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1. **Three routes to crypsis: Stasis, convergence, and parallelism in the Mastigias species complex (Scyphozoa, Rhizostomeae)**
三种隐蔽的途径：钵水母 Mastigias 种群复杂性中的停滞、会聚及对应
http://www.sciencedirect.com/science/article/pii/S1055790316000579
Evolutionary inference can be complicated by morphological crypsis, particularly in open marine systems that may rapidly dissipate signals of evolutionary processes. These complications may be alleviated by studying systems with simpler histories and clearer boundaries, such as marine lakes—small bodies of seawater entirely surrounded by land. As an example, we consider the jellyfish Mastigias spp. which occurs in two ecotypes, one in marine lakes and one in coastal oceanic habitats, throughout the Indo-West Pacific (IWP). We tested three evolutionary hypotheses to explain the current distribution of the ecotypes: (H1) the ecotypes originated from an ancient divergence; (H2) the lake ecotype was derived recently from the ocean ecotype during a single divergence event; and (H3) the lake ecotype was derived from multiple, recent, independent, divergences. We collected specimens from 21 locations throughout the IWP, reconstructed multilocus phylogenetic and intraspecific relationships, and measured variation in up to 40 morphological characters. The species tree reveals three reciprocally monophyletic regional clades, two of which contain ocean and lake ecotypes, suggesting repeated, independent evolution of coastal ancestors into marine lake ecotypes, consistent with H3; hypothesis testing and an intraspecific haplotype network analysis of samples from Palau reaffirms this result. Phylogenetic character mapping strongly correlates morphology to environment rather than lineage ($r = 0.7512$, $p < 0.00001$). Considering also the deeper relationships among regional clades, morphological similarity in Mastigias spp. clearly results from three separate patterns of evolution: morphological stasis in ocean medusae, convergence of lake morphology across distinct species and parallelism between lake morphologies within species. That three evolutionary routes each result in crypsis illustrates the challenges of interpreting evolutionary processes from patterns of biogeography and diversity in the seas. Identifying cryptic species is only the first step in understanding these processes; an equally important second step is exploring and understanding the processes and patterns that create crypsis.

2. **Study on the carry capacity of edible jellyfish fishery in Liaodong Bay**
辽东湾食用水母渔业捕捞能力研究
http://link.springer.com/article/10.1007%2Fs11802-016-2924-x
Jellyfish fishing is a special type of fishery that mainly exists in some countries of East and Southeast Asia. China has the largest jellyfish fishery yield in the world with an annual harvest of around 300 thousand tons. Liaodong Bay is the most important jellyfish fishery ground in China. However, due to the high benefits of jellyfish fishery, which leads to illegal and out-of-season jellyfish fishing occurring each year in Liaodong Bay. Illegal jellyfish fishery in Liaodong Bay is a typical example of the tragedy of the commons. The key problem is that fishermen seek to an illegally initiate jellyfish fishing as early as possible. In this paper, basing on the data of edible jellyfish's biology and ecology, we mainly analyzed the history of jellyfish fishery in China, especially in Liaodong bay, and then we calculated the carry capacity of edible jellyfish in Liaodong Bay which is about 300 thousand tons one year. This number is

equal to the recent annual yield of edible jellyfish in China. Furthermore, basing on the carry capacity and reasonable quotas price analysis, we set up a Jellyfish fishing quotas and deficit quotas buyback system which could be a suitable and effective solution for jellyfish fishery management and development in Liaodong Bay at the underlying roots. Although China is the first country with edible jellyfish aquaculture, the annual yield of jellyfish aquaculture is only one fifth of jellyfish fishing. So, there is a very bright developing prospect about edible jellyfish aquaculture in China.

3. **Ontogenetic changes in the predator-prey interactions between threadsail filefish and moon jellyfish**
   丝背细鳞鲀和海月水母之间捕食与被捕食相互作用的个体发育变化
   http://link.springer.com/article/10.1007%2Fs10750-016-2658-1
   Although jellyfish are important predators of fish larvae, many fish species also feed on jellyfish. Therefore, the predator–prey role of jellyfish and fish may switch during the course of their life histories. Here, we investigated such interactions by examining (1) the avoidance behaviour of threadsail filefish Stephanolepis cirrhifer to moon jellyfish Aurelia sp. and (2) the feeding behaviour of filefish on moon jellyfish medusae and polyps. The efficiency of filefish as jellyfish predators was examined by comparing their behaviour with that of black scraper Thamnaconus modestus and red sea bream Pagrus major. Filefish and black scraper were able to avoid medusae and obtain tolerance against nematocysts at a smaller body size compared to red sea bream. Filefish initiated feeding on medusae when they became juveniles of 21.8 mm SL. Feeding trials of yearling filefish on polyps at different temperatures (range 10–30 ℃) indicated that the highest feeding rate was 3.1 individuals s−1 at 26.8°C. We suggest that the feeding pressure of filefish on jellyfish polyps may have an impact on medusa biomass.

