

S Table 11. The results from nanoindentation experiments on natural and demineralised radulae in *Dendronotus lacteus*. The data show the mean and standard deviation of hardness and Young's modulus (both given in GPa) from different regions of the inner tooth structure (inside) and the tooth coating (surface) for each tooth type (central, lateral) and each radular region (building zone, maturation zone, working zone). Abbreviations: cs, side of the lateral teeth facing the central (rhachidian) tooth; demin., demineralized; *E*, Young's modulus; *H*, hardness; ls, outer/lateral side of the lateral teeth; *N*, quantity of measurements; SD, standard deviation.

Species	Zone	Tooth	Layer	Region	Side	State	N	H		E	
								Mean	SD	Mean	SD
<i>Dendronotus</i>	Building zone	Central	Inside			Demin.	10	0.02	0.01	0.42	0.13
<i>Dendronotus</i>	Building zone	Central	Coating	Cusp		Demin.	12	0.04	0.01	1.22	0.25
<i>Dendronotus</i>	Building zone	Central	Coating	Tip		Demin.	16	0.08	0.02	2.56	0.43
<i>Dendronotus</i>	Building zone	Lateral	Inside			Demin.	10	0.02	0.00	0.51	0.03
<i>Dendronotus</i>	Building zone	Lateral	Coating	Basis	cs	Demin.	4	0.03	0.00	0.82	0.01
<i>Dendronotus</i>	Building zone	Lateral	Coating	Basis	ls	Demin.	4	0.03	0.00	1.08	0.02
<i>Dendronotus</i>	Building zone	Lateral	Coating	Stylus	cs	Demin.	8	0.04	0.00	1.23	0.04
<i>Dendronotus</i>	Building zone	Lateral	Coating	Stylus	ls	Demin.	8	0.05	0.01	1.47	0.15
<i>Dendronotus</i>	Building zone	Lateral	Coating	Tip	cs	Demin.	8	0.06	0.01	2.05	0.06
<i>Dendronotus</i>	Building zone	Lateral	Coating	Tip	ls	Demin.	8	0.07	0.01	2.34	0.14
<i>Dendronotus</i>	Maturation zone	Central	Inside			Demin.	32	0.08	0.02	1.87	0.35
<i>Dendronotus</i>	Maturation zone	Central	Coating	Cusp		Demin.	20	0.22	0.04	6.07	0.88
<i>Dendronotus</i>	Maturation zone	Central	Coating	Tip		Demin.	22	0.28	0.06	7.48	1.31
<i>Dendronotus</i>	Maturation zone	Lateral	Inside			Demin.	32	0.07	0.01	1.66	0.34
<i>Dendronotus</i>	Maturation zone	Lateral	Coating	Basis	cs	Demin.	10	0.09	0.02	3.01	0.48
<i>Dendronotus</i>	Maturation zone	Lateral	Coating	Basis	ls	Demin.	10	0.14	0.06	4.16	1.22
<i>Dendronotus</i>	Maturation zone	Lateral	Coating	Stylus	cs	Demin.	10	0.24	0.01	6.46	0.57
<i>Dendronotus</i>	Maturation zone	Lateral	Coating	Stylus	ls	Demin.	10	0.27	0.05	7.59	1.26
<i>Dendronotus</i>	Maturation zone	Lateral	Coating	Tip	cs	Demin.	12	0.27	0.03	7.54	0.87
<i>Dendronotus</i>	Maturation zone	Lateral	Coating	Tip	ls	Demin.	12	0.19	0.04	5.24	1.09
<i>Dendronotus</i>	Working zone	Central	Inside			Demin.	28	0.14	0.01	3.02	0.17
<i>Dendronotus</i>	Working zone	Central	Coating	Cusp		Demin.	25	0.23	0.04	6.37	0.82
<i>Dendronotus</i>	Working zone	Central	Coating	Tip		Demin.	16	0.31	0.02	8.06	0.26
<i>Dendronotus</i>	Working zone	Lateral	Inside			Demin.	28	0.13	0.01	2.83	0.15
<i>Dendronotus</i>	Working zone	Lateral	Coating	Basis	cs	Demin.	10	0.17	0.00	4.65	0.08
<i>Dendronotus</i>	Working zone	Lateral	Coating	Basis	ls	Demin.	10	0.18	0.01	4.85	0.08
<i>Dendronotus</i>	Working zone	Lateral	Coating	Stylus	cs	Demin.	8	0.19	0.00	5.04	0.12
<i>Dendronotus</i>	Working zone	Lateral	Coating	Stylus	ls	Demin.	8	0.20	0.01	5.42	0.17
<i>Dendronotus</i>	Working zone	Lateral	Coating	Tip	cs	Demin.	10	0.23	0.01	5.99	0.34
<i>Dendronotus</i>	Working zone	Lateral	Coating	Tip	ls	Demin.	10	0.27	0.02	7.20	0.53
<i>Dendronotus</i>	Building zone	Central	Inside			Natural	10	0.03	0.01	0.83	0.25
<i>Dendronotus</i>	Building zone	Central	Coating	Cusp		Natural	12	0.08	0.03	2.93	0.92
<i>Dendronotus</i>	Building zone	Central	Coating	Tip		Natural	16	0.18	0.03	5.81	0.64
<i>Dendronotus</i>	Building zone	Lateral	Inside			Natural	10	0.03	0.00	0.98	0.04
<i>Dendronotus</i>	Building zone	Lateral	Coating	Basis	cs	Natural	4	0.07	0.01	2.17	0.26
<i>Dendronotus</i>	Building zone	Lateral	Coating	Basis	ls	Natural	4	0.10	0.01	2.84	0.17
<i>Dendronotus</i>	Building zone	Lateral	Coating	Stylus	cs	Natural	8	0.12	0.02	3.55	0.53
<i>Dendronotus</i>	Building zone	Lateral	Coating	Stylus	ls	Natural	8	0.14	0.02	4.08	0.46
<i>Dendronotus</i>	Building zone	Lateral	Coating	Tip	cs	Natural	8	0.13	0.02	4.02	0.70
<i>Dendronotus</i>	Building zone	Lateral	Coating	Tip	ls	Natural	8	0.14	0.02	4.12	0.54
<i>Dendronotus</i>	Maturation zone	Central	Inside			Natural	32	0.14	0.01	4.27	0.28
<i>Dendronotus</i>	Maturation zone	Central	Coating	Cusp		Natural	20	0.47	0.15	12.06	3.38
<i>Dendronotus</i>	Maturation zone	Central	Coating	Tip		Natural	22	0.47	0.17	13.03	4.34
<i>Dendronotus</i>	Maturation zone	Lateral	Inside			Natural	32	0.10	0.04	2.94	1.35
<i>Dendronotus</i>	Maturation zone	Lateral	Coating	Basis	cs	Natural	10	0.32	0.08	9.60	2.5
<i>Dendronotus</i>	Maturation zone	Lateral	Coating	Basis	ls	Natural	10	0.19	0.04	5.80	1.12
<i>Dendronotus</i>	Maturation zone	Lateral	Coating	Stylus	cs	Natural	10	0.41	0.12	12.24	3.71
<i>Dendronotus</i>	Maturation zone	Lateral	Coating	Stylus	ls	Natural	10	0.32	0.03	9.69	0.92
<i>Dendronotus</i>	Maturation zone	Lateral	Coating	Tip	cs	Natural	12	0.37	0.11	11.13	3.34
<i>Dendronotus</i>	Maturation zone	Lateral	Coating	Tip	ls	Natural	12	0.29	0.07	8.77	1.99
<i>Dendronotus</i>	Working zone	Central	Inside			Natural	28	0.13	0.00	3.80	0.08
<i>Dendronotus</i>	Working zone	Central	Coating	Cusp		Natural	25	0.46	0.01	12.44	0.38
<i>Dendronotus</i>	Working zone	Central	Coating	Tip		Natural	16	0.51	0.01	13.12	0.23
<i>Dendronotus</i>	Working zone	Lateral	Inside			Natural	28	0.12	0.00	3.57	0.07
<i>Dendronotus</i>	Working zone	Lateral	Coating	Basis	cs	Natural	10	0.31	0.09	9.21	2.66
<i>Dendronotus</i>	Working zone	Lateral	Coating	Basis	ls	Natural	10	0.26	0.01	7.66	0.16
<i>Dendronotus</i>	Working zone	Lateral	Coating	Stylus	cs	Natural	8	0.38	0.01	11.29	0.24
<i>Dendronotus</i>	Working zone	Lateral	Coating	Stylus	ls	Natural	8	0.27	0.01	8.05	0.14
<i>Dendronotus</i>	Working zone	Lateral	Coating	Tip	cs	Natural	10	0.39	0.01	11.81	0.21
<i>Dendronotus</i>	Working zone	Lateral	Coating	Tip	ls	Natural	10	0.28	0.03	8.20	1.09

S Table 12. The results from nanoindentation experiments of natural radulae in *Flabellina affinis*. The data show the mean and standard deviation of hardness and Young's modulus (both given in GPa) from different regions of the inner tooth structure (inside) and the tooth coating (surface) for each tooth type (central, lateral) and each radular region (building zone, maturation zone, working zone). Abbreviations: cs, side of the lateral teeth facing the central (rhachidian) tooth; *E*, Young's modulus; *H*, hardness; ls, outer/lateral side of the lateral teeth; *N*, quantity of measurements; SD, standard deviation.

