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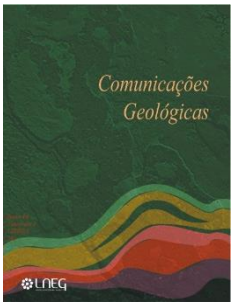
# History of the discovery of the ankylosaur *Dracopelta zbyszewskii* (Upper Jurassic), with new data about the type specimen and its locality




# História da descoberta do anquilossauro *Dracopelta zbyszewskii* (Jurássico Superior), com novos dados sobre o espécime tipo e a sua localidade

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**Abstract:** *Dracopelta zbyszewskii* is a poorly known ankylosaur dinosaur from the Upper Jurassic of Portugal. Even its early history has hitherto remained problematic, mostly due to scarce recorded information. By reviewing published literature, unpublished photos and notes, and field observations, we identify the type locality as a roadcut 400 m Southeast of Praia da Assenta Sul, approximately 1 km West of Barril, Mafra. Western Portugal, and date the discovery to early 1964 and the excavation to December 1964. This improves the existing records and allows to trace the early history of the holotype, providing important historical context on one of the most complete ankylosaurs from Europe. Furthermore, we preliminarily identify additional holotype material, i.e., putative pelvic elements, right hindlimb elements (distal femur, tibia, and fibula), one ungual, ribs, and osteoderms, which will help ascertain its position within Ankylosauria. We also propose that a single repository number be used for the specimen.

**Keywords**: *Dracopelta zbyszewskii*, ankylosaur, Upper Jurassic, historical record.

**Resumo**: *Dracopelta zbyszewskii* é um dinossauro anquilossauro pouco conhecido do Jurássico Superior de Portugal. Mesmo a história da sua descoberta tem permanecido problemática até aqui, em grande parte devido à escassa informação registada. Revendo literatura publicada, fotografias e notas inéditas, e observações de campo, identificamos aqui a localidade tipo como um corte de estrada, cerca de 400 m a Sudeste da Praia da Assenta Sul, aproximadamente 1 km a Oeste de Barril, Mafra, Costa Oeste de Portugal, e datamos a descoberta ao início de 1964 e a escavação a dezembro de 1964. Esta informação melhora os registos existentes e permite clarificar a história inicial do holótipo, fornecendo contexto histórico importante para um dos mais completos anquilossauros da Europa. Além disso, identificamos preliminarmente material adicional pertencente ao holótipo, i.e., putativos elementos pélvicos, elementos do membro posterior direito (fémur distal, tíbia e fíbula), uma ungual, costelas e osteodermes, o que ajudará a determinar a sua posição dentro dos Ankylosauria. Propomos também que um único número de inventário seja utilizado para o espécime.

**Palavras-chave:** *Dracopelta zbyszewskii*, anquilossauro, Jurássico Superior, registo histórico.

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## 1. Introduction

*Dracopelta zbyszewskii* Galton 1980 is an ankylosaurian dinosaur from the Upper Jurassic of Portugal. Ankylosaurs are dinosaurs mainly characterized by the extensive cranial and postcranial dermal ossification, and are known as far back as the Middle Jurassic (?Bathonian-Callovian) from fragmentary remains, becoming highly diverse during the Cretaceous, when occurrences are known worldwide, with the exception of Africa (*e.g.* Vickaryous *et al.*, 2004, Arbour and Currie, 2016). The holotype of *D. zbyszewskii* was the first articulated ankylosaur remains from the Jurassic and is one of the most complete Jurassic ankylosaurs from Europe (Galton, 1980, 1983; Pereda-Suberbiola *et al.*, 2005; Ösi, 2015). Therefore, it represents an important taxon to understand the evolution of the whole group Ankylosauria. However, it remains poorly understood and its affinities are uncertain, with Galton (1980) tentatively ascribing it to the Nodosauridae. Since its description, it has consistently either been disregarded altogether in most studies or been deemed too incomplete and undiagnostic to allow a more accurate classification other than either as *incertae sedis* or as a *nomen dubium* (*e.g.* Carpenter, 2001; Vickaryous *et al.*, 2004). More recently, other occurrences of Late Jurassic ankylosaurs have been reported, especially from North America (Kirkland and Carpenter, 1994; Carpenter *et al.*, 1998). The close affinities between North American and Iberian Late Jurassic faunas are well documented (*e.g.* Mateus, 2006; Hendrickx and Mateus, 2014; Tschopp *et al.*, 2015) so *D. zbyszewskii* is an important element to further clarify the paleobiogeographical implications between Iberia and North America during the Late Jurassic and evolutionary relationships within Ankylosauria. Thus, having as much information as possible on this taxon is crucial, starting with its exact type locality and age, and including its historical context. These have been a matter of debate since the records on the discovery of the holotype of *D. zbyszewski* are sparse or almost nonexistent. When it was first described (Galton, 1980), the holotype, a partial articulated ribcage and osteoderms, and associated material (Fig. 1), had been laying at the Serviços Geológicos de Portugal (SGP; presently Laboratório Nacional de Energia e Geologia, LNEG) storage for years (Galton, pers. comm., 2009, 2015). The little available


