**Food availability drives plastic self-repair response in a basal metazoan-case study on the ctenophore Mnemiopsis leidyi**

**A. Agassiz**

Many marine invertebrates including ctenophores are capable of extensive body regeneration when injured. However, as for the invasive ctenophore Mnemiopsis leidyi, there is a constant subportion of individuals not undergoing whole body regeneration but forming functionally stable half-animals instead. Yet, the driving factors of this phenomenon have not been addressed so far. This study sheds new light on how differences in food availability affect self-repair choice and regeneration success in cydippid larvae of M. leidyi. As expected, high food availability favored whole-body regeneration. However, under low food conditions half-animals became the preferential self-repair mode. Remarkably, both regenerating and half-animals showed very similar survival chances under respective food quantities. As a consequence of impaired food uptake after injury, degeneration of the digestive system would often occur indicating limited energy storage capacities. Taken together, this indicates that half-animals may represent an alternative energy-saving trajectory which implies self-repair plasticity as an adaptive trade-off between high regeneration costs and low energy storage capacities. We conclude that self-repair plasticity could lead to higher population fitness of ctenophores under adverse conditions such as in ships' ballast water tanks which is postulated to be the major vector source for the species' spreading around the globe.

**General information**

State: Published
Organisations: National Institute of Aquatic Resources, Section for Oceans and Arctic, Norwegian University of Science and Technology, GEOMAR - Helmholtz Centre for Ocean Research Kiel, University of Florida
Authors: Bading, K. T. (Ekstern), Kaehlert, S. (Ekstern), Chi, X. (Ekstern), Jaspers, C. (Intern), Martindale, M. Q. (Ekstern), Javidpour, J. (Ekstern)
Publication date: 1 Dec 2017
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General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Ecology and Oceanography, University of Copenhagen, GEOMAR - Helmholtz Centre for Ocean Research Kiel, Københavns Universitet
Authors: Ayala, D. J. (Intern), Munk, P. (Intern), Lundgreen, R. B. C. (Intern), Traving, S. J. (Ekstern), Jaspers, C. (Intern), Riemann, L. (Ekstern)
Publication date: 2017
Event: Abstract from Dansk Havforskermøde, Helsingør, Denmark.
Main Research Area: Technical/natural sciences
Publication: Research - peer-review › Journal article – Annual report year: 2017

Changes in food web function and diversity due to non-indigenous species

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Living Resources, Section for Oceans and Arctic, Abo Academy University, University of Erlangen-Nuremberg
Authors: Lehtiniemi, M. (Ekstern), Bonsdorff, E. (Ekstern), Funk, S. (Ekstern), Herlevi, H. (Ekstern), Huwer, B. (Intern), Jaspers, C. (Intern)
Number of pages: 127
Publication date: 2017

Host publication information
Establishment of a taxonomic and molecular reference collection to support the identification of species regulated by the Western Australian Prevention List for Introduced Marine Pests

Introduced Marine Pests (IMP, = non-indigenous marine species) prevention, early detection and risk-based management strategies have become the priority for biosecurity operations worldwide, in recognition of the fact that, once established, the effective management of marine pests can rapidly become cost prohibitive or impractical. In Western Australia (WA), biosecurity management is guided by the “Western Australian Prevention List for Introduced Marine Pests” which is a policy tool that details species or genera as being of high risk to the region. This list forms the basis of management efforts to prevent introduction of these species, monitoring efforts to detect them at an early stage, and rapid response should they be detected. It is therefore essential that the species listed can be rapid and confidently identified and discriminated from native species by a range of government and industry stakeholders. Recognising that identification of these species requires very specialist expertise which may be in short supply and not readily accessible in a regulatory environment, and the fact that much publicly available data is not verifiable or suitable for regulatory enforcement, the WA government commissioned the current project to collate a reference collection of these marine pest specimens. In this work, we thus established collaboration with researchers worldwide in order to source representative specimens of the species listed. Our main objective was to build a reference collection of taxonomically vouchered specimens and subsequently to generate species-specific DNA barcodes suited to supporting their future identification. To date, we were able to obtain specimens of 75 species (representative of all but four of the pests listed) which have been identified by experts and placed with the WA Government Department of Fisheries and, where possible, in accessible museums and institutions in Australasia. The reference collection supports the fast and reliable taxonomic and molecular identification of marine pests in WA and constitutes a valuable resource for training of stakeholders with interest in IMP recognition in Australia. The reference collection is also useful in supporting the development of a variety of DNA-based detection strategies such as real-time PCR and metabarcoding of complex environmental samples (e.g. biofouling communities). The Prevention List is under regular review to ensure its continued relevance and that it remains evidence and risk-based. Similarly, its associated reference collection also remains to some extent a work in progress. In recognition of this fact, this report seeks to provide details of this continually evolving information repository publicly available to the biosecurity management community worldwide.
Indvandrene

General information
State: Published
Organisations: National Institute of Aquatic Resources, Centre for Ocean Life, Section for Oceans and Arctic
Authors: Kjerboe, T. (Intern), Jaspers, C. (Intern)
Pages: 5
Publication date: 2017

Publication information
Pages (from-to): 5
Newspaper: Weekendavisen
Ratings:
ISI indexed (2013): ISI indexed no
ISI indexed (2012): ISI indexed no
ISI indexed (2011): ISI indexed no
Main Research Area: Technical/natural sciences
Publication: Communication › Newspaper article – Annual report year: 2017

Marine food webs in a changing ocean: Are we ignoring important plankton components?

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Oceans and Arctic
Authors: Jaspers, C. (Intern)
Publication date: 2017
Event: Abstract from IHF - Special seminar, Hamburg, Germany.
Main Research Area: Technical/natural sciences
Publication: Research › Conference abstract for conference – Annual report year: 2017

Marine snow particles in the oligotrophic Sargasso Sea as analysed by amplicon sequencing: composition and linkage to the plankton

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Ecology and Oceanography, Danish Shellfish Centre, Københavns Universitet, Aarhus University
Authors: Lundgren, R. B. C. (Ekstern), Ayala, D. J. (Intern), Jaspers, C. (Intern), Traving, S. J. (Forskerdatabase), Lombard, F. (Ekstern), Grossart, H. (Ekstern), Munk, P. (Intern), Nielsen, T. G. (Intern), Riemann, L. (Ekstern)
Publication date: 2017
Event: Abstract from Dansk Havforskermøde, Helsingør, Denmark.
Main Research Area: Technical/natural sciences
Publication: Research › Conference abstract for conference – Annual report year: 2017

Microbiota – host interactions: Linking microbiota associations to fitness in a basal metazoan

