

## Multi-species collapses at the warm edge of a warming sea

Gil Rilov

**Table S1** List of mollusca species annotated as common or vary common in Barash and Danin (1992) publication and their present day status.

| Class    | Family     | Species                   | Vertical distribution zone<br>From Barash and Danin 1982 | Global distribution from<br>Darash and Danin 1982                                                                                                                                                            | Native\ Non-native | Described abundance<br>(Barash and Danin 1982) | Currant abundance<br>(Rilov Lab data) | latest year of live record  |
|----------|------------|---------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------|---------------------------------------|-----------------------------|
| Bivalvia | Anomiidae  | <i>Anomia ephippium</i>   | Intertidal zone,<br>Infralittoral zone                   | Mediterranean (east, west),<br>East Atlantic (Iceland,<br>Norway, British Is., France,<br>Spain, Portugal, Morocco,<br>Senegal, guinea, Gabon,<br>south Africa, Madeira, Cape<br>Verde Is. , sea of Marmara. | Native             | common                                         | not found                             | Ashdod,<br>30.01.2012       |
| Bivalvia | Arcidae    | <i>Arca noae</i>          | Intertidal, subtidal<br>(3-91 m)                         | Mediterranean (east, west),<br>Sea of Marmara, East<br>Atlantic (Spain-Angola-<br>Canaries)                                                                                                                  | Native             | common                                         | not found                             | <1999                       |
| Bivalvia | Arcidae    | <i>Barbatia barbata</i>   | Intertidal, subtidal<br>(2-27 m)                         | Mediterranean (east, west),<br>Sea of Marmara, East<br>Atlantic (Spain to -<br>Morocco, Cape Verde<br>Island)                                                                                                | Native             | very common                                    | rare (on<br>rocks)                    | <1999                       |
| Bivalvia | Carditidae | <i>Cardita calyculata</i> | Intertidal, subtidal<br>(3-91 m)                         | Mediterranean (east, west),<br>East Atlantic (Spain-<br>Morocco-Canaries)                                                                                                                                    | Native             | common                                         | rare                                  | Hadera Power<br>Plant, 2005 |
| Bivalvia | Carditidae | <i>Glans trapezia</i>     | Intertidal, subtidal<br>(18-79 m)                        | Mediterranean (east, west),<br>East Atlantic (Spain-<br>Portugal)                                                                                                                                            | Native             | common                                         | not found                             | Segavyon I.,<br>18.10.2004  |

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| Bivalvia | Chamidae  | <i>Chama gryphoides</i>          | Intertidal, subtidal<br>(4-200 m)      | Mediterranean (east, west),<br>East Atlantic (French-<br>Morocco-Canaries)                                                                                                                                                | Native         | common               | not found      | Ashdod,<br>30.01.2012     |
| Bivalvia | Limidae   | <i>Lima (Lima) lima</i>          | Intertidal, subtidal<br>(2-63 m)       | Mediterranean (east, west),<br>East Atlantic (Spain to<br>Morocco, Canaries), West<br>Atlantic (Florida- West<br>Indies), Indian Ocean (Gulf<br>of Suez, Red Sea, East<br>Africa) Pacific Ocean<br>(Japan, New Caledonia) | Native         | common               | not found      | <1999                     |
| Bivalvia | Malleidae | <i>Malvufundus<br/>regulus *</i> | Intertidal, subtidal<br>(2-96 m)       | Mediterranean (east),<br>Lebanon, Syria, Cyprus,<br>South Turkey, Hawaii, Suez<br>channel                                                                                                                                 | Non-<br>native | common               | very<br>common | Sedot Yam,<br>06.2012     |
| Bivalvia | Mytilidae | <i>Gregariella<br/>petagnae</i>  | Intertidal zone,<br>infralittoral zone | Mediterranean (east, west),<br>East Atlantic (France-Spain-<br>Portugal, Morocco,<br>Senegal, Guinea), Alboran<br>sea                                                                                                     | Native         | Moderately<br>common | not found      | N/A                       |
| Bivalvia | Mytilidae | <i>Lithophaga<br/>lithophaga</i> | Intertidal zone,<br>Infralittoral zone | Mediterranean (east, west),<br>East Atlantic (France-Spain-<br>Portugal, Morocco,<br>Senegal, ), Indo pacific :<br>Aden, Persian Gulf                                                                                     | Native         | very common          | common         | Akko, 24.06.2012          |
| Bivalvia | Mytilidae | <i>Modiolus barbatus</i>         | Intertidal zone,<br>Infralittoral zone | Mediterranean (east, west),<br>East Atlantic (France-Spain-<br>Portugal, Morocco,<br>Senegal, Cape Verde Is. ),<br>Black sea, sea of Marmara.                                                                             | Native         | very common          | not<br>common  | Tel Baruch,<br>25.01.2012 |

