

Appendix Table 1. Registration numbers and specimen label data associated with the Natural History Museum (NHM) fossils used in this paper. The original locality, age and identification information are re-interpreted in the paper.

specimen	location on label	country	dating on label	original NHM identification
R2209	Auvers	France	Eocene, (Mid.Gervillei) Sables Moyens	<i>Madrepora solanderi</i> (Defrance)
R54910	No Information	France	Eocene ?	<i>Acropora</i> sp.
R54912	Brockenhurst, Hampshire	England		
R1920 5 pieces	Auvers	France	Eocene, Gervillei	<i>Acropora</i> sp.
R40382	La Ferme de l'Orme	France	Eocene	<i>Acropora ornata</i> (Defrance)
R40383	La Ferme de l'Orme	France	Eocene	<i>Acropora ornata</i> (Defrance)
R40384	La Ferme de l'Orme	France	Eocene	<i>Acropora ornata</i> (Defrance)
R40385	La Ferme de l'Orme	France	Eocene	<i>Acropora ornata</i> (Defrance)
R52066	Chambors	France	Eocene, Upper Calcaire Grossier	<i>Acropora</i> sp.
R18266	Auvers	France	Eocene, Lower Bartonian Sables Moyens	<i>Acropora solanderi</i> (Defrance)
R54911	No information	France	Eocene?	<i>Acropora</i> sp.
R55689	Auvers	France	Middle Eocene	<i>Acropora deformis</i> (Michelin)
R2209	Auvers	France	Eocene Gervillei Sable Moyen	<i>Acropora solanderi</i> (Defrance)
R35320	No information	France	Eocene?	<i>Acropora solanderi</i> (Defrance)
R45675	Auvers-sur-Oise	France	Eocene	<i>Acropora solanderi</i> (Defrance)
R45676	Auvers-sur-Oise	France	Eocene	<i>Acropora solanderi</i> (Defrance)
R45677	Auvers-sur-Oise	France	Eocene	<i>Acropora solanderi</i> (Defrance)
R45678	Auvers-sur-Oise	France	Eocene	<i>Acropora solanderi</i> (Defrance)
R45679	Auvers-sur-Oise	France	Eocene	<i>Acropora solanderi</i> (Defrance)
R52065	Chambors	France	Eocene, Upper Calcaire Grossier	<i>Acropora</i> sp.
R52067	Chambors	France	Eocene, Upper Calcaire Grossier	<i>Acropora</i> sp.
R54831	Paris Basin	France	Eocene	<i>Acropora solanderi</i> (Defrance)
R54832	Paris Basin	France	Eocene	<i>Acropora solanderi</i> (Defrance)
R54833	Paris Basin	France	Eocene	<i>Acropora solanderi</i> (Defrance)
R54838	Paris	France	Eocene	<i>Madrepora solanderi</i> (Defrance)
R54849	Paris Basin	France	Middle Eocene	<i>Acropora solanderi</i> (Defrance)
R54861	Auvers	France	Eocene, Sables Moyens	<i>Acropora solanderi</i> (Defrance)
49583	Brockenhurst, Hampshire	England	Eocene, Mid-Headon Beds	<i>Madrepora</i> sp.
R18216	Brockenhurst, Hampshire	England	Eocene, Mid-Headon Beds	<i>Madrepora solanderi</i> (Defrance)
R18217	Brockenhurst, Hampshire	England	Eocene, Mid-Headon Beds	<i>Madrepora solanderi</i> (Defrance)
R14571	Barton, Hampshire	England	Eocene, Barton Beds	<i>Dendrophyllia</i> sp.

R19125	Barton, Hampshire	England	Eocene, Barton Beds	<i>Dendrophyllia dendrophylloides</i> Milne-Edwards & Haime
R29687	Barton, Hampshire	England	Eocene, Barton Beds	<i>Acropora (Madrepora) solanderi</i> (Defrance)
R54837	Paris	France	Eocene	<i>Madrepora solanderi</i> (Defrance)
R54838	Paris	France	Eocene	<i>Madrepora solanderi</i> (Defrance)
R54839	Paris	France	Eocene	<i>Madrepora solanderi</i> (Defrance)
R54913	Brockenhurst, Hampshire	England	Oligocene	<i>Madrepora</i> sp.