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Oceans and Arctic
Authors: Jaspers, C. (Intern), Weiland-Bräuer, N. (Ekstern), Schmitz-Streit, R. (Ekstern), Reusch, T. (Ekstern)
Publication date: 2017
Event: Poster session presented at Metaorganism Seminar, Kiel, Germany.
Main Research Area: Technical/natural sciences
Publication: Research › Poster – Annual report year: 2017

Quelle mit Perspektive: Evolutionspotential einer invasiven Art in der Ostsee

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Oceans and Arctic
Authors: Jaspers, C. (Intern)
Resilience in moving water: Effects of turbulence on the predatory impact of the lobate ctenophore Mnemiopsis leidyi: Mnemiopsis leidyi feeding in turbulence

Despite its delicate morphology, the lobate ctenophore Mnemiopsis leidyi thrives in coastal ecosystems as an influential zooplankton predator. Coastal ecosystems are often characterized as energetic systems with high levels of natural turbulence in the water column. To understand how natural wind-driven turbulence affects the feeding ecology of M. leidyi, we used a combination of approaches to quantify how naturally and laboratory generated turbulence affects the behavior, feeding processes and feeding impact of M. leidyi. Experiments using laboratory generated turbulence demonstrated that turbulence can reduce M. leidyi feeding rates on copepods and Artemia nauplii by >50%. However, detailed feeding data from the field, collected during highly variable surface conditions, showed that wind-driven turbulence did not affect the feeding rates or prey selection of M. leidyi. Additional laboratory experiments and field observations suggest that the feeding process of M. leidyi is resilient to wind-driven turbulence because M. leidyi shows a behavioral response to turbulence by moving deeper in the water column. Seeking refuge in deeper waters enables M. leidyi to maintain high feeding rates even under high turbulence conditions generated by wind driven mixing. As a result, M. leidyi exerted a consistently high predatory impact on prey populations during highly variable and often energetic wind-driven mixing conditions. This resilience adds to our understanding of how M. leidyi can thrive in a wide spectrum of environments around the world. The limits to this resilience also set boundaries to its range expansion into novel areas.

General information
State: Accepted/In press
Organisations: Section for Marine Ecology and Oceanography, National Institute of Aquatic Resources, Danish Shellfish Centre, Marine Biological Laboratory, University of Oregon, Roger Williams University, Woods Hole Oceanographic Institution
Authors: Jaspers, C. (Intern), Costello, J. H. (Ekstern), Sutherland, K. R. (Ekstern), Gemmell, B. (Ekstern), Lucas, K. N. (Ekstern), Tackett, J. (Ekstern), Dodge, K. (Ekstern), Colin, S. P. (Ekstern)
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
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ISSN (Print): 0024-3590
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Web of Science (2018): Indexed yes
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Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.5 SJR 1.712 SNIP 1.225
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.472 SNIP 1.422 CiteScore 3.93
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.112 SNIP 1.584 CiteScore 3.73
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.256 SNIP 1.587 CiteScore 3.98
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 2.456 SNIP 1.5 CiteScore 3.81
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 2.374 SNIP 1.445 CiteScore 3.59
ISI indexed (2011): ISI indexed yes
Revealing the role of ocean currents for secondary invasions in a holoplanktonic species

General information
State: Published
Organisations: National Institute of Aquatic Resources, Danish Shellfish Centre, Section for Marine Living Resources, GEOMAR - Helmholtz Centre for Ocean Research Kiel
Authors: Jaspers, C. (Intern), Huwer, B. (Intern), Hinrichsen, H. (Ekstern), Biastoch, A. (Ekstern)
Publication date: 2017
Event: Abstract from ASLO Aquatic Sciences Meeting 2017, Honolulu, United States.
Main Research Area: Technical/natural sciences
Publication: Research - peer-review › Journal article – Annual report year: 2017

Selection for life-history traits to maximize population growth in an invasive marine species
Species establishing outside their natural range, negatively impacting local ecosystems, are of increasing global concern. They often display life-history features characteristic for r-selected populations with fast growth and high reproduction rates to achieve positive population growth rates (r) in invaded habitats. Here, we demonstrate substantially earlier maturation at a 2 orders of magnitude lower body mass at first reproduction in invasive compared to native populations of the comb jelly Mnemiopsis leidyi. Empirical results are corroborated by a theoretical model for competing life-history traits that predicts maturation at the smallest possible size to optimize r, while individual lifetime reproductive success (R0), optimized in native populations, is near constant over a large range of intermediate maturation sizes. We suggest that high variability in reproductive tactics in native populations is an underappreciated determinant of invasiveness, acting as substrate upon which selection can act during the invasion process.
**General information**

State: Accepted/In press
Organisations: National Institute of Aquatic Resources, Section for Oceans and Arctic, Danish Shellfish Centre, Section for Marine Ecology and Oceanography, Centre for Ocean Life
Authors: Jaspers, C. (Intern), Marty, L. (Intern), Kiørboe, T. (Intern)
Publication date: 2017
Main Research Area: Technical/natural sciences

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Journal: Global Change Biology
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BFI (2018): BFI-level 2
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Scopus rating (2016): CiteScore 8.75 SJR 4.768 SNIP 2.615
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 5.239 SNIP 2.585 CiteScore 8.48
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 4.636 SNIP 2.693 CiteScore 8.33
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 4.624 SNIP 2.655 CiteScore 8.4
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 4.228 SNIP 2.388 CiteScore 7.2
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 4.385 SNIP 2.23 CiteScore 6.86
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 4.394 SNIP 2.257
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 4.127 SNIP 2.178
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 3.934 SNIP 2.203
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 3.09 SNIP 1.837
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 3.148 SNIP 1.897
Scopus rating (2005): SJR 2.529 SNIP 1.877
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 2.679 SNIP 1.682
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 2.557 SNIP 1.561
Web of Science (2003): Indexed yes
Sind Quallen womöglich die Urväter höheren Lebens?

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Oceans and Arctic
Authors: Jaspers, C. (Intern)
Publication date: 2017

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Source/Publisher: Welt24
Main Research Area: Technical/natural sciences
Links:
https://www.welt.de/wissenschaft/article165396951/Sind-Quallen-womöglich-die-Urväter-höheren-Lebens.html
Publication: Communication › Internet publication – Annual report year: 2017

The invasive comb jelly *Mnemiopsis leidyi* in Europe and in the Baltic Sea: Invasion history, distribution, phenology and ecosystem impacts

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Living Resources, Section for Oceans and Arctic
Authors: Huwer, B. (Intern), Jaspers, C. (Intern)
Number of pages: 1
Publication date: 2017

Host publication information
Title of host publication: Book of Abstracts Sustain 2017
Article number: A-11
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Conference: Sustain 2017, Kgs. Lyngby, Denmark, 06/12/2017 - 06/12/2017
Electronic versions:
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2017

Zooplankton in a global perspective: Will climate change favor a more gelatinous marine food web?

