

The biodiversity of calcaxonian octocorals from the Irish continental slope inferred from multilocus mitochondrial barcoding

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Table S1. Identifications and location information for all octocorals in this study.

Voucher number	USNM Number	Haplotype	Subclade / species	Longitude (Decimal degrees)	Latitude (Decimal degrees)	Depth (m)
CE-17-266	1593468	1	D1	-10.682	48.6151	1787
CE-17-597	1593469	1	D1	-9.9423	48.5734	1729
CE-18-404	1593470	1	D1	-11.891	54.2208	1716
CE-18-435	1593471	1	D1	-11.95	54.1764	1395
CE-18-509	1593472	1	D1	-12.25	54.1342	1509
CE-18-646	1593473	1	D1	-12.556	54.0638	1418
CE-18-508	1593474	2	D1	-12.25	54.1341	1509
CE-17-269	1593475	3	B1	-10.682	48.6149	1753
CE-17-174	1593476	4	B1	-11.048	48.8303	1489
CE-17-206	1593477	5	B1	-10.681	48.6168	2080
CE-17-550	1593478	5	B1	-9.9416	48.5741	1804
CE-18-126	1593479	5	B1	-12.475	54.116	1777
CE-18-409	1593480	5	B1	-11.898	54.2236	1784
CE-17-146	1593481	6	B1	-11.048	48.8302	1468
CE-17-163	1593482	6	B1	-11.048	48.8301	1463
CE-17-424	1593483	6	B1	-10.037	48.6532	1298
CE-17-433	1593484	6	B1	-10.037	48.6532	1308
CE-17-490	1593485	6	B1	-10.036	48.6523	1309
CE-17-496	1593486	6	B1	-10.036	48.6521	1303
CE-17-501	1593487	6	B1	-10.036	48.6523	1318
CE-18-244	1593488	6	B1	-10.783	54.6626	1300
CE-17-201	1593489	7	D2	-10.681	48.6163	1997
CE-18-129	1593490	8	D2	-12.475	54.116	1791
CE-18-132	1593491	8	D2	-12.476	54.1161	1766
CE-18-387	1593492	8	D2	-11.888	54.2204	1679
CE-18-288	1593493	9	D2	-10.783	54.6626	1296
CE-18-222	1593494	10	D2	-10.783	54.6626	1300
CE-18-039	1593495	11	D2	-13.905	54.0686	2118
CE-18-197	1593496	12	I1	-10.681	48.6163	2031
CE-18-203	1593497	12	I1	-10.681	48.6165	2054
CE-17-234	1593498	13	I1	-10.681	48.6154	1852
CE-18-063	1593499	13	I1	-12.547	54.0611	1288
CE-18-415	1593500	13	I1	-11.897	54.2234	1774
CE-18-058	1593501	14	I1	-12.548	54.0611	1290
CE-18-067	1593502	14	I1	-12.548	54.0611	1290
CE-18-110	1593503	14	I1	-12.55	54.0617	1311
CE-18-111	1593504	14	I1	-12.55	54.0617	1312
CE-18-113	1593505	14	I1	-12.55	54.0617	1312
CE-18-639	1593506	14	I1	-12.558	54.0631	1483
CE-18-658	1593507	14	I1	-12.558	54.0631	149
CE-18-661	1593508	14	I1	-12.554	54.0648	1323
CE-17-125	1593509	15	I1	-11.048	48.83	1473
CE-17-511	1593510	15	I1	-10.036	48.6523	1314
CE-17-233	1593511	16	C1	-10.682	48.615	1834
CE-17-287	1593512	16	C1	-10.681	48.615	1745
CE-18-143	1593513	16	C1	-12.474	54.116	1817
CE-18-242	1593514	16	C1	-10.784	54.6627	1292
CE-18-456	1593515	16	C1	-11.945	54.1783	1532
CE-17-356	1593516	17	C1	-10.68	48.6152	1591
CE-17-276	1593517	18	J3	-10.681	48.615	1695
CE-17-274	1593518	19	J3	-10.681	48.615	1678

CE-17-284	1593519	19	J3	-10.681	48.615	1695
CE-17-289	1593520	19	J3	-10.681	48.615	1653
CE-17-348	1593521	19	J3	-10.68	48.6154	1599
CE-17-384	1593522	19	J3	-10.68	48.6154	1613
CE-18-088	1593523	19	J3	-12.551	54.0611	1361
CE-18-538	1593524	19	J3	-12.403	54.0602	1397
CE-18-653	1593525	19	J3	-12.555	54.0643	1374
CE-17-367	1593526	20	J3	-10.68	48.6154	1599
CE-17-205	1593527	21	A1	-10.681	48.6162	1980
CE-17-217	1593528	21	A1	-10.681	48.6159	1970
CE-17-229	1593529	21	A1	-10.682	48.6149	1834
CE-17-248	1593530	21	A1	~ -10.682*	~ 48.6150*	~1800*
CE-17-304	1593531	21	A1	-10.682	48.6148	1780
CE-17-425	1593532	21	A1	-10.037	48.6532	1287
CE-17-449	1593533	21	A1	-10.037	48.6532	1291
CE-18-247	1593534	21	A1	-10.784	54.6626	1294
CE-17-357	1593535	21	A1	-10.68	48.6152	1589
CE-18-339	1593536	22	A1	-11.581	54.2601	821
CE-17-216	1593537	23	F1	-10.681	48.6159	1971
CE-17-181	1593580	24	<i>Chelidonisis aurantiaca</i>	-11.049	48.8495	1507
CE-17-364	1593538	25	<i>Chrysogorgia</i> Group 7	-10.6795	48.6153	1599
CE-17-271	1593539	26	<i>Chrysogorgia</i> Group 7	-10.6806	48.6150	1657
CE-17-087	1593540	27	<i>Chrysogorgia</i> Group 3	-11.0477	48.8306	1493
CE-17-093	1593541	27	<i>Chrysogorgia</i> Group 3	-11.0482	48.8301	1460
CE-17-124	1593542	27	<i>Chrysogorgia</i> Group 3	-11.048	48.8302	1489
CE-17-129	1593543	27	<i>Chrysogorgia</i> Group 3	-11.0483	48.8298	1498
CE-17-142	1593544	27	<i>Chrysogorgia</i> Group 3	-11.0482	48.8299	1496
CE-17-283	1593545	27	<i>Chrysogorgia</i> Group 3	-10.6806	48.6150	1658
CE-18-229	1593546	27	<i>Chrysogorgia</i> Group 3	-10.7831	54.6626	1301
CE-18-289	1593547	27	<i>Chrysogorgia</i> Group 3	-10.7832	54.6627	1292
CE-18-292	1593548	27	<i>Chrysogorgia</i> Group 3	-10.7837	54.663	1299
CE-18-631	1593549	27	<i>Chrysogorgia</i> Group 3	-12.5564	54.0636	1439
CE-18-154	1593550	28	<i>Dasygorgia</i>	-12.4747	54.1161	1787
CE-18-418	1593551	28	<i>Dasygorgia</i>	-11.8957	54.2227	1772
CE-18-419	1593552	28	<i>Dasygorgia</i>	-11.8947	54.2225	1774
CE-17-388	1593553	29	<i>Chrysogorgia</i> Group 1	-10.6796*	48.6156*	~1600*
CE-18-237	1593554	29	<i>Chrysogorgia</i> Group 1	-10.7835	54.6627	1296
CE-18-248	1593555	29	<i>Chrysogorgia</i> Group 1	-10.7837	54.6626	1294

CE-18-295	1593556	29	<i>Chrysogorgia</i> Group 1	-10.7833	54.6626	1298
CE-18-632a	1593557	29	<i>Chrysogorgia</i> Group 1	-12.556	54.0638	1418
CE-18-434	1593558	30	<i>Narella bellissima</i>	-11.9516	54.1756	1348
CE-17-290	1593559	31	<i>Candidella</i> <i>imbricata</i>	-10.6796	48.6153	1591
CE-17-305	1593560	31	<i>Candidella</i> <i>imbricata</i>	-10.6796	48.6153	1591
CE-17-340	1593561	31	<i>Candidella</i> <i>imbricata</i>	-10.6797	48.6149	1594
CE-17-346	1593562	31	<i>Candidella</i> <i>imbricata</i>	-10.6795	48.6152	1589
CE-17-352	1593563	31	<i>Candidella</i> <i>imbricata</i>	-10.6796	48.6152	1591
CE-18-321	1593564	32	<i>Narella versluysi</i>	-11.5757	54.2625	907
CE-17-081	1593565	33	<i>Primnoa</i> sp.	-11.0478	48.8308	1482
CE-17-095	1593566	33	<i>Primnoa</i> sp.	-11.0476	48.8309	1490
CE-17-160	1593567	34	<i>Primnoa</i> sp.	-11.0487	48.8291	1514
CE-17-082	1593568	35	<i>Primnoa</i> sp.	-11.0478	48.831	1490
CE-17-169	1593569	35	<i>Primnoa</i> sp.	-11.0486	48.8294	1508
CE-17-084	1593570	36	<i>Primnoa</i> sp.	-11.0477	48.8306	1493
CE-17-090	1593571	36	<i>Primnoa</i> sp.	-11.0478	48.8308	1489
CE-17-101	1593572	36	<i>Primnoa</i> sp.	-11.0478	48.8308	1482
CE-17-102	1593573	36	<i>Primnoa</i> sp.	-11.0477	48.83083	1491
CE-18-261	1593574	37	<i>Thouarella</i> <i>grasshoffi</i>	-10.7835	54.6625	1291
CE-18-272	1593575	37	<i>Thouarella</i> <i>grasshoffi</i>	-10.7834	54.6626	1295
CE-18-278	1593576	37	<i>Thouarella</i> <i>grasshoffi</i>	-10.7837	54.6628	1297
CE-18-441	1593577	37	<i>Thouarella</i> <i>grasshoffi</i>	-11.9517	54.1756	1345
CE-18-577	1593578	37	<i>Thouarella</i> <i>grasshoffi</i>	-12.404	54.0597	1435
CE-18-568	1593579	38	<i>Calyptrophora</i> <i>clinata</i>	-12.4034	54.0602	1397

* Approximate location based on the collection of other specimens collected during the ROV dive. Sample location was not recorded at time of collection.

Table S2. Initial partitions provided to IQ tree and the final merged partitions and corresponding best fit model as determined by PartitionFinder in IQ-Tree.

Initial partitions	Nucleotide number	
<i>mtMutS</i> _pos1	1-936\3	
<i>mtMutS</i> _pos2	2-936\3	
<i>mtMutS</i> _pos3	3-936\3	
igr1	937-1116	
<i>COI</i> _pos1	1117-1902\3	
<i>COI</i> _pos2	1118-1902\3	
<i>COI</i> _pos3	1119-1902\3	
16S rRNA	1903-2112	
<i>NAD2</i> _pos1	2113-2688\3	
<i>NAD2</i> _pos2	2114-2688\3	
<i>NAD2</i> _pos3	2115-2688\3	
igr4	2689-3390	
Partitions selected by Partition Finder in IQ-Tree	Nucleotide number	Model selected
<i>mtMutS</i> _pos1, <i>mtMutS</i> _pos2, <i>mtMutS</i> _pos3, <i>COI</i> _pos1, <i>COI</i> _pos3, 16S rRNA, <i>NAD2</i> _pos1, <i>NAD2</i> _pos3	1-936\3, 2-936\3, 3-936\3, 1117-1902\3, 1119-1902\3, 1903-2112, 2113-2688\3, 2115-2688\3	TVM+F+R2
igr1, igr4	937-1116, 2689-3390	HKY+F+I
<i>COI</i> _pos2, <i>NAD2</i> _pos2	1118-1902\3, 2114-2688\3	HKY+F+I

Table S3. Haplotype membership of each octocoral using each genetic fragment individually, and for the concatenated sequence of all four regions (Combo). Boxes with the same number indicate that those corals share the same haplotype at the specific marker.

Voucher Number	Family	ID	Combo	<i>mtMutS</i>	<i>COI</i> + <i>igr1</i>	<i>16S</i> - <i>NAD2</i>	<i>igr4</i>
CE-17-266	Keratoisididae	D1	1	1	1	9	4
CE-17-597	Keratoisididae	D1	1	1	1	9	4
CE-18-404	Keratoisididae	D1	1	1	1	9	4
CE-18-435	Keratoisididae	D1	1	1	1	9	4
CE-18-509	Keratoisididae	D1	1	1	1	9	4
CE-18-646	Keratoisididae	D1	1	1	1	9	4
CE-18-508	Keratoisididae	D1	2	1	2	9	4
CE-17-269	Keratoisididae	B1	3	2	9	6	3
CE-17-174	Keratoisididae	B1	4	2	10	5	14
CE-17-206	Keratoisididae	B1	5	2	10	7	14
CE-17-550	Keratoisididae	B1	5	2	10	7	14
CE-18-126	Keratoisididae	B1	5	2	10	7	14
CE-18-409	Keratoisididae	B1	5	2	10	7	14
CE-17-146	Keratoisididae	B1	6	2	10	5	13
CE-17-163	Keratoisididae	B1	6	2	10	5	13
CE-17-424	Keratoisididae	B1	6	2	10	5	13
CE-17-433	Keratoisididae	B1	6	2	10	5	13
CE-17-490	Keratoisididae	B1	6	2	10	5	13
CE-17-496	Keratoisididae	B1	6	2	10	5	13
CE-17-501	Keratoisididae	B1	6	2	10	5	13
CE-18-244	Keratoisididae	B1	6	2	10	5	13
CE-17-201	Keratoisididae	D2	7	3	1	10	5
CE-18-129	Keratoisididae	D2	8	3	1	10	6
CE-18-132	Keratoisididae	D2	8	3	1	10	6
CE-18-387	Keratoisididae	D2	8	3	1	10	6
CE-18-288	Keratoisididae	D2	9	4	1	11	7
CE-18-222	Keratoisididae	D2	10	4	1	10	7

CE-18-039	Keratoisididae	D2	11	4	11	8	7
CE-18-197	Keratoisididae	I1	12	5	2	1	9
CE-18-203	Keratoisididae	I1	12	5	2	1	9
CE-17-234	Keratoisididae	I1	13	6	2	2	9
CE-18-063	Keratoisididae	I1	13	6	2	2	9
CE-18-415	Keratoisididae	I1	13	6	2	2	9
CE-18-058	Keratoisididae	I1	14	7	2	2	9
CE-18-067	Keratoisididae	I1	14	7	2	2	9
CE-18-110	Keratoisididae	I1	14	7	2	2	9
CE-18-111	Keratoisididae	I1	14	7	2	2	9
CE-18-113	Keratoisididae	I1	14	7	2	2	9
CE-18-639	Keratoisididae	I1	14	7	2	2	9
CE-18-658	Keratoisididae	I1	14	7	2	2	9
CE-18-661	Keratoisididae	I1	14	7	2	2	9
CE-17-125	Keratoisididae	I1	15	8	2	15	10
CE-17-511	Keratoisididae	I1	15	8	2	15	10
CE-17-233	Keratoisididae	C1	16	9	4	4	1
CE-17-287	Keratoisididae	C1	16	9	4	4	1
CE-18-143	Keratoisididae	C1	16	9	4	4	1
CE-18-242	Keratoisididae	C1	16	9	4	4	1
CE-18-456	Keratoisididae	C1	16	9	4	4	1
CE-17-356	Keratoisididae	C1	17	9	4	4	17
CE-17-276	Keratoisididae	J3	18	10	3	3	15
CE-17-274	Keratoisididae	J3	19	10	3	3	12
CE-17-284	Keratoisididae	J3	19	10	3	3	12
CE-17-289	Keratoisididae	J3	19	10	3	3	12
CE-17-348	Keratoisididae	J3	19	10	3	3	12
CE-17-384	Keratoisididae	J3	19	10	3	3	12
CE-18-088	Keratoisididae	J3	19	10	3	3	12
CE-18-538	Keratoisididae	J3	19	10	3	3	12

CE-18-653	Keratoisididae	J3	19	10	3	3	12
CE-17-367	Keratoisididae	J3	20	10	6	3	12
CE-17-205	Keratoisididae	A1	21	11	6	13	2
CE-17-217	Keratoisididae	A1	21	11	6	13	2
CE-17-229	Keratoisididae	A1	21	11	6	13	2
CE-17-248	Keratoisididae	A1	21	11	6	13	2
CE-17-304	Keratoisididae	A1	21	11	6	13	2
CE-17-425	Keratoisididae	A1	21	11	6	13	2
CE-17-449	Keratoisididae	A1	21	11	6	13	2
CE-18-247	Keratoisididae	A1	21	11	6	13	2
CE-17-357	Keratoisididae	A1	21	11	6	13	2
CE-18-339	Keratoisididae	A1	22	12	5	12	8*
CE-17-216	Keratoisididae	F1	23	13	8	14	16
CE-17-181	Chelidonisididae	<i>Chelidonisis aurantiaca</i>	24	14	7	16	18
CE-17-364	Chrysogorgiidae	<i>Chrysogorgia</i> Group 7	25	15	8	17	19
CE-17-271	Chrysogorgiidae	<i>Chrysogorgia</i> Group 7	26	16	9	17	19
CE-17-087	Chrysogorgiidae	<i>Chrysogorgia</i> Group 3	27	17	10	18	20
CE-17-093	Chrysogorgiidae	<i>Chrysogorgia</i> Group 3	27	17	10	18	20
CE-17-124	Chrysogorgiidae	<i>Chrysogorgia</i> Group 3	27	17	10	18	20
CE-17-129	Chrysogorgiidae	<i>Chrysogorgia</i> Group 3	27	17	10	18	20
CE-17-142	Chrysogorgiidae	<i>Chrysogorgia</i> Group 3	27	17	10	18	20
CE-17-283	Chrysogorgiidae	<i>Chrysogorgia</i> Group 3	27	17	10	18	20
CE-18-229	Chrysogorgiidae	<i>Chrysogorgia</i> Group 3	27	17	10	18	20
CE-18-289	Chrysogorgiidae	<i>Chrysogorgia</i> Group 3	27	17	10	18	20

CE-18-292	Chrysogorgiidae	<i>Chrysogorgia</i> Group 3	27	17	10	18	20
CE-18-631	Chrysogorgiidae	<i>Chrysogorgia</i> Group 3	27	17	10	18	20
CE-18-154	Chrysogorgiidae	<i>Dasygorgia</i>	28	18	10	19	20
CE-18-418	Chrysogorgiidae	<i>Dasygorgia</i>	28	18	10	19	20
CE-18-419	Chrysogorgiidae	<i>Dasygorgia</i>	28	18	10	19	20
CE-17-388	Chrysogorgiidae	<i>Chrysogorgia</i> Group 1	29	19	11	20	21
CE-18-237	Chrysogorgiidae	<i>Chrysogorgia</i> Group 1	29	19	11	20	21
CE-18-248	Chrysogorgiidae	<i>Chrysogorgia</i> Group 1	29	19	11	20	21
CE-18-295	Chrysogorgiidae	<i>Chrysogorgia</i> Group 1	29	19	11	20	21
CE-18-632a	Chrysogorgiidae	<i>Chrysogorgia</i> Group 1	29	19	11	20	21
CE-18-434	Primnoidae	<i>Narella</i> <i>bellissima</i>	30	20	12	21	22
CE-17-290	Primnoidae	<i>Candidella</i> <i>imbricata</i>	31	21	13	22	22
CE-17-305	Primnoidae	<i>Candidella</i> <i>imbricata</i>	31	21	13	22	22
CE-17-340	Primnoidae	<i>Candidella</i> <i>imbricata</i>	31	21	13	22	22
CE-17-346	Primnoidae	<i>Candidella</i> <i>imbricata</i>	31	21	13	22	22
CE-17-352	Primnoidae	<i>Candidella</i> <i>imbricata</i>	31	21	13	22	22
CE-18-321	Primnoidae	<i>Narella versluysi</i>	32	22	14	23	22
CE-17-081	Primnoidae	<i>Primnoa</i> sp.	33	23	15	24	22
CE-17-095	Primnoidae	<i>Primnoa</i> sp.	33	23	15	24	22
CE-17-082	Primnoidae	<i>Primnoa</i> sp.	35	23	16	24	22
CE-17-169	Primnoidae	<i>Primnoa</i> sp.	35	23	16	24	22

CE-17-084	Primnoidae	<i>Primnoa</i> sp.	36	23	16	25	22
CE-17-090	Primnoidae	<i>Primnoa</i> sp.	36	23	16	25	22
CE-17-101	Primnoidae	<i>Primnoa</i> sp.	36	23	16	25	22
CE-17-102	Primnoidae	<i>Primnoa</i> sp.	36	23	16	25	22
CE-17-160	Primnoidae	<i>Primnoa</i> sp.	34	24	16	24	22
CE-18-261	Primnoidae	<i>Thouarella grasshoffi</i>	37	25	17	26	23
CE-18-272	Primnoidae	<i>Thouarella grasshoffi</i>	37	25	17	26	23
CE-18-278	Primnoidae	<i>Thouarella grasshoffi</i>	37	25	17	26	23
CE-18-441	Primnoidae	<i>Thouarella grasshoffi</i>	37	25	17	26	23
CE-18-577	Primnoidae	<i>Thouarella grasshoffi</i>	37	25	17	26	23
CE-18-568	Primnoidae	<i>Calyptrophora clinata</i>	38	26	18	27	24
Total number of haplotypes			38	26	18	27	24

1. Family Keratoisididae

Thirty morphotypes belonging to 23 haplotypes were found.

Morphotype 1 – Haplotype 9

Subclade D2

Vouchers: **CE-18-288**

Location: North Porcupine Bank at 1296 m.

Colony and polyp morphology: Sparse dichotomous branching originating at the internodes, occurring in a single plane (Figure S1a, and b). Found attached to hard substrate. The coenenchyme is thick and a cream in colour with polyps, orange to pink, originating from all sides of the coenenchyme. Polyps are cylindrical (Figure S1c, and d).

Sclerites: Needles arranged longitudinally along the polyp body (≈ 6.6 mm – 2 mm, Figure S1e) and the coenenchyme (were not imaged). Intertentacular sclerites present. These needles are finely striated along the middle of the sclerite and have grooves and ridges at both ends. Blunt ended rods (≈ 800 μ m – 430 μ m) and flattened rods (≈ 300 μ m – 230 μ m) are found in the tentacles (Figure S1g). The rods from the tentacles have a heavy dentition of grooves and ridges on each end. Thorned rodlets (≈ 90 μ m) are found in the pharynx (Figure S1h).

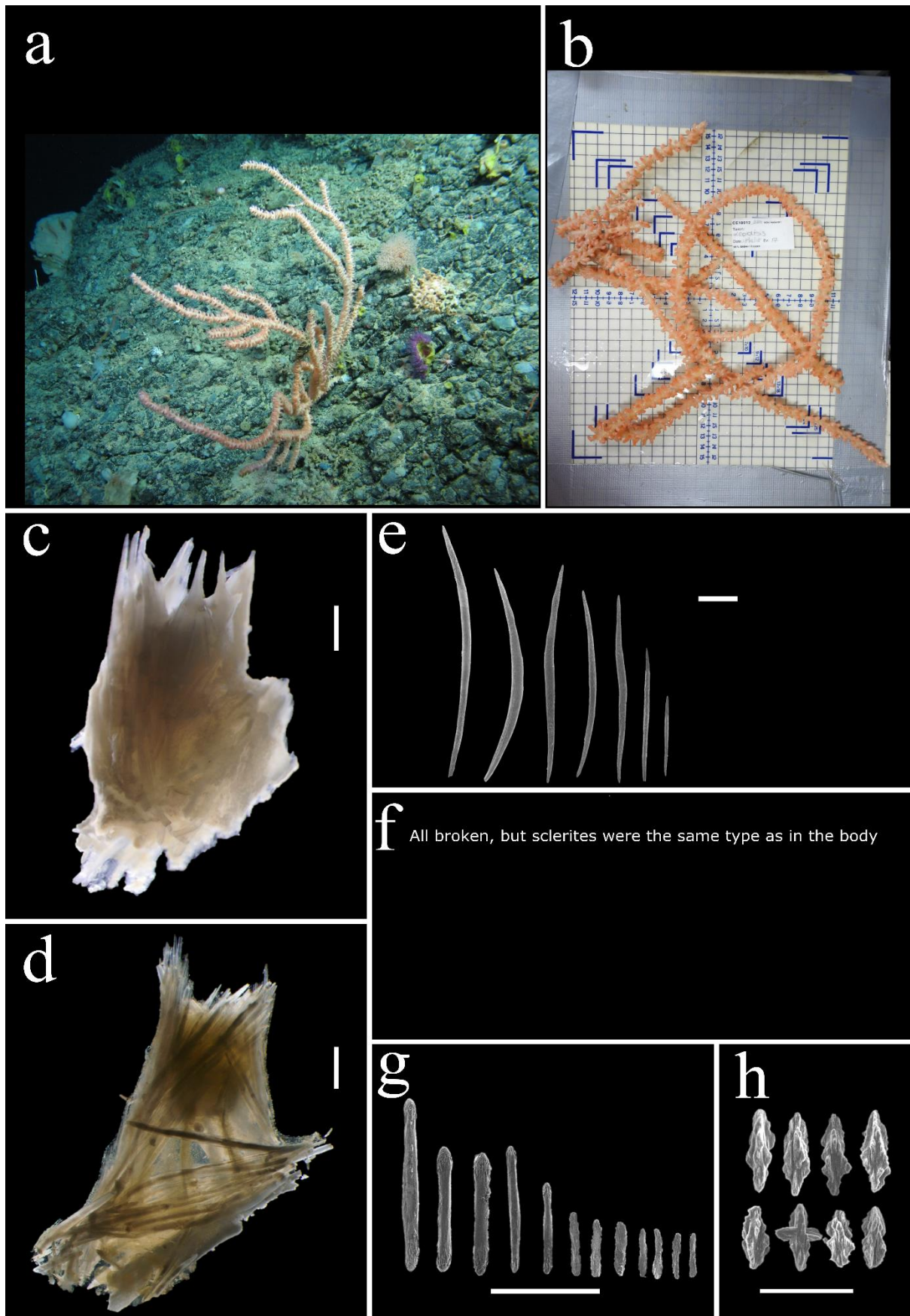


Figure S1. Morphotype 1 – Haplotype 9, voucher CE-18-288. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, g = 500 μ m, and h = 100 μ m.

Morphotype 2 – Haplotype 11

Subclade D2

Vouchers: **CE-18-039**

Location: North Porcupine Bank at 2118 m.

Colony and polyp morphology: Only a fragment was collected (Figure S2b). So only polyp morphology is available. Polyps are orange and are the same width from distal to proximal ends (Figure S2c and d). The polyps originate from opposite sides of the coenenchyme. Tentacles fold over the polyp mouth.

Sclerites: Rods (≈ 1.4 mm – 850 μ m, Figure S2e) are arranged obliquely at the base of the polyp body and longitudinally towards the distal end, sometime projecting past the base of the tentacles. Rods are also present in the coenenchyme (≈ 1.2 mm – 310 μ m, Figure S2f). The body sclerites are rods which are finely striated and have grooves and ridges on the ends. Blunt ended rods (≈ 400 μ m) with ridges and grooves at the tips and flattened rods (≈ 200 μ m – 100 μ m) are present in the tentacles (Figure S2g). Pharynx sclerites were not extracted due to a lack of available material.

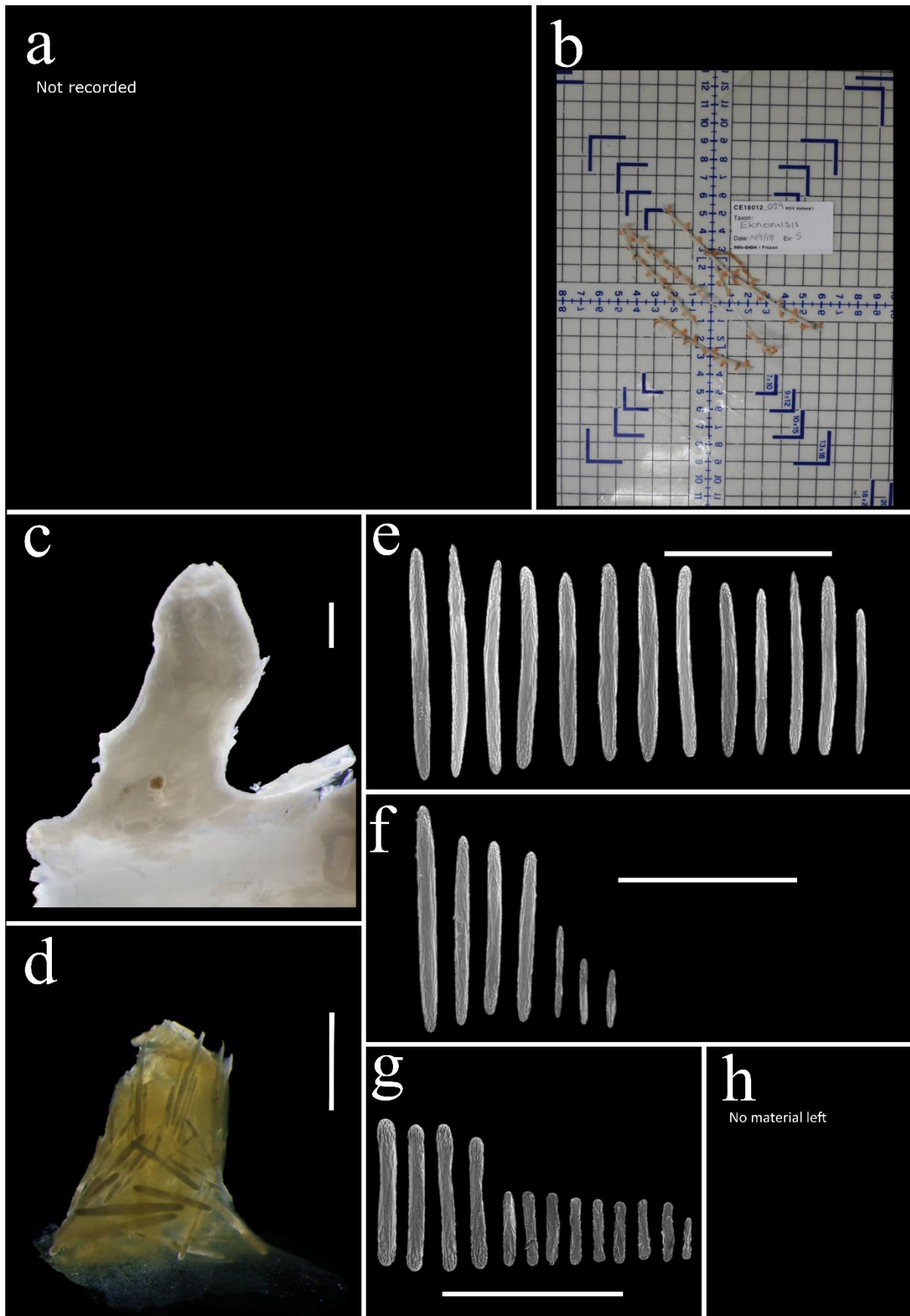


Figure S2. Morphotype 2 – Haplotype 11, voucher CE-18-039. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, e, and f = 1 mm, g = 500 μ m.

Morphotype 3 – Haplotype 10

Vouchers: **CE-18-222**

Location: North Porcupine Bank at 1301 m.

Colony and polyp morphology: Branches dichotomously from the internodes (Figure S3a and b). Found attached to hard substrate. Branching occurs often and in multiple planes. The coenenchyme is cream in colour, and densely populated with orange to pink polyps originating from all sides. The polyps are cylindrical (Figure S3c and d).

