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中国科学院海洋研究所
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1. **The non-indigenous medusa Blackfordia virginica (Hydrozoa, Leptothecata) in tropical Brazil: 50 years of unnoticed presence**
   热带巴西非本土的弗洲指突水母：50 年被忽视的存在
   http://link.springer.com/article/10.1007%2Fs10530-013-0496-x

Blackfordia virginica, a hydromedusa native to the Black Sea, has become established in a number of estuarine areas worldwide. In estuaries of northeastern Brazil, only a single published report, from the early 1960s, exists of the species and its establishment here has remained doubtful. On discovering specimens collected in the region at various times between 1987 and 2000, however, we hypothesized that this hydromedusa has long inhabited estuaries in the area while going unnoticed. The objective of this study was to investigate its occurrence in brackish waters of tropical northeastern Brazil over the past 50 years. In a search for specimens we found 1,759 individuals from estuaries of the Santa Cruz Channel (Itamaraca) and Capibaribe and Jiquia rivers that had been collected between 1987 and 2000. In addition, an analysis of grey literature (Ph.D. theses) suggests that the species has been present in the Santa Cruz Channel for at least five decades. Results thus support the hypothesis that this non-indigenous species has been established in the region for several decades at least, and that it constitutes an exotic component of the community.

2. **Irukandji jellyfish polyps exhibit tolerance to interacting climate change stressors**
   Irukandji 水母水螅体表现出对相互作用的气候变化压力的耐受性
   http://onlinelibrary.wiley.com/doi/10.1111/gcb.12408/abstract;jsessionid=911CDD66CA6310B54A26990A80A547F9.f04t03

Increasing ocean temperatures and strengthening boundary currents have caused the poleward migration of many marine species. Cubozoan jellyfish known to cause Irukandji syndrome have historically been confined to tropical waters but may be expanding into subtropical regions. Here, we examine the interactive effects of warming and acidification on the population dynamics of polyps of an Irukandji jellyfish, Alatina nr mordens, and the formation of statoliths in newly metamorphosed medusae, to determine if this jellyfish could tolerate future conditions predicted for southeast Queensland (SEQ), Australia. Two experiments, examining the orthogonal factors of temperature and pH, were undertaken. Experiment 1 mimicked the current, ca. 2050 and ca. 2100 summer temperature and pH conditions predicted for SEQ using A1F1 scenarios (temperature: 25, 27, 29 ℃; pH: 7.9, 7.8, 7.6) and Experiment 2 mimicked current and future winter conditions (18 and 22 ℃, pH 7.9, 7.8, 7.6). All polyps in Experiment 1 survived and budded. Fewer polyps budded in the lower pH treatments; however, patterns varied slightly among temperature treatments. Statoliths at pH 7.6 were 24% narrower than those at pH 7.8 and 7.9. Most polyps survived the winter conditions mimicked by Experiment 2 but only polyps in the 22 ℃, pH 7.9 treatment increased significantly. The current absence of A. nr mordens medusae in SEQ, despite the polyps' ability to tolerate the current temperature and pH conditions, suggests that ecological, rather than abiotic factors currently limit their distribution. Observations that budding was lower under low pH treatments suggest that rates of asexual reproduction will likely be much slower in the future. We consider that A. nr mordens polyps are likely to tolerate future conditions but are unlikely to thrive in the long term. However, if polyps can overcome potential ecological boundaries and acidification proceeds slowly A. nrmordens could expand polewards in the short term.

3. **Morphological and molecular discrimination of two closely related jellyfish species, Cyanea capillata and C. lamarckii (Cnidaria, Scyphozoa), from the northeast Atlantic**
   东北大西洋两种密切相关的水母种类 Cyanea capillata 和 C. lamarckii 的形态学与分子水平的区别
   http://plankt.oxfordjournals.org/content/36/1/48.short