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Oceans and Arctic
Authors: Jaspers, C. (Intern)
Publication date: 2017
Event: Abstract from Aarhus University Marine Ecology Seminar Series, Aarhus, Denmark.
Main Research Area: Technical/natural sciences
Publication: Research › Conference abstract for conference – Annual report year: 2017
Effects of in situ turbulence on the feeding behavior of Mnemiopsis leidyi

Selection for high reproduction rates during establishment of non-indigenous species: A case study of a successful marine invader

Carbon content of Mnemiopsis leidyi eggs and specific egg production rates in northern Europe
Elevating the predatory effect: Sensory-scanning foraging strategy by the lobate ctenophore Mnemiopsis leidyi

The influential predatory role of the lobate comb jellyfish Mnemiopsis leidyi has largely been attributed to the generation of a hydrodynamically silent feeding current to entrain and initiate high encounter rates with prey. However, for high encounter rates to translate to high ingestion rates, M. leidyi must effectively capture the entrained prey. To investigate the capture mechanisms, we recorded and quantified, using three-dimensional videography, the outcome of encounter events with slow swimming Artemia prey. The auricles, which produce the feeding current of M. leidyi, were the primary encounter structures, first contacting 59% of the prey in the feeding current. Upon detection, the auricles manipulated the Artemia to initiate captures on the tentillae, which are coated with sticky cells (colloblasts). Using this mechanism of sensory-scanning to capture prey entrained in the feeding current, M. leidyi uses a similar foraging strategy to that of feeding-current foraging copepods. As such, M. leidyi has a higher capture efficiency than do medusae, contributing to the greater predatory effect of M. leidyi in both its endemic and invasive ecosystems.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Ecology and Oceanography, Marine Biological Laboratory, Providence College, University of California at Berkeley, University of Texas, University of Oregon, GEOMAR - Helmholtz Centre for Ocean Research Kiel
Authors: Colin, S. P. (Ekstern), MacPherson, R. (Ekstern), Gemmell, B. (Ekstern), Costello, J. H. (Ekstern), Sutherland, K. (Ekstern), Jaspers, C. (Intern)
Pages: 100-109
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Main Research Area: Technical/natural sciences

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Scopus rating (2016): CiteScore 3.5 SJR 1.712 SNIP 1.225
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.472 SNIP 1.422 CiteScore 3.93
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.112 SNIP 1.584 CiteScore 3.73
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.256 SNIP 1.587 CiteScore 3.98
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 2.456 SNIP 1.5 CiteScore 3.81
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Elevating the predatory effect: Sensory-scanning foraging strategy by the lobate ctenophore Mnemiopsis leidyi

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Ecology and Oceanography
Authors: Collin, S. P. (Ekstern), MacPherson, R. (Ekstern), Gemmell, B. (Ekstern), Costello, J. (Ekstern), Sutherland, K. (Ekstern), Jaspers, C. (Intern)
Publication date: 2015
Event: Abstract from ASLO Aquatic Sciences Meeting 2015, Granada, Spain.
Main Research Area: Technical/natural sciences
Publication: Research - peer-review › Journal article – Annual report year: 2015

Interactions of gelatinous zooplankton within marine food webs

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Ecology and Oceanography, GEOMAR - Helmholtz Centre for Ocean Research Kiel, National Oceanographic and Atmospheric Administration, Universidad de Oviedo
Reproduction rates under variable food conditions and starvation in Mnemiopsis leidyi: significance for the invasion success of a ctenophore

The ctenophore Mnemiopsis leidyi is characterized by high growth rates and a large reproductive capacity. However, reproductive dynamics are not yet well understood. Here, we present laboratory data on food-dependent egg production in M. leidyi and egg hatching time and success. Further, we report on the reproduction of laboratory-reared and field-caught animals during starvation. Our results show that the half-saturation zooplankton prey concentration for egg production is reached at food levels of 12–23 µgC L⁻¹, which is below the average summer food concentration encountered in invaded areas of northern Europe. Furthermore, starved animals continue to produce eggs for up to 12 days after cessation of feeding with high overall hatching success of 65–90%. These life history traits allow M. leidyi to thrive and reproduce in environments with varying food conditions and give it a competitive advantage under unfavourable conditions. This may explain why recurrent population blooms are observed and sustained in localized areas in invaded northern Europe, where water exchange is limited and zooplankton food resources are quickly depleted by M. leidyi. We suggest that these reproductive life history traits are key to its invasion success.
Review of environmental factors influencing distributions of selected Baltic species: Report: BIO-C3 Deliverable, D1.1. EU Bonusproject BIO-C3

General information
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Organisations: National Institute of Aquatic Resources, Centre for Ocean Life, Section for Marine Ecology and Oceanography, Danish Shellfish Centre, University of Hamburg, Leibniz Institute of Marine Sciences, University of Tartu

Original language: English
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Publication: Research - peer-review » Journal article – Annual report year: 2015

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Ecology and Oceanography
Authors: Reusch, T. B. (Ekstern), Jaspers, C. (Intern)
Publication date: 2015

The invasive comb-jelly Mnemiopsis leidyi in northern Europe: Transport, origin and local extinction and re-invasion of sub-populations

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Ecology and Oceanography, Danish Shellfish Centre, Leibniz Institute of Marine Sciences
Authors: Jaspers, C. (Intern), Hinrichsen, H. (Ekstern), Møller, L. F. (Intern)
Publication date: 2015
Event: Abstract from ASLO Aquatic Sciences Meeting 2015, Granada, Spain.
Main Research Area: Technical/natural sciences
Publication: Research › Conference abstract for conference – Annual report year: 2016

A synthesis of the distribution of Mnemiopsis leidyi in European waters

General information
State: Published
Organisations: National Institute of Aquatic Resources, Centre for Ocean Life, Section for Marine Ecology and Oceanography, IFREMER, Alfred Wegener Institute, Aarhus University, Université Montpellier, University of Toulon, Institute of Biology of the Southern Seas, CSIC, Université de La Rochelle, Thünen Institute of Sea Fisheries, University Museum of Bergen, National Research Council of Italy, Alfred Wegener Institute for Polar and Marine Research, Leibniz-Institute for Baltic Sea Research, Sorbonne Universités, Institute of Fisheries, Marine Ecology, Istanbul University, Cefas, Institute for Agricultural and Fisheries Research, Marine Biology and Ecology Department, Royal Netherlands Institute for Sea Research - NIOZ, Deltares, GEOMAR - Helmholtz Centre for Ocean Research Kiel, University of Gothenburg, Aix Marseille Universite, University of Southern Denmark
Das Meer von Morgen

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Ecology and Oceanography
Authors: Jaspers, C. (Intern)
Publication date: 2014