Sclerites: Needles and rods are arranged longitudinally along the polyp body (≈ 4.5 mm – 390 μ m, Figure S3e) and present in coenenchyme (≈ 1.2 mm – 440 μ m, Figure S3f). The body and coenenchyme sclerites are finely striated along the entire length of the sclerite including the tips. Blunt ended rods (≈ 750 μ m – 300 μ m) and flattened rods (≈ 210 μ m – 90 μ m) are present in the tentacles (Figure S3g) and thorned rodlets (≈ 110 μ m – 70 μ m) are found in the pharynx (Figure S3h). The blunt ended rods have grooves and ridges on both ends of each sclerite.

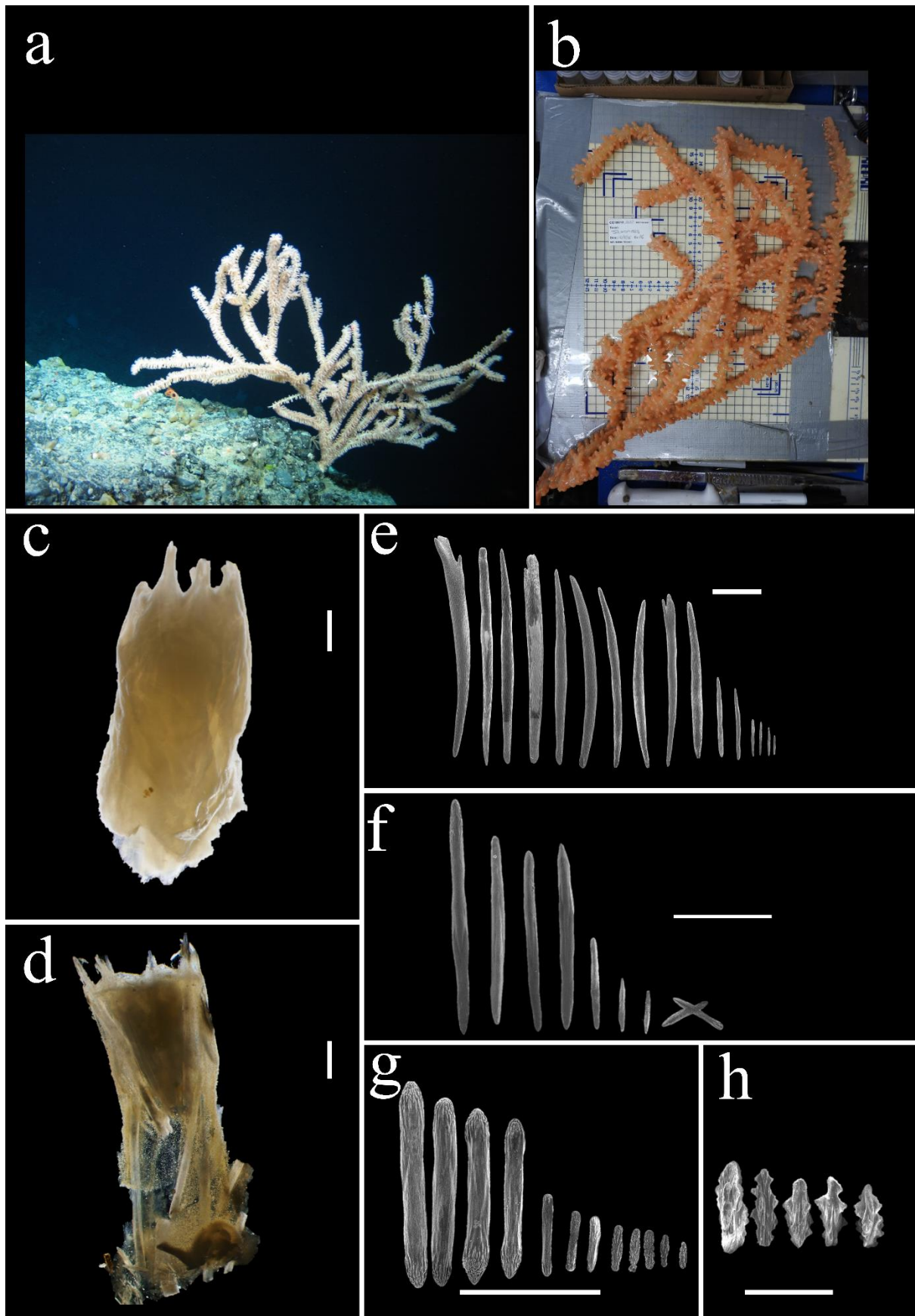


Figure S3. Morphotype 3 – Haplotype 10, voucher CE-18-222. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, f and g = 500 μ m, and h = 100 μ m.

Morphotype 4 – Haplotype 7

Vouchers: **CE-17-201**

Location: Whittard Canyon at 1997 m.

Colony and polyp morphology: Sparse dichotomous branching from the internodes (Figure S4a and b). Coenenchyme is cream in colour. Polyps are distally pink in colour and are slightly tapered at the distal end (Figure S4c and d). Polyps primarily originate from two opposing planes along the coenenchyme.

Sclerites: Rods are arranged obliquely along the polyp body (≈ 3.4 mm – 1.2 mm, Figure S4e) and coenenchyme (≈ 1.7 mm – 540 μ m, Figure S4f). These rods are finely striated along the length of the sclerite with grooves and ridges at the ends. Intertentacular sclerites present, sometimes as a cluster of sclerites. Blunt ended rods (≈ 500 μ m - 260 μ m) with grooves and ridges at the ends and flattened rods (≈ 200 μ m – 130 μ m) are found in the tentacles (Figure S4g). Thorned rodlets (≈ 75 μ m – 40 μ m) are found in the pharynx (Figure S4h).

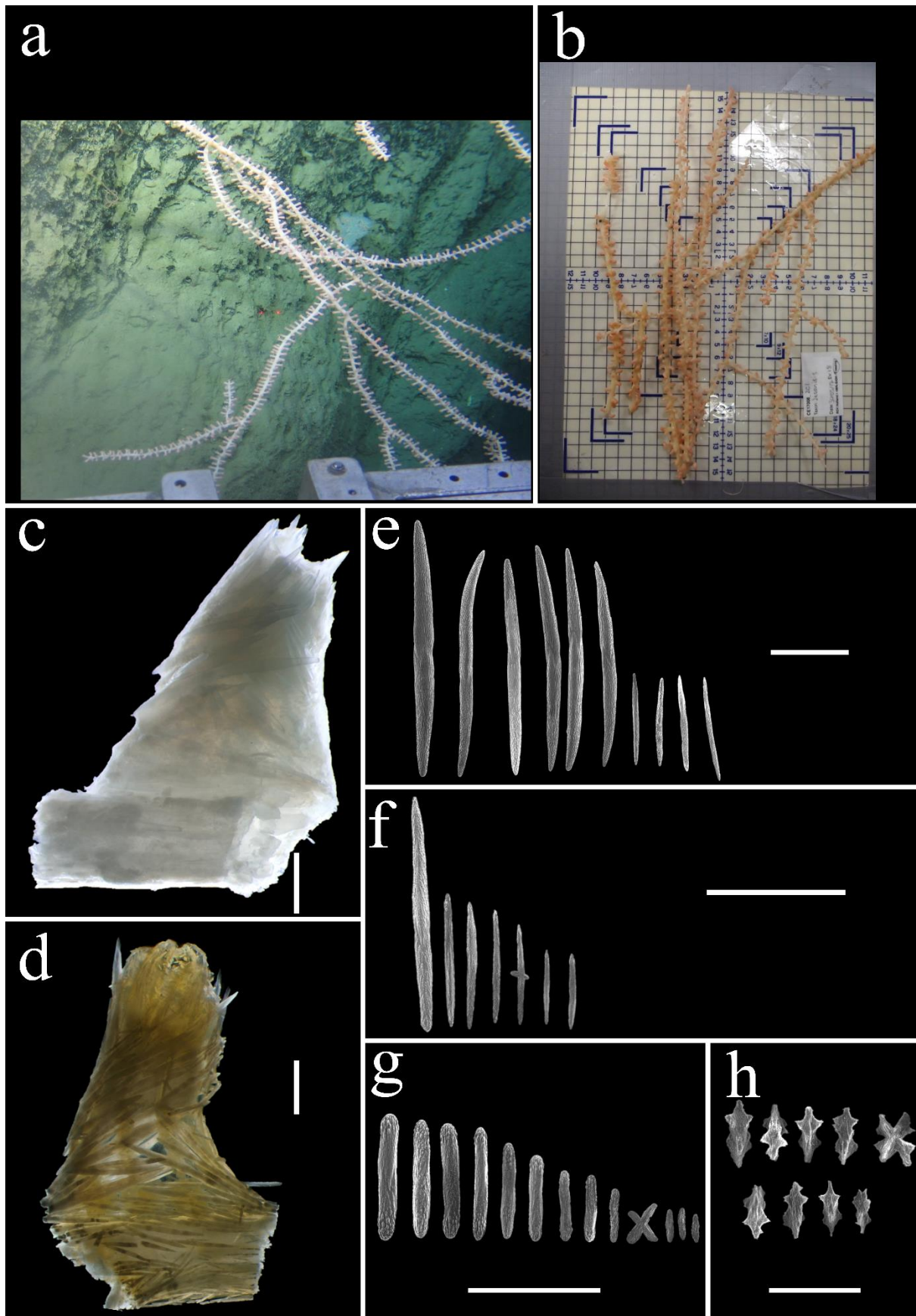


Figure S4. Morphotype 4 – Haplotype 7, voucher CE-17-201. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, e, and f = 1 mm, g = 500 μ m, and h = 100 μ m.

Morphotype 5 – Haplotype 8

Subclade D2

Vouchers: **CE-18-129**

Location: North Porcupine Bank between 1791 m.

Colony and polyp morphology: Sparse dichotomous branching from the internodes (Figure S5a and b). The coenenchyme is cream with polyps, orange to pink in colour, originating from all sides. Polyps are tapered at the distal end (Figure S5c and d).

Sclerites: Needles and rods are arranged obliquely along the polyp body (≈ 2.6 mm – 250 μ m, Figure S5e) and coenenchyme (≈ 1.9 mm – 300 μ m, Figure S5f). The body and coenenchyme sclerites are finely striated in the middle of the sclerite with both ridges and grooves found at one or both ends of the sclerites. Intertentacular sclerites present, sometimes as clusters of sclerites. Blunt ended rods (≈ 510 μ m – 400 μ m) are present in the tentacles (Figure S5g) with the same striation, grooves, and ridges present in the body and coenenchyme sclerites. Flattened rods (≈ 210 μ m – 70 μ m) are also present in the tentacles (Figure S5g). Thorned rodlets (≈ 100 μ m) are found in the pharynx (Figure S5h).

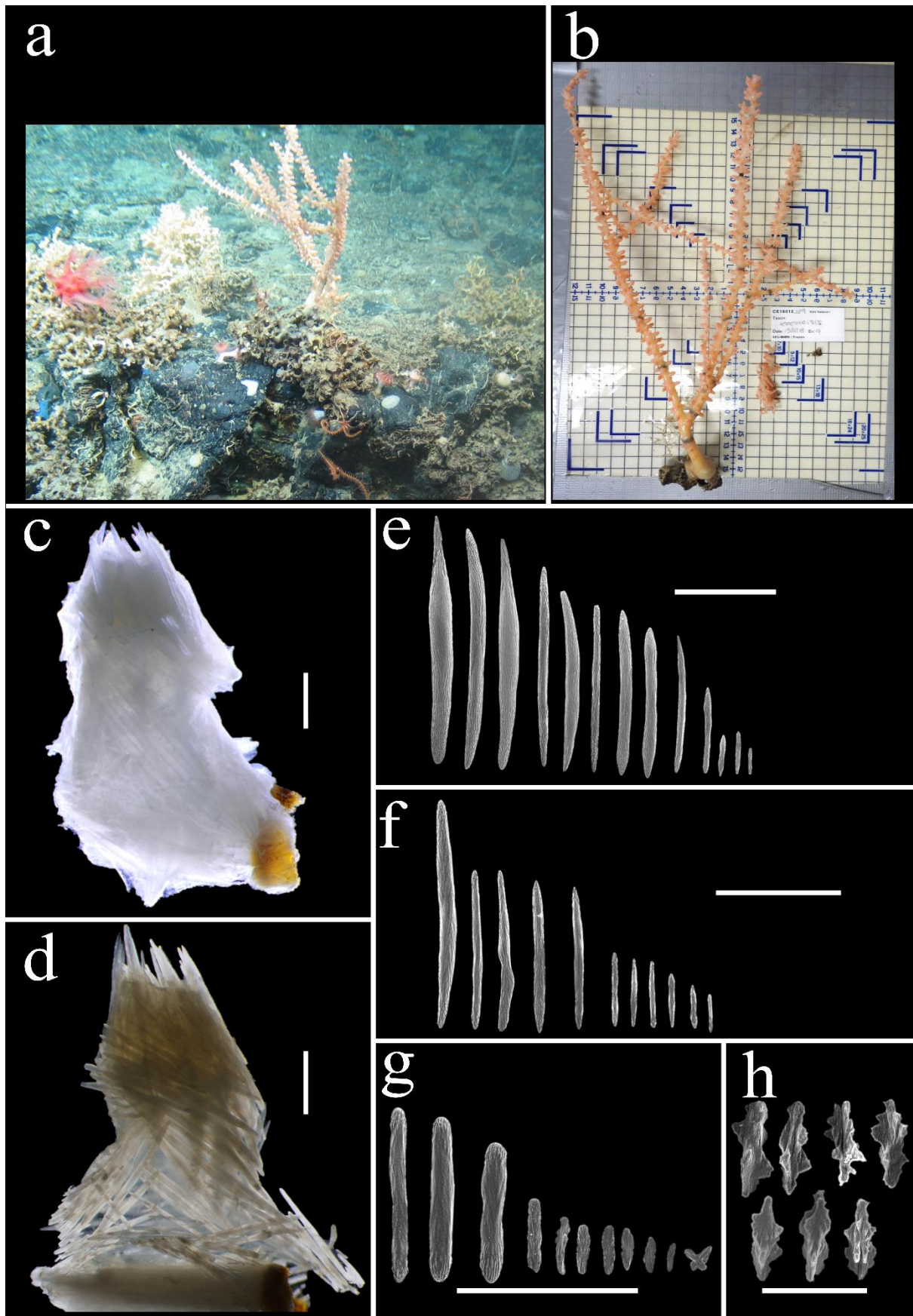


Figure S5. Morphotype 5 – Haplotype 8, voucher CE-18-249. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, e, and f = 1 mm, g = 500 μ m, and h = 100 μ m.

Morphotype 6 – Haplotype 8

Subclade D2

Vouchers: CE-18-132, **CE-18-387**

Location: North Porcupine Bank between 1679 – 1766 m.

Colony and polyp morphology: Dichotomous branching from the internodes (Figure S6a and b). Polyps are barrel shaped (Figure S6c and d), orange to pink in colour, and occur on all sides of the orange coenenchyme. Tentacles folded neatly over the top of the polyp.

Sclerites: Needles and rods are arranged obliquely along the polyp body ($\approx 2\text{ mm} - 260\text{ }\mu\text{m}$, Figure S6e), and are also present in the coenenchyme ($\approx 2.1\text{ mm} - 210\text{ }\mu\text{m}$, Figure S6f). Rarely, body sclerites project past the base of the tentacles. Blunt ended rods ($\approx 500\text{ }\mu\text{m} - 330\text{ }\mu\text{m}$) with grooves and ridges at the tips and fattened rods are found in the tentacles ($\approx 165\text{ }\mu\text{m} - 90\text{ }\mu\text{m}$, Figure S6g). The body and coenenchyme sclerites are finely striated and have grooves and ridges at the ends of the sclerites. The blunt ended rods are also ornamented with grooves and ridges at the sclerite tips. Thorned rodlets ($\approx 100\text{ }\mu\text{m}$) are present in the pharynx (Figure S6h).

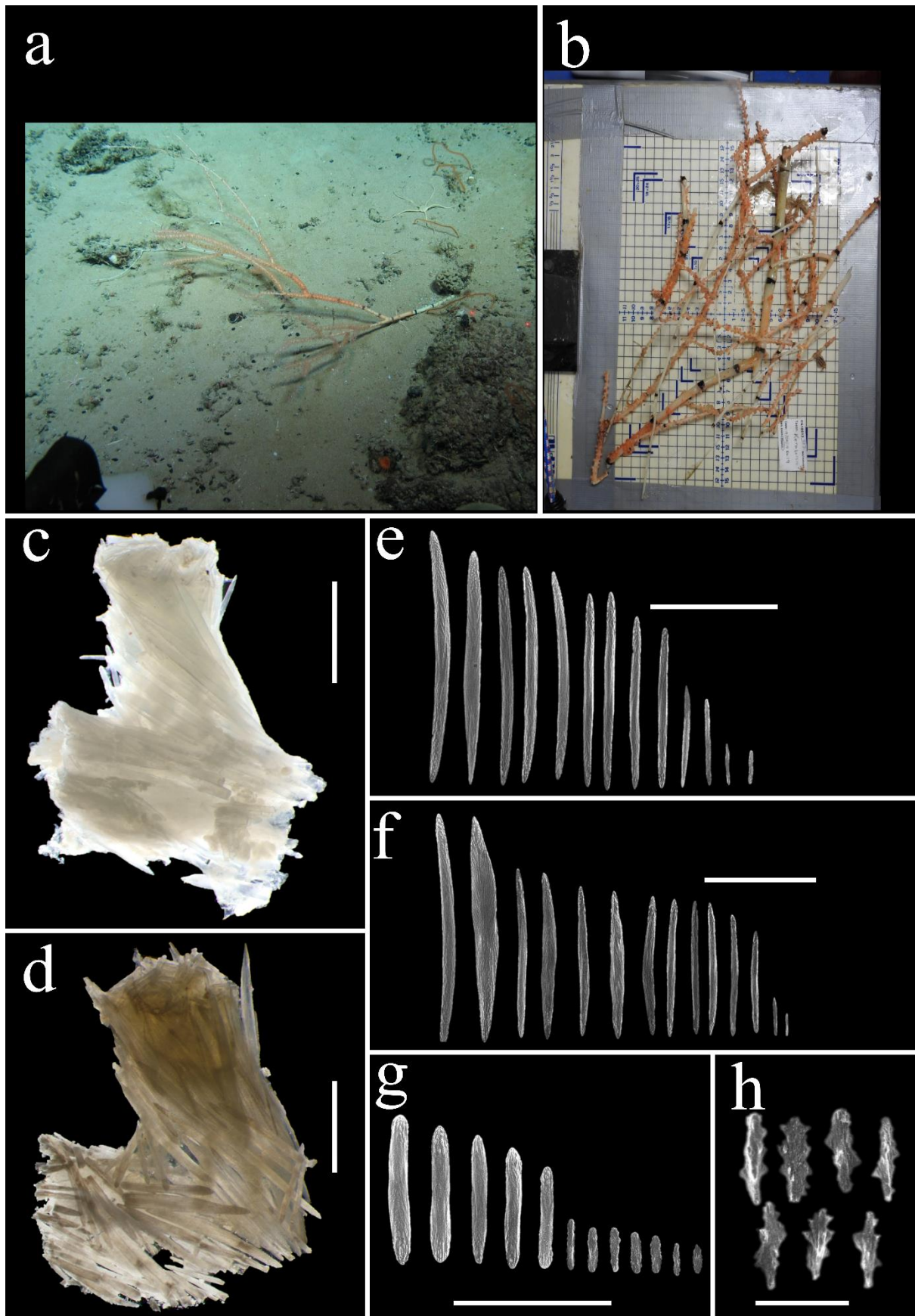


Figure S6. Morphotype 6 – Haplotype 8, voucher CE-18-387. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, e, and f = 1 mm, g = 500 μ m, and h = 100 μ m.

Morphotype 7 – Haplotype 1

Subclade D1

Vouchers: CE-17-266, CE-17-597, CE-18-404, CE-18-509

Location: Whittard Canyon and North Porcupine Bank between 1509 – 1787 m.

Colony and polyp morphology: Dichotomous branching from the internodes. Fan shaped colony (Figure S7a and b) attached to scleractinian rubble by a white circular disk. Coenenchyme is cream to orange in colour and densely populated with polyps that originate on all sides. Polyps are orange to pink in colour and cylindrical in shape (Figure S7c and d).

Sclerites: Needles and rods are arranged obliquely and longitudinally along the polyp body (≈ 4.87 mm – 1.2 mm Figure S7e). Body sclerites are finely striated longitudinally with heavy dentition of grooves and ridges at each end. Intertentacular sclerites present. There are no coenenchyme sclerites present. Blunt ended rods (≈ 670 μ m – 360 μ m) and flattened rodlets (≈ 200 μ m – 100 μ m) are found in the tentacles (Figure S7g). The blunt ended rods have grooves and ridges at the ends. Thorned rodlets (≈ 100 μ m) are present in the pharynx (Figure S7h).

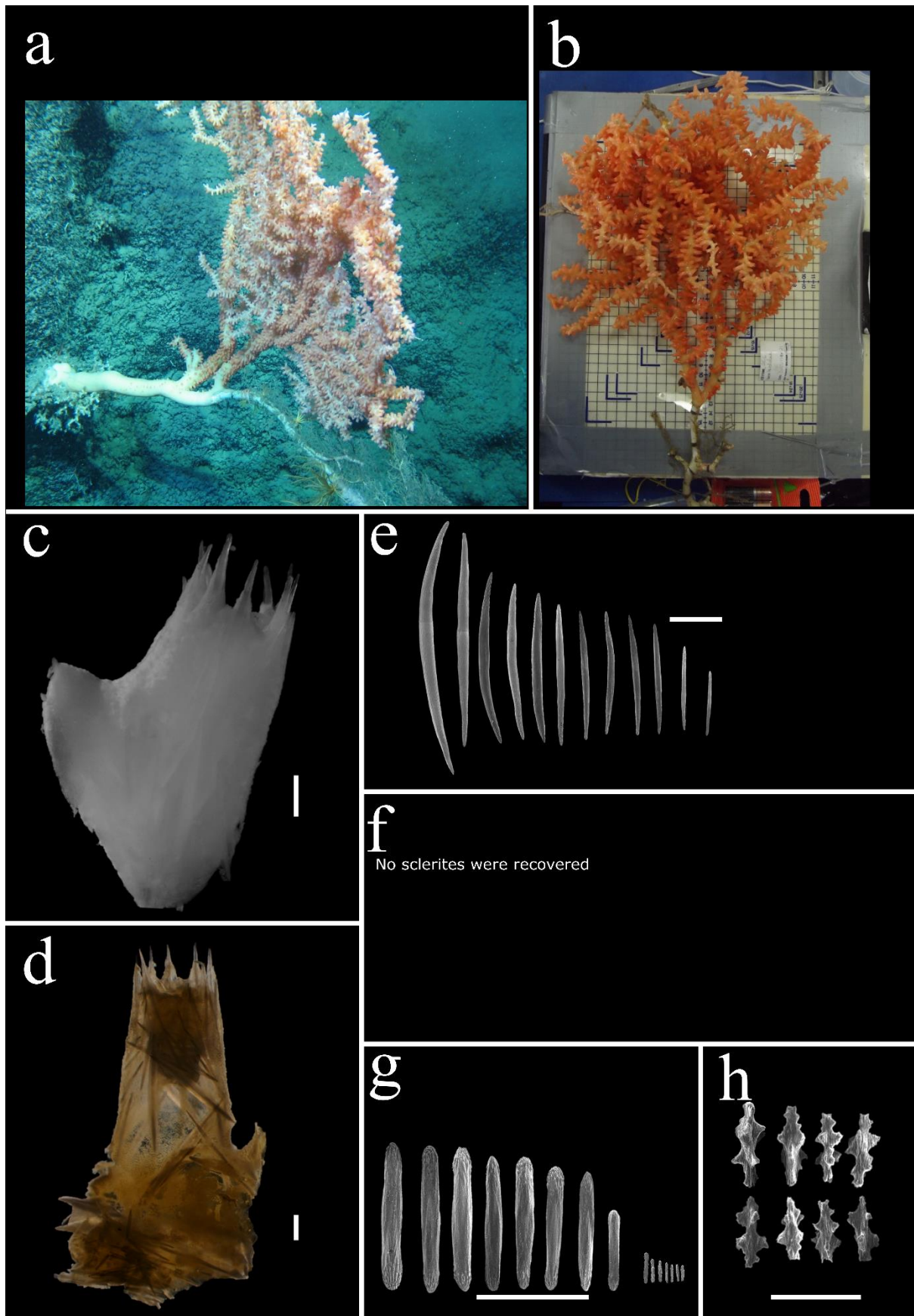


Figure S7. Morphotype 7 – Haplotype 1, voucher CE-17-266. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, g = 500 μ m, and h = 100 μ m.

Morphotype 8 – Haplotype 1:

Subclade D1

Vouchers: CE-18-435, **CE-18-646**

Location: North Porcupine Bank between 1395 – 1418 m.

Colony and polyp morphology: Sparse dichotomous branching from the internodes (Figure S8a and b). Attached to scleractinian rubble, seemingly directly to holdfast. The coenenchyme is pink-orange and distally thickened. Polyps are pink-orange in colour, darker than the coenenchyme. The polyps are the same width at both proximal and distal ends of the polyps (Figure S8c and d).

Sclerites: Needles and rods are arranged obliquely along the body (≈ 3.4 mm – 300 μ m, Figure S8e). Body sclerites are finely striated along the middle of the sclerite and have grooves and ridges at both ends. Some larger sclerites, sometimes clusters of fused sclerites, project past the base of the tentacles, not always between tentacles. There are no coenenchyme sclerites. Blunt ended rods (≈ 580 μ m – 340 μ m) and flattened rodlets (≈ 180 μ m – 80 μ m) are present in the tentacles (Figure S8g) and thorned rodlets (≈ 130 μ m – 60 μ m) are found in the pharynx (Figure S8h). The blunt ended rods have grooves and ridges at both ends of the sclerite.

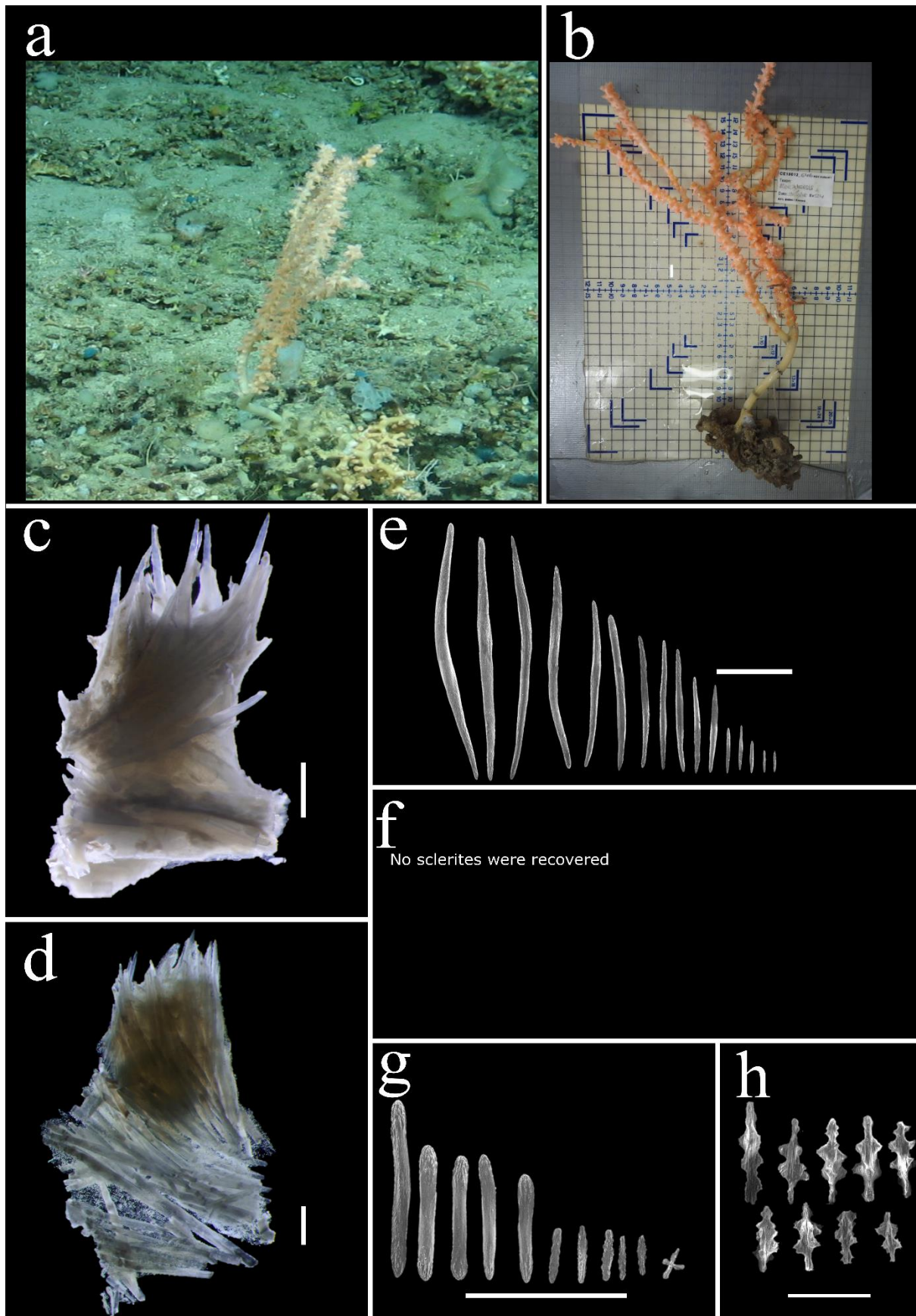


Figure S8. Morphotype 8 – Haplotype 1, voucher CE-18-646. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, g = 500 μ m, and h = 100 μ m.

Morphotype 9 – Haplotype 2

Subclade D1

Vouchers: **CE-18-508**

Location: North Porcupine Bank at 1509 m.

Colony and polyp morphology: Sparse dichotomous branching from the internodes, found attached to a rock by a circular disk (Figure S9a and b) The coenenchyme appears thin, and transparent. Polyps are barrel shaped (Figure S9c and d), orange to pink, and originate on all sides of the coenenchyme.

Sclerites: Needles and rods are arranged obliquely around the polyp body (≈ 4.3 mm – 470 μ m, Figure S9e). These body sclerites are finely striated and have grooves and ridges at the ends. Intertentacular sclerites present, sometimes as clusters of fused sclerites. No sclerites are observed in the coenenchyme. Blunt ended rods (≈ 630 μ m – 350 μ m) and flattened rods (≈ 160 μ m) are found in the tentacles (Figure S9g). Thorned rodlets (≈ 100 μ m) are present in the pharynx (Figure S9h).