4. **The earliest pelagic jellyfish with rhopalia from Cambrian Chengjiang Lagerstatte (vol 449, pg 166, 2016)**
   寒武纪澄江化石库最早的深海水母
   http://www.sciencedirect.com/science/article/pii/S0031018216300554

5. **Does temperature and salinity limit asexual reproduction of Aurelia aurita polyps (Cnidaria: Scyphozoa) in the Gulf of Gdansk (southern Baltic Sea)? An experimental study**
   温度和盐度限制了格但斯克湾（南波罗的海）海月水母水螅体的无性繁殖吗？
   http://link.springer.com/article/10.1007%2Fs10750-016-2678-x
   Outbreaks of the moon jellyfish Aurelia aurita occur seasonally in the Gulf of Gdańsk (southern Baltic Sea), but field observations of sedentary polyps are scarce suggesting that asexual reproduction of scyphistomae is restricted in this water basin. This study has been set up to investigate the effects of temperature (3, 5, 10, 15, 20 and 25 ℃) and salinity (2, 4, 7, 12 and 18 PSU) on polyp strobilation and budding under gradually changing exposure conditions. Duration and intensity of strobilation increased in low temperatures, while higher temperatures reduced (20 ℃) and ceased (25 ℃) production of ephyrae and enhanced budding activity. The asexual reproduction is therefore synchronized well with environmental conditions with strobilation occurring in spring

and autumn/winter and growth of colonies (budding) taking place in summer. This provides a potential of scyphistomae to develop benthic colonies and support population size of medusae in the gulf. Salinity of 4 PSU caused absorption of tentacles and in 2 PSU, 100% mortality of polyps was observed indicating high sensitivity of scyphistomae to low salinity. An increase in water salinity induced more numerous strobilation as well as enhanced and longer budding suggesting that scyphopolyps can be more abundant in the more saline western Baltic.

6. **First Records of the Invasive "Upside-down Jellyfish", Cassiopea (Cnidaria: Scyphozoa: Rhizostomeae: Cassiopeidae), from Coastal Lakes of New South Wales, Australia**
澳大利亚新南威尔士州沿海湖泊中入侵性“倒立水母”Cassiopea（刺胞动物门：钵水母纲）的首次记录
http://australianmuseum.net.au/journal/keable-2016-rec-aust-mus-681-2330
Scyphozoans of the genus Cassiopea (Cassiopeidae) are notable for their unusual benthic habit of lying upside-down with tentacles facing upwards, resulting in their common name, “upsidedown jellyfish”. In Australia, five named species of Cassiopea have been recorded from the tropical north. Cassiopea are frequently noted worldwide as invasive species and here, we report the first records of the genus and family from temperate eastern Australia on the basis of specimens collected from two widely separated coastal lakes, Wallis Lake and Lake Illawarra; these specimens represent southern range extensions of the genus by approximately 600 km and 900 km, respectively. Cassiopea from Lake Illawarra and Wallis Lake appear to represent different species, which we assign to C. ndrosia and C. cf. maremetens, respectively, noting morphological discrepancies from published accounts.

7. **Temporal dietary shift in jellyfish revealed by stable isotope analysis**
稳定同位素分析揭示水母的时间性饮食变化
http://link.springer.com/article/10.1007%2Fs00227-016-2892-0
A temporal change in the stable isotope (SI) composition of jellyfish in the Kiel Fjord, Western Baltic Sea, was documented by analyzing δ13C, δ15N and δ34S of bell tissue of Aurelia aurita and Cyanea capillata in the period between June and October 2011. A strong and significant temporal change in all SI values of A. aurita was found, including an increase of ~3 ‰ in δ13C, a decrease of ~4 ‰ in δ15N and sharp decline of ~7 ‰ in δ34S. While knowledge gaps in jellyfish isotope ecology, in particular the lack of reliable trophic enrichment factors, call for a conservative interpretation of our data, observed changes in particular in δ34S, as indicated by means of a MixSIR mixing model, would be consistent with a temporal dietary shift in A. aurita from mesozooplankton (>150 µm) to microplankton and small re-suspended particles (0.8–20 µm) from the benthos. Presence of a hitherto unidentified food source not included in the model could also contribute to the shift. During the 2-month occurrence of C. capillata, its isotope composition remained stable and was consistent with a mainly mesozooplanktonic diet. Mixing model output, mainly driven by δ34S values, indicated a lower proportion of A. aurita in the diet of C. capillata than previously reported, and thus to a potentially lesser importance of intraguild predation among jellyfish in the Kiel Fjord. Overall, our results clearly highlighted the potential for

substantial intraspecific isotopic seasonal variation in jellyfish, which should be taken into account in future feeding ecology studies on this group.

8. **The influence of salinity on box jellyfish (Chironex fleckeri, Cubozoa) statolith elemental chemistry**
利用耳石元素化学分析盐度对箱型水母的影响
http://link.springer.com/article/10.1007%2Fs00227-016-2867-1
Very little is known on the sources and movements of the potentially fatal cubomedusae Chironex fleckeri found around estuary mouths and beaches along tropical coastlines of Australia. Largely anecdotal evidence suggests an alternating season of polyps in protected estuaries during the dry season and medusae emerging from estuaries to feed along beaches with the onset of the monsoonal season. An experiment was conducted on young wild-caught C. fleckeri medusae (caught at Cape York, Australia, in November 2012) to establish how elemental incorporation into statoliths was affected by salinity. A critical salinity test revealed medusae inhabit salinities >20. Medusae were held in salinities of 22, 26, 30 and 34 (n = 5 per treatment) for a duration of 4 days. Laser ablation inductively coupled plasma mass spectrometry was used to analyse experimental areas of statoliths and solution-based ICPMS used for analysing water samples taken from each treatment. Statolith Mg Ca−1 and the partition coefficient (D Mg) significantly differed among treatments and were the only element Ca−1 ratios to do so. Multi-element Ca−1 signatures could also discriminate among salinity treatments. Partition coefficients revealed D Mg, D Sr and D Li were 2.62 × 10−6–0.81 and D Ba, D Mn and D Zn 1.87–431. Experimental and strong correlative evidence suggested that temperature exposure and not salinity was responsible for the significant patterns seen in statolith Sr Ca−1 found by Mooney and Kingsford (2012). Statolith chemistry shows strong promise for determining the movement of medusae through water bodies where there are known thermal and salinity gradients.

9. **The sex lives of ctenophores: the influence of light, body size, and self-fertilization on the reproductive output of the sea walnut, Mnemiopsis leidyi**
栉水母 Mnemiopsis leidyi 的繁殖：光和身体尺寸等影响
https://peerj.com/articles/1846/
Ctenophores (comb jellies) are emerging as important animals for investigating fundamental questions across numerous branches of biology (e.g., evodevo, neuroscience and biogeography). A few ctenophore species including, most notably, Mnemiopsis leidyi, are considered as invasive species, adding to the significance of studying ctenophore ecology. Despite the growing interest in ctenophore biology, relatively little is known about their reproduction. Like most ctenophores, M. leidyi is a simultaneous hermaphrodite capable of self-fertilization. In this study, we assess the influence of light on spawning, the effect of body size on spawning likelihood and reproductive output, and the cost of self-fertilization on egg viability in M. leidyi. Our results suggest that M. leidyi spawning is more strongly influenced by circadian rhythms than specific light cues and that body size significantly impacts spawning and reproductive output. Mnemiopsis leidyi adults that spawned alone produced a lower percentage of viable embryos versus those that spawned in pairs, suggesting that

self-fertilization may be costly in this species. These results provide insight into the reproductive ecology of M. leidyi and provide a fundamental resource for researchers working with them in the laboratory.

10. **Vertical distribution of giant jellyfish, Nemopilema nomurai using acoustics and optics**

巨型水母的垂直分布，使用声学和光学分析 Nemopilema nomurai

http://link.springer.com/article/10.1007%2Fs12601-016-0006-z

Nemopilema nomurai jellyfish, which are believed to complete their development in the East China Sea, have started migrating into the Yellow Sea in recent years. We obtained biomass estimates of this species in the Yellow Sea using bottom trawl fishing gear and sighting surveys over a 5-year period. These methods are effective for obtaining N. nomurai jellyfish density estimates and information about the community distribution near the bottom or surface of the sea. To verify the vertical distributions of giant jellyfish between, we used hydroacoustic equipment, including an optical stereo camera system attached to a towed sledge and an echo counting method with scientific echosounder system. Acoustic and optical data were collected while the vessel moved at 3 knots, from which the distribution and density of N. nomurai jellyfish were analyzed. Subsequently, the camera system was towed from a 7 m mean depth to sea level, with the detection range of the acoustic system extending from an 8 m depth to the bottom surface. The optical and acoustic methods indicated the presence of vertical distribution of 0.113 (inds/m3) and 0.064 (inds/m3), respectively. However, the vertical distribution indicated that around 93% of individuals occurred at a depth range of 10–40 m; thus, a 2.4-fold greater density was estimated by acoustic echo counting compared to the optical method.

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