Publication information
Newspaper: Der Tagesspiegel
No.: 22
Main Research Area: Technical/natural sciences
Links:
http://oceanrep.geomar.de/24973/1/21.06.14%2C%20Meer-1.pdf
Publication: Communication › Newspaper article – Annual report year: 2015

Das unbekannte Wasserwesen

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Ecology and Oceanography
Authors: Jaspers, C. (Intern)
Pages: 13
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Pages (from-to): 13
Newspaper: Kieler Nachrichten
Main Research Area: Technical/natural sciences
Links:
Publication: Communication › Newspaper article – Annual report year: 2015

DNA Sampling of Mnemiopsis leidyi for genotyping of populations

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Ecology and Oceanography, GEOMAR - Helmholtz Centre for Ocean Research Kiel
Authors: Jaspers, C. (Intern), Reusch, T. (Ekstern)
Pages: 76-79
Publication date: 2014

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Title of host publication: Report of the Joint CIESM/ICES Workshop on Mnemiopsis Science (JWMS)
Series: ICES Council Meeting
Volume: SSGHIE
Number: 14
ISSN: 1015-4744
Main Research Area: Technical/natural sciences
Publication: Research › Report chapter – Annual report year: 2015

Does the 'snot' of the oceans matter? Engaging with the public on gelatinous zooplankton. Lessons learned from The Danish Eel Expedition 2014

General information
Mechanisms behind the metabolic flexibility of an invasive comb jelly

Mnemiopsis leidyi is an invasive comb jelly which has successfully established itself in European seas. The species is known to produce spectacular blooms yet it is holoplanktonic and not much is known about its population dynamics in between. One way to gain insight on how M. leidyi might survive between blooms and how it can bloom so fast is to study how the metabolism of this species actually responds to environmental changes in food and temperature over its different life-stages. To this end we combined modelling and data analysis to study the energy budget of M. leidyi over its full life-cycle using Dynamic Energy Budget (DEB) theory and literature data. An analysis of data obtained at temperatures ranging from 8 to 30 °C suggests that the optimum thermal tolerance range of M. leidyi is higher than 12 °C. Furthermore M. leidyi seems to undergo a so-called metabolic acceleration after hatching. Intriguingly, the onset of the acceleration appears to be delayed and the data do not yet exist which allows determining what actually triggers it. It is hypothesised that this delay confers a lot of metabolic flexibility by controlling generation time. We compared the DEB model parameters for this species with those of another holoplanktonic gelatinous zooplankton species (Pelagia noctiluca). After accounting for differences in water content, the comparison shows just how fundamentally different the two energy allocation strategies are. P. noctiluca has an extremely high reserve capacity, low turnover times of reserve compounds and high resistance to shrinking. M. leidyi adopts the opposite strategy: it has a low reserve capacity, high turnover rates of reserve compounds and fast shrinking.
Mnemiopsis leidyi in the Baltic Sea region: Origin, transport and seasonality

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Ecology and Oceanography, GEOMAR - Helmholtz Centre for Ocean Research Kiel, University of Gothenburg
Quallen trüben den Badespaß

Will global change favor a more gelatinous marine food web? Lessons learned from the invasion history of a comb jelly in northern Europe

Environmental constraints of the invasive Mnemiopsis leidyi in Scandinavian waters
Novel insight from Mnemiopsis ecophysiological data using a coherent framework

General information
State: Published
Organisations: National Institute of Aquatic Resources, Centre for Ocean Life, Section for Marine Ecology and Oceanography, Sebastiaan A.L.M. Kooijman, University of Porto, Royal Netherlands Institute for Sea Research - NIOZ, Aix Marseille Universite
Authors: Augustine, S. (Intern), Jaspers, C. (Intern), Kooijman, S. A. (Ekstern), Freitas, V. (Ekstern), Walraven, L. V. (Ekstern), Veer, H. V. D. (Ekstern), Poggiale, J. (Ekstern), Carlotti, F. (Ekstern)
Number of pages: 1
Publication date: 2013
Event: Abstract from Dynamic Energy Budget (DEB) symposium, Island of Texel, Netherlands.
Main Research Area: Technical/natural sciences
Electronic versions:
Conference abstract
Publication: Research › Conference abstract for conference – Annual report year: 2013

Seasonal dynamics of early life stages of invasive and native ctenophores give clues to invasion and bloom potential in the Baltic Sea

Recently, both the invasive ctenophore Mnemiopsis leidyi and the arctic Mertensia ovum were discovered in the Baltic Sea but their range expansion remains unclear due to misidentification of their larval stages. Supported by molecular species verification we describe seasonal abundance and distribution of larvae and eggs of these two species. We show that their occurrence is significantly but inversely related to salinity. Mertensia ovum was present year round throughout the brackish Baltic Sea but also occurred in high-saline areas during cold seasons. Larvae of M. leidyi occurred throughout all seasons in high-saline areas but never extended further into the central Baltic. Highest ctenophore egg abundances were observed in high-saline areas during summer along with the first appearance of M. leidyi adults. The M. leidyi population peaked 2 months after the first occurrence of adults in high-saline areas, suggesting these areas as a source for lower saline regions. Low larvae abundances and a reduced transitional-to-adult ratio in the southern Baltic point to reduced or no active recruitment, suggesting that drift of animals from high-saline into lower saline regions sustains the M. leidyi population in the southern Baltic such as the Arkona and Bornholm basins.

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State: Published
Organisations: National Institute of Aquatic Resources, Centre for Ocean Life, GEOMAR - Helmholtz Centre for Ocean Research Kiel, University of Gothenburg
Authors: Jaspers, C. (Intern), Haraldsson, M. (Ekstern), Lombard, F. (Ekstern), Bolte, S. (Ekstern), Kiørboe, T. (Intern)
Pages: 582-594
Publication date: 2013
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Plankton Research
Volume: 35
Issue number: 3
ISSN (Print): 0142-7873
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.92 SJR 1.098 SNIP 0.848
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.025 SNIP 0.796 CiteScore 1.77
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.095 SNIP 1.255 CiteScore 2.24
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.289 SNIP 1.109 CiteScore 2.39
Ctenophore population recruits entirely through larval reproduction in the central Baltic Sea

Featured as research highlight in Nature. The comb jelly Mertensia ovum, widely distributed in Arctic regions, has recently been discovered in the northern Baltic Sea. We show that M. ovum also exists in the central Baltic but that the population consists solely of small-sized larvae (less than 1.6 mm). Despite the absence of adults, eggs were abundant. Experiments revealed that the larvae were reproductively active. Egg production and anticipated mortality rates suggest a self-sustaining population. This is the first account of a ctenophore population entirely recruiting through larval reproduction (paedogenesis). We hypothesize that early reproduction is favoured over growth to compensate for high predation pressure.