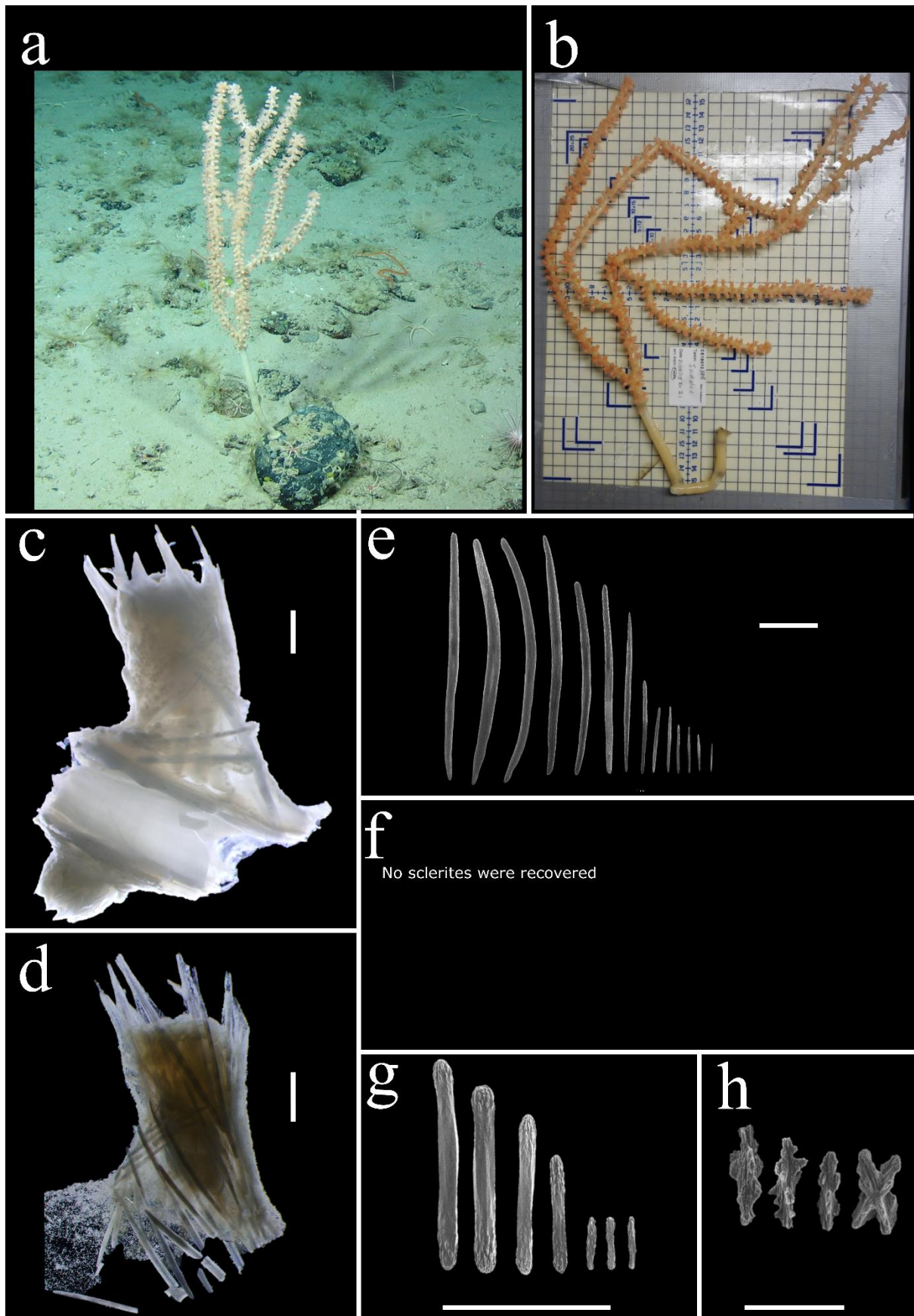


Figure S9. Morphotype 9 – Haplotype 2, voucher CE-18-508. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, g = 500 μ m, and h = 100 μ m.

Morphotype 10 – Haplotype 4

Subclade B1

Vouchers: **CE-17-174**

Location: Whittard Canyon at 1489 m.

Colony and polyp morphology: Unbranched whip coral (Figure S10a and b) attached to hard substrate. Coenenchyme is orange and densely populated on all sides with polyps. Polyps are a darker orange than the coenenchyme and are trumpet shaped, wider distally (Figure S10c and d). Tentacles fold neatly over the mouth.

Sclerites: Needles (≈ 5.3 mm – 2.5 mm) and scales (≈ 260 μ m, Figure S10e) are arranged longitudinally and obliquely in the body the body with many fusiform sclerites present. Intertentacular sclerites present either as individual or clusters of needles. Flattened rods are present in the tentacles. Coenenchyme sclerites (Figure S10f) are the same as body sclerites: rods and needles (≈ 1 mm – 380 μ m) and scales (≈ 300 μ m). Small flattened rods (≈ 300 μ m – 80 μ m, Figure S10g) are found in the tentacles. Body and coenenchyme sclerites are smooth and rarely have warts. Thorned rodlets (≈ 85 μ m, Figure S10h) are found in the pharynx.

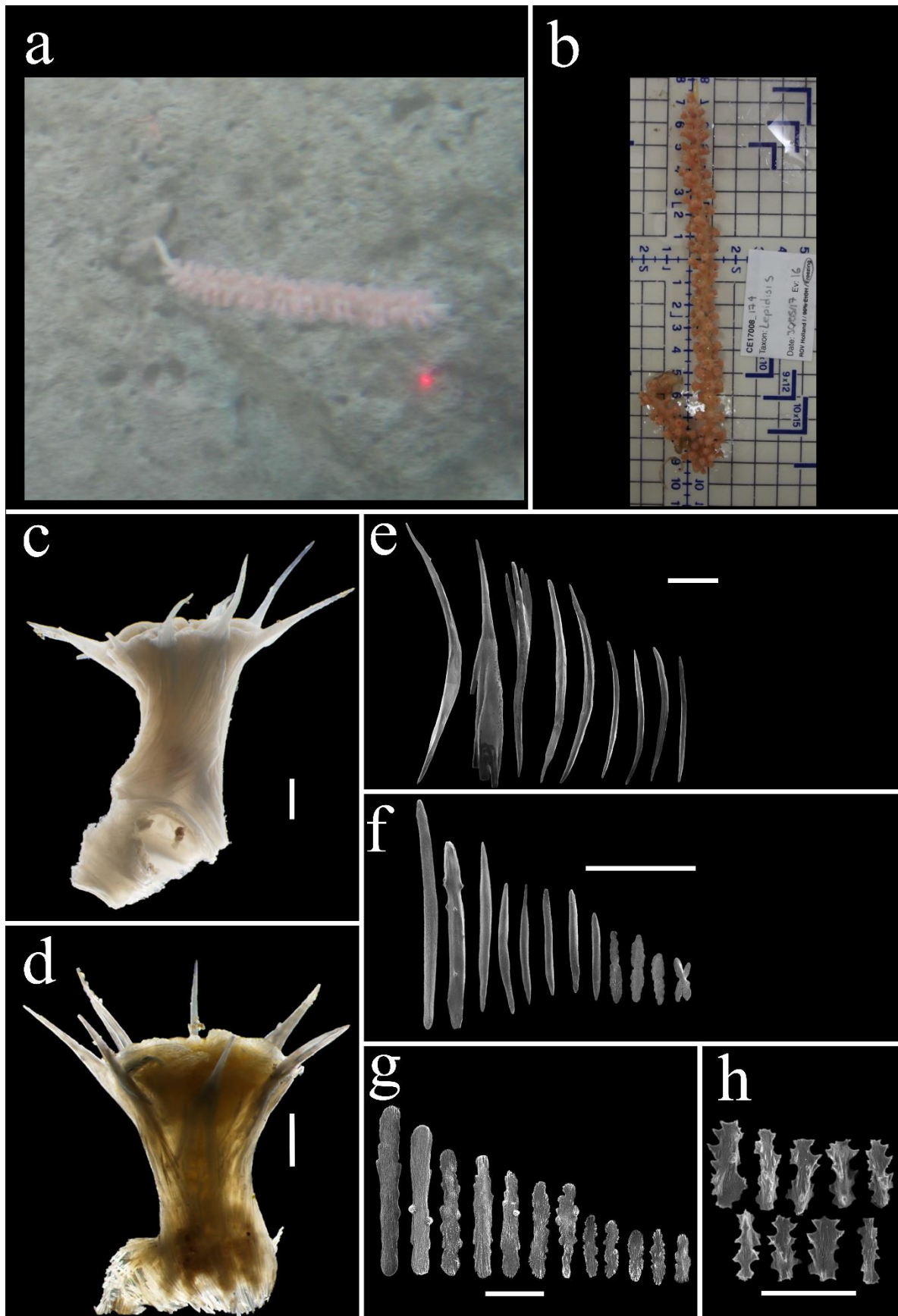


Figure S10. Morphotype 10 – Haplotype 4, voucher CE-17-174. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, f = 500 μ m, g and h = 100 μ m.

Morphotype 10 – Haplotype 6:

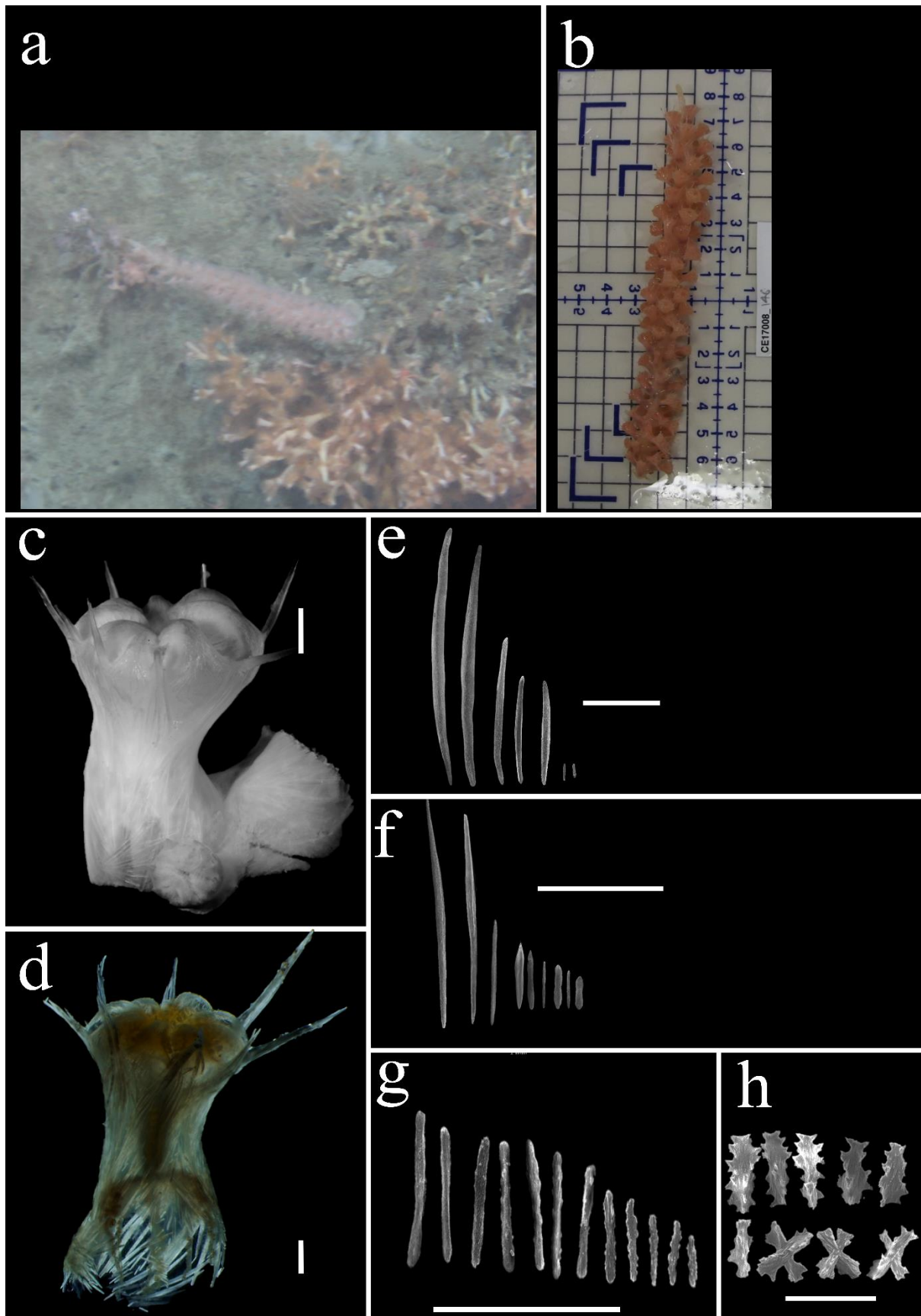
Subclade B1

Vouchers: **CE-17-146**, CE-17-163, CE-17-433, CE-17-490, CE-17-496, CE-17-501,

Location: Whittard Canyon between 1303 – 1468 m.

Colony and polyp morphology: All individuals except one are branched. It is unclear if branching occurs at the nodes or internodes. The unbranched individual (Figure S11a and b) is smaller than the others, perhaps the coral had not yet reached a size where it would branch. The coenenchyme is orange and densely populated with polyps, which are distally a darker orange. The polyps are trumpet shaped (Figure S11c and d) and the tentacles fold neatly over the mouth.

Sclerites: Needles (≈ 3.5 mm – 1.4 mm) and scales (≈ 230 μ m) are arranged obliquely and longitudinally along the body (Figure S11e). Intertentacular needles are present either as single or clusters of needles. Needles (≈ 1.9 mm – 300 μ m) and scales (≈ 350 μ m) are also present in the coenenchyme (Figure S11f). The sclerites in the body and coenenchyme are smooth. Thin flattened rods (≈ 330 μ m – 100 μ m) are present in the tentacles (Figure S11g) and thorned rodlets (≈ 90 μ m) are in the pharynx (Figure S11h).



Morphotype 11 – Haplotype 6

Subclade B1

Vouchers: CE-17-424, CE-18-244

Location: Whittard Canyon and North Porcupine Bank between 1298 – 1300 m.

Colony and polyp morphology: One unbranched (Figure S12a and b) and one laterally dichotomously branched individual. Unclear if branching occurs at the nodes or internodes. Both colonies found attached to hard substrate. Coenenchyme is cream with pink polyps densely populating all sides. Polyps are barrel shaped (Figure S12c and d).

Sclerites: Needles (≈ 4.7 mm – 1 mm) and scales (≈ 400 μ m – 100 μ m) are present in the body wall (Figure S12e). Intertentacular sclerites present. Body sclerites are arranged obliquely at the bottom of the polyp before changing to a longitude orientation along the polyp about 1/3 from the proximal end of the polyp. No sclerites were observed in the coenenchyme. Flattened rods (≈ 300 μ m – 100 μ m) are found in the tentacles (Figure S12g) and thorned rodlets (≈ 80 μ m) in the pharynx (Figure S12h).

Morphotype 12 – Haplotype 3

Subclade B1

Vouchers: **CE-17-269**

Location: Whittard Canyon at 1753 m

Colony and polyp morphology: Unbranched whip coral (Figure S13a and b) attached to hard substrate with a small disk, same circumference as the holdfast. Coenenchyme is cream in colour with pink polyps. Polyps arise from all sides of coenenchyme. Polyps are barrel shaped (Figure S13c and d) and are swollen proximally. Tentacles fold neatly over the mouth.

Sclerites: Needles (≈ 4.75 mm – 2.5 mm) and scales (≈ 250 μ m) are obliquely or longitudinally arranged along the polyp body (Figure S13e). Scales commonly pinched at the waist. Intertentacular needles are present. Body sclerites are smooth and arranged obliquely along the body. No sclerites are present in the coenenchyme. Flattened rods are present in the tentacles (≈ 220 μ m – 60 μ m, Figure S13g). Thorned rodlets (≈ 70 μ m, Figure S13h) are present in the pharynx.

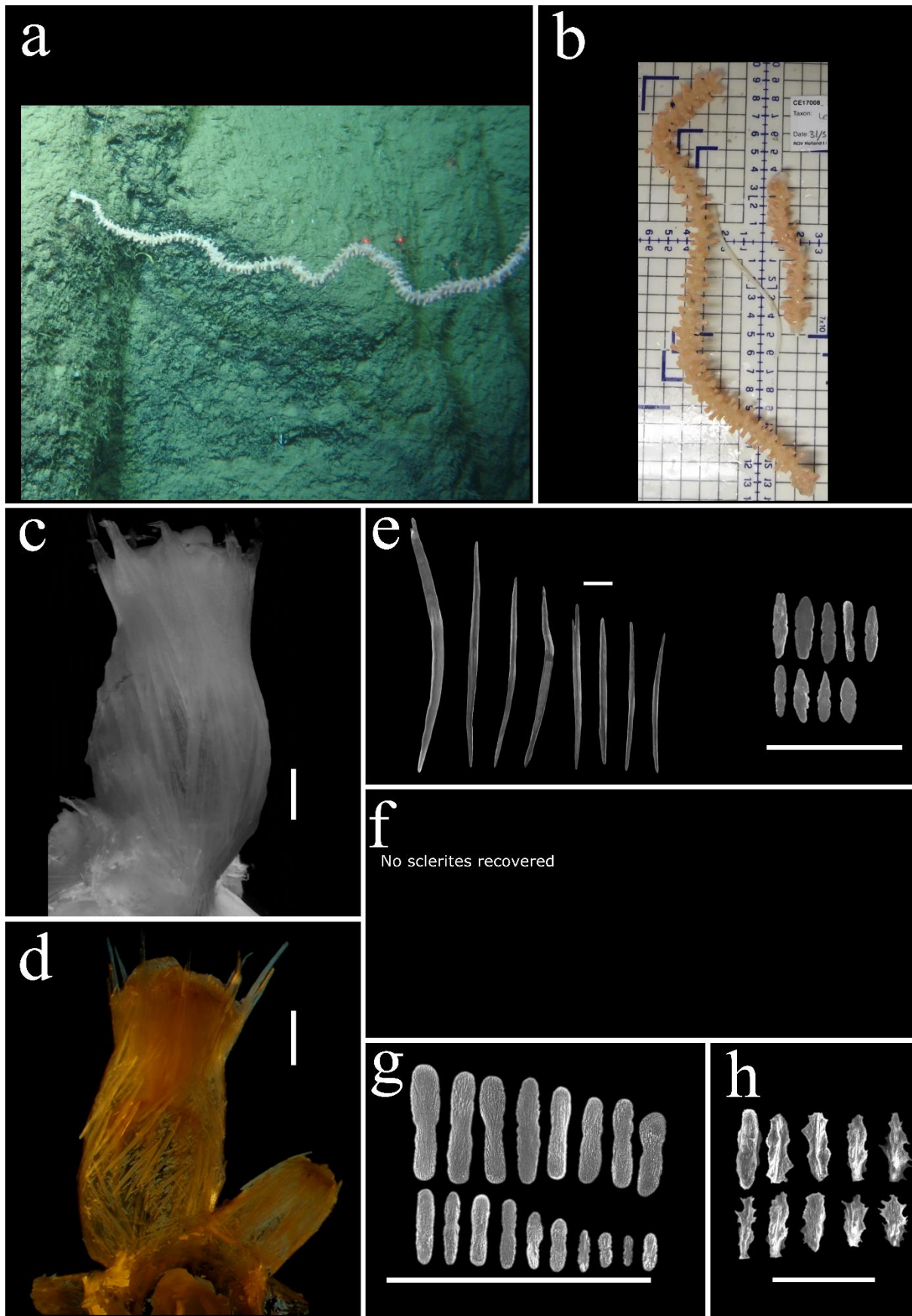


Figure S13. Morphotype 12 – Haplotype 3, voucher CE-17-269. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c and d = 1 mm, e and g = 500 μ m, and h = 100 μ m.

Morphotype 13 – Haplotype 5

Vouchers: **CE-17-206**, CE-17-550, CE-18-126, CE-18-409

Location: Whittard Canyon and North Porcupine Bank between 1776 – 2080 m.

Colony and polyp morphology: Unbranched whip corals (Figure S14a and b) attached to hard substrate with a circular disk. The coenenchyme is cream in colour and polyps, which are distally pink (Figure S14c and d), originate on all sides. The tentacles sit on top of mouth, forming an hourglass shaped polyp.

Sclerites: Needles (≈ 3.5 mm – 1.7 mm) and scales (≈ 300 μ m) are arranged both obliquely and longitudinally along the polyp body wall (Figure S14e). Intertentacular needles present. Needles (≈ 2.1 mm – 370 μ m) and scales (≈ 290 μ m – 170 μ m) are also present in the coenenchyme (Figure S14f). Sclerites found in the body and coenenchyme are smooth. Flattened rods (≈ 275 μ m – 80 μ m) are present in the tentacles (Figure S14g) and thorned rodlets (≈ 70 μ m) in the pharynx (Figure S14h).

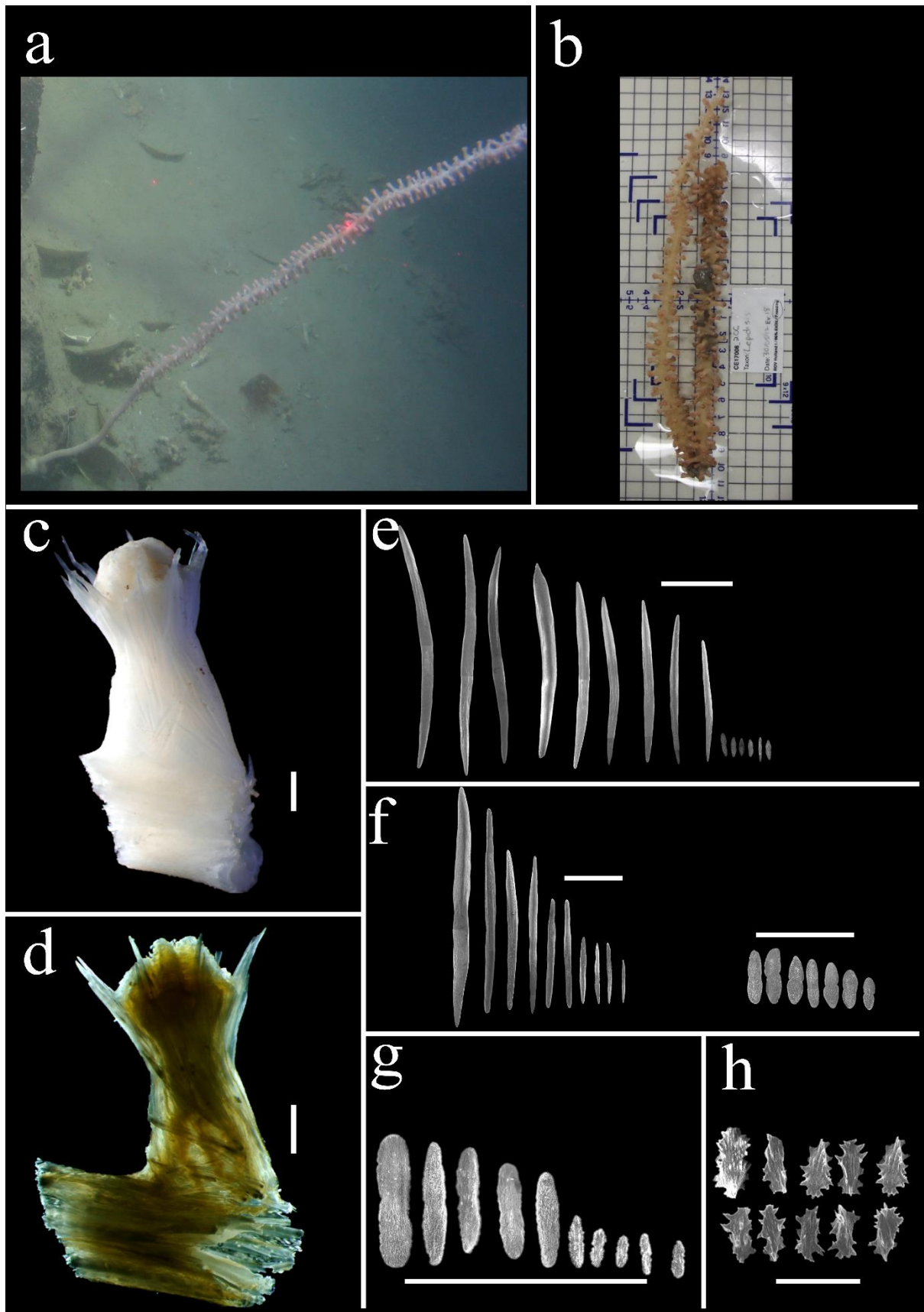


Figure S14. Morphotype 13 – Haplotype 5, voucher CE-17-206. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, f and g = 500 μ m, and h = 100 μ m.

Morphotype 14 – Haplotype 23:

Subclade F1

Vouchers: **CE-17-216**

Location: Whittard Canyon at 1971 m.

Colony and polyp morphology: Unbranched whip coral (Figure S15a and b) found attached to hard substrate by a white circular disk. Cream coenenchyme with distally pink polyps. Polyps are long, narrow, and flare at the distal end towards the tentacles (Figure S15c and d). Tentacles are folded over mouth.

Sclerites: Needles and rods (≈ 3.4 mm – 300 μ m) are present in the body (Figure S15e) and coenenchyme (≈ 1.7 mm – 150 μ m, Figure S15f). Blunt end rods (≈ 600 μ m – 330 μ m) and flattened rods (≈ 300 μ m – 90 μ m) with an irregular margin are found in the tentacles (Figure S15g). Thorned rodlets (≈ 90 μ m) are present in the pharynx (Figure S15h). Sclerites located in the body, coenenchyme and tentacles have a granulated surface with ridges and grooves at one or both ends of the needles and rods.

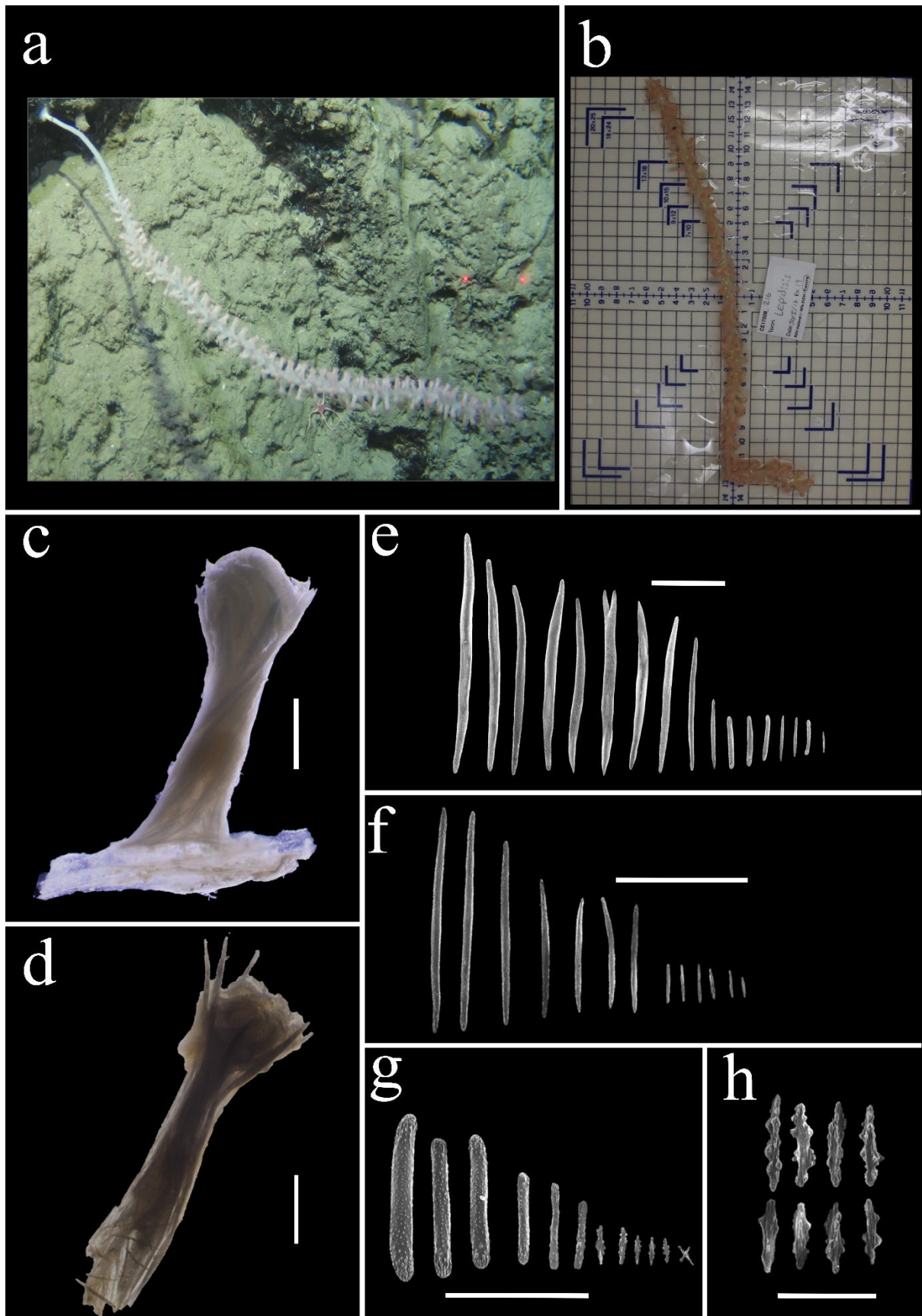


Figure S15. Morphotype 14 – Haplotype 23, voucher CE-17-216. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, e, and f = 1 mm, g = 500 μm, and h = 100 μm.

Morphotype 15 – Haplotype 12

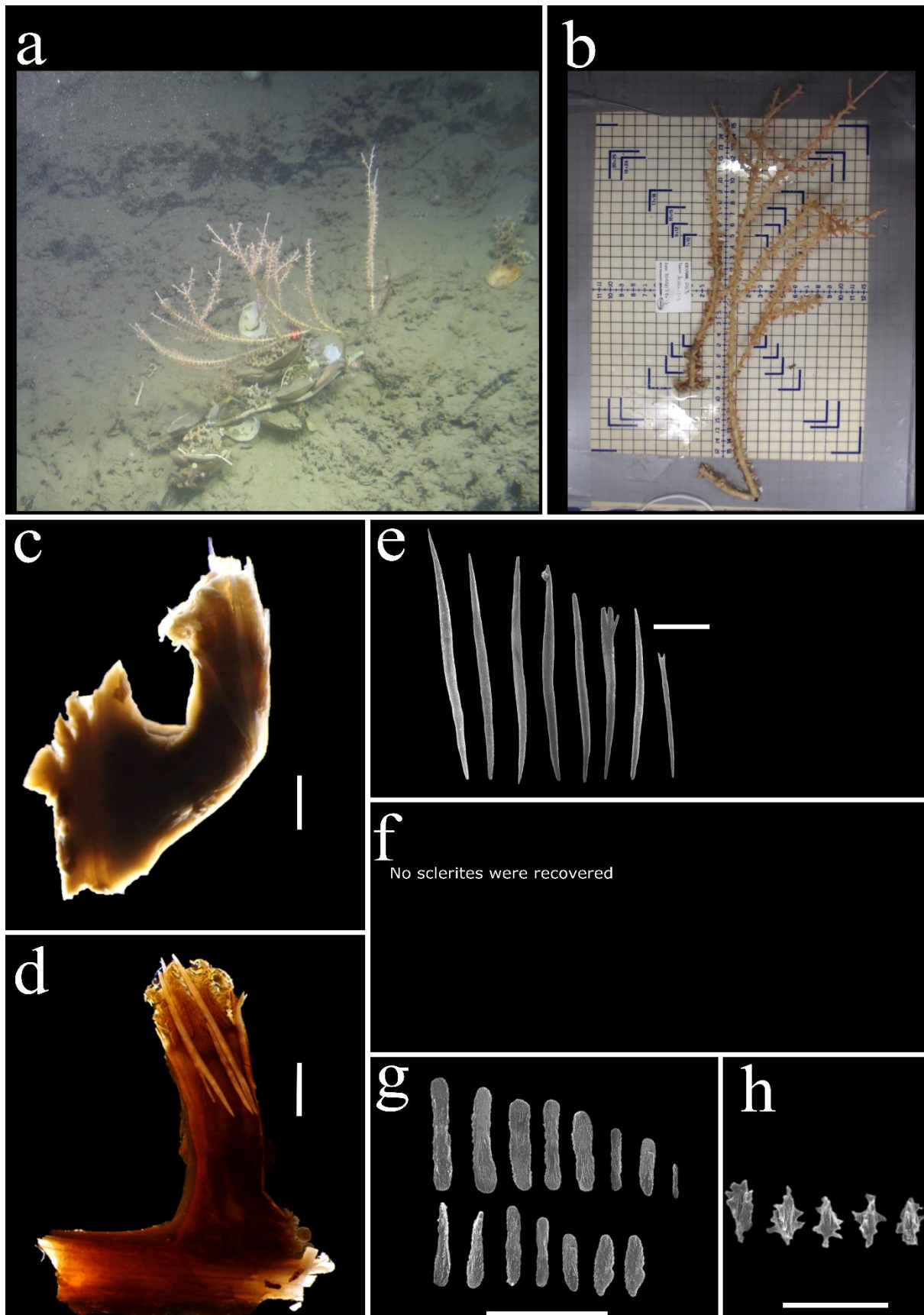
Subclade I1

Vouchers: CE-18-197, **CE-18-203**

Location: Whittard Canyon between 2031 – 2054 m.