Figure 1. Holotype material of *Dracopelta zbyszewskii*. (a) IGM 5787, ribcage and dermal armour; (b) IGM 3, autopodium; (c) best preserved elements from the postcranial material (stored at LNEG, no inventory number), from left to right: right tibia, anterior view; distal right femur, anterior view, with an osteoderm and ossified tendon below; rib segments (above); osteoderms (below). Scale bars in (a, c) and (b): 10 cm and 5 cm, respectively.

Figura 1. Material do holótipo de *Dracopelta zbyszewskii*. (a) IGM 5787, caixa torácica e armadura dérmica; (b) IGM 3, autopódio; (c) elementos mais bem preservados de material pós-craniano (armazenado no LNEG, sem número de inventário), da esquerda para a direita: tíbia direita, em vista anterior; fémur distal direito, em vista anterior, com um osteoderme e tendão ossificado em baixo; segmentos de costelas (acima); osteodermes (abaixo). Barras de escala em (a, c) e (b): 10 cm e 5 cm, respectivamente.

information at the time allowed only to attribute the type locality and horizon as Ribamar on the Western coast of Portugal and Kimmeridgian. Herein we address this problem by tracing the holotype's history and providing a full account of its discovery and the main contributors, while identifying the type locality (Figs. 2 e 4). We cross reference previously unknown archival records, i.e., field notes, photographs, reports, such as an original photograph from the holotype *in situ* as well as the original specimen sketch by George Zbyszewski (Fig. 3), with field work and observations of the area (Fig. 4), to review and establish the chronology of the discovery. We also report on additional material from the holotype (Fig. 1c), which will be invaluable for a detailed, updated description of *D. zbyszewskii*. Studies are currently ongoing to redescribe in detail the specimen and address its phylogenetic relationships. This work provides significant historical background and a new geographical and stratigraphical framework to better understand one of the most complete yet lesser-known ankylosaurs in Europe, and one of the few known from the Jurassic.

**Institutional abbreviations:** IGM - Instituto Geológico e Mineiro; IPFUB - Institute of Palaeontology of the Free University of Berlin; LNEG - Laboratório Nacional de Energia e Geologia; MG - Museu Geológico; SGP - Serviços Geológicos de Portugal; FCT-UNL – Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa.

