# Appendix

**Table A1.** Summary of propagule swimming speeds across two larval nutritional modes and six representative marine phyla.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Phylum** | **Class** | **Species** | **Nutrition1** | **Life stage2** | **Size** **(mm)** | **Speed** **(mm s-1)** | **Adult mobility3** | **References** |
| Annelida | Polychaeta | *Alitta virens* | Planktotroph | Meta | 230 | 0.8 | Motile | Bass and Brafield 1972; Chia et al. 1984 |
| Annelida | Polychaeta | *Capitella capitata I* | Lecithotroph | L.Tro | 200 | 3.1 | Motile | Chia et al. 1984; Plate and Husemann 1994 |
| Annelida | Polychaeta | *Capitella capitata I* | Lecithotroph | L.Tro | 500 | 3.4 | Motile | Chia et al. 1984; Plate and Husemann 1994 |
| Annelida | Polychaeta | *Capitella capitata I* | Lecithotroph | L.Tro | 500 | 2.9 | Motile | Chia et al. 1984; Plate and Husemann 1994 |
| Annelida | Polychaeta | *Capitella capitata I* | Lecithotroph | Tro | 130 | 5.2 | Motile | Chia et al. 1984; Plate and Husemann 1994 |
| Annelida | Polychaeta | *Capitella capitata II* | Lecithotroph | L.Tro | 450 | 4 | Motile | Chia et al. 1984; Plate and Husemann 1994 |
| Annelida | Polychaeta | *Capitellid unknown* | N/A | L.Tro | 340 | 1.2 | Motile | Chia et al. 1984 |
| Annelida | Polychaeta | *Chaetosphaerid*  | N/A | L.Tro | 290 | 1.7 | Motile | Chia et al. 1984 |
| Annelida | Polychaeta | *Chone infundibulariformis* | Planktotroph | Tro | N/A | 3.3 | Sedentary | Chia et al. 1984 |
| Annelida | Polychaeta | *Eteone longa* | Planktotroph | Tro | N/A | 1.2 | Motile | Chia et al. 1984 |
| Annelida | Polychaeta | *Eulalia viridis* | Planktotroph | Tro | 350 | 1.5 | Motile | Chia et al. 1984; Plate and Husemann 1994 |
| Annelida | Polychaeta | *Eupolymnia nebulosa* | Planktotroph | L.Tro | 275 | 0.7 | Motile | Duchêne 2004 |
| Annelida | Polychaeta | *Galeolaria caespitosa* | Planktotroph | Tro | 218 | 4.27 | Sedentary | Bolton and Havenhand 1997 |
| Annelida | Polychaeta | *Harmothoe imbricata* | Planktotroph | Tro | 200 | 1.1 | Motile | Daly et al. 1972; Chia et al. 1984 |
| Annelida | Polychaeta | *Heteromastus filiformis* | Planktotroph | Meta | 340 | 0.6 | Motile | Chia et al. 1984; Plate and Husemann 1994 |
| Annelida | Polychaeta | *Heteromastus filiformis* | Planktotroph | Tro | 100 | 0.5 | Motile | Chia et al. 1984; Plate and Husemann 1994 |
| Annelida | Polychaeta | *Hydroides elegans* | Planktotroph | Tro | N/A | 0.2 | Sedentary | Leung et al. 2013 |
| Annelida | Polychaeta | *Lagis koreni* | Planktotroph | Meta | N/A | 2.5 | Sedentary | Chia et al. 1984 |
| Annelida | Polychaeta | *Lagis koreni* | Planktotroph | Tro | N/A | 1.7 | Sedentary | Chia et al. 1984 |
| Annelida | Polychaeta | *Nephtys ciliata* | Planktotroph | Meta | N/A | 1.3 | Motile | Chia et al. 1984 |
| Annelida | Polychaeta | *Nephtys ciliata* | Planktotroph | Tro | N/A | 2.5 | Motile | Chia et al. 1984 |
| Annelida | Polychaeta | *Pholoe minuta* | Planktotroph | Meta | 360 | 0.8 | Motile | Blake 1975; Chia et al. 1984 |
| Annelida | Polychaeta | *Phyllodoce maculata* | Planktotroph | Tro | N/A | 1.8 | Motile | Chia et al. 1984 |
| Annelida | Polychaeta | *Phyllodoce mucosa* | Planktotroph | Tro | N/A | 1.2 | Motile | Chia et al. 1984 |
| Annelida | Polychaeta | *Polydora ciliata* | Planktotroph | Stage1 | 220 | 0.5 | Motile | Hansen et al. 2010 |
| Annelida | Polychaeta | *Polydora ciliata* | Planktotroph | Stage2 | 560 | 0.5 | Motile | Hansen et al. 2010 |
| Annelida | Polychaeta | *Polydora ciliata* | Planktotroph | Stage3 | 920 | 0.4 | Motile | Hansen et al. 2010 |
| Annelida | Polychaeta | *Scoloplos armiger* | Lecithotroph | Meta | 400 | 0.5 | Motile | Anderson 1959; Chia et al. 1984 |
| Annelida | Polychaeta | *Scoloplos armiger* | Lecithotroph | Tro | 200 | 0.8 | Motile | Anderson 1959; Chia et al. 1984 |