Colony and polyp morphology: Colonies branch dichotomously, but not often (Figure S16a and b). Coenenchyme is largely transparent with polyps originating primarily from alternating sides of the coenenchyme. Polyps are both perpendicular to the axis and L-shaped (Figure S16c and d). Polyps are cylindrical in shape with the tentacles loosely gathered over the mouth.

Sclerites: Needles (≈ 4.8 mm – 2.4 mm) scarcely populate the body wall (Figure S16e) occurring only in the distal half of the polyp. Body sclerites are granulated and are arranged both longitudinally and obliquely. Large sclerites project past the base of the tentacles. No sclerites were observed in the coenenchyme. Flattened rods (≈ 200 μ m – 60 μ m) are present in the tentacles (Figure S16g) and thorned rodlets (≈ 60 μ m) are found in the pharynx (Figure S16h).



Morphotype 16 – Haplotype 13

Clade II

Vouchers: **CE-17-234**

Location: Whittard Canyon at 1852 m.

Colony and polyp morphology: Di- and trichotomous branching occurring at the nodes (Figure S17a and b). Attached to hard substrate. The coenenchyme appears transparent with polyps, orange to pink, originating from two opposing sides of the coenenchyme. Polyps are slightly wider distally (Figure S17c and d). Tentacles appear fully extended.

Sclerites: Lightly granulated needles (≈ 6.3 mm – 2.1 mm) arranged longitudinally along the body (Figure S17e), primarily concentrated distally. Some sclerites project past the base of the tentacles. No sclerites are observed in the coenenchyme. Flattened rods (≈ 280 μ m – 80 μ m) are present in the tentacles (Figure S17f) and thorned rodlets (≈ 140 μ m – 65 μ m) are present in the pharynx (Figure S17g).

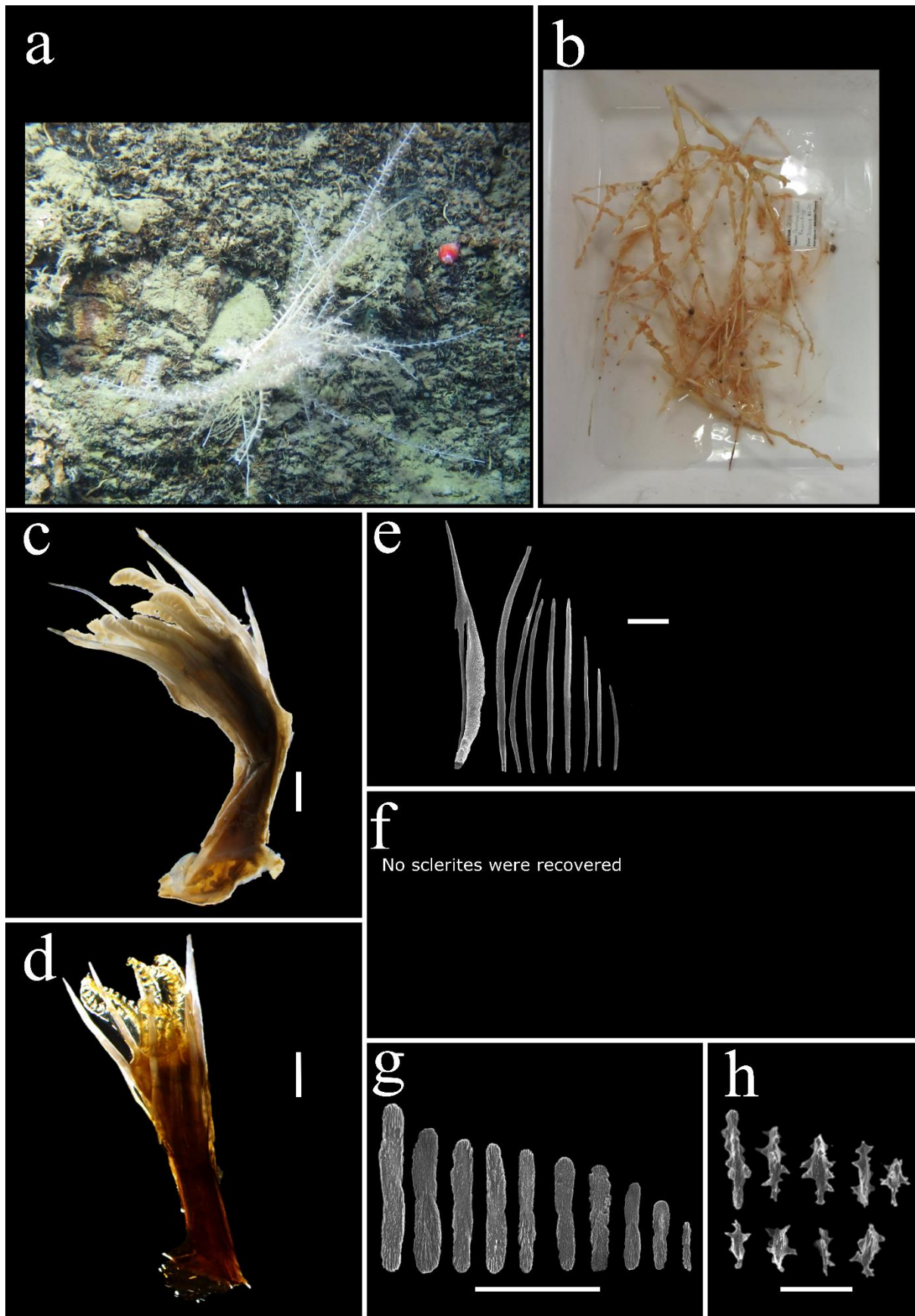


Figure S17. Morphotype 16 – Haplotype 13, voucher CE-17-234. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, g = 200 μ m, and h = 100 μ m.

Morphotype 17 – Haplotype 13

Subclade I1

Vouchers: **CE-18-063**,

Location: North Porcupine Bank at 1288 m

Colony and polyp morphology: Di- and trichotomous branching from the nodes occurring in multiple planes forming a bush (Figure S18a and b). Attached to scleractinian coral skeleton. Coenenchyme appears transparent and polyps, orange to pink in colour, originate on two opposing sides of the coenenchyme. Polyps are slightly distally flared to form a funnel shape (Figure S18c and d). The tentacles are relaxed and folded over the mouth.

Sclerites: Needles arranged longitudinally along the body ($\approx 3.9 \text{ mm} - 790 \mu\text{m}$, Figure S18e) and coenenchyme ($\approx 3.3 \text{ mm} - 320 \mu\text{m}$, Figure S18f). Intertentacular sclerites present between each pair of tentacles. Sclerites in the body and coenenchyme are lightly granulated. Flattened rodlets ($\approx 200 \mu\text{m} - 90 \mu\text{m}$) are present in the tentacles (Figure S18g) and thorny rods are present in the pharynx ($\approx 110 \mu\text{m} - 70 \mu\text{m}$, Figure S18h).

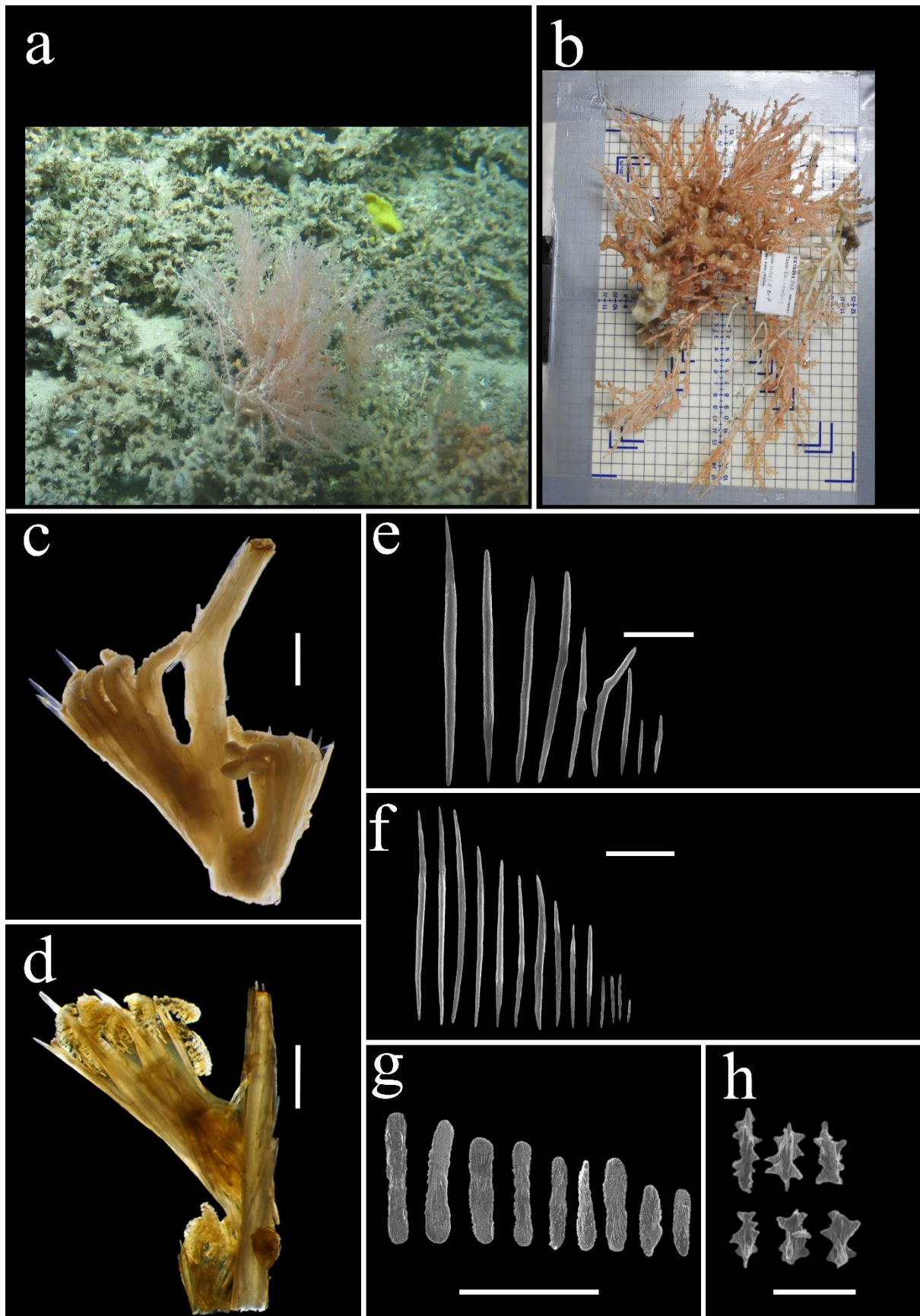


Figure S18. Morphotype 17 – Haplotype 13, voucher CE-18-063. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, e, and f = 1 mm, g = 200 μ m, and h = 100 μ m.

Morphotype 17 – Haplotype 14:

Vouchers: CE-18-058, CE-18-067, **CE-18-110**, CE-18-111, CE-18-113, CE-18-639, CE-18-658, CE-18-661.

Location: North Porcupine Bank between 1290 – 1483 m.

Colony and polyp morphology: Di- and trichotomous branching from the nodes in one or multiple planes forming a fan or bush colony (Figure S19a and b). Coenenchyme is thin and transparent with polyps, orange to pink, originating from two opposing sides of the coenenchyme. Polyps are funnel shaped, wider distally (Figure S19c and d). Tentacles folded loosely over mouth.

Sclerites: Rods arranged longitudinally along the polyp body (≈ 1.4 mm – 150 μ m, Figure S19 E) and coenenchyme (≈ 2.1 mm – 410 μ m, Figure S19f). Body and coenenchyme sclerites can be lightly granulated. Some body sclerites project past the base of the tentacles between tentacles. Flattened rods (≈ 190 μ m – 80 μ m) are present in the tentacles (Figure S19g). No sclerites are found in the pharynx.

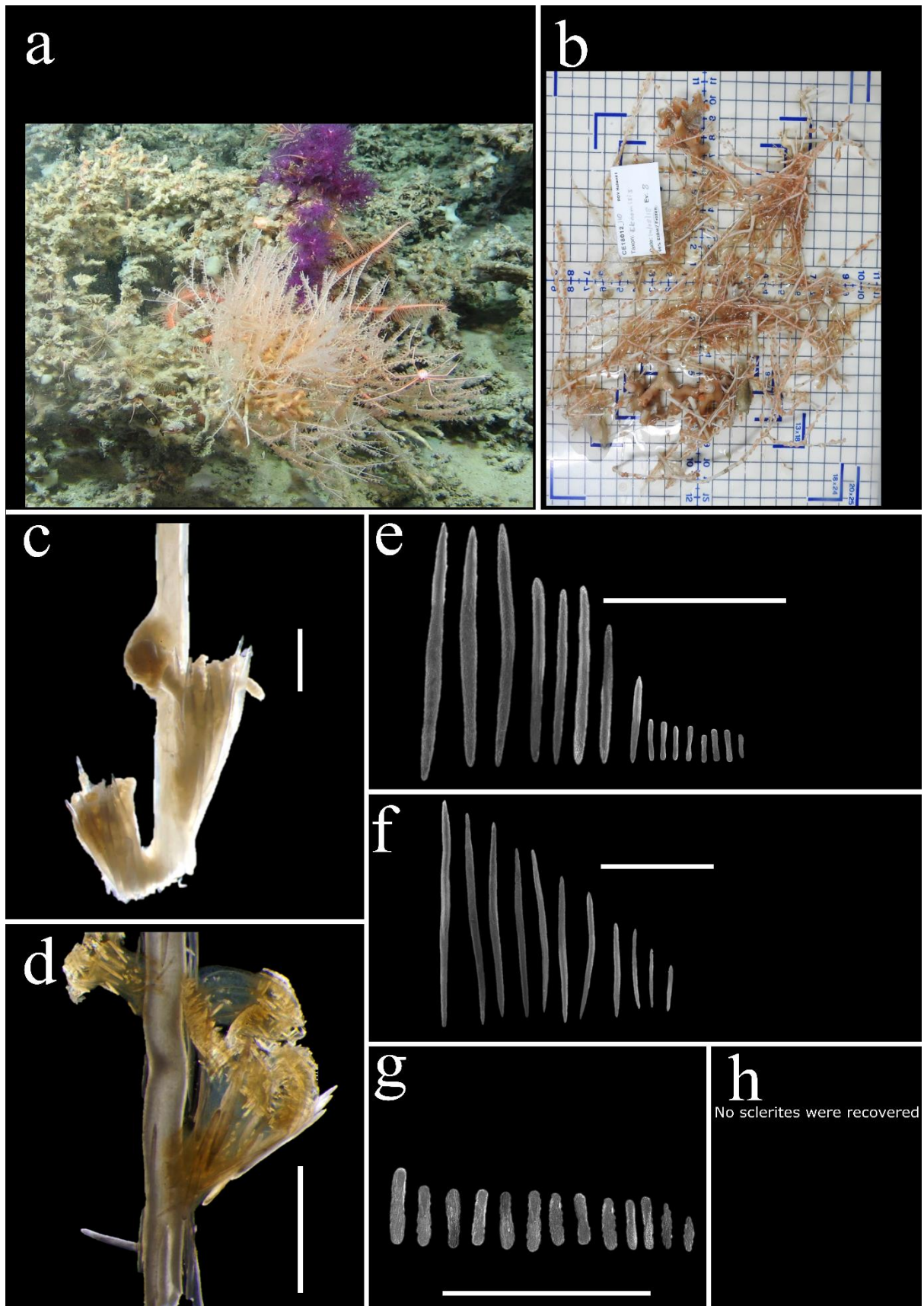


Figure S19. Morphotype 17 – Haplotype 14, voucher CE-18-110. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, e, and f = 1 mm, and g = 500 μ m.

Morphotype 18 – Haplotype 13

Subclade I1

Vouchers: **CE-18-415**

Location: North Porcupine Bank at 1774 m.

Colony and polyp morphology: Di- and trichotomous branching from the nodes forming a loose bush colony (Figure S20a and b). The coenenchyme is seemingly transparent and populated with orange polyps, originating from opposing sides of the coenenchyme. Polyps are funnel shaped, distally wider (Figure S20c and d). Tentacles are loosely folded over the mouth.

Sclerites: Needles and rods are arranged obliquely along the polyp body ($\approx 4.13 - 1.7$ mm, Figure S20 E). Intertentacular sclerites present. Rods and spindles are present in the coenenchyme (≈ 1.4 mm – 310 μm , Figure S20f). Body and coenenchyme sclerites are very lightly granulated. Flattened rods ($\approx 140 \mu\text{m} - 100 \mu\text{m}$) are present in the tentacles (Figure S20g) and thorned rodlets ($\approx 70 \mu\text{m}$) are present in the pharynx (Figure S20h).

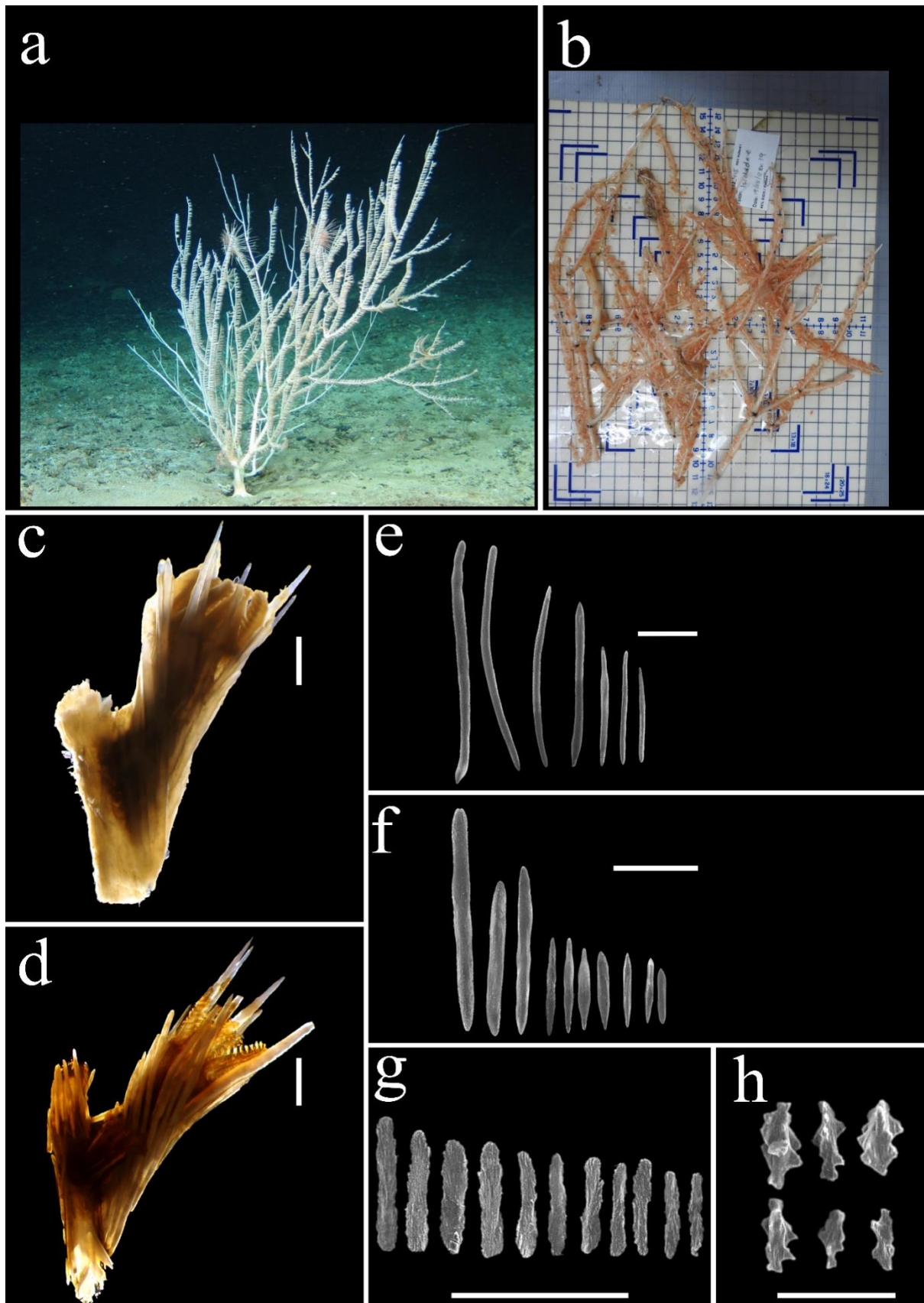


Figure S20. Morphotype 18 – Haplotype 13, voucher CE-18-415. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, f = 500 μ m, g = 200 μ m, and h = 100 μ m.

Morphotype 19 – Haplotype 15

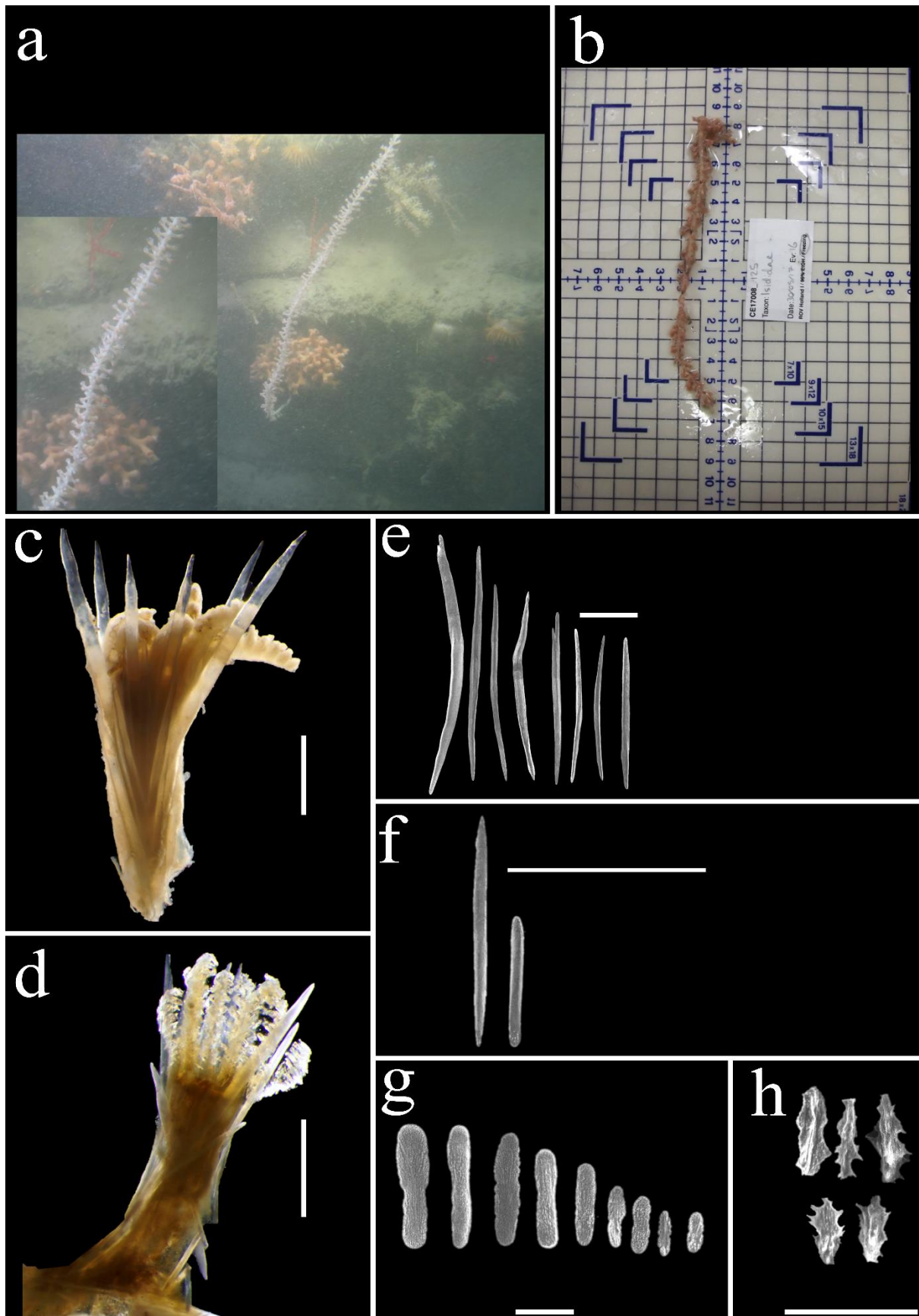
Subclade I1

Vouchers: **CE-17-125**, CE-17-511

Location: Whittard Canyon between 1341 – 1473 m.

Colony and polyp morphology: Unbranched whip coral (Figure S21a and b) attached to scleractinian rubble. Coenenchyme appears transparent with polyps, orange to pink, originating from all sides of the axis. Polyps can be either funnel shaped, wider at the distal end, or they are cylindrical with very little change in width between distal and proximal ends (Figure S21c and d).

Sclerites: Needles and rods are arranged both longitudinally and obliquely along the body (≈ 4.7 mm – 2.6 mm, Figure S21e), some project past the base of the tentacles between tentacle pairs. Needles and rods are found in the coenenchyme (≈ 1.2 mm – 710 μ m, Figure S21f). Flattened rods (≈ 230 μ m – 80 μ m) are observed in the tentacles (Figure S21g) and thorned rodlets (≈ 70 μ m) are present in the pharynx (Figure S21h).



Morphotype 20 – Haplotype 18

Subclade J3

Vouchers: **CE-17-276**

Location: Whittard Canyon at 1695 m

Colony morphology: branching occurs dichotomously from the node (and internode?) in a single plane to form a fan shaped colony (Figure S22a and b).

Sclerites: Not examined due to missing material.

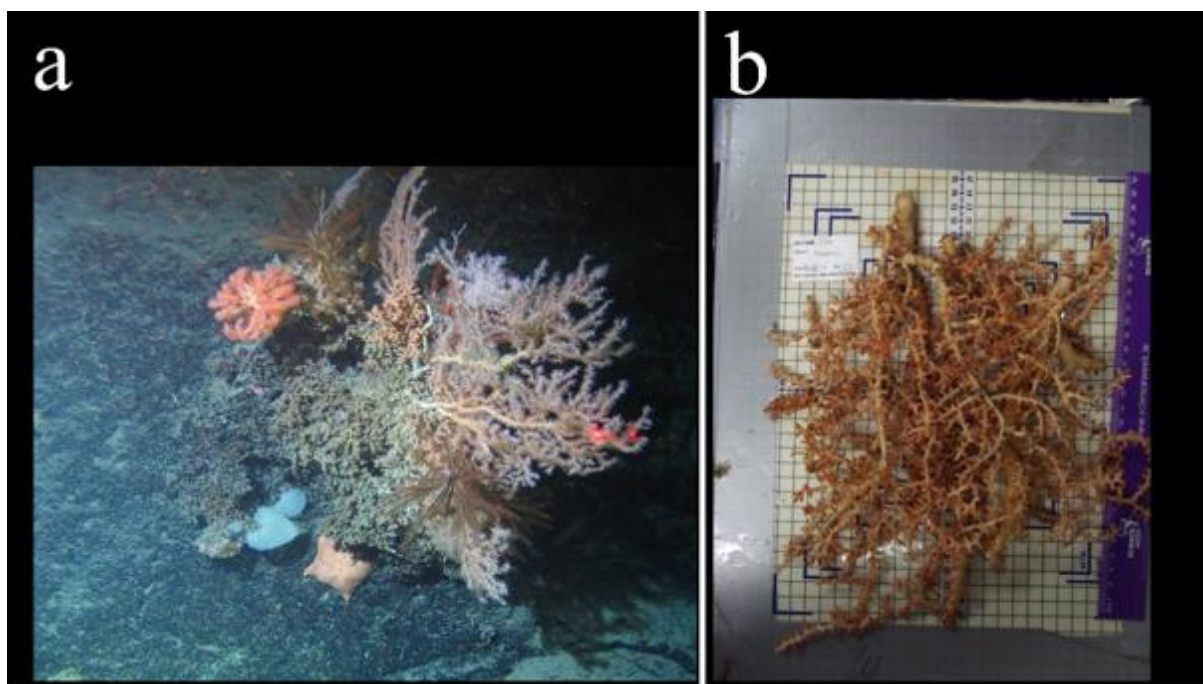


Figure S22. Morphotype 20 – Haplotype 18. voucher CE-17-276 **A**, *In-situ* image. **B**, *Ex-situ* image.

Morphotype 21 – Haplotype 19

Subclade J3

Vouchers: **CE-17-274**, CE-17-284, CE-17-289, CE-17-348, CE-17-384

Location: Whittard Canyon between 1599 – 1685 m.

Colony and polyp morphology: Planar colonies that branch dichotomously forming a fan (Figure S23a and b). Polyps are trumpet shaped (Figure S23c and d), orange to pink in colour, and originate from all sides of the coenenchyme.

Sclerites: Spindles and rods are found in arranged longitudinally in the body ($\approx 2\text{ mm} - 630\text{ }\mu\text{m}$, Figure S23e). Fusiform sclerites project past the base of the tentacles between each tenacle pair. Body sclerites were arranged longitudinally along the polyp body. Spindles and clubs are found in the coenenchyme ($\approx 2.8\text{ mm} - 730\text{ }\mu\text{m}$, Figure S23f). Flattened rods are found in the tentacles ($\approx 230\text{ }\mu\text{m} - 45\text{ }\mu\text{m}$, Figure S23g) and pharynx ($\approx 300\text{ }\mu\text{m}$, Figure S23h). All body and coenenchyme sclerites are always granulated and sometimes finely striated in the middle.

