

## Curriculum Vitae - Dror Angel - January 2017

### 1. Personal Details

Name: Dror L. Angel

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### 2. Higher Education

| Period of Study | Name of Institution and Department  | Degree   | Date of Degree |
|-----------------|---|--|----------------|
| 1979 - 1982     | Hebrew University, School of Agriculture, Dept. of Soils & Water                                | B.Sc.  | 5.7.1983       |
| 1983 - 1986     | City University of New York, Dept. of Biology   | M.Sc.  | 1.10.1987      |
| 1986 - 1989     | City University of New York, Dept. of Biology   | Ph.D.  | 1.10.1989      |
| 1989 - 1990     | National Center for Mariculture (NCM), Israel Oceanographic & Limnological Research (IOLR), Ltd | Post-doctoral Research Fellow with Amir Neori, Hillel Gordin | 1.12.1989      |

### 3. Academic Ranks and Tenure in Institutes of Higher Education

| Dates                  | Name of Institution and Department  | Rank/Position                                       |
|------------------------|---|---|
| 15.1.1983 – 22.12.1988 | The City College of New York, Biology Department  | Adjunct Lecturer, teaching several core lab courses |
| 1.12.2002 – 1.8.2004   | Woods Hole Oceanographic Inst., Marine Policy Center                                    | Senior Research Fellow                              |
| 15.2.2001 – 1.6.2004   | Massachusetts Institute of Technology, Dept. of Civil & Environmental Engineering       | Visiting Scholar                                    |
| 1.8.2004 – present     | University of Haifa, Recanati Institute for Maritime Studies                            | Senior Research Fellow                              |
| 1.8.2004 – 1.10.2011   | University of Haifa, Dept. of Maritime Civilizations                                    | Teaching Fellow                                     |
| 1.10.2011 - 30.9.2012  | University of Haifa, Charney School of Marine Sciences, Dept. of Marine Biology         | Senior Lecturer (proposed rank)                     |
| 1.10.2012 - present    | University of Haifa, Charney School of Marine Sciences, Dept. of Maritime Civilizations | Senior Lecturer                                     |

#### 4. Offices in University Academic Administration

|                |  |
|----------------|--|
| 2009 – 2016    | Member, Finance Committee, Recanati Institute for Marine Studies, University of Haifa.                             |
| 2011 – 2013    | Member, M.A. Studies Committee, Dept. of Maritime Civilizations, University of Haifa.                              |
| 2012 – 2016    | Chair, International M.A. Program in Maritime Civilizations, Dept. of Maritime Civilizations, University of Haifa. |
| 2013 – present | Chair, M.A. Studies Committee, Dept. of Maritime Civilizations, University of Haifa.                               |

#### 5. Scholarly Positions and Activities outside the University

##### 5.1 Professional Societies

|                |  |
|----------------|--|
| 1985 – 1996    | International Society for Protozoology               |
| 1985 – present | American Society of Limnology and Oceanography       |
| 1986 – present | American Geophysical Union                           |
| 1998 – present | Israel Society of Ecology and Environmental Sciences |
| 2004 – present | World Aquaculture Society                            |
| 2004 – present | Israeli Association for Aquatic Studies              |
| 2005 – 2010    | Israel Society for Microbiology                      |

##### 5.2 Professional Services

|                |   |
|----------------|---|
| 1991 – present | <b>Reviewer of manuscripts</b> for the following peer reviewed journals: <i>Marine Biology</i> ; <i>Marine Biology Research</i> , <i>Hydrobiologia</i> , <i>Marine Ecology Progress Series</i> ; <i>Deep Sea Research</i> ; <i>Ecological Modelling</i> ; <i>Journal of Applied Ecology</i> ; <i>Estuarine, Coastal and Shelf Science</i> ; <i>ICES Journal of Marine Science</i> ; <i>Aquaculture Research</i> , <i>Israeli Journal of Aquaculture</i> , <i>Israel Journal of Ecology and Evolution</i> , <i>Environmental Monitoring and Assessment</i> , <i>Journal of Plankton Research</i> , <i>Plos One</i> , <i>Journal of Phycology</i> , <i>Marine Pollution Bulletin</i> , <i>Marine Environmental Research</i> . |
| 1991 – present | <b>Reviewer for proposals</b> submitted to: <i>National Science Foundation</i> , U.S.A., <i>European Science Foundation</i> , <i>Israeli Ministry of Agriculture</i> , <i>Israeli Ministry of Environment</i> , <i>NOAA SeaGrant</i> , <i>Binational Agriculture Research &amp; Development Fund (BARD)</i> , <i>Binational (USA-Israel) Science Foundation (BSF)</i> , <i>Dutch Technology Foundation</i> , <i>Research Council of Norway</i> .  |

|                |   |
|----------------|---|
| 2007 – present | <b>Editorial advisory board member</b> and reviewer for the journal <i>Aquaculture</i>  |
| 2007 – present | <b>Editorial advisory board member</b> and reviewer for the journals <i>Aquaculture Environment Interactions</i> , <i>The Open Fish Science Journal</i> . |
| 2016 – present | <b>Member</b> , European Science Foundation (ESF) College of Expert Reviewers.  |
| 2017 – present | <b>Editorial board member</b> for the journal <i>Regional Environmental Change</i>  |

### **5.3 Professional Activities**

|                |  |
|----------------|--|
| 1980 - 1982    | Research Assistant, Soil and Water Sciences, The Volcani Institute for Agricultural Research, Bet Dagan, Israel.   |
| 1985 - 1987    | Organization of departmental seminars, Department of Biology, City College of New York, N.Y.   |
| 1988 - 1989    | Research Assistant, responsible for most of the field and laboratory aspects of a project on phosphorus dynamics in the Hudson River estuary, Marine Microbiology Group, Lamont Doherty Geological Observatory, Columbia University, NY. |
| 1990-2001      | Active member of the scientific board of the National Center for Mariculture (NCM), IOLR, Eilat.   |
| 1991 - 2000    | Responsible for Radioactive Safety and Diving Safety at NCM, Eilat.  |
| 1992 - 1993    | Acting head of the Water Quality Research Group, coordinating research on the use of algal biofilters in recirculating aquaculture systems, NCM, Eilat.  |
| 1994           | Organized and participated in the first joint German-Israeli research cruise on board R.V. <i>Poseidon</i> in the eastern Mediterranean Sea.   |
| 1994 - 2004    | Head of the Environmental and Water Quality Research Group, NCM, Eilat   |
| 2000 - 2003    | Scientific coordinator of multi-national EU STREP project <i>BIOFAQs</i>   |
| Mar 2007       | Involved in formation of the European Aquaculture Technology Platform <a href="http://www.eatpnet.eu/default.php">http://www.eatpnet.eu/default.php</a> .  |
| 2007 - 2011    | Member of the FAO working group entitled: “Building an Ecosystem Approach to Aquaculture”.   |
| Oct 2007       | Participated in MARBEF (Marine Biodiversity and Ecosystem Functioning - EU Network of Excellence) workshop entitled “Sampling and Laboratory Techniques in Meiobenthology”; Wilhemshaven, Germany.                                       |
| 2009 - present | Member of the Ecosystem-Based Aquaculture Group, IUCN Commission on Ecosystem Management.  |

|                |   |
|----------------|---|
| 2011 - 2013    | Member, Steering Committee, National (Israel) Panel on the Impacts of Climate Change on Marine Biodiversity and Ecosystem Services. |
| May 2012       | Presented a vision of marine science research and collaboration with the GU8 consortium of universities that reside by the sea      |
| June 2012      | Discussed ongoing marine research and potential for collaboration with representatives of the British Council in Israel             |
| July 2012      | Presented the International M.A. Program in Maritime Civilizations to the Philippine Ambassador of Israel                           |
| Sept 2012      | Helped coordinate and organize a scoping workshop in Xiamen, China on potential collaboration among GU8 partners in marine science  |
| Oct 2012       | Launched the International MA Program in Maritime Civilizations   |
| 2013 - present | Scientific coordinator of Departmental Scientific Research Cruises  |
| June 2016      | Hosted delegation of marine scientists from Yellow Sea Fisheries Research Institute, China and Chinese National Academy of Science  |

### **5.3.1 Consultant Activities**

|                |   |
|----------------|---|
| 2003           | Environmental Consultant, focusing on the environmental ramifications of dredging a Cape Cod estuary, Woods Hole Group, Falmouth, MA, USA.  |
| 2005 - present | Participated in numerous meetings in southern Europe as an invited expert on <i>Environment and Aquaculture in the Mediterranean</i> for the General Fisheries Commission of the Mediterranean (GFCM), Food and Agriculture Organization (FAO), United Nations.   |
| 2006 - present | Participated in several workshops hosted by the World Conservation Union (IUCN), as an invited expert, to develop a series of <i>Guidelines for Sustainable Development of Aquaculture in the Mediterranean</i> : 1. Interactions between the Environment & Aquaculture; 2. Aquaculture Site Selection and Site Management; 3. Responsible Aquaculture Practices & Certification. |
| April 2007     | Invited, as an expert, by the Greek Ministry for Agriculture & Food to help formulate a scheme for the regulation of fish farming in Greece; Athens, Greece.  |
| Sept 2007      | Invited, as an expert, to international workshop on “Atmospheric CO <sub>2</sub> , ocean acidification and ecological changes in planktonic calcifying organisms”; Barcelona, Spain.  |
| 2008 - 2010    | Consultant to Chilean government on environmental remediation of mariculture impacts.   |

|          |  |
|----------|--|
| Mar 2010 | Invited, as an expert, to meeting organized by FAO to develop <i>Guidelines for Offshore Aquaculture</i> ; Orbetello, Italy.   |
| Mar 2011 | Invited, as an expert, to a Scoping Workshop on the "Effect of Jellyfish on Aquaculture"; Oban, Scotland.  |
| Nov 2013 | Facilitator and Expert Evaluator of Proposals submitted for Development of the Greek National Research Infrastructure Roadmap for the period 2014-2020, Greek Ministry of Education and Religious Affairs, General Secretariat for Research and Technology |