Species	Zone	Tooth	Layer	Region	Side	State	N	H		E	
								Mean	SD	Mean	SD
<i>Flabellina</i>	Building zone	Central	Inside			Natural	9	0.04	0.01	0.87	0.31
<i>Flabellina</i>	Building zone	Central	Coating	Cusp		Natural	11	0.09	0.04	3.11	1.14
<i>Flabellina</i>	Building zone	Central	Coating	Tip		Natural	15	0.19	0.03	5.98	0.87
<i>Flabellina</i>	Building zone	Lateral	Inside			Natural	10	0.05	0.01	1.03	0.13
<i>Flabellina</i>	Building zone	Lateral	Coating	Basis	cs	Natural	4	0.08	0.01	2.28	0.37
<i>Flabellina</i>	Building zone	Lateral	Coating	Basis	ls	Natural	2	0.10	0.01	2.92	0.46
<i>Flabellina</i>	Building zone	Lateral	Coating	Stylus	cs	Natural	8	0.12	0.03	3.67	0.87
<i>Flabellina</i>	Building zone	Lateral	Coating	Stylus	ls	Natural	8	0.14	0.02	4.22	0.69
<i>Flabellina</i>	Building zone	Lateral	Coating	Tip	cs	Natural	6	0.13	0.02	3.98	0.56
<i>Flabellina</i>	Building zone	Lateral	Coating	Tip	ls	Natural	8	0.14	0.03	4.30	0.94
<i>Flabellina</i>	Maturation zone	Central	Inside			Natural	32	0.19	0.03	4.39	0.62
<i>Flabellina</i>	Maturation zone	Central	Coating	Cusp		Natural	20	0.47	0.16	12.55	3.97
<i>Flabellina</i>	Maturation zone	Central	Coating	Tip		Natural	22	0.51	0.19	13.73	4.98
<i>Flabellina</i>	Maturation zone	Lateral	Inside			Natural	31	0.14	0.07	3.13	1.50
<i>Flabellina</i>	Maturation zone	Lateral	Coating	Basis	cs	Natural	10	0.34	0.09	10.11	2.72
<i>Flabellina</i>	Maturation zone	Lateral	Coating	Basis	ls	Natural	10	0.20	0.04	6.02	1.32
<i>Flabellina</i>	Maturation zone	Lateral	Coating	Stylus	cs	Natural	10	0.42	0.13	12.50	3.92
<i>Flabellina</i>	Maturation zone	Lateral	Coating	Stylus	ls	Natural	10	0.34	0.05	10.20	1.32
<i>Flabellina</i>	Maturation zone	Lateral	Coating	Tip	cs	Natural	12	0.38	0.13	11.55	3.90
<i>Flabellina</i>	Maturation zone	Lateral	Coating	Tip	ls	Natural	12	0.29	0.07	8.83	2.01
<i>Flabellina</i>	Working zone	Central	Inside			Natural	27	0.17	0.02	3.93	0.48
<i>Flabellina</i>	Working zone	Central	Coating	Cusp		Natural	25	0.48	0.06	12.73	1.58
<i>Flabellina</i>	Working zone	Central	Coating	Tip		Natural	15	0.51	0.06	13.41	1.61
<i>Flabellina</i>	Working zone	Lateral	Inside			Natural	27	0.16	0.02	3.72	0.42
<i>Flabellina</i>	Working zone	Lateral	Coating	Basis	cs	Natural	10	0.31	0.09	9.35	2.77
<i>Flabellina</i>	Working zone	Lateral	Coating	Basis	ls	Natural	10	0.26	0.03	7.84	0.93
<i>Flabellina</i>	Working zone	Lateral	Coating	Stylus	cs	Natural	8	0.39	0.05	11.62	1.44
<i>Flabellina</i>	Working zone	Lateral	Coating	Stylus	ls	Natural	8	0.28	0.04	8.45	1.14
<i>Flabellina</i>	Working zone	Lateral	Coating	Tip	cs	Natural	10	0.41	0.05	12.41	1.49
<i>Flabellina</i>	Working zone	Lateral	Coating	Tip	ls	Natural	10	0.29	0.05	8.77	1.46

S Table 13. The results from the energy-dispersive X-ray (EDX) analysis on natural and demineralised radulae in *Dendronotus lacteus*. The data show the mean and standard deviation of elemental proportions in atomic percentages (%). Elemental proportions are sorted according to tooth types (central, lateral), for both the inner tooth structure (inside) and the tooth coating (surface), to the tooth region (cusp, tip, basis, stylus) and to the radular region (building zone, maturation zone, working zone). Abbreviations: BZ, building zone; cs, side of the lateral teeth facing the central (rhachidian) tooth; *D.*, *Dendronotus lacteus*; demin., demineralized; ls, outer/lateral side of the lateral teeth; me, tooth coating towards the membrane; MZ, maturation zone; *N*, quantity of measurements; oc, tooth coating towards the oral cavity; SD, standard deviation; WZ, working zone.

Species	Zone	Tooth	Layer	Region	Side	Direction	State	N	Ca		Cl		Cu		Fe		K		Mg	
									Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
D.	BZ	Central	Inside				Demin.	10	0.32	0.20	0.04	0.01	0.05	0.03	0.03	0.01	0.02	0.00	0.09	0.04
D.	BZ	Central	Coating	Cusp		oc	Demin.	12	0.69	0.32	0.01	0.00	0.30	0.06	0.02	0.00	0.01	0.00	0.06	0.01
D.	BZ	Central	Coating	Tip		me	Demin.	12	0.47	0.37	0.01	0.00	0.67	0.21	0.02	0.00	0.00	0.00	0.03	0.00
D.	BZ	Central	Coating	Tip		oc	Demin.	16	1.96	0.73	0.01	0.01	0.20	0.04	0.02	0.00	0.01	0.00	0.08	0.02
D.	BZ	Lateral	Inside				Demin.	10	0.28	0.17	0.03	0.00	0.04	0.03	0.02	0.01	0.02	0.00	0.07	0.03
D.	BZ	Lateral	Coating	Basis	cs	me	Demin.	2	0.36	0.02	0.01	0.00	0.05	0.00	0.02	0.00	0.00	0.00	0.04	0.01
D.	BZ	Lateral	Coating	Basis	cs	oc	Demin.	4	0.43	0.09	0.01	0.00	0.04	0.01	0.02	0.00	0.01	0.00	0.07	0.01
D.	BZ	Lateral	Coating	Basis	ls	me	Demin.	2	0.20	0.06	0.00	0.00	0.04	0.01	0.02	0.00	0.00	0.00	0.03	0.01
D.	BZ	Lateral	Coating	Basis	ls	oc	Demin.	4	0.55	0.02	0.01	0.00	0.04	0.01	0.01	0.01	0.01	0.00	0.05	0.01
D.	BZ	Lateral	Coating	Stylus	cs	me	Demin.	4	0.39	0.07	0.01	0.00	0.05	0.01	0.02	0.01	0.00	0.00	0.03	0.01
D.	BZ	Lateral	Coating	Stylus	cs	oc	Demin.	8	0.89	0.16	0.01	0.00	0.03	0.01	0.01	0.01	0.01	0.00	0.05	0.01
D.	BZ	Lateral	Coating	Stylus	ls	me	Demin.	4	0.19	0.05	0.00	0.00	0.03	0.01	0.02	0.01	0.00	0.00	0.02	0.01
D.	BZ	Lateral	Coating	Stylus	ls	oc	Demin.	8	0.61	0.09	0.01	0.00	0.04	0.01	0.02	0.00	0.01	0.00	0.05	0.01
D.	BZ	Lateral	Coating	Tip	cs	me	Demin.	4	0.05	0.01	0.01	0.00	0.05	0.01	0.02	0.01	0.01	0.00	0.05	0.01