Detecting fluctuations in the species composition of bloom-forming jellyfish requires the ability to correctly identify each species in each developmental stage. We verified diagnostic morphological and molecular genetic characters to discriminate Cyanea lamarckii and Cyanea capillata from northern European waters. Intrusions in the sub-umbrellar muscle folds were present in all C. capillata >80 mm r-diameter (between opposite rhopalia tips), but absent in C. lamarckii. Clearly visible wart-like papillae on the central exumbrella were present in all C. lamarckii >10-80 mm r-diameter, but absent in C. capillata. Both morphological features were retained in formaldehyde-seawater (4%) preserved medusae which had shrunk by 12.8% (+/- 2.7%) after 1 year of preservation. Our molecular genetic analyses demonstrated that fragments of mitochondrial cytochrome c oxidase subunit I (COI) and nuclear 18S rDNA clearly distinguished C. lamarckii from C. capillata, with intra- and inter-specific pairwise genetic distances of 0.0-1.5% and 15.5-17.0% (COI) and 0.0 and 0.2% (18S rDNA), respectively. The study revealed various bell colours in both species underlining that the identification based on the bell colours can result in misidentification. Our integrated taxonomic approach can help to correctly identify jellyfish species, which is fundamentally important for understanding the causes of jellyfish fluctuations and the development of jellyfish blooms.

4. **Emphasizing the diversity of North Sea hydromedusae by combined morphological and molecular methods**
   通过结合运用形态学和分子生物学方法强调北海水螅水母的多样性
   http://plankt.oxfordjournals.org/content/36/1/64

Hydromedusae are widespread and diverse representatives of the gelatinous zooplankton, but are often neglected because of their inconspicuousness and difficulties with identification. Here, we used an integrated approach combining both morphological and molecular genetic analyses of North Sea hydromedusae. Morphological identification was successfully carried out on living material, and preservation in 4% formaldehyde allowed re-examination of most morphological features. Ethanol and DESS were adequate fixatives for DNA analyses but led to distortion of morphological characters. In most cases, morphological species identifications were confirmed by molecular data (COI partial sequences) and the latter approach led to valid discrimination where morphological characters were insufficient. In comparison with 22 morphologically identified entities, COI analysis revealed 25 clades with a pronounced difference of ≥5.4% between intra- and inter-specific variability. Specimens morphologically identified as *Obelia* spp. were attributed to *O. geniculata*, *O. dichotoma* and *O. longissima*, while *Clytia*spp. were allocated to *C. hemisphaerica* and *C. languida* by the comparison to hydroid and medusa sequences retrieved from GenBank. Our results highlight the molecular approach as a powerful tool, extending the possibilities for valid species discriminations where morphological identification is difficult, for example, in species with a similar or identical morphology, in early life stages with insufficient identifying features and in linking different generations (hydroid and medusa). However, genetic analysis cannot replace

morphologically based taxonomy in studies on species' population dynamics, physiology and ecology. Thus, most information is achieved by combining both methods in integrative studies using both morphological and molecular taxonomy.

5. **Beneficial co-culture of jellyfish Rhopilema esculenta (Kishinouye) and sea cucumber Apostichopus japonicus (Selenka): implications for pelagic-benthic coupling**

   水母（Kishinouye）和刺参（Selenka）的有利共培养：浮游底栖耦合影响

   http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2109.2012.03225.x/abstract;jsessionid=B6E7C28272BC1CA1784A3CEAABF8282E.f04t04

   This study investigated monthly changes of sedimentation and sediment properties in three different culture systems (ponds) – i.e. jellyfish Rhopilema esculentamonoculture (J), sea cucumber Apostichopus japonicus and jellyfish co-culture (SJ) and sea cucumber monoculture (S) – to verify the feasibility of co-culturing jellyfish and sea cucumbers. Results showed that jellyfish culture accelerated the settling velocity of total particulate matter (TPM). Average TPM settling velocities in the SJ (75.6 g m−2 day−1) and J (71.1 g m−2 day−1) ponds were significantly higher than that in the S pond (21.7 g m−2 day−1) from June to September during the jellyfish culture period. Average settling velocities of organic matter (OM), total organic carbon (TOC), total nitrogen (TN) and total phosphorus (TP) in the SJ pond increased significantly by 3.0, 2.9, 3.3 and 3.8 times, respectively, compared with those in the S pond. Sediment contents of OM, TOC, TN and TP in the SJ and J ponds were significantly higher than those in the S pond during the jellyfish culture season. The specific growth rate of sea cucumbers feeding on SJ sediment was significantly higher than that of those feeding on S sediment. Co-culturing sea cucumbers with jellyfish may help alleviate benthic nutrient loading due to the jellyfish and provide a secondary cash crop.