## 6. Participation in Scholarly Conferences

### 6a. Conferences abroad

| <b>Date</b> | <b>Name of Conference</b>   | <b>Place of Conference</b>            | <b>Subject of Lecture/Discussion/Comments</b>   |
|-------------|---|---------------------------------------|---|
| 16.6.1987   | Summer Meeting of the American Society of Limnology & Oceanography (ASLO) | Madison, Wisconsin, USA               | Microbial populations associated with colonial radiolarian  |
| 10.11.1988  | Hudson River Foundation Symposium on Managing the Estuary                 | New Paltz, New York, USA              | Microbial dissolved organic phosphorus utilization in the Hudson River estuary  |
| 13.2.1988   | Winter Meeting of ASLO  | New Orleans, Louisiana, USA           | Carbon flow from colonial radiolarian to parasitic amphipods  |
| 6.12.1989   | Ocean Sciences Meeting  | San Francisco, California, USA        | The microbial ecology of colonial radiolaria  |
| 12.6.1990   | Summer Meeting of ASLO  | Williamsburg, Virginia, USA           | Heterotrophic dinoflagellates, bacteria and cyanobacteria dominate plankton biomass in the euphotic layer of the oligotrophic Gulf of Eilat (Aqaba) |
| 26.6.1990   | 43 <sup>rd</sup> Annual Meeting of the Society of Protozoologists         | University of Maryland, Maryland, USA | Free-living dinoflagellates associated with colonial radiolaria   |
| 27.8.1991   | Second International Conference of Hungary on Protozoology                | Tihany, Hungary                       | Planktonic colonial radiolaria: microhabitats for oceanic dinoflagellates   |

|           |  |                                    |   |
|-----------|--|------------------------------------|---|
| 20.8.1991 | The 5 <sup>th</sup> International Workshop on the Measurement of Microbial Activities in the Carbon Cycle in Aquatic Environments: Microbial Ecology of Pelagic Environments | Helsingor, Denmark                 | Microbial trophodynamics in hypertrophic seawater fishponds   |
| 9.9.1992  | The 6 <sup>th</sup> international Symposium on Microbial Ecology (ISME-6)  | Barcelona, Spain                   | Microbial mats and fish bioturbation: how do these affect the fate of organic matter in enriched sediments in the oligotrophic Gulf of Aqaba? |
| 1.6.1993  | Joint Meeting of ASLO and the Society of Wetland Scientists  | Edmonton, Canada                   | Mat-forming prokaryotes and associated microbes on hypertrophic sediments in the oligotrophic Gulf of Eilat (Aqaba)                           |
| 6.9.1995  | International Workshop on Modelling Environmental Interactions of Mariculture  | Dartmouth, Nova Scotia, Canada     | The use of fuzzy logic in the interpretation of dive logs and the state of the environment around fish farms<br><b>INVITED</b>                |
| 8.10.1999 | 7 <sup>th</sup> International Conference on Artificial Reefs and related aquatic habitats  | San Remo, Italy                    | The potential of artificial reefs to reduce organic enrichment caused by commercial net cage fish farming in the Gulf of Aqaba                |
| 27.7.2000 | 1 <sup>st</sup> MARICULT conference "How can we increase the production and harvest of living marine resources in the new millennium? "                                      | Trondheim, Norway                  | In situ biofiltration: a means to curtail the release of effluents from intensive finfish cage culture and enhance sustainability             |
| 12.2.2001 | Aquatic Sciences Meeting   | Albuquerque, NM, USA               | Can biofilters reduce effluent dispersal from net-pen fish farms?   |
| 18.6.2001 | Open Ocean Aquaculture IV Symposium  | St. Andrews, New Brunswick, Canada | A new approach to sustainable mariculture: stimulating "natural" biofilters to capture fish farm wastes<br><b>INVITED</b>                     |
| 2.10.2003 | NATO-Advanced Study institute, <i>Strategic Management of Marine Ecosystems</i>  | Sophia Antipolis, Antibes, France  | Environmental Impacts of Mariculture in the Gulf of Aqaba - a case study & how we may address some of the issues?<br><b>INVITED</b>           |

|            |  |                                     |  |
|------------|--|-------------------------------------|--|
| 12.5.2006  | World Aquaculture Society Meeting - AQUA 2006  | Florence, Italy                     | What do diurnal dynamics in water quality around a fish farm tell us about impacts?  |
| 12.5.2006  | World Aquaculture Society Meeting - AQUA 2006  | Florence, Italy                     | Assessing environmental impacts of marine shellfish aquaculture: a bi-coastal study  |
| 25.10.2007 | Competing Claims - Aquaculture Europe '07 Conference   | Istanbul, Turkey                    | An ECosystem Approach to Sustainable Aquaculture; the ECASA project<br><b>INVITED</b>  |
| 25.10.2007 | Competing Claims - Aquaculture Europe '07 Conference   | Istanbul, Turkey                    | An innovative approach to the use of foraminifera to determine the impact of mariculture on the benthic environment in the Gulf of Aqaba, Red Sea          |
| 27.9.2007  | ESF Euroclimate Workshop "Atmospheric CO <sub>2</sub> , ocean acidification and ecological changes in planktonic calcifying organisms" | Barcelona, Spain                    | How will acidification of the Mediterranean and other water bodies affect population dynamics of non-calcareous plankton such as medusae<br><b>INVITED</b> |
| 8.7.2009   | The 10 <sup>th</sup> International Forum on Marine Science & Technology & Economic Development   | Qingdao, People's Republic of China | Prospects for IMTA in an oligotrophic marine ecosystem: the Mediterranean experience<br><b>INVITED</b>   |
| 22.3.2010  | FAO Workshop, "The Initiation of Offshore Mariculture"   | Orbetello, Italy                    | Current environmental and ecosystem issues regarding offshore marine aquaculture in tropical regions<br><b>INVITED</b>                                     |
| 13.7.2010  | Third International Jellyfish Blooms Symposium   | Mar del Plata, Argentina            | First record of the hyperiid amphipod <i>Brachyscelus rapacoides</i> on scyphomedusea in the Levant  |
| 7.10.2010  | Aquaculture Europe 2010 Conference   | Porto, Portugal                     | Factors that affect public perception of marine aquaculture in Germany & Israel  |
| 23.11.2010 | FAO Workshop on Aquaculture Site Selection and Carrying Capacity   | St. George's Bay, Malta             | Environmental quality standards for marine fish farms<br><b>INVITED</b>  |
| 16.2.2011  | International Aquatic Sciences Meeting   | San Juan, Puerto Rico               | Dynamics in sediment biogeochemistry following the removal of net-cage fish farms in the northern Gulf of Aqaba  |

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|-----------------|--|--|---|
| 23.3.2011       | Scoping workshop towards a jellyfish monitoring network for Scottish waters  | Scottish Institute of Marine Science, Oban, Scotland | Jellyfish interactions with aquaculture – the Mediterranean experience<br><b>INVITED</b>  |
| 23.2.2014       | Ocean Sciences Meeting 2014  | Honolulu, Hawaii, USA                                | Integrated Multi Trophic Aquaculture as a means to enhance sustainability of marine aquaculture<br><b>INVITED</b>                     |
| 18.9.2014       | ICES Annual Science Conference 2014 - Sustainability in a changing ocean   | La Coruna, Spain                                     | Regulation of the scyphomedusa <i>Cyanea capillata</i> through predation on its larval stages, from release of planulae to settlement |
| 15.10.2014      | Aquaculture Europe 2014  | San Sebastian, Spain                                 | Digestibility of waste effluents from sea bream culture by the omnivorous grey mullet ( <i>Mugil cephalus</i> )                       |
| 25.2.2015       | ASLO Aquatic Sciences Meeting 2015, Global and Regional Perspectives — North Meets South   | Granada, Spain                                       | Impact of an invasive swarming scyphomedusa on Israeli fisheries  |
| 2-3.3.2015      | PERSEUS International Workshop - “Coming to grips with the jellyfish phenomenon in the Southern European & other Seas: research to the rescue of coastal managers” | Cadiz, Spain   | “Now you see them, now you don’t” – the need for 3-dimensional observational and monitoring tools for marine jellyfish                |
| 31.8 – 4.9.2015 | 14 <sup>th</sup> Deep Sea Biology Symposium  | Aveiro, Portugal                                     | Akhziv submarine canyon: an oasis in the deep sea?  |
| 13-15.10.2015   | “In the wake of plastics” - Addressing marine litter in the Mediterranean region CleanSea participatory workshop   | Venice, Italy  | Policy implications of marine debris studies: the Israeli case study  |
| 27.4.2016       | American Educational Research Association Conference   | San Antonio, Texas, USA                              | Jellyfish and people - a citizen-science collaboration with mutual benefits to citizens and scientists                                |



|                    |   |                         |  |
|--------------------|---|-------------------------|--|
| 25-<br>27.5.2016   | MICRO2016 - Fate and Impact of Microplastics in Marine Ecosystems: From the Coastline to the Open Sea | Lanzarote, Spain        | Microplastic distribution and composition in Israeli Mediterranean coastal waters                  |
| 29.5 –<br>3.6.2016 | 5th International Jellyfish Blooms Symposium  | Barcelona, Spain        | Proactive Jellyfish Citizen Science – much more than “just adding water                            |
| 12-<br>16.9.2016   | 41 <sup>st</sup> CIESM Conference   | Kiel, Germany           | The effect of well-amelioration brine on coastal microbial populations in the SE Mediterranean Sea |
| 20 –<br>23.9.2016  | Aquaculture Europe 2016 – Food for Thought  | Edinburgh, Scotland     | Economic sustainability of IMTA – a European case study  |
| 28-<br>30.10.2016  | 20th European Elasmobranch Association Conference   | Bristol, United Kingdom | Occurrence of the blue stingray <i>Dasyatis chrysonota</i> in Israeli Mediterranean waters         |

