

## Online resource S1

### Boring bryozoans: An investigation into the endolithic bryozoan family Penetrantiidae

Organisms Diversity & Evolution

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**Table S1** - All reported substrates of every penetrantiid species.

Predominantly molluscan shells, consequently molluscan species are listed in systematic order for each species and location.

1- Silén 1946; 2-Soule 1950; 3- Silén 1956; 4- Soule and Soule 1969; 5- Smyth 1988; 6- De Blauwe; 7- Schwaha et al. 2019; 8- Gordon 1986; 9- Voigt and Soule 1973; 10- Pohowsky 1978; \* This study

| <i>P. clionoides</i>                                      |   |      | <i>P. concharum</i>                                           |   |                           | <i>Penetrantia sp. (Iberia)</i>                               |   |                              | <i>P. sileni</i>                                                                                 |   |                            |
|-----------------------------------------------------------|---|------|---------------------------------------------------------------|---|---------------------------|---------------------------------------------------------------|---|------------------------------|--------------------------------------------------------------------------------------------------|---|----------------------------|
| <b>Gastropoda</b>                                         |   |      | <b>Gastropoda</b>                                             |   |                           | <b>Bivalvia - Anomioidea</b>                                  |   |                              | <b>Scaphopoda</b>                                                                                |   |                            |
| <i>Trochoidea</i>                                         |   |      | <i>Haliotoidea</i>                                            |   |                           | <i>Anomia cf. ephippium</i> Linnaeus, 1758*                   | D |                              | <i>Dentalium vallicolens</i> Raymond, 1904 <sup>2</sup>                                          | - | Mexico/ San Benito Islands |
| <i>Rochia nilotica</i> (Linnaeus, 1767) <sup>5</sup>      | - | Guam | <i>Haliotis cracherodii</i> Leach, 1814 <sup>2</sup>          | D | USA/California/ San Pedro | <b><i>P. parva</i></b>                                        |   |                              | <b><i>P. operculata</i></b>                                                                      |   |                            |
| <i>Tectus pyramis</i> (Born, 1778) <sup>5</sup>           | - | Guam | <i>Trochoidea</i>                                             | L | USA/California/ La Jolla  | <b>Gastropoda</b>                                             |   |                              | <b>Gastropoda - Conoidea</b>                                                                     |   | Hawaii/ Haena Bay          |
| <i>Trochus maculatus</i> Linnaeus, 1758 <sup>5</sup>      | - | Guam | <i>Tegula ligulata</i> (Menke, 1850) <sup>2</sup>             |   |                           | <i>Calyptraeidea</i>                                          |   |                              | <i>Conus striatus</i> Linnaeus, 1758 <sup>4</sup>                                                | - |                            |
| <i>Trochus ochroleucus</i> Gmelin, 1791 <sup>5</sup>      | - | Guam | <i>Littorinoidea</i>                                          |   |                           | <i>Sigapatella tenuis</i> (Gray, 1868)*                       | D | New Zealand/ South           | <b><i>P. taeana</i></b>                                                                          |   |                            |
| <i>Trochus</i> sp. <sup>5</sup>                           | - | Guam | <i>Littorina littorea</i> (Linnaeus, 1758) <sup>1</sup>       | - | Sweden/ Gullmar           | <i>Buccinoidea</i>                                            |   |                              | commonly found in bivalves, particularly oyster shells, but also noted in a few gastropod shells |   |                            |
| <i>Turbo setosus</i> Gmelin, 1791 <sup>5</sup>            | - | Guam | <i>Buccinoidea</i>                                            |   |                           | <i>Cominella adspersa</i> (Bruguière, 1789)*                  | D | New Zealand/ North           |                                                                                                  |   |                            |
| <i>Hipponicoidea</i>                                      |   |      | <i>Buccinum undatum</i> Linnaeus, 1758 <sup>1</sup>           | - | Sweden/ Gullmar           | <i>Cominella maculosa</i> (Martyn, 1784) <sup>1</sup>         | L | New Zealand/ North           | <b><i>P. bellardiellae</i></b>                                                                   |   |                            |
| <i>Sabia conica</i> (Schumacher, 1817) <sup>5</sup>       | - | Guam | <i>Neptunea antiqua</i> (Linnaeus, 1758) <sup>1</sup>         | - | Sweden/ Gullmar           | <i>Conoidea</i>                                               |   |                              | <b>Gastropoda</b>                                                                                |   |                            |
