



SOCIETY OF AVIAN PALEONTOLOGY AND EVOLUTION

- Newsletter -

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SOCIETY OF AVIAN PALEONTOLOGY AND EVOLUTION

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Dear Friends, Colleagues, and SAPE Members,

Let me begin this letter by acknowledging this tragic year and the impact it has had on our lives, both professionally and personally. In addition to the pandemic—its cost in lives, finances, and freedom—some of us have witnessed unprecedented brutality and injustice in our home towns.

A year ago, I thought I was writing my last letter as SAPE President. Since the time our Society was founded, Presidents have rotated at our international meetings, held every 4 years. My term was expected to be up in May, at our planned meeting in Malaga, when Vice President Ursula Göhlich would have become our new President. The pandemic prevented us from having our meeting; and you are not going to be surprised to hear that we simply don't know when we will be able to meet again, and enjoy the camaraderie and exchange of ideas that has characterized our international meetings for decades. We do know that we can no longer entertain hosting a meeting in Malaga during the first half of 2021—my hopes are, as well as those of the Host Committee, that an in-person meeting

will be possible during the second half of 2021 (stay tuned!).

Despite the incredible challenges of this year, the scientific endeavors of our members have continued unabated. It is great to see how members from around the world have published tremendous contributions and elevated our pursuit for understanding the evolution of birds to new levels. That is how science works—it never stops, ever!

Finally, if your membership has expired, we ask that you renew it as soon as possible. Please see the message from our Treasurer. Your membership supports the operating expenses of our Society, and the grants we give to students and colleagues who cannot afford to join our international meetings--and we expect to have a meeting in 2021!

I wish you all the very best, and hope you and your loved ones remain safe.

Luis M. Chiappe, SAPE President

10TH INTERNATIONAL MEETING OF THE SOCIETY OF AVIAN PALEONTOLOGY AND EVOLUTION

With COVID-19 recently spiking across much of Europe, and with many countries also undergoing a second wave or having border protection measures in place, the meeting we had hoped could be held in May 2021 will have to be postponed again. We remain hopeful, however, that it will be possible to hold the

meeting later in 2021. We realise that this possibility hinges on some very optimistic projections. In any case, functions tied to the meeting--like the election of new officials--have been paused until we can have an in-person meeting.

CALL FOR NOMINATIONS

We would like to remind you that the Executive Council has set up a Nominations Committee to seek candidates for Vice President of the Society and for five new Members at Large to serve during the next term. Members at Large cannot serve consecutive terms but are allowed to skip a term and be re-elected. Nominations should be sent to the Secretary, who will distribute them to the Committee. Self-nominations are

all accepted. As stated in our bylaws, only those members who have belonged to the Society continuously for five years or more are eligible for election to an office of the Society or to the Executive Council as a Member-at-Large. The election of these future Executive Council members will take place at the next meeting, which we hope can be in 2021.

A MESSAGE FROM THE TREASURER – SAPE MEMBERSHIP RENEWAL

Dear SAPE members, membership dues paid at our last meeting in Diamante (or at any point before May 2020), were understood and intended to cover the time period until the planned meeting in Malaga, Spain in May 2020. As you are all aware, the COVID-19 pandemic has forced us to postpone our meeting for the near future. While the Executive Council is hopeful that our tentatively rescheduled meeting will be held in the second half of 2021, technically all SAPE memberships ceased to be current this past May and need to be renewed as soon as possible to avoid negative financial impact to the society.

We encourage all members to follow the instructions on the SAPE website (<http://www.sapesociety.org>) and renew your membership immediately. This is especially important because the society is incurring monthly service fees on our bank account because the disbursement of The Cécile Mourer-Chauviré Travel Grant lowered our account balance below the pre-set limit to avoid these fees. Furthermore, because we were unable to hold our meeting as planned in May 2020, the society has not collected revenue from the auction.

The membership rate remains unchanged at \$20.00 USD for an approximately 4 year period until the next SAPE meeting. In this case, dues paid now will cover

the period from now until the potential SAPE meeting in 2024. Assuming that we are able to hold our planned meeting in Malaga next year, members will vote to adopt or reject the proposed plan to move to a 3-year meeting cycle instead of a 4-year cycle, and members in attendance will also have the chance to discuss options and vote on any membership fee issues that potentially arise as a result of adopting a 3-year meeting schedule.

Note, if you are one of the select few who have paid membership dues after May, 2020, then your membership is current through 2024 and you need not pay again.

Membership renewal instructions can be found on the SAPE website (<http://www.sapesociety.org>). Please follow the links provided and make your payment online. Only payments via PayPal are accepted.

The entire executive council would like to thank you in advance for renewing your membership and supporting SAPE and our mission. If you would like to make an additional gift to the society please reach out to Treasurer, Adam Smith (paleobirdsmith@gmail.com) and/or SAPE President Luis Chiappe (lchiappe@nhm.org).

CALL FOR PROPOSALS FOR THE 11TH SAPE MEETING (2024/2025)

We would also like to remind you that the Executive Council is seeking proposals from institutions and/or individuals interested in hosting the SAPE meeting in 2024 or 2025 (see above). A vote will take place at our

next meeting (hopefully in 2021). In the meantime, expressions of interest can be sent to the President Luis Chiappe.

NEWS FROM MEMBERS AND RECENT PUBLICATIONS

ARGENTINA

JORGE IGNACIO NORIEGA, from the CICYTTP-Diamante (CONICET-UADER), is working on birds coming from the Santa Cruz Formation (Early-Middle Miocene) from Patagonia, Argentina. Together with JUAN M. DIEDERLE from the same institution, he described the avian fossil assemblage at the Río Santa Cruz valley from the homonymous geologic unit. Birds recovered from the same levels but at the Río Chalfía valley in Patagonia, as well as new materials of South American Pleistocene teratorns (Teratornithidae), are currently under study together with MARCOS CENIZO (Fundación de Historia Natural Félix de Azara).

CAROLINA ACOSTA HOSPITALECHE, from the Museo de La Plata and CONICET, continues working in Antarctic and South American birds, including remains from the Cretaceous and Eocene of Seymour Island, Miocene of Argentina, Chile, and Peru, and Pleistocene of Uruguay. During the last year, Carolina was collaborating with other researchers in the study of an Antarctic bird from the Cretaceous of Vega Island (with AMANDA CORDES, JUDD CASE, and JAMES MARTIN), and Cenozoic penguins for peptide sequencing (with ROSS MACPHEE, and SAMANTA PRESSLEE). She also examined the avian remains from the *Myiodon* Cave in Southern Chile (with MARIANA PICASSO and LEANDRO PÉREZ), and other fossils from the Eocene of Seymour Island.