D.	BZ	Lateral	Coating	Tip	cs	oc	Demin.	8	0.91	0.37	0.01	0.00	0.04	0.01	0.01	0.01	0.01	0.00	0.06	0.02
D.	BZ	Lateral	Coating	Tip	ls	me	Demin.	4	0.32	0.19	0.01	0.01	0.05	0.01	0.02	0.01	0.00	0.00	0.03	0.01
D.	BZ	Lateral	Coating	Tip	ls	oc	Demin.	8	0.57	0.14	0.01	0.00	0.04	0.01	0.01	0.01	0.01	0.00	0.05	0.01
D.	MZ	Central	Inside				Demin.	32	0.24	0.14	0.02	0.01	0.08	0.08	0.02	0.00	0.02	0.01	0.08	0.03
D.	MZ	Central	Coating	Cusp		oc	Demin.	20	1.06	0.18	0.02	0.00	0.09	0.02	0.02	0.00	0.02	0.00	0.13	0.02
D.	MZ	Central	Coating	Tip		me	Demin.	22	0.60	0.13	0.02	0.00	0.13	0.04	0.03	0.01	0.02	0.00	0.11	0.02
D.	MZ	Central	Coating	Tip		oc	Demin.	22	2.52	0.30	0.02	0.00	0.06	0.01	0.03	0.01	0.02	0.00	0.15	0.03
D.	MZ	Lateral	Inside				Demin.	32	0.27	0.16	0.02	0.01	0.09	0.10	0.03	0.01	0.02	0.01	0.10	0.03
D.	MZ	Lateral	Coating	Basis	cs	me	Demin.	5	0.30	0.06	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.09	0.02
D.	MZ	Lateral	Coating	Basis	cs	oc	Demin.	10	1.75	0.35	0.02	0.00	0.07	0.01	0.02	0.01	0.02	0.00	0.13	0.02
D.	MZ	Lateral	Coating	Basis	ls	me	Demin.	5	0.21	0.05	0.01	0.00	0.05	0.01	0.02	0.01	0.01	0.00	0.08	0.02
D.	MZ	Lateral	Coating	Basis	ls	oc	Demin.	10	0.79	0.13	0.02	0.00	0.06	0.01	0.02	0.00	0.02	0.00	0.12	0.02
D.	MZ	Lateral	Coating	Stylus	cs	me	Demin.	5	0.37	0.08	0.02	0.00	0.06	0.01	0.02	0.00	0.02	0.00	0.12	0.02
D.	MZ	Lateral	Coating	Stylus	cs	oc	Demin.	10	2.18	0.35	0.02	0.01	0.08	0.01	0.02	0.01	0.02	0.00	0.13	0.02
D.	MZ	Lateral	Coating	Stylus	ls	me	Demin.	5	0.19	0.09	0.01	0.01	0.06	0.01	0.02	0.00	0.01	0.00	0.09	0.02
D.	MZ	Lateral	Coating	Stylus	ls	oc	Demin.	10	0.68	0.09	0.01	0.01	0.05	0.01	0.02	0.00	0.01	0.01	0.10	0.01
D.	MZ	Lateral	Coating	Tip	cs	oc	Demin.	12	2.04	0.29	0.02	0.01	0.09	0.01	0.03	0.00	0.01	0.01	0.13	0.03
D.	MZ	Lateral	Coating	Tip	ls	me	Demin.	6	0.23	0.04	0.02	0.01	0.05	0.01	0.02	0.01	0.02	0.01	0.10	0.01
D.	MZ	Lateral	Coating	Tip	ls	oc	Demin.	12	0.84	0.13	0.02	0.01	0.07	0.02	0.02	0.00	0.02	0.00	0.12	0.02
D.	MZ	Lateral	Coating	Tip		me	Demin.	6	0.37	0.09	0.02	0.01	0.07	0.02	0.02	0.01	0.02	0.01	0.12	0.03
D.	WZ	Central	Inside				Demin.	28	0.31	0.14	0.02	0.01	0.05	0.07	0.03	0.03	0.02	0.01	0.07	0.03
D.	WZ	Central	Coating	Cusp		oc	Demin.	25	0.95	0.21	0.04	0.01	0.04	0.01	0.05	0.01	0.02	0.00	0.19	0.03
D.	WZ	Central	Coating	Tip		me	Demin.	15	0.74	0.21	0.03	0.00	0.06	0.01	0.04	0.01	0.03	0.00	0.18	0.03
D.	WZ	Central	Coating	Tip		oc	Demin.	16	2.60	0.37	0.05	0.01	0.04	0.01	0.08	0.05	0.03	0.01	0.22	0.03
D.	WZ	Lateral	Inside				Demin.	28	0.36	0.15	0.02	0.01	0.06	0.07	0.04	0.03	0.02	0.01	0.08	0.03
D.	WZ	Lateral	Coating	Basis	cs	me	Demin.	5	0.52	0.08	0.02	0.00	0.15	0.02	0.04	0.00	0.02	0.01	0.17	0.02
D.	WZ	Lateral	Coating	Basis	cs	oc	Demin.	10	1.73	0.39	0.04	0.01	0.32	0.06	0.04	0.01	0.03	0.00	0.19	0.04
D.	WZ	Lateral	Coating	Basis	ls	me	Demin.	5	0.46	0.12	0.02	0.00	0.11	0.02	0.03	0.01	0.02	0.00	0.16	0.03
D.	WZ	Lateral	Coating	Basis	ls	oc	Demin.	10	0.64	0.17	0.03	0.00	0.21	0.04	0.04	0.01	0.02	0.01	0.19	0.03
D.	WZ	Lateral	Coating	Stylus	cs	me	Demin.	4	0.48	0.18	0.04	0.01	0.19	0.03	0.05	0.01	0.02	0.01	0.20	0.03
D.	WZ	Lateral	Coating	Stylus	cs	oc	Demin.	8	1.76	0.41	0.04	0.00	0.49	0.06	0.05	0.01	0.03	0.00	0.20	0.02
D.	WZ	Lateral	Coating	Stylus	ls	me	Demin.	4	0.50	0.13	0.03	0.01	0.13	0.04	0.04	0.01	0.02	0.01	0.18	0.04
D.	WZ	Lateral	Coating	Stylus	ls	oc	Demin.	8	0.73	0.14	0.03	0.00	0.26	0.02	0.04	0.00	0.02	0.01	0.19	0.02
D.	WZ	Lateral	Coating	Tip	cs	me	Demin.	5	0.59	0.11	0.03	0.01	0.19	0.03	0.05	0.00	0.02	0.00	0.20	0.03
D.	WZ	Lateral	Coating	Tip	cs	oc	Demin.	10	1.94	0.38	0.06	0.02	0.82	0.19	0.13	0.05	0.04	0.00	0.23	0.04
D.	WZ	Lateral	Coating	Tip	ls	me	Demin.	5	0.48	0.05	0.02	0.00	0.14	0.02	0.04	0.00	0.02	0.01	0.17	0.02
D.	WZ	Lateral	Coating	Tip	ls	oc	Demin.	6	0.61	0.14	0.04	0.01	0.24	0.05	0.04	0.01	0.02	0.01	0.17	0.03
D.	BZ	Central	Inside				Natural	10	0.47	0.29	0.06	0.01	0.08	0.05	0.04	0.02	0.03	0.00	0.12	0.06
D.	BZ	Central	Coating	Cusp		me	Natural	12	0.19	0.08	0.00	0.00	0.16	0.02	0.01	0.00	0.00	0.00	0.04	0.00
D.	BZ	Central	Coating	Cusp		oc	Natural	12	1.07	0.43	0.01	0.00	0.46	0.08	0.02	0.00	0.01	0.00	0.09	0.01
D.	BZ	Central	Coating	Tip		me	Natural	16	0.97	0.67	0.01	0.00	0.12	0.03	0.02	0.00	0.01	0.01	0.05	0.01
D.	BZ	Central	Coating	Tip		oc	Natural	16	5.28	3.31	0.02	0.00	0.33	0.05	0.03	0.00	0.02	0.01	0.13	0.01
D.	BZ	Lateral	Inside				Natural	10	0.40	0.24	0.05	0.01	0.06	0.04	0.03	0.02	0.02	0.00	0.10	0.05

D.	BZ	Lateral	Coating	Basis	cs	me	Natural	2	1.45	0.06	0.01	0.00	0.06	0.00	0.02	0.00	0.00	0.04	0.00	
D.	BZ	Lateral	Coating	Basis	cs	oc	Natural	4	1.53	0.57	0.01	0.00	0.06	0.00	0.02	0.00	0.01	0.00	0.09	0.00
D.	BZ	Lateral	Coating	Basis	ls	me	Natural	2	0.34	0.01	0.00	0.00	0.04	0.00	0.02	0.00	0.00	0.00	0.03	0.00
D.	BZ	Lateral	Coating	Basis	ls	oc	Natural	4	1.37	0.51	0.01	0.00	0.06	0.00	0.02	0.00	0.01	0.00	0.08	0.00
D.	BZ	Lateral	Coating	Stylus	cs	me	Natural	4	0.73	0.02	0.01	0.00	0.06	0.00	0.02	0.00	0.00	0.00	0.04	0.00
D.	BZ	Lateral	Coating	Stylus	cs	oc	Natural	8	3.19	1.53	0.01	0.00	0.06	0.01	0.02	0.00	0.01	0.00	0.08	0.01
D.	BZ	Lateral	Coating	Stylus	ls	me	Natural	4	0.36	0.01	0.00	0.00	0.04	0.00	0.02	0.00	0.00	0.00	0.03	0.00