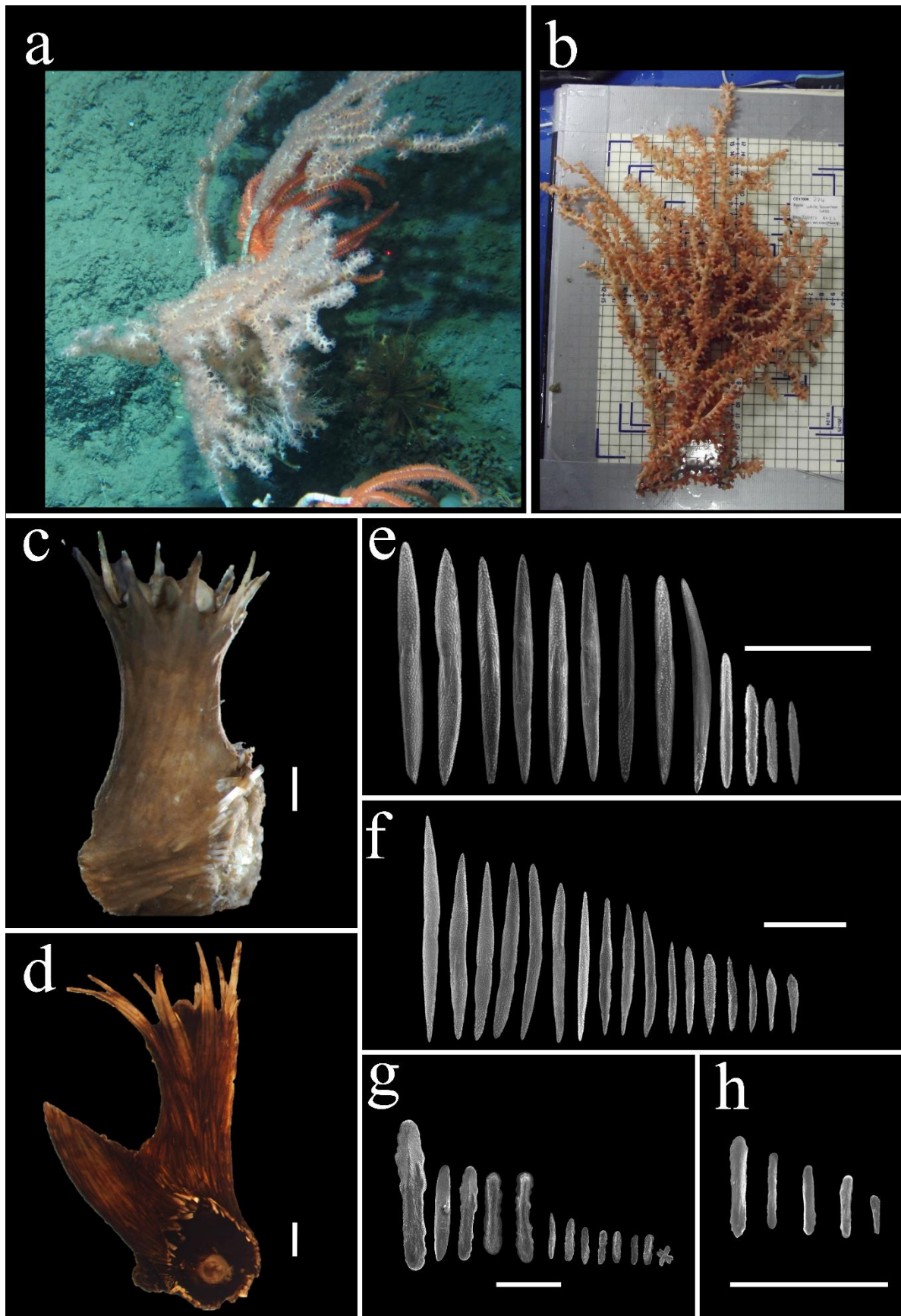


Figure S23. Morphotype 21 – Haplotype 19, voucher CE-17-274. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, e, and f = 1 mm, g = 100 μ m, and h = 500 μ m.

Morphotype 22 – Haplotype 19

Subclade J3

Vouchers: CE-18-088, **CE-18-538**, CE-18-653

Location: North Porcupine Bank between 1361 – 1397 m.

Colony and polyp morphology: Colonies planar and branch di- and trichotomously from the nodes (Figure S24a and b), but less so than morphotype 1. Polyps are circular to trumpet in shape (Figure S24c and d). Colonies have a thin coenenchyme and polyps originate from all sides of the coenenchyme.

Sclerites: Clubs and rods are present in the body (≈ 3.1 mm – 320 μ m, Figure S24e) arranged obliquely toward the base and between large inter-tentacular sclerites. Intertentacular sclerites present. Rods (≈ 1.7 mm – 660 μ m) and flattened rods (≈ 490 μ m – 170 μ m) are present in the coenenchyme (Figure S24f). Flattened rods are found in the tentacles (≈ 370 μ m – 120 μ m, Figure S24g) and pharynx (≈ 120 μ m, Figure S24h). Clubs are more often finely striated with granulation at the ends.

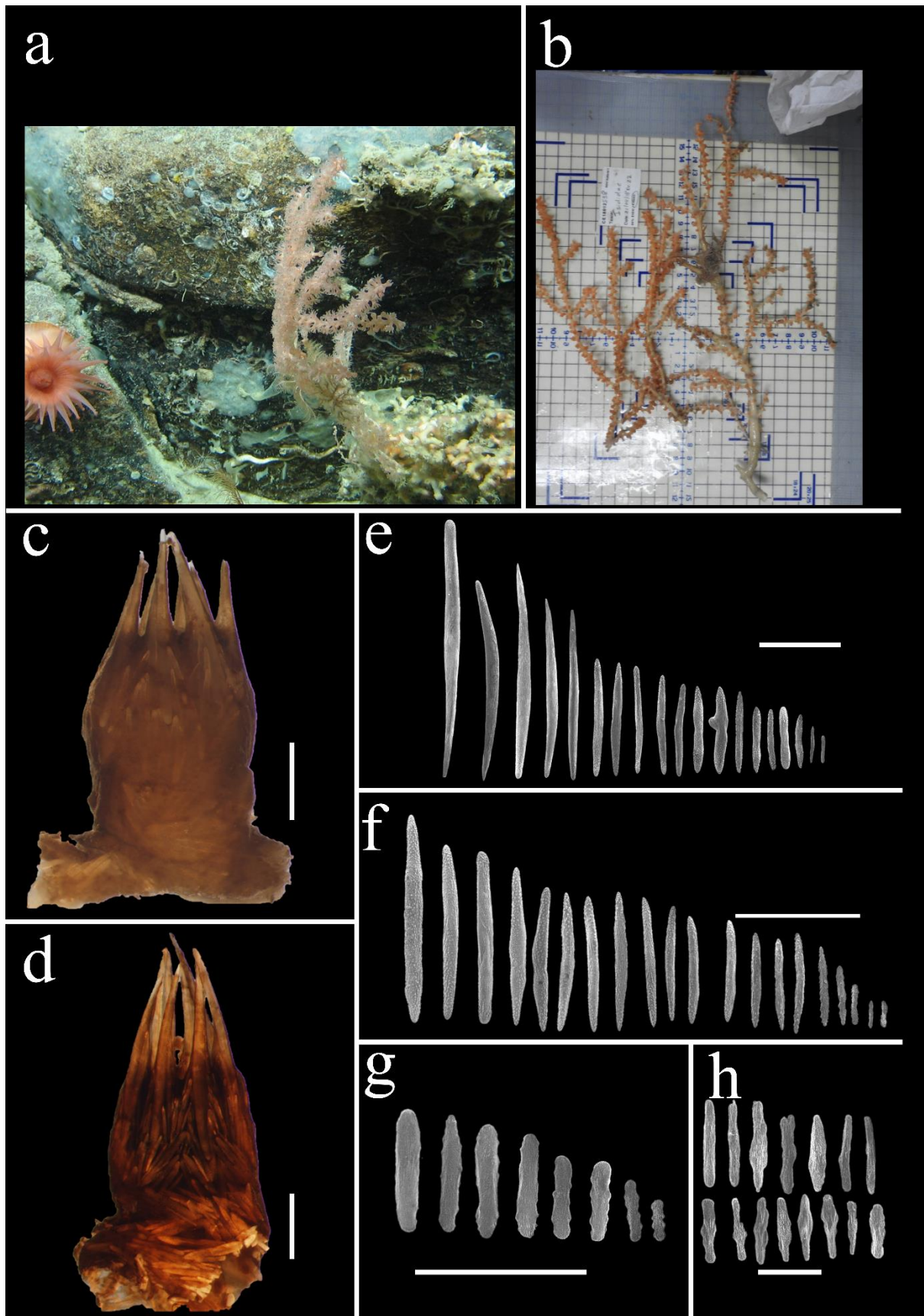


Figure S24. Morphotype 22 – Haplotype 19, voucher CE-18-538. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, e, and f = 1 mm, g = 500 μ m, and h = 100 μ m.

Morphotype 23 – Haplotype 20

Subclade J3

Vouchers: **CE-17-367**

Location: Whittard Canyon at 1599 m.

Colony and polyp morphology: Planar colony with dichotomous branching from the nodes (Figure S25a and b). Coenenchyme is thick and cream to orange in colour with dark orange polyps. Polyps are barrel shaped (Figure S25c and d), covered in a thick tissue, and densely populate all sides of the coenenchyme. The tentacles fold over the mouth.

Sclerites: Needles and spindles are arranged longitudinally along the body (≈ 2.3 mm – 680 μ m, Figure S25e) and coenenchyme (≈ 2.3 mm – 750 μ m, Figure S25f). There are smaller scales (≈ 300 μ m – 160 μ m) with lobed margins, similar to those reported in *Jasonisis thresheri* (Alderslade and McFadden 2012), present in the coenenchyme (Figure S25f). Flattened rodlets (≈ 360 μ m – 90 μ m) are found in the tentacles (Figure S25g) and elongated diamond shaped rods (≈ 120 μ m – 75 μ m) are found in the pharynx (Figure S25h). All body and coenenchyme sclerites were heavily granulated and/or longitudinally striated along the middle of the sclerite. Spindles are often pinched at the waist.

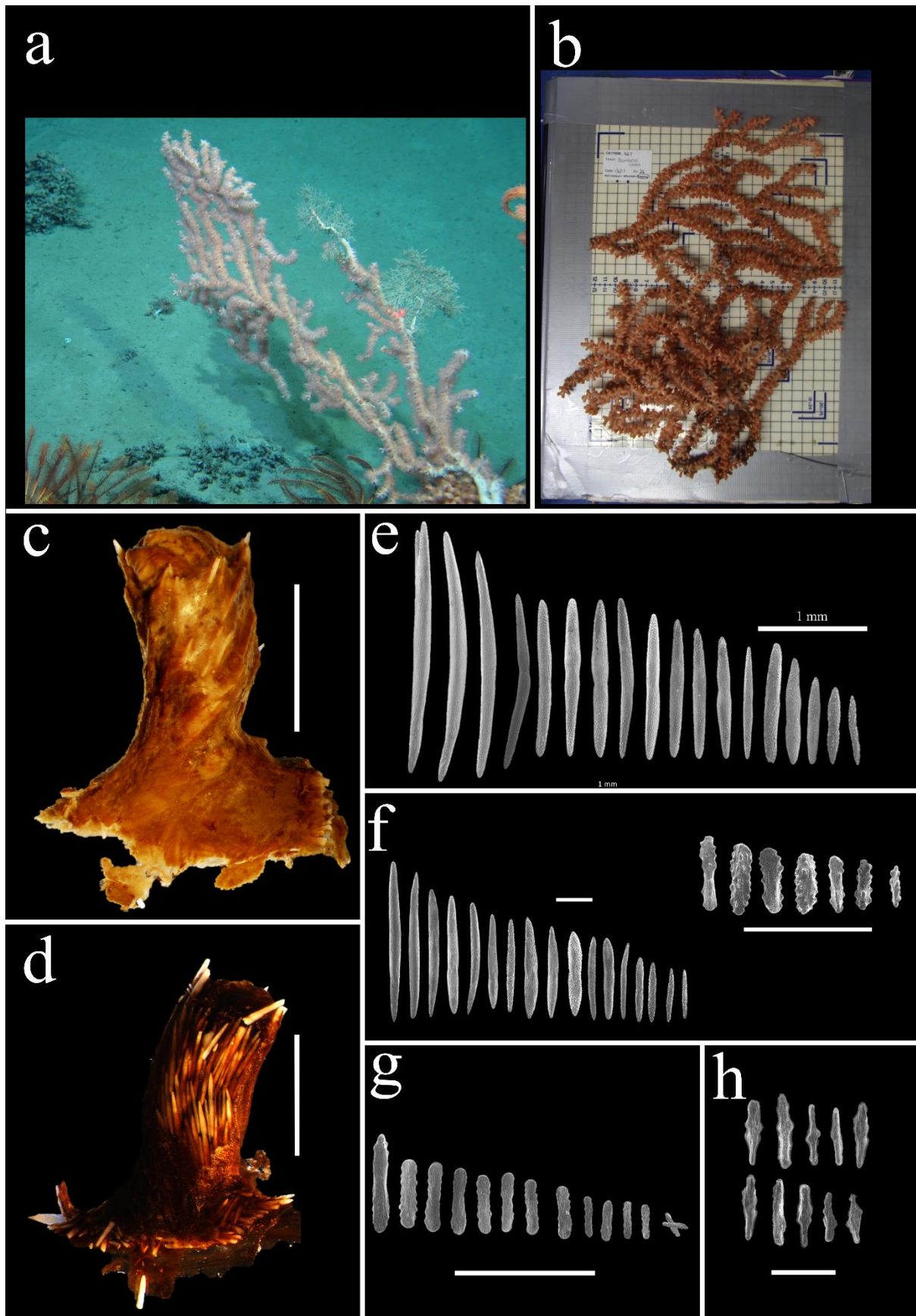


Figure S25. Morphotype 23 – Haplotype 20, voucher CE-17-367. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, f and g = 500 μ m, and h = 100 μ m.

Morphotype 24 - Haplotype 21 – *Acanella arbuscula*

Subclade A1

Vouchers: CE-17-205, CE-17-217, CE-17-229, CE-17-248, **CE-17-304**

Location: Whittard Canyon between 1780 -1980 m

Colony and polyp morphology: Sparse di- and trichotomous branching from the nodes which forms a loose bush colony (Figure S26a and b). Coenenchyme and polyps are deep orange and the polyps are funnel shaped, tapered at the proximal end (Figure S26c and d). Tentacles fold over the mouth of the polyp. Colonies lacked a rhizoid holdfast implying attachment to hard substrate.

Sclerites: Slender rods (≈ 2.3 mm – 300 μ m) are present in the body (Figure S26e). These rods are arranged obliquely around the polyp. Body sclerites project past the base of the tentacles between each pair of tentacles. Rods (≈ 1 mm – 250 μ m) and flattened rods (≈ 190 μ m – 120 μ m) with irregular margins are present in the coenenchyme (Figure S26f). Blunt ended rods (≈ 350 μ m – 140 μ m) and flattened rods (≈ 115 μ m) are present in the tentacles (Figure S26g). Rods (≈ 180 μ m – 115 μ m) with irregular margins are present in the pharynx (Figure S26h). Sclerites from the body, coenenchyme, and tentacles are heavily granulated.

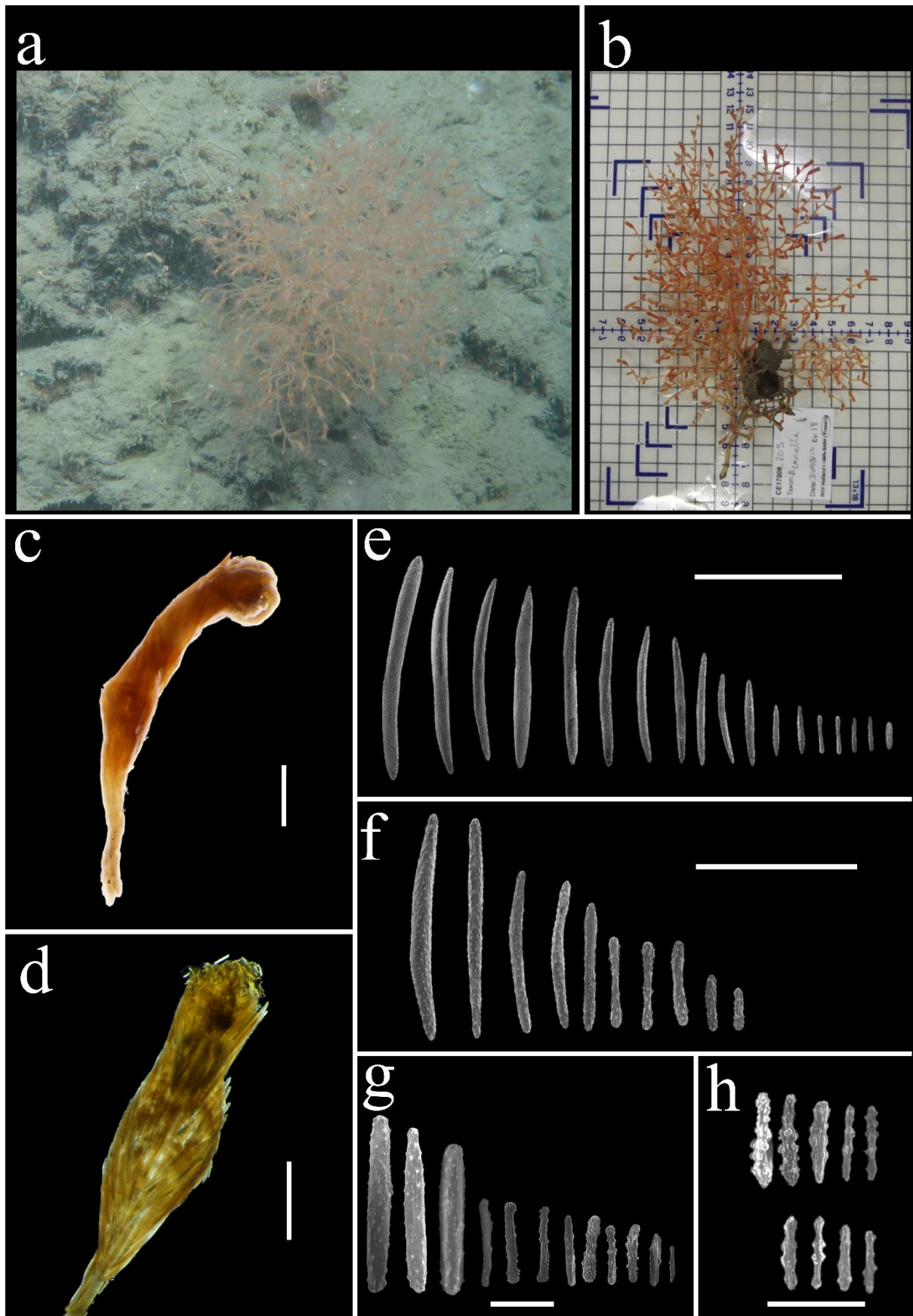


Figure S26. Morphotype 24 – Haplotype 21, voucher CE-17-304. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, f = 500 μ m, g and h = 100 μ m.

Morphotype 25 – Haplotype 21 – *Acanella arbuscula*

Subclade A1

Vouchers: **CE-17-357**

Location: Whittard Canyon at 1589 m.

Colony and polyp morphology: Gross morphology is an intermediate between Morphotype 24 and Morphotype 26: a robust tight bush shaped colony (Figure S27a and b). Polyps are elongated and the same width from proximal to distal ends. The tentacles are gathered over the mouth (Figure S27c and d)

Sclerites: Needles and irregular rods of varying thickness are found in the body (≈ 2.9 mm – 370 μ m, Figure S27e). Body sclerites are arranged obliquely around the polyp. Rods are present in the coenenchyme (≈ 650 μ m – 390 μ m, Figure S27f). Blunt ended rods (≈ 320 μ m – 220 μ m) and flattened rods (≈ 140 μ m – 90 μ m) with irregular margins are present in the tentacles (Figure S27g). Rods and needles from the body, coenenchyme, and tentacles are lightly granulated. A single rod (≈ 120 μ m). was extracted from the pharynx (Figure S27h).

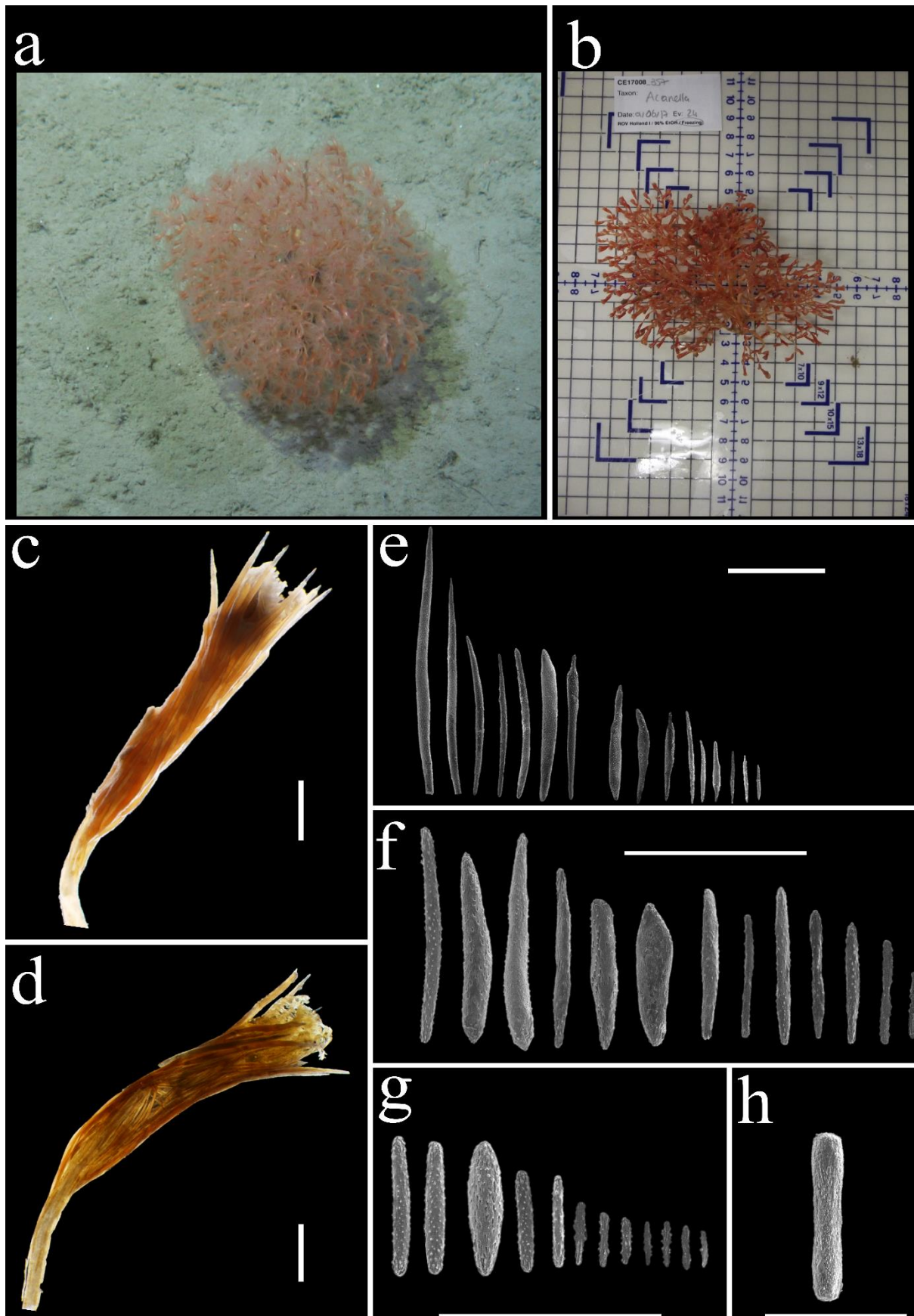


Figure S27. Morphotype 25 – Haplotype 21, voucher CE-17-357. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, f and g = 500 µm, and h = 100 µm.

Morphotype 26 – Haplotype 21 – *Acanella arbuscula*

Subclade A1

Vouchers: **CE-17-425**, CE-17-449, CE-18-247

Location: Whittard Canyon and North Porcupine Bank between 1287 – 1294 m

Colony and polyp morphology: Di- and trichotomous branching from the nodes at an acute angle forming a funnel bush shape (Figure S28a and b). Coenenchyme and polyps are orange. Coenenchyme more transparent at proximal portion of colony, thickening distally to an orange or yellow colour. Attached to hard substrates. Polyps are barrel shaped and densely populate the coenenchyme (Figure S28c and d).

Sclerites: Slender rods found in the body wall (≈ 2.2 mm – 280 μ m, Figure S28e) and coenenchyme (≈ 1 mm, Figure S28f). Body sclerites arranged obliquely around the polyp. Intertentacular sclerites present. Blunt ended rods (≈ 275 μ m – 160 μ m) and flattened scales (≈ 100 μ m) with irregular margins are present in the tentacles (Figure S28g). All sclerites from the body wall, tentacles, and coenenchyme are heavily granulated. Warty rods are found in the pharynx (Figure S28h).

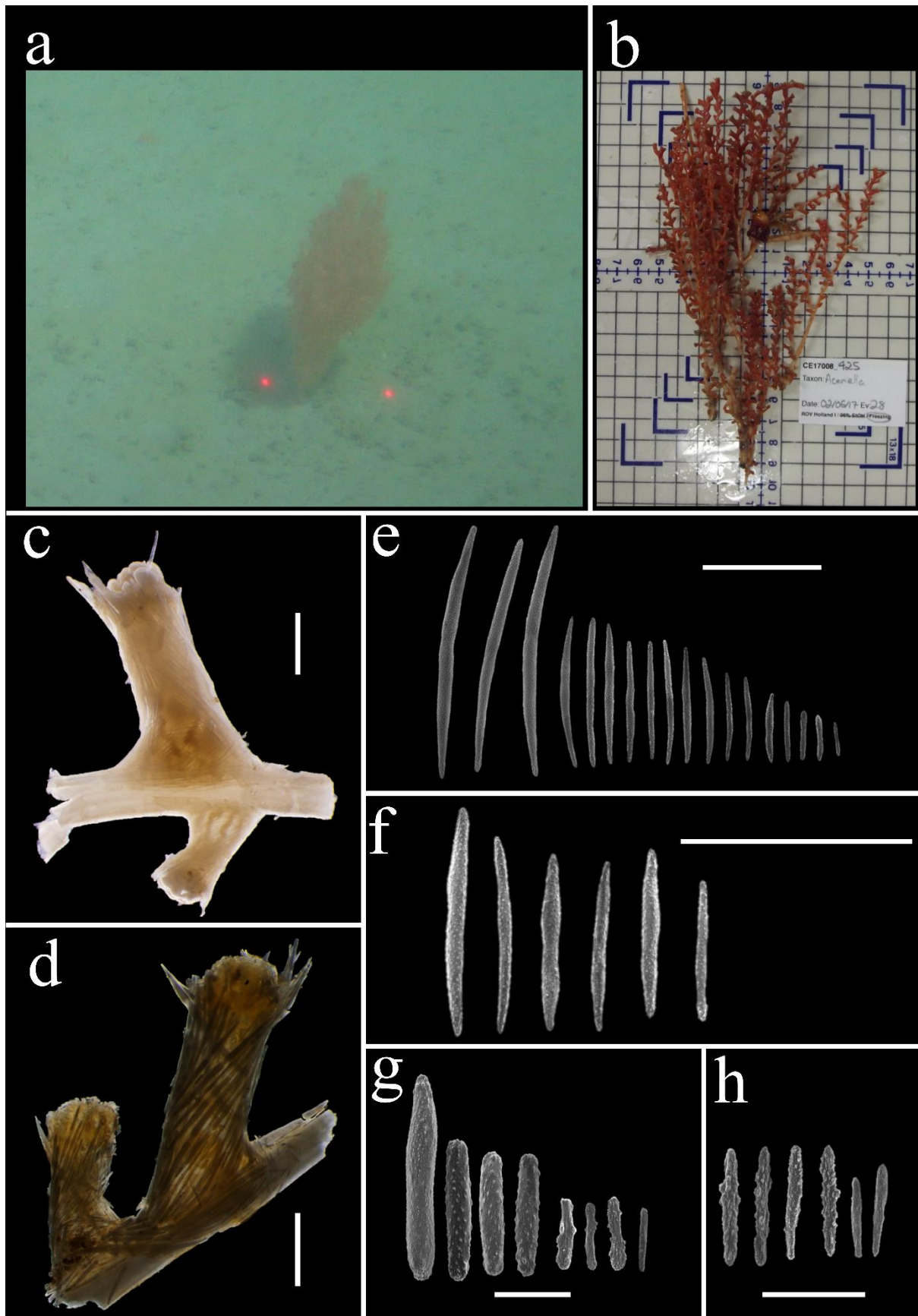


Figure S28. Morphotype 26 – Haplotype 21, voucher CE-17-425. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, e and f = 1 mm, g and h = 100 µm.

Morphotype 27 – Haplotype 22 – *Acanella* sp.

Clade A1

Vouchers: **CE-18-339**

Location: North Porcupine Bank at 821 m.

Colony and polyp morphology: Dichotomous branching from the node occurring in a single plane leading to a flabellate colony (Figure S29a and b). Coenenchyme is thin near the base of colony and thickens distally with an orange colour. Polyps are barrel shaped, and tentacles are contracted over the mouth (Figure S29c and d). Individual attached to hard substrate.

Sclerites: Rods and needles, heavily granulated, present in the polyp body (≈ 2.3 mm - 180 μ m, Figure S29e) and coenenchyme (≈ 1 mm – 115 μ m, Figure S29f). Body sclerites are arranged obliquely around the polyp. Intertentacular needles present. Blunt ended rods (≈ 400 μ m – 75 μ m), are present in the tentacles (Figure S29g) all lightly granulated. Warty rods (≈ 140 μ m- 70 μ m) are present in the pharynx (Figure S29h).

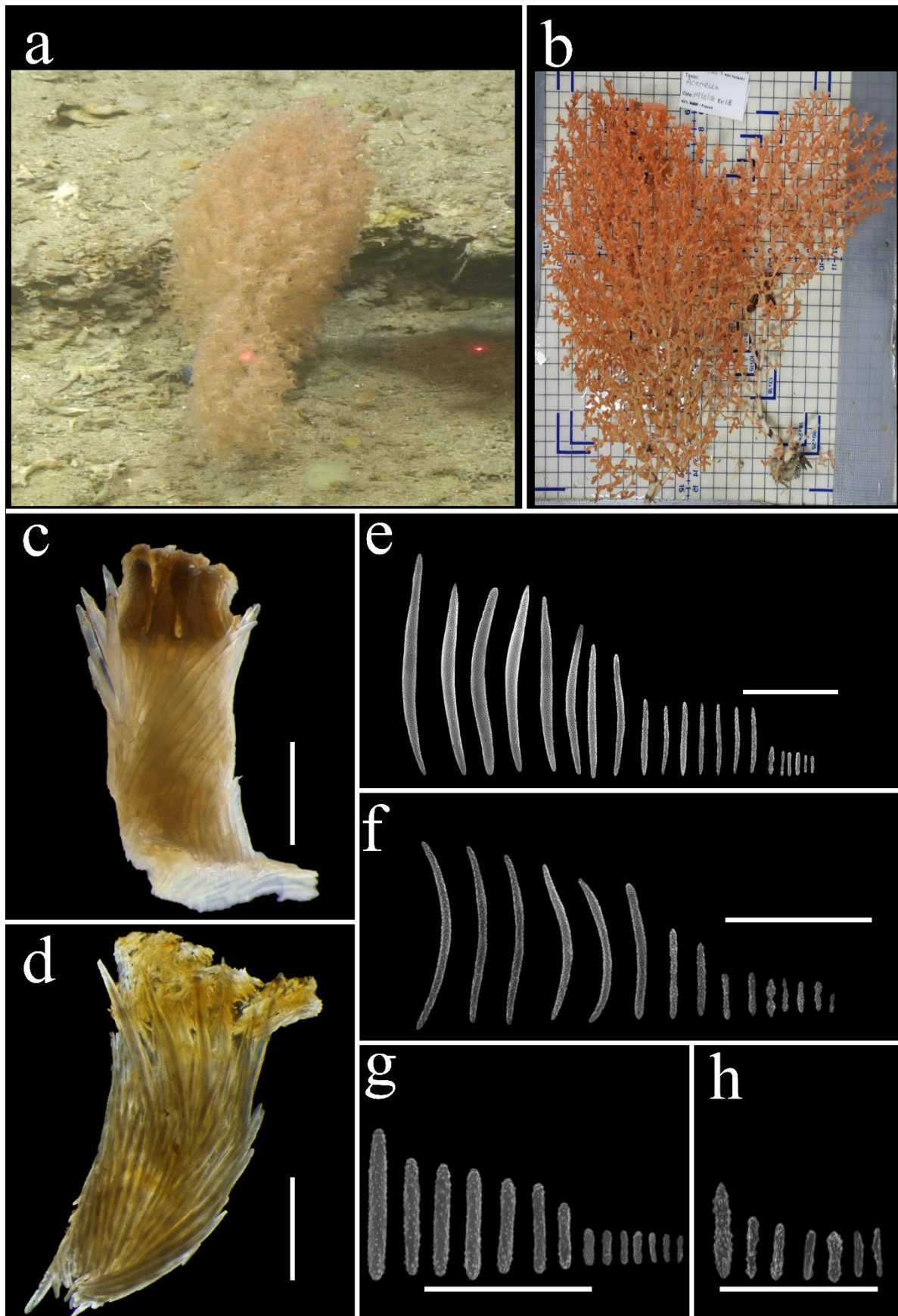


Figure S29. Morphotype 27 – Haplotype 22, voucher CE-18-339. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, e, and f = 1 mm, g = 500 μ m, and h = 250 μ m.