Given the current pandemic, some ongoing projects were scheduled for next year, including works in collaboration with her Ph.D. students. Among them, the lab tasks and visits programmed to other institutions with Lic. ALEJANDRA SOSA (anatomy, and modularity of the spine in Antarctic fossil penguins), Lic. ALEJANDRA PIRO (anatomy and phylogeny of Procellariiformes), and Lic. LUIS GARAT (osteohistology in modern and Eocene penguins from Antarctica) will wait until 2021. However, some works on the comparative anatomy of penguins, albatrosses, and petrels could be completed, apart from the projects almost finished with Dra. NADIA HAIDR.

Carolina is now working on the head sinuses in penguins with Dra. ARIANA PAULINA-CARABAJAL, and with new Eocene penguins collected in Chile in collaboration with Trans-Andean colleagues. She continues teaching as a Professor at the Universidad Nacional de La Plata in two courses: Principles of Paleontology and Vertebrate Paleontology.

Research at the LACEV (Laboratorio de Anatomía Comparada y Evolución de los Vertebrados, at the Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”) currently focuses on the early stages of avian evolution. We have published new contributions regarding a new paravian (Overoraptor; Motta et al., 2020) and a detailed study about pectoral girdle morphology in early avialans and ratites (Novas et al., 2020) with its implications in early steps of bird flight. Furthermore, we are working on new contributions on the early Cretaceous birds from Brazil and anatomical innovations of the forelimb at the non-avian dinosaur/bird transition. We also published the description of several fossil owls from Ecuador, including the new giant owl-predator *Asio ecuadoriensis* (Lo Coco et al., 2020).

CLAUDIA TAMBUSI, FEDERICO “DINO” DEGRANGE and MARÍA MANUELA DEMMEL FERREIRA at CICTERRA (Centro de Investigaciones en Ciencias de la Tierra) in Córdoba, and RICARDO DE MENDOZA and JULIETA CARRIL at La Plata

University, are working on several topics on paleobiology and evolution of South American and Antarctic birds. Brain and sensory organs morphology, functional morphology, evolution and comparisons between different bird guilds are among their main interests. Systematic and evolution of Mio-Pliocene birds of Sierras Pampeanas at La Rioja and Córdoba and Pampean Region also deserve their time. Works in progress include the analysis of biomechanical performance in different bird skulls, the study of fossil birds collected during field works at Buenos Aires, La Rioja, Catamarca and Chubut, and the analyses of anatomical networks of muscle and bone of the hind limb and, also, within the framework of evo-devo, developmental anatomical networks.

And finally, a message from some of our SAPE Argentinian members: In recent years, researchers affiliated with The Argentinian National Scientific and Technical Research Council (CONICET) have lost a significant part of their purchasing power. The extremely fragile economic situation of CONICET’s workers motivated a strong claim before the science minister and CONICET’s board for an immediate salary improvement. This claim has been supported by 700 international scientists, whom we thank for their support. If you wish to learn more about this claim, please contact Carolina Acosta Hospitaleche acostacar@fcnym.unlp.edu.ar.

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- ACOSTA HOSPITALECHE, C. & PICASSO, M. (2020): Textural ageing in *Pygoscelis antarctica* (Aves, Sphenisciformes): a new comparative scale for penguins bones. – *Vertebrate Zoology*, 70: 125–139.
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- and Major Evolutionary Patterns. – Journal of Morphology. DOI: 10.1002/Jmor.21265
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- DIEDERLE, J.M. & NORIEGA, J.I. (2019): New records of birds from the Santa Cruz Formation (Early–Middle Miocene) at the Río Santa Cruz valley, Patagonia, Argentina. – *Publicación Electrónica de la Asociación Paleontológica Argentina*, 19 (2): 55–61. <http://dx.doi.org/10.5710/PEAPA.16.09.2019.284>
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CONFERENCE ABSTRACTS

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- ACOSTA HOSPITALECHE, C. PIRO, A., & SOSA, M. A. (2019): Desarrollo de la articulación mandibular secundaria en pingüinos del eoceno de Antártida. – *Publicación Electrónica Asociación Paleontológica Argentina*, 20: R22, Reunión de Comunicaciones de la Asociación Paleontológica Argentina, La Plata, 27–29 November 2019.
- ACOSTA HOSPITALECHE, C., & REGUERO, M. (2020): Giant pseudo-toothed birds in the Eocene of Seymour Island, Antarctica. Abstracts of SCAR 2020 Antarctic Science Global Connections, p. 486. – Open Science Conference, Hobart, 3–7 August 2020.
- BAUZÁ, N. GELFO, J. N., ACOSTA HOSPITALECHE, C. & REGUERO, M. (2019): Nuevos descubrimientos paleógenos en la Isla Marambio, Cuenca de James Ross, Antártida. – *Publicación Electrónica Asociación Paleontológica Argentina*, 20: R16, Reunión de Comunicaciones de la Asociación Paleontológica Argentina, La Plata, 27–29 November 2019.
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AUSTRALIA

The 2019-20 year has again been a busy one for Avian Palaeontology at Flinders University, South Australia despite COVID19. We greatly missed not being able to visit colleagues in Europe for the SAPE conference but remain optimistic that one day soon this may yet be on the agenda. Dr JACQUELINE NGUYEN joined the Flinders team as a DECRA Fellow though as yet is officed in Sydney, but we look forward to Jackie working with students to describe the long overlooked fossil passerine faunas of southern Australia.

PhD candidate ELLEN MATHER continues her project on Australia's fossil accipitrids and has obtained exciting results. A fossil of a Late Oligocene accipitrid

about the size of the black breasted buzzard (*Hamirostra melanosternon*), with most of the limb elements preserved is a new taxon. Morphological comparisons and phylogenetic analyses suggest it represents a basal lineage not closely related to any living group. Secondly, Ellen is analysing the relationships of two very large Pleistocene accipitrids. One, known from a few bones from a single site, is about the size of Black Vulture (*Aegypius monachus*) but with huge talons. A slightly smaller form known from several sites across southern Australia resolves with the vulture subfamily Aegypiiinae, despite having an overall morphology being more akin to a hunting eagle

and legs similar in size to Haast's eagle. Descriptions of these taxa are well advanced and Ellen expects to submit the first paper from this work for publication soon.

JACOB BLOKLAND is well into his PhD project investigating the phylogenetic relationships of the fossil Oligocene and Miocene rails from Australia and New Zealand. A third species has been revealed in the St Bathans Fauna from NZ, and central Australian Oligo-Miocene sites also reveal three species.

PHOEBE MCINERNEY has continued her PhD research on the Australian Dromornithidae, a group of large flightless birds. Central to this work are descriptions of a complete skull and a couple rostra of the Pleistocene *Genyornis newtoni*. A small expansion of her project has seen Phoebe describing the morphology of several fossils revealing pathologies indicative of the disease osteomyelitis. Such pathologies seem relatively common in the sample from Lake Callabonna and affect sterna, tarsometatarsi and phalanges.

