**Supplementary Tables with Captions**

Supplementary Table S1. Tanamu 1 taxa, relative abundance (MNI), NTAXA, Simpson 1-*D* and Shannon *H* values by stratigraphic unit (SU). Note that the raw taxonomic data reported in Asmussen et al. (completed manuscript) have been revised here to ensure the independence of taxa. Following assessment of each taxon and their relative contribution to the total assemblage, taxonomic categories were either grouped to the highest common level (e.g. genus) or excluded from further analysis (primarily family level attributions) (following Lyman, 2008).

|  |  |  | **Post-Lapita** | **Lapita** | **Pre-Ceramic** | | | **Total** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Class** | **Family** | **Taxon** | **SU1** | **SU3** | **SU4** | **SU5** | **SU6+7** | **MNI** |
| Bivalvia | Arcidae | *Anadara antiquata* | 3 | 443 | 37 | 454 | 136 | 1073 |
|  |  | *Anadara rufescens* |  | 1 | 1 | 15 |  | 17 |
|  |  | *Arca ventricosa* |  |  |  |  | 5 | 5 |
|  |  | *Barbatia foliata* | 1 | 2 | 5 | 23 | 20 | 51 |
|  |  | *Tegillarca granosa* | 1 | 50 | 4 | 39 | 2 | 96 |
|  | Cardiidae | *Fragum* spp. |  | 9 | 4 | 4 | 52 | 69 |
|  |  | *Hippopus hippopus* |  |  |  | 3 |  | 3 |
|  |  | *Tridacna squamosa* |  | 1 |  |  |  | 1 |
|  |  | *Vasticardium flavum* |  | 7 | 2 | 42 |  | 51 |
|  | Chamidae | *Chama* spp. |  | 42 | 17 | 297 | 43 | 399 |
|  | Corbulidae | *Corbula* sp. |  | 1 |  |  |  | 1 |
|  | Cyrenidae | *Batissa violacea* |  | 12 | 13 | 85 | 14 | 124 |
|  |  | *Geloina expansa* | 9 | 27 | 13 | 153 | 32 | 234 |
|  | Glauconomidae | *Glauconome rugosa* |  | 2 | 2 | 12 | 3 | 19 |
|  | Gryphaeidae | *Hyotissa hyotis* |  |  |  | 1 |  | 1 |
|  | Lucinidae | *Anodontia edentula* |  | 16 | 4 | 21 | 9 | 50 |
|  |  | *Austriella corrugata* |  | 24 | 14 | 107 | 41 | 186 |
|  |  | *Codakia tigerina* |  | 1 |  |  |  | 1 |
|  | Mactridae | *Mactra* spp. |  | 11 | 7 | 106 | 45 | 169 |
|  | Malleidae | *Malleus* spp. | 1 | 10 |  | 4 |  | 15 |
|  | Mesodesmatidae | *Atactodea striata* |  | 129 | 88 | 370 | 413 | 1000 |
|  | Mytilidae | Mytilidae |  |  | 2 | 13 | 16 | 31 |
|  | Noetiidae | Noetiidae |  |  |  | 1 |  | 1 |
|  | Ostreidae | Ostreidae | 37 | 253 | 109 | 1099 | 92 | 1590 |
|  | Pectinidae | Pectinidae |  |  |  |  | 1 | 1 |
|  | Placunidae | *Placuna* spp. |  | 54 | 3 | 3 |  | 60 |
|  | Psammobiidae | *Asaphis violascens* |  | 7 | 2 | 24 |  | 33 |
|  |  | *Gari occidens* |  | 1 |  |  | 2 | 3 |
|  | Pteriidae | *Isognomon* spp. |  | 65 | 119 | 901 | 64 | 1149 |
|  |  | *Pinctada* spp. | 1 | 13 | 43 | 413 | 21 | 491 |
|  | Spondylidae | *Spondylus* spp. | 1 | 5 |  | 10 |  | 16 |
|  | Tellinidae | Tellinidae |  | 1 | 3 | 13 | 123 | 140 |
|  | Veneridae | *Anomalodiscus squamosus* |  | 12 | 1 | 2 | 1 | 16 |
|  |  | *Dosinia* sp. |  |  |  | 1 | 1 | 2 |
|  |  | *Gafrarium* spp. | 3 | 865 | 167 | 515 | 149 | 1699 |
|  |  | *Irus carditoides* |  |  |  | 2 | 4 | 6 |
|  |  | *Marcia hiantina* |  | 1 |  | 1 |  | 2 |
|  |  | *Periglypta puerpera* | 1 | 1 |  | 5 | 1 | 8 |
|  |  | *Pitar pellucidus* |  | 12 | 6 | 11 | 1 | 30 |
|  |  | *Protapes gallus* |  | 28 | 6 | 16 | 9 | 59 |
|  |  | *Tapes literatus* |  | 3 | 2 | 7 | 1 | 13 |
|  |  | *Venerupis aspera* |  | 10 | 10 | 191 | 40 | 251 |
| Gastropoda | Amathinidae | *Amathina tricarinata* |  | 1 | 2 | 7 | 1 | 11 |
|  | Angariidae | *Angaria delphinus* | 1 | 3 |  | 1 | 1 | 6 |
|  | Architectonicidae | *Architectonica* sp. <10mm |  |  |  |  | 1 | 1 |
|  | Bullidae | *Bulla* spp. |  | 5 | 5 | 2 | 16 | 28 |
|  | Calliostomatidae | *Calliostoma* spp. |  | 4 | 5 | 33 | 80 | 122 |
|  | Cerithiidae | *Cerithium citrinum* |  | 3 |  | 39 | 5 | 47 |
|  |  | *Cerithium coralium* |  | 2 | 6 | 22 | 2 | 32 |
|  |  | *Cerithium echinatum* |  | 1 | 1 |  | 1 | 3 |
|  |  | *Cerithium nodulosum* |  | 2 |  |  |  | 2 |