| Annelida | Polychaeta | *Spirobranchus giganteus* | Planktotroph | Tro | N/A | 2.1 | Sedentary | Marsden 1984 |
| Annelida | Polychaeta | *Spirobranchus giganteus* | Planktotroph | Tro | N/A | 2 | Sedentary | Marsden 1984 |
| Annelida | Polychaeta | *Spirobranchus polycerus* | Planktotroph | Tro | 100 | 2.5 | Sedentary | Marsden 1994 |
| Annelida | Polychaeta | *Streblospio benedicti* | Planktotroph | Tro | 100 | 0.6 | Motile | Ward et al. 2000 |
| Bryozoa | Cheilostomatida | *Membranipora sp.* | Planktotroph | Cyphonautes | 400 | 1.9 | Sessile | Chia et al. 1984 |
| Bryozoa | Gymnolaemata | *Amathia vidovici* | Lecithotroph | Coronate | 150 | 3.3 | Sessile | Zimmer and Woollacott 1993 |
| Bryozoa | Gymnolaemata | *Bugula neritina* | Lecithotroph | Pyriform | 270 | 4.6 | Sessile | Wendt 2000 |
| Bryozoa | Gymnolaemata | *Bugulina californica* | Lecithotroph | Cyphonautes | 220 | 3.6 | Sessile | Rebolledo et al. 2014 |
| Bryozoa | Gymnolaemata | *Bugulina simplex* | Lecithotroph | Cyphonautes | 210 | 4.4 | Sessile | Wendt 2000 |
| Bryozoa | Gymnolaemata | *Bugulina sp.* | Lecithotroph | Cyphonautes | N/A | 8 | Sessile | Chia et al. 1984; Wendt 2000 |
| Bryozoa | Gymnolaemata | *Bugulina stolonifera* | Lecithotroph | Cyphonautes | 160 | 4.9 | Sessile | Wendt 2000 |
| Bryozoa | Gymnolaemata | *Crisularia turrita* | Lecithotroph | Cyphonautes | 200 | 3.4 | Sessile | Wendt 2000 |
| Cnidaria | Anthozoa | *Agaricia tenuifolia* | Lecithotroph | Plan | N/A | 3.6 | Sessile | Gleason et al. 2009 |
| Cnidaria | Anthozoa | *Agaricia teunifolia* | Lecithotroph | Plan | N/A | 2.1 | Sessile | Baird et al. 2014 |
| Cnidaria | Anthozoa | *Anthopleura nigrescens* | Lecithotroph | Plan | 215 | 2.5 | Sedentary | Hodgson 1985 |
| Cnidaria | Anthozoa | *Caryophyllia smithi* | Lecithotroph | Plan | 140 | 30 | Sessile | Tranter et al. 1982; Chia et al. 1984 |
| Cnidaria | Anthozoa | *Cerianthus sp.* | Lecithotroph | Plan | 300 | 6.5 | Sedentary | Hodgson 1985 |
| Cnidaria | Anthozoa | *Coelastrea aspera* | Lecithotroph | Plan | 470 | 2.73 | Sessile | Baird et al. 2014 |
| Cnidaria | Anthozoa | *Corallium rubrum* | Lecithotroph | Plan | N/A | 1.5 | Sessile | Martínez-Quintana et al. 2015 |
| Cnidaria | Anthozoa | *Cyphastrea ocellina* | Lecithotroph | Plan | 1000 | 2.5 | Sessile | Hodgson 1985 |
| Cnidaria | Anthozoa | *Entacmaea quadricolor* | Lecithotroph | Plan | 600 | 2.1 | Sedentary | Scott and Harrison 2007 |
| Cnidaria | Anthozoa | *Eunicella singularis* | Lecithotroph | Plan | 1000 | 3 | Sessile | Weinberg and Weinberg 1979 |
| Cnidaria | Anthozoa | *Galaxea horrescens* | Lecithotroph | Plan | 2300 | 2.41 | Sessile | Baird et al. 2014 |
| Cnidaria | Anthozoa | *Heliofungia actiniformis* | Lecithotroph | Plan | 500 | 5 | Sessile | Chia et al. 1984 |
| Cnidaria | Anthozoa | *Heliofungia actinoformis* | Lecithotroph | Plan | 500 | 1.57 | Sessile | Baird et al. 2014 |
| Cnidaria | Anthozoa | *Heliofungia actinoformis* | Lecithotroph | Plan | 500 | 1.66 | Sessile | Baird et al. 2014 |
| Cnidaria | Anthozoa | *Heliopora coerulea* | Lecithotroph | Plan | 3700 | 0.01 | Sessile | Harii et al. 2002 |
| Cnidaria | Anthozoa | *Isopora brueggemanni* | Lecithotroph | Plan | 2500 | 2.86 | Sessile | Baird et al. 2014 |
| Cnidaria | Anthozoa | *Lobactis scutaria* | Lecithotroph | Plan | 105 | 2.5 | Sessile | Hodgson 1985 |
| Cnidaria | Anthozoa | *Lophelia pertusa* | Lecithotroph | Plan | 150 | 0.5 | Sessile | Larsson et al. 2014 |
| Cnidaria | Anthozoa | *Lophelia pertusa* | Lecithotroph | Plan | 150 | 0.65 | Sessile | Larsson et al. 2014 |
| Cnidaria | Anthozoa | *Madracis spp.* | Lecithotroph | Plan | N/A | 1.75 | Sessile | Vermeij et al. 2003 |
| Cnidaria | Anthozoa | *Montipora dilitata* | Lecithotroph | Plan | 275 | 1.5 | Sessile | Hodgson 1985 |