COVID-related restrictions meant fieldwork was curtailed for most of the last year, but after South Australia was declared free of community transmission a small field trip to the Late Oligocene exposures of Namba Formation at Lake Pinpa and Billeroo Creek in northern South Australia was possible. A nice haul of rail fossils was achieved and a large sample of fossiliferous concentrate is already yielding many micro-verts including small passerines.

TREVOR WORTHY finally complete the Checklist of Australian fossil birds with Jackie Nguyen's help. While the Australian fauna may seem small to some, we see this work, which is annotated and includes complete synonymies for all taxa, as the impetus for future workers to rise to the challenge and fill in the gaps. Research on a range of fossil waterfowl continues.

ELEN SHUTE received the Vice-Chancellor's Award for Doctoral Thesis Excellence from Flinders University for her PhD work on Pleistocene fossil birds from the Nullarbor Plain, Western Australia. She continues to work on Nullarbor fossils, and is also working on Pleistocene cave faunas from other Australian localities. She is collaborating with Dr Alice Clement and Prof. Gavin Prideaux (Flinders) on a project describing the skeletal anatomy of fossil and modern pezoporine parrots. Outside of palaeontology she is continuing to work in the field of conservation.

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into the palaeobiology, evolution, and diversity of early penguins (Aves, Sphenisciformes). – *Paleontologica Electronica* 22.3.78, 1–92. <https://doi.org/10.26879/1009>

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AUSTRIA

In 2020, Ursula GÖHLICH finished a big project on a new Middle Miocene fossil site and vertebrate fauna in Bosnia-Herzegovina – unfortunately without any avifauna so far. The results were published recently through 20 research articles in a special volume, for which she has acted as a guest-editor.

GÖHLICH, U.B. & MANDIC, O. (2020): The drowning swamp of Gračanica (Bosnia-Herzegovina) - a diversity hotspot from the middle Miocene in the Bugojno Basin. – *Palaeobiodiversity and Palaeoenvironments*, 100(2): 281–591. <https://link.springer.com/journal/12549/100/2>

GÖHLICH, U.B. & MANDIC, O. (2020): Introduction to the special issue "The drowning swamp of Gračanica (Bosnia-Herzegovina) - a diversity hotspot from the middle Miocene in the Bugojno Basin". In U.B. Göhlich & O. Mandic (Eds.). *The drowning swamp of Gračanica (Bosnia-Herzegovina) - a diversity hotspot from the middle Miocene in the Bugojno Basin*. – *Palaeobiodiversity and Palaeoenvironments*, 100(2): 281–293. <https://doi.org/10.1007/s12549-020-00437-0>

GÖHLICH, U.B. (2020): The proboscidean fauna (Mammalia) from early middle Miocene lignite of Gračanica near Bugojno (Bosnia-Herzegovina). In U. B. GÖHLICH & O. MANDIC (Eds.) *The drowning swamp of Gračanica (Bosnia-Herzegovina) - a*

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BULGARIA

ZLATOZAR BOEV studied archaeozoological material of the Late Antiquity Northern Fortification Walls of Serdica (3rd–6th century A.D., pr. Sofia, Bulgaria) and the Medieval settlement near Nedan village (Veliko Tarnovo Region, CN Bulgaria), 9th–10th c. AD.

He is the scientific tutor of one PhD student, Dimitar Plachyiski: “Distribution of the Western Capercaillie (*Tetrao urogallus* Linnaeus, 1758) in Bulgaria depending on the landscape-ecological characteristics of the habitats”.

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Cave (Macedonia, Greece). – *Historia naturalis bulgarica*, 40: 1–31.

POPULAR SCIENCE:

ANONYM. [BOEV, Z.] (2020): First fossil record of the Black Francolin in Eastern Europe. – *Priroda*, BAS, 3: 25. (In Bulgarian).

ANONYM. [BOEV, Z.] (2020): The World's first fossil record of the Black-winged Pratincole was found in Bulgaria. – *Priroda*, BAS, 3: 81. (In Bulgarian).

BOEV, Z. (2019): A giant parrot reigned in the forests of New Zealand. – *Priroda*, BAS, 4: 80-81. (In Bulgarian).

BOEV, Z. (2019): Camels in Bulgaria. – *Priroda*, BAS, 4: 98-103 (In Bulgarian).

BOEV, Z. (2019): Giant ostrich traversed the North Black Sea Region 1.8 million years ago. – *Priroda*, BAS, 4: 88-89. (In Bulgarian).

BOEV, Z. (2020): First fossil record of the Black Francolin in Eastern Europe. – *Priroda*, BAS, 3: 100-104. (In Bulgarian).

BOEV, Z. (2020): Late Pleistocene chronicle of birds from the Razhishkata Cave. – *Priroda*, BAS, 1: 80-88. (In Bulgarian).

CHINA

JINGMAI O'CONNOR has moved from the Institute of Vertebrate Paleontology and Paleoanthropology to the Field Museum of Natural History where she is now Associate Curator of Fossil Reptiles. Students interested in working with her should apply to the University of Chicago. O'Connor will continue to work closely with the IVPP as an Adjunct Professor and will also continue to advise students through the IVPP.

Jingmai has one PhD student, WU Qian, studying the evolution of the scapulocoracoid in paravians and pterosaurs and a Master's student, LIU Shumin, working on digestive traces in pennraptorans. Together with former postdoc ALIDA BAILLEUL, Jingmai has provided strong support for the preservation of ovarian follicles in Jehol birds (Bailleul et al., 2020). Of notable interest, she has helped to document evidence of molting in two Jehol paravians – *Microaptor* (together with a team of Israeli ornithologists and Wang Min and Xu Xing of the IVPP)(Kiat et al., 2020) and *Protopteryx* (together with a team of scientists from the Shandong Tianyu Museum of Nature)(O'Connor et al., 2020). These two studies identify differences in the way volant dromaeosaurids and enantiornithines molted their flight feathers, relative to neornithines, but still provide support for interpretations these two groups were capable of flight during the molt.

LI ZHIHENG continue work on evolution of birds in general. Earlier this year, he and his colleagues published a detail microscopic analyses of Early Cretaceous bird teeth with the comparison of their closest non-avian theropods from Jehol and Yanliao Biota. The synchrotron microscopy (TXM) and SEM imaging indicate the lack of porous mantle dentin layer at the EDJ boundary in all the birds and most non-avian dinosaur examined. This study confirmed that a transition to the dominant herbivorous diet lead to the reduction of tooth in Mesozoic birds, not only reflected from the teeth number, but also changes in the internal microscopic features of tooth at micro- or nano- scale. Li and his colleagues continue analysis more teeth from a wide range of Mesozoic birds and trying figure out the correlation of tooth morphology with dietary preferences, as well as their feeding ecology.