#### 6b. Conferences in Israel

|           |  |  |   |
|-----------|--|--|---|
| 12.3.1990 | Joint US-Israel Workshop on Marine Symbioses   | Marine Biology Laboratory, Eilat, Israel | Carbon flow in the colonial radiolarian microcosm   |
| 30.5.1992 | The Moshe Shilo Workshop on Marine CO2 fixation and Recycling: Microscale to Global Processes                              | Eilat, Israel                            | Microbial mats mediate the benthic turnover of organic matter in polluted sediments in the Gulf of Aqaba      |
| 8.6.1992  | US – Israel Workshop on Mariculture and the Environment  | Eilat, Israel                            | Benthic microbial mat dynamics in and on seafloor sediments in the Gulf of Eilat (Aqaba), Red Sea             |
| 22.6.1992 | The 5th International Conference on Environmental Quality and Ecosystem Stability  | Jerusalem, Israel                        | The impact of a floating fish farm on the underlying benthos and on the benthic nutrient regeneration process |
| 25.1.1994 | The 1st Annual Meeting on the Ecosystem of the Gulf of Aqaba in Relation to the Economic Development and the Peace Process | Eilat, Israel                            | Surprising ecological changes in the sediments below a fish farm in the northern Gulf of Eilat                |

|           |   |                               |  |
|-----------|---|-------------------------------|--|
| 30.1.1995 | The Ecosystem of the Gulf of Aqaba in Relation to the Enhanced Economical Development and the Peace Process - II  | Eilat, Israel                 | Recent developments in assessing the environmental impacts of net pen fish farming in the Gulf of Aqaba  |
| 16.1.1996 | The Ecosystem of the Gulf of Aqaba in Relation to the Enhanced Economical Development and the Peace Process - III | Eilat, Israel                 | Assessing anthropogenic impacts on the marine environment in the Gulf of Aqaba: comparison among selected methods  |
| 20.4.2010 | Annual meeting of the Israel Association of Aquatic Sciences  | IUI, Eilat                    | Extensive aggregations of wild fish at coastal net-cage fish farms in the Red Sea  |
| 11.4.2011 | Annual meeting of the Israel Association of Aquatic Sciences  | Hefziba Facility, Hadera      | Economic evaluation of jellyfish effects on the fishery sector of Israel   |
| 22.5.2014 | Annual meeting of the Israel Association of Aquatic Sciences  | Peres Center for Peace, Jaffa | 1. The role of the Akhziv Canyon in determining local food web dynamics. 2. Microplastic pollution and its potential effects on marine biota in Israeli coastal waters |
| 20.6.2016 | Sustainable food systems: agriculture, environment & nutrition  | Tel Aviv University, Tel Aviv | Ecosystem services provided by Israeli aquaculture: a case study in sustainable protein production   |

b. **Organization of Conferences or Sessions**

| <b>Date</b>  | <b>Name of Conference</b>   | <b>Place of Conference</b> | <b>Subject of Conference/<br/>Role at Conference/<br/>Comments</b>   |
|--------------|---|----------------------------|--|
| 12-16.2.2001 | Aquatic Sciences Meeting  | Albuquerque, NM, USA       | Organized special session, "Impacts of Mariculture and Aquaculture"  |
| 11-15.2.2002 | Ocean Sciences Meeting  | Oahu, Hawaii, USA          | Organized special session, "Mariculture and its impacts on the marine environment: what we know and what we don't" |
| 26.9.2002    | Ballast Water Management Workshop: Regional Solutions                   | Boston, MA, USA            | Co-organized (with Judith McDowell) the workshop and convened roundtable discussion                                |
| 3-10.10.2002 | Environmental Impacts of Mariculture and Possible Mitigation Strategies | Eilat, Israel              | Initiated and organized a hands-on international workshop  |

|               |  |                       |   |
|---------------|--|-----------------------|---|
| 13.11.2003    | Cape Cod Academics, Managers & End-Users Meeting on Nitrogen Remediation Strategies  | Barnstable, MA, USA   | Co-organized (with Heidi Clark and Hauke Kite-Powell) and participated in meeting with stakeholders                             |
| 25-26.3.2004  | Integrated Multi-Trophic Aquaculture Workshop  | St John, NB, Canada   | Co-organized (with Thierry Chopin and Shawn Robinson) and participated in the meeting   |
| 13.5.2006     | World Aquaculture Society Meeting - AQUA 2006  | Florence, Italy       | Organized brainstorming session, to advise the EU on priority topics toward the 7 <sup>th</sup> framework program               |
| 24-27.10.2007 | Competing Claims - Aquaculture Europe '07 Conference   | Istanbul, Turkey      | Program Committee member, Session Chair and speaker   |
| 2-7.3.2008    | Ocean Sciences Meeting   | Orlando, FL, USA      | Co-organized (with John Marra) special session, "Marine Aquaculture - What are the Burning Environmental Issues and Solutions?" |
| 25-30.1.2009  | ASLO Aquatic Sciences Meeting 2009, A Cruise Through Nice Waters   | Nice, France          | Organized special session, "Jellyfish Blooms"   |
| 13-18.2.2011  | International Aquatic Sciences Meeting   | San Juan, Puerto Rico | Organized Town Hall Meeting, "Oceanographers & Limnologists Feeding the World"  |
| 23-27.9.13    | 10 <sup>th</sup> International Conference on Artificial Reefs and Related Aquatic Habitats   | Izmir, Turkey         | Steering Committee  |
| 1-5.12.2013   | International Conference on Coelenterate Biology   | Eilat, Israel         | Organizing Committee & Session Co-chair   |
| 22-27.2.2015  | ASLO Aquatic Sciences Meeting 2015, Global and Regional Perspectives — North Meets South   | Granada, Spain        | Session Co-chair  |
| 2-3.3.2015    | Angel, D.L. (2015). "Now you see them, now you don't" – the need for 3-dimensional observational and monitoring tools" for marine jellyfish. "Coming to grips with the jellyfish phenomenon in the Southern European and other Seas: research to the rescue of coastal managers." PERSEUS International Workshop (March 2-3, 2015, Cadiz, Spain) | Cadiz, Spain          | Session Co-chair  |

|                    |  |                  |                  |
|--------------------|--|------------------|------------------|
| 29.5 –<br>3.6.2016 | JBS-12: Challenges in jellyfish research and how we deal with these ; 5th International Jellyfish Blooms Symposium | Barcelona, Spain | Session Co-chair |
|--------------------|--|------------------|------------------|

## 7. Invited Addresses

| Date      | Place of Lecture  | Name of Forum                 | Presentation/Comments   |
|-----------|---|-------------------------------|---|
| 4.5.1989  | City University of New York, N.Y., N.Y., USA                                  | Department of Biology Seminar | Microbial ecology of colonial radiolaria  |
| 23.5.1989 | NCM, Eilat  | Institute Seminar             | The microbial consortium associated with colonial radiolarian                     |
| 1990      | Steinitz Marine Biology Laboratory, Eilat                                     | Institute Seminar             | Microplankton dynamics at station A in the Gulf of Eilat                          |
| 16.7.1997 | Institut für Meereskunde, Kiel, Germany                                       | Institute Seminar             | The application of fuzzy logic to aquaculture impact assessments                  |
| 19.5.1999 | Field School, Eilat   | Special Seminar               | Mariculture in the Red Sea – pro or con?  |
| 14.1.2001 | Scottish Association of Marine Science, Oban, UK                              | Special Seminar               | Sustainable net cage mariculture in the Gulf of Aqaba- is this actually feasible? |
| 13.5.2002 | University of Massachusetts, Boston, MA, USA                                  | Special Seminar               | Finfish cage aquaculture and the environment                                      |
| 11.9.2002 | Marine Policy Center, Woods Hole Oceanographic Institute, Woods Hole, MA, USA | Institute Seminar             | Is it possible to make finfish cage aquaculture more environmentally sustainable? |
| 3.11.2003 | National Marine Fisheries Service, NOAA, Woods Hole, MA, USA                  | Institute Seminar             | Net pen fish farms and a healthy marine environment - can these be compatible?    |
| 27.5.2003 | Holon Academy Institute of Technology, Holon                                  | Special Seminar               | In situ biofiltration: a means to counter coastal eutrophication                  |
| 3.12.2003 | MIT SCUBA Club, Cambridge, MA, USA  | Special Seminar               | An overview of marine environmental research projects involving SCUBA             |
| 13.2.2007 | IFOP, Chiloe, Chile   | Institute Seminar             | How can we help make aquaculture in Chiloe more sustainable                       |
| 27.6.2007 | Oranim College, Kiryat Tivon  | Departmental Seminar          | Mariculture in Eilat – could it have been done better?                            |

|            |  |   |  |
|------------|--|---|--|
| 27.5.2008  | Yad ben Zvi, Jerusalem   | Seminar in the series, "A Mediterranean Cruise" | Can we protect our Mediterranean shores? On marine pollution and coastal management  |
| 25.6.2008  | Kinneret Limnological Laboratory   | Institute Seminar                               | What do biological indicators tell us about the impact of human activities on coastal environments? Fish-farming as a case study |
| 17.8.2008  | Tasmania Aquaculture & Fisheries Institute, Hobart, Tasmania   | Institute Seminar                               | Israeli marine aquaculture - some environmental issues (& solutions)   |
| 8.7.2009   | Yellow Sea Fisheries Research Institute, Chinese Academy of Fishery Sciences, Qingdao, China   | Special Seminar                                 | Various means to address environmental concerns related to Israeli mariculture   |
| 31.12.2009 | Geography Department, University of Haifa  | Departmental Seminar                            | Integrated aquaculture in China  |
| 23.3.2011  | Scottish Association of Marine Science, Oban, UK   | Workshop - Effect of Jellyfish on Aquaculture   | Jellyfish interactions with aquaculture – the Mediterranean experience   |
| 2.11.2011  | EU-Israel Cooperation on Climate Change, Ofer Observatory, University of Haifa   | Special Workshop                                | The EU "CIRCLE-MED" Framework Program Project - INTERMED   |
| 12.12.2011 | Taiwan-Israel Research Symposium on "Effects of Human Activities on Marine Environments", University of Haifa  | Special Symposium                               | Sustainable aquaculture: getting the most out of the ocean with the least effect   |
| 8.9.2012   | GU8 Scoping Workshop on Ocean Sciences & Marine Biotechnology Xiamen, China  | Special Workshop                                | What happens when jellyfish blooms and marine aquaculture coincide?  |
| 28.1.2013  | IMBIZO III. The future of marine biogeochemistry, ecosystems and societies: Multi-dimensional approaches to the challenges of global change in continental margins and open ocean systems Goa, India | Special Workshop                                | Reduced pressure in the Israeli coastal ecosystem – remediation by means of policy change  |
| 5.2.2013   | Artificial Reefs Conference, Marseille, France   | Special Symposium                               | Artificial reefs as a means to enhance the sustainability of marine aquaculture  |