R54914	Brockenhurst, Hampshire	England	Oligocene	<i>Madrepora</i> sp.
49583 2 pieces	Brockenhurst, Hampshire	England	Eocene, Middle Headon Beds	<i>Madrepora</i> sp.
R2339	Brockenhurst, Hampshire	England	Eocene	<i>Madrepora</i> sp.
R45678	Auvers-sur-oise	France	Eocene	<i>Acropora solanderi</i> (Defrance)
R18265	Auvers	France	Eocene, Lower Bartonian Sables Moyens	<i>Acropora solanderi</i> (Defrance)
R54842	No information	France	Middle Eocene	<i>Acropora solanderi</i> (Defrance)
R54844	No information	France	Middle Eocene	<i>Acropora solanderi</i> (Defrance)
R19126	Barton, Hampshire	England	Eocene, Barton Beds	<i>Acropora</i> sp.
R28205	Barton Cliffs, Barton	England	Eocene, Barton Beds	<i>Acropora solanderi</i> (Defrance)
R40720	Whitecliff Bay Isle of Wight	England	Eocene	<i>Acropora solanderi</i> (Defrance)
R40721	Whitecliff Bay Isle of Wight	England	Eocene	<i>Acropora solanderi</i> (Defrance)
R49389	Barton, Hampshire	England	Eocene, Horizon H2	<i>Acropora</i> sp.
R52051	Chambors	France	Eocene, Upper Calcaire Grossier	<i>Acropora</i> sp.
R54848	Paris Basin	France	Middle Eocene	<i>Acropora solanderi</i> (Defrance)
R54915	Barton Cliffs Hampshire	England	Upper Eocene	

Appendix 2. Species group identifications, most similar species, character measurements and descriptions for all fossils indicated in Appendix Table 1. rc, radial corallites.

species group	most similar extant sp.	specimen	general description of specimen	branch thickness (mm)	radial corallites	walls & coenosteum
<i>humilis I</i>	<i>digitifera</i>	R54843	Nine branchlets, one showing evidence of a tip, apparently terete, overall length of 42mm, evidence of digitate growth	6, 8	Mixed sizes, mostly not touching, show thickened wall	Some evidence of costate rc wall, coenosteum between walls reticulate
<i>humilis I</i>	<i>digitifera</i>	R2209a	Horizontal fragment with four branches, one of these is a short terete branchlet, overall length of 25mm	10	Mixed sizes, mostly not touching except on branchlet, no rc sufficiently developed to indicate shape	Intercorallite coenosteum reticulate
<i>humilis I</i>	<i>digitifera</i>	R54910	Nine plus branches, all broken, overall length of 50mm, branches arising from basal region indicating corymbose growth	6	All corallites abraded, but indications of appressed structure with round opening, evenly sized and distributed radials, some rc touching	Dense costate wall, dense reticulo-costate between corallites
<i>humilis Ii</i>	<i>globoiceps</i>	R54912	Five branches indicate very short digitate branching from base, overall length of 35mm	5	Very abraded, appressed crowded corallites, same size	Indications of dense reticulo-costate coenosteum on & between radials
<i>latistella</i>	<i>aculeus</i>	R40382	Piece of gracile branches, overall length of 10mm	4	Not very abraded, rc not touching, same size, partially tubular appressed	
<i>latistella</i>	<i>aculeus</i>	R40383	Piece of gracile branches, overall length of 10mm	4	With round openings	Coenosteum costate, intercorallite broken costate or reticulate
<i>latistella</i>	<i>aculeus</i>	R40384	Piece of gracile branches, overall length of 9mm	3		
<i>latistella</i>	<i>aculeus</i>	R40385	Piece of gracile branches, overall length of 12mm	3		
<i>loveli</i>	<i>glauca</i>	R18266	Two short branchlets, evidence of a branch tip and three other broken branches, evidence of terete branches, overall length of 50mm, most likely colony shape digitate/corymbose	6	Mixed sizes, some touching	Evidence from three or four corallites of a thickened rc wall
<i>loveli</i>	<i>glauca</i>	R54911	One group of six branchlets and a second single branchlet at least two branchlets showing indications of being short, overall length of 36mm, evidence of terete branches	3, 12	One rc well developed, not touching, appressed tubular structure	Coenosteum between radials mostly reticulate, evidence of costate radial wall
