

當個國際間的說書人： 從發想到新知識的建立

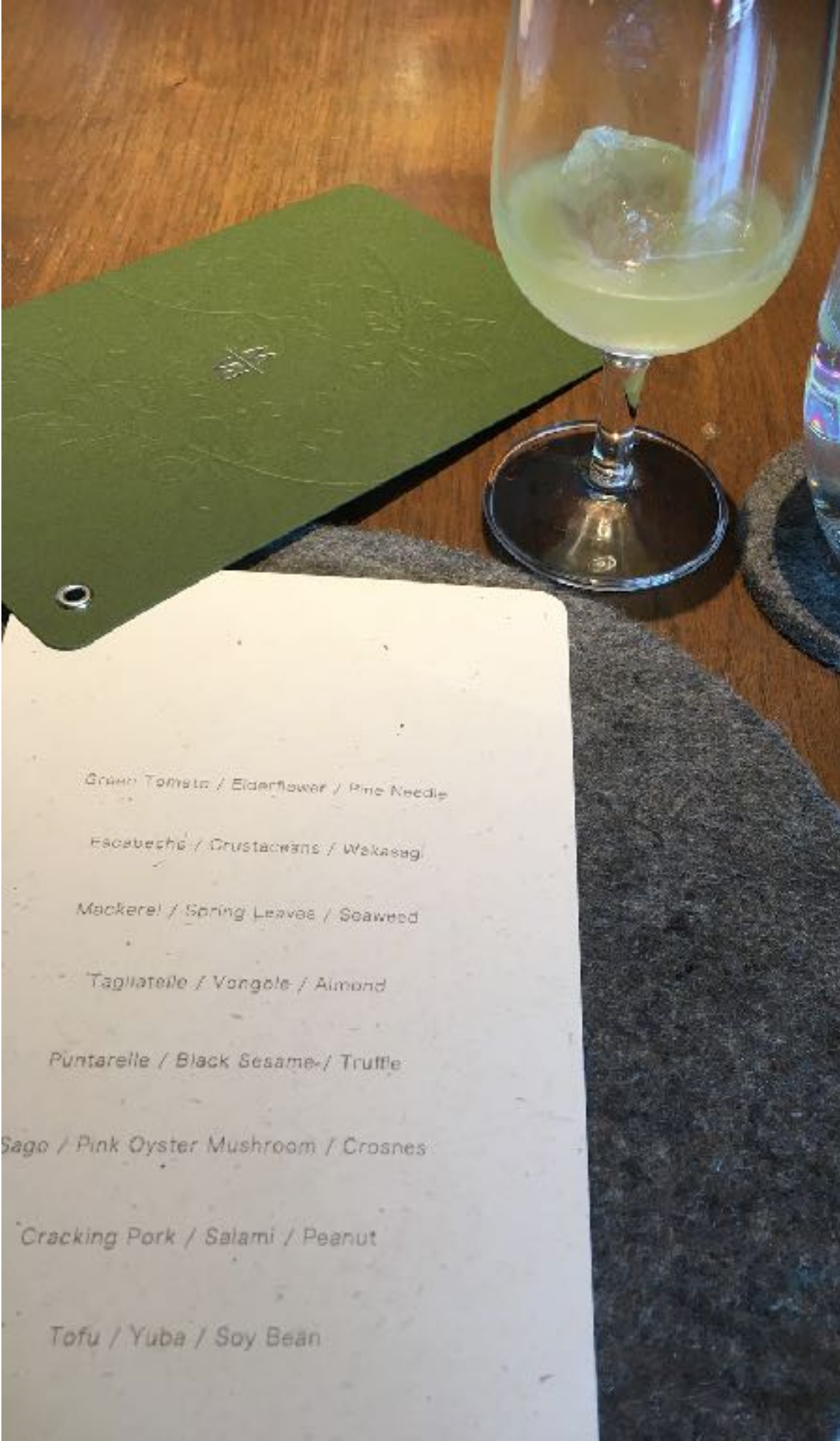


蔡政修 (Tsai, C-H) 2023 Mar 29 Wed 圖書館

台灣大學 (National Taiwan University)

生命科學系／生態學與演化生物學研究所

(Department of Life Science/ Institute of Ecology and Evolution Biology)



Green Tomato / Elderflower / Pine Needle

Escabeche / Crustaceans / Wakasagi

Mackerel / Spring Leaves / Seaweed

Tagliatelle / Vongole / Almond

Puntarelle / Black Sesame / Truffle

Sage / Pink Oyster Mushroom / Crostini

Cracking Pork / Salami / Peanut

Tofu / Yuba / Soy Bean



Fortune favors the well read

“You found that in what journal?” My adviser, sitting across the desk from me as we discussed my next research project, raised his eyebrows in surprise. We had recently finished my first project and realized that our methods had some limitations. We needed to redesign our experiments, so I had done a lot of thinking and reading and had collected some preliminary results on new approaches. And based on some surprising sources, I had come up with an unusual proposal for advancing past the obstacles we had encountered.