| Cnidaria | Anthozoa | *Montipora verrucosa* | Lecithotroph | Plan | 275 | 1.5 | Sessile | Hodgson 1985 |
| Cnidaria | Anthozoa | *Oculina varicosa* | Lecithotroph | Plan | 160 | 0.5 | Sessile | Brooke and Young 2003 |
| Cnidaria | Anthozoa | *Oculina varicosa* | Lecithotroph | Plan | 160 | 3 | Sessile | Brooke and Young 2003 |
| Cnidaria | Anthozoa | *Oculina varicosa* | Lecithotroph | Plan | 160 | 1.9 | Sessile | Brooke and Young 2005 |
| Cnidaria | Anthozoa | *Oculina varicosa* | Lecithotroph | Plan | 160 | 1.7 | Sessile | Brooke and Young 2005 |
| Cnidaria | Anthozoa | *Orbicella annularis* | Lecithotroph | Plan | N/A | 7 | Sessile | Pizarro and Thomason 2008 |
| Cnidaria | Anthozoa | *Orbicella faveolata* | Lecithotroph | Plan | 500 | 1.1 | Sessile | Vermeij et al. 2006 |
| Cnidaria | Anthozoa | *Orbicella faveolata* | Lecithotroph | Plan | 500 | 8 | Sessile | Pizarro and Thomason 2008 |
| Cnidaria | Anthozoa | *Oxypora lacera* | Lecithotroph | Plan | N/A | 1.5 | Sessile | Mundy and Babcock 1998 |
| Cnidaria | Anthozoa | *Platygyra acuta* | Lecithotroph | Plan | 500 | 1.2 | Sessile | Kwok and Ang 2013 |
| Cnidaria | Anthozoa | *Pocillopora damicornis* | Lecithotroph | Plan | 1200 | 2.5 | Sessile | Hodgson 1985 |
| Cnidaria | Anthozoa | *Pocillopora damicornis* | Lecithotroph | Plan | 1200 | 1.75 | Sessile | Baird et al. 2014 |
| Cnidaria | Anthozoa | *Pocillopora damicornis* | Lecithotroph | Plan | 1200 | 1.78 | Sessile | Baird et al. 2014 |
| Cnidaria | Anthozoa | *Pocillopora damicornis* | Lecithotroph | Plan | 1200 | 2.01 | Sessile | Baird et al. 2014 |
| Cnidaria | Anthozoa | *Pocillopora damicornis* | Lecithotroph | Plan | 1200 | 2.79 | Sessile | Baird et al. 2014 |
| Cnidaria | Anthozoa | *Porites asteroides* | Lecithotroph | Plan | 760 | 4.3 | Sessile | Gleason et al. 2009 |
| Cnidaria | Anthozoa | *Porites asteroides* | Lecithotroph | Plan | 760 | 2.8 | Sessile | Baird et al. 2014 |
| Cnidaria | Anthozoa | *Porites compressa* | Lecithotroph | Plan | 270 | 1.5 | Sessile | Hodgson 1985 |
| Cnidaria | Anthozoa | Semper's | Lecithotroph | Plan | 200 | 1 | Sessile | Hodgson 1985 |
| Cnidaria | Anthozoa | *Seriatopora hystrix* | Lecithotroph | Plan | 1500 | 3.33 | Sessile | Baird et al. 2014 |
| Cnidaria | Hydrozoa | *Laomedea flexuosa* | Lecithotroph | Plan | N/A | 0.4 | Sessile | Marfenin and Belorustseva 2008 |
| Cnidaria | Hydrozoa | Leptothecatid | Lecithotroph | Plan | 600 | 0.42 | Sessile | Chia et al. 1984 |
| Cnidaria | Schyphozoa | *Aurelia aurita* | Lecithotroph | Plan | ~200 | 2 | Motile | Conn 2000, Mayorova et al. 2012, Conley and Uye 2015 |
| Echinodermata | Asteroidea | *Asterias rubens* | Planktotroph | Blas | 140 | 0.04 | Motile | Montgomery et al. 2017 |
| Echinodermata | Asteroidea | *Asterias rubens* | Planktotroph | Bra | 350 | 0.48 | Motile | Montgomery et al. 2017 |
| Echinodermata | Asteroidea | *Asterias rubens* | Planktotroph | Gas | 200 | 0.38 | Motile | Montgomery et al. 2017 |
| Echinodermata | Asteroidea | *Crossaster papposus* | Lecithotroph | Blas | 600 | 0.15 | Motile | Montgomery et al. 2017 |
| Echinodermata | Asteroidea | *Crossaster papposus* | Lecithotroph | Bra | 1100 | 0.78 | Motile | Montgomery et al. 2017 |
| Echinodermata | Asteroidea | *Crossaster papposus* | Lecithotroph | Gas | 800 | 0.46 | Motile | Montgomery et al. 2017 |
| Echinodermata | Asteroidea | *Pteraster tesselatus* | Lecithotroph | Bilobed | 600 | 1 | Motile | Kelman and Emlet 1999 |
| Echinodermata | Asteroidea | *Pteraster tesselatus* | Lecithotroph | Gas | 1000 | 1.5 | Motile | Kelman and Emlet 1999 |
| Echinodermata | Echinoidea | *Arbacia punctulata* | Planktotroph | Plut4 | 130 | 0.75 | Motile | Wheeler et al. 2016 |
| Echinodermata | Echinoidea | *Arbacia punctulata* | Planktotroph | Plut6 | 176 | 0.95 | Motile | Wheeler et al. 2016 |