<i>loveli</i>	<i>glauca</i>	R55689	Groups of branchlets arising together evidence from at least two branchlets that they are short, overall length of 35mm, evidence of terete branches	6, 12	Same size, mostly not touching, evidence from one rc of an	Evidence from three rc of a thickened wall
<i>cervicornis</i>	<i>prolifera?</i>	R2209b	Fragment of branch with one broken branchlet , overall length of 24mm	6	Mostly one size, not touching, very abraded	Rc walls costate, intercorallite reticulate
<i>cervicornis</i>	<i>prolifera</i>	R35320	Joint' area with eight branches coming off a common branch, overall length of 43mm	8, 14	One size or a mixture, spacing consistent with <i>prolifera</i> sp.	No rc walls discernable, indications of costate rc wall
<i>cervicornis</i>	<i>prolifera</i>	R45675	One broken branch with two incipient branches coming off at different places, overall length of 29mm	9	Mixed sizes or one size, not touching	No evidence of rc walls, coenosteum between rc reticulate
<i>cervicornis</i>	<i>prolifera?</i>	R45676	Fragment of branch broken through center with one branchlet just forming, overall length of 29mm	9	One size, open tubular	Not discernable rc walls, intercorallite reticulate
<i>muricata</i>	<i>pharaonis</i>	R45677	Fragment of branch, four branchlets coming from one side, overall length of 27mm	8	Mixed sizes, mostly not touching, tubular appressed with round openings	Walls can be detected in six of them, rc walls costate, intercorallite reticulate
<i>hyacinthus</i>	<i>hyacinthus</i>	R45679	Small fragment with at least five branches arising closely together, overall length of 20mm		Broken branches show lipped corallites arranged close together in a "rosette"	Rc walls costate, intercorallite reticulate
<i>cervicornis</i>	<i>prolifera</i>	R52067	Small branch badly abraded, three half branches proliferating from tip, overall length of 28mm	10	Mixed sizes or one size, rc not touching	No evidence of rc walls, coenosteum between rc reticulate

<i>cervicornis</i>	<i>prolifera?</i>	R54831	Fragment of branch with two broken branches coming off at acute angle, overall length of 40mm	5, 6	Mixed sizes , some touching	Severely abraded
<i>muricata</i>	<i>pharaonis?</i>	R54832	Fragment of branch forking into three complete branchlets, including axial corallites tips, abraded around tip, overall length of 35mm	5, 7	Two sizes, mixed sizes, mostly heavily abraded, appressed tubular, probably with lip	Rc wall costate/broken costate or reticulate intercorallite coenosteum
<i>cervicornis</i>	<i>prolifera?</i>	R54833	Fragment of branch, forking to another branch at its base, forking again at tops, each branched forks are broken, but the basal one has another branchlet which is not broken with one ring of radial corallites, overall length of 40mm	7	Mixed sizes, not touching	Severely abraded
<i>cervicornis</i>	<i>prolifera?</i>	R54838	Fragment with joint, with five branches coming off, all broken, overall length of 35mm	6, 8	Mixed sizes, not touching, scattered	Severely abraded
<i>hyacinthus</i>	<i>hyacinthus</i>	R54849	Fragment of branch with one fork at tip, fork branches are broken, other forking again another branch coming off at base, overall length of 52mm, branch slightly flattened	7, 11, 13	Mixed sizes, mostly not touching	Severely abraded
<i>cervicornis</i>	<i>prolifera?</i>	R54861	Fragment of branch with one broken branchlet on each side, overall length of 39mm	6, 7	Mixed sizes, not touching	Severely abraded
<i>muricata</i>	<i>pharaonis</i>	R52065	Very abraded and bioeroded, overall length of 26mm, very similar to 54837/54839	6		
