**Table S1.** Sampling sites and taxonomic information of shells used by *Phascolion* species.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sampling site | Class | Family | Genus | N | Depth (m) |
| Shimoda | Gastropoda | Solariellidae | *Solariella* | 1 | 400 |
| 　 | 　 | Calliotropidae | *Ginrbis* | 1 | 400 |
| 　 | 　 | Cerithiidae | *Lirobittium* | 2 | 400 |
| 　 | 　 | Naticidae | unidentified | 1 | 400 |
| 　 | 　 | Columbellidae | *Mitrella* | 1 | 400 |
| 　 | 　 | Fasciolaridae | *Fusinus* | 1 | 400 |
| 　 | 　 | Turridae | unidentified | 1 | 400 |
| 　 | 　 | Acteonidae | *Acteon* | 1 | 400 |
| Kumanonada | Gastropoda | Solariellidae | *Solariella* | 1 | 185 |
| 　 | 　 | Cerithiidae | *Lirobittium* | 20 | 92, 185 |
| 　 | 　 | Turritellidae | *Haustator*(*Kurosioia*) | 8 | 82 |
| 　 | 　 | Orectospiridae | *Trochocerithium* | 1 | 185 |
| 　 | 　 | Naticidae | *Natica* | 3 | 185 |
| 　 | 　 | Cerithiosidae | *Seila(Notoselia)* | 1 | 185 |
| 　 | 　 | Newtoniellidae | *Cerithiella* | 2 | 185 |
| 　 | 　 | Epitoniidae | *Narvaliscala* | 1 | 185 |
| 　 | 　 | 　 | *Epitonium* | 2 | 185 |
| 　 | 　 | Columbellidae | *Mitrella*(*Sulcomitrella*) | 2 | 185 |
| 　 | 　 | Nassariidae | *Nassarius*(*Telasco*) | 2 | 185 |
| 　 | 　 | 　 | *Nassarius* | 2 | 59, 82 |
| 　 | 　 | Buccinidae | *Manaria* | 2 | 82, 92 |
| 　 | 　 | Fasciolariidae | *Granulifusus* | 5 | 57, 82 |
| 　 | 　 | Muricidae | *Coralliophila* | 2 | 82, 92 |
| 　 | 　 | 　 | *Babelomurex* | 1 | 92 |
| 　 | 　 | Costellariidae | *Vexillum* | 1 | 82 |
| 　 | 　 | Pseudomelatomidae | *Comitas* | 1 | 82 |
| 　 | 　 | 　 | *Brachytoma* | 4 | 82, 289 |
| 　 | 　 | 　 | *Antiplanes* | 1 | 82 |
| 　 | 　 | Horaiclavidae | *Horaicclavus* | 1 | 185 |
| 　 | 　 | 　 | *Paradrillia* | 1 | 59 |
| 　 | 　 | Turridae | *Gemmula* | 21 | 57, 59, 82, 92 |
| 　 | 　 | 　 | *Lophiotoma* (*Lophioturris*) | 5 | 59, 82, 92 |
| 　 | 　 | 　 | unidentified | 3 | 185 |
| 　 | 　 | Terebridae | unidentified | 4 | 82 |
| 　 | 　 | Cancellariidae | *Microsveltia* | 4 | 185 |
| 　 | 　 | Retusidae | *Retusa* | 1 | 185 |
| 　 | 　 | Pyramidellidae | *Syrnola* | 2 | 185 |
| 　 | 　 | 　 | *Brachystomia* | 1 | 92 |
| 　 | 　 | 　 | unidentified | 1 | 185 |
|  |  | unidentified | unidentified | 9 | 82, 92, 185, 289 |
| 　 | Scaphopoda | Dentaliidae | *Dentalium* | 1 | 82 |
| 　 | 　 | Gadilinidae | *Episiphon* | 15 | 82, 185 |
| 　 | 　 | Entalinidae | *Entalinopsis* | 3 | 185 |
| 　 | 　 | 　 | unidentified | 22 | 59, 82, 92 |
| 　 | 　 | Gadilidae | *Entalimorpha* | 4 | 82 |
| 　 | 　 | unidentified | unidentified | 1 | 185 |
| Tanabe | Gastropoda | Trochidae | unidentified | 1 | 87 |
| 　 | 　 | Turritellidae | *Tachyrhynchus* | 1 | 800 |
| 　 | 　 | Orectospiridae | *Trochocerithium* | 18 | 421 |
| 　 | 　 | Naticidae | *Euspira* | 1 | 421 |
| 　 | 　 | Nassariidae | *Nassarius* (*Profundinassa*) | 4 | 421 |
| 　 | 　 | 　 | unidentified | 3 | 87, 421 |
| 　 | 　 | Buccinidae | *Microfusus* | 1 | 421 |
| 　 | 　 | Fasciolariidae | *Fusinus* | 2 | 219,421 |
| 　 | 　 | Muricidae | unidentified | 1 | 87 |
| 　 | 　 | Costellariidae | unidentified | 4 | 87 |
| 　 | 　 | Conidae | unidentified | 2 | 87 |
| 　 | 　 | Mangeliidae | *Obesotoma* | 1 | 421 |
| 　 | 　 | 　 | unidentified | 2 | 87 |
| 　 | 　 | Raphitomidae | unidentified | 1 | 87 |
| 　 | 　 | Horaiclavidae | *Horaicclavus* | 1 | 421 |
| 　 | 　 | Turridae | unidentified | 17 | 87, 421 |
| 　 | 　 | Terebridae | unidentified | 7 | 87 |
| 　 | 　 | Cancellariidae | unidentified | 1 | 87 |
| 　 | 　 | Acteonidae | *Crenilabium* | 1 | 421 |
|  |  | unidentified | unidentified | 5 | 87, 219, 421 |
| 　 | Scaphopoda | Entalinidae | *Entalinopsis* | 7 | 421 |
| 　 | 　 | 　 | *Entalina* | 17 | 421, 800 |
| 　 | 　 | 　 | unidentified | 2 | 87 |
| 　 | 　 | Gadilidae | *Gadila* | 4 | 421, 800 |