Morphotype 28 – Haplotype 16

Subclade C1

Vouchers: CE-17-233, **CE-17-287**, CE-18-143,

Location: Whittard Canyon and North Porcupine Bank between 1745 – 1845 m.

Colony and polyp morphology: Unbranched whip coral (Figure S30a and b). Coenenchyme is cream in colour with pink polyps that originate on all sides of the coenenchyme. A thick tissue covers the polyps, which are barrel shaped (Figure S30c and d). Tentacles are loosely gathered over the mouth.

Sclerites: Needles (≈ 5.4 mm – 290 μ m) are present in the body (Figure S30e), concentrated longitudinally on one side of the polyp with some needles projecting past the base of the tentacles. No sclerites are found in the coenenchyme. Flattened rods (≈ 300 μ m – 80 μ m) are found in the tentacles (Figure S30g). The pharyngeal sclerites were elongated diamond shaped rods (≈ 130 μ m, Figure S30h).

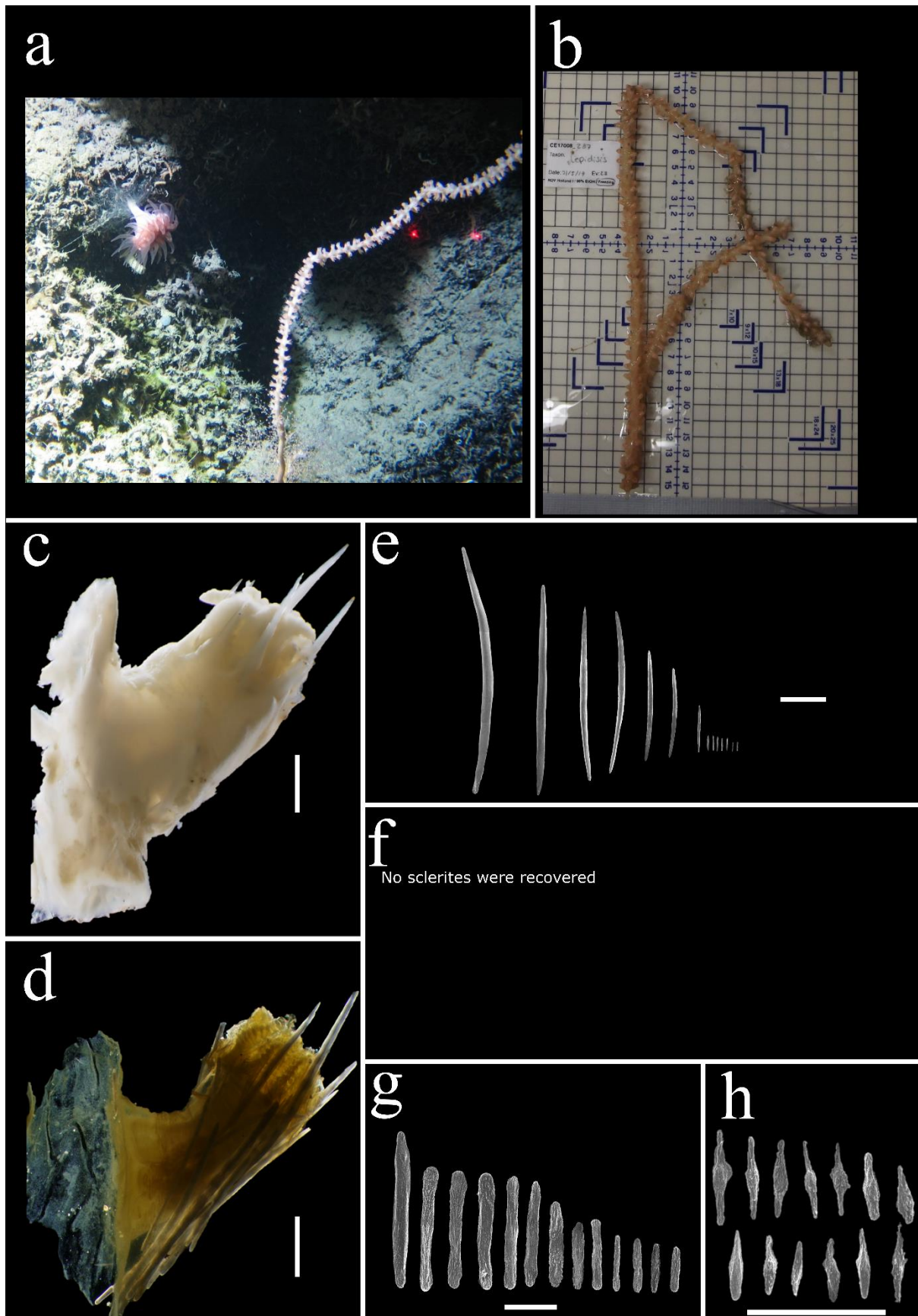


Figure S30. Morphotype 28 – Haplotype 16, voucher CE-17-287. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, g = 100 μ m, and h = 200 μ m.

Morphotype 29 – Haplotype 16

Subclade C1

Vouchers: CE-18-242, CE-18-456

Location: North Porcupine Bank between 1292 – 1532 m.

Colony and polyp morphology: Unbranched whip coral that infrequently coils distally (Figure S30a and b). Coenenchyme is thick and densely populated with irregularly placed polyps. Coenenchyme is cream-orange in colour transitioning to orange-pink polyps. Polyps are the same width from proximal to distal ends (Figure S30c and d) and are covered with a thick tissue. Tentacles relaxed over the mouth.

Sclerites: Smooth needles ($\approx 4\text{ mm} - 200\text{ }\mu\text{m}$) sparsely populate body wall (Figure S30e) arranged obliquely and longitudinally along the polyp. Smooth needles ($\approx 2\text{ mm} - 730\text{ }\mu\text{m}$) and elongate diamond rodlets ($\approx 300\text{ }\mu\text{m}$) are present in the coenenchyme (Figure S30f). Flattened rods ($\approx 230\text{ }\mu\text{m}$) are present in the tentacles (Figure S30g) and elongated diamond shaped rods ($\approx 140\text{ }\mu\text{m}$) in the pharynx (Figure S30h).

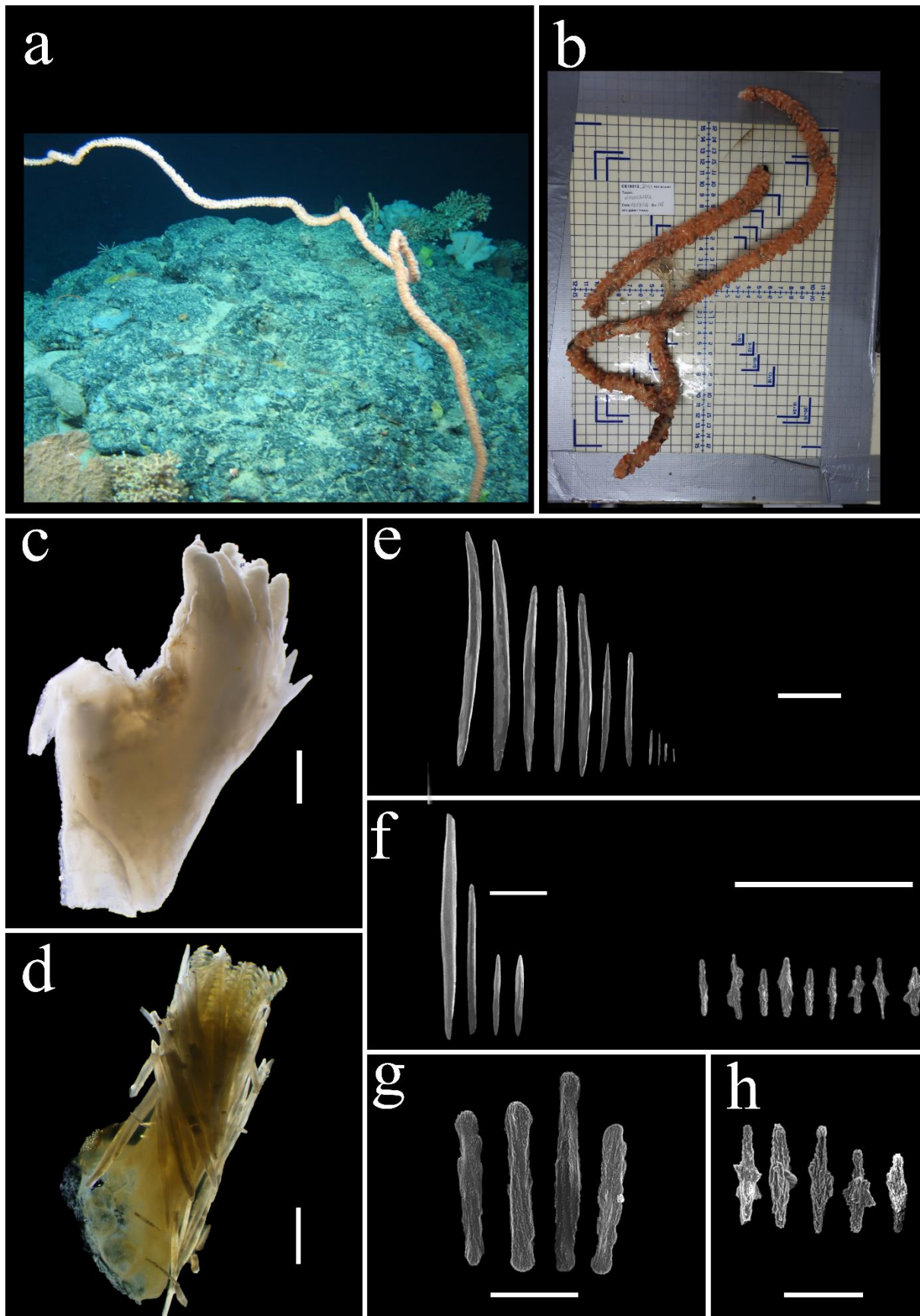


Figure S31. Morphotype 29 – Haplotype 16, voucher CE-18-242. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, f = 500 μ m, g and h = 100 μ m.

Morphotype 30 – Haplotype 17

Subclade C1

Vouchers: **CE-17-356**

Location: Whittard Canyon at 1591 m.

Colony and polyp morphology: Unbranched whip coral (Figure S32a and b) attached to scleractinian rubble with a circular disk. The coenenchyme is thick and cream in colour which transitions to pink polyps. Polyps originate on all sides of the axis. Polyps are barrel shaped with thick tissue (Figure S32c and d). The tentacles are relaxed and fold over the mouth.

Sclerites: Smooth needles ($\approx 5\text{ mm} - 180\text{ }\mu\text{m}$) sparsely populate the body wall (Figure S32e) and are arranged obliquely along the polyp, more concentrated towards the distal end. Needles project past the base of the tentacles. Needles ($\approx 700\text{ }\mu\text{m}$) and flattened rods ($\approx 250\text{ }\mu\text{m} - 100\text{ }\mu\text{m}$) are found in the coenenchyme (Figure S32f). Flattened rods ($\approx 300\text{ }\mu\text{m} - 100\text{ }\mu\text{m}$) are found in the tentacles (Figure S32g) and elongated diamond shaped rods ($\approx 80\text{ }\mu\text{m} - 130\text{ }\mu\text{m}$) are present in the pharynx (Figure S32h).

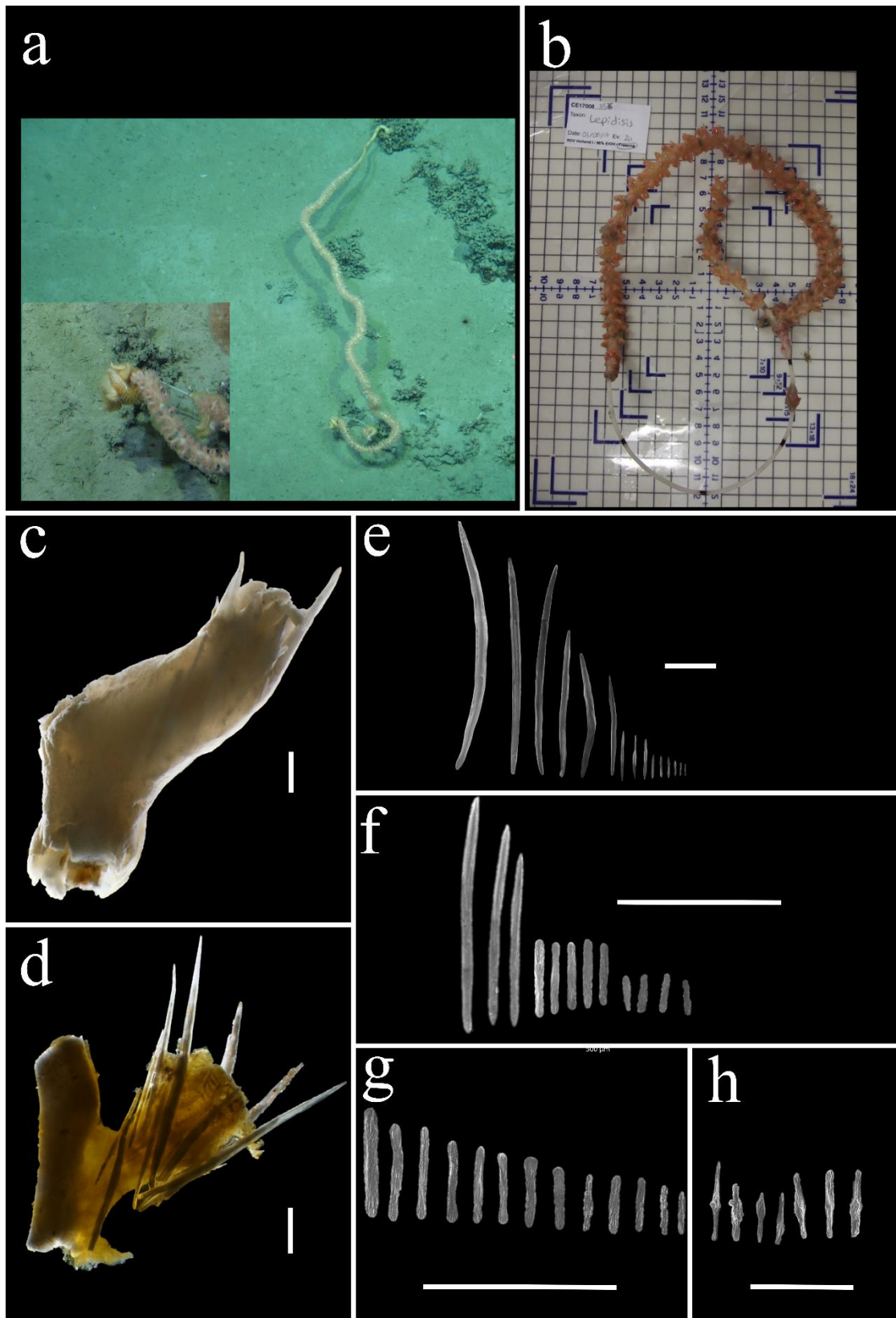


Figure S32. Morphotype 30 – Haplotype 17, voucher CE-17-356. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Whole polyp. **d**, Whole polyp cleared in clove oil. **e**, Sclerites from the body wall. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. **h**, Sclerites from the pharynx. Scale bar: c, d, and e = 1 mm, f and g = 500 μ m, and h = 200 μ m.

2. Family Primnoidae

Nine haplotypes and six morphotypes.

Morphotype 31 – Haplotype 33 – *Primnoa* sp.

Vouchers: CE-17-081, **CE-17-095**

Location: Whittard Canyon between 1482 and 1490 m.

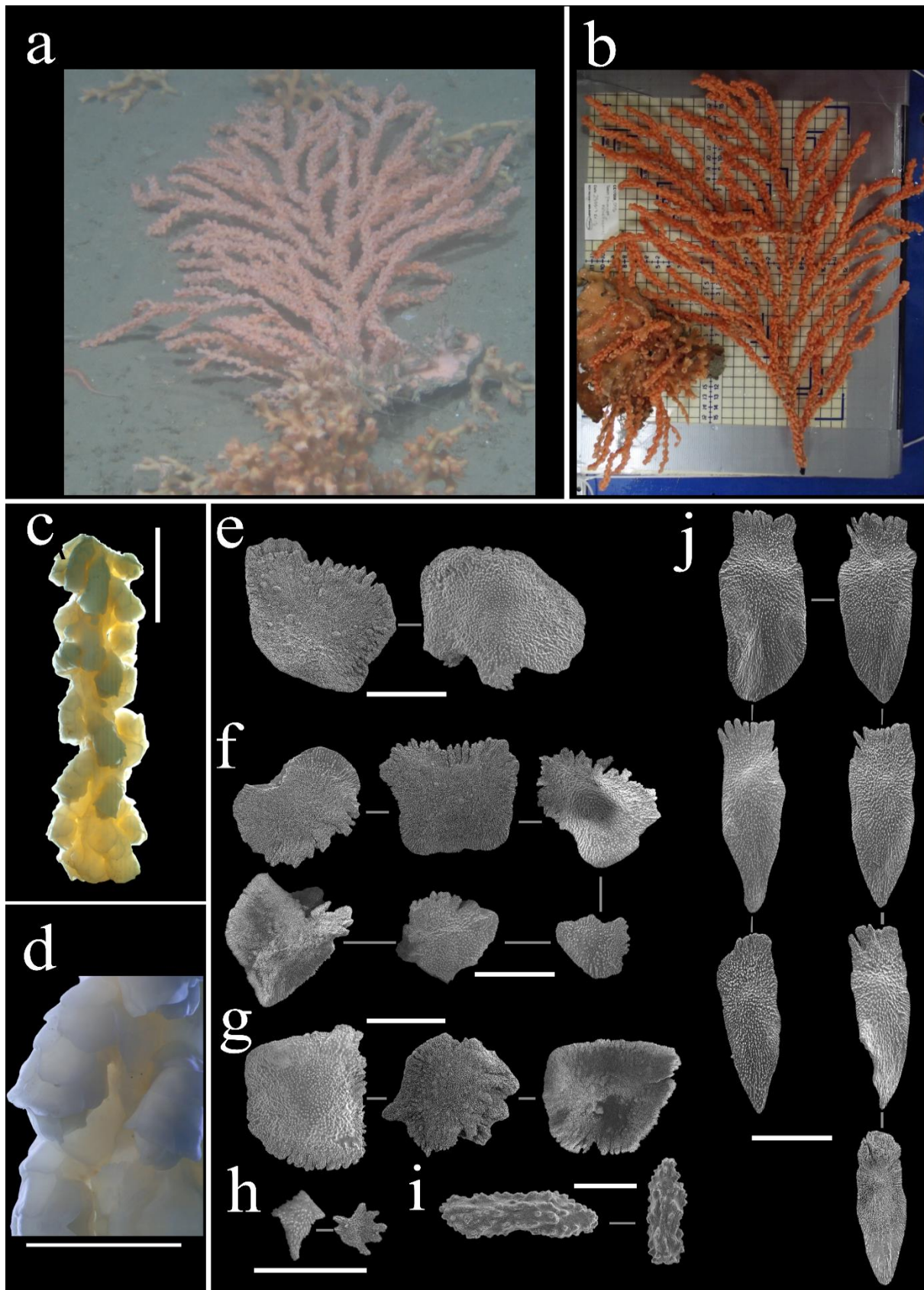


Figure S33. Morphotype 31 – Haplotype 33, *Primnoa* sp., voucher CE-17-095. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Close up of the colony. **d**, Close up of polyps **e**, Basal scales. **f**, Marginal scales. **g**, Medial scales. **h**, Sclerites from the coenenchyme. **i**, Sclerites from the tentacles. **j**, Opercular scales. Scale bar: c = 10 mm, d = 5 mm, e, f, g, h and j = 1 mm, i = 100 μ m.

Morphotype 31 – Haplotype 34 – *Primnoa* sp

Vouchers: **CE-17-160**

Location: Whittard Canyon at 1514 m.

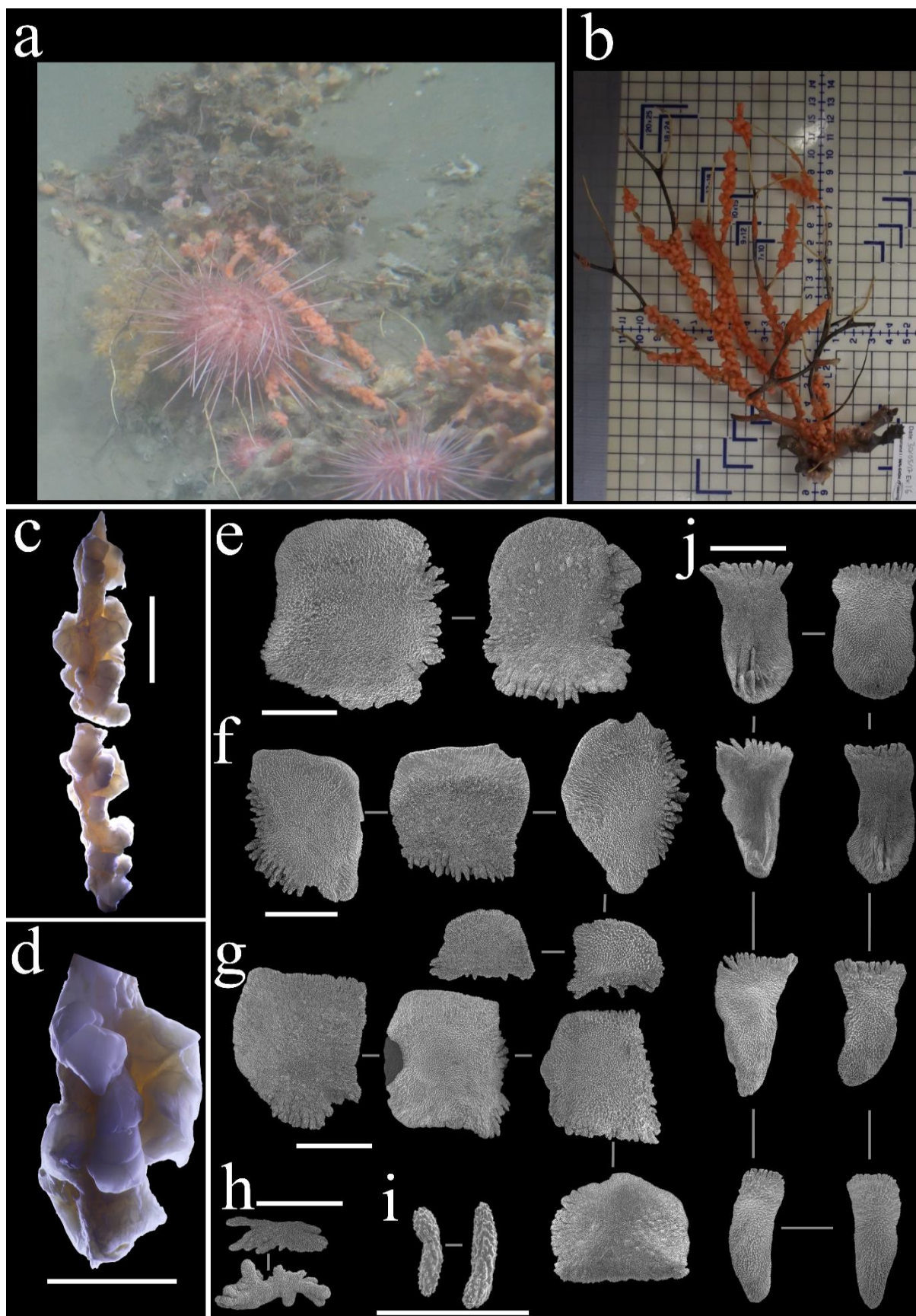


Figure S34. Morphotype 31 – Haplotype 34, *Primnoa* sp. voucher CE-17-160. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Close up of the colony. **d**, Close up of polyps. **e**, Basal scales. **f**, Marginal scales. **g**, Medial scales. **h**, Sclerites from the coenenchyme. **i**, Sclerites from the tentacles. **j**, Opercular scales. Scale bar: c = 10 mm, d = 5 mm, e, f, g, h, and j = 1 mm, i = 500 μ m.

Morphotype 31 – Haplotype 35 – *Primnoa* sp

Vouchers: **CE-17-082**, CE-17-169

Location: Whittard Canyon between 1490 and 1508 m.

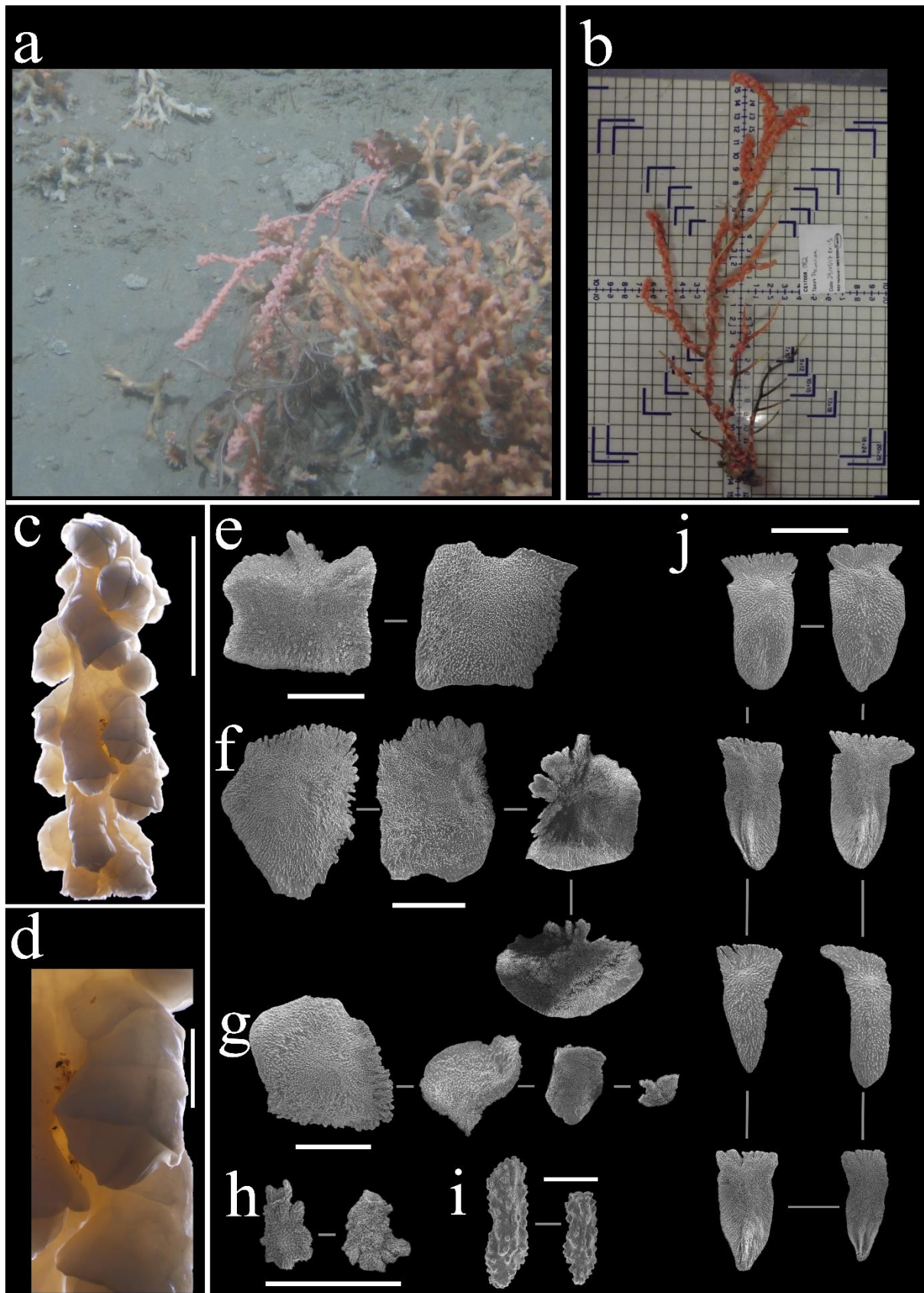


Figure S35. Morphotype 31 – Haplotype 35, *Primnoa* sp. voucher CE-17-082. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Close up of the colony. **d**, Close up of polyps. **e**, Basal scales. **f**, Marginal scales. **g**, Medial scales. **h**, Sclerites from the coenenchyme. **i**, Sclerites from the tentacles. **j**, Opercular scales. Scale bar: c = 10 mm, d = 5 mm, e, f, g, and j = 1 mm, h = 500 μ m, i = 100 μ m.

Morphotype 31 – Haplotype 36 – *Primnoa* sp

Vouchers: CE-17-084, CE-17-090. **CE-17-101.** CE-17-102

Location: Whittard Canyon between 1489 and 1493 m.

