782	m3	394021	979	1032		0,54	0,11	
		MB 1783	m4	394052	948	987		0,80	0,14	
		MB 1784	m5	394113	887	991		0,79	0,24	
		MB 1785	m6	394175	825	939		0,96	0,26	
		MB 1786	p	394171	829	940		0,74	0,40	
		MB 1980	a	393359	1641	1016	2447	2,00	1,80	
		MB 1981	m1	393348	1652	955	2398	2,07	1,91	
		MB 1982	m2	393506	1494	974	2266	2,08	1,92	
		MB 1983	m3	393613	1387	980	2336	2,00	1,98	
		MB 1984	m4	393554	1446	1027	2385	1,49	1,54	
		MB 1985	m5	393670	1330	976	2255	1,62	1,74	
		MB 1986	m6	393728	1272	974	2236	1,31	1,64	
		MB 1987	m7	393713	1287	999	2340	0,89	1,28	
		MB 1988	m8	393830	1170	1015	2303	0,91	1,19	
		MB 1989	m9	393836	1164	1067	2038	1,87	1,72	
		MB 1990	m10	393887	1113	1085	2323	1,36	1,46	
		MB 1991	m11	393897	1103	1070	2335	1,10	1,27	
		MB 1992	m12	393833	1167	1248	2840	1,28	1,29	
		MB 1993	m13	393776	1224	1187	2705	1,77	1,83	
		MB 1994	m14	393757	1243	1041	2376	1,55	1,63	
		MB 1995	m15	393771	1229	1197	2908	1,23	1,37	
		MB 1996	m16	393875	1125	1129	2832	1,45	1,57	
		MB 1997	m17	393991	1009	1175	2537	2,13	1,90	
		MB 1998	m18	393789	1211			2,10	1,99	
		MB 1999	m19	393928	1072	876	1711	2,09	1,67	
		MB 2000	m20	394006	994	914	1706	2,28	1,88	
		MB 2001	m21	393958	1042	876	1769	2,20	1,75	
		MB 2002	m22	394024	976	919	1613	2,38	2,02	
		MB 2003	m23	394138	862	901	1433	2,26	1,88	
		MB 2004	m24	394113	887	951	1505	2,26	1,81	
		MB 2010	m25	394132	868	1043	2341	2,03	1,89	
		MB 2011	m26	394027	973	1127	2116	2,20	2,12	
		MB 2012	m27	394131	869	1153	1816	2,28	1,88	
		MB 2013	m28	394079	921	1164	1739	2,32	1,90	
		MB 2014	m29	394186	814	1178	1642	2,31	1,81	
		MB 2015	m30	394221	779	1072	1610	2,38	1,74	
		MB 2016	m31	394312	688	1064	1519	2,30	1,41	
		MB 2017	m32	394351	649	1128	1499	2,37	1,59	
MB 2018	m33	394053	947	1009	1374	2,33	1,98			
MB 2019	m34	394246	754	879	1406	2,43	1,37			
MB 2020	m35	394250	750	925	1896	2,24	1,16			
MB 2021	m36	394219	781	831	1315	2,47	1,33			
MB 2022	m37	393925		768	1273	2,23	1,90			
MB 2023	m38	394323	677	904	1631	2,38	1,63			
MB 2024	m39	394358	642	897	1627	2,29	1,83			
MB 2025	m40	394339	661	892	1597	2,34	1,68			
MB 2026	m41	394323	677	875	1458	2,29	1,70			
MB 2027	m42	394362	638	864	1411	2,31	1,73			
MB 2028	m43	394281	719	863	1484	2,27	1,71			
MB 2029	m44	394200	800	887	1579	2,36	1,99			
MB 2030	m45	394325	675	880	1542	2,19	1,46			
MB 2031	m46	394321	679	870	1631	2,15	1,76			
MB 2032	m47	394260	740	854	1640	2,25	1,42			
MB 2033	m48	394267	733	834	1530	2,20	1,54			
MB 2034	m49	394284	716	868	1510	2,15	1,52			
MB 2035	m50	394186	814	916	1707	2,02	1,63			
MB 2036	m51	394143	857	922	1793	1,73	1,43			
MB 2037	p	394053	947	926	1954	1,78	1,82			

Tab. 1 - Trace chemistry and stable isotopes compositions of modern brachiopods (*M. venosa*, *L. wa*, *A. kerguelensis*, *L. neozelanica*, *G. vitreus*).