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| Bivalvia | Mytilidae   | <i>Mytilaster minimus</i>           | Intertidal zone, infralittoral fringe | Mediterranean (east, west), East Atlantic (France-Spain-Portugal, Morocco), Alboran sea                                                                                       | Native     | very common | not common  | Tel Baruch, 20.12.2012;         |
| Bivalvia | Mytilidae   | <i>Brachidontes pharaonis</i> *     | Intertidal                            | Mediterranean (east, west), Indo-Pacific (Suez canal and bays, Aqaba, Red Sea, Gulf of Aden, Somalia, Southern Africa, Natal, Cape of good Hope, Madagascar, Australia)       | Non-native | common      | very common | Everywhere                      |
| Bivalvia | Noetiidae   | <i>Striarca lactea</i>              | Intertidal, subtidal (5-192 m)        | Mediterranean (east, west), Black Sea, East Atlantic (British Isle-Cape of good Hope), Indian Ocean (India, Red Sea)                                                          | Native     | very common | very common | Commonly encountered everywhere |
| Bivalvia | Ostreidae   | <i>Ostrea edulis</i>                | Intertidal, subtidal (2-31 m)         | Mediterranean (east, west), Black Sea, Sea of Marmara, East Atlantic (Norway-Morocco)                                                                                         | Native     | very common | not found   | <1999                           |
| Bivalvia | Pectinidae  | <i>Chlamys multistriata</i>         | Intertidal, subtidal (113-180 m)      | Mediterranean (east, west), Sea of Marmara, East Atlantic (Norway-Senegal)                                                                                                    | Native     | very common | not found   | <1999                           |
| Bivalvia | Pteriidae   | <i>Pinctada imbricata radiata</i> * | Intertidal, subtidal (2-69 m)         | Mediterranean (east, west), IndoPacific (Red Sea, Gulf of Eilat and Suez, Persian Gulf, Somalia, Madagascar, South Africa, New Guinea, Hawaii Islands, Australia, New Zealand | Non-native | very common | common      | Nahsholim, 20.12.2012           |
| Bivalvia | Spondylidae | <i>Spondylus gaederopus</i>         | Subtidal (7-20 m)                     | Mediterranean (east, west), East Atlantic (Portugal - Gianna, Canaries)                                                                                                       | Native     | very common | not found   | <1999                           |