General information
State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources, Section for Population Ecology and Genetics
Authors: Jaspers, C. (Intern), Haraldsson, M. (Ekstern), Bolte, S. (Ekstern), Reusch, T. B. (Ekstern), Thygesen, U. H. (Intern), Kiørboe, T. (Intern)
Ecology of gelatious plankton: With emphasis on feeding interactions, distribution pattern and reproduction biology of Mnemiopsis leidyi in the Baltic Sea

Comb jellies were a relatively obscure group of zooplankton, until Mnemiopsis leidyi invaded the Black Sea in the 1980’s with cascading effects on several ecosystem levels including commercial fisheries. This native to the east coasts of America triggered large public and scientific attention as a result of this invasion and its ecological and economic impacts. In 2005, when M. leidyi was sighted in Northern Europe for the first time, similar consequences were feared. The aim of my PhD project was to understand the potential impact of M. leidyi on the Baltic Sea ecosystem and constrains on its dispersal. Specifically, the project investigated (i) direct and indirect effects of M. leidyi on the Baltic cod population in its
most important spawning ground, (ii) factors governing the spatial and temporal distribution of M. leidyi eggs, larvae and adults in the Baltic and,

(iii) M. leidyi reproduction and its effect on population development. The approach involved 13 monthly monitoring cruises from high saline Skagerrak to low saline northern Baltic regions, in situ and laboratory controlled reproduction and feeding experiments, molecular analysis for species verification, and statistical modeling. The low feeding rates and passive negative selection of cod eggs in experiments demonstrate that M. leidyi does not pose a direct threat to the Baltic cod population at the environmental conditions characteristic for its spawning ground. Furthermore, the drastically reduced reproduction rates observed under low salinities suggest M. leidyi is not likely to compete with cod recruits prey. Spatial and temporal surveys show highest abundances during October, with a consistent absence of adult and larval M. leidyi in the northern Baltic. Abundances in the Kattegat were 60 times higher than in the central Baltic, suggesting that the M. leidyi population in the central Baltic is dependent on advection from high saline areas. This interpretation is consistent with the low reproduction rates measured and a low fraction of up-growing animals in the central Baltic. While adults were not observed from April to June in high saline areas, M. leidyi larvae were present throughout the year. It remains unclear where M. leidyi overwinters but high saline areas appear to be important in the annual establishment of the population.

Laboratory and in situ reproduction experiments confirmed that fecundity is a major contributor to M. leidyi’s invasion success, although salinity is regulating, and possibly restricting, its range expansion in Northern Europe. Maximum reproduction rates are shown to be attained at low food concentrations, helping reconcile the high population densities observed in localized areas despite low food concentrations. An unexpected discovery was that the arctic relict ctenophore Mertensia ovum, thought to be restricted to the northern Baltic, also occurs in the high saline Kattegat/Skagerrak during winter and spring. Interestingly, in the northern Baltic the M. ovum population consists exclusively of larval-sized animals that are actively reproducing and maintaining a self-sustained population. Natural selection can favor early maturation at small size when mortality rates are high, and our results are consistent with this hypothesis. Currently, M. leidyi has established itself permanently in high and intermediate saline areas in Northern Europe. While the ecological impact of M. leidyi in the central Baltic appears to be limited concern, the environment in other European waters should be more favourable to their populations. In these areas, it is suggested that M. leidyi constitutes a potential threat to fisheries through resource competition with fishes.

General information
State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources
Authors: Jaspers, C. (Intern), Kiørboe, T. (Intern)
Number of pages: 130
Publication date: 2012

Publication information
Place of publication: Charlottenlund
Publisher: DTU aqua. National Institute of Aquatic Resources
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
Publication: Research › Ph.D. thesis – Annual report year: 2012

Occurrence, inter-annual variability and zooplankton-predation impact of the invasive ctenophore Mnemiopsis leidyi and the native jellyfish Aurelia aurita in Limfjorden (Denmark) in 2010 and 2011

In 2007, the invasive ctenophore Mnemiopsis leidyi was observed for the first time in Limfjorden (Denmark) where it exhibited mass occurrence in late summer while the indigenous and usually dominating common jellyfish, Aurelia aurita, was nearly absent. Both species were further studied in 2008 and 2009 and it was found that the additional predation pressure by M. leidyi caused the zooplankton stocks to be severely depressed. Here, we report on the population dynamics and predation impact of M. leidyi and A. aurita in Limfjorden in 2010 and 2011. In 2010, M. leidyi was observed in Limfjorden for the first time in August with the highest density and largest size in the central parts (Skive Fjord). The estimated half-life of zooplankton (copepods) was only important in Skive Fjord in mid-August 2010 when the joint-predation impact of A. aurita and M. leidyi was 2.3 d. In 2011, no M. leidyi were observed on the first cruise (3 August), while during the second cruise (17 November) it was observed in large numbers. The western most location (Vene Bugt) was dominated by large sized (≥ 60 mm) M. leidyi, while the average size decreased towards the central parts of the fjord-system. The proportion of cydippid larvae increased from west to the central parts thus suggesting rapid reproduction and population-size expansion. The bio-volumes of ctenophores were highest in the central part with 85 ml m-3 in Løgstør Bredning, which may be compared to the greatest mean bio-volume of about 184 ml m-3 observed in the Black Sea in 1989 when the zooplankton and fish stocks collapsed. Analysis of available hydrographic data and model calculations indicates that re-invasion of M. leidyi from the North Sea seeded the autumn population in Limfjorden in mid-September.

General information
State: Published
The gelatinous zooplankton communities of Godthåbsfjorden, West Greenland

General information
State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources
Authors: Hopcroft, R. R. (Ekstern), Jaspers, C. (Intern), Nielsen, T. G. (Intern)
Number of pages: 35
Publication date: 2012
Event: Poster session presented at 2012 ASLO Aquatic Sciences Meeting, Salt Lake City, UT, United States.
Main Research Area: Technical/natural sciences

The invasive ctenophore Mnemiopsis leidyi in northern European waters and its potential impact on fisheries

The recent invasion by Mnemiopsis in northern European waters has lead to concerns for fishery interests especially in the central Baltic Sea, where it overlaps with commercially important cod recruits on their spawning grounds. We present laboratory feeding rate experiments along with video recordings, in situ reproduction rates and distribution data to investigate the direct and indirect effect on the Baltic cod population. Feeding rates on cod larvae were low and negligible for eggs under the hydrographic conditions characteristic for the spawning grounds. Further, Mnemiopsis passively selected against cod eggs. Application of our clearance rates to in situ abundances confirmed that Mnemiopsis has a negligible direct predation impact on cod offspring. Further, due to drastically reduced reproduction rates at low salinities, occurrence of Mnemiopsis in the central Baltic appears to be dependent on advection, and is unlikely to reach large population sizes. Hence, Mnemiopsis constitutes neither a direct nor a potential indirect threat to the cod population in the central Baltic. However, its large reproduction potential in high saline areas with 11,500 eggs ind-1 d-1 and observed high abundances in parts of northern Europe make Mnemiopsis a severe potential food competitor with fish in these higher saline systems.
A place for Mnemiopsis: Spatio-temporal habitat characterization in Scandinavian waters