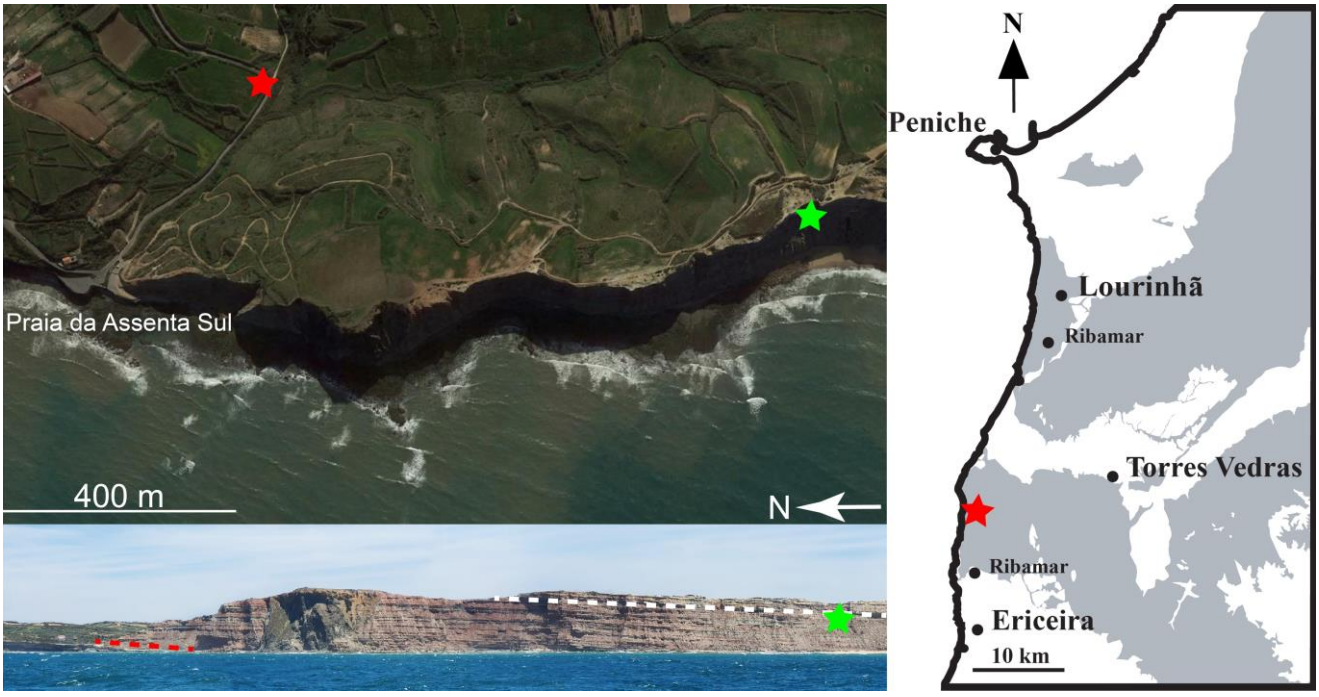


Figure 2. Regional simplified geological map (right), with location of *Dracopelta zbyszewskii* (red star). Gray coloured areas on the right represent Late Jurassic units. Satellite (top left) and coastal profile (bottom left) photographs of the Praia da Assenta Sul area. Green star indicates the site of the new ankylosaurian specimen FCT-UNL 702; white dashed line on bottom left represents approximate J-K boundary according to Mateus *et al.* (2017); red dashed line marks the coastal equivalent unit to the type locality. Satellite image modified from Google Earth® and panoramic photo of the coast by André Carvalho.

Figura 2. Mapa geológico regional simplificado (direita), com localização de *Dracopelta zbyszewskii* (estrela vermelha). Áreas a cinzento à direita representam unidades do Jurássico Superior. Fotografias de satélite (esquerda topo) e perfil costeiro (esquerda em baixo) da área da Praia da Assenta Sul. Estrela verde indica a jazida de um novo espécime de anquilossauro FCT-UNL 702; abaixo à esquerda) linha tracejada branca representa aproximadamente a fronteira J-K segundo Mateus *et al.* (2017); linha tracejada vermelha marca a unidade equivalente na costa à localidade tipo. Fotografia de satélite modificada de Google Earth® e fotografia panorâmica da costa por André Carvalho.