| <i>Stromboidea</i>                                        |   |      | <i>Cerithioidea</i>                                           |   |                           | <i>Conus ebraeus</i> Linnaeus, 1758 <sup>4</sup>              | - | Hawaii/ Puka Bay             | <i>Bellardiella crassilabris</i> Möllendorff, 1899 <sup>7</sup>                                  | H | Papua New Guinea           |
| <i>Strombus</i> sp. <sup>5</sup>                          | - | Guam | <i>Turritellina tricarinata</i> (Brocchi, 1814) <sup>1</sup>  | - | Sweden/ Gullmar           | <b>Bivalvia</b>                                               |   |                              | <b><i>Penetrantia sp. Japan</i></b>                                                              |   |                            |
| <i>Tonnoidea</i>                                          |   |      | <b>Bivalvia</b>                                               |   |                           | <i>Arcoidea</i>                                               |   |                              | <b>Gastropoda</b>                                                                                |   |                            |
| <i>Annaperenna verrucosa</i> (Sowerby, 1825) <sup>5</sup> | - | Guam | <i>Anomioidea</i>                                             |   |                           | <i>Glycymeris modesta</i> (Angas, 1879)*                      | D | New Zealand/ North           | <i>Trochoidea</i>                                                                                |   |                            |
| <i>Bursa bufonia</i> (Gmelin, 1791) <sup>5</sup>          | - | Guam | <i>Pododesmus patelliformis</i> (Linnaeus, 1761) <sup>1</sup> | D | Sweden/ Gullmar           | <i>Pectinoidea</i>                                            |   |                              | <i>Tegula rugata</i> (A. Gould, 1861)*                                                           | L | Japan/ Yokohama Bay        |
| <i>Bursa</i> sp. <sup>5</sup>                             | - | Guam | <i>Mytiloidea</i>                                             |   |                           | <i>Pecten novaezelandiae</i> Reeve, 1852*                     | D | New Zealand/ South           | <i>Buccinoidea</i>                                                                               |   |                            |
| <i>Casmaria ponderosa</i> (Gmelin, 1791) <sup>5</sup>     | - | Guam | <i>Modiolus modiolus</i> (Linnaeus, 1758)*                    | D | Sweden/ Kristineberg      | <i>Ostreoidae</i>                                             |   |                              | <i>Japeuthria ferrea</i> (Reeve, 1847)*                                                          | L | Japan/ Sagami Bay          |
| <i>Lampasopsis cruentata</i> (Sowerby, 1835) <sup>5</sup> | - | Guam | <i>Mytilus edulis</i> Linnaeus, 1758 <sup>1</sup>             | D | Sweden/ Gullmar           | <i>Ostrea chilensis</i> Küster, 1844*                         | D | New Zealand/ South           | <i>Muricoidea</i>                                                                                |   |                            |
| <i>Monoplex nicobaricus</i> (Röding, 1798) <sup>5</sup>   | - | Guam | <i>Mytilus californianus</i> Conrad, 1837 <sup>2</sup>        | D | Mexico/Baja California    | <i>Hiatelloidea</i>                                           |   |                              | <i>Reishia clavigera</i> (Küster, 1860)*                                                         | L | Japan/ Sagami Bay          |
| <i>Cerithioidea</i>                                       |   |      | <i>Pectinoidea</i>                                            |   |                           | <i>Panopea smithae</i> Powell, 1950*                          | D | New Zealand/ North           | <b><i>P. gosaviensis</i> †</b>                                                                   |   |                            |
| <i>Cerithium nodulosum</i> Bruguière, 1792 <sup>5</sup>   | - | Guam | <i>Pecten maximus</i> (Linnaeus, 1758) <sup>1</sup>           | D | Sweden/ Gullmar           | <i>Veneroidea</i>                                             |   |                              | <b>Gastropoda - Acteonelloidea †</b>                                                             |   |                            |
| <i>Cerithium</i> sp. <sup>5</sup>                         | - | Guam | <i>Aequipecten opercularis</i> (Linnaeus, 1758) <sup>1</sup>  | D | Sweden/ Gullmar           | <i>Austrovenus stutchburyi</i> (W. Wood, 1828)*               | D |                              | <i>Acteonella d'Orbigny</i> , 1842 † <sup>9</sup>                                                |   | Austria/ Gosau             |
| <i>Buccinoidea</i>                                        |   |      | <i>Pseudamussium peslutrae</i> (Linnaeus, 1771) <sup>1</sup>  | D | Sweden/ Gullmar           | <i>Tawera phenax</i> (Finlay, 1930)*                          | D | New Zealand/ North           | <b><i>P. soulei</i> †</b>                                                                        |   |                            |