|  |  | *Cerithium zonatum* |  | 5 |  | 1 |  | 6 |
|  |  | *Clypeomorus batillariaeformis* |  | 15 | 12 | 48 | 7 | 82 |
|  |  | *Rhinoclavis vertagus* |  | 2 | 1 |  |  | 3 |
|  | Chilodontaidae | *Euchelus atratus* |  | 1 | 7 | 8 | 16 | 32 |
|  | Columbellidae | *Mitrella scripta* |  |  | 1 | 2 |  | 3 |
|  | Conidae | Conidae | 4 | 5 | 5 | 19 | 5 | 38 |
|  | Costellariidae | *Vexillum rugosum* |  |  | 1 | 1 |  | 2 |
|  |  | *Vexillum vulpecula* |  |  |  | 1 |  | 1 |
|  | Cymatiidae | Cymatiidae | 1 | 1 | 1 | 1 | 3 | 7 |
|  | Cypraeidae | Cypraeidae | 2 | 2 | 2 | 9 | 3 | 18 |
|  | Ellobiidae | *Cassidula* spp. |  |  |  |  | 2 | 2 |
|  |  | *Ellobium* spp. | 2 | 2 | 4 | 65 | 71 | 144 |
|  | Epitoniidae | Epitoniidae |  |  |  |  | 2 | 2 |
|  | Fissurellidae | *Hemitoma* spp. | 11 | 25 | 18 | 7 | 4 | 65 |
|  | Littorinidae | *Littoraria* spp. |  | 8 | 15 | 196 | 113 | 332 |
|  | Lottiidae | Lottiidae |  |  | 1 |  | 5 | 6 |
|  | Mitridae | *Mitra* sp. |  |  |  |  | 2 | 2 |
|  | Muricidae | *Chicoreus* spp. |  | 4 | 12 | 133 | 12 | 161 |
|  |  | *Drupella margariticola* |  |  | 1 | 1 |  | 2 |
|  | Nacellidae | *Cellana rota* |  |  |  |  | 1 | 1 |
|  | Nassariidae | *Nassarius coronatus* |  |  |  | 2 | 1 | 3 |
|  |  | *Nassarius crematus* |  | 4 | 4 | 21 | 3 | 32 |
|  |  | *Nassarius distortus* |  |  |  | 9 | 3 | 12 |
|  |  | *Nassarius olivaceus* |  | 7 | 6 | 61 | 11 | 85 |
|  |  | *Nassarius pullus* |  |  | 1 | 5 | 2 | 8 |
|  | Naticidae | *Mammilla sebae* |  |  |  | 1 |  | 1 |
|  |  | *Notocochlis gualtieriana* |  | 6 | 1 | 10 | 3 | 20 |
|  |  | *Polinices mammilla* |  | 11 | 14 | 215 | 27 | 267 |
|  |  | *Polinices peselephanti* |  | 2 |  |  | 2 | 4 |
|  | Neritidae | *Neripteron violaceum* |  |  |  | 5 |  | 5 |
|  |  | *Nerita albicilla* |  | 5 | 13 | 93 | 12 | 123 |
|  |  | *Nerita balteata* |  | 6 | 4 | 60 | 7 | 77 |
|  |  | *Nerita chamaeleon* |  | 9 | 5 | 71 | 19 | 104 |
|  |  | *Nerita costata* |  |  | 1 | 3 | 5 | 9 |
|  |  | *Nerita planospira* |  | 5 | 18 | 77 | 10 | 110 |
|  |  | *Nerita polita* |  |  | 4 | 29 | 13 | 46 |
|  |  | *Nerita undata* |  | 7 | 3 | 62 | 17 | 89 |
|  | Olividae | Olividae |  | 1 | 4 | 31 | 3 | 39 |
|  | Patellidae | Patellidae |  |  |  |  | 26 | 26 |
|  | Pisaniidae | *Cantharus* sp. |  |  |  | 2 |  | 2 |
|  | Planaxidae | Planaxidae | 2 |  |  |  | 1 | 3 |
|  |  | *Fissilabia decollata* |  |  | 1 | 1 |  | 2 |
|  |  | *Planaxis sulcatus* |  | 11 | 6 | 58 | 14 | 89 |
|  | Potamididae | *Cerithideopsis largillierti* | 4 | 8 | 29 | 248 | 104 | 393 |
|  |  | *Pirinella cingulata* |  |  | 2 | 2 | 2 | 6 |
|  |  | *Telescopium telescopium* | 145 | 9 | 9 | 12 | 1 | 176 |
|  |  | *Terebralia* spp. | 1 | 7 | 29 | 106 | 10 | 153 |
|  | Strombidae | *Canarium labiatum* |  | 2 |  | 3 |  | 5 |
|  |  | *Canarium urceus* |  | 1 |  |  |  | 1 |
|  |  | *Conomurex luhuanus* | 375 | 182 | 15 | 2 |  | 574 |
|  |  | *Euprotomus aurisdianae* |  | 1 |  |  |  | 1 |
|  |  | *Gibberulus gibberulus* | 2 | 21 | 4 | 3 | 1 | 31 |
|  |  | *Laevistrombus canarium* |  | 37 | 12 | 58 | 16 | 123 |
|  |  | *Lambis* spp. | 13 | 66 | 16 | 60 |  | 155 |
|  | Tegulidae | *Rochia nilotica* |  |  |  | 3 | 1 | 4 |
|  |  | *Tectus fenestratus* | 7 | 7 |  | 6 | 4 | 24 |
|  | Terebridae | Terebridae |  |  |  | 1 | 1 | 2 |
|  | Tonnidae | *Tonna* sp. | 1 |  |  | 1 |  | 2 |
|  | Trochidae | Trochidae | 1 |  | 2 | 2 | 4 | 9 |
|  | Turbinellidae | *Vasum* sp. | 1 | 3 | 1 | 1 |  | 6 |
|  | Turbinidae | *Lunella cinerea* |  | 4 | 5 | 37 | 16 | 62 |
|  |  | *Turbo* spp. |  | 4 | 6 | 42 | 16 | 68 |
| **Total MNI** |  |  | **631** | **2636** | **999** | **6963** | **2049** | **13278** |
| **NTAXA** |  |  | **27** | **79** | **73** | **93** | **82** |  |
| **Simpson 1-*D*** |  |  | **0.59** | **0.84** | **0.93** | **0.93** | **0.93** |  |
| **Shannon *H*** |  |  | **1.39** | **2.64** | **3.29** | **3.26** | **3.30** |  |