6. **Timoides agassizii Bigelow, 1904, little-known hydromedusa (Cnidaria), appears briefly in large numbers off Oman, March 2011, with additional notes about species of the genus Timoides**

   2011 年 3 月阿曼水螅水母 Timoides agassizii 的暴发

   http://biotaxa.org/Zootaxa/article/view/zootaxa.3746.2.7

   A bloom of the hydromedusan jellyfish, Timoides agassizii, occurred in February 2011 off the coast of Sohar, Al Batinah, Sultanate of Oman, in the Gulf of Oman. This species was first observed in 1902 in great numbers off Haddummati Atoll in the Maldive Islands in the Indian Ocean and has rarely been seen since. The species appeared briefly in large numbers off Oman in 2011 and subsequent observation of our 2009 samples of zooplankton from Sohar revealed that it was also present in low numbers (two collected) in one sample in 2009; these are the first records in the Indian Ocean north of the Maldives. Medusaecollected off Oman were almost identical to those recorded previously from the Maldive Islands, Papua New Guinea, the Marshall Islands, Guam, the South China Sea, and Okinawa. T. agassizii is a species that likely lives for several months. It was present in our plankton samples together with large numbers of the oceanic siphonophore Physalia physalis only during a single month's samples, suggesting that the temporary bloom off Oman was likely due to the arrival of mature, open ocean medusae into nearshore waters. We see no evidence that T. agassizii has established a new population along Oman, since if so, it would likely have been present in more than one sample period. We are unable to deduce further details of the life cycle of this species

from blooms of many mature individuals nearshore, about a century apart. Examination of a single damaged T. agassizii medusa from Guam, calls into question the existence of its congener, T. latistyla, known only from a single specimen.

7. **New data on the distribution and feeding habits of jellyfish in the Northwest Pacific**
   西北太平洋水母分布和捕食习惯的新数据
   http://link.springer.com/article/10.1134%2FS1063074013070043

In June and July of 2012, the jellyfish catches in the northeastern portion of the surveyed Pacific waters off the Kuril Islands substantially exceeded those in the southwestern portion. This indicates that jellyfish disperse over the studied area predominantly from the southern Bering Sea and from the eastern coast of Kamchatka. Their strobilation probably takes place as well on the shelf and continental slope of eastern Kamchatka. The distribution of jellyfish with medium-sized bells does not show any geographic pattern; the aggregations that are formed are mixed regarding the original locality of individuals. Jellyfish occur within a broad range of surface water temperatures and their catches have declined significantly only in the southeast of the area of surveys near the Subarctic Front. As is seen from the data we compared, not only the abundance of jellyfish, but their feeding activity and, as a consequence, the amount of consumed food decreased by an order of magnitude during the cold season (in the spring 2011). However, irrespective of the season, the largest quantities of food were recorded in the largest and most numerous jellyfish (Phacellophora camtschatica, Chrysaora melanaster). The quantitative results of the studies on the diet of jellyfish may be somewhat underestimated, as fragile jellyfish bodies are easily damaged in trawl nets and evaluating the diet is possible only for intact individuals. Use of specialized catching gear in the future may help us to specify the feeding dynamics in jellyfish, as well they may provide an opportunity to observe their feeding behavior. At the same time, quantitative estimates of the daily-food intake in jellyfish can be obtained only by taking the rates of digestion and prey consumption found under laboratory conditions into account, with their subsequent verification in balance models.