D.	BZ	Lateral	Coating	Stylus	ls	oc	Natural	8	0.90	0.07	0.01	0.00	0.06	0.00	0.02	0.00	0.01	0.00	0.08	0.00
D.	BZ	Lateral	Coating	Tip	cs	me	Natural	4	0.08	0.01	0.01	0.00	0.06	0.01	0.02	0.00	0.01	0.00	0.07	0.01
D.	BZ	Lateral	Coating	Tip	cs	oc	Natural	8	3.59	1.68	0.01	0.00	0.07	0.01	0.02	0.00	0.01	0.00	0.09	0.00
D.	BZ	Lateral	Coating	Tip	ls	me	Natural	4	0.67	0.35	0.01	0.01	0.05	0.01	0.02	0.00	0.00	0.00	0.04	0.01
D.	BZ	Lateral	Coating	Tip	ls	oc	Natural	8	1.17	0.20	0.01	0.00	0.07	0.01	0.02	0.00	0.01	0.00	0.09	0.01
D.	MZ	Central	Inside				Natural	32	0.34	0.21	0.02	0.02	0.11	0.13	0.03	0.01	0.02	0.01	0.12	0.04
D.	MZ	Central	Coating	Cusp		me	Natural	20	0.29	0.06	0.01	0.00	0.05	0.01	0.02	0.00	0.01	0.00	0.08	0.00
D.	MZ	Central	Coating	Cusp		oc	Natural	20	1.64	0.08	0.03	0.01	0.14	0.01	0.04	0.00	0.03	0.00	0.20	0.01
D.	MZ	Central	Coating	Tip		me	Natural	22	1.74	0.36	0.01	0.00	0.04	0.01	0.03	0.00	0.01	0.00	0.09	0.01
D.	MZ	Central	Coating	Tip		oc	Natural	22	9.53	0.32	0.03	0.00	0.09	0.01	0.05	0.00	0.03	0.00	0.23	0.01
D.	MZ	Lateral	Inside				Natural	32	0.39	0.24	0.02	0.02	0.13	0.14	0.04	0.01	0.02	0.01	0.14	0.05
D.	MZ	Lateral	Coating	Basis	cs	me	Natural	5	0.60	0.11	0.02	0.00	0.07	0.00	0.02	0.00	0.02	0.00	0.13	0.00
D.	MZ	Lateral	Coating	Basis	cs	oc	Natural	10	6.24	1.16	0.02	0.00	0.10	0.00	0.03	0.00	0.02	0.00	0.19	0.00
D.	MZ	Lateral	Coating	Basis	ls	me	Natural	5	0.38	0.02	0.01	0.00	0.06	0.01	0.02	0.00	0.01	0.00	0.10	0.01
D.	MZ	Lateral	Coating	Basis	ls	oc	Natural	10	2.76	0.15	0.02	0.00	0.09	0.00	0.03	0.01	0.02	0.00	0.16	0.01
D.	MZ	Lateral	Coating	Stylus	cs	me	Natural	5	0.62	0.01	0.02	0.00	0.07	0.00	0.02	0.00	0.02	0.00	0.14	0.00
D.	MZ	Lateral	Coating	Stylus	cs	oc	Natural	10	8.13	0.36	0.03	0.00	0.12	0.00	0.03	0.00	0.02	0.00	0.19	0.00
D.	MZ	Lateral	Coating	Stylus	ls	me	Natural	5	0.33	0.07	0.01	0.01	0.07	0.00	0.02	0.00	0.01	0.00	0.12	0.01
D.	MZ	Lateral	Coating	Stylus	ls	oc	Natural	10	2.90	0.15	0.02	0.00	0.09	0.00	0.03	0.00	0.02	0.00	0.17	0.00
D.	MZ	Lateral	Coating	Tip	cs	me	Natural	6	0.67	0.02	0.02	0.00	0.08	0.01	0.02	0.01	0.02	0.00	0.15	0.01
D.	MZ	Lateral	Coating	Tip	cs	oc	Natural	12	8.48	0.34	0.03	0.00	0.13	0.01	0.04	0.00	0.02	0.00	0.20	0.01
D.	MZ	Lateral	Coating	Tip	ls	me	Natural	6	0.45	0.03	0.02	0.00	0.07	0.00	0.02	0.00	0.02	0.01	0.13	0.00
D.	MZ	Lateral	Coating	Tip	ls	oc	Natural	12	3.04	0.14	0.02	0.00	0.10	0.00	0.03	0.00	0.02	0.00	0.18	0.00
D.	WZ	Central	Inside				Natural	28	0.45	0.19	0.03	0.01	0.08	0.09	0.04	0.04	0.02	0.01	0.10	0.04
D.	WZ	Central	Coating	Cusp		me	Natural	25	0.27	0.07	0.02	0.01	0.02	0.01	0.04	0.00	0.01	0.00	0.12	0.01
D.	WZ	Central	Coating	Cusp		oc	Natural	25	1.50	0.26	0.06	0.01	0.07	0.00	0.07	0.01	0.04	0.00	0.29	0.02
D.	WZ	Central	Coating	Tip		me	Natural	16	1.56	0.34	0.03	0.00	0.02	0.00	0.07	0.04	0.02	0.00	0.14	0.01
D.	WZ	Central	Coating	Tip		oc	Natural	16	8.76	0.79	0.08	0.01	0.06	0.01	0.13	0.07	0.05	0.01	0.34	0.02
D.	WZ	Lateral	Inside				Natural	28	0.52	0.22	0.03	0.02	0.09	0.11	0.06	0.05	0.03	0.01	0.11	0.05
D.	WZ	Lateral	Coating	Basis	cs	me	Natural	5	0.96	0.02	0.03	0.00	0.20	0.01	0.05	0.00	0.02	0.00	0.23	0.00
D.	WZ	Lateral	Coating	Basis	cs	oc	Natural	10	6.68	0.92	0.06	0.00	0.50	0.03	0.06	0.01	0.04	0.00	0.29	0.01
D.	WZ	Lateral	Coating	Basis	ls	me	Natural	5	0.85	0.04	0.03	0.00	0.14	0.00	0.04	0.00	0.02	0.00	0.20	0.01
D.	WZ	Lateral	Coating	Basis	ls	oc	Natural	10	2.25	0.38	0.04	0.00	0.30	0.04	0.06	0.00	0.03	0.00	0.26	0.01
D.	WZ	Lateral	Coating	Stylus	cs	me	Natural	4	0.99	0.01	0.04	0.00	0.22	0.00	0.06	0.01	0.02	0.00	0.24	0.00
D.	WZ	Lateral	Coating	Stylus	cs	oc	Natural	8	6.61	0.99	0.07	0.00	0.75	0.12	0.08	0.01	0.04	0.00	0.30	0.01
D.	WZ	Lateral	Coating	Stylus	ls	me	Natural	4	0.90	0.02	0.03	0.00	0.16	0.01	0.04	0.01	0.02	0.00	0.21	0.00
D.	WZ	Lateral	Coating	Stylus	ls	oc	Natural	8	2.61	0.35	0.05	0.00	0.37	0.02	0.06	0.00	0.03	0.00	0.27	0.01
D.	WZ	Lateral	Coating	Tip	cs	me	Natural	5	1.02	0.03	0.04	0.00	0.23	0.02	0.06	0.00	0.03	0.00	0.25	0.01
D.	WZ	Lateral	Coating	Tip	cs	oc	Natural	10	6.73	0.91	0.08	0.01	1.13	0.13	0.17	0.05	0.05	0.01	0.32	0.02
D.	WZ	Lateral	Coating	Tip	ls	me	Natural	5	0.93	0.02	0.03	0.00	0.19	0.00	0.05	0.00	0.02	0.00	0.22	0.00
D.	WZ	Lateral	Coating	Tip	ls	oc	Natural	6	2.52	0.38	0.06	0.01	0.40	0.02	0.06	0.00	0.04	0.01	0.27	0.01

S Table 14. The results from the energy-dispersive X-ray (EDX) analysis on the natural and demineralised radulae of *Dendronotus lacteus*. The data are presented below, showing the mean and standard deviation of elemental proportions in atomic percentages (%). Elemental proportions are sorted according to tooth types (central, lateral), for both the inner tooth structure (inside) and the tooth coating (surface), to the tooth region (cusp, tip, basis, stylus) and to the radular region (building zone, maturation zone, working zone). Abbreviations: BZ, building zone; cs, side of the lateral teeth facing the central (rhachidian) tooth; *D.*, *Dendronotus lacteus*; demin., demineralized; ls, outer/lateral side of the lateral teeth; me, tooth coating towards the membrane; MZ, maturation zone; *N*, quantity of measurements; oc, tooth coating towards the oral cavity; SD, standard deviation; WZ, working zone.