| Echinodermata | Echinoidea | *Dendraster excentricus* | Planktotroph | Gas | 115 | 0.97 | Motile | Rumrill and Chia 1985 |
| Echinodermata | Echinoidea | *Dendraster excentricus* | Planktotroph | Plut | 400 | 1 | Motile | Pennington and Emlet 1986 |
| Echinodermata | Echinoidea | *Dendraster excentricus* | Planktotroph | Plut | 400 | 0.84 | Motile | Rumrill and Chia 1985 |
| Echinodermata | Echinoidea | *Dendraster excentricus* | Planktotroph | Prism | 230 | 1.03 | Motile | Rumrill and Chia 1985 |
| Echinodermata | Echinoidea | *Hemicentrotus pulcherrimus* | Planktotroph | Gas | 100 | 0.2 | Motile | Mogami et al. 1988 |
| Echinodermata | Echinoidea | *Hemicentrotus pulcherrimus* | Planktotroph | Plut | 250 | 0.14 | Motile | Mogami et al. 1988 |
| Echinodermata | Echinoidea | *Paracentrotus lividus* | Planktotroph | Blas | 120 | 0.27 | Motile | Morgana et al. 2016 |
| Echinodermata | Echinoidea | *Paracentrotus lividus* | Planktotroph | Plut | 500 | 0.23 | Motile | Morgana et al. 2016 |
| Echinodermata | Echinoidea | *Strongylocentrotus droebachiensis* | Planktotroph | Bra | 200 | 0.19 | Motile | Montgomery et al. 2017 |
| Echinodermata | Echinoidea | *Strongylocentrotus droebachiensis* | Planktotroph | Gas | 250 | 0.35 | Motile | Montgomery et al. 2017 |
| Echinodermata | Echinoidea | *Strongylocentrotus droebachiensis* | Planktotroph | Plut | 800 | 0.3 | Motile | Montgomery et al. 2017 |
| Echinodermata | Echinoidea | *Strongylocentrotus purpuratus* | Planktotroph | Plut4 | 200 | 0.2 | Motile | Chan et al. 2015a; Chan et al. 2015b |
| Echinodermata | Echinoidea | *Strongylocentrotus purpuratus* | Planktotroph | Plut6 | 450 | 0.26 | Motile | Chan et al. 2015a; Chan et al. 2015b |
| Echinodermata | Holothuroidea | *Cucumaria frondosa* | Lecithotroph | Blas | 600 | 0.18 | Motile | Montgomery et al. 2017 |
| Echinodermata | Holothuroidea | *Cucumaria frondosa* | Lecithotroph | Gas | 650 | 0.21 | Motile | Montgomery et al. 2017 |
| Echinodermata | Holothuroidea | *Cucumaria frondosa* | Lecithotroph | Pen | 700 | 0.15 | Motile | Montgomery et al. 2017 |
| Echinodermata | Holothuroidea | *Psolus chitonoides* | Lecithotroph | Dol | 500 | 1.4 | Motile | McEuen and Chia 1991 |
| Echinodermata | Ophiuroidea | *Amphiura filiformis* | Planktotroph | Plut1 | 200 | 0.25 | Motile | Chan et al. 2015b |
| Echinodermata | Ophiuroidea | *Amphiura filiformis* | Planktotroph | Plut2 | 275 | 0.2 | Motile | Chan et al. 2015b |
| Echinodermata | Ophiuroidea | *Ophioderma brevispina* | Lecithotroph | Vit | 400 | 0.3 | Motile | Webb 1989 |
| Echinodermata | Ophiuroidea | *Ophiopholis aculeata* | Planktotroph | Plut | N/A | 0.1 | Motile | Webb 1989 |
| Mollusca | Bivalvia | *Acila castrensis* | Lecithotroph | N/A | 150 | 1.9 | Motile | Zardus and Morse 1998 |
| Mollusca | Bivalvia | *Arctica islandica* | Planktotroph | Vel | 160 | 0.75 | Motile | Mann and Wolf 1983; Chia et al. 1984 |
| Mollusca | Bivalvia | *Magallana gigas* | Planktotroph | Tro | 75 | 0.62 | Sedentary | Emlet 1990 |
| Mollusca | Bivalvia | *Mulinia lateralis* | Planktotroph | Pedi | N/A | 0.34 | Motile | Campos and Mann 1988 |
| Mollusca | Bivalvia | *Mulinia lateralis* | Planktotroph | Umbo | N/A | 0.49 | Motile | Campos and Mann 1988 |
| Mollusca | Bivalvia | *Mulinia lateralis* | Planktotroph | Vel | N/A | 0.25 | Motile | Campos and Mann 1988 |
| Mollusca | Bivalvia | *Mytilus edulis* | Planktotroph | Vel | 200 | 1.1 | Sedentary | Chia et al. 1984; Petersen 1984 |
| Mollusca | Bivalvia | *Pecten maximus* | Planktotroph | Vel | 300 | 10 | Sedentary | Beaumont and Budd 1983; Chia et al. 1984 |
| Mollusca | Bivalvia | *Rangia cuneata* | Planktotroph | Pedi | N/A | 0.45 | Motile | Campos and Mann 1988 |