General information
State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources
Authors: Haraldsson, M. (Ekstern), Jaspers, C. (Intern), Titleiman, J. (Ekstern), Aksnes, D. L. (Ekstern), Tiselius, P. (Ekstern)
Publication date: 2011
Event: Poster session presented at 5th International Zooplankton Production Symposium, Púcon, Chile.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 277429
Publication: Research › Poster – Annual report year: 2011

Long-term effects of grazing and global warming on the composition and carrying capacity of graminoid marshes for moulting geese in East Greenland

General information
State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources
Authors: Madsen, J. (Ekstern), Jaspers, C. (Intern), Tamstorf, M. (Ekstern), Mortensen, C. E. (Ekstern), Rigét, F. (Ekstern)
Pages: 638-649
Publication date: 2011
Main Research Area: Technical/natural sciences
Publication information
Journal: Ambio
Volume: 40
ISSN (Print): 0044-7447
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BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.19 SJR 1.221 SNIP 1.194
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.114 SNIP 1.089 CiteScore 2.6
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.23 SNIP 1.308 CiteScore 2.71
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.203 SNIP 1.278 CiteScore 2.56
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.953 SNIP 0.907 CiteScore 1.88
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.845 SNIP 0.897 CiteScore 1.65
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.176 SNIP 1.323
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.189 SNIP 1.082
Multi-decadal changes in tundra environments and ecosystems: Synthesis of the International Polar Year-Back to the Future Project (IPY-BTF)

Understanding the responses of tundra systems to global change has global implications. Most tundra regions lack sustained environmental monitoring and one of the only ways to document multi-decadal change is to resample historic research sites. The International Polar Year (IPY) provided a unique opportunity for such research through the Back to the Future (BTF) project (IPY project #512). This article synthesizes the results from 13 papers within this Ambio Special Issue. Abiotic changes include glacial recession in the Altai Mountains, Russia; increased snow depth and hardness, permafrost warming, and increased growing season length in sub-arctic Sweden; drying of ponds in Greenland; increased nutrient availability in Alaskan tundra ponds, and warming at most locations studied. Biotic changes ranged from relatively minor plant community change at two sites in Greenland to moderate change in the Yukon, and to dramatic increases in shrub and tree density on Herschel Island, and in sub-arctic Sweden. The population of geese tripled at one site in northeast Greenland where biomass in non-grazed plots doubled. A model parameterized using results from a BTF study forecasts substantial declines in all snowbeds and increases in shrub tundra on Niwot Ridge, Colorado over the next century. In general, results support and provide improved capacities for validating experimental manipulation, remote sensing, and modeling studies.

General information
State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources, University of Texas, Royal Swedish Academy of Sciences, Centre for Ecology and Hydrology, Linköping University, North Dakota State University, Lund University, Yukon Territorial Government, Lantmäteriet, Queen's University, Institute of Biology and Biotechnology of Plants, Michigan State University, Swedish Biodiversity Centre, Umeå University, Abisko Scientific Research Station, University of British Columbia, University of Alberta, Marine Biological Laboratory, Stockholm University, Uppsala University, University of Saskatchewan, Vrije Universiteit Amsterdam, Alfred Wegener Institute, Aarhus University, Komarov Botanical Institute, Minnesota State University Moorhead, Tomsk State University, Portland State University, Flanders Research Foundation
Pages: 705-716
Publication date: 2011
Main Research Area: Technical/natural sciences
Salinity gradient of the Baltic Sea limits the reproduction and population expansion of the newly invaded comb jelly Mnemiopsis leidyi

General information
State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources, University of Gothenburg
Authors: Jaspers, C. (Intern), Møller, L. F. (Intern), Kiørboe, T. (Intern)
Pages: e24065
Publication date: 2011
Main Research Area: Technical/natural sciences

Publication information
Journal: PLoS ONE
Volume: 6
Issue number: 8
ISSN (Print): 1932-6203
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.11 SJR 1.201 SNIP 1.092
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.414 SNIP 1.131 CiteScore 3.32
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.545 SNIP 1.141 CiteScore 3.54
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.74 SNIP 1.147 CiteScore 3.94
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.945 SNIP 1.142 CiteScore 4.15
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
The invasive ctenophore Mnemiopsis leidyi poses no direct threat to Baltic cod eggs and larvae

Since its invasion into the Baltic Sea in 2006, the ctenophore Mnemiopsis leidyi has been suspected of serious predation on the early life stages of Baltic cod (Gadus morhua callarias L.) due to a temporal and spatial overlap in the most important cod spawning ground, the Bornholm Basin. We conducted laboratory incubation experiments and video observations to quantify feeding rates on Baltic cod eggs and larvae. Ingestion rates increased with cod larvae concentrations up to 8 prey L⁻¹, beyond which ingestion remained constant. Neither Mnemiopsis size nor egg concentration (1–16 prey L⁻¹) affected feeding rates on cod eggs. Observed feeding rates pooled from all experiments conducted at nonsaturating prey concentrations were low, with the highest volume-specific clearance on 4.5-d-old yolk-sac larvae (0.05 ± 0.02 L (mL Mnemiopsis)⁻¹ h⁻¹), and lower rates on 4.5–8-d-old larvae (0.02 ± 0.02 L (mL Mnemiopsis)⁻¹ h⁻¹) and eggs (0.02 ± 0.03 L (mL Mnemiopsis)⁻¹ h⁻¹). When offered Artemiasalina and cod eggs simultaneously, Mnemiopsis passively selected against cod eggs. Video recordings showed that eggs did not trigger the capture response that Mnemiopsis shows toward motile prey, and ingested eggs were often ejected (88%, n = 8). Applying our clearance rates to in situ abundances of cod eggs, larvae, and Mnemiopsis for the peak of the spawning season, we demonstrate that the predation pressure of the invasive ctenophore is negligible. We conclude that Mnemiopsis constitutes no direct threat to the Baltic cod population.