## 2. History of the discovery and study of *Dracopelta* type specimen

Very little is known about the discovery of *D. zbyszewskii*. The early records are virtually nonexistent, with the only official information available being a short, handwritten "Ribamar" label associated with the specimen, and previous descriptions of the holotype material (Galton, 1980; Pereda-Suberbiola *et al.*, 2005). According to Pereda-Suberbiola and colleagues (2005), improving on what was known until then, the holotype was found during road construction works in the Assenta region "*sometime between the end of 1963 and the beginning of 1964*". In fact, in early 1964, during the construction of a road between Barril and the beach of Assenta Sul, fossil bones were exposed. The local newspaper Badaladas no. 472, on January 9th, 1965, published a short article here titled "*140-million-year-old fossil found at Praia da Assenta"*, in which it reported the occurrence, as translated: "*When about one year ago a road was being opened between the village of Barril and Praia da Assenta, part of a fossil of a very old animal was discovered. [...] A local friend of ours was made aware of the finding and after going to the site to verify its existence, informed the Geological Services of Portugal about the appearance of the fossil. Thus, immediately went on the last* [December] *22nd, to Praia da Assenta, our friends, Dr. Georges Zbyszewski and Eng. Veiga Ferreira, senior officials of those services, accompanied by specialized personnel, who proceeded to survey the interesting fossil. As those friends informed us, it must be a dinosaur that is 140 million years old, but only after properly studied in the laboratory of those services, can it be classified scientifically to which genus it belongs."* This news report confirms 1964 as the discovery of fossil dinosaur bones in the area as well as the presence of Georges Zbyszewskii and Octávio da Veiga Ferreira. The aforementioned "local friend" that first confirmed the presence of the fossil was found to be Leonel Trindade and photographed the specimen *in situ* (Fig. 3). In the back of the photograph, part of the personal files of Trindade at the Torres Vedras Museum archives, is written "Assenta", thus confirming that the dinosaur bones reported are indeed from *D. zbysewskii*. Leonel de Freitas Sampaio Trindade (Fig. 5a) (Torres Vedras, July 16th, 1903 - January 4th, 1992) was an archaeologist in Torres Vedras, responsible for numerous studies mainly in the Neolithic from the Western Region, among which Castro do Zambujal and Tholos de Paimogo (*e.g.* Trindade and Veiga Ferreira, 1956; Gallay *et al.*, 1973; Sangmeister *et al.*, 1974). The Torres Vedras Museum bears his name in recognition of his work, as does the Associação Leonel Trindade, now Sociedade de História Natural, in Torres Vedras. Being an archaeologist with a peripheral interest in palaeontology, he forwarded relevant fossils in the area to his contacts in the SGP in Lisbon, namely Georges Zbyszewski. Georges Zbyszewski (Fig. 5b) (Gatchina, Russia, October 22nd, 1909 - Lisbon, March 1st, 1999) was one of the most prominent geologists and paleontologists in Portugal who, after his first visit in 1935, and over the course of more than 40 years working at the SGP, authored and/or co-authored over 200 publications, including the geological mapping of the country, studies on the Quaternary encompassing geology, archaeology and palaeontology, and paleontological works on invertebrates and vertebrates of the Cenozoic and Mesozoic of Portugal (*e.g.* Zbyszewski and Almeida, 1950; Lapparent and Zbyszewski, 1957; Zbyszewski and Ferreira, 1990) . As reported, together with Octávio da Veiga Ferreira, his colleague and protégé, he visited Porto do Barril beach on December 22nd, 1964, and organized the excavation and extraction of the specimen. Georges Zbyszewski

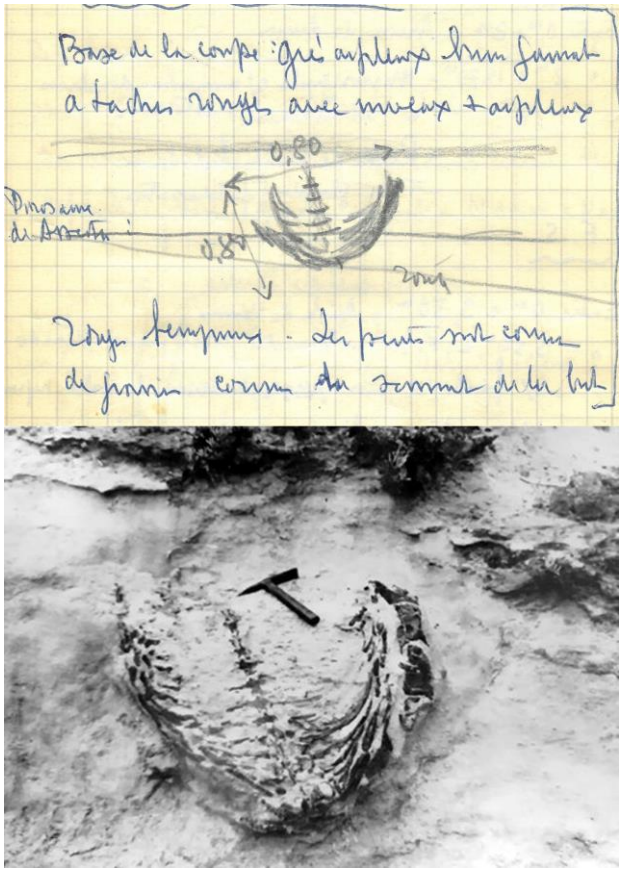

Figure 3. Historical record of the holotype of *Dracopelta zbyszewskii*. Top) sketch of the holotype in George Zbyszewski's 1964 fieldbook. "Dinosaure de Assenta" (dinosaur of Assenta) is noted on the left edge of the page. The content of the rest of the page is unrelated with this sketch (see text for further information on George Zbyszewski's field notes); Bottom) holotype *in situ* in 1964 (photograph by Leonel Trindade, kindly shared by Torres Vedras municipal archives).