Supplementary Table S2: Diversity permutation test result matrices by stratigraphic unit (SU) for Tanamu 1 richness (NTAXA), Simpson 1-*D* and Shannon *H*.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Post-Lapita** | **Lapita** | **Pre-Ceramic** | |
| **NTAXA** |  | **SU1** | **SU3** | **SU4** | **SU5** |
| **Lapita** | **SU3** | 0.0001 |  |  |  |
| **Pre-Ceramic** | **SU4** | 0.0001 | 0.9979 |  |  |
| **SU5** | 0.0001 | 0.2330 | 0.9766 |  |
| **SU6+7** | 0.0001 | 0.1949 | 0.6197 | 0.9910 |
|  |  | **Post-Lapita** | **Lapita** | **Pre-Ceramic** | |
| **Simpson 1-*D*** |  | **SU1** | **SU3** | **SU4** | **SU5** |
| **Lapita** | **SU3** | 0.0001 |  |  |  |
| **Pre-Ceramic** | **SU4** | 0.0001 | 0.0001 |  |  |
| **SU5** | 0.0001 | 0.0001 | 0.6091 |  |
| **SU6+7** | 0.0001 | 0.0001 | 0.9304 | 0.1031 |
|  |  | **Post-Lapita** | **Lapita** | **Pre-Ceramic** | |
| **Shannon *H*** |  | **SU1** | **SU3** | **SU4** | **SU5** |
| **Lapita** | **SU3** | 0.0001 |  |  |  |
| **Pre-Ceramic** | **SU4** | 0.0001 | 0.0001 |  |  |
| **SU5** | 0.0001 | 0.0001 | 0.3399 |  |
| **SU6+7** | 0.0001 | 0.0001 | 0.6663 | 0.3520 |

Supplementary Table S3: *Anadara antiquata* Kruskal-Wallis Test pairwise comparisons of predicted valve length by stratigraphic unit (SU).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sample 1 – Sample 2** | **Test Statistic** | **Std. Error** | **Std. Test Statistic** | **Sig.** | **a. Adj. Sig** |
| SU3 – SU4 | -54.254 | 51.011 | -1.064 | 0.288 | 1.000 |
| SU3 – SU5 | -361.575 | 18.424 | -19.625 | 0.000 | 0.000 |
| SU3 – SU6+7 | -282.822 | 28.570 | -9.899 | 0.000 | 0.000 |
| SU4 – SU5 | -307.321 | 51.158 | -6.007 | 0.000 | 0.000 |
| SU4 – SU6+7 | -228.568 | 55.623 | -4.109 | 0.000 | 0.000 |
| SU5 – SU6+7 | 78.753 | 28.831 | 2.732 | 0.006 | 0.038 |

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is 0.05.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.