### 8. Colloquium Talks - Invited

| <b>Date</b> | <b>Place of Lecture</b>                      | <b>Name of Forum</b>            | <b>Presentation/Comments</b>   |
|-------------|--|---------------------------------|--|
| 4.5.1989    | City University of New York, N.Y., N.Y., USA | Biology Department Colloquium   | Microbial ecology of colonial radiolaria   |
| 3.8.1995    | University of Maine, Darling Ctr             | Chemistry Department Colloquium | Sustainable aquaculture in the Red Sea   |
| 10.3.2001   | Marine Biological Station, Piran, Slovenia   | Institutional Colloquium        | Environmental impacts of mariculture and some means to reduce these                          |
| 13.2.2002   | Hawaii Pacific University, Oceanic Institute | Institute Colloquium            | Aquaculture - Environment interactions and what we can do about these                        |
| 15.12.2003  | Ort Braude College, Karmiel                  | Weekly College Colloquium       | Aquatic ecosystem services - utilizing nature wisely and sustainably                         |
| 4.6.2003    | St Johns Canada                              | Institute Colloquium            | Grey mullets may drive sustainable net cage aquaculture                                      |
| 1.3.2005    | Recanati Institute for Maritime Studies      | Institute Colloquium            | Net-pen mariculture and the environment: some first-hand insight on the environmental issues |
| 24.3.2005   | Department of Geography, University of Haifa | Department Colloquium           | Net-pen mariculture & the environment  |
| 17.12.2013  | Neveh Ya'ar, Agriculture Research Center,    | Institute Colloquium            | Aquaculture in the 21 <sup>st</sup> Century – is it user friendly?                           |

### 8. Plenary Talks

| <b>Date</b> | <b>Place of Lecture</b> | <b>Name of Forum</b>   | <b>Presentation/Comments</b>  |
|-------------|-------------------------|--|---|
| 8.9.2015    | Dalian, China           | International Forum on Modern Mariculture Development Strategy | Offshore Aquaculture – is it really more sustainable than coastal aquaculture |

## 9. Research Grants Awarded

| <b>Role in Research</b> | <b>Other Researchers</b><br>(PI = project coordinator)                         | <b>Topic</b>  | <b>Funded by</b>   | <b>Years (budget)</b>      |
|-------------------------|--|---|--|----------------------------|
| <b>Co-PI</b>            | Amir Neori (PI), Michael Krom (co-PI), Steven Ellner (co-PI), Claude Boyd (PI) | <i>Macroalgae to solve water quality problems in intensively cultured marine fishponds</i>                                    | BARD (US-Israel Bi-National Agricultural Research Development) | 1990 – 1993<br>(\$300,000) |
| <b>PI</b>               |  | <i>Microbial interactions and their influence on water quality in intensively managed seawater fish ponds.</i>                | Arava Research & Development (Israel)                          | 1990 – 1992<br>(\$60,000)  |
| <b>Co-PI</b>            | Peter Krost (co-PI), Dieter Schnack (PI)                                       | <i>Environmental effects of net cage fish farming in the Gulf of Eilat (Aqaba).</i>   | GKSS (Germany/Israel)  | 1991 – 1993<br>(\$14,000)  |
| <b>Co-PI</b>            | Nehemia Sar (PI), Alfred Puhler (co-PI)  | <i>Halophila stipulacea: a nitrogen-fixing seagrass and potential source of fish food.</i>                                    | GKSS (Germany/Israel)  | 1991 – 1994<br>(\$225,000) |
| <b>Co-PI</b>            | Amir Neori (PI)  | <i>The use of unicellular plankton as biological indicators of pollution in the Gulf of Eilat (Aqaba).</i>                    | Israeli Ministry of Energy and Infrastructure                  | 1991 – 1993<br>(\$9,000)   |
| <b>PI</b>               |  | <i>Water quality and microbial dynamics in an integrated seawater fish ponds system</i>                                       | Arava Research & Development Fund (Israel)                     | 1993 – 1994<br>(\$30,000)  |
| <b>Co-PI</b>            | Colin Porter (PI), Noam Mozes (co-PI)  | <i>The use of seaweeds to improve the environment around an intensive fish cage farm in the northern Gulf of Elat (Aqaba)</i> | Israeli Ministry of Environmental Quality                      | 1993 – 1994<br>(\$8,000)   |
| <b>Co-PI</b>            | Harald Rosenthal (PI), Myroula Hadji-christophorou (co-PI)                     | <i>Modelling benthic disturbance and recovery in warm water mariculture</i>   | AVICENNE (Commission of the European Communities)              | 1995 – 1998<br>(\$315,000) |

|              |  |   |  |                          |
|--------------|--|---|--|--------------------------|
| <b>PI</b>    | Barak Herut (co-PI), Nurit Kress (co-PI), Ulrich Fiedler (co-PI), Dieter Adelung (PI)  | <i>Examining the use of hydrogen peroxide production rates as a tracer of anthropogenic pollution in coastal marine waters of the Mediterranean, Red and Baltic Seas.</i> | BMBF (Germany/Israel)  | 1995 – 1998 (\$294,000)  |
| <b>PI</b>    | Ehud Spanier (PI)  | <i>Examining the potential of artificial reefs to reduce organic enrichment caused by commercial marine net cage fish farming in the Gulf of Aqaba.</i>                   | Israeli Ministry of the Environment  | 1999 – 2001 (\$36,000)   |
| <b>Co-PI</b> | Kenny Black (PI), Martin Sayer (co-PI), Ehud Spanier (co-PI), Alenka Malej (co-PI), Ioannis Karakassis (co-PI), Helen Pickering (co-PI), Ken Collins (co-PI), Sonja Lojen (co-PI).   | <i>BIOFiltration and Aquaculture (BIOFAQs): an evaluation of hard substrate deployment performance within mariculture developments</i>                                    | European Union – FP5   | 2000 – 2003 (€1,100,000) |
| <b>PI</b>    |  | <i>Examining the diversity of nitrifying bacteria in recirculating aquaculture systems</i>  | MIT Sea Grant and WHOI Sea Grant   | 2001 – 2002 (\$15,000)   |
| <b>Co-PI</b> | Hauke Kite-Powell (PI), Heidi Clark (co-PI), Porter Hoagland (co-PI), Di Jin (co-PI)   | <i>Mitigating the effects of excess nutrients in coastal waters through bivalve aquaculture and harvesting.</i>   | CICEET (The Cooperative Institute for Coastal and Estuarine Environmental Technology), NOAA, USA | 2003 – 2005 (\$232,642)  |
| <b>Co-PI</b> | Daniel Cheney (PI), Ralph Elston (co-PI), Andy Suhrbier (co-PI), Jonathan Davis (co-PI), Robin Downey (co-PI), Carter Newell (co-PI), John Richardson (co-PI), Tessa Getchis (co-PI), Jamie Vaudrey (co-PI), Mark Luckenbach (co-PI) | <i>National Marine Aquaculture Initiative: Environmental and technical assessment of alternative shellfish production methods</i>   | National Sea Grant College Program, NOAA, USA  | 2004 – 2006 (\$142,083)  |



|              |   |   |   |                          |
|--------------|---|---|---|--------------------------|
| <b>Co-PI</b> | Kenny Black (PI), David Whitmarsh (co-PI), Paul Tett (co-PI), Alenka Malej (co-PI), Helmut Thetmeyer (co-PI), Reinhold Fieler (co-PI), Yannis Karakassis (co-PI), Tony Hawkins (co-PI), Joao Ferreira (co-PI), Salvatore Porello (co-PI), Alain Bodoy (co-PI), Angel Borja (co-PI), Roberto Pastres (co-PI), Tarzan Legovic (co-PI), Anders Stigebrandt (co-PI) | <i>ECASA: Ecosystem Approach for Sustainable Aquaculture</i>  | European Union (FP6 STREP)                                | 2004 – 2007 (€486,250)   |
| <b>Co-PI</b> | Tom Hopkins (PI), Denis Bailey (PI) and 50 other partner institutes (co-PIs) from 23 EU member and associated member states   | <i>SPICOSA: Science and policy integration for coastal ecosystem assessment</i>                                 | European Union (FP6 Integrated Project)                   | 2006 – 2010 (€1,000,000) |
| <b>Co-PI</b> | Vincenzo Zonno (PI) and 24 partners (co-PIs) from EU and non-EU countries   | <i>AquAgris: Environmental management reform for sustainable farming, fisheries and aquaculture</i>             | European Union (FP6 Coordination Action)                  | 2006 – 2009 (€99,671)    |
| <b>Co-PI</b> | Francisco Cárcamo (PI), Carlos Hernández (co-PI), Alejandro Chávez (co-PI), Mario Maldonado (co-PI), Luis Klaassen (co-PI), Héctor Novoa (co-PI)  | <i>Development of knowledge and procedures for remediation of ecosystems affected by mariculture</i>            | Chilean Economic Development Agency                       | 2006 – 2009 (€60,400)    |
| <b>Co-PI</b> | Peter Krost (PI), Mohammad Badran (co-PI)   | <i>Societal security and environmental impacts concerning mariculture in the Red Sea</i>                        | NATO - Science for Peace                                  | 2007 – 2010 (€60,000)    |
| <b>Co-PI</b> | Eran Vigoda-Gadot (PI), Horst Sterr (PI), Peter Krost (co-PI)   | <i>Socio-political aspects of marine aquaculture: A comparative study of policymaking in Germany and Israel</i> | The German Israeli Foundation for Scientific Research and | 2008 – 2011 (€185,750)   |

|              |   |  | Development (GIF)   |                           |
|--------------|---|--|---|---------------------------|
| <b>Co-PI</b> | Gianluca Sara (PI), Branko Glamuzina (co-PI).   | <i>INTERMED - The impact of climate change on Mediterranean intertidal communities: losses in coastal ecosystem integrity and services</i> | CIRCLE-MED, European Union FP7 ERA-Net  | 2008 – 2010 (€135,000)    |
| <b>Co-PI</b> | Maeve Kelly (PI), Yannis Kotzamanis (co-PI), Céline Rebours (co-PI), Hui Liu (China), Philip Heath (co-PI), Silas S.O. Hung (co-PI) | <i>IRC-IMTA - An international research consortium for promoting and developing integrated multi-trophic aquaculture</i>                   | European Union International Research Staff Exchange Scheme (IRSES) - Marie Curie Actions | 2009 – 2012 (€309,600)    |
| <b>Co-PI</b> | Evangelos Papathanassiou (PI) and 53 partner institutes (co-PIs) from EU member and associated member states                        | <i>PERSEUS - Identification and impact assessment of natural and human-induced pressures on the Mediterranean and Black Seas.</i>          | EU-FP7  | 2011 – 2015 (€12,999,000) |
| <b>Co-PI</b> | Kenny Black (PI) and 15 partner institutes (co-PIs) from EU member and associated member states                                     | <i>IDREEM - Increasing industrial resource efficiency in European mariculture</i>  | EU-FP7  | 2012 – 2016 (€9,900,000)  |