| Mollusca | Bivalvia | *Rangia cuneata* | Planktotroph | Umbo | N/A | 0.49 | Motile | Campos and Mann 1988 |
| Mollusca | Bivalvia | *Rangia cuneata* | Planktotroph | Vel | N/A | 0.38 | Motile | Campos and Mann 1988 |
| Mollusca | Bivalvia | *Sinonovacula constricta* | Planktotroph | Pedi | 180 | 0.41 | Motile | Wang and Xu 1997 |
| Mollusca | Bivalvia | *Sinonovacula constricta* | Planktotroph | Vel | 130 | 0.48 | Motile | Wang and Xu 1997 |
| Mollusca | Bivalvia | *Spisula solidissima* | Planktotroph | Pedi | N/A | 0.4 | Motile | Campos and Mann 1988 |
| Mollusca | Bivalvia | *Spisula solidissima* | Planktotroph | Umbo | N/A | 0.4 | Motile | Campos and Mann 1988 |
| Mollusca | Bivalvia | *Spisula solidissima* | Planktotroph | Vel | N/A | 0.26 | Motile | Campos and Mann 1988 |
| Mollusca | Bivalvia | *Teredo pedicellatus* | Planktotroph | Vel | 60 | 7.5 | Motile | Chia et al. 1984; Wurzinger-Mayer et al. 2014 |
| Mollusca | Gastropoda | *Alderia modesta* | Lecithotroph | Vel | 190 | 1.2 | Motile | Krug and Zimmer 2000 |
| Mollusca | Gastropoda | *Alderia modesta* | Lecithotroph | Vel | 190 | 1.14 | Motile | Krug and Zimmer 2004 |
| Mollusca | Gastropoda | *Alderia modesta* | Planktotroph | E.Vel | 126 | 0.94 | Motile | Krug and Zimmer 2004 |
| Mollusca | Gastropoda | *Alderia modesta* | Planktotroph | Vel | 190 | 1.14 | Motile | Krug and Zimmer 2004 |
| Mollusca | Gastropoda | *Bathynerita naticoidea* | Planktotroph | N/A | N/A | 1.6 | Motile | Gaest and Lea 2006 |
| Mollusca | Gastropoda | *Crepidula fornicata* | Planktotroph | Vel | N/A | 1.5 | Motile | Hilbish et al. 1999 |
| Mollusca | Gastropoda | *Crepipatella peruviana* | Planktotroph | Vel | N/A | 0.64 | Motile | Montory et al. 2014 |
| Mollusca | Gastropoda | *Dendronotus sp.* | Planktotroph | Vel | 200 | 0.6 | Motile | Chia et al. 1984; Sisson 2005 |
| Mollusca | Gastropoda | *Littorina littorea* | Planktotroph | Vel | 100 | 1.3 | Motile | Fish and Fish 1977; Chia et al. 1984 |
| Mollusca | Gastropoda | *Tenellia sibogae* | Lecithotroph | N/A | 150 | 3 | Motile | Miller and Hadfield 1986 |
| Mollusca | Gastropoda | *Tenellia sibogae* | Lecithotroph | N/A | 150 | 2.41 | Motile | Miller 1993 |
| Mollusca | Polyplacophora | *Mopalia ciliata* | Lecithotroph | Tro | 400 | 1.6 | Sedentary | Rebolledo 2014 |
| Mollusca | Polyplacophora | *Mopalia kennerleyi* | Lecithotroph | Tro | 310 | 1.17 | Sedentary | Rebolledo and Emlet 2015 |
| Mollusca | Polyplacophora | *Tonicella marmorea* | Planktotroph | Tro | N/A | 2.3 | Sedentary | Chia et al. 1984 |
| Porifera | Demospongiae | *Cacospongia mollior* | Lecithotroph | Par | 650 | 32 | Sessile | Uriz et al. 2008 |
| Porifera | Demospongiae | *Carteriospongia foliascens* | Lecithotroph | Par | 850 | 4.3 | Sessile | Wahab et al. 2014 |
| Porifera | Demospongiae | *Coscinoderma matthewsi* | Lecithotroph | Par | 572 | 45 | Sessile | Wahab et al. 2011 |
| Porifera | Demospongiae | *Halichondria magniconulosa* | Lecithotroph | Par | 629 | 1.9 | Sessile | Maldonado and Young 1996 |
| Porifera | Demospongiae | *Halichondria melandocia* | Lecithotroph | Par | 320 | 2 | Sessile | Maldonado and Young 1996 |
| Porifera | Demospongiae | *Haliclona caerulea* | Lecithotroph | Par | 760 | 3.4 | Sessile | Maldonado and Young 1996 |
| Porifera | Demospongiae | *Haliclona tubifera* | Lecithotroph | Par | 315 | 2.8 | Sessile | Woollacott 1993 |
| Porifera | Demospongiae | *Reneira sp.* | Lecithotroph | Par | 300 | 1.8 | Sessile | Leys and Degnan 2001 |
| Porifera | Demospongiae | *Rhopaloeides odorabile* | Lecithotroph | Par | 275 | 4 | Sessile | Whalan et al. 2008 |
| Porifera | Demospongiae | *Scopalina lophyropoda* | Lecithotroph | Par | 1000 | 15 | Sessile | Uriz et al. 2008 |
| Porifera | Demospongiae | *Tedania ignis* | Lecithotroph | Par | 820 | 9 | Sessile | Maldonado and Young 1996 |