ALIDA BAILLEUL continues were histological work on Mesozoic birds. Earlier this year, she and her colleagues published a histological analysis of purported ovarian follicles in an enantiornithine from the Jehol biota to test the possibility that they may in fact be ingested seeds. The histological and histochemical results shows tissues identical to those in the perfollicular membrane around ovarian follicles in extant birds (i.e., smooth muscle fibers, collagen fibers and blood vessels). This study confirmed that at least in this specimen, the seed

hypothesis can be ruled out and confirms that some early birds only had one functional ovary. Alida continues analyzing tissues in other Mesozoic birds, including fossilized cartilage, to make inferences of function in early birds and to understand the mode of preservation of this tissue.

WANG MIN continues his study about Mesozoic birds. This year, he and his colleagues described so far the most complete Mesozoic bird, an Early Cretaceous enantiornithine *Mirusavis parvus*, preserving the medullary bone (MB). They were able to show that this female-specific endosteal bone tissue present within the cavities of nearly all the postcranial elements including delicate ones such as ribs, suggesting that skeleton-wide distribution of MB appeared early in avian evolution. They further posited that this represents the plesiomorphic condition for the Aves and that the distribution of this bone tissue present among crown neornithines is a product of increased pneumatization in this lineage and natural selection for more efficient distribution of MB. Wang et al. reported a new ornithuromorph bird, *Mengciusornis dentatus*, from the Early Cretaceous Jehol Biota. Their phylogenetic study recovered *Mengciusornis* as a sister with *Schizoura*. However, *Mengciusornis* has toothed premaxillae, in stark contrast with the edentulous jaws of *Schizoura*, demonstrating that dentition varied considerably between some closely related species. They argued that a strong degree of plasticity in the developmental mechanisms regulated tooth and beak formation, which is supported by earlier evidence that indicates teeth have been lost multiple times within Aves and Dinosauria. Wang Min and ZHOU ZHONGHE later this year described a new referred specimen of the enantiornithine *Piscivorenantiornis inusitatus*, which compensates handful of morphologies not preserved in the holotype and refined the systematic position of this taxon.

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FRANCE

ERIC BUFFETAUT is going on with his work (in collaboration with Delphine Angst) on the giant Late Cretaceous bird *Gargantuavis*, with a description of a new femur from Provence and a reply to the paper by Mayr et al. (2020) on a Romanian *Gargantuavis*-like specimen; the status of *Gargantuavis* as an insular basal ornithurine is reasserted. Despite difficulties caused by the Covid-19 epidemic, field work at Upper Cretaceous localities in southern France could be resumed during the summer, leading to the discovery of what appear to be huge avian scapulae, possibly belonging to a gargantuaviid.

Eric's work on Asian ostriches has included additional studies on Chinese Late Pleistocene eggs, including Lowe's type of *Struthio anderssoni* kept at the Natural History Museum, London. Equally at the NHM, Eric has revised the type specimen of *Struthio asiaticus*

Milne-Edwards, a group of bones with a long and tangled history; it appears that reports of *Struthio asiaticus* outside the Indian subcontinent are based on unconvincing evidence.

Eric's research on the history of palaeornithology has focussed on the discovery of *Aepyornis* and its eggs (a book on the topic – in French – is in press, as well as a paper on the first published photographs of *Aepyornis* eggs). A joint paper with Delphine Angst on the rather forgotten Mauritian dodo researcher (and *Leguatia* debunker) Paul Carié has also appeared.

Abundant new fossil bird remains have been discovered in the early Eocene locality of La Borie (Saint Papoul, southern France). This material mainly includes *Gastornis* bones, but also comprises three small-sized taxa. The study of this material has been entrusted to CÉCILE MOURER-CHAUVIRÉ and ESTELLE BOURDON, but

work has been slowed down since March because of the lockdown. Hopefully this study will be completed within the next year.

Among ongoing projects in Lyon, new fossil birds from the early Oligocene of the Luberon region (Alpes-de-Haute-Provence) are being studied by ANTOINE LOUCHART and colleagues, while two have been published this year: a stem Galbulae (jacamars and puffbirds) studied by ANAÏS DUHAMEL and a Tyrannida passerine (tyrant-flycatchers, manakins and allies) studied by SEGOLENE RIAMON, both present-day South American and American taxa respectively, adding to the list of birds with a transatlantic connotation from these strata. On the side of extinct island birds, ecological and evolutionary insights from the study of a skull of the Rodrigues owl *Otus murivorus* by Anaïs has been published, with unexpected results, among which a suspicion of partly scavenging habits for the owl (presumably on the super-abundant tortoise carcasses). In the course of her PhD, Ségolène has obtained interesting results on several aspects of the ecology and evolution of *Sylviornis neocaledoniae*, which will be published soon. Field trip to New Caledonia has been, and is still being postponed, due to the coronavirus restrictions. But we keep optimistic that this situation is not to stand for ever! Other projects involving other islands are underway, including in collaboration with JULIAN HUME (UK), and some are more or less impacted by this situation. Ségolène also finished a study of the earliest hornbill fossil, from Napak (Uganda, early Miocene), and other birds from the same site will follow. Last spring, in a Master's internship under lockdown circumstances, Anaïs modeled how past long-distance bird migrations could be investigated, and this work will be completed soon with analyses. In a Master's internship as well, JEANNE ROLLAND-GUILLARD studied endocasts of *Palaelodus ambiguus* skulls, and this work will be submitted soon in collaboration with CHRIS TORRES (USA); it has implications regarding the paleo-ecological inferences for this bird, compared with flamingos and grebes. Almost completed study on extant ostriches postcranials will be submitted soon in collaboration with ANDRZEJ ELZANOWSKI (Poland). Antoine also participated in an isotopic study by lab colleagues showing that birds (birds of prey, ibises) mummified in Ancient Egypt were wild, rather than captive birds.

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GERMANY

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HUNGARY

EUGEN (JENŐ) KESSLER is nearing the end of the presentation of the fossil bird fauna of the Carpathian Basin. Only the article on the Passeriformes will follow in this fall's issue.

KESSLER, E. (J.) (2019): Evolution of Galliformes and their presence in the Carpathian Basin. – *Ornis*

Hungarica, 27(2): 142–174. DOI: 10.2478/orhu-2019-0021.

KESSLER, E. (J.) (2020): Evolution of Corvids and their Presence in the Neogene and the Quaternary in the Carpathian Basin. – *Ornis Hungarica*, 28(1): 121–168. DOI: 10.2478/orhu-2020-0009

NEW ZEALAND

In Christchurch, VANESA DE PIETRI and PAUL SCOFIELD, along with TREVOR WORTHY and other long-standing members of the team have continued their work on fossil birds from St Bathans, New Zealand. New publications on shorebirds and passerines are planned for 2021, and the annual dig is scheduled for the summer of 2021.