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| Bivalvia   | Veneridae   | <i>Dosinia lupinus</i>                  | Subtidal (5-85 m)                             | Mediterranean (east, west),<br>Sea of Marmara, East<br>Atlantic (Iceland- Ivory<br>Coast, Canaries)                               | Native         | common      | not found      | N/A                                         |
| Bivalvia   | Veneridae   | <i>Petricola<br/>lithophaga</i>         | Intertidal,<br>Infralittoral zone<br>(to 6 m) | Mediterranean (east, west),<br>East Atlantic ( British Is.,<br>France, Spain, Portugal,<br>Morocco) black sea , sea of<br>Marmara | Native         | common      | not found      | Haifa Power<br>Station Inlet,<br>27.06.2005 |
| Gastropoda | Aplysiidae  | <i>Aplysia fasciata</i>                 | Intertidal, subtidal<br>(9-24 m)              | Mediterranean (east, west),<br>East Atlantic (England-<br>Angola), IndoPacific (Gulf of<br>Aqaba-Red Sea)                         | Native         | common      | not<br>common  | N/A                                         |
| Gastropoda | Buccinidae  | <i>Pisania striata</i>                  | Intertidal                                    | Mediterranean (east, west),<br>Sea of Marmara, East<br>Atlantic (Spain-Morocco)                                                   | Native         | very common | common         | Tel Baruch,<br>17.08.2012                   |
| Gastropoda | Buccinidae  | <i>Pollia dorbigny</i>                  | Intertidal, subtidal<br>(7-37 m)              | Mediterranean (east, west),<br>East Atlantic (Spain-<br>Republic of Ghana)                                                        | Native         | common      | not found      | Shikmona,<br>09.05.2003                     |
| Gastropoda | Cerithiidae | <i>Bittium reticulatum</i>              | Subtidal (not<br>mentioned on<br>rocks)       | Mediterranean (east, west),<br>East Atlantic (Norway to<br>Morocco and the islands)                                               |                | very common | very<br>common | N/A                                         |
| Gastropoda | Cerithiidae | <i>Cerithium<br/>scabridum *</i>        | Intertidal                                    | Mediterranean (east, west),<br>IndoPacific (Red Sea, Gulf<br>of Eilat and Suez -Persian<br>Gulf- South India)                     | Non-<br>native | very common | very<br>common | Tel Baruch,<br>17.08.2012                   |
| Gastropoda | Cerithiidae | <i>Cerithium<br/>vulgatum Bruguière</i> | Intertidal, subtidal<br>(to 2 m)              | Mediterranean (east, west),<br>East Atlantic (Spain-<br>Morocco, Canaries)                                                        | Native         | very common | not found      | <1999                                       |

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| Gastropoda | Chromodorididae | <i>Felimare picta</i>       | Intertidal, subtidal (2-46 m)  | Mediterranean (east, west), East Atlantic (Spain, French, Canaries-Gianna)         | Native     | common      | common     | N/A                    |
| Gastropoda | Cloumbellidae   | <i>Mitrella scripta</i>     | Intertidal, subtidal (46-91 m) | Mediterranean (east, west), Sea of Marmara, East Atlantic (Spain-Morocco-Madeira)  | Native     | common      | not found  | N/A                    |
| Gastropoda | Fascioliariidae | <i>Fasciolaria lignaria</i> | Intertidal, subtidal (to 3m)   | Mediterranean (endemic)                                                            | Native     | common      | not found  | <1999                  |
| Gastropoda | Fissurellidae   | <i>Diodora gibberula</i>    | Intertidal                     | Mediterranean (east, west), Black Sea, East Atlantic (Spain-Cape Verde)            | Native     | common      | not found  | Bat Yam, 21.02.2002    |
| Gastropoda | Fissurellidae   | <i>Diodora graeca</i>       | Intertidal, subtidal (to 75 m) | Mediterranean (east, west), Black Sea, East Atlantic (England - Canaries)          | Native     | common      | not found  | <1999                  |
| Gastropoda | Fissurellidae   | <i>Diodora italica</i>      | Intertidal                     | Mediterranean (endemic)                                                            | Native     | common      | not found  | Tel Baruch, 25.03.2013 |
| Gastropoda | Fissurellidae   | <i>Diodora ruppellii</i> *  | Intertidal, subtidal (to 70 m) | Mediterranean, IndoPacific                                                         | Non-native | common      | not common | Apolonia, 21.02.2012   |
| Gastropoda | Fissurellidae   | <i>Emarginella huzardii</i> | subtidal (18-42 m)             | Mediterranean (east, west), East Atlantic (Morocco, Canaries)                      | Native     | common      | not found  | <1999                  |
| Gastropoda | Fissurellidae   | <i>Emarginula octavia</i>   | Intertidal, subtidal (22-55 m) | Mediterranean (east, west), East Atlantic (Morocco, Canaries), IndoPacific (India) | Native     | common      | not found  | <1999                  |
| Gastropoda | Fissurellidae   | <i>Fissurella nubecula</i>  | Intertidal                     | Mediterranean (east, west), East Atlantic                                          | Native     | very common | not common | Apollonia, 31.03.2010  |
| Gastropoda | Fossaridae      | <i>Fossarus ambiguus</i>    | Intertidal                     | Mediterranean (east, west), East Atlantic (French-Angola)                          | Native     | common      | not found  | N/A                    |