**Table S2.** Sampling and taxonomic information of shells used by *Aspidosiphon* species.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sampling site | Class | Family | Genus | N | Depth (m) |
| Kumanonada | Gastropoda | Turritellidae | *Haustator*(*Kurosioia*) | 1 | 82 |
| 　 | 　 | Orectospiridae | *Trochocerithium* | 1 | 289 |
| 　 | 　 | Eulimidae | *Niso* | 1 | 92 |
| 　 | 　 | Nassariidae | *Nassarius* | 1 | 59 |
| 　 | 　 | Buccinidae | *Retifusus* | 1 | 289 |
| 　 | 　 | Pseudomelatomidae | *Comitas* | 1 | 289 |
| 　 | 　 | 　 | *Brachytoma* | 3 | 289 |
| 　 | 　 | Horaiclavidae | *Paradrillia* | 1 | 289 |
| 　 | 　 | Turridae | *Gemmula* | 5 | 82, 92, 289 |
| 　 | 　 | 　 | *Lophiotoma* (*Lophioturris*) | 2 | 59, 92 |
| 　 | Scaphopoda | Gadilinidae | *Episiphon* | 1 | 185 |
| Shimoda | Gastropoda  | Trochidae | unidentified | 1 | 90 |
| 　 | 　 | Nassariidae | *Nassarius* (*Telasco*) | 1 | 421 |
| 　 | 　 | 　 | unidentified | 1 | 90 |
| 　 | 　 | Costellariidae | unidentified | 2 | 90 |
| 　 | 　 | Drillidae | unidentified | 1 | 90 |
| 　 | 　 | Turridae | unidentified | 5 | 90 |

**Table S3.** Size parameters of *Phascolion* individuals and their shells. Abbreviations: Locality = sampling locality, Class = class of shells used by *Phascolion*, N = number of individuals, TL = trunk length average (mm) (mean ± SE), TW = trunk width average (mm) (mean ± SE), SL = shell length average (mm) (mean ± SE), SW = shell width average (mm) (mean ± SE), SA = shell aperture length average (mm) (mean ± SE).