Species	Zone	Tooth	Layer	Region	Side	Direction	State	N	Na		P+Pt		S		Si		Zn	
									Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
D.	BZ	Central	Inside				Demin.	10	0.00	0.00	0.33	0.12	0.46	0.09	0.03	0.00	0.08	0.06
D.	BZ	Central	Coating	Cusp		oc	Demin.	12	0.00	0.00	0.33	0.06	0.26	0.04	1.70	0.91	0.02	0.00
D.	BZ	Central	Coating	Tip		me	Demin.	12	0.00	0.00	0.31	0.09	0.16	0.10	0.15	0.18	0.02	0.00
D.	BZ	Central	Coating	Tip		oc	Demin.	16	0.00	0.00	0.31	0.08	0.28	0.05	0.27	0.14	0.02	0.00
D.	BZ	Lateral	Inside				Demin.	10	0.00	0.00	0.28	0.10	0.36	0.06	0.02	0.01	0.06	0.05
D.	BZ	Lateral	Coating	Basis	cs	me	Demin.	2	0.00	0.00	0.18	0.01	0.19	0.02	0.08	0.01	0.02	0.00
D.	BZ	Lateral	Coating	Basis	cs	oc	Demin.	4	0.00	0.00	0.28	0.04	0.23	0.04	0.12	0.03	0.02	0.00
D.	BZ	Lateral	Coating	Basis	ls	me	Demin.	2	0.00	0.00	0.20	0.01	0.02	0.00	0.08	0.03	0.02	0.00
D.	BZ	Lateral	Coating	Basis	ls	oc	Demin.	4	0.00	0.00	0.29	0.05	0.20	0.02	1.59	0.20	0.02	0.01
D.	BZ	Lateral	Coating	Stylus	cs	me	Demin.	4	0.00	0.00	0.29	0.02	0.19	0.04	0.08	0.05	0.02	0.01
D.	BZ	Lateral	Coating	Stylus	cs	oc	Demin.	8	0.00	0.00	0.27	0.04	0.18	0.03	0.10	0.05	0.02	0.01
D.	BZ	Lateral	Coating	Stylus	ls	me	Demin.	4	0.00	0.00	0.32	0.03	0.02	0.01	0.08	0.02	0.02	0.01
D.	BZ	Lateral	Coating	Stylus	ls	oc	Demin.	8	0.00	0.00	0.30	0.05	0.20	0.03	1.92	1.73	0.02	0.00
D.	BZ	Lateral	Coating	Tip	cs	me	Demin.	4	0.00	0.00	0.22	0.05	0.21	0.03	0.07	0.07	0.02	0.01
D.	BZ	Lateral	Coating	Tip	cs	oc	Demin.	8	0.00	0.00	0.18	0.03	0.22	0.04	0.03	0.01	0.02	0.00
D.	BZ	Lateral	Coating	Tip	ls	me	Demin.	4	0.00	0.00	0.24	0.09	0.11	0.11	0.13	0.07	0.02	0.01
D.	BZ	Lateral	Coating	Tip	ls	oc	Demin.	8	0.00	0.00	0.20	0.02	0.20	0.03	1.69	1.51	0.02	0.00
D.	MZ	Central	Inside				Demin.	32	0.00	0.00	0.23	0.06	0.27	0.12	0.02	0.01	0.06	0.07
D.	MZ	Central	Coating	Cusp		oc	Demin.	20	0.00	0.00	0.29	0.08	0.38	0.06	2.57	0.39	0.04	0.01
D.	MZ	Central	Coating	Tip		me	Demin.	22	0.00	0.00	0.29	0.07	0.34	0.05	0.15	0.04	0.03	0.00
D.	MZ	Central	Coating	Tip		oc	Demin.	22	0.00	0.00	0.26	0.05	0.42	0.07	0.50	0.09	0.06	0.01
D.	MZ	Lateral	Inside				Demin.	32	0.00	0.00	0.26	0.08	0.35	0.16	0.02	0.01	0.08	0.10
D.	MZ	Lateral	Coating	Basis	cs	me	Demin.	5	0.00	0.00	0.26	0.09	0.27	0.06	0.08	0.02	0.03	0.01
D.	MZ	Lateral	Coating	Basis	cs	oc	Demin.	10	0.00	0.00	0.26	0.04	0.33	0.04	0.13	0.03	0.03	0.01
D.	MZ	Lateral	Coating	Basis	ls	me	Demin.	5	0.00	0.00	0.24	0.08	0.27	0.05	0.17	0.04	0.03	0.01
D.	MZ	Lateral	Coating	Basis	ls	oc	Demin.	10	0.00	0.00	0.23	0.05	0.29	0.04	3.13	0.58	0.03	0.00
D.	MZ	Lateral	Coating	Stylus	cs	me	Demin.	5	0.00	0.00	0.26	0.05	0.31	0.05	0.10	0.03	0.03	0.01
D.	MZ	Lateral	Coating	Stylus	cs	oc	Demin.	10	0.00	0.00	0.23	0.05	0.33	0.06	0.15	0.03	0.04	0.01
D.	MZ	Lateral	Coating	Stylus	ls	me	Demin.	5	0.00	0.00	0.20	0.06	0.28	0.05	0.20	0.06	0.02	0.00
D.	MZ	Lateral	Coating	Stylus	ls	oc	Demin.	10	0.00	0.00	0.25	0.07	0.25	0.03	3.18	0.46	0.03	0.01
D.	MZ	Lateral	Coating	Tip	cs	oc	Demin.	12	0.00	0.00	0.22	0.04	0.33	0.06	0.16	0.03	0.04	0.01
D.	MZ	Lateral	Coating	Tip	ls	me	Demin.	6	0.00	0.00	0.27	0.07	0.27	0.03	0.26	0.04	0.02	0.00
D.	MZ	Lateral	Coating	Tip	ls	oc	Demin.	12	0.00	0.00	0.22	0.04	0.30	0.05	3.76	0.72	0.03	0.00
D.	MZ	Lateral	Coating	Tip		me	Demin.	6	0.00	0.00	0.28	0.07	0.31	0.06	0.14	0.05	0.03	0.01
D.	WZ	Central	Inside				Demin.	28	0.00	0.01	0.25	0.05	0.32	0.12	0.02	0.01	0.05	0.07
D.	WZ	Central	Coating	Cusp		oc	Demin.	25	0.00	0.01	0.38	0.07	0.52	0.08	3.62	0.50	0.15	0.03
D.	WZ	Central	Coating	Tip		me	Demin.	15	0.00	0.01	0.37	0.07	0.50	0.08	0.31	0.07	0.08	0.01
D.	WZ	Central	Coating	Tip		oc	Demin.	16	0.00	0.00	0.48	0.06	0.69	0.15	0.55	0.11	0.32	0.08
D.	WZ	Lateral	Inside				Demin.	28	0.00	0.01	0.29	0.06	0.42	0.15	0.02	0.01	0.06	0.08
D.	WZ	Lateral	Coating	Basis	cs	me	Demin.	5	0.00	0.00	0.32	0.06	0.42	0.06	0.29	0.05	0.07	0.01
D.	WZ	Lateral	Coating	Basis	cs	oc	Demin.	10	0.00	0.00	0.39	0.08	0.46	0.09	0.25	0.06	0.22	0.06
D.	WZ	Lateral	Coating	Basis	ls	me	Demin.	5	0.01	0.02	0.31	0.06	0.39	0.05	0.34	0.09	0.05	0.01
D.	WZ	Lateral	Coating	Basis	ls	oc	Demin.	10	0.00	0.00	0.30	0.05	0.44	0.06	3.23	0.47	0.12	0.02
D.	WZ	Lateral	Coating	Stylus	cs	me	Demin.	4	0.00	0.01	0.32	0.02	0.49	0.07	0.34	0.08	0.09	0.01
D.	WZ	Lateral	Coating	Stylus	cs	oc	Demin.	8	0.00	0.00	0.36	0.05	0.53	0.04	0.27	0.02	0.29	0.03
D.	WZ	Lateral	Coating	Stylus	ls	me	Demin.	4	0.01	0.02	0.31	0.06	0.43	0.1	0.37	0.09	0.07	0.02
D.	WZ	Lateral	Coating	Stylus	ls	oc	Demin.	8	0.00	0.00	0.32	0.06	0.45	0.04	3.07	0.39	0.13	0.01
D.	WZ	Lateral	Coating	Tip	cs	me	Demin.	5	0.00	0.00	0.32	0.02	0.49	0.08	0.35	0.06	0.12	0.02
D.	WZ	Lateral	Coating	Tip	cs	oc	Demin.	10	0.00	0.00	0.45	0.08	0.77	0.17	0.32	0.07	0.37	0.07
D.	WZ	Lateral	Coating	Tip	ls	me	Demin.	5	0.00	0.00	0.34	0.06	0.40	0.06	0.37	0.09	0.06	0.01
D.	WZ	Lateral	Coating	Tip	ls	oc	Demin.	6	0.00	0.00	0.37	0.09	0.40	0.08	3.14	0.38	0.14	0.03
D.	BZ	Central	Inside				Natural	10	0.00	0.00	0.37	0.16	0.67	0.1	0.04	0.01	0.12	0.09
D.	BZ	Central	Coating	Cusp		me	Natural	12	0.00	0.00	0.31	0.06	0.21	0.01	0.79	0.42	0.01	0.00
D.	BZ	Central	Coating	Cusp		oc	Natural	12	0.00	0.00	0.33	0.06	0.41	0.01	2.64	1.40	0.03	0.01
D.	BZ	Central	Coating	Tip		me	Natural	16	0.00	0.00	0.30	0.08	0.23	0.01	0.13	0.06	0.02	0.01
D.	BZ	Central	Coating	Tip		oc	Natural	16	0.00	0.00	0.32	0.08	0.45	0.01	0.42	0.20	0.04	0.00
D.	BZ	Lateral	Inside				Natural	10	0.00	0.00	0.32	0.14	0.52	0.07	0.03	0.01	0.10	0.07