|            |               |                                       |                                |                                                                                                                                                                         |            |             |             |                             |
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| Gastropoda | Haliotidae    | <i>Haliotis tuberculata lamellosa</i> | Intertidal, subtidal (to 23 m) | Mediterranean (east, west), East Atlantic (Spain to Morocco, Canaries)                                                                                                  | Native     | common      | not found   | <1999                       |
| Gastropoda | Lamellariidae | <i>Lamellaria perspicua</i>           | Intertidal,                    | Mediterranean (east, west), East Atlantic (Iceland, Norway- Senegal, South Africa), West Atlantic (Florida, Caribbean, Brazil, Patagonia), East Pacific (Mexico, Chile) | Native     | common      | not found   | <1999                       |
| Gastropoda | Littorinidae  | <i>Echinolittorina punctata</i>       | Intertidal                     | Mediterranean (east, west), East Atlantic (Spain-South Africa)                                                                                                          | Native     | very common | very common | Tel Baruch, 17.08.2012      |
| Gastropoda | Littorinidae  | <i>Melaraphe neritoides</i>           | Intertidal                     | Mediterranean (east, west), Black Sea, Sea of Marmara, East Atlantic (England-Morocco-Canaries)                                                                         | Native     | very common | very common | Tel Baruch, 17.08.2012      |
| Gastropoda | Muricidae     | <i>Indothais lacera</i> *             | Intertidal, subtidal (to 26 m) | Mediterranean (east, west), Persian Gulf, Sri Lanka, India, Siam, Indonesia)                                                                                            | Non-native | common      | not found   | Rishon leZiyyon, 21.12.2003 |
| Gastropoda | Muricidae     | <i>Ocenebrina edwardsi</i>            | Intertidal, subtidal           | Mediterranean (east, west), Sea of Marmara, East Atlantic (French-Canaries)                                                                                             | Native     | very common | common      | N/A                         |
| Gastropoda | Muricidae     | <i>Stramonita haemastoma</i>          | Intertidal, subtidal (to 9 m)  | Mediterranean (east, west), East Atlantic (Spain to Cape Verde Island), West Atlantic (North America and Caribbean- Brazil)                                             | Native     | common      | not found   | <1999                       |
| Gastropoda | Muricidae     | <i>Hexaplex trunculus</i>             | Intertidal, subtidal           | Mediterranean (east, west), East Atlantic (Spain-Canaries)                                                                                                              | Native     | very common | common      | <1999                       |