Figura 3. Registo histórico do holótipo de *Dracopelta zbyszewskii*. Topo) esboço do holótipo no livro de campo de 1964 de George Zbyszewski. "Dinosaure de Assenta" (dinossauro de Assenta) está anotado na margem esquerda da página. O conteúdo do resto da página não está relacionado com este esboço (ver texto para mais informações sobre as notas de campo de George Zbyszewski); Fundo) holótipo *in situ* em 1964 (fotografia por Leonel Trindade).

drew a pencil sketch of the *D. zbyszewskii* rib cage in his fieldbook (Fig. 3), with the dimensions of the specimen block "*0.80*" for "*0.80*", "*route*" indicating the road, and "*Dinosaure de Assenta*" noted down on the side. To be noted that this information is mixed with the author's notes on unrelated work in the previous and following pages. The two adjacent sentences to the sketch are part of the geological description of the section of Ruivos, Palmela, 75 km to the Southwest, later published in the corresponding geological map explanation booklet (Zbyszewski *et al.*, 1965: pages 16 and 17). Georges Zbyszewski's field books are usually not dated or possess other references that could allow cross referencing field information or exactly date his field notes and visits. Nevertheless, by putting together these pieces of information, it was possible then to confirm that Zbyszewski and Veiga Ferreira visited the site in Assenta on December 22nd, 1964, and that the sketch was probably drawn on that day, which consequently also allows to date that portion of Zbyszewski's field notes and observations. Furthermore, by comparing the surrounding lithology on the photograph and performing field observations of the area, while cross-referencing it with information of the site in Pereda-Suberbiola *et al.* (2005), the outcrop on the side of the road was identified (Fig. 4), thus confirming that *D. zbyszewskii* was indeed the occurrence reported and that the roadcut section is the type locality. The specimen was then collected by Zbyszewski and Veiga Ferreira and housed at LNEG (former Serviços Geológicos de Portugal), where it was briefly prepared by Manuel de Matos (Mateus, 2006).

George Zbyszewski co-authored the seminal work "Les Dinosauriens du Portugal" in 1957, with Albert de Lapparent, which would make him a natural candidate for the study of this new dinosaur specimen. Surprisingly, he did not study or seemed interested in co-authorship of the description of this dinosaur and rather focused on non-paleontological geology. In August 1978, Peter M. Galton visited the Geological Museum in Lisbon to observe stegosaur material during a one-week trip, before a scientific meeting in Paris. Peter Malcolm Galton (Fig. 5c) (London, England, March 14th, 1942) is a prolific vertebrate paleontologist, Professor Emeritus at University of Bridgeport CT, who published extensively on dinosaurs, particularly ornithischians and basal sauropodomorphs, which mainly resulted from visiting unstudied collections in museums. During his time in Lisbon, new unstudied specimens caught his attention. His host, Zbyszewski, invited him to study it since "the Geological Survey encouraged Zbyszewski to concentrate on geology, not dinosaurs" (Peter M. Galton, personal communication, 2009, 2015). As a result, in June 1980, Galton described the specimen and erected the new taxon, *Dracopelta zbyszewskii* Galton, 1980, in honor of the collector and his host in Portugal, as a nodosaurid ankylosaur, based on the similarities of the armour to ankylosaurs known at the time. He was an author of additional work featuring *D. zbyszewskii* (Galton, 1983; Pereda-Suberbiola *et al.*, 2005) and other ornithischians from Portugal (Galton, 1981, 1991, 1994, 1996).

## 3. Type locality and horizon

Galton (1980) wrongly pointed the type specimen to be from the Upper Jurassic (Kimmeridgian) of Ribamar, after the indications of Georges Zbyszewski. As aforementioned, Zbyszewski had knowledge of both the exact location of the finding and the age of the specimen. However, the toponym of Ribamar created obvious confusion on the location and age, since there are two localities with the same name, Ribamar, 25 km apart (Fig. 2): 1) in Mafra municipality, to the South, and 2) in Lourinhã municipality, to the North. Antunes and Mateus (2003) reasoned that the type locality may have been Ribamar from Lourinhã because of the extensive Kimmeridgian-Tithonian outcrops and dinosaur record in the area. Ribamar from Mafra and its immediate surrounding area sit on Early Cretaceous igneous and sedimentary rocks that overlie the Upper Jurassic found further to the North. Therefore, those authors deemed as highly unlikely that *D. zbyszewskii* came from this locality: either the age or the location had been wrongly placed. At that time, samples of the the rock matrix of the type specimen were tested for palynology to try to attest on the age, but the results were inconclusive. New data from Pereda-Suberbiola *et al.* (2005) provided new inputs on the type locality and age, and date of discovery, while describing additional holotype material, a putative right manus (Fig. 1b). Those authors propose a date of discovery between the end of 1963 and the beginning of 1964 and corrected the previous location and narrowed down the type locality to 400 m East of Praia do Sul, near Assenta, Torres Vedras, but without figuring the location or providing coordinates. The same authors constrained the age to the uppermost lower