General information
State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources
Authors: Jaspers, C. (Intern), Titelman, J. (Ekstern), Hansson, L. J. (Ekstern), Haraldsson, M. (Ekstern), Ditlefsen, C. R. (Ekstern)
Pages: 431-439
Publication date: 2011
Main Research Area: Technical/natural sciences

Publication information
Journal: Limnology and Oceanography
Volume: 56
Issue number: 2
ISSN (Print): 0024-3590
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.5 SJR 1.712 SNIP 1.225
The physical characteristics of the Baltic Sea might act as a bottleneck for the Mnemiopsis leidyi population expansion in this newly invaded area.
Biological baseline study in the Ramsar site "Heden" and the entire Jameson Land, East Greenland

Composition of the metazooplankton community and structure across the continental shelf off tropical NW Australia

This talk focuses on the distribution pattern and grazing impact of different functional metazooplankton groups in a tropical marine ecosystem. We studied the metazooplankton distribution across the continental shelf from eutrophic mangrove areas to the oligotrophic deep blue ocean off NW Australia. Chlorophyll a concentrations were reduced by factor 10 along the transect including a shift towards small sized primary producers. The metazooplankton biomass followed the same pattern. Even though low in abundance, copepods were most frequent followed by larvaceans, doliolids other thaliacea and chaetognaths. Small size classes <200 μm dominated the zooplankton and e.g. 80 % of the larvacean community belonged to the micro-size fraction. We show that gelatinous zooplankton is of key importance for the carbon cycling in this tropical area. Larvaceans exceeded the copepod grazing impact on the primary producers especially in oligotrophic areas. The metazooplankton community structure and production reflect biotic and abiotic conditions of the system. We show that small size classes, especially larvaceans, have a higher contribution to secondary production and carbon cycling in tropical oligotrophic areas than previously thought.
Effect of acid Lugol solution as preservative on two representative chitineous and gelatinous zooplankton groups

The estimation of biomass from body lengths to carbon regressions is a common approach in plankton research. Several different chemicals for sample preservation are in use, and conversion factors to account for shrinkage effects exist, but to our knowledge the consequences of using potassium-iodide and iodine (Lugol solution) as preservative on body sizes of different mesozooplankton groups have not been investigated. We tested the effect of 2% acidified Lugol solution on body sizes over time on two major marine mesozooplankton groups, namely larvaceans and copepods, which are representatives of gelatinous and chitineous plankton, respectively. For both, we observed a significant shrinkage effect over time (P <0.0001). Larvaceans showed a reduction in body size by 20% within the first 2 min, which stabilized after 36 h at 22%, whereas copepods shrank by 17%. These differences were significant (P = 0.0324), with no further shrinkage observed over an additional 3 months. Failure to adequately account for shrinkage effects could result in significant biomass underestimation if length-weight relationships are generated from live material.

General information

State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources, Aarhus University
Authors: Jaspers, C. (Intern), Carstensen, J. (Ekstern)
Pages: 430-435
Publication date: 2009
Main Research Area: Technical/natural sciences

Publication information
Journal: Limnology and Oceanography: Methods
Volume: 7
ISSN (Print): 1541-5856
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 1.005 SNIP 0.898 CiteScore 2.03
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.375 SNIP 1.226 CiteScore 2.61
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.203 SNIP 1.087 CiteScore 2.27
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.148 SNIP 1.007 CiteScore 2.26
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.251 SNIP 0.981 CiteScore 2.11
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.06 SNIP 0.811 CiteScore 1.86
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.003 SNIP 0.785
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.637 SNIP 0.685
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.861 SNIP 0.853
Web of Science (2008): Indexed yes
The abundance and depth distribution of metazoans > 20 μm were investigated at seven stations across the Southern Indian Ocean (SIO), October-November 2006. Copepod nauplii, copepodites and larvaceans dominated the metazooplankton community. Copepodites were most abundant within Agulhas Current and Southern Ocean waters, decreasing toward subtropical/tropical areas, whereas larvaceans showed the inverse pattern. The fraction <200 μm contained the majority of the zooplankton enumerated, including 81, 23 and 93% of the larvacean, copepodite and nauplii abundances, respectively. The relative abundance of larvaceans compared with copepodites increased from 7 to 44% from South Africa towards Australia. Peak copepodite biomass was observed off South Africa, while larvacean biomass was <1% of the copepodite biomass there, increasing to 6% in tropical waters. Both copepodite and nauplii biomass were positively correlated to total Chl a (P < 0.0001), larvacean biomass was only significantly related to temperature (P = 0.0213). Despite their low biomass, larvacean production was estimated to exceed the copepod production up to five times. It appears that the abundance and role of larvaceans in the SIO has been severely underestimated in previous studies; thus future investigations into the fate of organic matter will remain incomplete if this group is not adequately considered.

General information
State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources
Authors: Jaspers, C. (Intern), Nielsen, T. G. (Intern), Carstensen, J. (Ekstern), Hopcroft, R. R. (Ekstern), Møller, E. F. (Ekstern)
Pages: 525-540
Publication date: 2009
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Plankton Research
Volume: 31
Issue number: 5
ISSN (Print): 0142-7873
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.92 SJR 1.098 SNIP 0.848
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.025 SNIP 0.796 CiteScore 1.77
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.095 SNIP 1.255 CiteScore 2.24
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.289 SNIP 1.109 CiteScore 2.39
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Mesozooplankton distribution across the Southern Indian Ocean with emphasis on Appendicularians

General information
State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources
Authors: Jaspers, C. (Intern), Nielsen, T. G. (Intern)
Publication date: 2008
Event: Poster session presented at Ocean Sciences Meeting, From the Watershed to the Global Ocean, Orlando, Florida, US.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 259106
Publication: Research › Poster – Annual report year: 2008

Mesozooplankton distribution across the Southern Indian Ocean with emphasis on Appendicularians

General information
State: Published
Metazooplankton distribution across the Southern Indian Ocean during the Galathea 3 Expedition

General information
State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources
Authors: Jaspers, C. (Intern), Nielsen, T. G. (Intern), Carstensen, J. (Ekstern), Hopcroft, R. (Ekstern), Møller, E. (Ekstern)
Publication date: 2008
Event: Poster session presented at Galathea 3-arrangement, Copenhagen, Denmark.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 259107
Publication: Research › Poster – Annual report year: 2008

Projects:

Ecology and evolution of a notorious invader: Is invasion success influenced by rapid adaptation to global change? (39175)
Marine invasive species have globally increasing biological and economic impacts. However, evolutionary mechanisms favoring range expansion and invasiveness remain poorly understood. This project will describe the environmental envelope of the comb jelly Mnemiopsis leidyi, one of the most notorious marine invasive species, and experimentally investigate the potential for rapid adaptive evolution, which might enable the species to overcome current physiological constraints on the range of its distribution. This includes the possible role of intra-specific hybridization for accelerating adaptive evolution. The results will have implications for the assessment of future invasion risks by M. leidyi in a global change perspective.

The project is coordinated by DTU Aqua.

Biodiversity changes - causes, consequences and management implications (BIO-C3) (39117)
BIO-C3 will investigate the dynamics of biodiversity in the Baltic Sea, their causes and the consequences for the function of food webs, including implications for biodiversity management policies.