<i>muricata</i>	<i>pharaonis</i>	49583	Joint area with six branchlets coming off at a common branch, some with small branches coming off on them, five branches broken across, three small branchlets unbroken, overall length of 25mm	9	Mixed sizes, very abraded, tubular appressed with round openings or exert tubular with round openings, mostly not touching	At least four rc with walls clearly visible, rc walls costate, intercorallite walls reticulate
<i>muricata</i>	<i>pharaonis</i>	R18216	Joint area with three branches coming off at a common branch, all broken, overall length of 47mm	14	Mixed sizes, mostly two sizes, touching, very abraded, corallites tubular with round openings	One area between two branches shows corallite with partial walls, rc walls costate, intercorallite area reticulate
<i>muricata</i>	<i>pharaonis</i>	R18217	Section of branch, evidence of one branch right down to its base, overall length of 56mm	13	Mixed size of large and small, some touching	Severely abraded
<i>muricata</i>	<i>pharaonis</i>	R14571	Fragment of main branch. Joint area with six broken branches, subequal distance from all around branches. Indication that there are branchlets instead of branches, overall length of 40mm	9	Mixed sizes, not touching. Some tubular appressed with round openings, others apparently tubular exert with round openings	Rc walls clearly visible in three corallites, rc wall costate, intercorallite walls reticulate in some places, broken costate in others
<i>muricata</i>	<i>pharaonis</i>	R19125	Piece of main branch with short branchlets coming off at a common branch on one side but not other, four branchlets intact, another branchlet broken towards its tip, overall length of 30mm	7, 12	Scattered, one size, not touching, round openings	Corallite walls costate, intercorallite walls reticulate
<i>muricata</i>	<i>muricata</i>	R29687	Section of horizontal branch with one short branchlet and another incipient branchlet, overall length of 35mm	7, 8	Quite abraded, no well formed rc, suggest round opening with lip,	Walls costate, intercorallite reticulate/partially costate
<i>muricata</i>	<i>pharaonis</i>	R54837	Long broken fragment with seven broken branches coming off indicating multiple branch growth, overall length of 35mm	5, 6	Mixture of large and small sizes, mostly not touching some evidence of lip, type of rc not discernable	Rc walls costate, intercorallite walls reticulate
<i>muricata</i>	<i>pharaonis</i>	R54838	Fragment of branch with five branches and one incipient branch arising from a join area, overall length of 35mm	6, 7, 8	Mixed sizes, mostly not touching, severely abraded	No rc walls discernable, reticulate intercorallite coenosteum
<i>muricata</i>	<i>pharaonis</i>	R54839	Arborescent based on three broken branches, overall length of 36mm	4, 5, 7, 8	Mixture of sizes, mostly not touching, some evidence of lip, type of rc not discernable	Rc walls costate, intercorallite walls reticulate
<i>muricata</i>	<i>pharaonis</i>	R54913	Fragment of main branch, six branchlets evenly distributed on one side, appear to be evenly distributed on one side, appear to be short branchlets with only one ring of radial corallites, overall length of 30mm	11	Mixed sizes, mostly not touching, apparently tubular appressed on the branchlets , either immersed or exert between branches	Rc wall costate, costate broken or reticulate in intercorallite quite abraded
<i>muricata</i>	<i>pharaonis</i>	R54914	Forked fragment with two broken chances which are apparently mostly complete, each of this form another branch, overall length of 19mm	7, 13		Severely abraded

<i>robusta</i>	<i>robusta</i>	49583 two pieces	Joint with seven broken branches, overall length of 55mm, small fragment of branch, clearly similar to big piece, overall length of 21mm	4, 21	At least three rc are almost complete, tubular appressed with costate walls, corallites are very worn in most places, two sizes four discernable, tubular appressed with costate walls	Intercorallite areas reticulate