Vanessa and Paul continue their work on the Paleocene fauna of the Waipara Gorge in North Canterbury in association with Gerald Mayr, Al Mannerling and Leigh Love. Work has also continued on describing the avifauna of the Pliocene deposits of South Taranaki with the description by a team led by

Daniel Thomas of an early-diverging *Eudyptes* penguin, *E. atatu*.

This past year, Vanessa's New Zealand Royal Society funded work on the evolutionary history of shorebirds has been productive with the description of buttonquail specimens from the Oligocene and Miocene of France, a Holocene *Prosobonia* sandpiper from Henderson Island and several more taxa are due to be described from the St Bathans fauna of Central Otago, including larids and members of the suborder Charadrii.

BRIAN GILL (Auckland Museum, retired) has published a paper on the exchanges of natural history specimens, during 1878–1905, between Thomas Cheeseman (Auckland Museum's curator) and Henry

- Ward of Ward's Natural Science Establishment, Rochester, NY. Auckland Museum received plaster casts of some of the "celebrated" fossils of Mesozoic marine reptiles from Europe, but also elephant bird casts (tarsometatarsus and whole egg). Analysis of archived correspondence between the two men gave a detailed account of their professional interactions over nearly three decades. Currently, Brian has been checking museum specimens to prepare an inventory of all finds of moa bones (Dinornithiformes) from palaeontological and archaeological sites across the Auckland and Coromandel regions of northern New Zealand. The bones come from 45 locations and give evidence of at least 175 individual moas in this fossil record. Auckland has mostly natural sites and Coromandel mostly archaeological sites. All four North Island species are present, but the inventory shows that *Anomalopteryx didiformis*, common in Auckland, was rare in Coromandel.
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- ZELENKOV, N.V. (2019): [The fossil birds of Mongolia: history of investigation and evolution of faunistic complexes] – *Transactions of the Joint Russian-*

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SPAIN

- FRANCISCO “KIKO” SERRANO continues as “Juan de la Cierva” Postdoctoral Fellow at the Spanish Royal Academy of Sciences and Research Associate at Natural History Museum of Los Angeles County (CA, U.S.A). He continues his research on the aerial properties of early Cretaceous birds and the evolution of avian flight. His collaboration with LUIS CHIAPPE (NHM Los Angeles) has produced several interesting results in the period 2019–2020. In two studies, they described new Early Cretaceous enantiornithines from China, *Orienantius ritteri* and *Gretcheniao sinensis*, and aerial modelling revealed intermittent and continuous flapping flight. Also, a meticulous anatomical description and analyses of two new specimens of *Protopteryx fengningensis* showed that intermittent flight capacity was present in the earliest enantiornithines. Collaboration with ANUSUYA CHINSAMY (University of Cape Town) shed light on the life history of *Confuciusornis* based on bone histology. Likewise, a collaboration with MICHAEL PITTMAN (Hong Kong University) provided new information for aerial modeling of *Sapeornis* from Laser Stimulated Fluorescence images, and in other paper, they and other colleagues reviewed the methods to infer flight properties in early theropods. In addition, Kiko has recently published an analysis of the disparity of the humerus among neornithines, which supports that the adaptation of the wing to different aerial or underwater locomotion was the main factor shaping this bone. This study has been published in a special issue edited by DANIEL FIELD (University of Cambridge). Apart from the research, Kiko dedicated a lot of his time to the organization of our SAPE meeting earlier this year. Unfortunately, due to the global pandemic, the meeting has been postponed until it can be held safely.
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SWEDEN

PER ERICSON continues to work on the systematics of birds using primarily molecular data. He is currently involved in a long-term investigation of the bowerbird family (Ptilonorhynchidae) using phylogenomics. Together with Jon Fjeldså and Les Christidis he has edited a multi-author book on the evolution of passerine birds, due for publication October 2020: “*The Largest Avian Radiation. The Evolution of Perching Birds, or the Order Passeriformes*” (Lynx Edicions).

DENNIS VOETEN joined the Sanchez Laboratory at Uppsala University to continue his research into the virtual palaeohistology of extinct and extant bird-line archosaurs. Dennis furthermore contributed to a study led by VINCENT BEYRAND that traced brain shape evolution along avian ancestry and into the modern avian diversity.

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UNITED KINGDOM

DANIEL FIELD continues to enjoy his post at the University of Cambridge, despite the global madness of 2020. He was disappointed not to see SAPE colleagues in Málaga as planned. His research group remains interested in the early evolutionary history of crown birds, as well as other topics related to Mesozoic and Cenozoic avian evolution and morphology. The highlight of the year was the publication of *Asteriornis maastrichtensis*, a crown bird with a well-preserved skull from the latest Cretaceous of Europe. The fossil has implications for the early evolution of crown birds, the origin of Galloanserae, crown bird biogeography, and avian survivorship across the K–Pg boundary.

JUNYA WATANABE is continuing his research on the evolution of wing-propelled diving birds as a postdoctoral fellow in Cambridge with Daniel Field. His manuscript on the reconstruction of wing musculature in the flightless auks *Pinguinus* and *Mancalla* is currently in review, while posted online as a preprint for feedback. He is also working on methodological aspects of morphometrics and phylogenetic comparative methods.

For JULIAN PENDER HUME, the coronavirus pandemic not only ended access to his institution, the NHM, Tring, but also all overseas travel for 2020; thus planned trips to Aldabra, Seychelles, mainland Australia, a return to

Lord Howe Island, Madagascar, Mauritius and Rodrigues, Dublin and Prague will take place next year, depending on Covid-19 of course. Let us all hope that 2021 proves a better time for all.

The only bright side to this otherwise dismal time was the chance to write up outstanding papers, so the publication list represents work done while in lockdown, plus a few contributions to other work. The highlight of recent times was a chance to re-visit Lord Howe Island, an island pristine when discovered by Europeans in 1788, as it was unknown to Polynesians. One particular site proved incredibly productive, with the first fossil discoveries of much of the avifauna, including those hitherto only known from illustrations or a few skins. Along with Jacqueline Nguyen, a full excavation of this site and study of previously collected museum fossil collections will take place as soon as the world opens up again. An initial overview paper is in review, with others planned for next year.

DELPHINE ANGST is continuing her work on the ecology and biology of the large fossil and subfossil flightless birds with a multidisciplinary approach. She is currently at the end of her two year postdoctoral position at the University of Bristol in the School of Earth Science with a European Marie Curie Fellowship. She works in collaboration with Mike Benton and Emily

Rayfield on the ecology and the biology of the dodo birds using multidisciplinary approaches, including skeletal function, bone microstructure and histology, isotopes analyses and Finite Element Analyses. Using these different tools, she will work on the locomotion, diet, sexual dimorphism and population structure of the dodo.