“Actually, two journals,” I replied somewhat sheepishly, “*Inorganic Chemistry* and *The Journal of Physical Chemistry*.” We are organic chemists, and although the difference between our field and those represented by these two journals may seem small to a nonchemist, to specialists they are practically different planets. Neither of these journals is usually found near the desk of a card-carrying organic chemist—yet here we were discussing these two papers, the more recent of which was published 2 decades ago.

“I know that this sounds crazy,” I continued, “but look at the reactivity that they saw.” We craned our heads over the printouts. The authors of these papers had given little thought to whether their results had much bearing on our field—they weren’t organic chemists, after all. However, being good scientists, they had made copious observations during their experiments, and sure enough, some had interesting implications for our studies. “I see what you mean,” my adviser said, “but I don’t know how you find these papers.”

The answer is pretty simple: I aggressively curate and monitor the notifications I receive about newly published papers, and I read those that strike my interest, even if they’re not directly related to my research. Then, if I find an interesting string of references in a paper I’m reading, I’ll follow where it leads. That’s how I found my way to those decades-old papers. Chemistry also has a small but vibrant blogging community, and sometimes a thoughtful post highlighting a recent paper will start me on one of my literature dives. If I find that many of these references come from the same source—*Inorganic Chemistry*, for example—I’ll add it to the stable of journals that I follow.

Perhaps the bigger question is why I make the effort. The short answer is that I read widely to prepare myself



“I read widely to prepare myself for whatever might come along in the lab.”

for whatever might come along in the lab. My biggest fear is the one that got away, the important discovery that I missed because I couldn’t see it for what it was. It’s this fear that drives me to cast my intellectual net widely, so that I have the broad foundation I need to see my research from multiple angles. Given the limited number of hours in each day, it can be tempting to read only in my sub-discipline, but I know that doing so would ultimately limit the kinds of connections I can draw. Fortune favors the prepared mind, as Louis Pasteur famously said to explain his scientific success, and I am doing my best to be prepared.

That conversation with my adviser was a few years ago. The intellectual leap inspired by those

old papers enabled me to finish and publish my project, and I am now wrapping up my Ph.D. studies. As I look back on my graduate career, I realize that it’s been replete with these sorts of situations. Time and time again, strange observations in the lab reminded me of a paper I had read in some far-out journal, or a seemingly irrelevant visiting speaker’s talk suddenly led me to understand a result that had been bugging me for weeks. These are my favorite moments in research; the thrill of finally fitting disparate pieces together is tough to beat.

One of the new first-year students in our department recently asked me for advice on making it through graduate studies. I typically find that type of vague question tough to answer succinctly, but this one was easy: Read widely and voraciously. Fortune doesn’t come every day, but when it does, you will be prepared to make the most of it. ■

Julian G. West is a doctoral student at Princeton University in New Jersey. Do you have an interesting career story? Send it to SciCareerEditor@aaas.org.



By Aleksandra Deczkowska

Let's talk about language barriers

As an undergraduate student in my home country of Poland, I quickly realized that I would have to pack my bags and go abroad if I wanted to advance my scientific career. Since then, I have worked in Israel, Belgium, and Switzerland, and in all three countries my knowledge of the local languages was close to zero. Like many researchers who choose to work abroad, I thought that my decent English skills would be enough for me to thrive. But it has turned out to be unexpectedly difficult. I don't regret my decision to travel, but those who want to follow this path should be warned: Language barriers exist, and they will probably affect you and your work.

In most of my labs I was the only nonnative speaker, and it was very hard to encourage people to speak English. Unofficial lab communication was typically conducted in the local language, so I was often the last one to hear about new ideas, results, or career development opportunities. I even missed several lab meetings.