D.	BZ	Lateral	Coating	Basis	cs	me	Natural	2	0.00	0.00	0.18	0.01	0.23	0.01	0.13	0.01	0.02	0.00
D.	BZ	Lateral	Coating	Basis	cs	oc	Natural	4	0.00	0.00	0.29	0.04	0.31	0.01	0.16	0.01	0.02	0.00
D.	BZ	Lateral	Coating	Basis	ls	me	Natural	2	0.00	0.00	0.20	0.01	0.02	0.01	0.13	0.00	0.02	0.00
D.	BZ	Lateral	Coating	Basis	ls	oc	Natural	4	0.00	0.00	0.30	0.05	0.30	0.01	2.34	0.09	0.02	0.00
D.	BZ	Lateral	Coating	Stylus	cs	me	Natural	4	0.00	0.00	0.29	0.03	0.25	0.01	0.14	0.07	0.02	0.00
D.	BZ	Lateral	Coating	Stylus	cs	oc	Natural	8	0.00	0.00	0.28	0.04	0.29	0.03	0.15	0.05	0.03	0.01
D.	BZ	Lateral	Coating	Stylus	ls	me	Natural	4	0.00	0.00	0.31	0.03	0.02	0.00	0.16	0.07	0.02	0.00
D.	BZ	Lateral	Coating	Stylus	ls	oc	Natural	8	0.00	0.00	0.30	0.04	0.30	0.02	4.44	4.22	0.02	0.00
D.	BZ	Lateral	Coating	Tip	cs	me	Natural	4	0.00	0.00	0.22	0.05	0.27	0.02	0.13	0.11	0.02	0.00
D.	BZ	Lateral	Coating	Tip	cs	oc	Natural	8	0.00	0.00	0.19	0.03	0.33	0.02	0.05	0.01	0.03	0.00
D.	BZ	Lateral	Coating	Tip	ls	me	Natural	4	0.00	0.00	0.23	0.08	0.12	0.12	0.21	0.08	0.02	0.00
D.	BZ	Lateral	Coating	Tip	ls	oc	Natural	8	0.00	0.00	0.20	0.03	0.33	0.01	2.99	2.69	0.03	0.01
D.	MZ	Central	Inside				Natural	32	0.00	0.00	0.25	0.08	0.39	0.18	0.02	0.01	0.09	0.10
D.	MZ	Central	Coating	Cusp		me	Natural	20	0.00	0.00	0.28	0.08	0.30	0.01	1.23	0.10	0.02	0.00
D.	MZ	Central	Coating	Cusp		oc	Natural	20	0.00	0.00	0.32	0.08	0.59	0.02	4.09	0.32	0.06	0.01
D.	MZ	Central	Coating	Tip		me	Natural	22	0.00	0.00	0.25	0.06	0.33	0.01	0.23	0.02	0.03	0.01
D.	MZ	Central	Coating	Tip		oc	Natural	22	0.00	0.00	0.29	0.06	0.66	0.02	0.78	0.06	0.09	0.01
D.	MZ	Lateral	Inside				Natural	32	0.00	0.00	0.29	0.10	0.50	0.22	0.02	0.02	0.11	0.13
D.	MZ	Lateral	Coating	Basis	cs	me	Natural	5	0.00	0.00	0.27	0.09	0.37	0.01	0.16	0.01	0.04	0.00
D.	MZ	Lateral	Coating	Basis	cs	oc	Natural	10	0.00	0.00	0.28	0.03	0.46	0.01	0.19	0.02	0.05	0.00
D.	MZ	Lateral	Coating	Basis	ls	me	Natural	5	0.00	0.00	0.25	0.08	0.34	0.01	0.29	0.01	0.03	0.00
D.	MZ	Lateral	Coating	Basis	ls	oc	Natural	10	0.00	0.00	0.25	0.05	0.40	0.01	7.24	0.69	0.04	0.00
D.	MZ	Lateral	Coating	Stylus	cs	me	Natural	5	0.00	0.00	0.26	0.05	0.37	0.01	0.16	0.02	0.04	0.00
D.	MZ	Lateral	Coating	Stylus	cs	oc	Natural	10	0.00	0.00	0.24	0.05	0.48	0.01	0.22	0.01	0.06	0.00
D.	MZ	Lateral	Coating	Stylus	ls	me	Natural	5	0.00	0.00	0.20	0.06	0.35	0.01	0.36	0.03	0.03	0.00
D.	MZ	Lateral	Coating	Stylus	ls	oc	Natural	10	0.00	0.00	0.28	0.06	0.42	0.02	8.24	0.85	0.04	0.00
D.	MZ	Lateral	Coating	Tip	cs	me	Natural	6	0.00	0.00	0.29	0.07	0.39	0.01	0.25	0.04	0.04	0.00
D.	MZ	Lateral	Coating	Tip	cs	oc	Natural	12	0.00	0.00	0.25	0.04	0.49	0.01	0.24	0.02	0.06	0.00
D.	MZ	Lateral	Coating	Tip	ls	me	Natural	6	0.00	0.00	0.29	0.08	0.36	0.01	0.49	0.02	0.03	0.00
D.	MZ	Lateral	Coating	Tip	ls	oc	Natural	12	0.00	0.00	0.24	0.05	0.44	0.01	8.33	0.98	0.05	0.00
D.	WZ	Central	Inside				Natural	28	0.00	0.01	0.27	0.05	0.46	0.17	0.02	0.02	0.07	0.10
D.	WZ	Central	Coating	Cusp		me	Natural	25	0.00	0.01	0.35	0.06	0.41	0.02	2.12	0.12	0.08	0.02
D.	WZ	Central	Coating	Cusp		oc	Natural	25	0.00	0.01	0.45	0.08	0.82	0.04	7.06	0.40	0.23	0.05
D.	WZ	Central	Coating	Tip		me	Natural	16	0.00	0.01	0.42	0.06	0.54	0.09	0.26	0.02	0.18	0.04
D.	WZ	Central	Coating	Tip		oc	Natural	16	0.00	0.01	0.60	0.07	1.08	0.18	0.87	0.08	0.51	0.10
D.	WZ	Lateral	Inside				Natural	28	0.00	0.01	0.31	0.06	0.60	0.22	0.03	0.02	0.09	0.12
D.	WZ	Lateral	Coating	Basis	cs	me	Natural	5	0.00	0.00	0.34	0.07	0.56	0.01	0.54	0.01	0.09	0.00
D.	WZ	Lateral	Coating	Basis	cs	oc	Natural	10	0.00	0.00	0.47	0.08	0.70	0.03	0.38	0.02	0.34	0.05
D.	WZ	Lateral	Coating	Basis	ls	me	Natural	5	0.01	0.02	0.33	0.06	0.51	0.01	0.63	0.02	0.07	0.00
D.	WZ	Lateral	Coating	Basis	ls	oc	Natural	10	0.00	0.00	0.33	0.05	0.63	0.02	6.48	0.30	0.17	0.01
D.	WZ	Lateral	Coating	Stylus	cs	me	Natural	4	0.01	0.02	0.34	0.03	0.59	0.02	0.58	0.02	0.10	0.00
D.	WZ	Lateral	Coating	Stylus	cs	oc	Natural	8	0.00	0.00	0.44	0.04	0.82	0.07	0.41	0.02	0.44	0.03
D.	WZ	Lateral	Coating	Stylus	ls	me	Natural	4	0.01	0.02	0.32	0.03	0.52	0.01	0.66	0.02	0.08	0.00
D.	WZ	Lateral	Coating	Stylus	ls	oc	Natural	8	0.00	0.00	0.36	0.05	0.65	0.02	6.63	0.30	0.19	0.01
D.	WZ	Lateral	Coating	Tip	cs	me	Natural	5	0.00	0.00	0.34	0.02	0.61	0.02	0.61	0.02	0.15	0.03
D.	WZ	Lateral	Coating	Tip	cs	oc	Natural	10	0.00	0.00	0.52	0.08	1.06	0.11	0.44	0.03	0.51	0.04
D.	WZ	Lateral	Coating	Tip	ls	me	Natural	5	0.00	0.00	0.36	0.06	0.54	0.00	0.73	0.18	0.08	0.00
D.	WZ	Lateral	Coating	Tip	ls	oc	Natural	6	0.00	0.00	0.44	0.07	0.66	0.03	6.96	0.11	0.23	0.02

S Table 15. The results from the energy-dispersive X-ray (EDX) analysis on natural radulae of *Flabellina affinis*. The data are presented below, showing the mean and standard deviation of elemental proportions in atomic percentages (%). Elemental proportions are sorted according to tooth types (central, lateral), for both the inner tooth structure (inside) and the tooth coating (surface), to the tooth region (cusp, tip, basis, stylus) and to the radular region (building zone, maturation zone, working zone). Abbreviations: BZ, building zone; cs, side of the lateral teeth facing the central (rhachidian) tooth; F., *Flabellina affinis*; ls, outer/lateral side of the lateral teeth; me, tooth coating towards the membrane; MZ, maturation zone; N, quantity of measurements; oc, tooth coating towards the oral cavity; SD, standard deviation; WZ, working zone.