N/A: Data not available.

1 Nutritional modes defined based on Poulin et al. (2001).

2 Prefixe L = late. Annelid life stages include: trochophore (tro), metatrochophore (meta) and numbered stages. Cnidarian life stages include: planula (pla). Echinoderm life stages include: blastula (blas), gastrula (gas), brachiolaria (bra), pluteus (plut) with arm number indicated, pentactula (pen) and vitellaria (vit). Mollusca life stages include: veliger (vel), trochophore (tro). Poriferan life stages include: parenchymella (par).

3 *Sessile* adults are incapable of movement, *sedentary* adults have the capacity to move but do so rarely and *motile* adults move readily and often.

# Appendix References

**Anderson D.** (1959) The embryology of the polychaete *Scoloplos armiger*. *Journal of Cell Science*, **3**(49), 89-166.

**Baird A.H., Cumbo V.R., Figueiredo J., Harii S., Hata T. and Madin J.S.** (2014) Comment on “Chemically mediated behavior of recruiting corals and fishes: A tipping point that may limit reef recovery”. *PeerJ*, **2**, e628v621.

**Bass N. and Brafield A.** (1972) The life-cycle of the polychaete *Nereis virens*. *Journal of the Marine Biological Association of the United Kingdom*, **52**(3), 701-726.

**Beaumont A. and Budd M.** (1983) Effects of self-fertilisation and other factors on the early development of the scallop *Pecten maximus*. *Marine Biology*, **76**(3), 285-289.

**Blake J.A.** (1975) The larval development of polychaeta from the northern California Coast. III eighteen species of errantia. *Ophelia*, **14**(1-2), 23-84.

**Brooke S. and Young C.** (2005) Embryogenesis and larval biology of the ahermatypic scleractinian *Oculina varicosa*. *Marine Biology*, **146**(4), 665-675.

**Brooke S. and Young C.M.** (2003) Reproductive ecology of a deep-water scleractinian coral, *Oculina varicosa*, from the southeast Florida shelf. *Continental Shelf Research*, **23**(9), 847-858.

**Campos B. and Mann R.** (1988) Discocilia and paddle cilia in the larvae of *Mulinia lateralis* and *Spisula solidissima* (Mollusca: Bivalvia). *Biological Bulletin*, **175**(3), 343-348.

**Chan K.Y.K., García E. and Dupont S.** (2015a) Acidification reduced growth rate but not swimming speed of larval sea urchins. *Scientific Reports*, **5**.

**Chan K.Y.K., Grünbaum D., Arnberg M. and Dupont S.** (2015b) Impacts of ocean acidification on survival, growth, and swimming behaviours differ between larval urchins and brittlestars. *ICES Journal of Marine Science*, **73**(3), 951-961.

**Chia F.S., Buckland J. and Young C.M.** (1984) Locomotion of marine invertebrate larvae - A review. *Canadian Journal of Zoology*, **62**(7), 1205-1222.

**Conley K. and Uye S.-i.** (2015) Effects of hyposalinity on survival and settlement of moon jellyfish (*Aurelia aurita*) planulae. *Journal of Experimental Marine Biology and Ecology*, **462**, 14-19.

**Daly J., Evans S. and Morley J.** (1972) Changes in behaviour associated with pair formation in the polychaete *Harmothoë imbricata* (L.). *Marine and Freshwater Behaviour and Physiology*, **1**(1-4), 49-69.

**Duchêne J.-C.** (2004) Early recognition of sediment during settlement of *Eupolymnia nebulosa* (Polychaeta: Terebellidae) larvae. *Marine Biology*, **145**(1), 79-85.

**Emlet R.B.** (1990) Flow fields around ciliated larvae: effects of natural and artificial tethers. *Marine Ecology Progress Series*, 211-225.

**Fish J. and Fish S.** (1977) The veliger larva of *Hydrobia ulvae* with observations on the veliger of *Littorina littorea* (Mollusca: Prosobranchia). *Journal of Zoology*, **182**(4), 495-503.

**Gaest V. and Lea A.** (2006) *Ecology and early life history of Bathynerita naticoidea: evidence for long-distance larval dispersal of a cold seep gastropod*. University of Oregon, Oregon, USA.

**Gleason D., Danilowicz B. and Nolan C.** (2009) Reef waters stimulate substratum exploration in planulae from brooding Caribbean corals. *Coral Reefs*, **28**(2), 549-554.

**Hansen B.W., et al.** (2010) Swimming behavior and prey retention of the polychaete larvae Polydora ciliata (Johnston). *Journal of Experimental Biology*, **213**(18), 3237-3246.

**Harii S., Kayanne H., Takigawa H., Hayashibara T. and Yamamoto M.** (2002) Larval survivorship, competency periods and settlement of two brooding corals, *Heliopora coerulea* and *Pocillopora damicornis*. *Marine Biology*, **141**(1), 39-46.

**Hilbish T.J., Sasada K., Eyster L.S. and Pechenik J.A.** (1999) Relationship between rates of swimming and growth in veliger larvae: genetic variance and covariance. *Journal of Experimental Marine Biology and Ecology*, **239**(2), 183-193.

**Hodgson G.** (1985) Abundance and distribution of planktonic coral larvae in Kaneohe Bay, Oahu, Hawaii. *Marine Ecology Progress Series*, 61-71.

**Kelman D. and Emlet R.B.** (1999) Swimming and bouyancy in ontogenetic stages of the cushion star *Pteraster tesselatus* (Echinodermata: Asteroidea) and their implications for distribution and movement. *Biological Bulletin*, **197**, 309-314.

**Krug P.J. and Zimmer R.K.** (2000) Developmental dimorphism and expression of chemosensory-mediated behavior: habitat selection by a specialist marine herbivore. *Journal of Experimental Biology*, **203**(11), 1741-1754.