## 10. Scholarships, Awards and Prizes

1987 - Granting institution: Sigma Xi Grant-in-Aid of Predoctoral Research - \$1,000

1988 - Granting institution: Sigma Xi Grant-in-Aid of Predoctoral Research - \$1,000

1989 - Granting institution: Office of Naval Research - \$ 2,500 toward Marine Ecology Course, Marine Biological Laboratory, Woods Hole, Massachusetts, USA

1990 - Granting institution: Gershon Meyerbaum foundation - \$ 15,000 postdoctoral scholarship in oceanography at the National Center for Mariculture, Eilat

2005 – 2012 University of Haifa Research Authority seed grants in support of proposal writing; several grants in aid (4,000 – 5,000 NIS, each)

## 11. Teaching

### 11a. Courses Taught in Recent Years

| <b>Year</b>    | <b>Name of Course</b>                        | <b>Type of Course</b>  | <b>Degree</b>               | <b>Number of Students</b> |
|----------------|--|--|-----------------------------|---------------------------|
| 2005 – present | Marine & Coastal Pollution                   | Lecture  | B.A. & M.A.                 | 5 - 20                    |
| May 2006       | Environment-Aquaculture Interactions         | Lectures & practicum, International Course – CIHEAM, Murcia, Spain.  | Academics and professionals | 40                        |
| 2007           | Introduction to Environmental Sciences       | Lecture  | B.A.                        | 40                        |
| 2007           | Coastal Management                           | Lecture  | B.A. & M.A.                 | 10                        |
| 2007 – present | Climate Change Effects on Marine Communities | Lecture  | B.A. & M.A.                 | 7 - 20                    |
| May 2011       | Environmental Effects of Aquaculture         | Lectures & practicum, International Center for Advanced Mediterranean Agronomic Studies (CIHEAM) in Murcia, Spain. | Academics and professionals | 40                        |
| 2012 - 2013    | Marine Fisheries and Aquaculture             | Lecture  | M.A.                        | 7 - 10                    |
| 2013 - 2014    | Oceanography                                 | Lecture  | M.A.                        | 6                         |
| 2014 - present | Laboratory Methods in Marine Biology         | Laboratory   | M.A.                        | 22                        |
| 2014 - present | Mediterranean Sea                            | Lecture  | M.A.                        | 26                        |

## 11b. Supervision of Graduate Students

### 11b1. MA/MSc Students

| 1 | Name of Student   | Title of Thesis  | Degree   | Date Completed / In Progress | Details of Publication                                   |
|---|-------------------|--|--|------------------------------|--|
| 2 | Timor Katz        | <i>The use of grey mullets to ameliorate organically-enriched sediments in the oligotrophic Gulf of Aqaba (Red Sea)</i>                | <b>MSc</b> (supervised together with Dr. B. Herut, IOLR and A. Genin, Hebrew University) | <b>2000</b>                  | # Katz et al. 2002 (D. 13); Lupatsch et al. 2003 (D. 20) |
| 3 | Michal Strauss    | <i>The use of meiofauna as an indicator for organic enrichment associated with mariculture in the Northern Gulf of Eilat, Red Sea.</i> | <b>MSc</b> (supervised together with Prof. A. Gasith, Tel Aviv University)               | <b>2000</b>                  |  |
| 4 | Philip Nemoy      | <i>Sponge ecology: historical aspects and recent findings from the Mediterranean coast of Israel</i>                                   | <b>MA</b> (supervised together with Prof. E. Spanier, N. Kashtan, University of Haifa)   | <b>2009</b>                  | Manuscript in revision                                   |
| 5 | Irina Korchenkov  | <i>Factors affecting public attitudes toward aquaculture in Israel</i>   | <b>MA</b> (supervised together with Prof. E. Vigoda-Gadot, University of Haifa)          | <b>2009</b>                  | Freeman et al. 2012 (D. 29)                              |
| 6 | Tali Nitzan       | <i>The effect of temperature on the relative levels of heat shock proteins in the intertidal gastropod <i>Littorina punctata</i></i>   | <b>MA</b> (supervised together with Dr. S. Paz, University of Haifa)                     | <b>2010</b>                  | Manuscript in revision                                   |
| 7 | Jonathan Liberzon | <i>Seasonal dynamics of chromophoric dissolved organic matter in Lake Kinneret</i>   | <b>MSc</b> (supervised together with Prof. Y. Carmel, Technion)                          | <b>2010</b>                  | Liberzon et al. 2015 (D.40)                              |
| 8 | Noa Nakar         | <i>Jellyfish impact on fisheries and planula settlement dynamics of the Scyphozoan medusa</i>  | <b>MA</b> (supervised together with Prof. D. Disegni-Eshel, University of Haifa)         | <b>2011</b>                  | Manuscript in preparation                                |

|    |                 |  |  |                    |                            |
|----|-----------------|--|--|--------------------|----------------------------|
|    |                 | <i>Rhopilema nomadica on the Mediterranean coast of Israel</i>   |  |                    |                            |
| 9  | Shai Oron       | <i>Diagenesis of organic matter and its effects on benthic foraminifera in the Red Sea</i>                                       | <b>MSc</b> (supervised together with M. Kiflawi, S. Abramovich; Ben Gurion University, B. Goodman-Tchernov, University of Haifa) | <b>2012</b>        | # Oron et al. 2014 (D.34)  |
| 10 | Dafna Israel    | <i>Can artificial reefs reduce the environmental effects of aquaculture in Skutulsfjordur, Iceland?</i>                          | <b>MA</b> (Coastal & Marine Management, University of Westfjords, Iceland)   | <b>2012</b>        | #Israel et al. 2015 (D.43) |
| 11 | Avichai Bar Lev | <i>Elucidating the swimming behavior patterns of the bloom-forming scyphomedusan, <i>Rhopilema nomadica</i></i>                  | <b>MA</b> (University of Haifa)  | <b>Suspended</b>   | Manuscript in preparation  |
| 12 | Itzhak Levy     | <i>Ecology and diversity of rays (batoidea) in Israeli coastal waters</i>  | <b>MA</b> (supervised together with G. Gambash, University of Haifa, Y. Tikochinsky, Rupin College)                              | <b>2016</b>        |                            |
| 13 | Maura Schonwald | <i>Ecological effects of marine excavations on surrounding biota</i>   | <b>MA</b> (supervised together with S. Katab-Naim, University of Haifa)  | <b>2017</b>        |                            |
| 14 | Eric Solie      | <i>Effect of sand nourishment on shallow subtidal marine communities in the Eastern Mediterranean</i>                            | <b>MA</b> (supervised together with D. Zviely, University of Haifa)  | <b>In Progress</b> |                            |
| 15 | Ori Shapira     | <i>Morphodynamic and sedimentological characteristics of the Sharon coast of Israel and their effect on reproductive success</i> | <b>MA</b> (supervised together with D. Zviely, University of Haifa)  | <b>In Progress</b> |                            |

|    |                |  |   |                    |  |
|----|----------------|--|---|--------------------|--|
|    |                | <i>of loggerhead sea turtle <i>Caretta caretta</i></i>   |   |                    |  |
| 16 | Hassan Shama   | <i>Characterization and quantification of phosphorus and nitrogen in marine sediments at the Shafdan outfall and assessing their impact on the macro benthic fauna</i> | <b>MA</b><br>(supervised together with N. Kress, IOLR, Haifa)                               | <b>2017</b>        |  |
| 17 | Tuvia Dulin    | <i>The biological composition of rhodoliths near the Akhziv Islands, Eastern Mediterranean</i>   | <b>MA</b><br>(supervised together with S. Katab-Naim, University of Haifa)                  | <b>In Progress</b> |  |
| 18 | Dina Shukis    | <i>Impact of microplastic pollutants on marine shore birds</i>   | <b>MA</b><br>(supervised together with D. Kerem, University of Haifa)                       | <b>In Progress</b> |  |
| 19 | Maisa Mantsur  | <i>Environmental conditions reconstruction of the Tanninim and Alexander stream estuaries in the context of accelerated human settlement during the Late Holocene</i>  | <b>MA</b><br>(supervised together with S. Katab-Naim, University of Haifa & A. Almogi, GSI) | <b>In Progress</b> |  |
| 20 | Mervat Mantsur | <i>Temporal dynamics of coastal fisheries as recounted by fishers from Akko</i>  | <b>MA</b><br>(supervised together with D. Edelist, University of Haifa)                     | <b>In Progress</b> |  |
| 22 | Ofrat Raveh    | <i>The effect of nitrate enrichment on coastal microbial populations in the southeastern Mediterranean Sea</i>   | <b>MA</b><br>(supervised together with E. Rahav, IOLR, Haifa)                               | <b>In Progress</b> |  |

## 11b. 2. PhD Students

|   |                       |   |   |                    |                            |
|---|-----------------------|---|---|--------------------|----------------------------|
| 1 | Mia Elasar            | <i>The Achziv Canyon (Eastern Mediterranean) and its influence on the local hydrography and food web</i>  | <b>PhD</b> (supervised together with D. Kerem, M. Lazar, University of Haifa) | <b>2016</b>        |                            |
| 2 | Zafirir Kuplik        | <i>Proliferation of the scyphomedusa <i>Rhopilema nomadica</i> in the eastern Mediterranean: Efficiency in resource exploitation in an oligotrophic environment</i> | <b>PhD</b> (supervised together with D. Kerem, University of Haifa)           | <b>2017</b>        | #Kuplik et al. 2015 (D.41) |
| 3 | Dafna Israel          | <i>Biofiltration of fish-farm wastes at eastern Mediterranean net-cage fish farms as a means to boost sustainability</i>  | <b>PhD</b>  | <b>2017</b>        | Manuscripts in preparation |
| 4 | Philip Nemoy          | <i>Application of marine sponges (Porifera) as a means to establish sustainable aquaculture</i>   | <b>PhD</b> (supervised together with E. Spanier, University of Haifa)         | <b>2017</b>        | Manuscripts in preparation |
| 5 | Noam van der Hall     | <i>Microplastic pollution in Israeli Coastal waters and their effects on marine biota</i>   | <b>PhD</b>  | <b>In Progress</b> | Manuscript in preparation  |
| 6 | Ayana Perlberg-Bennet | <i>Sustainability aspects of the relationship between marine environment and coastal aquaculture in Israel</i>  | <b>PhD</b> (supervised together with S. Freeman, University of Haifa)         | <b>In Progress</b> |                            |

## PUBLICATIONS

### A. Ph.D. Dissertation

**The microbial ecology of colonial radiolaria.** September 1, 1989, 244 pp., (in English), City University of New York, mentors: Neil Swanberg and O. Roger Anderson.