| <i>Cantharus</i> sp. <sup>5</sup>                         | - | Guam | <i>Arcticoidea</i>                                            |   |                           | <b><i>P. cf. parva</i></b>                                    |   |                              | <b>Gastropoda - Buccinoidea</b>                                                                  |   |                            |
| <i>Latirus barclayi</i> (Reeve, 1847) <sup>5</sup>        | - | Guam | <i>Arctica islandica</i> (Linnaeus, 1767)*                    | D | Sweden/ Kristineberg      | <b>Gastropoda - Trochoidea</b>                                |   |                              | <i>Neptunea contraria</i> (Linnaeus, 1771) <sup>10</sup>                                         |   | Netherlands/ Katot         |
| <i>Polia undosa</i> (Linnaeus, 1758) <sup>5</sup>         | - | Guam | <i>Cardioidea</i>                                             |   |                           | <i>Turbo petholatus</i> Linnaeus, 1758*                       | H | New Caledonia                |                                                                                                  |   |                            |
| <i>Conoidea</i>                                           |   |      | <i>Cerastoderma edule</i> (Linnaeus, 1758) <sup>1</sup>       | D | Sweden/ Gullmar           | <b><i>P. irregularis</i></b>                                  |   |                              |                                                                                                  |   |                            |
| <i>Conus eburneus</i> Hwass in Bruguière, 1792*           | - | Guam | <i>Crassatelloidea</i>                                        |   |                           | <b>Gastropoda</b>                                             |   |                              |                                                                                                  |   |                            |
| <i>Conus</i> sp. <sup>5</sup>                             | - | Guam | <i>Astarte sulcata</i> (da Costa, 1778) <sup>1</sup>          | D | Sweden/ Gullmar           | <i>Cerithioidea</i>                                           |   |                              |                                                                                                  |   |                            |
| <i>Muricoidea</i>                                         |   |      | <b>Crustacea</b>                                              |   |                           | <i>Maoricolpus roseus</i> (Quoy & Gaimard, 1834) <sup>8</sup> | L | New Zealand/ North           |                                                                                                  |   |                            |
| <i>Chicoreus brunneus</i> (Link, 1807) <sup>5</sup>       | - | Guam | <i>Balanus balanus</i> (Linnaeus, 1758) <sup>1</sup>          | - | Sweden/ Gullmar           | <i>Buccinoidea</i>                                            |   |                              |                                                                                                  |   |                            |
| <i>Chicoreus</i> sp. <sup>5</sup>                         | - | Guam | <i>Semibalanus balanoides</i> (Linnaeus, 1767) <sup>5</sup>   | - | Belgium/ Kalmesbank       | <i>Argobuccinum pustulosum</i> ([Lightfoot], 1786)*           | D | New Zealand/ South           |                                                                                                  |   |                            |
| <i>Coralliophila violacea</i> (Kiener, 1836) <sup>5</sup> | - | Guam | <b>Polychaeta</b>                                             |   |                           | <b>Bivalvia</b>                                               |   |                              |                                                                                                  |   |                            |
| <i>Drupa ricinus</i> (Linnaeus, 1758) <sup>5</sup>        | - | Guam | <i>Serpulid*</i>                                              | D | Norway/Tromsø imfjord     | <i>Mytiloidea</i>                                             |   |                              |                                                                                                  |   |                            |
| <i>Drupa clathrata</i> (Lamarck, 1816) <sup>5</sup>       | - | Guam | <b><i>P. cf. concharum</i> (France)</b>                       |   |                           | <i>Perna canaliculus</i> (Gmelin, 1791) <sup>3</sup>          | L | New Zealand/ Little Papanui  |                                                                                                  |   |                            |
| <i>Drupa morum</i> Röding, 1798 <sup>5</sup>              | - | Guam | <b>Gastropoda</b>                                             |   |                           | <i>Hiatelloidea</i>                                           |   |                              |                                                                                                  |   |                            |
