**Table S1.** Effects of combined elevated temperature and decreased pH experimental seawater conditions on reproductive scenarios of marine invertebrates in comparison to those under ambient conditions.

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| --- | --- | --- | --- | --- | --- | --- |
| **Taxa** | **Location** | **Life-stages** | **Stressors** | **Exposure time** | **Response in comparison to control seawater conditions** | **Reference** |
| Stony coral *Stylophora pistillata* | Gulf of Aqaba, Israel | Parental colonies and their planulae | SW + 5°C; -0.4 pH units | Adults: 33 days,  Planulae: 12,24, and 36 h | Similar physiology parameters  Similar settlement rate | Bellworthy et al. (2019) |
| Stony coral  *Pocillopora damicornis* | Luhuitou, South China Sea | Planulae and primary polyp | SW + 2°C; -0.2 pH units | 3 weeks | Similar asexual budding rate Increased calcification and lateral growth rates | Jiang et al. (2018) |
| Stony coral  *Pocillopora damicornis* | Hawaii | Parental colonies and their planulae | SW + 2.5°C; -0.2 pH units | Adults: 6 weeks, Planulae: 5 days | Reduced planulae size  Similar metabolic rates | Putnam and Gates (2015) |
| Stony coral  *Porites astreoides* | Lower Florida Keys, USA | Planulae | SW + 2.5°C; -0.5 pH units | 72 h | Similar survival and settlement rates  Similar fv/fm  Increased lipid peroxidation | Olsen, Paul et al. (2015) |
| Stony corals *Acropora tenuis*, *A. millepora* | Great Barrier Reef, Australia | Gamete, embryo and 7-day old planulae | SW + 3°C; -0.15 pH units | Fertilization: 2 h  Embryogenesis: 96 h, survival: 14 days, metamorphosis: 24h | Equal rates of fertilization, embryo development, survivorship and metamorphosis | Chua et al. (2013) |
| Stony coral  *Pocillopora damicornis* | Nanwan Bay, Taiwan | Planulae | SW + 4°C; -0.2 pH units | 9 days | Increased survival (%), Equal rates of fv/fm, respiration rates, and planulae size | Putnam et al. (2013) |
| Stony coral *Porites panamensis* | Taboga, Panama | Planulae | SW + 1°C; -0.2 pH units | Planula settlement: 10 days Primary polyp: 42 days | Reduced primary polyp growth Similar planulae survival and settlement rates | Anlauf, D’Croz  et al. (2011) |
| Sea urchin  *Paracentrotus lividus* | Canary Islands | Larvae | SW + 1.5°C, +2.5°C; -0.4, 0.7 pH units | 1 month | Warming mitigated negative effects of acidification on larval development and settlement | García, Clemente et al. (2015) |
| Sea urchin  *Tripneustes gratilla* | New South  Wales, Australia | Larvae | SW + 3°C, +6°C; -0.3, 0.5 pH units | 5 days | Warming mitigated negative effect of acidification on larval growth | Sheppard Brennand et al. (2010) |
| Sea urchins  *Heliocidaris erythrogramma*,  *H. tuberculata*, *Tripneustes gratilla*, *Centrostephanus rodgersii*  Gastropod snail  *Haliotis coccoradiata* | New South  Wales, Australia | Gamete | SW + 4°C, +6°C; -0.3-0.6 pH units | 4 days | Similar fertilization (%) among all species across all treatments | Byrne et al. (2010) |
| Sea star *Patiriella regularis* | Tasmania, Australia |  |  |  |  |  |
| Sea urchin *Heliocidaris erythrogramma* | Sydney, Australia | Gamete and embryo | SW + 4°C, +6°C; -0.3-0.6 pH units | 4 days | Similar fertilization (%) among adults  Temperature had a significant effect on embryo developmental failure, regardless of pH | Byrne et al. (2009) |
| Oyster  *Saccostrea glomerate,*  *Crassostrea gigas* | New South  Wales, Australia | Gamete and embryo | SW + 4°C, +6°C; -0.1-0.4 pH units |  | Decreased fertilization (%) at elevated pCO2 and suboptimal temperature  Decreased embryo development under increased pCO2 and suboptimal temperature | Parker, Ross et al. (2010) |