During the last year, she published an important work done in collaboration with Anusuya Chinsamy, Aurore Canoville and Ursula Göhlich on a global bone histological study of the Aepyornithidae. This work included for the first time 29 thin sections of hindlimb bones from different ontogenetic stages and provided new data about histological variations between the different bones and during the life history of these birds.

On top of this work, she continues her collaboration with Eric Buffetaut on several projects including a paper about Paul Carié, a Mauritian naturalist who worked on the dodo and has been completely forgotten until recently; and an answer to the paper published by Mayr *et al.* in 2020 about *Gargantuavis*. Our answer confirms that *Gargantuavis* is indeed a basal ornithurine.

Finally, associated with these works, other studies are in progress on modern and fossil large ground birds. Delphine's work on the bone histology of the bony crests of guinea fowl is in progress, and this work will allow us to have a better understanding of this structure (construction, function, ontogeny...) to better understand the similar structures in fossil birds such as dromornithids. In parallel, a bone histology study of the large ground birds, including Aepyornithidae, Gastornithidae, Dinornithiformes and Ratites is in progress with Anusuya Chinsamy and Aurore Canoville. Moreover, the first sampling of Phorusrhacidae was done to do the first bone histology study of this group. A new study is in progress on the poorly known taxon *Gastornis russelli* from the Paleocene of France, with interesting implications about ontogenetic changes in *Gastornis*, as well as the description of a new very large mandible of *Gastornis* from southern France, which will question the possibility of sexual dimorphism amongst Gastornithidae.

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- TRIANTIS, K. A., RIGAL, F., WHITTAKER, R. J., HUME, J.P., SHEARD, C., POURSANIDIS, D., ROLLAND, J., SFENTHOURAKIS, S., MATTHEWS, T. J., THÉBAUD, C., & TOBIAS, J. A. (in review): Deterministic assembly and anthropogenic extinctions drive community convergence of island avifaunas. – *Ecology Letters*.
- WATANABE, J., FIELD, D. J., & MATSUOKA, H. (2020): Wing musculature reconstruction in extinct flightless auks (*Pinguinus* and *Mancalla*) reveals incomplete convergence with penguins (Spheniscidae) due to differing ancestral states. – bioRxiv preprint. doi: [10.1101/2020.07.22.215707](https://doi.org/10.1101/2020.07.22.215707).
- WATANABE, J., KOIZUMI, A., NAKAGAWA, R., TAKAHASHI, K., TANAKA, T., & MATSUOKA, H. (2020): Seabirds (Aves) from the Pleistocene Kazusa and Shimosa groups, central Japan. – *Journal of Vertebrate Paleontology* 39(5): e1697277. doi: [10.1080/02724634.2019.1697277](https://doi.org/10.1080/02724634.2019.1697277).

USA

California

At the Dinosaur Institute of the Natural History Museum of Los Angeles County, Luis CHIAPPE continues his research focus on the early Cretaceous Jehol avifauna, and the newly reported late Cretaceous William's Quarry of Brazil, where hundreds of 3D enantiornithine bones have been unearthed. Luis is working with ALYSSA BELL on understanding the evolution of hesperornithiforms at a global scale, and with graduate students NATE CARROLL and BECKY WU on early bird feather development and avian dental replacement, respectively. In addition to her duties as Collections Manager, MAUREEN WALSH, has spent countless hours preparing three-dimensional avian specimens from the Late Cretaceous of Brazil. NATE SMITH continues his research on early Mesozoic dinosaurs and their relatives from Ghost Ranch, New Mexico and the central Transantarctic Mountains. He is also finishing a collaborative project examining growth strategies in large-bodied theropod dinosaurs. Nate and Luis also welcomed KEEGAN MELSTROM, a new postdoctoral fellow of the Dinosaur Institute who's working on a project quantifying dinosaur dentition (including birds) and examining dental ecomorphology through time; as well as a new PhD student, PAUL BYRNE, who is beginning projects examining pneumatization in birds and archosaurs. Below are the publications from our team for this last year:

- BELL, A. & CHIAPPE, L.M. (2020): Anatomy of *Parahesperornis alexi*: Evolutionary Mosaicism in the Cretaceous birds Hesperornithiformes. – *Life*, 10(5); DOI: [org/10.3390/life10050062](https://doi.org/10.3390/life10050062).
- BRADLEY, A.B., BURCH, S.H., TURNER, A.H., SMITH, N.D., IRMIS, R.B., & NESBITT, S.J. (2019): Sternal elements of early dinosaurs fill a critical gap in the evolution of the sternum in Avemetatarsalia (Reptilia: Archosauria). – *Journal of Vertebrate Paleontology*, 39(5): e1700992; DOI: 10.1080/02724634.2019.1700992.
- CARROLL, N., CHIAPPE, L.M., & BOTTJER, D. (2019): Mid-Cretaceous amber inclusions reveal morphogenesis of extinct rachis-dominated feathers. – *Scientific Reports*, 9: 18108; DOI: 10.1038/s41598-019-54429-y
- CHIAPPE, L.M., LIU, D., SERRANO F.J., ZHANG, Y. & MENG Q. (2019): Anatomy and flight performance of the early enantiornithine bird *Protopteryx fengningensis*: Information from two new specimens of the Early Cretaceous Huajiyang Formation of China. In Special Issue "The Hidden World of Dinosaurs: Their Anatomy, Histology and Paleobiology ", J LAITMAN, P DODSON AND B HEDRICK (Eds.). – *The Anatomical Record*, 303 (4): 716–731.