| <i>Drupa rubusidaeus</i> Röding, 1798 <sup>5</sup>        | - | Guam | <i>Calyptraeidea</i>                                          |   |                           | <i>Panopea smithae</i> Powell, 1950*                          | D | New Zealand/ South           |                                                                                                  |   |                            |
| <i>Drupa</i> sp. <sup>5</sup>                             | - | Guam | <i>Crepidula fornicata</i> (Linnaeus, 1758)*                  | L | France/ Roscoff           | <b><i>P. densa</i></b>                                        |   |                              |                                                                                                  |   |                            |
| <i>Menathais intermedia</i> (Kiener, 1835) <sup>5</sup>   | - | Guam | <i>Buccinoidea</i>                                            |   |                           | <b>Gastropoda</b>                                             |   |                              |                                                                                                  |   |                            |
| <i>Menathais tuberosa</i> (Röding, 1798) <sup>5</sup>     | - | Guam | <i>Buccinum undatum</i> Linnaeus, 1758*                       | D | France/ Roscoff           | <i>Lottiidea</i>                                              |   |                              |                                                                                                  |   |                            |
| <i>Mancinella armigera</i> Link, 1807 <sup>5</sup>        | - | Guam | <b>Bivalvia</b>                                               |   |                           | <i>Lottia scabra</i> (Gould, 1846) <sup>2</sup>               | L | USA/California/ Point Fernin |                                                                                                  |   |                            |
| <i>Morula uva</i> (Röding, 1798) <sup>5</sup>             | - | Guam | <i>Anomioidea</i>                                             |   |                           | <i>Haliotoidea</i>                                            |   |                              |                                                                                                  |   |                            |
| <i>Morula</i> sp. <sup>5</sup>                            | - | Guam | <i>Anomia cf. ephippium</i> Linnaeus, 1758*                   | D | France/ Roscoff           | <i>Haliotis cracherodii</i> Leach, 1814 <sup>2</sup>          | D | USA/California/ San Pedro    |                                                                                                  |   |                            |
| <i>Nassa sarta</i> (Bruguière, 1789) <sup>5</sup>         | - | Guam | <i>Pododesmus patelliformis</i> (Linnaeus, 1761)*             | D | France/ Roscoff           | <i>Fissurelloidea</i>                                         |   |                              |                                                                                                  |   |                            |
| <i>Tenguelia granulata</i> (Duclos, 1832) <sup>5</sup>    | - | Guam | <i>Arcoidea</i>                                               |   |                           | <i>Fissurella volcano</i> Reeve, 1849 <sup>2</sup>            | L | USA/California/ Point Fernin |                                                                                                  |   |                            |
| <i>Thais</i> sp. <sup>5</sup>                             | - | Guam | <i>Glycymeris glycymeris</i> (Linnaeus, 1758)*                | D | France/ Roscoff           | <i>Trochoidea</i>                                             |   |                              |                                                                                                  |   |                            |
| <i>Turbinelloidea</i>                                     |   |      | <i>Ostreoidae</i>                                             |   |                           | <i>Tegula ligulata</i> (Menke, 1850) <sup>2</sup>             | D | USA/California/ La Jolla     |                                                                                                  |   |                            |
| <i>Vasum ceramicum</i> (Linnaeus, 1758) <sup>5</sup>      | - | Guam | <i>Ostrea edulis</i> Linnaeus, 1758*                          | D | France/ Roscoff           | <i>Buccinoidea</i>                                            |   |                              |                                                                                                  |   |                            |
| <i>Vasum turbinellus</i> (Linnaeus, 1758) <sup>5</sup>    | - | Guam | <i>Pectinoidea</i>                                            |   |                           | <i>Burnupena catarrhacta</i> (Gmelin, 1791) <sup>1</sup>      | L | South Africa/ Good Hope      |                                                                                                  |   |                            |
| <i>Vasum</i> sp. <sup>5</sup>                             | - | Guam | <i>Mimachlamys varia</i> (Linnaeus, 1758)*                    | D | France/ Roscoff           | <i>Burnupena cincta limbosa</i> (Lamarck, 1822) <sup>1</sup>  | L | South Africa/ Port Nolloth   |                                                                                                  |   |                            |