**Krug P.J. and Zimmer R.K.** (2004) Developmental dimorphism: consequences for larval behavior and dispersal potential in a marine gastropod. *Biological Bulletin*, **207**(3), 233-246.

**Kwok C. and Ang P.** (2013) Inhibition of larval swimming activity of the coral (*Platygyra acuta*) by interactive thermal and chemical stresses. *Marine Pollution Bulletin*, **74**(1), 264-273.

**Larsson A.I., Järnegren J., Strömberg S.M., Dahl M.P., Lundälv T. and Brooke S.** (2014) Embryogenesis and larval biology of the cold-water coral *Lophelia pertusa*. *PLoS One*, **9**(7), e102222.

**Leung Y.S., et al.** (2013) Physiological and behavioural responses of different life stages of a serpulid polychaete to hypoxia. *Marine Ecology Progress Series*, **477**, 135-145.

**Leys S.P. and Degnan B.M.** (2001) Cytological basis of photoresponsive behavior in a sponge larva. *Biological Bulletin*, **201**(3), 323-338.

**Maldonado M. and Young C.M.** (1996) Effects of physical factors on larval behavior, settlement and recruitment of four tropical demosponges. *Marine Ecology Progress Series*, 169-180.

**Mann R. and Wolf C.C.** (1983) Swimming behaviour of larvae of the ocean quahog *Arctica islandica* in response to pressure and temperature. *Marine Ecology Progress Series*, 211-218.

**Marfenin N. and Belorustseva S.** (2008) How the distribution of colonies of the hydroid *Laomedea flexuosa* is limited to a narrow belt along the lower littoral zone. *Journal of the Marine Biological Association of the United Kingdom*, **88**(8), 1559-1566.

**Marsden J.** (1984) Swimming in response to light by larvae of the tropical serpulid *Spirobranchus giganteus*. *Marine Biology*, **83**(1), 13-16.

**Marsden J.R.** (1994) Vertical movements and distribution of planktonic larvae of the serpulid polychaete *Spirobranchus polycerus* (Schmarda); effects of changes in hydrostatic pressure. *Journal of Experimental Marine Biology and Ecology*, **176**(1), 87-105.

**Martínez-Quintana A., Bramanti L., Viladrich N., Rossi S. and Guizien K.** (2015) Quantification of larval traits driving connectivity: the case of *Corallium rubrum* (L. 1758). *Marine Biology*, **162**(2), 309-318.

**McEuen F.S. and Chia F.S.** (1991) Development and metamorphosis of two psolid sea cucumbers, *Psolus chitonoides* and *Psolidium bullatum*, with a review of reproductive patterns in the family Psolidae (Holothuroidea: Echinodermata). *Marine Biology*, **109**(2), 267-279.

**Miller S.E.** (1993) Larval period and its influence on post-larval life history: Comparison of lecithotrophy and facultative planktotrophy in the aoelid nudibranch *Phestilla sibogae*. *Marine Biology*, **117**, 635-645.

**Miller S.E. and Hadfield M.G.** (1986) Ontogeny of phototaxis and metamorphic competence in larvae of the nudibranch *Phestilla sibogae* Bergh (Gastropoda: Opisthobranchia). *Journal of Experimental Marine Biology and Ecology*, **97**(1), 95-112.

**Mogami Y., Oobayashi C., Yamaguchi T., Ogiso Y. and Baba S.A.** (1988) Negative geotaxis in sea urchin larvae: a possible role of mechanoreception in the late stages of development. *Journal of Experimental Biology*, **137**(1), 141-156.

**Montgomery E.M., Hamel J.-F. and Mercier A.** (2017) Ontogenetic shifts in swimming capacity of echinoderm propagules: A comparison of species with planktotrophic and lecithotrophic larvae. *Marine Biology*, **164**, 43.

**Montory J.A., Pechenik J.A., Diederich C.M. and Chaparro O.R.** (2014) Effects of low salinity on adult behavior and larval performance in the intertidal gastropod *Crepipatella peruviana* (Calyptraeidae). *PLoS One*, **9**(7), e103820.

**Morgana S., Gambardella C., Falugi C., Pronzato R., Garaventa F. and Faimali M.** (2016) Swimming speed alteration in the early developmental stages of *Paracentrotus lividus* sea urchin as ecotoxicological endpoint. *Marine Environmental Research*, **115**, 11-19.

**Mundy C.N. and Babcock R.C.** (1998) Role of light intensity and spectral quality in coral settlement: Implication for depth-dependent settlement? *Journal of Experimental Marine Biology and Ecology*, **223**, 235-255.

**Pennington J.T. and Emlet R.B.** (1986) Ontogenetic and diel vertical migration of a planktonic echinoid larva, *Dendraster excentricus*: Occurence, causes, and probable consequences. *Journal of Experimental Marine Biology and Ecology*, **104**, 69-95.

**Petersen J.H.** (1984) Larval settlement behavior in competing species: *Mytilus californianus* Conrad and *M. edulis*. *Journal of Experimental Marine Biology and Ecology*, **82**(2-3), 147-159.

**Pizarro V. and Thomason J.** How do swimming ability and behaviour affect the dispersal of coral larvae. *Proceedings of the Proceedings of the 11th International Coral Reef Symposium, Fort Lauderdale, Florida, 7, 2008.* pp. 464-467.

**Plate S. and Husemann E.** (1994) Identification guide to the planktonic polychaete larvae around the island of Helgoland (German Bight). *Helgoländer Meeresuntersuchungen*, **48**(1), 1.