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Locality | Class | N | TL | Max TL | TW | Max TW | SL | Max SL | SW | Max SW | SA | Max SA |
| Shimoda | Gastropoda | 9 | 12.01 ± 2.38 | 25.6 | 1.58 ± 0.36 | 2.97 | 8.49 ± 0.54 | 11.52 | 5.13 ± 0.74 | 8.46 | 4.04 ± 0.56 | 6.61 |
| Shimoda | Scaphopoda | − | − | − | − | − | − | − | − | − | − | − |
| Tanabe | Gastropoda | 34 | 9.48 ± 1.10 | 37.4 | 1.68 ± 0.13 | 3.68 | 9.88 ± 0.88 | 25.97 | 5.20 ± 0.34 | 10.88 | 3.69 ± 0.34 | 10.25 |
| Tanabe | Scaphopoda | 28 | 9.69 ± 0.62 | 16.32 | 1.94 ± 0.07 | 2.64 | 19.11 ± 1.32 | 31.74 | 2.44 ± 0.06 | 3.01 | 2.44 ± 0.06 | 3.01 |
| Kumanonada | Gastropoda | 119 | 10.15 ± 0.67 | 32.16 | 1.47 ± 0.07 | 4.56 | 11.59 ± 0.60 | 34.46 | 4.35 ± 0.22 | 13.47 | 2.94 ± 0.17 | 10.79 |
| Kumanonada | Scaphopoda | 47 | 7.19 ± 0.46 | 14.75 | 1.09 ± 0.06 | 1.88 | 15.08 ± 0.70 | 25.38 | 1.86 ± 0.09 | 2.76 | 1.86 ± 0.09 | 2.75 |

**Table S4.** Pearson’s product-moment correlation between the body size of *Phascolion* species and their shell size: TL = trunk length average (mm), TW = trunk width average (mm), SL = shell length average (mm), SW = shell width average (mm), SA = shell aperture length average (mm).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Locality | Factor | correlation coefficient | *t* value | *df* | *P* value | 95 percent confidence interval |
| Shimoda | Gastropod shells |  |  |  |  |  |  |
| 　 | TL & SL | 0.403 | 1.17 | 7 | *P* = 0.2816 | -0.356 | 0.842 |
| 　 | TL & SW | 0.764 | 3.14 | 7 | *P* < 0.05 | 0.204 | 0.948 |
| 　 | TL & SA | 0.765 | 3.145 | 7 | *P* < 0.05 | 0.2057 | 0.9477 |
| 　 | TW & SL | 0.606 | 2.016 | 7 | 0.08353 | -0.0969 | 0.9057 |
| 　 | TW & SW | 0.8078 | 3.627 | 7 | *P* < 0.05 | 0.3102 | 0.9562 |
| 　 | TW & SA | 0.8006 | 3.535 | 7 | *P* < 0.05 | 0.2915 | 0.9562 |
| Kumanonada | Gastropod shells |  |  |  |  |  |  |
| 　 | TL & SL | 0.8037 | 13.907 | 106 | *P* < 0.001 | 0.7248 | 0.8617 |
| 　 | TL & SW | 0.7968 | 13.581 | 106 | *P* < 0.001 | 0.7157 | 0.8568 |
| 　 | TL & SA | 0.6811 | 9.532 | 105 | *P* < 0.001 | 0.5642 | 0.7712 |
| 　 | TW & SL | 0.826 | 15.159 | 107 | *P* < 0.001 | 0.7552 | 0.8777 |
| 　 | TW & SW | 0.8776 | 18.944 | 107 | *P* < 0.001 | 0.8259 | 0.9147 |
| 　 | TW & SA | 0.7934 | 13.424 | 106 | *P* < 0.001 | 0.7111 | 0.8543 |
| 　 | Scaphopod shells |  |  |  |  |  |  |
| 　 | TL & SL | 0.8453 | 10.616 | 45 | *P* < 0.001 | 0.7371 | 0.9112 |
| 　 | TL & SW | 0.7616 | 7.885 | 45 | *P* < 0.001 | 0.6073 | 0.8606 |
| 　 | TL & SA | 0.7606 | 7.86 | 45 | *P* < 0.001 | 0.6057 | 0.8599 |
| 　 | TW & SL | 0.647 | 5.693 | 45 | *P* < 0.001 | 0.442 | 0.7878 |
| 　 | TW & SW | 0.7328 | 7.225 | 45 | *P* < 0.001 | 0.5644 | 0.8426 |
| 　 | TW & SA | 0.7321 | 7.2102 | 45 | *P* < 0.001 | 0.5634 | 0.8422 |
| Tanabe | Gastropod shells |  |  |  |  |  |  |
| 　 | TL & SL | 0.703 | 5.5039 | 31 | *P* < 0.001 | 0.4741 | 0.8428 |
| 　 | TL & SW | 0.7643 | 6.599 | 31 | *P* < 0.001 | 0.5707 | 0.8773 |
| 　 | TL & SA | 0.6236 | 4.221 | 28 | *P* < 0.001 | 0.3397 | 0.8034 |
| 　 | TW & SL | 0.8747 | 10.05 | 31 | *P* < 0.001 | 0.7595 | 0.9367 |
| 　 | TW & SW | 0.8413 | 8.666 | 31 | *P* < 0.001 | 0.7003 | 0.9191 |
| 　 | TW & SA | 0.8115 | 7.348 | 28 | *P* < 0.001 | 0.6376 | 0.9066 |
| 　 | Scaphopod shells |  |  |  |  |  |  |
| 　 | TL & SL | 0.4872 | 2.733 | 24 | *P* < 0.05 | 0.1231 | 0.7357 |
| 　 | TL & SW | 0.4696 | 2.606 | 24 | *P* < 0.05 | 0.1006 | 0.7251 |
| 　 | TL & SA | 0.4689 | 2.6 | 24 | *P* < 0.05 | 0.0996 | 0.7246 |
| 　 | TW & SL | 0.2996 | 1.538 | 24 | *P* = 0.137 | -0.09925 | 0.6155 |
| 　 | TW & SW | 0.2618 | 1.329 | 24 | *P* = 0.1964 | -0.1397 | 0.5893 |
| 　 | TW & SA | 0.2611 | 1.325 | 24 | *P* = 0.1976 | -0.1404 | 0.5889 |