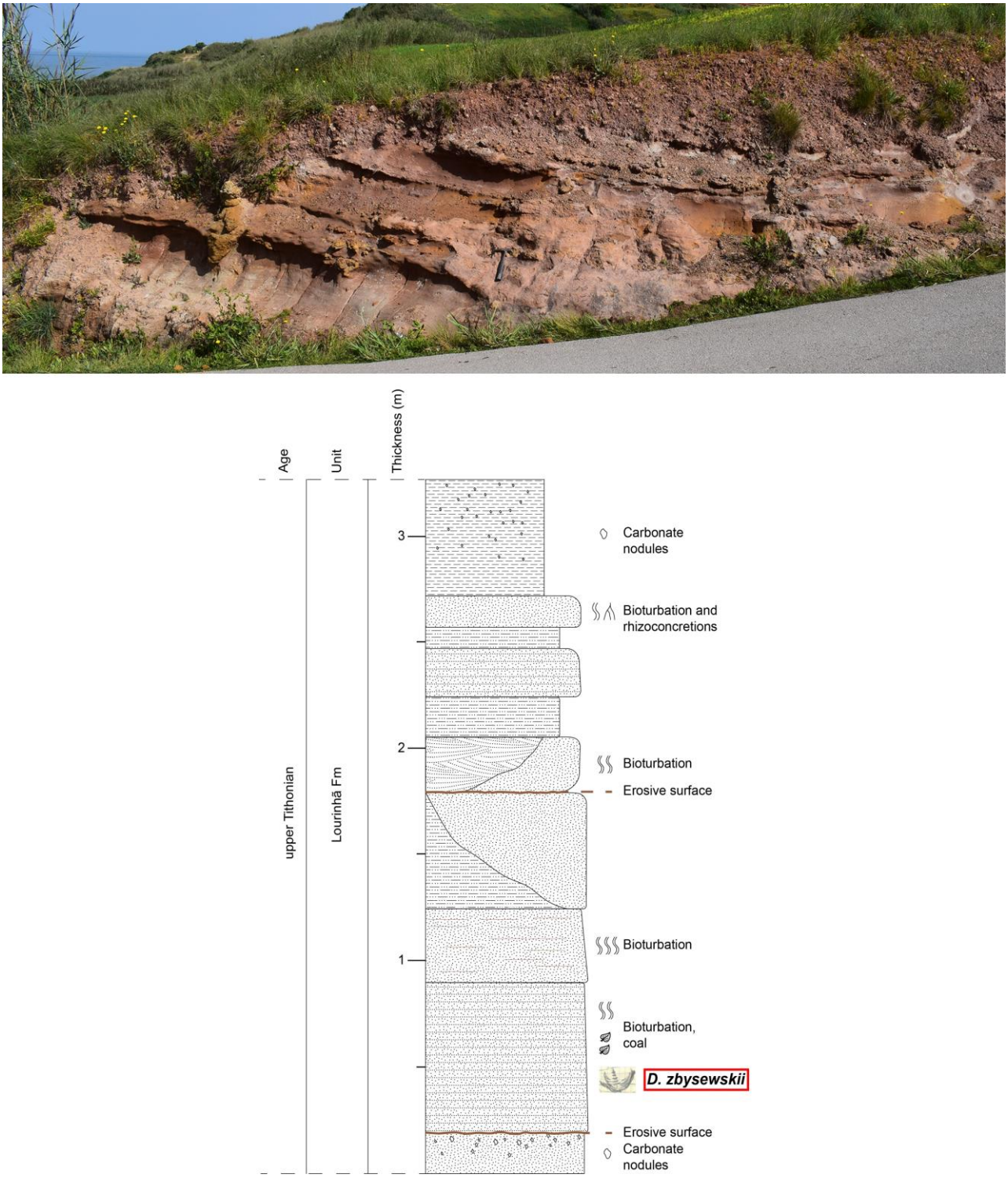


Figure 4. Type locality of *Dracopelta zbyszewskii* (above) and local stratigraphic log showing the placement of the holotype in the section (below).
Figura 4. Localidade tipo de *Dracopelta zbyszewskii* (acima) e coluna estratigráfica local, mostrando a localização do holótipo na secção (abaixo).