Species	Provenance	Valve	ID number		Ca ($\mu\text{g/g}$)	Mg ($\mu\text{g/g}$)	Sr ($\mu\text{g/g}$)	Na ($\mu\text{g/g}$)	$\delta^{13}\text{C}_c$ ‰	$\delta^{18}\text{O}_c$ ‰
<i>Liothyrella uva</i>	Rothera Island, Antarctica 67°34'11"S, 68°07'88"W	dorsal	MB 1800	a	392351	2649	1210	2827	0,33	3,38
			MB 1801	m1	392820	2180	1282	3188	1,31	3,65
			MB 1802	m2	393074	1926	1194	3074	1,20	3,42
			MB 1803	m3	393216	1784	1111	2443	1,17	3,33
			MB 1804	m4	393166	1834	1080	2767	1,06	3,46
			MB 1805	m5	393164	1836	1075	2634	1,22	3,40
			MB 1806	m6	393105	1895	1081	2812	0,99	3,47
			MB 1807	m7	393157	1843	1196	2940	0,76	3,29
			MB 1808	m8	393172	1828	1202	2970	0,93	3,47
			MB 1809	m9	393071	1929	1223	1770	1,04	3,35
		MB 1810	m10	393058	1942	1188	2564	1,14	3,56	
		MB 1811	p	392664	2336	1276	2900	1,05	3,58	
		ventral	MB 1813	a	390875	4125	1652	3368	0,32	3,23
			MB 1814	m1	391855	3145	1499	3111	1,25	3,45
			MB 1815	m2	391935	3065	1482	2769	1,23	3,42
			MB 1816	m3	391845	3155	1498	2994	0,96	3,44
			MB 1817	m4	391903	3097	1405	2772	1,00	3,42
			MB 1818	m5	392117	2883	1346	2673	1,27	3,55
			MB 1819	m6	392146	2854	1278	2925	0,79	3,42
			MB 1820	m7	392183	2817	1144	2598	0,90	3,43
MB 1821	m8		392354	2646	1177	2535	1,00	3,59		
MB 1822	m9		392325	2675	1133	2445	1,06	3,51		
MB 1823	m10	392798	2202	1103	2554	1,16	3,63			
MB 1824	p	392623	2377	1056	2668	0,98	3,60			
<i>Aerothyris kerguelensis</i>	S.Cochon Island, Indian Ocean 46°13'45 50°12'8E CP82(MD30)	ventral	MB 1660	a	393529	1471	1030	2628	2,00	2,67
			MB 1661	m1	393381	1619	1072	2430	2,35	2,65
			MB 1662	m2	393687	1313	982	2493	2,42	3,06
			MB 1663	m3	393903	1097	946	2274	2,52	2,95
			MB 1664	m4	393941	1059	888	1902	2,61	2,84
			MB 1665	m5	394076	924	835	1682	2,68	2,77
			MB 1666	m6	394162	838	814	1220	2,67	2,88
			MB 1667	m7	394248	752	805	1234	2,58	2,83
		MB 1668	m8	394306	694	789	1278	2,62	2,81	
		MB 1669	p	394223	777	815	1371	2,31	2,60	
		dorsal	MB 1650	a	393546	1454	1093	2651	2,26	2,97
			MB 1651	m1	393679	1321	1003	2273	2,44	2,76
			MB 1652	m2	393763	1237	971	2267	2,55	3,09
			MB 1653	m3	393805	1195	968	2030	2,66	3,11
			MB 1654	m4	393845	1155	914	1949	2,68	3,22
			MB 1655	m5	393830	1170	909	1801	2,78	3,17
			MB 1656	m6	393989	1011	802	1220	2,71	2,72
			MB 1657	m7	394154	846	834	1595	2,76	2,84
		MB 1658	m8	394213	787	850	1446	2,60	2,70	
		MB 1659	p	394204	796	786	1361	2,14	2,88	
		ventral	MB 1678	a	392935	2065	1042	2571		
			MB 1679	m1	393324	1676	1000	2214		
			MB1680	m2	393446	1554	922	2280		
			MB 1681	m3	393545	1455	870	1967		
			MB 1682	m4	393748	1252	803	1558		
			MB 1683	m5	393972	1028	724	1632		
			MB 1684	m6	394226	774	696	1331		
		MB 1685	p	394161	839	722	1616			
		dorsal	MB 1670	a	392869	2131	1026	2370		
			MB 1671	m1	393511	1489	907	2111		
MB 1672	m2		393632	1368	836	1688				
MB 1673	m3		393788	1212	800	1597				
MB 1674	m4		393858	1142	802	1620				
MB 1675	m5		393891	1109	800	1575				
MB 1676	m6		394157	843	753	1253				
MB 1677	p		394119	881	805	1393				

Tab. 1 - Trace chemistry and stable isotopes compositions of modern brachiopods (*M. venosa*, *L. uva*, *A. kerguelensis*, *L. neozelanica*, *G. vitreus*) (continued).