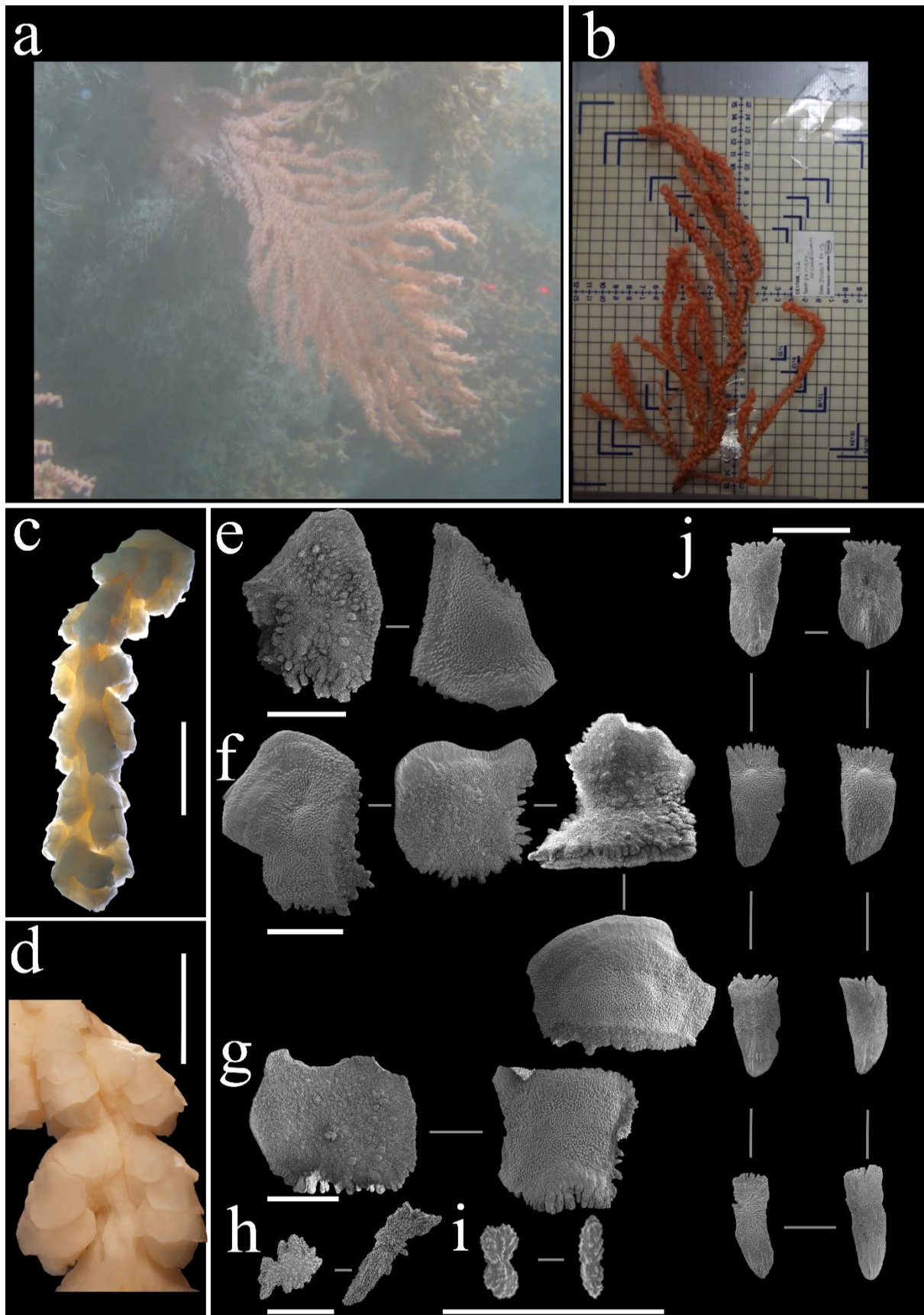


Figure S36. Morphotype 31 – Haplotype 36, *Primnoa* sp. voucher CE-17-101. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Close up of the colony. **d**, Close up of polyps. **e**, Basal scales. **f**, Marginal scales. **g**, Medial scales. **h**, Sclerites from the coenenchyme. **i**, Sclerites from the tentacles. **j**, Opercular scales. Scale bar: c = 10 mm, d = 5 mm, e, f, g, and j = 1 mm, h and i = 500 μ m.

Morphotype 32 – Haplotype 30 – *Narella bellissima*, (Kükenthal, 1915),

***Vouchers:* CE-18-434**

Location: North Porcupine Bank at 1348 m.

As diagnosed from original description.

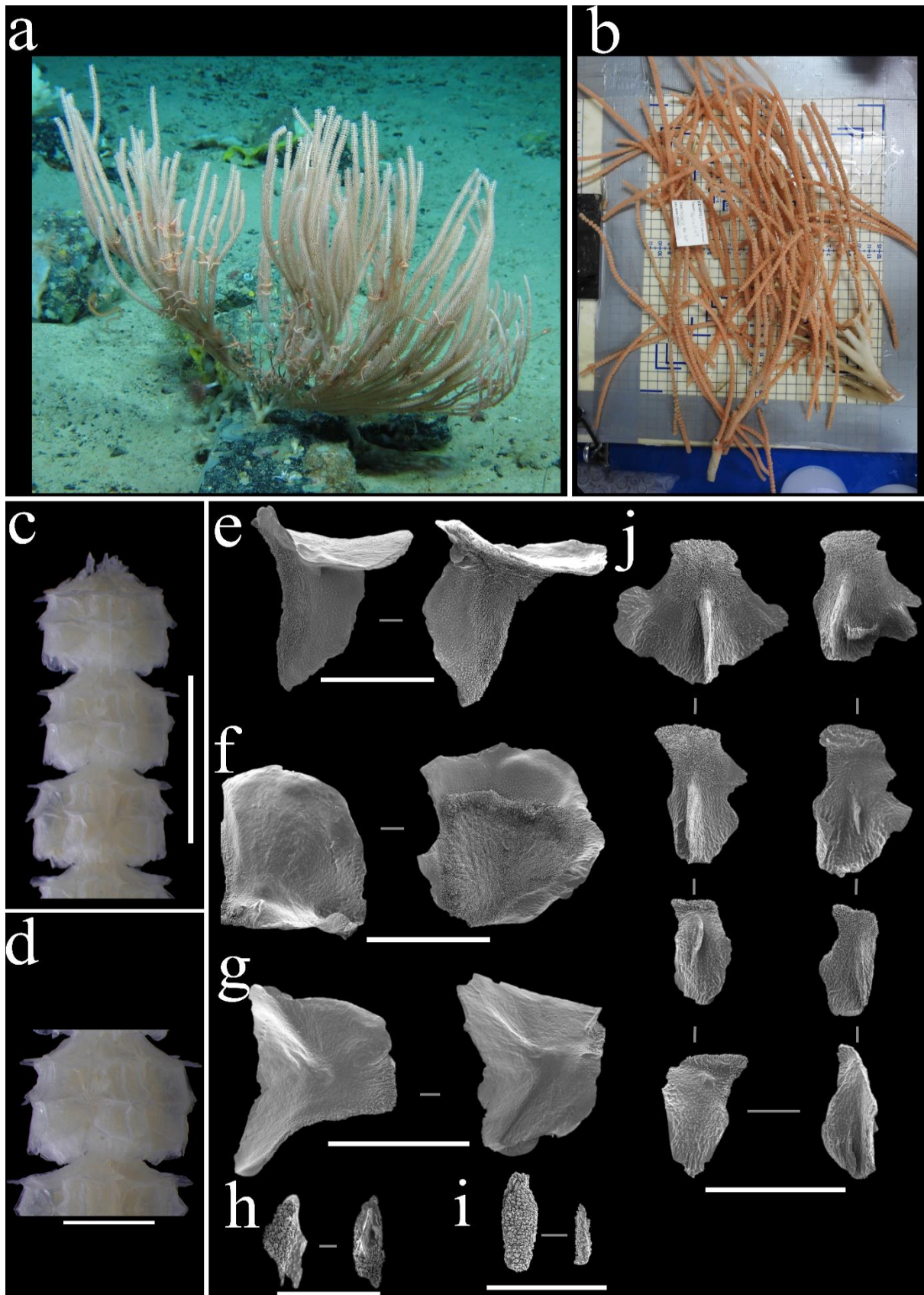


Figure S37. Morphotype 32 – Haplotype 30, *Narella bellissima*, voucher CE-18-434. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Close up of the colony. **d**, Close up of polyps. **e**, Basal scales. **f**, Marginal scales. **g**, Medial scales. **h**, Sclerites from the coenenchyme. **i**, Sclerites from the tentacles. **j**, Opercular scales. Scale bar: c = 5 mm, d = 2 mm, e, f, g, and j = 1 mm, h and i = 500 μ m.

Morphotype 33 – Haplotype 32 – *Narella versluysi* (Hickson 1909)

Vouchers: **CE-18-321**

Location: North Porcupine Bank at 907 m.

As diagnosed from original description.

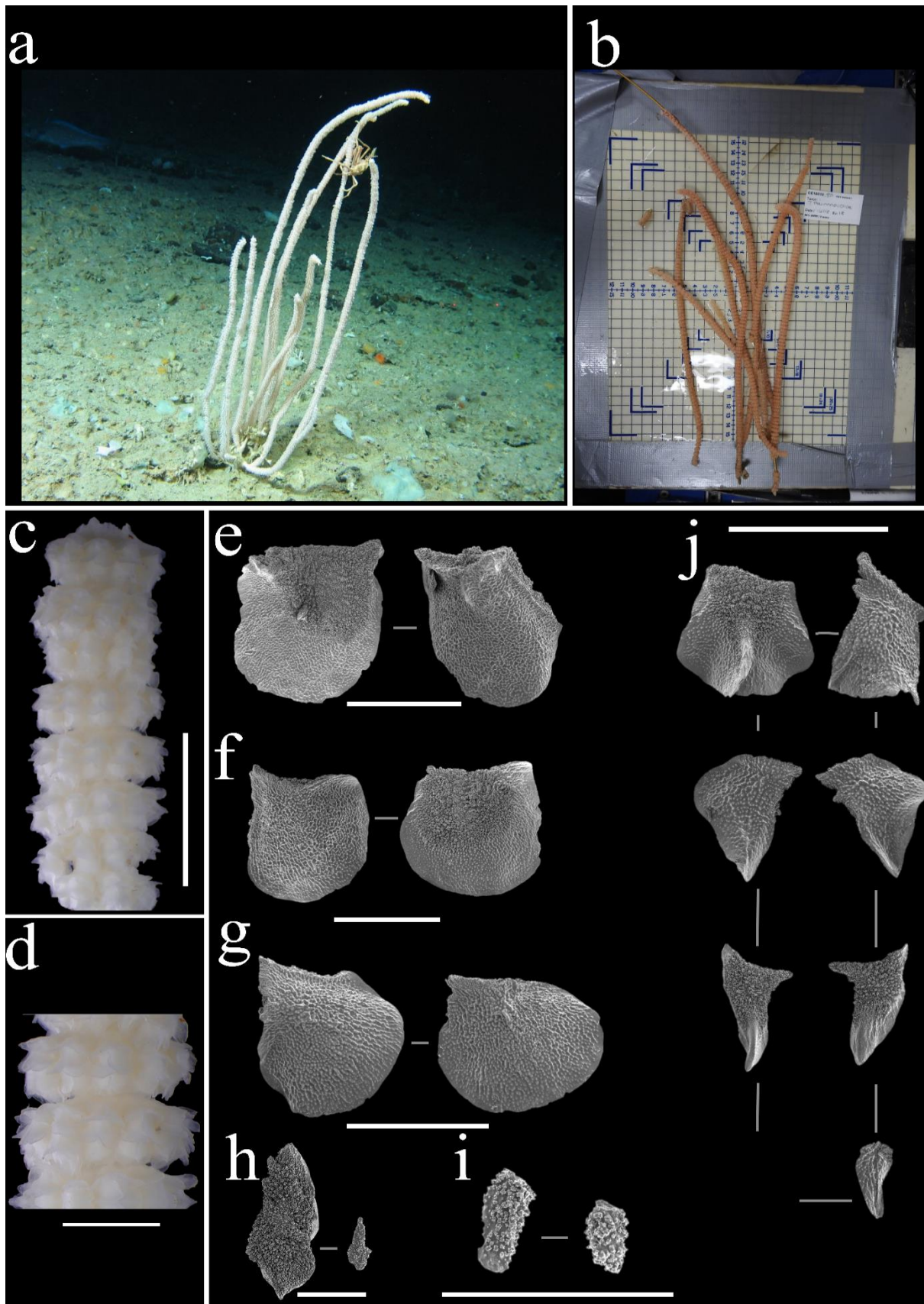


Figure S38. Morphotype 33 – Haplotype 32, *Narella versluysi*, voucher CE-18-321. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Close up of the colony. **d**, Close up of polyps. **e**, Basal scales. **f**, Marginal scales. **g**, Medial scales. **h**, Sclerites from the coenenchyme. **i**, Sclerites from the tentacles. **j**, Opercular scales. Scale bar: c = 10 mm, d = 5 mm, e, f, g, and j = 1 mm, h and i = 500 μ m.

Morphotype 34 – Haplotype 31 – *Candidella imbricata* (Johnson, 1862)

Vouchers: **CE-17-290**, CE-17-305, CE-17-340, CE-17-346, CE-17-346, CE-17-352

Location: Whittard Canyon between 1589 and 1594 m.

As diagnosed from original description.

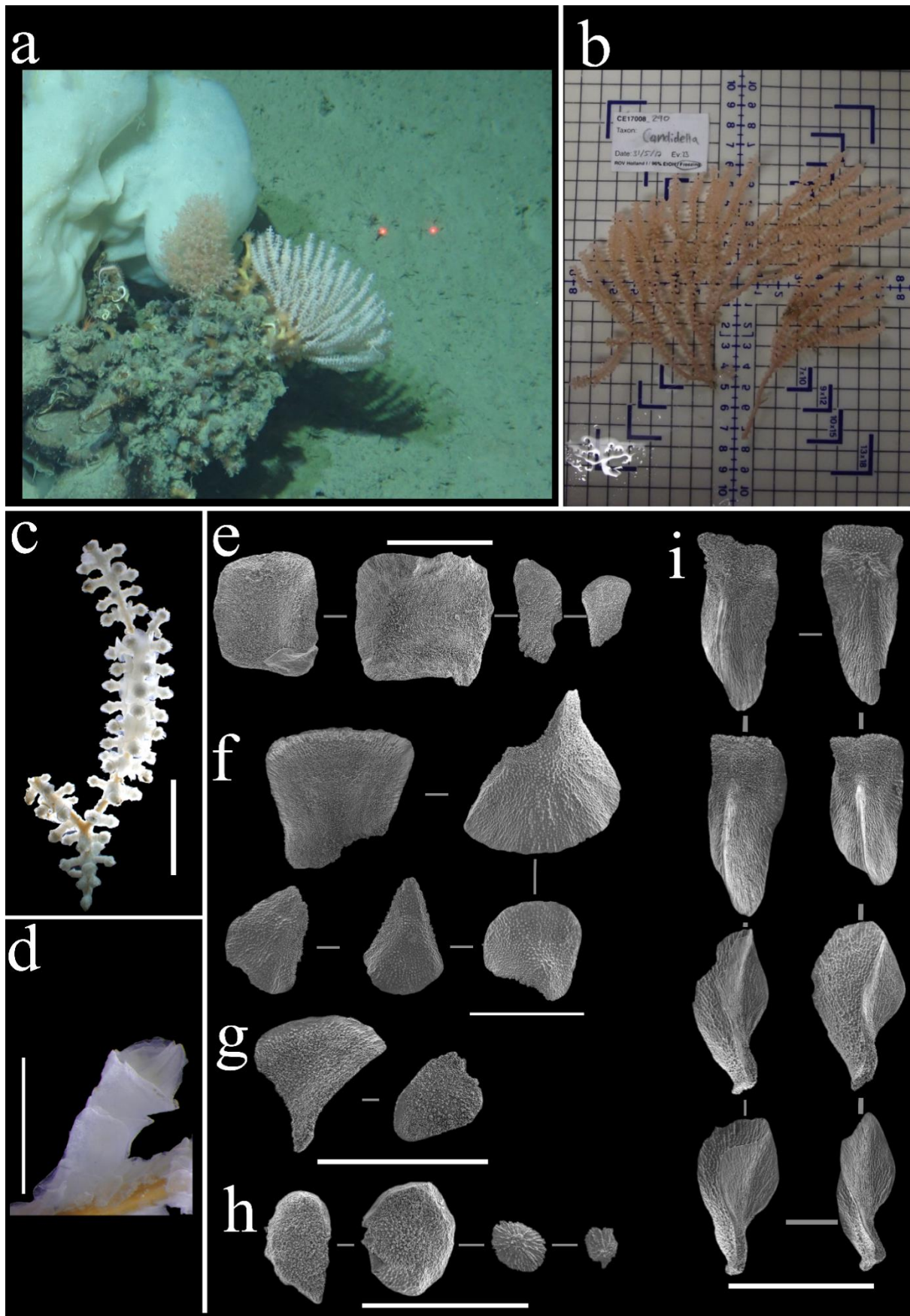


Figure S39. Morphotype 34 – Haplotype 31, *Candidella imbricata*, voucher CE-17-290. **a**, In-situ image. **b**, Ex-situ image. **c**, Close up of the colony. **d**, Close up of polyps. **e**, Basal scales. **f**, Marginal scales. **g**, Medial scales. **h**, Sclerites from the coenenchyme. **i**, Opercular scales. Scale bar: c = 10 mm, d = 2 mm, e, f, g, h, and i = 500 µm.

Morphotype 35 – Haplotype 37 - *Thouarella grasshoffi* Cairns, 2006

Vouchers: **CE-18-261**, CE-18,272. CE-18,278. CE-18-441, CE-18-557

Location: North Porcupine Bank between 1291 and 1435 m.

As diagnosed from original description.

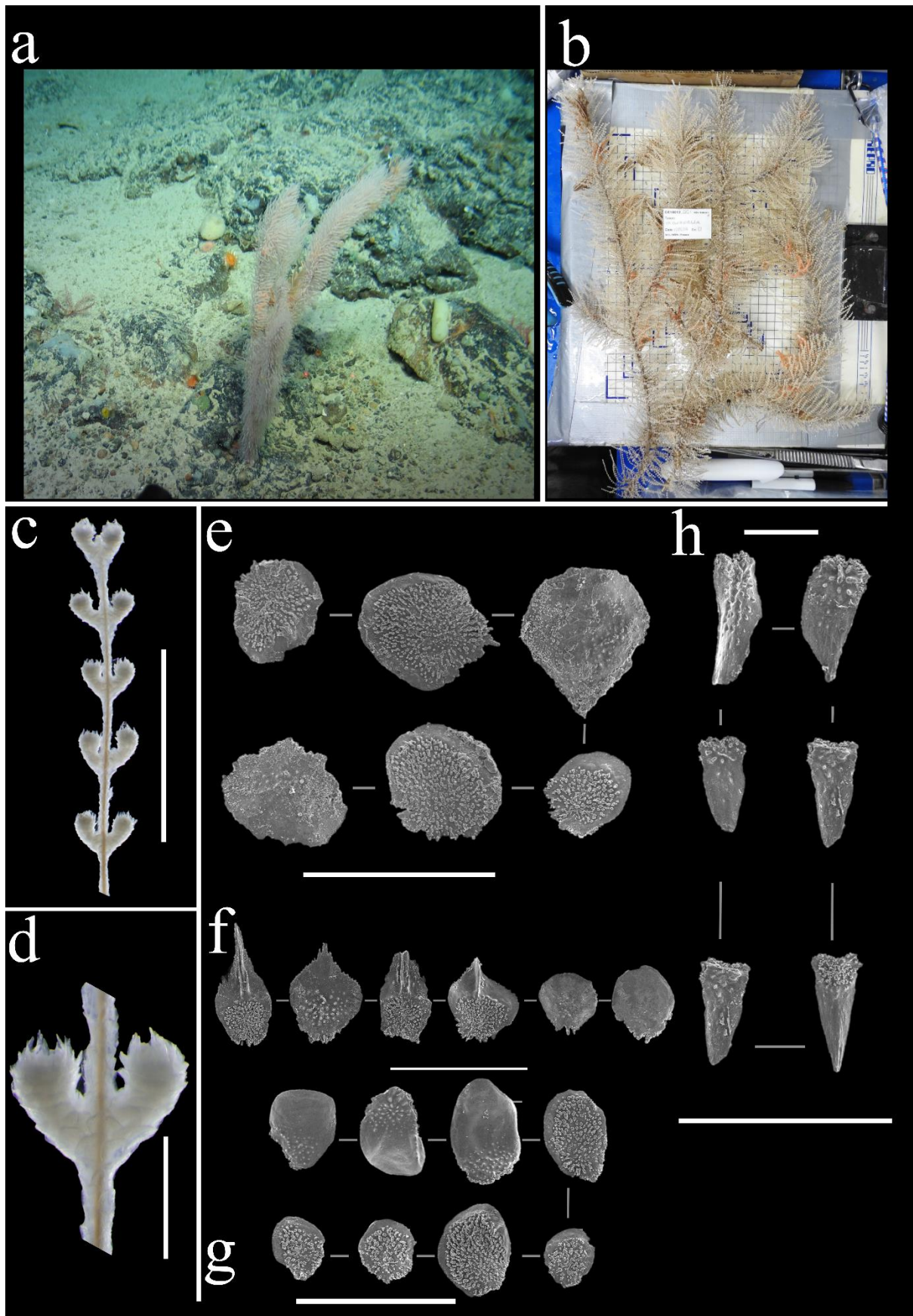


Figure S40. Morphotype 35 – Haplotype 37, *Thouarella grasshoffi*, voucher CE-18-261. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Close up of the colony. **d**, Close up of polyps. **e**, Body scales. **f**, Marginal scales. **g**, Sclerites from the coenenchyme. **h**, Opercular scales. Scale bar: c = 5 mm, d = 1 mm, e, f, g, and h = 500 µm.

Morphotype 36 – Haplotype 38 – *Calyptrophora clinata* Cairns, 2007

Vouchers: **CE-18-568**

Location: North Porcupine Bank at 1397 m.

As diagnosed from original description.

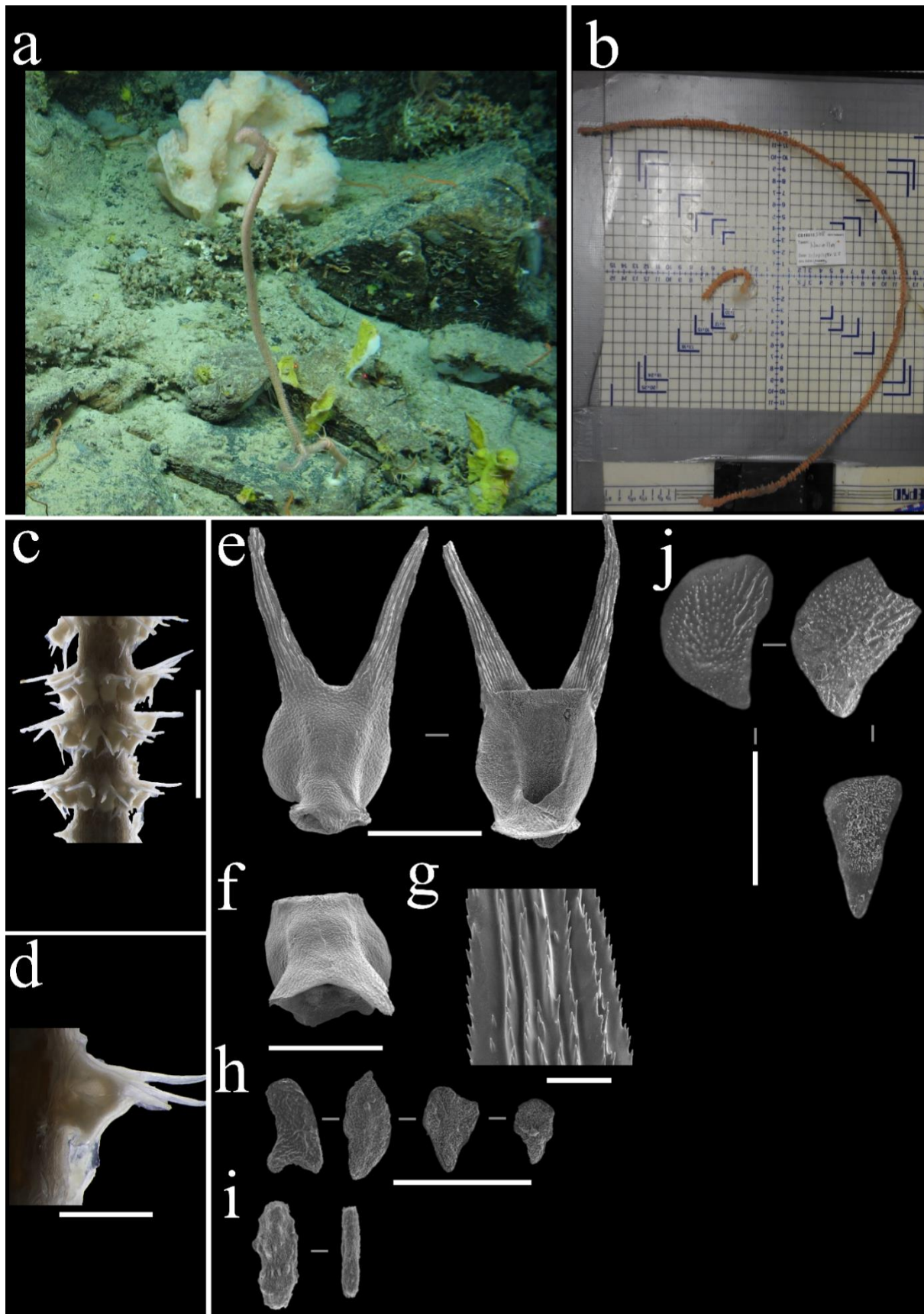


Figure S41. Morphotype 36 – Haplotype 38, *Calyptrophora clinata*, voucher CE-18-568. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Close up of the colony. **d**, Close up of polyps. **e**, Fused Basal scales. **f**, Buccal Scales. **g**, Zoomed image of serrated spines on basal scales. **h**, Sclerites from the coenenchyme. **i**, Sclerites from the tenacles. **j**, Opercular scales. Scale bar: c = 5 mm, d = 2 mm, e, f, and h = 1 mm, g and i = 100 μ m, and j = 500 μ m.

2.1. Family Chrysogorgiidae
Morphotype 37 – Haplotype 25

***Chrysogorgia* Group 7**

Vouchers: **CE-17-364**

Location: Whittard Canyon at 1599 m.

Identified by CB Untiedt.

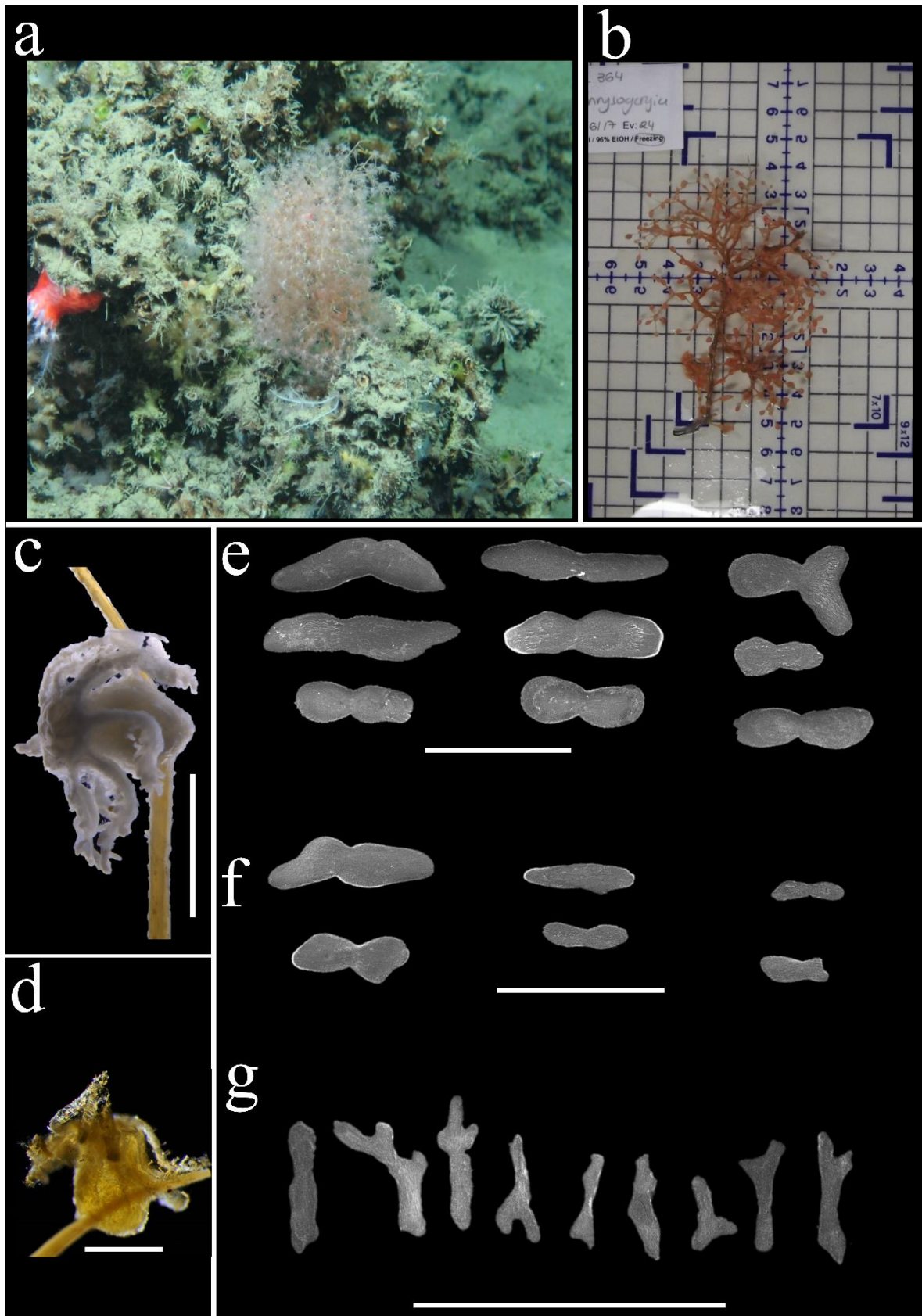


Figure S42. Morphotype 37 – Haplotype 25, *Chrysogorgia* Group 7, voucher CE-17-364. **a**, In-situ image. **b**, Ex-situ image. **c**, Close up of the polyp. **d**, Close up of cleared polyps. **e**, Sclerites from the polyp body. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. Scale bar: c and d = 1 mm, e and f, = 200 μ m, and g = 500 μ m.

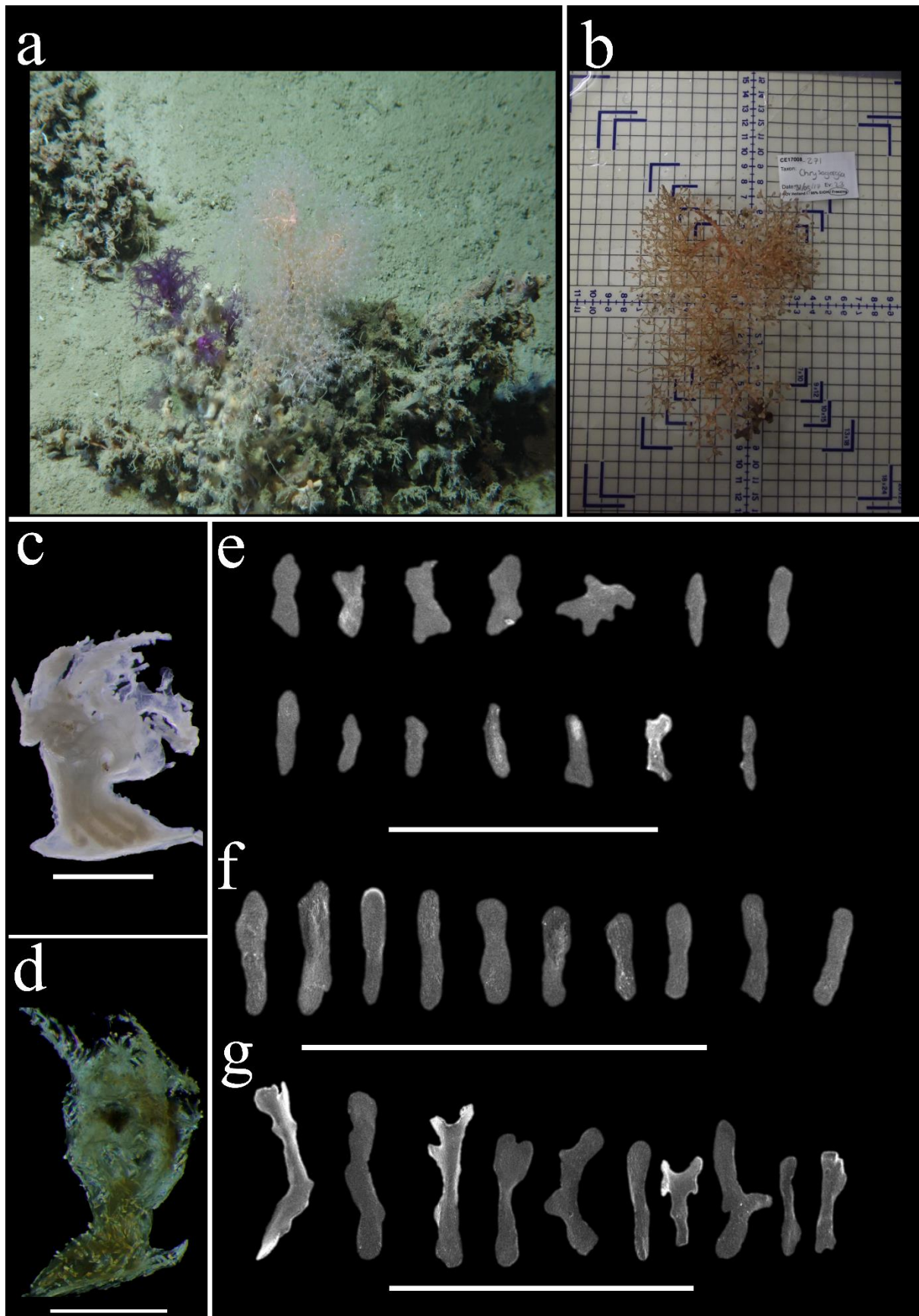
Morphotype 38 – Haplotype 26

***Chrysogorgia* Group 7**

Vouchers: CE-17-271

Location: Whittard Canyon at 1657 m.