Tithonian-upper Tithonian. Through field observations, it was possible to confirm the exact type locality at 39°03'07.8" N 9°24'43.2" W, a roadcut between Barril and Praia da Assenta Sul, in the municipality of Mafra (Figs. 2 e 4), 5 km North of Ribamar, Mafra. The specimen comes from a medium to fine-grained gray sandstone, stratigraphically low in the local sequence (Fig. 4), representing a fluvial channel, with small coalified plant fragments. The 3 m type section is characterized by a succession of fluvial sandstones (some showing parallel lamination) intercalated by oxidized erosive surfaces showing moderate bioturbation and fossilized roots, which indicates periodic subaerial exposure, further confirmed by the presence of


Figure 5. Main historic contributors. (a) Leonel Trindade (from Travanca, 1999); (b) Georges Zbyszewski (right) and Octávio da Veiga Ferreira (left) (kindly shared by João Luís Cardoso); (c) Peter M. Galton (photograph by Octávio Mateus).

Figura 5. Principais intervenientes históricos. (a) Leonel Trindade (de Travanca, 1999); (b) Georges Zbyszewski (direita) e Octávio da Veiga Ferreira (esquerda) (fotografia cedida por João Luís Cardoso); (c) Peter M. Galton (fotografia por Octávio Mateus).

carbonated nodules. This is consistent with what is recognized in the uppermost part of the Lourinhã Formation, the Assenta Member (Mateus *et al.*, 2017). Therefore, we agree with the uppermost lower Tithonian-upper Tithonian age of *D. zbyszewskii*. This specimen is much higher than the Kimmeridgian/Tithonian boundary seen in the outcrops to the North and about 75-85 m stratigraphically below the Jurassic Cretaceous boundary (Mateus *et al.*, 2017). Recently, a new ankylosaur specimen was reported about 1 km South, but stratigraphically higher, about 5 to 6 m below the JK boundary (Fig. 2) (Russo and Mateus, 2019). Studies on this specimen are currently ongoing to clarify if it represents an additional, more complete specimen, of *D. zbyszewskii*, or a different taxon altogether.

## 4. New unpublished material from the type specimen

The holotype of *D. zbyszewskii* is composed of MG 5787 (former IGM 5787), a partial rib cage with 12 dorsal vertebrae and articulated proximal ribs, and five different types of dermal armour (Galton, 1980), and MG 3 (IGM 3), an incomplete autopodium with three metapodials and digits II, III and IV (Pereda-Suberbiola *et al.*, 2005), and unpublished material. Galton (1980) described only the ribcage and osteoderms, because the remaining material was not located or available during his visit. The autopodium, described by Pereda-Suberbiola *et al.* (2005), was found and retrieved from storage, across the street of Museu Geológico, in 1979 by João Luís Cardoso (Cardoso, pers. comm., 2021), while inventorying the collections of the then-SGP as an undergraduate student, and who notified Georges Zbyszewski on the finding.

Additional material (uncatalogued) was recently identified at the LNEG storage and is here accounted for while a more detailed study is ongoing. It was not initially described by Galton (1980) nor Pereda-Suberbiola *et al*. (2005) because it was unprepared and misplaced, mixed in with a stegosaurian specimen from Atouguia da Baleia (also collected by George Zbyszewski) that was later described as another specimen of *Miragaia longicollum* by Costa and Mateus (2019). The rock matrix was a medium-grained, gray sandstone, similar in colour and grain size to the latter. Costa *et al*. (2017) sorted both specimens using anatomy and the chemical signature obtained by X-ray fluorescence (XRF). The geochemical signature on the sediment from the holotype of *D. zbyszewskii* showed an enrichment in K and Fe. To corroborate this result, an XRF analysis was performed using a Thermo Scientific NitonXL3t Goldd+ on a sample collected from the specimen layer from the type locality. The geochemical profiles in both samplings were very similar, specifically registering peak amounts of K, Fe, and Rb. Also, the highest peak registered was of Si, which was expected and can be attributable to the high content of potassium feldspar in the matrix, namely orthoclase, a major component of the sandstones in the Lourinhã Formation.