**Table S5.** Size parameters of *Aspidosiphon* individuals and their shells. Abbreviations: Locality = sampling locality; Class = class of shells used by *Aspidosiphon*, N = number of individuals, TL = trunk length average (mm) (mean ± SE), TW = trunk width average (mm) (mean ± SE), SL = shell length average (mm) (mean ± SE), SW = shell width average (mm) (mean ± SE), SA = shell aperture length average (mm) (mean ± SE).

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Locality | Class | N | TL | Max TL | TW | Max TW | SL | Max SL | SW | Max SW | SA | Max SA |
| Tanabe | Gastropoda | 12 | 16.1 ± 3.98 | 20.08 | 2.42 ± 0.91 | 3.33 | 11.67 ± 3.31 | 14.98 | 6.99 ± 1.71 | 8.69 | 6.85 ± 2.85 | 9.7 |
| Tanabe | Scaphopoda | 1 | 11.55 | 11.55 | 1.73 | 1.73 | 13.23 | 13.23 | 2.51 | 2.51 | 2.51 | 2.51 |
| Kumanonada | Gastropoda | 17 | 16.06 ± 1.43 | 28.68 | 2.32 ± 0.15 | 3.31 | 18.05 ± 1.31 | 28.35 | 6.96 ± 0.56 | 11.42 | 4.53 ± 0.47 | 8.46 |
| Kumanonada | Scaphopoda | 1 | 3.29 | 3.29 | 0.76 | 0.76 | 10.97 | 10.97 | 1.22 | 1.22 | 1.22 | 1.22 |

**Table S6.** Pearson’s product-moment correlation between the body size of *Aspidosiphon* species and their shell size: TL = trunk length average (mm), TW = trunk width average (mm), SL = shell length average (mm), SW = shell width average (mm), SA = shell aperture length average (mm).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Locality | Factor | correlation coefficient | *t* value | *df* | *P* value | 95 percent confidence interval |
| Kumanonada | Gastropod shells |  |  |  |  |  |  |
| 　 | TL & SL | 0.6238 | 3.091 | 15 | *P* < 0.05 | 0.2045 | 0.8496 |
| 　 | TL & SW | 0.4628 | 2.0223 | 15 | 0.06136 | -0.0228 | 0.7717 |
| 　 | TL & SA | 0.5546 | 2.5817 | 15 | *P* < 0.05 | 0.1009 | 0.8173 |
| 　 | TW & SL | 0.5131 | 2.3155 | 15 | *P* < 0.05 | 0.0431 | 0.7971 |
| 　 | TW & SW | 0.7422 | 4.2899 | 15 | *P* < 0.001 | 0.4067 | 0.9013 |
| 　 | TW & SA | 0.7487 | 4.3752 | 15 | *P* < 0.001 | 0.4188 | 0.904 |

Fig.S1. Shells collected from three locations off Tanabe (Sts. 12–14). Numbers of shells used by shell-dwelling sipunculans, *Catapagrus* sp., and *Bubocorophium* sp. are shown by different color patterns.