Species	Zone	Tooth	Layer	Region	Side	Direction	State	N	Ca		Cl		Cu		Fe		K		Mg	
									Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
F.	BZ	Central	Inside				Natural	9	0.47	0.32	0.06	0.01	0.08	0.05	0.04	0.02	0.03	0.01	0.12	0.07
F.	BZ	Central	Coating	Cusp		me	Natural	10	0.17	0.07	0.00	0.00	0.16	0.03	0.01	0.00	0.00	0.00	0.04	0.01
F.	BZ	Central	Coating	Cusp		oc	Natural	11	1.18	0.53	0.01	0.00	0.50	0.12	0.02	0.00	0.01	0.00	0.10	0.01
F.	BZ	Central	Coating	Tip		me	Natural	16	1.06	0.80	0.01	0.00	0.12	0.04	0.02	0.01	0.01	0.01	0.05	0.01
F.	BZ	Central	Coating	Tip		oc	Natural	15	5.35	3.67	0.02	0.01	0.34	0.06	0.03	0.00	0.02	0.01	0.13	0.02
F.	BZ	Lateral	Inside				Natural	10	0.43	0.30	0.05	0.01	0.07	0.03	0.04	0.02	0.02	0.00	0.11	0.06
F.	BZ	Lateral	Coating	Basis	cs	me	Natural	2	1.54	0.29	0.01	0.00	0.07	0.02	0.03	0.01	0.00	0.00	0.04	0.00
F.	BZ	Lateral	Coating	Basis	cs	oc	Natural	4	1.57	0.46	0.01	0.00	0.06	0.01	0.02	0.01	0.01	0.00	0.09	0.01
F.	BZ	Lateral	Coating	Basis	ls	me	Natural	2	0.34	0.01	0.00	0.00	0.05	0.01	0.02	0.00	0.00	0.00	0.03	0.00
F.	BZ	Lateral	Coating	Basis	ls	oc	Natural	2	1.44	0.81	0.01	0.00	0.07	0.02	0.02	0.00	0.01	0.00	0.09	0.01
F.	BZ	Lateral	Coating	Stylus	cs	me	Natural	4	0.75	0.12	0.01	0.00	0.06	0.01	0.02	0.01	0.00	0.00	0.04	0.01
F.	BZ	Lateral	Coating	Stylus	cs	oc	Natural	8	3.33	1.70	0.01	0.00	0.06	0.01	0.02	0.00	0.01	0.00	0.08	0.01
F.	BZ	Lateral	Coating	Stylus	ls	me	Natural	4	0.36	0.01	0.00	0.00	0.04	0.01	0.02	0.00	0.00	0.00	0.03	0.01
F.	BZ	Lateral	Coating	Stylus	ls	oc	Natural	8	0.92	0.12	0.01	0.00	0.06	0.01	0.02	0.00	0.01	0.00	0.08	0.01
F.	BZ	Lateral	Coating	Tip	cs	me	Natural	4	0.08	0.01	0.01	0.00	0.06	0.00	0.02	0.00	0.01	0.00	0.07	0.01
F.	BZ	Lateral	Coating	Tip	cs	oc	Natural	6	3.68	2.14	0.01	0.00	0.06	0.01	0.02	0.00	0.01	0.00	0.10	0.02
F.	BZ	Lateral	Coating	Tip	ls	me	Natural	3	0.86	0.42	0.01	0.01	0.06	0.00	0.02	0.00	0.00	0.00	0.04	0.01
F.	BZ	Lateral	Coating	Tip	ls	oc	Natural	8	1.19	0.22	0.01	0.00	0.07	0.01	0.02	0.00	0.01	0.00	0.09	0.01
F.	MZ	Central	Inside				Natural	32	0.36	0.22	0.02	0.02	0.12	0.12	0.03	0.01	0.02	0.01	0.13	0.05
F.	MZ	Central	Coating	Cusp		me	Natural	20	0.29	0.06	0.01	0.00	0.05	0.01	0.02	0.00	0.01	0.00	0.08	0.01
F.	MZ	Central	Coating	Cusp		oc	Natural	20	1.66	0.16	0.03	0.01	0.14	0.02	0.04	0.01	0.03	0.01	0.21	0.02
F.	MZ	Central	Coating	Tip		me	Natural	22	1.80	0.45	0.01	0.00	0.03	0.01	0.02	0.00	0.01	0.00	0.09	0.01
F.	MZ	Central	Coating	Tip		oc	Natural	22	9.86	1.28	0.03	0.01	0.10	0.01	0.05	0.01	0.03	0.00	0.24	0.03
F.	MZ	Lateral	Inside				Natural	31	0.41	0.24	0.02	0.02	0.13	0.15	0.04	0.01	0.02	0.02	0.15	0.05
F.	MZ	Lateral	Coating	Basis	cs	me	Natural	5	0.60	0.11	0.02	0.00	0.07	0.01	0.02	0.00	0.02	0.00	0.13	0.01
F.	MZ	Lateral	Coating	Basis	cs	oc	Natural	10	6.42	1.30	0.02	0.00	0.10	0.01	0.03	0.00	0.02	0.00	0.19	0.02
F.	MZ	Lateral	Coating	Basis	ls	me	Natural	5	0.41	0.07	0.01	0.00	0.07	0.01	0.02	0.00	0.01	0.00	0.10	0.01
F.	MZ	Lateral	Coating	Basis	ls	oc	Natural	10	2.78	0.25	0.02	0.00	0.09	0.01	0.03	0.01	0.02	0.00	0.17	0.02
F.	MZ	Lateral	Coating	Stylus	cs	me	Natural	5	0.61	0.06	0.02	0.00	0.07	0.01	0.02	0.00	0.02	0.00	0.15	0.02
F.	MZ	Lateral	Coating	Stylus	cs	oc	Natural	10	8.42	1.13	0.03	0.00	0.12	0.02	0.03	0.00	0.02	0.00	0.19	0.03
F.	MZ	Lateral	Coating	Stylus	ls	me	Natural	5	0.33	0.07	0.01	0.01	0.08	0.01	0.02	0.00	0.01	0.00	0.12	0.02
F.	MZ	Lateral	Coating	Stylus	ls	oc	Natural	10	3.07	0.31	0.02	0.00	0.10	0.01	0.03	0.00	0.02	0.00	0.17	0.02
F.	MZ	Lateral	Coating	Tip	cs	me	Natural	5	0.73	0.08	0.02	0.00	0.09	0.01	0.02	0.01	0.02	0.00	0.15	0.02
F.	MZ	Lateral	Coating	Tip	cs	oc	Natural	12	8.82	1.34	0.03	0.00	0.14	0.02	0.04	0.01	0.02	0.00	0.21	0.03
F.	MZ	Lateral	Coating	Tip	ls	me	Natural	6	0.44	0.09	0.02	0.00	0.07	0.01	0.02	0.00	0.02	0.01	0.14	0.03
F.	MZ	Lateral	Coating	Tip	ls	oc	Natural	12	3.20	0.55	0.02	0.00	0.10	0.02	0.03	0.01	0.02	0.00	0.18	0.03
F.	WZ	Central	Inside				Natural	27	0.46	0.21	0.03	0.01	0.08	0.08	0.05	0.04	0.02	0.01	0.10	0.04
F.	WZ	Central	Coating	Cusp		me	Natural	25	0.28	0.09	0.03	0.01	0.02	0.00	0.04	0.01	0.01	0.00	0.12	0.01
F.	WZ	Central	Coating	Cusp		oc	Natural	25	1.57	0.34	0.07	0.01	0.07	0.01	0.07	0.01	0.04	0.01	0.30	0.04
F.	WZ	Central	Coating	Tip		me	Natural	16	1.61	0.42	0.03	0.01	0.02	0.01	0.07	0.04	0.02	0.00	0.14	0.02
F.	WZ	Central	Coating	Tip		oc	Natural	15	9.09	1.38	0.09	0.01	0.06	0.01	0.15	0.09	0.06	0.01	0.35	0.04
F.	WZ	Lateral	Inside				Natural	27	0.53	0.25	0.03	0.02	0.09	0.11	0.06	0.05	0.03	0.01	0.12	0.05
F.	WZ	Lateral	Coating	Basis	cs	me	Natural	5	1.04	0.09	0.03	0.00	0.23	0.04	0.05	0.01	0.02	0.00	0.23	0.01
F.	WZ	Lateral	Coating	Basis	cs	oc	Natural	10	6.91	1.10	0.06	0.01	0.52	0.08	0.07	0.01	0.04	0.01	0.30	0.03
F.	WZ	Lateral	Coating	Basis	ls	me	Natural	5	0.85	0.08	0.03	0.00	0.14	0.02	0.04	0.00	0.02	0.00	0.21	0.01
F.	WZ	Lateral	Coating	Basis	ls	oc	Natural	10	2.30	0.50	0.04	0.00	0.30	0.05	0.06	0.01	0.03	0.00	0.28	0.04
F.	WZ	Lateral	Coating	Stylus	cs	me	Natural	4	1.03	0.20	0.04	0.01	0.23	0.01	0.06	0.01	0.02	0.01	0.25	0.05
F.	WZ	Lateral	Coating	Stylus	cs	oc	Natural	8	6.91	1.55	0.07	0.01	0.80	0.13	0.08	0.01	0.04	0.00	0.31	0.04
F.	WZ	Lateral	Coating	Stylus	ls	me	Natural	4	0.94	0.12	0.03	0.00	0.16	0.03	0.04	0.01	0.02	0.00	0.22	0.02
F.	WZ	Lateral	Coating	Stylus	ls	oc	Natural	8	2.69	0.43	0.05	0.01	0.38	0.05	0.06	0.01	0.03	0.00	0.28	0.03
F.	WZ	Lateral	Coating	Tip	cs	me	Natural	5	1.06	0.07	0.04	0.01	0.25	0.03	0.06	0.01	0.03	0.00	0.25	0.01
F.	WZ	Lateral	Coating	Tip	cs	oc	Natural	10	6.87	1.16	0.08	0.01	1.16	0.17	0.18	0.06	0.06	0.01	0.34	0.05
F.	WZ	Lateral	Coating	Tip	ls	me	Natural	5	0.95	0.17	0.03	0.00	0.18	0.02	0.05	0.01	0.02	0.00	0.24	0.04
F.	WZ	Lateral	Coating	Tip	ls	oc	Natural	10	2.69	0.6	0.06	0.01	0.42	0.06	0.06	0.01	0.04	0.01	0.28	0.04

S Table 16. The results from the energy-dispersive X-ray (EDX) analysis on natural radulae of *Flabellina affinis*. The data are presented below, showing the mean and standard deviation of elemental proportions in atomic percentages (%). Elemental proportions are sorted according to tooth types (central, lateral), for both the inner tooth structure (inside) and the tooth coating (surface), to the tooth region (cusp, tip, basis, stylus) and to the radular region (building zone, maturation zone, working zone). Abbreviations: BZ, building zone; cs, side of the lateral teeth facing the central (rhachidian) tooth; F., *Flabellina affinis*; ls, outer/lateral side of the lateral teeth; me, tooth coating towards the membrane; MZ, maturation zone; N, quantity of measurements; oc, tooth coating towards the oral cavity; SD, standard deviation; WZ, working zone.