Baltic biodiversity is historically dynamic responding to various drivers operating at different time and space scales. Species diversity is generally low and contains many recent immigrants and glacial relict species because of low salinity and relatively young age. Nevertheless, Baltic food webs sustain many goods and services valued by society.

We focus on functional consequences of ongoing and projected distributional and compositional changes of benthic and pelagic communities with a focus on invasive and resident key species. Using spatial and temporal projections of abiotic/biotic drivers including their interaction (climate change, eutrophication, species invasions, fisheries), we will assess how biodiversity (e. g., of species, traits, habitats) responds in time, space and along gradients of human impact and hydrography. We will investigate the potential and genetic basis for colonisation, acclimation and adaptation of species and populations to the Baltic Sea, and how compositional and adaptive changes of Baltic biodiversity affect
ecosystem functions with an emphasis on trophic linkage and food web dynamics.

Results will feed into impact assessments that guide management policies including improved operationalization of status indicators, and guidelines for MPAs.

The project is coordinated by Helmholtz Centre for Ocean Research, Kiel (GEOMAR). DTU Aqua is co-coordinator.

The project is funded equally by EU, BONUS (Science for a Better Future of the Baltic Sea Region), ERA-NET.

National Institute of Aquatic Resources

Section for Marine Ecology and Oceanography

GEOMAR - Helmholtz Centre for Ocean Research Kiel

University of Hamburg

Stockholm University

National Marine Fisheries Research Institute

University of Tartu

Finnish Environment Institute

Klaipeda University

DHI Denmark

University of Gothenburg

Johann Heinrich von Thünen-Institute

Swedish Meteorological and Hydrological Institute

Åbo Academy University

Period: 01/03/2014 → 28/02/2018

Number of participants: 10

Research areas: Marine Populations and Ecosystem Dynamics & Fish Biology & Population Genetics & Ecosystem based Marine Management

Project participant:

Tomkiewicz, Jonna (Intern)

MacKenzie, Brian (Intern)

Eero, Margit (Intern)

Bekkevold, Dorte (Intern)

Dutz, Jörg (Intern)

Behrens, Jane (Intern)

Huwer, Bastian (Intern)

Project Manager, organisational:

Neuenfeldt, Stefan (Intern)

Project Manager, academic:

Jaspers, Cornelia (Intern)

Project Coordinator:

Köster, Fritz (Intern)

The early life of eel in the Sargasso Sea – Influence of oceanography and climate (SARGASSO-EEL) (39107)

The recruitment of the European eel has been in dramatic decline during the last 30 years, and is at a severe low of only 3-5% of earlier magnitude. This change and its influence on the eel fishery have led to an intensified research in the oceanic phase of the European eel.

In order to contribute to further understanding of the life cycle of eel the Danish eel expedition set out in 2014 for the eel spawning grounds in the Sargasso Sea. Here a consortium of Danish scientists and international collaborators focused on the linkages between oceanography, biological production, eel spawning and the growth and drift of eel larvae.

During the expedition, a wide range of organisms was collected: From the smallest plankton of less than a millimeter to very large fish. A number of research groups are now working on samples and data from the expedition and assembling information on key processes in the early life of eels. Preliminary findings indicate that biological and physical changes have taken place in the spawning areas that may affect the eel larvae’s chances of survival and their journey to Europe.
The project was coordinated by DTU Aqua.

The project is funded by the Carlsberg Foundation and Danish Centre of Marine Research (cruise).

National Institute of Aquatic Resources
Section for Marine Ecology and Oceanography
University of Copenhagen
Aarhus University
Pierre and Marie Curie University - University of Paris VI
Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB), Berlin
Université de la Méditerranée
University of Alaska Fairbanks
University of Rhode Island

Sir Alister Hardy Foundation for Ocean Science (SAHFOS)

International Council for the Exploration of the Sea
Period: 01/08/2013 → 01/08/2016
Number of participants: 11
Research areas: Marine Populations and Ecosystem Dynamics & Fish Biology & Oceanography

Project participant:
Thomsen, Helge Abildhauge (Intern)
Sørensen, Sune Riis (Intern)
Bekkevold, Dorte (Intern)
Malanski, Evandro (Intern)
Jaspers, Cornelia (Intern)
Koski, Marja (Intern)
Christoffersen, Mads (Intern)
Hansen, Susanne (Intern)

Phd Student:
Ayala, Daniel Jiro (Intern)

Project Manager, academic:
Nielsen, Torkel Gissel (Intern)

Project Coordinator:
Munk, Peter (Intern)

Baltic zooplankton cascades (BAZOOCA) (38584)

The alien ctenophore *Mnemiopsis leidyi*, notorious for wrecking havoc in the Black Sea, was recently introduced to the Baltic, where it thrives. As an enclosed brackish water system where many organisms live close to their tolerance thresholds, the Baltic is very sensitive to such disturbances. We aim to test the overall hypothesis that *Mnemiopsis* in the Baltic causes cascading effects throughout the pelagic food web, from gelatinous and top predators to microbes. Using field studies, experiments and modeling we will address a specific set of research aims (organized as work packages). We will consider these research aims within the natural spatial (Baltic proper, Bothnian Sea, Bothnian Bay) and environmental (oxygen, temperature, salinity, light, N, P) gradients in the Baltic. Understanding such food web effects and potential cascades is crucial given the overall stress from contemporary environmental challenges, e.g. eutrophication, increased maritime activities, and climate change. The results will be useful for both scientists and policy makers. The current regime shift towards more jellyfish is unprecedented in the Baltic. Its effects on this specific ecosystem cannot be forecast solely on the basis of lessons from other ecosystems.

The project is coordinated by University of Gothenburg, Sweden.

National Institute of Aquatic Resources
Centre for Ocean Life
University of Gothenburg
University of Kalmar
University of Bergen

University of Helsinki

Umeå University
Period: 01/01/2009 → 14/07/2012
Number of participants: 2
Research area: Oceanography
Project participant:
Jaspers, Cornelia (Intern)
Project Manager, academic:
Kiørboe, Thomas (Intern)

Feeding ecology of gelationous plankton

National Institute of Aquatic Resources
Period: 15/12/2008 → 27/06/2012
Number of participants: 6
Phd Student:
Jaspers, Cornelia (Intern)
Supervisor:
Nielsen, Torkel Gissel (Intern)
Main Supervisor:
Kiørboe, Thomas (Intern)
Examiner:
Brander, Keith (Intern)
Acuña-Fernández, José Luis (Ekstern)
Costello, John H. (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Activities:

ICES - Working Group on Assessment of New MoU Species - WGNEW (External organisation)
Period: 2012 → …
Cornelia Jaspers (Participant)

Section for Ocean Ecology and Climate
Degree of recognition: International

Related external organisation

ICES - Working Group on Assessment of New MoU Species - WGNEW
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar