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Distribución y depositación natural de huesos en la costa sur de Tierra del Fuego: Tafonomía Actualística e implicaciones arqueológicas

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La dispersión natural y las modificaciones tafonómicas de restos óseos han sido temas abordados en diferentes partes del mundo, pero estos estudios son aún escasos en latitudes altas y regiones de clima templado frío-subhúmedo. Aquí, los procesos que gobiernan las posibilidades de preservación de los huesos pueden seguir historias tafonómicas diferentes a las ya conocidas para otros ambientes. En esta presentación se dan a conocer los resultados de recientes investigaciones tafonómicas actualísticas iniciadas en la costa sur de Tierra del Fuego. La información generada permite identificar características particulares de acumulación y preservación de restos óseos dentro de la misma localidad estudiada. La mayor abundancia de materiales fue registrada en el sector de playas, y en menor frecuencia en los espacios de turba, pastizal y bosque. La abrasión marina es el proceso más conspicuo que afecta a los huesos que yacen en la playa, mientras que la meteorización es un efecto significativo dentro del bosque. Asimismo, se alerta sobre la posibilidad de mezcla entre materiales zooarqueológicos y fauna actual en turbales y pastizales, donde las posibilidades de entierro son altas. Sobre la base de estos primeros resultados, se discutirán las contribuciones más importantes para las interpretaciones arqueológicas del área, así como las nuevas preguntas que disparan y los abordajes propuestos como agendas futuras.

Marine benthic biodiversity record in intertidal death assemblages of Punta Mejillón, Patagonia, Argentina

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We present an ongoing Project that is in an early stage of development, concerning the taphonomic fidelity of life and death assemblages in Punta Mejillón locality (coast of Río Negro Province, Argentina; 41° 00' 51" S). The goals are: 1- evaluate how marine benthic intertidal biodiversity is recorded in death assemblages sampled at four levels (lower, middle and upper intertidal and supratidal or high water mark). 2- How sampled levels differ in terms of species richness and abundance. 3- Evaluate the effect of sampling with and without sieves on diversity and species abundance. Previous research showed that death assemblages sampled by hand from the high tide line in Patagonian coasts resemble faunal composition at the regional scale (faunistic provinces). However, at the locality scale the fidelity was low. During spring tides of November and December of 2013 life and death assemblages of marine benthic invertebrates were sampled together in Punta Mejillón. We present here the results of the analysis of the death assemblages. Sampling of death assemblages at the four levels was performed by means of transects parallel to the coastline, along each level, until filling a 12 litres bucket. Every sample was sieved with two mesh sizes, 1 and 10 mm (side of the square). We expect, by the end of the project to assess the following hypothesis: 1- using sieves to get the samples yield different results than picking by hand (sieved samples show higher levels of fidelity and higher diversity than non-sieved ones); 2- there are differences in the faunal composition amongst the four levels, partly correlated with the composition of the living community and partly explained the time-averaging and biostratinomic agents; 3- there is an association in terms of faunal composition between life and death assemblages in each level. We propose that Punta Mejillón serves as the base level for live-dead comparisons in Patagonia, due to its little or no anthropized nature.

***Glycymeris longior* como tafón para el norte de Patagonia, Argentina (Golfo San Matías)**

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La abundancia de las valvas de *Glycymeris longior* (Bivalvia) tanto en la comunidad bentónica viviente del Golfo San Matías (GSM) como en los sedimentos cuaternarios de la región podría ser aprovechada en estudios de tafonomía actualista. Entonces, nuestro objetivo es estudiar el patrón tafonómico registrado en las valvas holocenas de *G. longior* del noroeste del GSM con el fin posterior de extender dicho estudio a otros depósitos donde se encuentra esta especie. Se estudió ($n=347$) el largo y alto de las valvas, articulación, fragmentación, desgaste, redondeamiento, preservación de los dientes y bioerosión. Tanto el largo como el alto de las valvas mostraron distribuciones normales ($p_{largo}=0.1328$ y $p_{alto}=0.568$), incluso las distribuciones de frecuencia en PHI y en 1/6 del máximo tamaño fueron simétricas, es decir, la muestra presentó poca selección del material. Además la ausencia de articulación, altos porcentajes de desgaste (62.43%) y redondeamiento (65.25%) y pobre preservación de los dientes (81.92%) indicarían la alta energía ambiental. A su vez, se registró un alto grado de fragmentación aunque en su mayoría conservaron más del 50% de la valva (62.71%). Una baja proporción de valvas presentó señal de predación por gastrópodos (1.94%) y se registraron las trazas *Caulostrepsis* sp. (1.38%) y *Entobia* sp. (45.7%). En base a estos resultados se interpretó que las condiciones hidrodinámicas del sector noroeste del GSM durante el Holoceno serían intensas. El alto porcentaje de valvas con *Entobia* sp. darían cuenta del desenterramiento y la exposición de las mismas sobre el fondo marino, además la nula selección por tamaños, la desarticulación y el alto porcentaje de redondeamiento indicarían el gran transporte a las que fueron sometidas. Cabe destacar que las valvas de los especímenes vivientes de *G. longior* presentan un desgaste en vida, por lo cual el grado de desgaste inicial será mayor con respecto a otros bivalvos infaunales.

Conchillas y fogones un tiempo después...

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Es frecuente encontrar en los concheros arqueológicos evidencias de combustión, siendo relevante evaluar el grado de afectación del fuego sobre las valvas de moluscos asociadas a fogones antrópicos. Con el fin de distinguir distintos procesos de afectación térmica sobre las valvas presentes en los concheros arqueológicos (3000 a 2000 años AP) de la cuenca del río Santa Lucía, Uruguay, se implementaron una serie estudios de tafonomía actualística. En este sentido se abordó el estudio de los procesos de formación de dos fogones contemporáneos, uno realizado sobre un depósito de moluscos natural en Playa Penino (Departamento de San José, Uruguay) y el otro sobre un conchero antrópico formado por deshechos de pesca artesanal en Laguna Garzón (Departamento de Maldonado). Se evaluó el grado de afectación de las valvas de *Erodona mactroides* cuando estas actúan como sustrato del fogón. *Erodona mactroides* es la especie predominante en los concheros arqueológicos prehispánicos del río Santa Lucía. Se describen los distintos grados de afectación térmica de las valvas y los procesos posteriores al abandono del fogón. En general se observa un mayor porcentaje de valvas en las que el periostraco está ausente, las líneas de crecimiento menos definidas, la superficie externa alisada y tonos que varían entre el blanco y el gris. Otras modificaciones de las valvas, discriminadas por los procesos posteriores al abandono del fogón, indican la incidencia de tres tipos de fracturas.

Differential preservation of the snail *Heleobia parchappii* (d'Orbigny) in freshwater and saline shallow lakes of the Argentine pampas

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It has been observed that in Holocene lacustrine successions of the Pampa Plain (Argentina), mollusk assemblages deposited under inferred brackish-saline lake conditions exhibit higher abundance and better preservation than those deposited in freshwater, suggesting that preservation may be strongly related to salinity in these environments. To explore this hypothesis, we conducted an actualistic field-based study of live/dead fidelity and preservation of the euryhaline mud snail *Heleobia parchappii* (target species) in six shallow lakes representing a gradient of salinity (between 0.5 and 42 ppt). Live/dead fidelity included the comparison of the abundance and size of shells occurring alive (LA) with those occurring dead (DA). Preservation was evaluated through the analysis of shell fragmentation and surface alteration in DAs. Live/dead fidelity in abundance was poor. Dead shells were more abundant in higher saline lakes whereas live snails showed their lowest abundance here. This pattern was more evident in DAs deposited over the littoral shore of lakes (older assemblages) suggesting a taphonomic origin for such concentrations. Shell size was similar between LAs and DAs, suggesting a good live/dead fidelity. Fragmentation was lower in the most saline lakes, suggesting less destructive conditions for postmortem preservation. Shell surface alteration did not show significant differences among lakes. These preliminary results highlight the importance of lake salinity as a possible taphonomic agent that promote mollusk preservation. It is possible that the higher taphonomic alteration of shells in freshwater may be related to changes produced by microbial maceration of organic matrix, as these lakes are far more productive than saline ones. While experimental studies addressing the causes of shell alteration in freshwater lakes are needed, the present findings provide evidence in that direction, with implications for explaining the high concentration of well-preserved shells usually found in Holocene sedimentary successions.

Actualistic Taphonomy of freshwater mollusks from the Argentine pampas: an overview of recent research progress

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Historically, the development of taphonomic studies in freshwater environments has been scarce and mainly restricted to the Northern Hemisphere, with almost no information on how taphonomic processes work (and eventually differ) in the Southern Hemisphere. We present here an overview of the main results obtained in actualistic taphonomic studies on freshwater mollusks conducted in the Pampa Plain of Argentina, since 2008. Research included patterns of distribution of live and dead mollusks, live/dead fidelity at local and regional scales and dead and fossil shell preservation. Studies were conducted above and below the sediment-water interface (SWI), including both descriptive and experimental approaches. Live/dead fidelity and taphonomic studies were compared between streams and lakes (the two most conspicuous aquatic environments in the area) and among shallow lakes exhibiting differences in water quality and substrate. Additionally, a field experiment of two and a half years of duration was placed in one of these lakes to evaluate shell dissolution below the SWI. Overall, results indicated that DAs reflected the richness and evenness of modern communities as well as shell size, and exhibited variations due to local environmental conditions (salinity, hardness, productivity). Fidelity in abundance of single species was poor, with dead shells being more abundant in higher saline lakes. The taphonomically active zone occupies the first 10 cm below the SWI. Below that depth no significant differences in preservation are observed. The main process affecting shell surface was dissolution probably due to changes produced by microbial maceration of organic matrix. Preservation was better in saline lakes, which may allow to explain the high concentration of well-preserved shells usually found in Holocene sedimentary successions.

Different rodent feces morphotypes from the Reserva Ecológica do Taim, southern Brazil: A case study

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Coprolites (fossil feces) provide important paleoecological information, such as diet of the producer, parasites and gut microbiota, which would not be accessed through body remains. The coprolite morphology can indicate the producer, as, for example, spiral coprolites are often attributed to non-teleost fishes. However, feces from different groups of animals can be similar, and variations can occur within the morphology of feces among a single producer, mainly due different food and water disponibilities and diseases. Here in, we compare different feces morphotypes produced by capybaras (*Hydrochoerus hydrochaeris*) and nutrias (*Myocastor coypus*), and traces within. The feces were analyzed and collected in the Reserva Ecológica do Taim, southern Brazil. The most common dung morphotype produced by capybaras is of up to 46 pellets (average 25–30) that form a cylinder or are separated during the extrusion, forming a mound. These pellets have different length (from 2.2–3.8 cm), while the width does not vary (1.3–1.5 cm). Some capybara feces do not form pellets, only a more cohesive cylinder tapering in one end. The coypu dungs have bullet shape or is tapered in both ends, with 2.5 cm long and 1.4 cm wide. The external surface bears parallel longitudinal striations or grooves impressed in the fine-grained matrix. After dried the feces lost almost all the striations and the width diminish almost 15%. This morphology occurs in carnivore and herbivore coprolites in the fossil record, usually attributed to reptiles or crocodylomorphs. The variations on the capybara feces and the morphological similarity between the coypu's feces and Permo-Triassic coprolites shows that the use of coprolite morphology as the only tool to infer the animal source should be avoided.

Taphonomy of bioclastic marine deposits: Stratigraphic and paleoecological potential

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Shelly concentrations develop in areas close to or at sequence boundaries (sequence discontinuities or bedding planes such as downlap deposits at the base of highstand system tracts, apparent truncation deposits at distal maximum flooding surfaces, toplap deposits at the top of highstand system tracts, and so on). The Southern Brazil Shelf (SBS, within latitudes 27°S and 34°S) is, presently, a sediment-starved passive margin continental shelf, and its morphostructural development is fairly known. There, bioclastic concentrations are associated to putative wave ravinement surfaces, during several transgressive-regressive stages. Many deposits are present in areas with no intimate relation to previous sea-level stabilization areas, with sediment mainly constituted of reworked sand. Over thirty shell samples from near shelf-break shell rich deposits, as well as proximal (shallow) shell-rich deposits and ten samples from the sandy substrate (shell-poor) were evaluated for taphonomic damage and biogenic alteration (predation, microendoliths, and encrusters) according to updated protocols. This procedure allows (i) quantifying the relation between damage condition of biogenic remains and environmental factors, and (ii) the position within a 5th-to-6th order sequence stratigraphy framework, notwithstanding the lack of precise chronostratigraphic information. Low-intensity damage states (such as natural bright and ornamentation) dominate the samples from the distal shell-rich deposit; whereas the inverse occurs to the proximal deposit (samples from the shell-poor locations present an intermediate damage pattern). The observed pattern is consistent with onlap and backlap shell bed formation, according to characteristics determined in the literature. The condition of these three areas may reflect degrees of exposure at the Taphonomically-Active Zone, the magnitude of time averaging, and even the local sedimentation history, which by turn is relatable to the sequence stratigraphic record and glacioeustatic sea level oscillations.

The role of bioerosion traces in the Taphonomy of continental assemblages: study of fossil and recent cases from Brazil, Venezuela and the United States

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Bioerosion encompasses trace fossils produced on consolidated substrates. In continental settings, these substrates could be represented by lithic structures (rocks, hardgrounds, and fossils), wood, bones and shells. Despite recent advances in the study of continental bioerosion, the taphonomic significance of these traces is still understated. Here, we report three examples of the contribution of bioerosion to the taphonomic history of fossil assemblages. The dinosaur bones from the Marília Formation (Maastrichtian, Brazil) have a diverse array of bioerosion, with diverse origins. Among them, four morphotypes of traces were interpreted as being derived from root etching, invertebrate activity and tetrapod bites. The recognition of these bioerosions in the same fossil assemblage is indicative of a reasonable time-averaging and the activity of organisms on the carcasses in pre-, peri- and post-mortem stages and prior to or after the burial of the remains. *Gastrochaenolites* borings occur in coprolites from the Urumaco Formation (Upper Miocene, Venezuela). Given that this ichnogenus is lithic substrate-related, it is inferred to be produced on fossilized coprolites, rather than in the fresh feces. The presence of *Gastrochaenolites*-bearing coprolites in the same strata of other materials that lack bioerosion is indicative of reworking episodes of that fossil assemblage followed by new burials. Lastly, shallow discolored furrows associated with rounded pits occur in bones, teeth and scales from the San José Formation (Eocene, USA). Since recent roots were found attached to these traces, they are considered to be the result of the chemical corrosion of the fossil surfaces by extant plants. The production of these traces is related to the erosion of the fossil-bearing level and the exposure of the materials to a new Taphonomically Active Zone. Although these cases are still under study, they indicate that bioerosions are important taphonomic signatures in continental settings, and more experiments with extant material must be done.

Perceptions on Actualistic Paleontology in four distinct areas of energy supply along the coast of the states of Rio de Janeiro, São Paulo and Paraná, Brazil

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Actuopaleontology aims to improve paleoenvironmental and paleoecological interpretations. However, studies with gastropods and their comparisons with bivalves are non-existent in the literature. Here it is intended to study the variations of the taphonomic signatures of different gastropods and bivalves collected in four points of the Brazilian inner shelf: Macaé-RJ with its open relief influenced by the currents of resurgence; Ubatuba-SP with a bay with characteristics of low energy; Cananéia-SP with an open coastline influenced by discharge of rivers and Paranaguá-PR with estuarine environment and a port. Fragmentation is the main taphonomic signature of bioclasts from the studied points. However, such taphonomic alteration is not an environmentally sensitive signature due to its multivariate origin, both biogenic and abiogenic. In Paranaguá the high indices of fragmentation are mainly influenced by the action of predation and bioerosion by durophagous that may weaken those bioclasts. The predation marks are, in most cases, on the lower margin of the bivalve shells. In Macaé, probably the low sedimentation rate, greater depth and spatial proximity to the Cabo-Frio / RJ (ACAS) resurgence current were influential for bioerosion and incrustation. Temperature is also an important indicator for bioerosion, since it was only significant in Ubatuba, which has higher average water temperatures between the four points. In Paranaguá it is noticed that the bivalves, unlike the gastropods of the other points, have higher rates of abrasion. In addition, this signature is better located in the region of the umbo of the shell what perhaps can be result of activity in life. Abrasion and dissolution have greater significance in freshwater, lagoon and estuarine environments, as well as Cananéia and Paranaguá, whereas damages of biological origin such as bioerosion and incrustation appeared in lower frequencies. High frequencies of bioerosion and incrustation appeared on shells from inner shelf environments, where predominates oceanic conditions, such as Macaé and Ubatuba. Thus, signatures and environmental factors can be used in the identification of environmental variations and, therefore, can be useful in comparative paleoenvironmental and paleoecological analyses.

Actualismo.... ¿uniformitarismo o ciencia ficción? Contribuciones de la Tafonomía Actualística a las interpretaciones arqueológicas en las pampas de Argentina

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Las investigaciones enmarcadas dentro de la tafonomía actualística no han sido abundantes en la región pampeana. La escasez de estos enfoques y la resistencia de su incorporación en los programas de investigación se vinculan a varias razones. La principal de ellas consiste en el error conceptual de pensar que es metodológicamente inviable el desarrollo de observaciones naturalistas en los ambientes pampeanos altamente modificados por la acción humana moderna. Durante la última década, hemos llevado a cabo un programa de investigación de tafonomía actualística en la pampa húmeda de Argentina orientada a resolver problemas arqueológicos, con el fin de construir un *corpus* de información sobre los agentes tafonómicos y los procesos que caracterizan a esta subregión. Numerosas líneas de investigación fueron exploradas y sus principales contribuciones publicadas. El objetivo de este trabajo es discutir nuestros resultados generados bajo el enfoque actualístico y reflexionar sobre el alcance de los mismos en las interpretaciones arqueológicas. Luego de una década de estudios sistemáticos nuestros resultados más importantes contribuyen a identificar mezclas potenciales entre huesos modernos y el registro arqueológico en relación a diferentes ambientes; a determinar sesgos de preservación ósea de acuerdo con las propiedades del registro; a reconocer a los agentes responsables de la acumulación y alteración ósea; y a establecer criterios diagnósticos para distinguir patrones naturales de culturales o para definir equifinalidad cuando esto no es posible.

Actualistic Taphonomy as a key for understanding the Holocene diatom record of the Argentine pampas

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Recent findings of noticeable changes in diatom preservation in the Holocene record of Pampean shallow lakes evidenced the need of carrying out actualistic studies to decipher the environmental significance of taphonomic signatures. A series of field and experimental studies were conducted, focusing on the effect of contemporary environmental gradients on the dissolution and fragmentation of diatom valves. Field studies signaled salinity, carbonates and bicarbonates as the main drivers of dissolution of the target taxa *Cyclotella meneghiniana* in shallow lakes covering wide environmental gradients. Laboratory controlled experiments demonstrated a negative effect of NaCl and HCO₃Na on valve preservation, evidenced by an increase in dissolved silica and by the occurrence of valves showing advanced stages of dissolution. Although fragmentation was high in many lakes, the environmental causes of valve breakage could not be identified in the dataset. Detailed analysis of taphonomic attributes and their relationship with live/dead agreement were examined in three lakes representing the lower salinity portion of the gradient. Results showed that low compositional fidelity was caused by differential fragmentation of the most delicate taxa, rather than by dissolution biases. These results indicated a strong link between compositional and taphonomic patterns at different working scales, which was also evident in the sedimentary record of these lakes, as Holocene changes in diatom assemblage composition were highly correlated with taphonomic profiles. This correlation can be a consequence of the same environmental characteristics influencing both preservation and composition, but also taphonomy could be biasing assemblage composition by differentially destroying delicate taxa. This strong interdependence highlights the need of incorporating taphonomic studies in routine paleoenvironmental research. By doing so, diatom paleoecology would become benefited not only by incorporating clues on the quality of compositional information but also by integrating taphofacies as a potential source of environmental information.

Fidelidade Quantitativa de Ostracodes em Ilhas Oceânicas brasileiras

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A relação quantitativa entre associações vivas e suas correspondentes associações mortas (possíveis associações fósseis), de organismos com alto grau de preservação, tem implicações diretas em interpretações paleontológicas e ecológicas. Tais estudos permitem, por exemplo, mensurar diversos aspectos ecológicos auxiliando na compreensão de padrões de diversidade em larga escala temporal e espacial. A fidelidade quantitativa tem sido baseada principalmente em moluscos, embora existam outros grupos potenciais ainda não explorados, como os ostracodes. Este grupo consiste de pequenos crustáceos (adultos em geral entre 0,4 – 1 mm) constituídos por uma carapaça carbonática bivalve, comumente encontrados no registo fóssil e com aplicação demonstrada tanto à paleoecologia quanto à ecologia. A despeito disso, análises tafonômicas ainda são incipientes em ostracodes. Este estudo visa, portanto, preencher a lacuna de conhecimento quanto ao potencial de preservação composicional de ostracodes marinhos, utilizando abordagens numéricas com base em 19 amostras de sedimentos coletados em ambientes insulares. A área de estudo corresponde à Ilha da Trindade, localizada no oceano Atlântico Sul (20°S, 29°W), e à cadeia de montes submarinos adjacente, formando a Cadeia Vitória-Trindade (20°S), representando uma extensão de aproximadamente 1000 km. As ilhas oceânicas vêm sendo usadas como modelo para várias linhas de pesquisa, como biogeografia, ecologia, evolução e biologia da conservação. Nestes ecossistemas são encontradas espécies endêmicas ou raras, sendo que estas últimas podem ter (ou não) relação espacial com outras ilhas e topos de *seamounts* ou plataformas continentais. Assim, este estudo visa compreender a fidelidade composicional de ostracodes marinhos em ampla escala espacial, consolidando este grupo como um importante proxy ecológico para ambientes marinhos tanto atuais quanto pretéritos.

Tafonomía Actualística en el noreste de la meseta de Santa Cruz (Argentina). Avances, implicancias arqueológicas y agenda futura

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En el noreste de la Meseta Central de Santa Cruz hemos iniciado recientemente el desarrollo de un proyecto de tafonomía actualística con el fin de fortalecer las interpretaciones arqueológicas del área. Con este programa actualístico buscamos entender cómo los diferentes agentes y procesos modernos generan patrones de acumulación, dispersión y destrucción diferencial en los distintos microambientes que caracterizan la región en donde llevamos adelante nuestras investigaciones arqueológicas. Con este trabajo buscamos aportar al desarrollo y discusiones propuestas para el taller, a partir de la presentación del proyecto en ejecución, los primeros avances logrados durante los trabajos de campo desarrollados entre 2015 y 2017, las contribuciones principales para las interpretaciones arqueológicas y las perspectivas a futuro. Estos trabajos, por el momento incluyen un diseño de registro y relevamiento basado en prospecciones por transectas de información tafonómica y ambiental; y el relevamiento y seguimiento de concentraciones óseas actuales localizadas en distintos ambientes dentro del área de estudio.

Especies invasoras, un experimento natural en Tafonomía Actualista

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Presentamos un proyecto que tiene como objetivo caracterizar y comparar los rasgos tafonómicos en las valvas de dos especies de moluscos invasoras en el Río de la Plata: el gasterópodo *Rapana venosa* y el bivalvo *Corbicula fluminea*. Dado que las fechas de establecimiento en la zona de dichas especies ha sido reportado adecuadamente, el lapso abarcado hasta el día de hoy (dos y tres décadas) es el adecuado para cubrir en forma natural (no mediante "siembra de valvas") una ventana temporal existente en los estudios tafonómicos actualistas. Esta es la existente entre la tafonomía experimental que dura semanas a meses, y el estudio de ensambles de valvas recientes ("death assemblages") que tienen una mezcla temporal ("time averaging") de cientos o miles de años. Los rasgos o atributos tafonómicos serán tabulados según sus variables y sometidos a análisis cuantitativos; también se evaluará el efecto de la granulometría del sedimento y la composición elemental y condición de la microestructura de las valvas (mediante EDS y SEM). Esta utilización de las especies invasoras como modelo para establecer las características tafonómicas que surgen a corto plazo en forma natural es absolutamente novedosa y se espera que sea un primer hito que siente las bases para estudios futuros similares.

Efeito da hipersalinidade na fossilização dos insetos da Formação Crato, Bacia do Araripe, Eocretáceo, Nordeste do Brasil.

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Os insetos da Formação Crato se destacam no cenário mundial por sua diversidade, abundância e pela preservação de seus detalhes morfológicos, não sendo raros exemplos tridimensionais o que permite o título de *fóssil lagerstätte* para esta unidade. Simulações tafonômicas já realizadas ajudam a explicar como as baratas fossilizaram com as asas abertas, além de seu tempo e sequência de desarticulação. Porém, quando analisadas as características da matriz carbonática, esta aponta para uma sedimentação lenta o que levaria à desarticulação e até mesmo à total decomposição do organismo antes do recobrimento. A presença de alguns pseudomorfos de halita singenéticos, bem próximos a alguns exemplares de baratas e aranhas com as patas contraídas, sinalizam que em determinados momentos da deposição o ambiente seria hipersalino. Uma nova simulação vem sendo testada, utilizando exemplares, vivos de *Periplaneta americana* afogados e cobertos com pó de carbonato de cálcio na fração lama, em um meio hipersalino. Uma análise preliminar tem mostrado retração no tempo de desarticulação e até mesmo decomposição das baratas de no mínimo 3 meses. O experimento encontra-se em andamento buscando determinar o tempo máximo em que o organismo pode permanecer sem desarticular. O efeito de salinização no retardamento da desarticulação tem se mostrado como um dos possíveis fatores bioestratigráficos que poderia ter contribuído na fossilização dos insetos da Formação Crato.

Ostracodes (Ostracoda, Crustacea) do infralitoral como um grupo potencial para estudos de fidelidade composicional

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A fidelidade composicional é um tema transversal entre a Ecologia e a Paleontologia que visa mensurar diversos aspectos ecológicos (e.g., riqueza, diversidade, equitabilidade) entre associações vivas e mortas (= acumulação de remanescentes biológicos identificáveis de organismos bentônicos). A fidelidade quantitativa tem sido majoritariamente fundamentada em moluscos, por eles serem abundantes no registro fóssil e por deixarem restos refratários facilmente coletáveis. Não obstante, existe uma lacuna de tais estudos em outros grupos potenciais, como por exemplo, os ostracodes. Tais microcrustáceos, com carapaça bivalve, já possuem comprovada aplicação à paleoecologia, à bioestratigrafia, à paleo- e à biogeografia. Contudo, a despeito de sua importância, nenhum estudo avaliou o potencial de preservação bem como a fidelidade composicional de ostracodes marinhos. Sendo assim, este projeto visa preencher parcialmente esta lacuna, utilizando abordagens quantitativas com base em 62 amostras coletadas em algas e sedimentos do sublitoral do Estado de Santa Catarina (26° – 27° S), sul do Brasil. Taxonomicamente, nós encontramos a presença de 18 famílias, 33 gêneros e 45 espécies, destacando a importância destes ambientes para os ostracodes. Mais de >60% das espécies foram registradas somente na associação morta, enquanto 16 foram coletadas vivas. Embora a associação morta apresente maior riqueza relativa de espécies, a associação viva é a mais abundante. A fidelidade composicional, não obstante, foi bastante heterogênea ao longo da área de estudo, refletindo, provavelmente, variações ambientais espacialmente estruturadas. Embora os resultados sejam preliminares, é indiscutível a importância de tais estudos à paleoecologia de ostracodes marinhos e sua aplicação à interpretação paleoambiental.

Dissolution bias in the planktonic foraminiferal assemblages from the South Atlantic

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The occurrence and abundance of planktonic organisms in seawater is controlled by oceanographic variables, mainly temperature and secondarily salinity, mixed layer depth and food availability. Even after death, foraminifera tests are influenced by environmental conditions while sinking through the water column and at the seabed where they are deposited. However, there are no studies involving quantitative comparisons between planktonic foraminifera abundances on the sediments with the living associations. The main goal of this study is to evaluate the environmental factors modifying the planktonic foraminifera assemblages by dissolution in the South Atlantic Ocean and to observe the difference in microfauna composition resulting from this process. The study area comprises the South Atlantic (6°N to 57°S and 20°E to 57°W), from where we obtained publicly available data of planktonic foraminifera census counts from superficial sediments, and temperature, salinity and dissolved oxygen data for both bottom and surface waters (0 to 200 m). To overcome the lack of data on living planktonic assemblage composition, we grouped some regions of the study area by similar temperatures, since this is the main factor determining the relative species abundance in planktonic foraminifera assemblages. To examine the response of foraminifera abundances and environmental variables multivariate analysis will be carried out, mainly canonical analysis of proximities and non-metric multidimensional scaling with vector fitting and thin-plate splines. Given that living planktonic foraminifera assemblages reflect surface conditions, mainly temperature, we expect bottom conditions to play an important role in the variation of the associations in places with similar surface temperatures, but with different bottom conditions. This pattern is expected since depth (and other related variables) have a direct influence on carbonate dissolution. [Projeto FAPERGS nº 1982-2551/13-7; CAPES Processo 88887.091727/2014-01]

Actualistic Taphonomy of plant remains in tropical forests of southeastern Brazil

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Studies in actualistic taphonomy accumulations of plant remains carried out in tropical forests promotes understanding the origin of elements that integrate the fossil floras, the accumulation time of layers, the physical and chemical processes that interfere in their formation, as well as providing climatic information such as temperature and precipitation. Thus, studies were conducted in meandering rivers (Itanhaém, Mogi-Guaçu and Capivari) located in the state of São Paulo, southeastern Brazil. We collected assembly packages of plant remains present in the point bars, preserving the original stratigraphy. Then, the leaves of angiosperms were classified within morphotypes and when possible systematically. ^{14}C dating was also carried out to the base, middle and top of all packages collected. The results showed that the assemblies collected in Itanhaém river, which is associated to estuarine conditions, present a greater diversity of assemblies reflecting variations of plant cover throughout its course. However, the assemblies collected on the banks of Mogi-Guaçu and Capivari rivers, located inland, reflect only the riparian forest bordering the river. In all assemblages, the identified morphotypes belong to the arboreal vegetation near the deposit with well-preserved leaves without showing a preferential orientation, in layers of decimetric thickness mostly deposited during the 50s of the last century, and associated with years of high precipitation. The preservation of the assemblies is related to changes in the level of aquifers, and chemical composition of their waters. Finally, the taxonomic analysis of leaf material allowed access to the species and families most likely to be preserved in fossil record in the future, as they reflect the composition and structure of the original community, as well as the climate for the moment of its deposition. FAPESP 2016/20927-0

Deep-water time-averaging in mollusk shell accumulations: variation in temporal mixing on shelf and continental slope

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Numerical dating of mollusk and brachiopod shells from present-day seafloors indicates that death assemblages (e.g., surficial accumulation of skeletal remains of shelly benthos) from shallow marine settings are typically time-averaged over multi-centennial to multi-millennial time scales. However, the scale of time-averaging in deeper, more offshore settings remains underexplored. Here, we use numerical dating of individual shells to estimate time-averaging in offshore mollusk assemblages (>100 m) collected on the Southern Brazilian Shelf (SBS). Eighty-six specimens of *Nuculana* spp. (Bivalvia, Mollusca) were dated using amino acid racemization (AAR) ages calibrated against radiocarbon dates ($n = 24$). The results demonstrate that shell accumulations from the outer shelf and continental slope have experienced temporal mixing comparable in magnitude to previously reported estimates from coastal and inner shelf areas of the SBS region. However, despite similar levels of time-averaging, the median shell ages estimated for offshore sites are notably older than those observed in nearshore settings. Although modern surficial sediments represent a stratigraphically isochronous surface, the shell ravinements formed on that surface are diachronous with median shell ages increasing offshore along the depositional profile of the SBS. Shell accumulations forming along isochronous surfaces may be time-transgressive and can include species ecologically inconsistent with the depositional setting in which they are currently found. The temporal resolution of those shell accumulation appears largely invariant to water depth and location along the depositional profile of the SBS shelf.

Valvas antiguas, valvas recientes y especies vivientes

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Las acumulaciones de valvas recientes en la costa son importantes fuentes de información en estudios de Tafonomía Actualista. En estas se puede preservar una muestra (sesgada) de la comunidad que vive en el área adyacente, evidenciarse procesos bioestratinómicos útiles para el análisis tafonómico de asociaciones fósiles y determinar time-averaging y tiempos de residencia de las valvas en el medio. Los ensambles de valvas recientes han sido fuente también del registro de la presencia de especies en un área. Si bien el rango de distribución geográfico de una especie debiera establecerse en base a la colecta de especímenes vivos, abundan en la literatura, la cita de especies en base a valvas vacías colectadas en las playas. Para la costa de Uruguay, existen algunos ejemplos de esta problemática que genera incertidumbre, especialmente para especies cuyo límite de distribución se encuentra en la costa uruguaya. El creciente conocimiento de los depósitos marinos del Cuaternario así como el análisis de ensambles de valvas recientes puede aportar al abordaje de estas cuestiones. Dado que los depósitos cuaternarios están asociados a la franja costera de Uruguay y en varios casos sometidos a la acción de la erosión costera, es probable que conchillas antiguas integren los ensambles de valvas recientes. De hecho, por ejemplo, *Anomalocardia brasiliiana* es un bivalvo que ha sido registrado en numerosos yacimientos cuaternarios y sus conchillas han sido halladas sueltas en la costa. Una valva de esta especie colectada en la Playa de Parque del Plata (departamento de Canelones) fue datada por ^{14}C AMS. Se obtuvo una edad aproximada de 6600 años radiocarbónicos antes del presente, por lo que es muy probable que dicha valva proviniera de un depósito holoceno cercano. Esta contribución pretende ser el puntapié inicial de futuras investigaciones que aprovechen la complementación de la información proveniente de depósitos cuaternarios y de ensambles de valvas recientes para aportar a aspectos biogeográficos actuales.

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