Species	Zone	Tooth	Layer	Region	Side	Direction	State	N	Na		P+Pt		S		Si		Zn	
									Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
F.	BZ	Central	Inside				Natural	9	0.00	0.00	0.41	0.15	0.69	0.15	0.05	0.01	0.14	0.12
F.	BZ	Central	Coating	Cusp		me	Natural	10	0.00	0.00	0.34	0.08	0.22	0.02	0.88	0.41	0.01	0.00
F.	BZ	Central	Coating	Cusp		oc	Natural	11	0.00	0.00	0.35	0.08	0.43	0.04	2.58	1.48	0.03	0.01
F.	BZ	Central	Coating	Tip		me	Natural	16	0.00	0.00	0.31	0.08	0.23	0.03	0.13	0.07	0.01	0.01
F.	BZ	Central	Coating	Tip		oc	Natural	15	0.00	0.00	0.33	0.08	0.46	0.06	0.43	0.22	0.04	0.01
F.	BZ	Lateral	Inside				Natural	10	0.00	0.00	0.33	0.15	0.54	0.11	0.04	0.01	0.10	0.09
F.	BZ	Lateral	Coating	Basis	cs	me	Natural	2	0.00	0.00	0.18	0.01	0.24	0.04	0.12	0.03	0.02	0.00
F.	BZ	Lateral	Coating	Basis	cs	oc	Natural	4	0.00	0.00	0.30	0.07	0.34	0.05	0.17	0.02	0.02	0.00
F.	BZ	Lateral	Coating	Basis	ls	me	Natural	2	0.00	0.00	0.21	0.06	0.02	0.00	0.13	0.01	0.03	0.01
F.	BZ	Lateral	Coating	Basis	ls	oc	Natural	2	0.00	0.00	0.29	0.08	0.31	0.01	2.22	0.44	0.02	0.00
F.	BZ	Lateral	Coating	Stylus	cs	me	Natural	4	0.00	0.00	0.30	0.05	0.25	0.03	0.14	0.07	0.02	0.00
F.	BZ	Lateral	Coating	Stylus	cs	oc	Natural	8	0.00	0.00	0.29	0.05	0.30	0.05	0.15	0.06	0.03	0.01
F.	BZ	Lateral	Coating	Stylus	ls	me	Natural	4	0.00	0.00	0.33	0.07	0.02	0.00	0.16	0.06	0.02	0.01
F.	BZ	Lateral	Coating	Stylus	ls	oc	Natural	8	0.00	0.00	0.31	0.03	0.30	0.04	4.62	4.49	0.02	0.00
F.	BZ	Lateral	Coating	Tip	cs	me	Natural	4	0.00	0.00	0.22	0.04	0.28	0.03	0.13	0.11	0.02	0.00
F.	BZ	Lateral	Coating	Tip	cs	oc	Natural	6	0.00	0.00	0.19	0.04	0.33	0.03	0.05	0.01	0.03	0.01
F.	BZ	Lateral	Coating	Tip	ls	me	Natural	3	0.00	0.00	0.27	0.07	0.17	0.13	0.25	0.07	0.02	0.00
F.	BZ	Lateral	Coating	Tip	ls	oc	Natural	8	0.00	0.00	0.21	0.04	0.35	0.05	3.10	2.78	0.03	0.01
F.	MZ	Central	Inside				Natural	32	0.00	0.00	0.26	0.09	0.39	0.18	0.02	0.01	0.09	0.11
F.	MZ	Central	Coating	Cusp		me	Natural	20	0.00	0.00	0.29	0.09	0.31	0.04	1.26	0.17	0.02	0.01
F.	MZ	Central	Coating	Cusp		oc	Natural	20	0.00	0.00	0.33	0.09	0.61	0.08	4.19	0.57	0.07	0.01
F.	MZ	Central	Coating	Tip		me	Natural	22	0.00	0.00	0.26	0.07	0.34	0.04	0.25	0.04	0.03	0.01
F.	MZ	Central	Coating	Tip		oc	Natural	22	0.00	0.00	0.31	0.07	0.68	0.08	0.82	0.13	0.09	0.01
F.	MZ	Lateral	Inside				Natural	31	0.00	0.00	0.30	0.11	0.53	0.26	0.03	0.02	0.12	0.14
F.	MZ	Lateral	Coating	Basis	cs	me	Natural	5	0.00	0.00	0.30	0.09	0.38	0.04	0.16	0.02	0.04	0.01
F.	MZ	Lateral	Coating	Basis	cs	oc	Natural	10	0.00	0.00	0.29	0.04	0.49	0.05	0.19	0.03	0.06	0.01
F.	MZ	Lateral	Coating	Basis	ls	me	Natural	5	0.00	0.00	0.26	0.07	0.37	0.05	0.32	0.03	0.03	0.00
F.	MZ	Lateral	Coating	Basis	ls	oc	Natural	10	0.00	0.00	0.23	0.08	0.42	0.06	7.40	1.27	0.04	0.01
F.	MZ	Lateral	Coating	Stylus	cs	me	Natural	5	0.00	0.00	0.27	0.06	0.37	0.03	0.16	0.02	0.04	0.00
F.	MZ	Lateral	Coating	Stylus	cs	oc	Natural	10	0.00	0.00	0.25	0.06	0.48	0.07	0.23	0.03	0.07	0.01
F.	MZ	Lateral	Coating	Stylus	ls	me	Natural	5	0.00	0.00	0.22	0.08	0.39	0.05	0.37	0.03	0.03	0.00
F.	MZ	Lateral	Coating	Stylus	ls	oc	Natural	10	0.00	0.00	0.29	0.07	0.44	0.04	8.72	1.07	0.04	0.00
F.	MZ	Lateral	Coating	Tip	cs	me	Natural	5	0.00	0.00	0.30	0.07	0.38	0.04	0.25	0.05	0.04	0.01
F.	MZ	Lateral	Coating	Tip	cs	oc	Natural	12	0.00	0.00	0.25	0.04	0.51	0.06	0.25	0.03	0.06	0.01
F.	MZ	Lateral	Coating	Tip	ls	me	Natural	6	0.00	0.00	0.30	0.08	0.36	0.03	0.48	0.07	0.03	0.00
F.	MZ	Lateral	Coating	Tip	ls	oc	Natural	12	0.00	0.00	0.25	0.04	0.45	0.04	8.43	1.26	0.05	0.01
F.	WZ	Central	Inside				Natural	27	0.00	0.01	0.28	0.07	0.48	0.19	0.02	0.02	0.08	0.11
F.	WZ	Central	Coating	Cusp		me	Natural	25	0.00	0.01	0.36	0.07	0.42	0.06	2.18	0.28	0.08	0.02
F.	WZ	Central	Coating	Cusp		oc	Natural	25	0.00	0.01	0.46	0.09	0.84	0.11	7.28	0.92	0.24	0.05
F.	WZ	Central	Coating	Tip		me	Natural	16	0.00	0.01	0.44	0.08	0.56	0.13	0.26	0.04	0.19	0.05
F.	WZ	Central	Coating	Tip		oc	Natural	15	0.00	0.00	0.63	0.10	1.12	0.24	0.89	0.12	0.53	0.13
F.	WZ	Lateral	Inside				Natural	27	0.00	0.01	0.32	0.08	0.64	0.24	0.03	0.02	0.10	0.14
F.	WZ	Lateral	Coating	Basis	cs	me	Natural	5	0.00	0.00	0.35	0.07	0.58	0.07	0.57	0.09	0.09	0.01
F.	WZ	Lateral	Coating	Basis	cs	oc	Natural	10	0.00	0.00	0.49	0.09	0.72	0.11	0.39	0.06	0.36	0.08
F.	WZ	Lateral	Coating	Basis	ls	me	Natural	5	0.01	0.02	0.35	0.10	0.52	0.09	0.64	0.06	0.08	0.01
F.	WZ	Lateral	Coating	Basis	ls	oc	Natural	10	0.00	0.00	0.34	0.05	0.63	0.08	6.75	0.91	0.18	0.02
F.	WZ	Lateral	Coating	Stylus	cs	me	Natural	4	0.01	0.02	0.35	0.03	0.61	0.06	0.60	0.08	0.11	0.01
F.	WZ	Lateral	Coating	Stylus	cs	oc	Natural	8	0.00	0.00	0.46	0.05	0.83	0.11	0.43	0.06	0.46	0.08
F.	WZ	Lateral	Coating	Stylus	ls	me	Natural	4	0.01	0.02	0.33	0.04	0.53	0.06	0.69	0.14	0.08	0.01
F.	WZ	Lateral	Coating	Stylus	ls	oc	Natural	8	0.00	0.00	0.37	0.06	0.69	0.08	6.91	0.86	0.19	0.03
F.	WZ	Lateral	Coating	Tip	cs	me	Natural	5	0.00	0.00	0.35	0.02	0.63	0.09	0.66	0.06	0.15	0.04
F.	WZ	Lateral	Coating	Tip	cs	oc	Natural	10	0.00	0.00	0.54	0.09	1.09	0.15	0.45	0.07	0.52	0.07
F.	WZ	Lateral	Coating	Tip	ls	me	Natural	5	0.00	0.00	0.38	0.09	0.54	0.05	0.73	0.15	0.09	0.01
F.	WZ	Lateral	Coating	Tip	ls	oc	Natural	10	0.00	0.00	0.45	0.06	0.69	0.09	7.11	0.64	0.25	0.04