|                                                           |   |      | <i>Pecten maximus</i> (Linnaeus, 1758)*                       | D | France/ Roscoff           | <i>Fusinus</i> sp. <sup>1</sup>                               | L | Panama                       |                                                                                                  |   |                            |
|                                                           |   |      | <i>Cardioidea</i>                                             |   |                           | <i>Muricoidea</i>                                             |   |                              |                                                                                                  |   |                            |
|                                                           |   |      | <i>Acanthocardia echinata</i> (Linnaeus, 1758)*               | D | France/ Roscoff           | <i>Acanthinucella spirata</i> (Blainville, 1832) <sup>2</sup> | D | USA/California/ San Pedro    |                                                                                                  |   |                            |
|                                                           |   |      | <i>Laevicardium crassum</i> (Gmelin, 1791)*                   | D | France/ Roscoff           | <i>Olivellinae</i>                                            |   |                              |                                                                                                  |   |                            |
|                                                           |   |      | <i>Macroidea</i>                                              |   |                           | <i>Callianax biplicata</i> (Sowerby, 1825) <sup>2</sup>       | D | USA/California/ La Jolla     |                                                                                                  |   |                            |
|                                                           |   |      | <i>Lutaria lutaria</i> (Linnaeus, 1758)*                      | D | France/ Roscoff           | <b><i>P. brevis</i></b>                                       |   |                              |                                                                                                  |   |                            |
|                                                           |   |      | <i>Solenoidae</i>                                             |   |                           | <b>Gastropoda</b>                                             |   |                              |                                                                                                  |   |                            |
|                                                           |   |      | <i>Erisis siliqua</i> (Linnaeus, 1758)*                       | D | France/ Roscoff           | <i>Trochoidea</i>                                             |   |                              |                                                                                                  |   |                            |
|                                                           |   |      | <i>Solen capensis</i> P. Fischer, 1881*                       | D | France/ Roscoff           | <i>Gibbula candei</i> (d'Orbigny, 1840) <sup>1</sup>          | L | Madeira/ Funchal Bay         |                                                                                                  |   |                            |
|                                                           |   |      | <i>Veneroidea</i>                                             |   |                           | <i>Steromphala divaricata</i> (Linnaeus, 1758) <sup>1</sup>   | L | Spain/ Ibiza                 |                                                                                                  |   |                            |
|                                                           |   |      | <i>Callista chione</i> (Linnaeus, 1758)*                      | D | France/ Roscoff           | <i>Buccinoidea</i>                                            |   |                              |                                                                                                  |   |                            |
|                                                           |   |      | <i>Pollitapes rhomboides</i> (Pennant, 1777)*                 | D | France/ Roscoff           | <i>Pisania striata</i> (Gmelin, 1791) <sup>1</sup>            | L | Spain/ Ibiza                 |                                                                                                  |   |                            |
|                                                           |   |      | <i>Venus verrucosa</i> Linnaeus, 1758*                        | D | France/ Roscoff           | <i>Cantharus</i> sp. <sup>1</sup>                             | - | Spain/ Ibiza                 |                                                                                                  |   |                            |