### B. Scientific Books (Refereed)

#### Edited Books - Published

1. Purcell, J.E. and **D.L. Angel** (eds). 2010. *Jellyfish Blooms: New Problems and Solutions*, Springer Publications ISBN 978-90-481-9540-4. 234 pp

### C. Monographs

None

### D. Articles in Refereed Journals

#### Published

1. Anderson, O.R., Bennett, P., **Angel, D.L.** and M. Bryan. 1989. Experimental and observation studies of radiolarian physiological ecology. 2. Trophic activity and symbiont primary productivity of *Spongaster tetrastetas* with comparative data on predatory activity of some Nassellaridae. *Marine Micropaleontology* 14: 267-273. **2012 Impact Factor = 1.925; 5-Y Impact Factor = 2.713**
2. Spero, H.J. and **D.L. Angel**. 1991. Planktonic sarcodines: microhabitat for oceanic dinoflagellates. *Journal of Phycology* 27: 187-195. **2012 Impact Factor = 2.239; 5-Y Impact Factor = 2.663**
3. **Angel, D.L.** 1991. Carbon flow within the colonial radiolarian microcosm. *Symbiosis* 10: 196-217. **2012 Impact Factor = 1.110; 5-Y Impact Factor = 1.420**
4. Gordon, N., **Angel, D.L.**, Neori, A., Kress, N. and B. Kimor. 1994. Heterotrophic dinoflagellates with symbiotic cyanobacteria and nitrogen limitation in the Gulf of Aqaba. *Marine Ecology Progress Series* 107: 83-88. **2012 Impact Factor = 2.546; 5-Y Impact Factor = 3.158**
5. Kress, N., Herut, B. and **D.L. Angel**. 1996. Environmental conditions of the water column in Haifa Bay, Israel, during September-October 1993. *Water Science Technology* 32: 57-64. **2012 Impact Factor = 1.102; 5-Y Impact Factor = 1.150**



6. Porter, C.P., Krost, P., Gordin, H. and **D.L. Angel**. 1996. Grey mullet (*Mugil cephalus*) as a forager of organically enriched sediments below marine fish farms. *The Israel Journal of Aquaculture - Bamidgeh* 48: 47-55. **5-Y Impact Factor = 0.665**
7. Neori, A., Krom, M.D., Ellner, S.P., Boyd, C.E., Popper, D., Rabinovitch, R., Davison, P.J., Dvir, O., Zuber, D., Ucko, M., **Angel, D.L.** and H. Gordin. 1996. Seaweed biofilters dependably maintain quality of recirculated water in integrated fish-seaweed culture units. *Aquaculture* 141: 183-199. **2012 Impact Factor = 2.009; 5-Y Impact Factor = 2.624**
8. Herut, B., Shoham-Frider, E., Kress, N., Fiedler, U. and **D.L. Angel**. 1998. Hydrogen peroxide production rates in clean and polluted coastal marine waters of the Mediterranean, Red and Baltic Seas. *Marine Pollution Bulletin* 36:994-1003. **2012 Impact Factor = 2.531; 5-Y Impact Factor = 3.153**
9. Zohary, T., Brenner, S., Krom, M.D., **Angel, D.L.**, Kress, N., Li, W.K.W., Neori, A. and T.Z. Yacobi. 1998. Buildup of microbial biomass during deep winter mixing in a Mediterranean warm-core eddy. *Marine Ecology Progress Series* 167:47-57. **2012 Impact Factor = 2.546; 5-Y Impact Factor = 3.158**
10. **Angel, D.L.**, Krost, P. and W. Silvert. 1998. Describing benthic impacts of fish farming with fuzzy sets: Theoretical background and analytic methods. *Journal of Applied Ichthyology* 14: 1-8. **2012 Impact Factor = 0.902; 5-Y Impact Factor = 1.063**
11. **Angel, D.L.**, U. Fiedler, U., Eden, N., Kress, N., Adelung, D. and B. Herut. 1999. Catalase activity in macro and micro-organisms as an indicator of biotic stress in coastal waters of the eastern Mediterranean Sea. *Helgoland Marine Research* 53: 209-218. **2012 Impact Factor = 1.444; 5-Y Impact Factor = 1.642**
12. **Angel, D.L.**, Verghese, S., Lee, J.J., Saleh, A.M., Zuber, D., Lindell, D. and A. Symons. 2000. Impact of a net cage fish farm on the distribution of benthic foraminifera in the northern Gulf of Eilat (Aqaba, Red Sea). *Journal of Foraminiferal Research* 30: 54-65. **2012 Impact Factor = 1.620; 5-Y Impact Factor = 1.600**
13. # Katz, T., Herut, B., Genin, A. and **D.L. Angel**. 2002. Grey mullets ameliorate organically-enriched sediments below a fish farm in the oligotrophic Gulf of Aqaba (Red Sea). *Marine Ecology Progress Series* 234:205-214. **2012 Impact Factor = 2.546; 5-Y Impact Factor = 3.158**
14. **Angel, D.L.**, Eden, N., Breitstein, S., Yurman, A., Katz, T., and E. Spanier. 2002. In situ biofiltration: a means to limit the dispersal of effluents from marine finfish cage aquaculture. *Hydrobiologia* 469:1-10. **2012 Impact Factor = 1.985; 5-Y Impact Factor = 2.270**
15. **Angel, D.L.** and Spanier, E. 2002. An application of artificial reefs to reduce organic enrichment caused by net cage fish farming: preliminary results. *ICES Journal of Marine Science* 59:1-6. **2012 Impact Factor = 2.277; 5-Y Impact Factor = 2.472**
16. **Angel, D.L.**, Eden, N., Katz, T., and E. Spanier. 2003. Mariculture-environment interactions and biofiltration in oligotrophic Red Sea waters. *Annales Series Historia Naturalis* 13: 33-36. - **Not listed**
17. Bongiorno, L., Shafir, S., **Angel, D.L.** and B. Rinkevich. 2003. Survival, growth and reproduction of hermatypic corals subjected to *in situ* fish farm nutrient enrichment. *Marine Ecology Progress Series* 253:137-144. **2012 Impact Factor = 2.546; 5-Y Impact Factor = 3.158**

18. Rinkevich, B., **Angel, D.L.**, Shafir, S. and L. Bongiorno. 2003. 'Fair is foul and foul is fair': response to a critique. *Marine Ecology Progress Series* 261: 305–309. **2012 Impact Factor = 2.546; 5-Y Impact Factor = 3.158**
19. Spanier, E., Tsemel, A., Lubinevski, H., Roitemberg, A., Yurman, A., Breitstein, S., **Angel, D.L.**, Eden, N. and T. Katz. 2003. Can open water bio-filters be used for the reduction of the environmental impact of finfish net cage aquaculture in the coastal waters of Israel? *Annales Series Historia Naturalis* 13: 25-28. - **Not listed**
20. Lupatsch, I., Katz, T. and **D.L. Angel**. 2003. Removal of fish farm effluents by grey mullets: a nutritional approach. *Aquatic Living Resources* 34:1367-1377. **2012 Impact Factor = 1.071; 5-Y Impact Factor = 1.291**
21. Eden, N., Katz, T. and **D.L. Angel**. 2003. The impact of net cage fish farms on *Nassarius (Niotha) sinusigerus* distribution in the Gulf of Eilat (Aqaba), Red Sea. *Marine Ecology Progress Series* 263:139-147. **2012 Impact Factor = 2.546; 5-Y Impact Factor = 3.158**
22. Lojen, S. Spanier, E., Tsemel, A., Katz, T., Eden, N. and **D.L. Angel**. 2005.  $\delta^{15}\text{N}$  as a natural tracer of particulate nitrogen effluents released from marine aquaculture. *Marine Biology* 148:87-96. **2012 Impact Factor = 2.468; 5-Y Impact Factor = 2.491**
23. Cook, E.J., Black, K.D., Sayer, M.D.J., Cromey, C.J., **Angel, D.L.**, Spanier, E., Tsemel, A., Katz, T., Eden, N., Karakassis, I., Tsapakis, M., Apostolaki, E. and A. Malej. 2006. The influence of caged mariculture on the early development of sub-littoral fouling communities: a pan-European study. *ICES Journal of Marine Science* 63:637-649. **2012 Impact Factor = 2.277; 5-Y Impact Factor = 2.472**
24. Tsemel, A., Spanier, E. and **D.L. Angel**. 2006. Benthic communities of artificial structures: effects of mariculture in the Gulf of Aqaba (Eilat) on development and bioaccumulation. *Bulletin of Marine Science* 78: 103–113. **2012 Impact Factor = 1.297; 5-Y Impact Factor = 1.695**
25. Borja, A., Germán Rodríguez, J., Black, K.D., Bodoy, A., Emblow, C., Fernandes, T.F., Forte, J., Karakassis, I., Muxika, I., Nickell, T.D., Papageorgiou, N., Pranovi, F., Sevastou, K., Tomassetti, P. and **D.L. Angel**. 2009. Assessing the suitability of a range of benthic indices in the evaluation of environmental impact of fin and shellfish aquaculture located in sites across Europe. *Aquaculture* 293: 231-240. **2012 Impact Factor = 2.009; 5-Y Impact Factor = 2.624**
26. Wynne, M.J, Verbruggen, H., and **D.L. Angel**. 2009. The recognition of *Caulerpa integerrima* (Zanardini) comb. et stat. nov. (Bryopsidales, Chlorophyta) from the Red Sea. *Phycologia* 48: 291-301. **2012 Impact Factor = 1.647; 5-Y Impact Factor = 1.843**
27. Fuentes, V., **Angel, D.L.**, Bayha, K.M., Atienza, D., Edelist, D., Bordehore, C. and J.E. Purcell. 2010. Blooms of the invasive ctenophore, *Mnemiopsis leidyi*, span the Mediterranean Sea in 2009. *Hydrobiologia* 645:23-37. **2012 Impact Factor = 1.985; 5-Y Impact Factor = 2.270**
28. Nakar, N., Disegni, D., and **D.L. Angel**. 2011. Economic evaluation of jellyfish effects on the fishery sector—Case study from the eastern Mediterranean. In *Proceedings of the Thirteenth Annual BIOECON Conference* pp. 11-13.
29. \*Black, K.D., Calder, L.A., Nickell, T.D., Sayer, M.D.J., Orr, H., Brand, T., Cook, E.J., Magill, S., Katz, T., Eden, N., Jones, K.J., Tsapakis, M. and **D.L. Angel**. 2012. Chlorophyll, lipid profiles and bioturbation in sediments around a fish cage