Species	Provenance	Valve	ID number		Ca ($\mu\text{g/g}$)	Mg ($\mu\text{g/g}$)	Sr ($\mu\text{g/g}$)	Na ($\mu\text{g/g}$)	$\delta^{13}\text{C}_c$ ‰	$\delta^{18}\text{O}_c$ ‰	
<i>Liothyrella neozelanica</i>	off New Zealand 34.707°S, 178.57°E	ventral	MB 1825	a	392356	2644	921	1743	1,76	1,10	
			MB 1826	m1	393128	1872	706	1319	2,31	1,10	
			MB 1827	m2	393471	1529	571	1087	2,66	1,00	
			MB 1828	m3	393451	1549	606	1035	2,65	1,18	
			MB 1829	m4	393591	1409	627	945	2,73	1,38	
			MB 1830	m5	393679	1321	621	954	2,81	1,04	
			MB 1831	m6	393685	1315	632	963	2,82	1,14	
			MB 1832	m7	393833	1167	575	798	2,62	1,44	
			MB 1833	m8	393887	1113	588	777	2,50	1,32	
			MB 1834	m9	393891	1109	621	841	2,82	1,22	
			MB 1835	m10	393863	1137	689		2,51	1,05	
			MB 1836	m11	393965	1035	618	857	2,10	1,24	
			MB 1837	m12	393891	1109	648	887	2,33	1,10	
			MB 1838	m13	393655	1345	704	1133	1,73	1,12	
			MB 1839	m14	393634	1366	765	1253	1,66	1,05	
		MB 1840	m15	393622	1378	739	1277	1,74	1,08		
		MB 1841	p	393183	1817	753	1552	1,57	1,24		
		dorsal	MB 1843	a	392373	2627	972	1921	1,74	1,19	
			MB 1844	m1	393145	1855	780	1433	2,41	1,31	
			MB 1845	m2	393491	1509	650	1006	2,73	1,41	
MB 1846	m3		393458	1542	654	852	2,68	1,26			
MB 1847	m4		393642	1358	625	896	2,89	1,31			
MB 1848	m5		393758	1242	582	816	2,77	1,23			
MB 1849	m6		393587	1413	647	1007	2,65	1,28			
MB 1850	m7		393879	1121	614	980	2,59	1,29			
MB 1851	m8		393814	1186	649	956	2,49	1,03			
MB 1852	m9		393652	1348	705	1329	1,70	1,07			
MB 1853	m10		393778	1222	710	991	1,68	0,88			
MB 1854	m11		393478	1522	734	1412	1,53	1,28			
MB 1855	p		393402	1598	789		1,40	1,28			
<i>Gryphus vitreus</i>	Montecristo Island, Mediterranean Sea 42°55.035' N, 10°05.600' E		ventral	MB 1878	a	391154	3846	1194	2248	2,04	2,06
				MB 1879	m1	392484	2516	977	1586	2,42	2,07
		MB 1880		m2	392962	2038	970	1421	2,63	2,23	
		MB 1881		m3	393224	1776	913	1384	2,70	2,09	
		MB 1882		m4	393553	1447	737	1120	3,00	2,00	
		MB 1883		m5	394032	968	641	865	3,29	2,37	
		MB 1884		m6	394238	762	600	645	3,30	2,43	
		MB 1885		m7	394304	696	558	586	3,27	2,30	
		MB 1886		m8	394375	625	560	597	3,14	2,24	
		MB 1887		m9	394477	523	520	623	3,02	2,07	
		MB 1888		m10	394474	526	430	529	2,93	1,96	
		MB 1889		m11	394469	531	421	561	2,85	1,88	
		MB 1890		m12	394430	570	447	503	2,72	2,29	
		MB 1891		m13	394402	598	486	504	2,59	1,83	
		MB 1892		m14	394272	728	483	461	2,56	2,05	
MB 1893	p	392748	2252	825	1351	1,85	2,06				

Tab. 1 - Trace chemistry and stable isotopes compositions of modern brachiopods (*M. venosa*, *L. uva*, *A. kerguelensis*, *L. neozelanica*, *G. vitreus*) (continued).