**Rebolledo A., Velarde M. and Lu X.** (2014) *Swimming velocities and patterns of Bugula californica larvae through the early stages of development*. University of Washington, Friday Harbour.

**Rebolledo A.P.** (2014) *Hull flotation function in the eggs of Mopalia ciliata (Chitonida: Mopaliidae) and swimming of its larvae through ontogeny*. University of Washington, Friday Harbour.

**Rebolledo A.P. and Emlet R.B.** (2015) The parachute function of the hull in eggs of *Mopalia kennerleyi* (Chitonida: Mopaliidae), and swimming of its larvae through ontogeny. *Invertebrate Biology*, **134**(1), 31-37.

**Rumrill S. and Chia F.** (1985) Differential mortality during the embryonic and larval lives of northeast Pacific echinoids. In Keegan B. and O'Connor B. (eds) *Echinodermata.* Rotterdam, Netherlands: CRC Press pp 333-338.

**Scott A. and Harrison P.L.** (2007) Embryonic and larval development of the host sea anemones *Entacmaea quadricolor* and *Heteractis crispa*. *Biological Bulletin*, **213**(2), 110-121.

**Sisson C.G.** (2005) Veligers from the nudibranch *Dendronotus frondosus* show shell growth and extended planktonic period in laboratory culture. *Hydrobiologia*, **541**(1), 205-213.

**Tranter P.R.G., Nicholson D.N. and Kinchington D.** (1982) A description of spawning and post-gastrula development of the cool temperate coral, *Caryophyllia smithi*. *Journal of the Marine Biological Association of the United Kingdom*, **62**(4), 845-854.

**Uriz M.J., Turon X. and Mariani S.** (2008) Ultrastructure and dispersal potential of sponge larvae: tufted versus evenly ciliated parenchymellae. *Marine Ecology*, **29**(2), 280-297.

**Vermeij M., Fogarty N.D. and Miller M.** (2006) Pelagic conditions affect larval behavior, survival, and settlement patterns in the Caribbean coral *Montastraea faveolata*. *Marine Ecology Progress Series*, **310**, 119-128.

**Vermeij M., Sampayo E., Bröker K. and Bak R.** (2003) Variation in planulae release of closely related coral species. *Marine Ecology Progress Series*, **247**, 75-84.

**Wahab M.A., de Nys R. and Whalan S.** (2011) Larval behaviour and settlement cues of a brooding coral reef sponge. *Coral Reefs*, **30**(2), 451-460.

**Wahab M.A.A., de Nys R., Webster N. and Whalan S.** (2014) Larval behaviours and their contribution to the distribution of the intertidal coral reef sponge *Carteriospongia foliascens*. *PLoS One*, **9**(5), e98181.

**Wang W.-X. and Xu Z.-Z.** (1997) Larval swimming and postlarval drifting behavior in the infaunal bivalve *Sinonovacula constricta*. *Marine Ecology Progress Series*, 71-81.

**Ward L.A., Montagna P.A., Kalke R.D. and Buskey E.J.** (2000) Sublethal effects of Texas brown tide on *Streblospio benedicti* (Polychaeta) larvae. *Journal of Experimental Marine Biology and Ecology*, **248**(1), 121-129.

**Webb C.M.** Larval swimming and substrate selection in the brittle star *Ophioderma brevispinum Proceedings of the 23rd European Marine Biology Symposium, School of Biological Sciences, University of Wales, Swansea, 1989.* Olsen & Olsen, pp. 217.

**Weinberg S. and Weinberg F.** (1979) The life cycle of a gorgonian: *Eunicella singularis*. *Bijdragen Tot de Dierkunde*, **48**(2), 127-140.

**Wendt D.E.** (2000) Energetics of larval swimming and metamorphosis in four species of *Bugula* (Bryozoa). *Biological Bulletin*, **198**(3), 346-356.

**Whalan S., Ettinger-Epstein P., Battershill C. and de Nys R.** (2008) Larval vertical migration and hierarchical selectivity of settlement in a brooding marine sponge. *Marine Ecology Progress Series*, **368**, 145-154.

**Wheeler J.D., Chan K.Y.K., Anderson E.J. and Mullineaux L.S.** (2016) Ontogenetic changes in larval swimming and orientation of pre-competent sea urchin *Arbacia punctulata* in turbulence. *Journal of Experimental Biology*, **219**(9), 1303-1310.

**Woollacott R.M.** (1993) Structure and swimming behavior of the larva of *Haliclona tubifera* (Porifera: Demospongiae). *Journal of Morphology*, **218**(3), 301-321.

**Wurzinger-Mayer A., Shipway J.R., Kristof A., Schwaha T., Cragg S.M. and Wanninger A.** (2014) Developmental dynamics of myogenesis in the shipworm *Lyrodus pedicellatus* (Mollusca: Bivalvia). *Frontiers in Zoology*, **11**(1), 90.

**Zardus J.D. and Morse M.P.** (1998) Embryogenesis, morphology and ultrastructure of the pericalymma larva of *Acila castrensis* (Bivalvia: Protobranchia: Nuculoida). *Invertebrate Biology*, 221-244.

**Zimmer R.L. and Woollacott R.M.** (1993) Anatomy of the larva of *Amathia vidovici* (Bryozoa: Ctenostomata) and phylogenetic significance of the vesiculariform larva. *Journal of Morphology*, **215**(1), 1-29.