- farm in the Gulf of Eilat, Israel. *Aquaculture* 345: 4-49. 2012 Impact Factor = 2.009; 5-Y Impact Factor = 2.624
30. \*Freeman, S., Vigoda-Gadot, E., Sterr, H., Schultz, M., Korchenkov, I., Krost, P. and **D.L. Angel**. 2012. Public attitudes towards marine aquaculture: A comparative analysis of Germany and Israel. *Environmental Science and Policy* 22: 60-72. 2012 Impact Factor = 2.978; 5-Y Impact Factor = 3.461
  31. \*Sarà, G., Prusina, I., Milanese, M., **Angel, D.L.**, Glamuzina, B., Nitzan, T., Freeman, S., Rinaldi, A., Palmeri, V., Montalto, V., Lo Martire, M., Gianguzza, P., Arizza, V., De Pirro, M., Helmuth, B., Murray, J., DeCantis, S. and G.A. Williams. 2012. The impact of climate change on Mediterranean intertidal communities: losses in coastal ecosystem integrity and services. *Regional Environmental Change*, published on-line, October 2012. {*Regional Environmental Change* (2014) 14:S5–S17}. 2012 Impact Factor = 1.945; 5-Y Impact Factor = 2.080
  32. \*Bolte, S., Fuentes, V., Haslob, H., Huwer, B., Thibault-Botha, D., **Angel, D.**, Galil, B., Javidpour, J., Moss, A.G. and T.B.H. Reusch. 2013. Population genetics of the invasive ctenophore *Mnemiopsis leidyi* in Europe reveal source-sink dynamics and secondary dispersal to the Mediterranean Sea. *Marine Ecology Progress Series* 484:25-36. 2012 Impact Factor = 2.546; 5-Y Impact Factor = 3.158
  33. \*Ozgul, A. and **D.L. Angel**. 2013. Aggregations of wild fish at net-cage fish farms in the Gulf of Aqaba-Red Sea; implications for fisheries management and conservation. *Aquaculture Environment Interactions* 4:135-145. 2012 Impact Factor = 2.219; 5-Y Impact Factor = 2.219
  34. \*Ghabooli, S., Shiganova, T.A., Briski, E., Piraino, S., Fuentes, V., Thibault-Botha, D., Angel, D.L., Cristescu, M.E. and H.J. MacIsaac. 2013. Invasion pathway of the invasive ctenophore *Mnemiopsis leidyi* in the Mediterranean Sea. *Plos One* 8(11):1-9. 2012 Impact Factor = 3.730; 5-Y Impact Factor = 4.240
  35. \* # Oron, S., **Angel, D.**, Goodman–Tchernov, B., Merkado, G., Kiflawi, M. and S. Abramovich. 2014. Benthic foraminiferal response to the removal of aquaculture fish cages in the Gulf of Aqaba-Eilat, Red Sea. *Marine Micropaleontology* 107:8-17. 2012 Impact Factor = 1.925; 5-Y Impact Factor = 2.713
  36. \*Gabay, O., Sternberg, M., **Angel, D.L.**, Barneah, O., Goren, M., Gasith, A., Gafny, S., Grunzweig, J.M., Hershkovitz, Y., Zohary, T., Yom-tov, Y., Israel, A., Milstein, D., Rilov, G. and Y. Steinberger. 2014. Climate change in Israel – implications for biodiversity and the need to establish a national center for climate change research. *Ecology and Environment* 5:161-171. Not listed
  37. \***Angel, D.L.**, Edelist, D. and S. Freeman. 2014. Local perspectives on regional challenges: jellyfish proliferation and fish stock management along the Israeli Mediterranean coast. *Regional Environmental Change* doi:10.1007/s10113-014-0613-0 2012 Impact Factor = 1.945; 5-Y Impact Factor = 2.080
  38. \*Sternberg, M., Gabay, O., **Angel, D.**, Barneah, O., Gafny, S., Gasith, A., Gruenzweig, J., Hershkovitz, Y., Israel, A., Milstein, D., Steinberger, Y. and T. Zohary. 2014. Impacts of climate change on biodiversity in Israel - an expert assessment approach. *Regional Environmental Change* doi:10.1007/s10113-014-0675-z 2012 Impact Factor = 1.945; 5-Y Impact Factor = 2.080

39. \*Alexander, K.A., Potts, T.P., Freeman, S., Israel, D., Johansen, J., Kletou, D., Meland, M., Pecorino, D., Rebours C., Shorten, M, and **D.L. Angel**. 2015. The implications of aquaculture policy and regulation for the development of integrated multi-trophic aquaculture in Europe. *Aquaculture* 443: 16–23. 2012 Impact Factor = 2.009; 5-Y Impact Factor = 2.624
40. \*Crise, A., Kaberi, H., Ruiz, J., Zatsepin, A., Arashkevich, E., Giani, M., Karageorgis, A.P., Prieto, L., Pantazi, M., Gonzalez-Fernandez, D., Ribera d'Alcalà, M., Tornero, V., Vassilopoulou, V., Durrieu de Madron, X., Guieu, C., Puig, P., Zenetos, A., Andral, B., **Angel, D.L.**, and 91 additional authors. 2015. A MSFD complementary approach for the assessment of pressures, knowledge and data gaps in Southern European Seas: the PERSEUS experience. *Marine Pollution Bulletin* DOI: 10.1016/j.marpolbul.2015.03.024
41. \*Liberzon, J., Carmel, Y. and **D.L. Angel**. 2015. The elusive nature of fluorescent organic matter in Lake Kinneret, Israel. *Hydrobiologia* DOI 10.1007/s10750-015-2360-8 2012 Impact Factor = 2.531; 5-Y Impact Factor = 3.153
42. \*Kuplik, Z., Kerem, D. and **D.L. Angel**. 2015. Regulation of *Cyanea capillata* populations by predation on their planulae. *Journal of Plankton Research* 37:1068-1073.
43. \*Alexander, K.A., **Angel, D.L.**, Freeman, S., Israel, D., Johansen, J., Kletou, D., Meland, M., Pecorino, D., Rebours,C., Rousou, M., Shorten, M. and T. Potts. 2016. Improving sustainability of aquaculture in Europe: Stakeholder dialogues on Integrated Multi-Trophic Aquaculture (IMTA). *Environmental Science and Policy* 55. pp. 96-106.
44. \*Israel, D., Gallo, C. and **D.L. Angel**. 2016. Benthic artificial reefs as a means to reduce the environmental effects of cod mariculture in Skutulsfjörður, Iceland. *Marine Biodiversity* (in press). DOI:10.1007/s12526-016-0490-5
45. \*van der Hall, N., Levy, A., and **D.L. Angel**. 2016. Exceptionally high abundances of microplastics in the oligotrophic Israeli Mediterranean coastal waters. *Marine Pollution Bulletin* (accepted). DOI: 10.1016/j.marpolbul.2015.03.024 2012 Impact Factor = 2.531; 5-Y Impact Factor = 3.153

## **E. Articles or Chapters in Scientific Books** **(which are not Conference Proceedings)**

### **Published**

1. **Angel, D.L.** 1998. Marine aquaculture and the marine environment in the Gulf of Aqaba: are these on a collision course, or can they co-exist? In: A. Adler, D. Baum and M. Fein (eds), *The Year of the Sea*, Israel Ministry of the Environment Publication, p. 217-222.
2. **Angel, D.L.**, Katz, T., Eden, N., Spanier, E. and K.D. Black. 2005. Damage control in the coastal zone: improving water quality by harvesting aquaculture-derived nutrients. In: E. Levner, I. Linkov and J.M. Proth (eds), *Strategic Management of Marine Ecosystems*, Springer, p. 77-87.
3. Spanier, E. and **D.L. Angel**. 2008. Benthic artificial reefs and mid-water artificial substrates in the northern Gulf of Aqaba: Biodiversity and potential environmental applications. In: F.D. Por (ed.), *Aqaba-Eilat, the Improbable*

- Gulf: Environment, Biodiversity and Preservation. Hebrew University Magnes Press, p. 281-298.
4. **Angel, D.L.** and S. Freeman. 2009. Integrated aquaculture (INTAQ) as a tool for an ecosystem approach to the marine farming sector in the Mediterranean Sea. In D. Soto (ed.). *Integrated marine aquaculture: a global review. FAO Fisheries and Aquaculture Technical Paper. No. 529.* Rome, FAO, p. 133-183.
  5. Troell M, Buck BH, Angel D, Chopin T (2012) Possibilities for the development of IMTA, combined with other activities, in offshore environments. In: Chopin T, Neori A, Robinson S, Troell M (eds). *Integrated multi-trophic aquaculture (IMTA) or the turquoise revolution: a greener ecosystem approach to the blue revolution.* Springer, Berlin, P.
  6. \*Karakassis, I. and **D.L. Angel.** 2011. Aquaculture-environment interactions in the Mediterranean Sea. In GFCM. 2011. *Site selection and carrying capacity in Mediterranean marine aquaculture: key issues (WGSC-SHoCMed).* p. 14-36. GFCM:XXXV/2011/Dma.9. (Also available at: [http://gfcmsitestorage.blob.core.windows.net/documents/web/GFCM/35/GFCM\\_XXXV\\_2011\\_Dma.9.pdf](http://gfcmsitestorage.blob.core.windows.net/documents/web/GFCM/35/GFCM_XXXV_2011_Dma.9.pdf))
  7. \***Angel, D.L.** and S. Freeman. 2011. Interaction of aquaculture with other uses of the coastal zone. In GFCM. 2011. *Site selection and carrying capacity in Mediterranean marine aquaculture: key issues (WGSC-SHoCMed).* p. 79-88. GFCM:XXXV/2011/Dma.9. (Also available at: [http://gfcmsitestorage.blob.core.windows.net/documents/web/GFCM/35/GFCM\\_XXXV\\_2011\\_Dma.9.pdf](http://gfcmsitestorage.blob.core.windows.net/documents/web/GFCM/35/GFCM_XXXV_2011_Dma.9.pdf))
  8. \*Freeman, S. and **D.L. Angel.** 2011. Economic bottlenecks. In GFCM. 2011. *Site selection and carrying capacity in Mediterranean marine aquaculture: key issues (WGSC-SHoCMed).* p. 89-99. GFCM:XXXV/2011/Dma.9. (Also available at: [http://gfcmsitestorage.blob.core.windows.net/documents/web/GFCM/35/GFCM\\_XXXV\\_2011\\_Dma.9.pdf](http://gfcmsitestorage.blob.core.windows.net/documents/web/GFCM/35/GFCM_XXXV_2011_Dma.9.pdf))
  9. Suhrbier, A., Cheney, D., Middleton, M., Christy, A., Davis, J., Downey, R., Richardson, J., Newell, C., Luckenbach, M., Getchis, T., Vaudrey, M. and **D. Angel.** Environmental effects of marine shellfish aquaculture on benthic fauna and water column characteristics. NOAA NMAI and the NOAA Aquaculture Program. Available at: <http://www.pacshell.org/pdf/shellfishaquaenviron.pdf>