- CHINSAMY, A., MARUGÁN-LOBÓN, J., SERRANO F.J., & CHIAPPE, L.M. (2019): Osteohistology and life history of the basal pygostylian, *Confuciusornis sanctus*. In Special Issue "The Hidden World of Dinosaurs: Their Anatomy, Histology and Paleobiology", J LAITMAN, P DODSON AND B HEDRICK (Eds). – The Anatomical Record, 304 (4): 949–962.
- FORSTER, C., O'CONNOR, P., CHIAPPE, L.M., & TURNER, A.H. (2020): The osteology of the Late Cretaceous paravian *Rahonavis ostromi* from Madagascar. – Palaeontologia Electronica, 23(2): a31; DOI: [org/10.26879/793](https://doi.org/10.26879/793)
- KUNDRÁT, M., RICH, T.H., LINDGREN, L., SJÖVALL, P., VICKERS-RICH, P., CHIAPPE, L.M., & KEAR, B. (2019): A polar dinosaur feather assemblage from Australia. – Gondwana Research; DOI: [org/10.1016/j.gr.2019.10.004](https://doi.org/10.1016/j.gr.2019.10.004)
- KUNDRAT, M., CORIA, R., MANNING, T.W., SNITTING, D., CHIAPPE, L.M., NUDDS, J., & AHLBERG, P.E. (2020): Specialized craniofacial anatomy of a titanosaurian embryo from Argentina. – Current Biology, 30: 1–7.
- NEBREDA, S., NAVALON, G., MENENDEZ, I., SIGURDSEN, T. CHIAPPE, L.M., & MARUGAN-LOBON, J. (2020): Disparity and macroevolutionary transformation of the maniraptoran manus. In Special Issue "Early Flight Study: Methods, Current Status and New Frontiers", M PITTMAN AND X XU (Eds.). – Bulletin of the American Museum of Natural History, 440: 183–203.
- SERRANO, F.J., PITTMAN, M., KAYE, T., WANG X., ZHENG, X., CHIAPPE, L.M., & XU, X. (2019): Laser-stimulated fluorescence (LSF) refines flight modelling of the Early Cretaceous bird *Sapeornis*. In Special Issue "Early Flight Study: Methods, Current Status and New Frontiers", M PITTMAN AND X XU (Eds.). – Bulletin of the American Museum of Natural History, 440: 333–345.
- SMITH, N.D., MAKOVICKY, P.J., SIDOR, C.A., & HAMMER, W.R. (2020): A kannemeyeriiform (Synapsida: Dicynodontia) occipital plate from the Middle Triassic upper Fremouw Formation of Antarctica. – Journal of Vertebrate Paleontology, e1829634; DOI: [10.1080/02724634.2020.1829634](https://doi.org/10.1080/02724634.2020.1829634)
- WANG, X., CAU, A., KUNDRÁT, M., CHIAPPE, L.M., JI, Q., WANG, Y., LI, T., & WU, W. (2020): A new advanced ornithuromorph bird from Inner Mongolia documents the northernmost geographic distribution of the Jehol paleornithofauna in China. –Historical Biology; DOI: [10.1080/08912963.2020.1731805](https://doi.org/10.1080/08912963.2020.1731805).
- WOOLLEY, C.H., SMITH, N.D., & SERTICH, J.J.W. (2020): New specimens from a poorly-known lizard assemblage in the Upper Cretaceous (Campanian) San Juan Basin, New Mexico, USA. – PeerJ, 8: e8846; <http://doi.org/10.7717/peerj.8846>.
- XING, L., O'CONNOR, J.K., SCHMITZ, L., CHIAPPE, L.M., MCKELLAR, R.C., QIRU, Y., & GANG, L. (2020): Burmese amber reveals smallest known Mesozoic dinosaur. – Nature, 579 (7798): 245–249.

Connecticut

DANIEL KSEPKA is continuing his research on penguins, the avian brain, and phylogenetic methods for combining fossil and molecular data. At the Bruce Museum, Dan is currently overseeing the installation of the new "Cycles" permanent science exhibition which will open in Fall 2021. Dan and his wife Kristin welcomed their daughter Phoebe (note SAPE-approved bird name) in October 2019.

- FIELD, D.J., BENITO, J., CHEN, A., JAGT, J.M.W., & KSEPKA, D.T. (2020): Late Cretaceous neornithine from Europe illuminates the origins of crown birds. – Nature, 579: 397-401. <https://doi.org/10.1038/s41586-020-2096-0>.
- KSEPKA, D.T., BALANOFF, A.M., SMITH, N.A., BEVER, G.S., BHULLAR, B.A.S., BOURDON, E., BRAUN, E.L., BURLEIGH, J.G., CLARKE, J.A., COLBERT, M.W., CORFIELD, J.R., DEGRANGE, F.J., DE PIETRI, V.L., EARLY, C.M., FIELD, D.J., GIGNAC, P.M., LEONE GOLD, M.E., KIMBALL, R.T., KAWABE, S., LEFEBVRE, L.,

- MARUGÁ-LOBÓN, J., MONGLE, C.S., MORHARDT, A., NORELL, M.A., RIDGELY, R.C., ROTHMAN, R.S., SCOFIELD, R.P., TAMBUSI, C.P., TORRES, C.R., VAN TUINEN, M., WALSH, S.A., WATANABE, A., WITMER, L.M., WRIGHT, A.K., ZANNO, L.E., JARVIS, E.D., SMAERS, J.B. (2020): Tempo and Pattern of Avian Brain Size Evolution. – Current Biology, 30: 2026–2036.e3. <https://doi.org/10.1016/j.cub.2020.03.060>.
- THOMAS, D.B., KSEPKA, D.T., HOLVAST, E.J., TENNYSON, A.J.D., & SCOFIELD, R.P. (2020): Re-Evaluating New Zealand's Endemic Pliocene Penguin Genus. – New Zealand Journal of Geology and Geophysics, 63: 324–330.
- THOMAS, D.B., TENNYSON, A.J.D., SCOFIELD, R.P., HEATH, T.A., PETT, W., & KSEPKA, D.T. (2020): Ancient Crested Penguin Constrains Timing of Recruitment into Seabird Hotspot. – Proceedings of the Royal Society B, 287: 20201497.

Illinois

JINGMAI O'CONNOR has moved from the Institute of Vertebrate Paleontology and Paleoanthropology to the Field Museum of Natural History where she is now Associate Curator of Fossil Reptiles. Students interested in working with her should apply to the University of Chicago. O'Connor will continue to work closely with the IVPP as an Adjunct Professor and will also continue to advise students through the IVPP.

- BAILLEUL, A. M., O'CONNOR, J. K., LI, Z.-H., WU, Q., ZHAO, T., MARTINEZ MONLEON, M. A., WANG, M., & ZHENG, X.-T. (2020): Confirmation of Ovarian Follicles in an Enantiornithine (Aves) from the Jehol Biota Using

- Soft Tissue Analyses. – Communications Biology, 3: 1–8.
- DING, A., PITTMAN, M., UPCHURCH, P., O'CONNOR, J., FIELD, D. J., & XU, X. (2020): The Biogeography of Coelurosaurian Theropods and Its Impact on Their Evolutionary History.
- HU, H., O'CONNOR, J. K., McDONALD, P. G., & WROE, S. (2020): Cranial Osteology of the Early Cretaceous *Sapeornis Chaoyangensis* (Aves: Pygostylia). – Cretaceous Research, 113: 1–13.
- HU, H., O'CONNOR, J. K., WANG, M., McDONALD, P. G., WROE, S., & ZHOU, Z.-H. (2020): New Anatomical Information of Bohaiornithid *Longusunguis* Confirms Plesiomorphic Diapsid Skull Retained in