The new holotype material presented herein is composed of 35 blocks (defined as any fragment larger than 10 cm) and over 70 fragments. Although most elements are unidentified fragments, a few can be identified. Most are osteoderms, of which four possible lateral plates based on its size and curved shape, but there are also nine partial ribs and appendicular bones. The latter are the best preserved and in a more advanced state of preparation and consist of the distal end of the right femur, right tibia, broken at the distal end, and right fibula, broken in three smaller fragments, two phalanges (one of them is an ungual), most likely from the autopodium. Either more poorly preserved or in need of further preparation, there is also a partial femoral shaft and possible pelvic elements. This new material is currently being described.

## 5. Numbering the type specimen

The catalogue specimen numbering of *D. zbyszewskii* is also somewhat problematic. As aforementioned, both the ribcage and the autopodium have different specimen numbers, IGM 5787 and IGM 3 respectively, whilst the remaining material does not have an inventory number. The institutional catalogue acronym of the type specimen has changed over the years, reflecting the various changes of the institutional name and in the institution itself that houses the specimen. Even though the museum remained relatively unaltered throughout, the only change being in 1993 when Museu dos Serviços Geológicos de Portugal was renamed as Museu Geológico, its institutional frame changed. It originated in 1859 with the purpose to store specimens from the surveys and works of the Comissão Geológica do Reino, created two years before, in 1857, by royal decree. The parent institution

went through successive name changes in the next 60 years: Comissão Geológica de Portugal (1857-1869), Secção dos Trabalhos Geológicos de Portugal (1869-1886), Comissão dos Trabalhos Geológicos de Portugal (1886-1892), Direcção dos Trabalhos Geológicos de Portugal (1899-1901); Comissão do Serviço Geológico de Portugal (1901-1918). In 1918, it changed again, to Serviços Geológicos de Portugal, until 1993 when it became Instituto Geológico e Mineiro. In 2003, IGM was decommisioned, and in 2006 its services came under the jurisdiction of Laboratório Nacional de Energia e Geologia, as it remains to this day. All SGP specimens were automatically converted to MG in 1993 without changing the number itself. Concerning the history of museum cataloguing record, it is important to note that the specimens initially collected by the Institute of Palaeontology of the Free University of Berlin (IPFUB) in Portugal also received a different acronym and number system, IPFUB, and not SGP or MG. That material, that include mostly Jurassic vertebrate from Guimarota, Pedrógão, Porto das Barcas, and Porto Dinheiro, were transferred to the Museu Geológico in 2007 and 2008, eventually receiving the final MG acronym and new catalogue number without preserving the original IPFUB numbers. At the beginning, the numbering system of the museum was largely according to the position of the fossil cabinets in the rooms rather than uniting the various anatomical elements of each vertebrate skeleton under the same number. As a result, the three portions of the type specimen of *D. zbyszewskii* are thus numbered differently despite belonging to the same individual: MG 5787, MG 3 and the new elements here reported presently unnumbered. A similar situation happened with other dinosaur holotypes, such as the types of *Lusotitan atalaiensis* Lapparent and Zbyszewski 1957 and *Lourinhasaurus alenquerensis* Lapparent and Zbyszewski 1957, in which the same individuals hold multiple specimen numbers (Antunes and Mateus, 2003). Therefore, considering that all material reported herein pertains to the holotype, and to avoid confusion in the future, we recommend that a single specimen, i.e., one skeleton, be kept under one single repository number. In this case, because there is no numbering in the original article, we recommend the lowest number (MG 3) for the entire holotype specimen. Regardless, MG holds collections that date back to the 1800s, and, despite these cases, the historical records are preserved with a remarkable level of detail, which allowed most findings to be traceable and reconstructed. The documentation available at LNEG and the records of the collections allow for an incomparable reconstruction of the history of Science in Portugal.

## 6. Conclusions

The history of the discovery of the holotype of the ankylosaur *D. zbyszewskii* is here reviewed and accounted for, as it remained obscure until now. New data (photographs, field notes, newspapers, and field observations) allowed to confirm that it was found in early 1964 during road works between the locality of Barril and Praia da Assenta Sul, Mafra, Western Portugal, in a light gray sandstone, corresponding to a fluvial channel. This is thus defined as the type locality and is late Tithonian in age, located in the uppermost part (Assenta Member) of the Lourinhã Formation. It was first reported by Leonel Trindade to Georges Zbyszewski, and Octávio da Veiga Ferreira, who recovered the specimen on December 22nd, 1964. Additionally, new unpublished postcranial bones of the type specimen are also reported, namely right hindlimb elements and dermal armour. It is also proposed that a single repository number is used for the whole specimen to avoid confusion and facilitate future reference and access.

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