Identified by CB Untiedt.



Morphotype 39 – Haplotype 27

***Chrysogorgia* Group 7**

Vouchers: CE-17-93, CE-17-124, **CE-17-129**, CE-17-144,

Location: Whittard Canyon between 1460 m and 1505 m.

Identified by CB Untiedt.

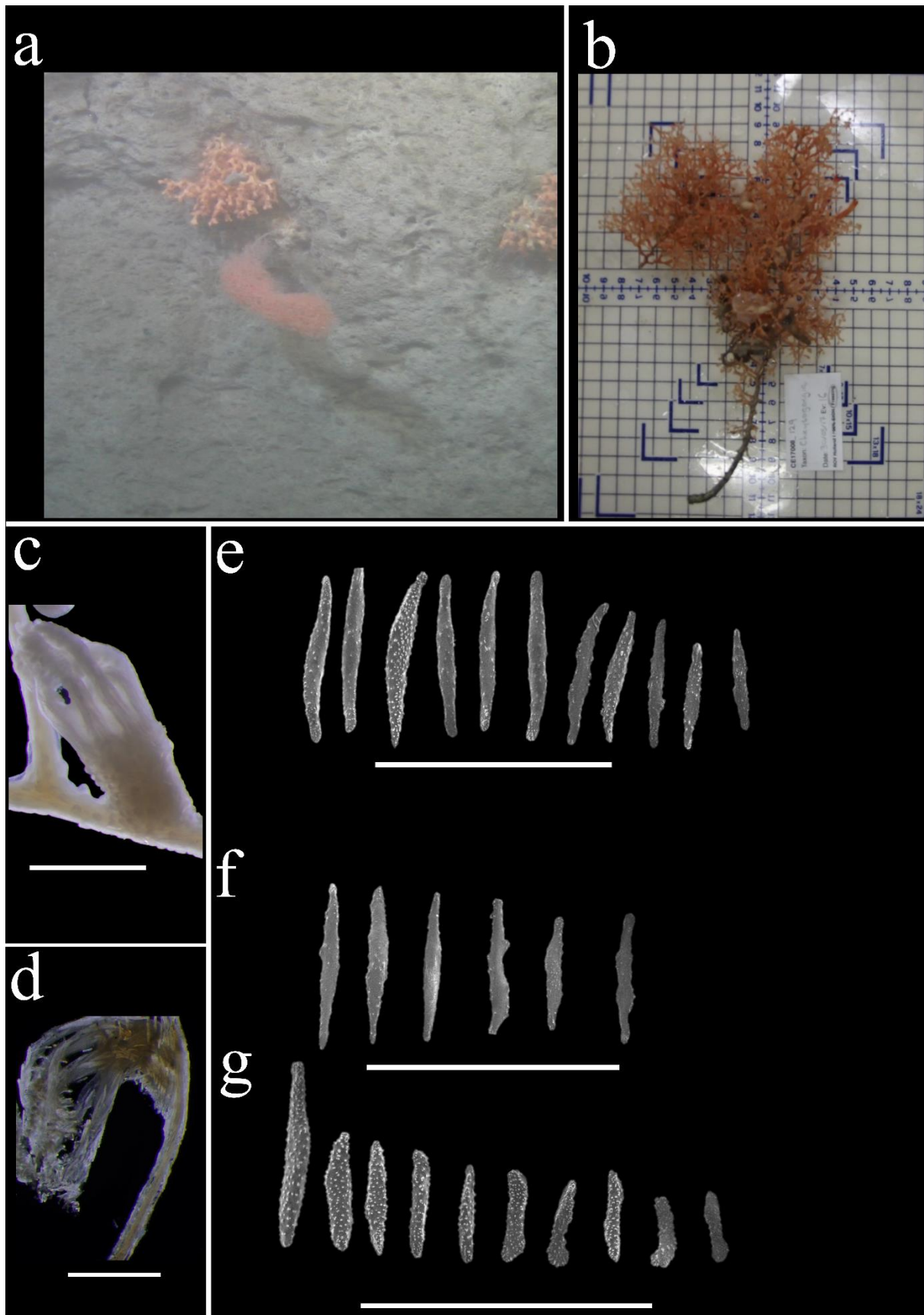


Figure S44. Morphotype 39 – Haplotype 27, *Chrysogorgia* Group 7, voucher CE-17-129. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Close up of the polyp. **d**, Close up of cleared polyps. **e**, Sclerites from the polyp body. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. Scale bar: c, d, e, f, and g = 500 μ m.

Morphotype 40 – Haplotype 27

***Chrysogorgia* Group 7**

Vouchers: CE-17-87, **CE-17-283**, CE-17-364, CE-18-229

Location: Whittard Canyon and North Porcupine Bank between 1301 m and 1658 m

Identified by CB Untiedt.

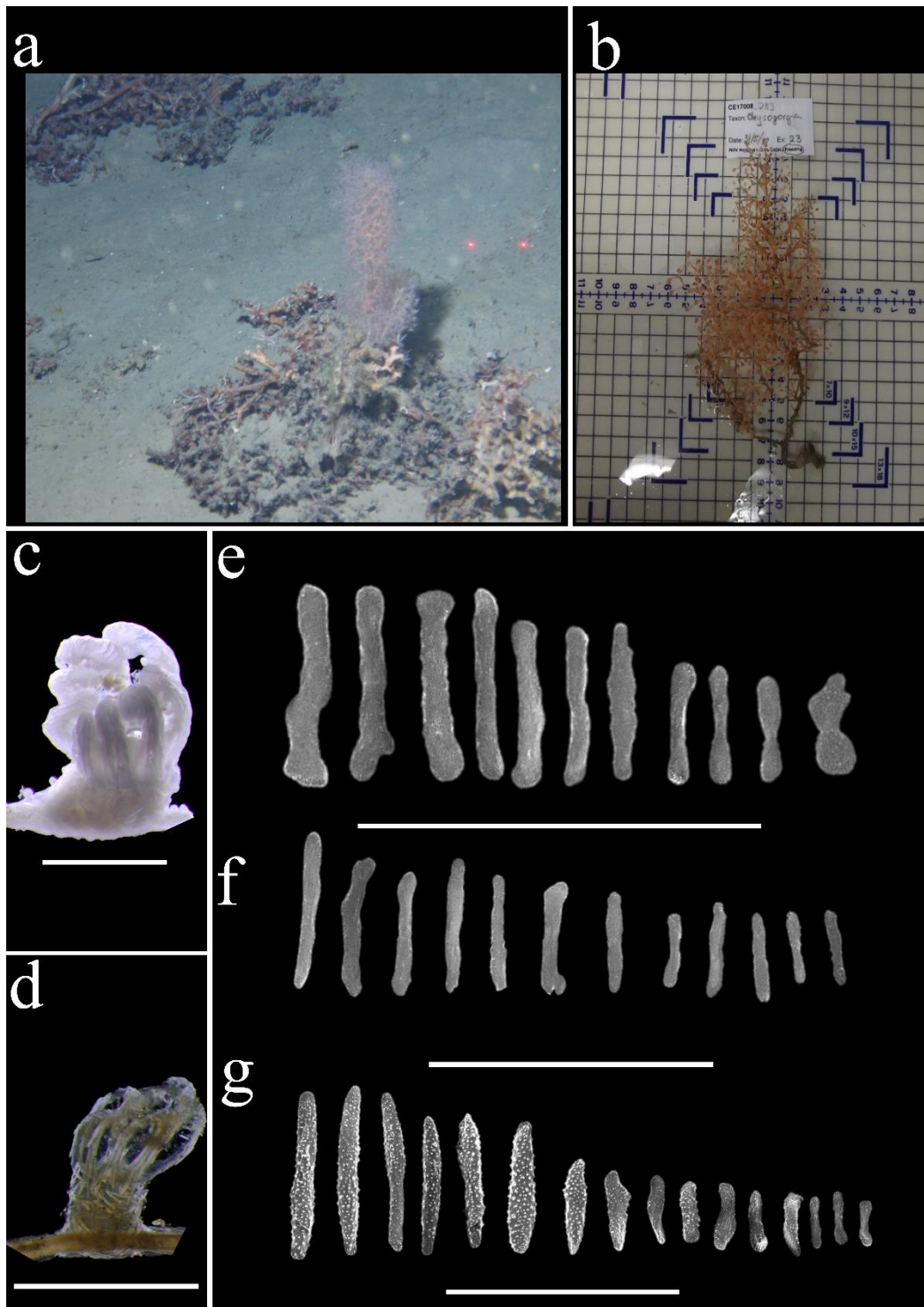


Figure S45. Morphotype 40 – Haplotype 27, *Chrysogorgia* Group 7, voucher CE-17-283. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Close up of the polyp. **d**, Close up of cleared polyps. **e**, Sclerites from the polyp body. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. Scale bar: c and d = 1 mm, e, f, and g = 500 μ m.

Morphotype 41 – Haplotype 27

***Chrysogorgia* Group 7**

Vouchers: CE-18-289, **CE-18-292**

Location: North Porcupine Bank between 1292 m and 1299 m.

Identified by CB Untiedt.

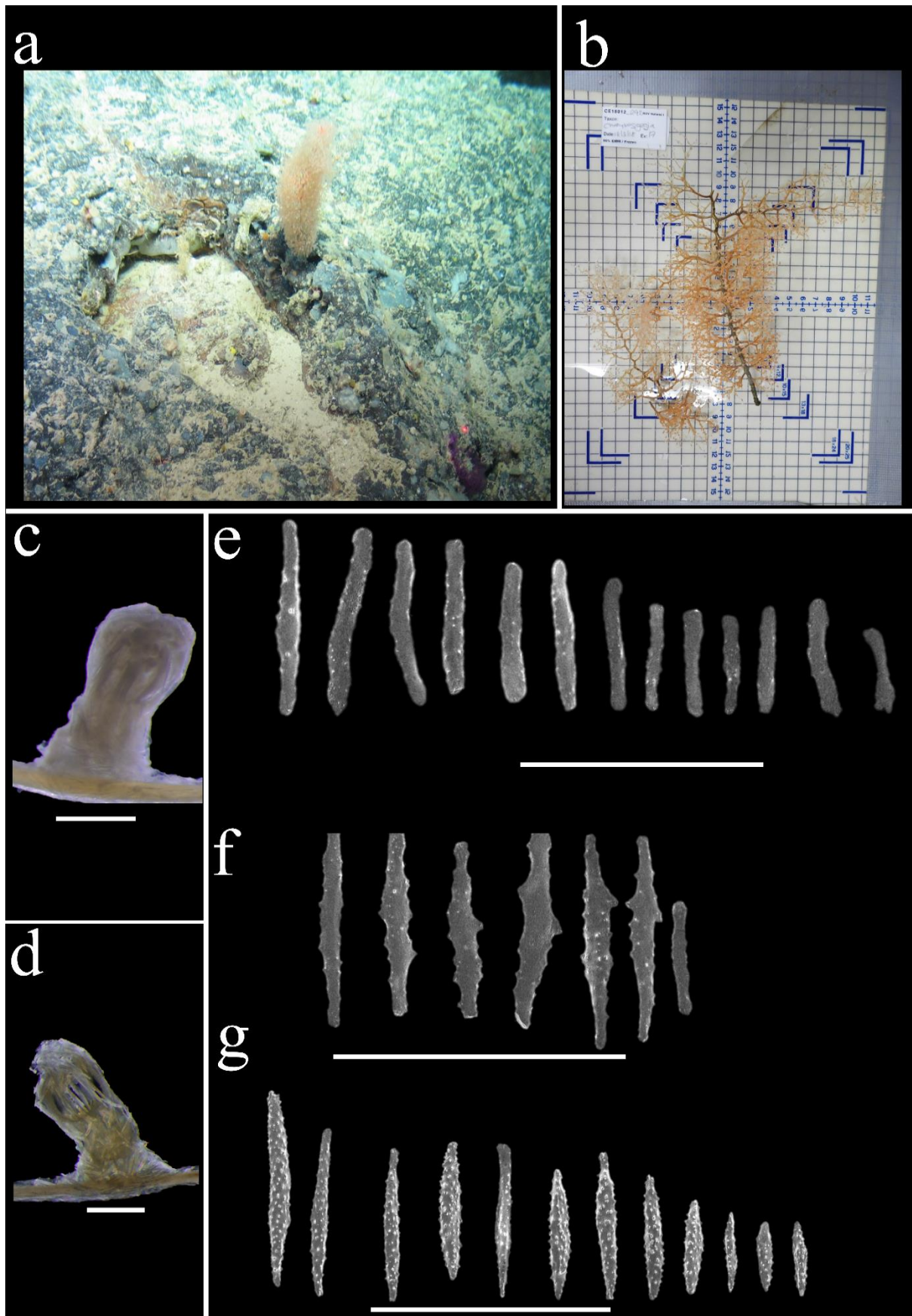


Figure S46. Morphotype 41 – Haplotype 27, *Chrysogorgia* Group 7, voucher CE-18-292. **a**, In-situ image. **b**, Ex-situ image. **c**, Close up of the polyp. **d**, Close up of cleared polyps. **e**, Sclerites from the polyp body. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. Scale bar: c, d, e, f, and g = 500 μ m.

Morphotype 42 – Haplotype 28

Dasygorgia sp.

Vouchers: CE-18-154, **CE-18-418**, CE-18-419

Location: North Porcupine Bank between 1772 m and 1787 m.

Identified by CB Untiedt.

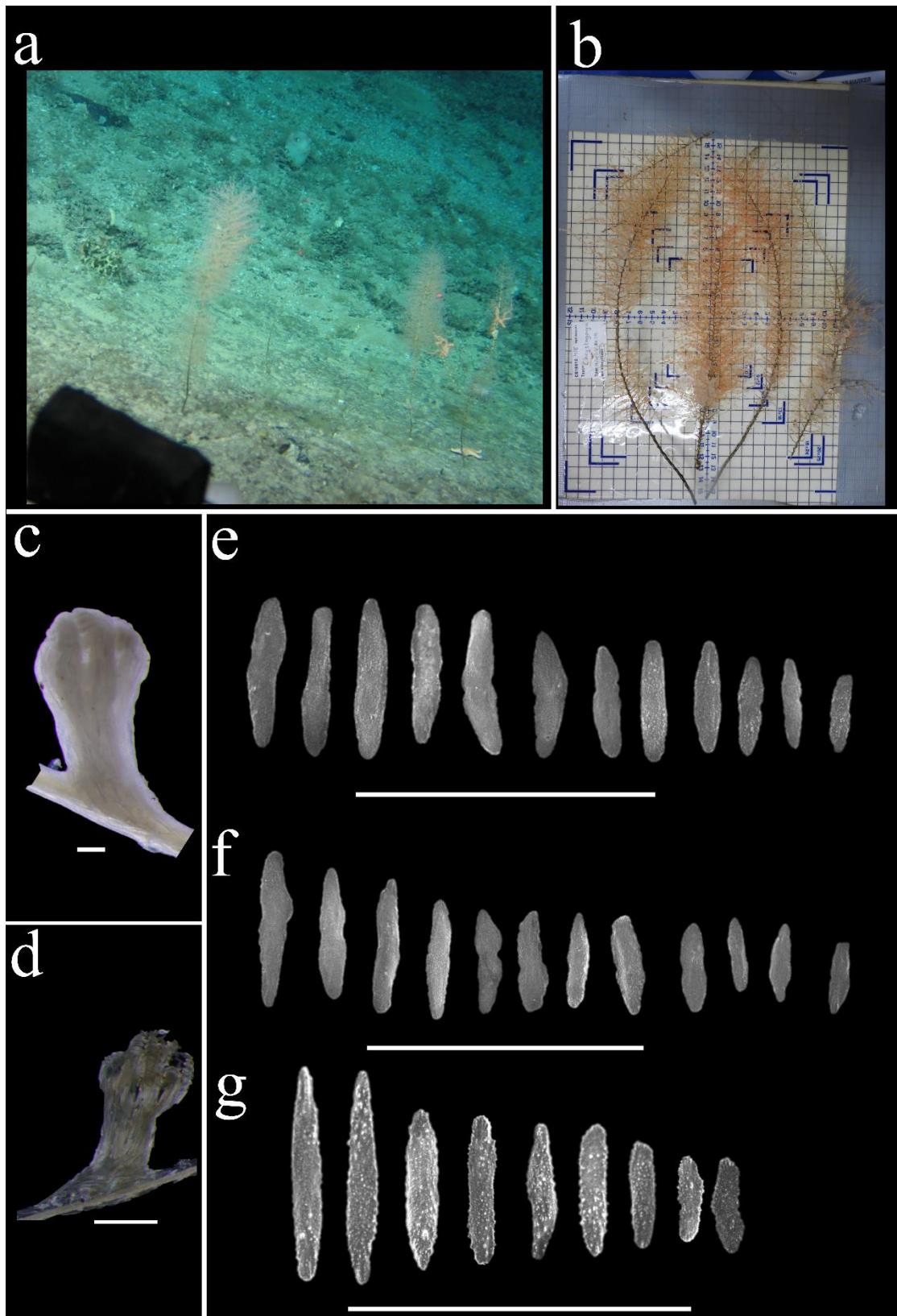


Figure S47. Morphotype 42 – Haplotype 28, *Dasygorgia* sp., voucher CE-18-418. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Close up of the polyp. **d**, Close up of cleared polyps. **e**, Sclerites from the polyp body. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. Scale bar: c. d. e, f, and g = 500 μ m.

Morphotype 43 – Haplotype 29

Group 1

Vouchers: CE-17-388, **CE-18-237**, CE-18-248, CE-18-295, CE-18-632a

Location: Whittard Canyon and North Porcupine Bank between 1296 and 1418 m.

Identified by CB Untiedt.

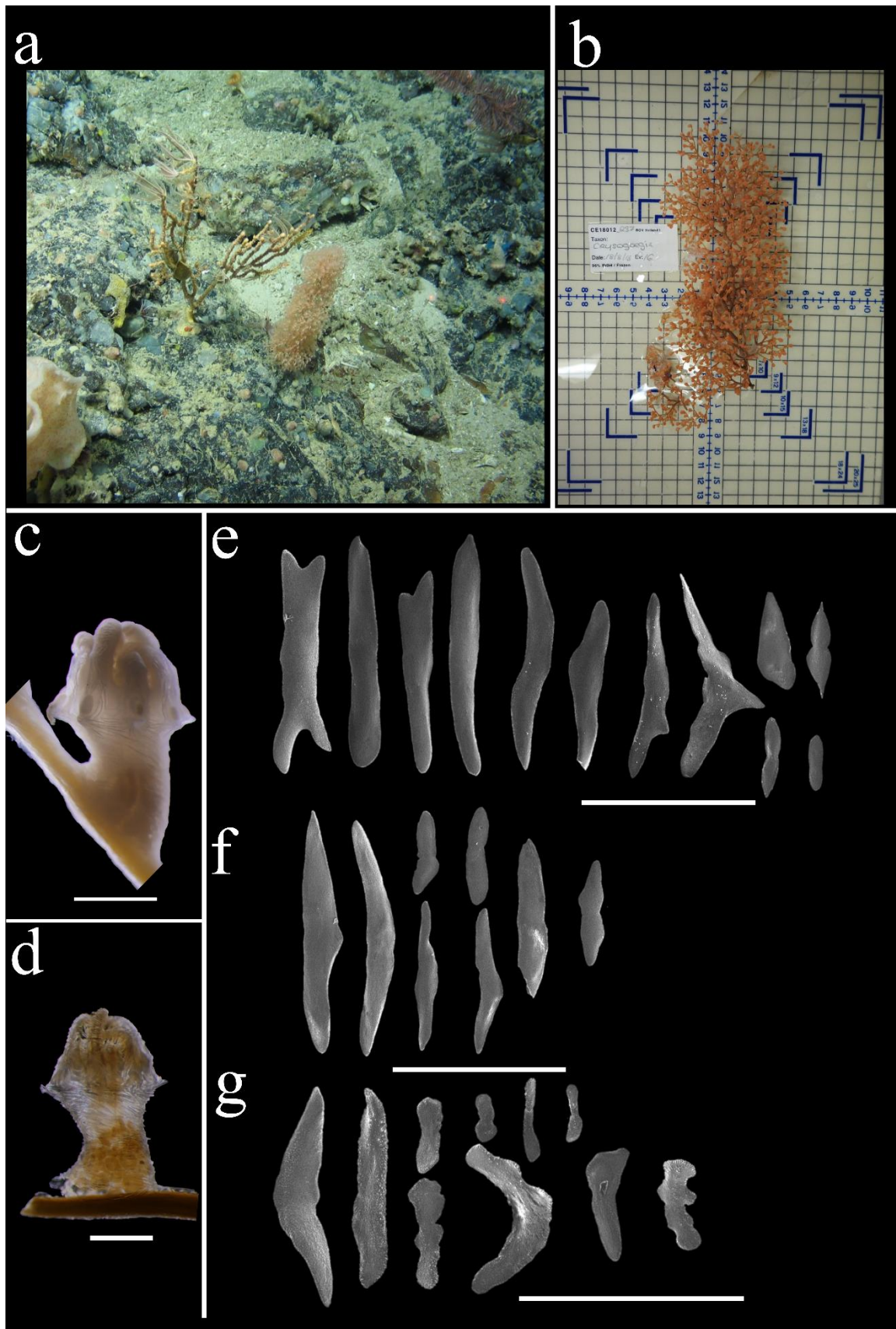


Figure S48. Morphotype 43 – Haplotype 29, *Chrysogorgia* Group 1, voucher CE-18-237. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Close up of the polyp. **d**, Close up of cleared polyps. **e**, Sclerites from the polyp body. **f**, Sclerites from the coenenchyme. **g**, Sclerites from the tentacles. Scale bar: c and d = 1 mm, e, f, and g = 500 µm.

3. Family Chelidonisididae

Morphotype 44 – Haplotype 23 – *Chelidonisis aurantiaca*

Vouchers: **CE-17-181**

Location: Whittard Canyon at 1507 m.

As diagnosed from original description.

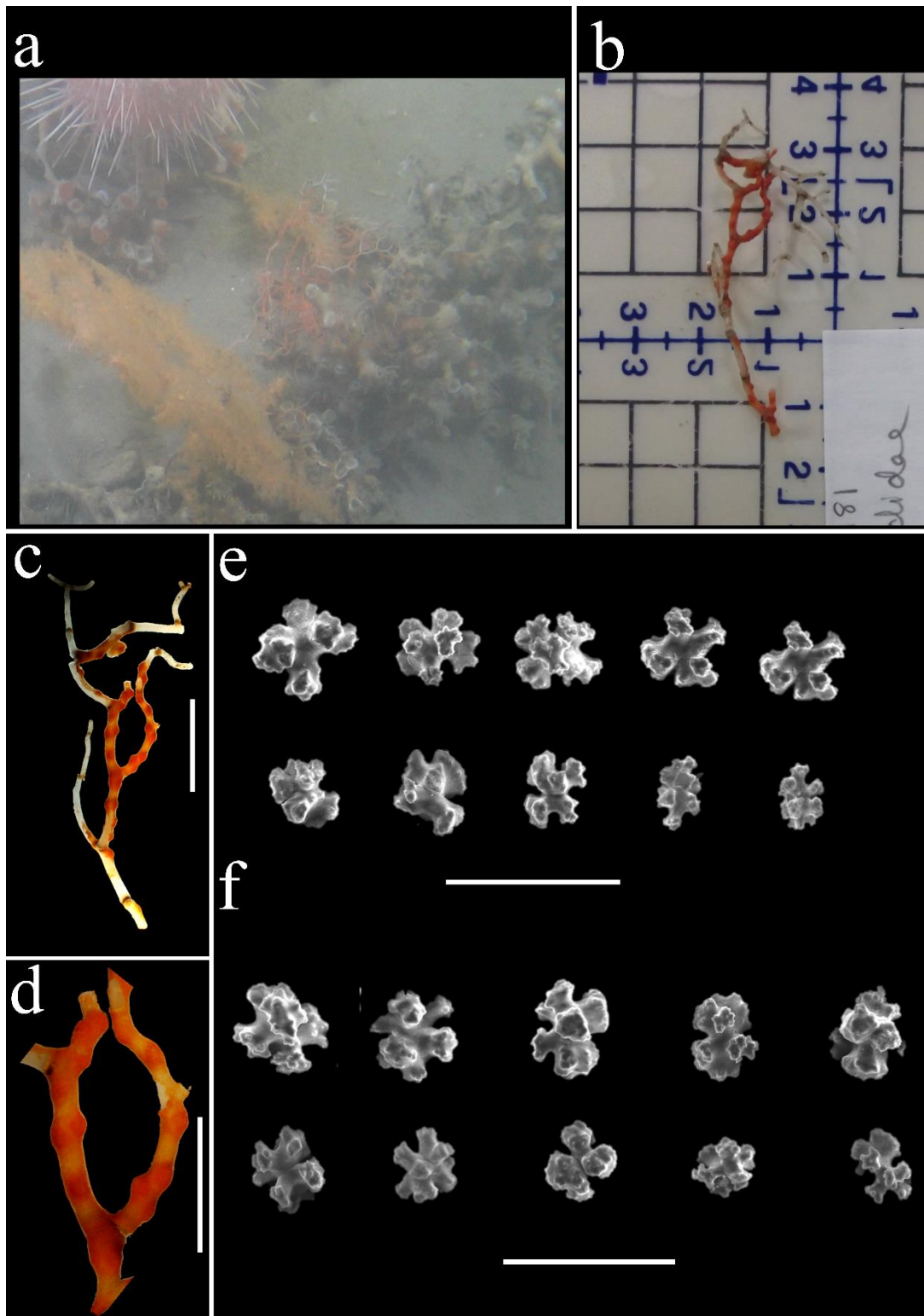


Figure S49. Morphotype 44 – Haplotype 23, *Chelidonisis aurantiaca*, voucher CE-17-181. **a**, *In-situ* image. **b**, *Ex-situ* image. **c**, Close up of the fragment. **d**, Close up of polyps. **e**, Sclerites from the polyp body. **f**, Sclerites from the coenenchyme. Scale bar: c and d = 10 mm, e = 5 mm, f and g = 100 μ m.

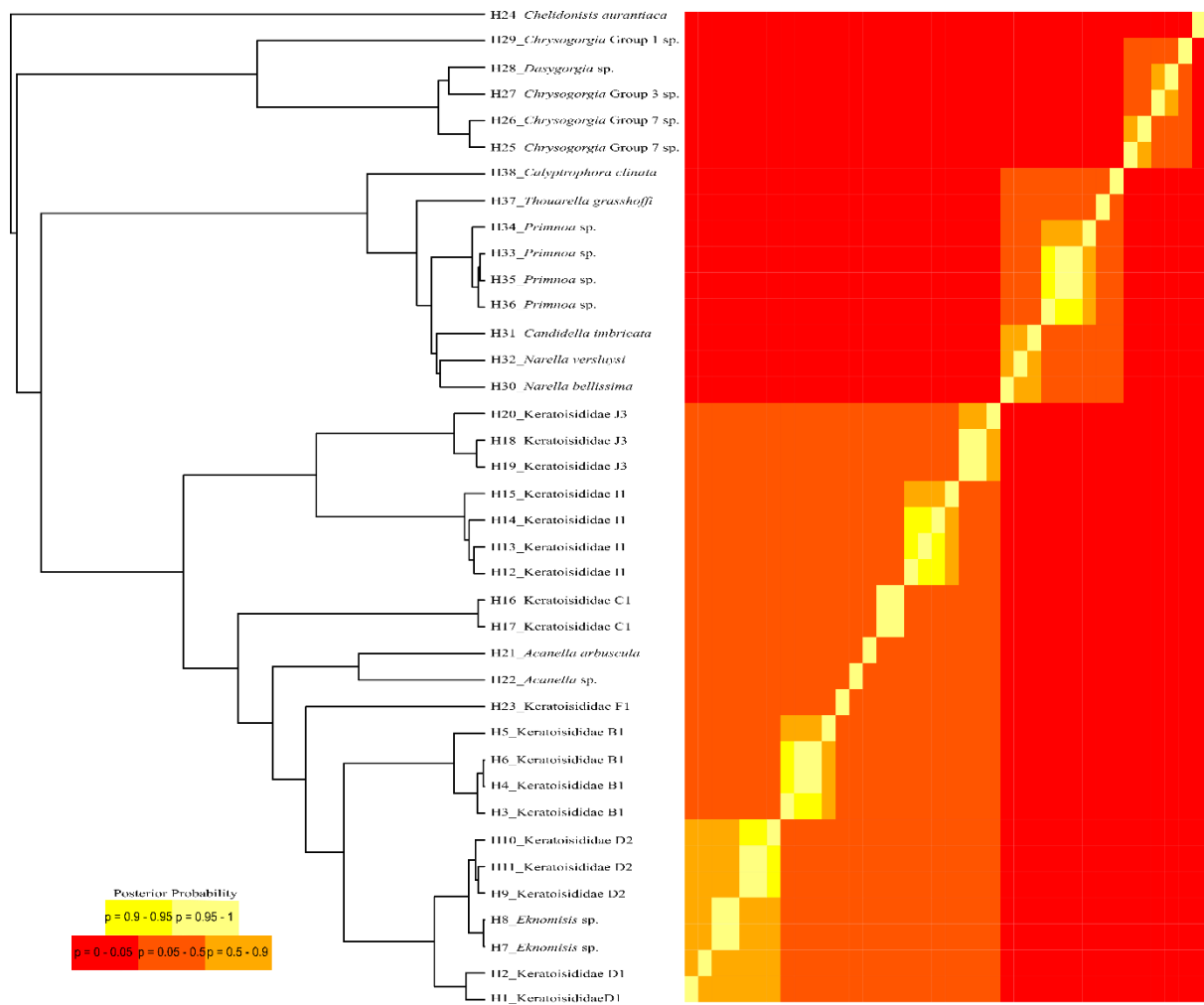


Figure S50. bGYMC species delimitation inference. The heatmap visualises the different species estimates when different posterior probability thresholds are used. A1, B1, C1, D1, D2, F1, I1, and J3 refer the keratoisidid subclades defined by Watling *et al.*, (2022).