<i>robusta</i>	<i>robusta</i>	R2339	Portion of densely branching section with short branchlets coming off, overall length of 23mm		Densely arranged and touching, one section include elongate partially appressed corallites with costate walls, two sizes, but not absolutely clear	
<i>aspera</i>	<i>aspera</i>	R2209b	Two branches (broken) indicating most likely arborescent growth, overall length of 24mm	6	Two sizes	Indications of reticulate intercorallite coenosteum
<i>aspera</i>	<i>aspera</i>	R45678	Indications of arborescent branching, overall length of 33mm	7	Two sizes	Indications of reticulate intercorallite coenosteum
<i>aspera</i>	<i>aspera</i>	R54847	Evidence of four broken branches, overall length of 28mm	5, 6	Two sizes	Evidence of costate radial wall & reticulate intercorallite coenosteum
<i>aspera</i>	<i>aspera</i>	R2209c	Apparently arborescent fragment with one broken branch coming off, overall length of 30mm	6, 8	Two sizes, mostly not touching	Rc wall severely abraded, coenosteum difficult to interpret
<i>hyacinthus</i>	<i>hyacinthus</i>	R18265	Four short branchlets recognisable from terminal corallite, overall length of 25mm	5	Rosette-like arrangement, evidence of appressed rc with large round openings consistent with the presence of a rounded lip	Radial corallite walls costate, reticulate interradiial coenosteum
<i>aspera</i>	<i>aspera</i>	R54842	Joint area with seven branches coming off from common branch, all broken off at their base, overall length of 36mm	5, 7, 13	Two sizes or mixed sizes, one corallite only indicates appressed tubular with rounded opening, all others severely abraded, mostly not touching	Rc wall costate, reticulate intercorallite coenosteum
<i>latistella</i>	<i>aculeus</i>	R54844	One branch embedded in the tissues of another coral appearance of a branchlet from a corymbose colony, overall length of 43mm	7	Well preserved, partly appressed, tubular with round opening	Corallite walls costate, intercorallite areas reticulate or a line of
<i>cervicornis</i>	<i>prolifera?</i>	R52067				
<i>Dendracis</i> not <i>Acropora</i>		R49389	No axial corallite, overall length of 19mm			
unidentified	unidentified	R19126	Small piece, possibly basal without central axis, possibly <i>Dendracis</i> , overall length of 15mm		One size, round opening and immersed	
unidentified	unidentified	R28205	Small forked fragment, one part of fork maybe forming three branchlets, overall length of 19mm	4	Very abraded, mostly not touching	
unidentified	unidentified	R40720	Three small fragments, each just a portion of a branch but very similar, overall length of 13mm, 5mm		Abraded, not touching	
unidentified	unidentified	R40721	Small, abraded pieces 4mm length			
unidentified	unidentified	R52051	Short piece of small branch with three broken branchlets coming off, overall length of 16mm	5	Very abraded, corallites approximately same size	No corallite available to indicate characters
unidentified	unidentified	R54848	Fragment with multiple branching, apparently corymbose, six branches discernable, two apparently incipient, overall length of 28mm	6, 7, 8	Two sizes	Entire fragment too abraded to discern structure
unidentified	unidentified	R54915	Section of forked branch with second fork at tip with three broken branch ends, overall length of 25mm	7	Very abraded, apparently scattered and mostly not touching	
unidentified	unidentified	R1920 five pieces	Five fragments, may be different species, lengths of 13mm, 15mm, 15mm, 17mm, 20mm	5, 5, 4, 4, 7 resp.		
unidentified	unidentified	R52066	Fragment of a branch, slender, overall length of 13mm	4	Mixed sizes, possibly larger size in line, shape cannot be discerned	Severely abraded