|            |                |                                |                                 |                                                                                                          |        |             |             |                       |
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| Gastropoda | Patellidae     | <i>Patella ulyssiponensis</i>  | Intertidal                      | Mediterranean (east, west), Black Sea, Atlantic (Norway-Canaries)                                        | Native | common      | common      | Akhziv, 16.03.2011    |
| Gastropoda | Patellidae     | <i>Patella caerulea</i>        | Intertidal                      | Mediterranean (east, west), East Atlantic (Portugal - Canaries)                                          | Native | very common | very common | Nahsholim, 25.03.2013 |
| Gastropoda | Phasianellidae | <i>Tricolia pullus</i>         | Intertidal, subtidal (to 4 m)   | Mediterranean (east, west), Black Sea, Sea of Marmara, East Atlantic (England - Senegal-Canaries)        | Native | common      | not found   | N/A                   |
| Gastropoda | Trimusculidae  | <i>Trimusculus mammillaris</i> | Intertidal                      | Mediterranean (east, west), East Atlantic (Portugal-Congo, Cape Verde Island)                            | Native | common      | not found   | Shikmona, 15.09.2001  |
| Gastropoda | Triphoridae    | <i>Monophorus perversus</i>    | Intertidal, subtidal (18-191 m) | Mediterranean (east, west), Black Sea, Sea of Marmara, East Atlantic (Norway-Senegal and Canary Islands) | Native | common      | not found   | N/A                   |
| Gastropoda | Trochidae      | <i>Gibbula rarilineata</i>     | Intertidal                      | Mediterranean (endemic)                                                                                  | Native | common      | not found   | <1999                 |
| Gastropoda | Trochidae      | <i>Gibbula turbinoides</i>     | Intertidal, subtidal (to 22 m)  | Mediterranean (endemic)                                                                                  | Native | common      | not found   | Shikmona, 09.05.2003  |
| Gastropoda | Trochidae      | <i>Gibbula varia</i>           | Intertidal, subtidal (to 4 m)   | Mediterranean (east, west), Black Sea, East Atlantic (Spain-Portugal)                                    | Native | very common | not found   | Ashdod, 01.07.2010    |
| Gastropoda | Trochidae      | <i>Gibbula ardens</i>          | Intertidal, subtidal (to 22 m)  | Mediterranean (east, west), East Atlantic                                                                | Native | very common | not found   |                       |
| Gastropoda | Trochidae      | <i>Gibbula umbilicaris</i>     | Intertidal                      |                                                                                                          |        | common      | not found   | N/A                   |
| Gastropoda | Trochidae      | <i>Phorcus articulatus</i>     | Intertidal                      | Mediterranean (east, west), Sea of Marmara, East Atlantic (Spain to - Morocco, Cape Verde Island)        | Native | common      | common      | Shikmona, 2013        |

|                |                   |                                        |                                   |                                                                                                 |                |             |                |                           |
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| Gastropoda     | Trochidae         | <i>Phorcus richardi</i>                | Intertidal                        | Mediterranean (east, west),<br>East Atlantic (Portugal-<br>Canaries)                            | Native         | common      | not found      | <1999                     |
| Gastropoda     | Trochidae         | <i>Phorcus turbinatus</i>              | Intertidal                        | Mediterranean (east, west),<br>East Atlantic (Spain--<br>Morocco, Canaries)                     | Native         | common      | very<br>common | Tel Baruch,<br>18.03.2005 |
| Gastropoda     | Vermetidae        | <i>Vermetus triquetrus</i>             | Intertidal                        | Mediterranean (east, west),<br>East Atlantic (Spain-<br>Morocco, Canaries)                      | Native         | common      | common         | Shahaf I.,<br>08.05.2007  |
| Gastropoda     | Vermetidae        | <i>Thylacodes<br/>arenarius</i>        | Intertidal, subtidal<br>(18-70m)  | Mediterranean (east, west),<br>East Atlantic (Portugal,<br>Morocco, Madeira)                    | Native         | very common | not found      | N/A                       |
| Gastropoda     | Vermetidae        | <i>Dendropoma<br/>petraeum</i>         | Intertidal, subtidal<br>(1 m)     |                                                                                                 | Native         | common      | rare           | N/A                       |
| Polyplacophora | Acanthochitonidae | <i>Acanthochitona<br/>fascicularis</i> | Intertidal, deep<br>subtidal      | Mediterranean (east, west),<br>East Atlantic (from the<br>English Channel, Africa,<br>Canaries) | Native         | common      | not found      | <1999                     |
| Polyplacophora | Chitonidae        | <i>Chiton corallinus</i> *             | Deep subtidal                     | Mediterranean (east, west),<br>East Atlantic (Morocco),<br>IndoPacific (Red Sea)                | Non-<br>native | common      | not found      | <1999                     |
| Polyplacophora | Chitonidae        | <i>Chiton olivaceus</i>                | Intertidal, subtidal<br>(to 26 m) | Mediterranean (east, west),<br>East Atlantic (Morocco,<br>Portugal, Spain)                      | Native         | very common | common         | <1999                     |
| Polyplacophora | Lepidochitonidae  | <i>Lepidochitona<br/>caprearum</i>     | Intertidal                        | Mediterranean (east, west),<br>Black Sea, Atlantic<br>(Morocco, Portugal)                       | Native         | common      | not found      | <1999                     |