8. **Pattern- and contrast-dependent visual response in the box jellyfish Tripedalia cystophora**
   箱形水母 Tripedalia cystophora
   http://jeb.biologists.org/content/216/24/4520

Cubomedusae possess a total of 24 eyes, some of which are structurally similar to vertebrate eyes. Accordingly, the medusae also display a range of light-guided behaviours including obstacle avoidance, diurnal activity patterns and navigation. Navigation is supported by spatial resolution and image formation in the so-called upper lens eye. Further, there are indications that obstacle avoidance requires image information from the lower lens eye. Here we use a behavioural assay to examine the obstacle avoidance behaviour of the Caribbean cubomedusa Tripedalia cystophora and test whether it requires spatial resolution. The possible influence of the contrast and orientation of the obstacles is also examined. We show that the medusae can only perform the behaviour when spatial information is present, and fail to avoid a uniformly dark wall, directly proving the use of spatial vision. We also show that the medusae respond stronger to high contrast lines than to low contrast lines in a graded fashion, and propose that the medusae use contrast as a semi-reliable measure of distance to the obstacle.

9. **Recent strandings of the giant jellyfish Rhizostoma luteum Quoy and Gaimard, 1827 (Cnidaria: Scyphozoa: Rhizostomeae) on the Atlantic and Mediterranean coasts**

大西洋和地中海沿岸巨型水母 Rhizostoma luteum Quoy 和 Gaimard 的近期搁浅

http://link.springer.com/article/10.1007%2Fs00227-013-2293-6

We present reports of sightings of living and stranded specimens of Rhizostoma luteum on the Atlantic coast of Morocco and along the south shore of the Iberian Peninsula in June-July 2012 and in January-February 2013. During summer 2012 and following the dominant currents, the jellyfish first appeared in the Gulf of Cadiz west of the Strait of Gibraltar. Subsequently, seven additional sightings were reported east of the Strait, in the Alboran Sea. In winter 2013, another event of stranded individuals of this species occurred in the Gulf of Cadiz. A phylogenetic analysis performed on the mitochondrial cytochrome c oxidase I (COI) gene sequence in specimens from both stranding events confirmed the morphological classification, ratifying that R. luteum differs from Rhizostoma octopus and Rhizostoma pulmo. This study records the presence of this species for the first time in 60 years.

10. **Invasion Pathway of the Ctenophore Mnemiopsis leidyi in the Mediterranean Sea**

栉水母 Mnemiopsis leidyi 在地中海的入侵途径

http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0081067

Gelatinous zooplankton outbreaks have increased globally owing to a number of human-mediated factors, including food web alterations and species introductions. The invasive ctenophore Mnemiopsis leidyi entered the Black Sea in the early 1980s. The invasion was followed by the Azov, Caspian, Baltic and North Seas, and, most recently, the Mediterranean Sea. Previous studies identified two distinct invasion pathways of M. leidyi from its native range in the western Atlantic Ocean to Eurasia. However, the source of newly established populations in the Mediterranean Sea remains unclear. Here we build upon our previous study and investigate sequence variation in both mitochondrial (Cytochrome c Oxidase subunit I) and nuclear (Internal Transcribed Spacer) markers in M. leidyi, encompassing five native and 11 introduced populations, including four from the Mediterranean Sea. Extant genetic diversity in Mediterranean populations (n = 8, Na = 10) preclude the occurrence of a severe genetic bottleneck or founder effects in the initial colonizing population. Our mitochondrial and nuclear marker surveys revealed two possible pathways of introduction into Mediterranean Sea. In total, 17 haplotypes and 18 alleles were recovered from all surveyed populations. Haplotype and allelic diversity of Mediterranean populations were comparable to populations from which they were likely drawn. The distribution of genetic diversity and pattern of genetic differentiation suggest initial colonization of the Mediterranean from the Black-Azov Seas (pairwise FST = 0.001–0.028). However, some haplotypes and alleles from the Mediterranean Sea were not detected from the well-sampled Black Sea, although they were found in Gulf of Mexico populations that were also genetically similar to those in the Mediterranean Sea (pairwise FST= 0.010–0.032), raising the possibility of multiple invasion sources. Multiple introductions from a combination of Black Sea and native region sources could be facilitated by intense local and transcontinental shipping activity, respectively.

王琳 提供