- Enantiornithes. – *Journal of Systematic Palaeontology*, 18: 1481–1495.
- KIAT, Y., BALABAN, A., SAPIR, N., O'CONNOR, J., WANG, M., & XU, X. (2020): Sequential Molt in a Feathered Dinosaur and Implications for Early Paravian Locomotion and Ecology. – *Current Biology*.
- O'CONNOR, J. (2020): The Plumage of Basal Birds, in *The Evolution of Feathers*, ed. by C. Foth, and O. W. M. Rauhut: Springer, Cham, 147–172.
- O'CONNOR, J., FALK, A. R., WANG, M., & ZHENG, X.-T. (2020): First Report of Immature Feathers in Juvenile Enantiornithines from the Early Cretaceous Jehol Avifauna. – *Vertebrata Palasiatica*, 58: 24–44.
- O'CONNOR, J. K., ZHENG, X.-T., PAN, Y.-H., WANG, X.-L., WANG, Y., ZHANG, X.-M., & ZHOU, Z.-H. (2020): New Information on the Plumage of *Protopteryx* (Aves: Enantiornithes) from a New Specimen. – *Cretaceous Research*, 116: 1–17.
- PITTMAN, M., O'CONNOR, J., FIELD, D. J., TURNER, A. H., MA, W.-S., MAKOVICKY, P. J., & XU, X. (2020): Systematics, Fossil Record, and Biogeography: Pennaraptoran Systematics, in *Pennaraptoran Theropod Dinosaurs: Past Progress and New Frontiers*, ed. by M. Pittman, and X. Xu.
- PITTMAN, M., O'CONNOR, J., TSE, E., MAKOVICKY, P. J., FIELD, D. J., MA, W.-S., TURNER, A. H., NORELL, M. A., PEI, R., & XU, X. (2020): The Fossil Record of Mesozoic and Paleocene Pennaraptorans, in *Pennaraptoran Theropod Dinosaurs: Past Progress and New Frontiers*, ed. by M. Pittman, and X. Xu.
- WANG, M., O'CONNOR, J. K., BAILLEUL, A. M., & LI, Z.-H. (2020): Evolution and Distribution of Medullary Bone: Evidence from a New Early Cretaceous Enantiornithine Bird. – *National Science Review*, 7: 1068–1078.
- XING, L.-D., COCKX, P., O'CONNOR, J. K., & MCKELLAR, R. C. (2020): A Newly Discovered Enantiornithine Foot Preserved in Mid-Cretaceous Burmese Amber. – *Palaeoentomology*, 3: 212–219.
- XING, L.-D., MCKELLAR, R. C., & O'CONNOR, J. (2020): An Unusually Large Bird Wing in Mid-Cretaceous Burmese Amber. – *Cretaceous Research*.
- XING, L.-D., O'CONNOR, J., SCHMITZ, L., CHIAPPE, L. M., MCKELLAR, R. C., YI, Q.-R., & LI, G. (2020): Hummingbird-Sized Dinosaur from the Cretaceous Period of Myanmar. – *Nature*, 579. [retracted but citable according to the ICZN]
- XING, L.-D., O'CONNOR, J. K., NIU, K.-C., COCKX, P., MAI, H.-J., & MCKELLAR, R. C. (2020): A New Enantiornithine (Aves) Preserved in Mid-Cretaceous Burmese Amber Contributes to Growing Diversity of Cretaceous Plumage Patterns. – *Frontiers in Earth Science*, 8: 1–11.
- YANG, S.-H., HE, H.-Y., JIN, F., ZHANG, F.-C., WU, Y.-B., YU, Z.-Q., LI, Q.-L., WANG, M., O'CONNOR, J. K., DENG, C.-L., ZHU, R.-X., & ZHOU, Z.-H. (2020): The Appearance and Duration of the Jehol Biota: Constraint from Sims U-Pb Zircon Dating for the Huajiying Formation in Northern China. – *Proceedings of the National Academy of Sciences U.S.A.*, 117: 14299–14305.
- ZHENG, X.-T., O'CONNOR, J. K., WANG, Y., WANG, X.-L., YIN, X.-W., ZHANG, X.-M., & ZHOU, Z.-H. (2020): New Information on the Keratinous Beak of *Confuciusornis* (Aves: Pygostylia) from Two New Specimens – *Frontiers in Earth Science*, 8: 1–14.
- ZHENG, X.-T., SULLIVAN, C., O'CONNOR, J. K., WANG, X.-L., WANG, Y., ZHANG, X.-M., & ZHOU, Z.-H. (2020): Structure and Possible Ventilatory Function of Unusual, Expanded Sternal Ribs in the Early Cretaceous Bird *Jeholornis*. – *Cretaceous Research*, 116: 1–10.

South Carolina

ADAM SMITH continues in his 5th year as curator at Clemson University's Campbell Geology Museum. Ongoing projects include collaborations focused on fossil birds from locations in the USA, Egypt, and China as well as projects on avian neuroanatomy, avian bone histology and feather microstructure. Because the Campbell Geology Museum has been closed owing to COVID-19 since mid-March, Adam has had ample time to devote to research and grant writing.

KSEPKA, D.T., BALANOFF, A.M., SMITH, N.A., BEVER, G.S., BHULLAR, B.A.S., BOURDON, E., BRAUN, E.L., BURLEIGH, J.G., CLARKE, J.A., COLBERT, M.W., CORFIELD, J.R., DEGRANGE, F.J., DE PIETRI, V.L., EARLY, C.M., FIELD, D.J., GIGNAC, P.M., LEONE GOLD,

M.E., KIMBALL, R.T., KAWABE, S., LEFEBVRE, L., MARUGÁ-LOBÓN, J., MONGLE, C.S., MORHARDT, A., NORELL, M.A., RIDGELY, R.C., ROTHMAN, R.S., SCOFIELD, R.P., TAMBUSI, C.P., TORRES, C.R., VAN TUINEN, M., WALSH, S.A., WATANABE, A., WITMER, L.M., WRIGHT, A.K., ZANNO, L.E., JARVIS, E.D., SMAERS, J.B. (2020): Tempo and Pattern of Avian Brain Size Evolution. – *Current Biology*, 30: 2026–2036.e3. <https://doi.org/10.1016/j.cub.2020.03.060>.

SMITH, N.A., STIDHAM, T.A., & MITCHELL, J.S. (2020): The first fossil owl (Aves, Strigiformes) from the Paleogene of Africa. – *Diversity*, Special Issue: Origins of Modern Avian Biodiversity, 12(4): 163. doi.org/10.3390/d12040163.

Texas

MUSSER, G. & CLARKE, J.A. (in press, 2020): An exceptionally preserved specimen from the Green River Formation elucidates complex phenotypic

evolution in Gruiformes and Charadriiformes. – *Frontiers in Ecology and Evolution*. doi: 10.3389/fevo.2020.559929