## **F. Articles in Conference Proceedings**

### **Published**

1. **Angel, D.L.**, Krost, P., Zuber, D. and Neori, A. 1992. Microbial mats mediate the benthic turnover of organic matter in polluted sediments in the Gulf of Aqaba. *Editors - Lea Saar and George Kissil. Proceedings of the U.S-Israel Workshop on Mariculture and the Environment,* p. 66-73. Eilat, Israel - June 8 - 10, 1992
2. **Angel, D.L.**, Eden, N. and Susel, L. 1995. The influence of environmental variables on *Halophila stipulacea* growth. *European Aquaculture Society* 25: 103-128
3. **Angel, D.L.**, Krost, P. and Gordin, H. 1995. Benthic implications of net cage aquaculture in the oligotrophic Gulf of Aqaba. *European Aquaculture Society* 25: 129-173

4. Wust-Bloch, G. H. 1997. (ed.) with contributions of Amit, R.; **Angel, D.L.**; Hadad, A.; Enzel, Y.; Heimann, A.; Yechieli, Y.; Marco, S.; Steinitz, G.; Wachs, D.; Wust, H.; Zilberbrand, M.; Zilberman, E. and Zuber, D.: The Nuweiba earthquake (22.11.1995): Post-seismic analysis of failure features and seismic hazard implications. Israel Geological Survey, Special report 3/97, 59 pp.
5. Baptist, M., Silvert, W., **Angel, D.L.** and Krost, P. 1997. Assessing benthic impacts of fish farming with an expert system based on neural networks. *Editors - G.T. Wallace and E. F. Braasch - Proceedings of the Gulf of Maine Ecosystem Dynamics Scientific Symposium and Workshop, Regional Association for Research on the Gulf of Maine (RARGOM) Report, 97-1, p. 313-327. New Hampshire, USA - June 10, 1997*
6. **Angel, D.L.** and E. Spanier, 1998. The potential of artificial reefs to reduce organic enrichment caused by commercial net cage fish farming in the Gulf of Aqaba. *Proceedings of the Workshop on Offshore Technologies for Aquaculture, Technion, Haifa, 13-15 October, 1998. p 266-269*
7. **Angel, D.L.** and Spanier, E. 1999. Artificial reefs to reduce organic enrichment caused by net cage fish farming - preliminary results. In: G. Relini, G. Ferrara and E. Massaro (eds). *Proceedings 7th International Conference on Artificial Reefs (7th CARAH) pp. 478 - 485.*
8. Black, K.D., Sayer, M.D., Cook, E.J., **Angel, D.L.**, Spanier, E., Karakassis, I., Malej, A., Collins, K., Pickering, H., Whitmarsh, D. and S. Lojen. 2001. BIOFAQs - BIOFiltration and AQUaculture: an evaluation of substrate deployment performance. In: A. Uriarte and B. Basurco (eds). Environmental impact assessment of Mediterranean aquaculture farms. Proceedings of the seminar of the CIHEAM Network on Technology of Aquaculture in the Mediterranean (TECAM), 17-21 January, 2000, Zaragoza, Spain, *Cahiers Options Mediterraneennes* 55 pp. 205-207.
9. **Angel, D.L.** 2004. Integrated aquaculture - variations on the theme of biofiltration. *Bulletin of the Aquaculture Association of Canada* 104: 20-25.
10. Soto, D., Aguilar-Manjarrez, J., Brugère, C., **Angel, D.L.**, Bailey, C., Black, K., Edwards, P., Costa-Pierce, B., Chopin, T., Deudero, S., Freeman, S., Hambrey, J., Hishamunda, N., Knowler, D., Silvert, W., Marba, N., Mathe, S., Norambuena, R., Simard, F., Tett, P., Troell, M. & Wainberg, A. 2008. Applying an ecosystem-based approach to aquaculture: principles, scales and some management measures. In D. Soto, J. Aguilar-Manjarrez and N. Hishamunda (eds). Building an ecosystem approach to aquaculture. FAO/Universitat de les Illes Balears Expert Workshop. 7–11 May 2007, Palma de Mallorca, Spain. *FAO Fisheries and Aquaculture Proceedings*. No. 14. Rome, FAO. pp. 15–35.
11. \***Angel, D.L.** and D. Edelist. 2013. Sustainable development of tropical marine aquaculture off-the-coast and offshore. In: Lovatelli, A., Aguilar-Manjarrez, J. & Soto, D., eds. Expanding mariculture farther offshore: technical, environmental, spatial and governance challenges. FAO Technical Workshop, 22–25 March 2010, Orbetello, Italy. *FAO Fisheries and Aquaculture Proceedings* No. 24. Rome, FAO. p. 173 – 200.
1. \***Van Der Hal, N., Rios L.M. and D.L. Angel.** 2016. Microplastics in Israeli Mediterranean Coastal Waters. In: J. Baztan et al., eds., *MICRO 2016: Fate and*

Impact of Microplastics in Marine Ecosystems, From the Coastline to the Open Sea (ISBN: 978-0-12-812271-6), Elsevier p. 13-14.

## **G. Entries in Encyclopedias (Refereed)**

1. \***Angel, D.L.** 2012. Sustainable marine aquaculture in the Mediterranean. In: Robert A. Meyers (ed.), *Encyclopedia of Sustainability Science and Technology*, DOI 10.1007/978-1-4419-0851-3, Springer Science+Business Media LLC, 18 pp
2. \*Troell, M., Buck, B.H., **Angel, D.L.** and T. Chopin. 2014. Possibilities for the development of integrated multi-trophic aquaculture (IMTA), combined with other activities, in offshore environments. In: Meyers, Robert A. (Ed.), *Encyclopedia of Sustainability Science and Technology*, 10pp

## **H. Other Scientific Publications**

### **Published Guidelines for Sustainable Aquaculture** (with my contributions)

1. IUCN 2007. *Guide for the Sustainable Development of Mediterranean Aquaculture 1. Interactions between Aquaculture and the Environment*. Gland, Switzerland and Málaga, Spain: IUCN. 303 p.
  2. IUCN 2009. *Guide for the Sustainable Development of Mediterranean Aquaculture. 2. Aquaculture site selection and site management*. Gland, Switzerland and Malaga, Spain. VIII + 319 p.
  3. IUCN 2009. *Guide for the Sustainable Development of Mediterranean Aquaculture. 3. Responsible Aquaculture Practices & Certification*. Gland, Switzerland and Malaga, Spain. 66 p.
  4. FAO. 2010. Aquaculture development. 4. *Ecosystem approach to aquaculture*. FAO Technical Guidelines for Responsible Fisheries. No. 5, Suppl. 4. Rome, FAO. 53 p.
- \* ICES. 2014. Report of the Joint CIESM/ICES Workshop on *Mnemiopsis* Science (JWMS), 18–20 September 2014, A Coruña, Spain. ICES CM. 2014/SSGHIE: 14. 80 pp. (participation and contribution)

### **Research & Case Reports**

1. Neori, A. and **D.L. Angel**. 1990 - 1991. *Annual Report* of the Water Quality Group. National Center for Mariculture, Israel Oceanographic and Limnological Research, Ltd
2. **Angel, D.L.** and A. Neori. 1992 - 1993. *Annual Report* of the Water Quality and Algal Physiology Group. National Center for Mariculture, Israel Oceanographic and Limnological Research, Ltd
3. **Angel, D.L.**, Brenner, S., Golik, A. and N. Mozes. 1993. *Environmental Impact Assessment* for the Dagsuf Fish Farm in the Gulf of Aqaba. Israel Oceanographic and Limnological Research, Ltd

4. Kissil, G., **Angel, D.L.** and A. Neori. 1994. *Annual Report* of the Water Quality and Algal Physiology Group. National Center for Mariculture, Israel Oceanographic and Limnological Research, Ltd
5. **Angel, D.L.** 1995 – 2004. *Annual Reports* of the Environmental Quality Research Group. National Center for Mariculture, Israel Oceanographic and Limnological Research, Ltd
6. **Angel, D.L.**, Post, A., Brenner, S., Eden, N., Katz, T., Cicelsky, A., Lupatsch, I. 1998. *Environmental Impact Assessment* of Net Cage Fish Farming in the Gulf of Aqaba. Israel Oceanographic and Limnological Research, Ltd

### **\*I. Papers in Preparation (summer 2016)**

- Kuplik, Z., Kerem, D., Angel, D.L. 2016. Diet and potential impact of the rhizostome *Rhopilema nomadica* on the marine food web in Israeli coastal waters. - **In advanced form**
- Elasar, M., Kerem, D., Lazar, M., Angel, D.L. 2016. Macro-faunal abundance and diversity in Akhziv submarine canyon and adjacent slope (eastern Levantine basin, Mediterranean Sea). - **working on 1<sup>st</sup> draft**
- Alexander, K.A., Freeman, S., Angel, D.L. 2016. The ‘perception gap’ caused by representational inequality in environmental resource planning. - **in revision**