My labmates also missed out on my contributions. In one case, a colleague struggled for weeks with a protocol that I had a lot of experience with, but I didn't realize it. Finally, I noticed that someone had ordered familiar reagents, and I asked into the air, "Hey, is anyone staining on coverslips?" Ultimately, I was able to help with the experiments. But a few words that I recognized would have saved my labmate a lot of time and frustration, and the lab a fair amount of money.

The challenges also extended into the social realm. At happy hours, retreats, and other events, 99% of the conversation was in languages I could not understand. From time to time, someone who had been chatting in French or Dutch would ask me a question in English. I didn't know the context, so I would respond politely but briefly, unable to build on the previous conversation. As suddenly as it started, the conversation would dry out. I could initiate small talk in English, but I never knew the right moment to interrupt an ongoing conversation. I would occasionally ask, "Could we please speak in English?" but most of the time, this question elicited only silence. Suddenly no one had anything to say. So, I generally smiled quietly until I grew frustrated, excused myself, and left early, feeling totally isolated and excluded.

Of course, you can blame me for not learning the lan-



"In most of my labs ... it was very hard to encourage people to speak English."

guage. But my time was limited, and my priority was my research, not language courses. In addition, my lack of integration with the locals discouraged me from looking for ways to communicate with them. Instead, I found support from other foreigners who felt similar frustrations. We talked about it, but we didn't see what more we could do. It was natural that the locals would speak their own language. As foreigners, we just had to deal with it.

When I was deciding on a lab for my Ph.D. thesis, though, I realized that I could take matters into my own hands by choosing a more international lab. In my current workplace in Israel, enough of us are English-speaking foreigners that the locals communicate in English too, at least part of the time. This has made a huge difference for me. I enjoy casually sharing tips and tricks with labmates, and I have rewarding personal relationships with many of them.

Yet, the larger problem remains. If I prioritize language when considering future labs, it will severely limit my choices. I also worry that other young scientists going abroad will have the same false assumptions that I did and not take language into account when making career decisions. But it doesn't have to be this way. I know that it can be an inconvenience for locals to speak in another language to accommodate a foreigner, but in the end, everyone benefits. ■

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By Jeffrey J. McDonnell

The 1-hour workday

When I was an assistant professor, I felt constantly overwhelmed. I had classes to teach, relationships with new colleagues to navigate, a lab group to assemble, and an infant at home—not to mention research to conduct and papers to publish. To get ahead, I took on any opportunities that were offered, including membership on various editorial boards and professional committees. Despite working like a madman, my productivity as measured by paper output was meager. I simply could not find time in my day for undistracted writing. And when I did find the time after an extended stretch away from writing, the warm-up period to get back into the paper was often long, further slowing my progress.

At first I thought that this kind of frustration was routine for academic researchers. But as the years passed, I noticed a few senior colleagues who published with impressive regularity and always had a paper in the works. When I asked them what their secret was, I found that they prioritized doing small amounts of focused writing every day. I've since developed my own version of this approach. I call it the 1-hour workday, referring to the short, sacrosanct period when I do what I see as the "real" work of academia: writing papers.

First thing in the morning is when I'm at my mental best, and when I'm still most in control of my time, so I now use the first hour of my day to write. For me, it's best done from home. I've developed something of a ritual: I wake up early, make an espresso, and write until I'm spent—or until distractions like email or the day's deadlines and meetings start to intrude. This is usually about an hour, some days a little less and some days more. I've found that, like hitting a ball in golf, regular writing is easier if I tee it up. I plan my early morning writing the night before. It is in my calendar and on my to-do list, with details about which paper and section I will be working on.

This routine has transformed my work life. Instead of the frustration that frequently plagued me early in my career, now—no matter how work proceeds after I've completed my writing time—I go home at the end of the day with the satisfaction of having accomplished something.

I have in no way mastered the writing game, but my 1-hour workday has certainly increased my academic output. And by keeping me focused and in practice, it has improved the quality of my writing and made the process



***"I wake up early,
make an espresso, and
write until I'm spent."***

much more enjoyable. It also offers an opportunity for deep thinking. I remember rarely having any such thinking time when I started out as a professor, but now I find that my daily keystrokes can lead to new ideas. When I string together days of successful writing, ideas flow and new connections present themselves even when I'm away from my keyboard, particularly on my bike ride to work or when I'm reading for pleasure.

Many days, "writing" means editing and revising the work of others. This work can sometimes be a slog, but I keep my spirits up by thinking of it as a game of table tennis. My goal is to return the serve—when done quickly, this greatly improves the game.

In any sport, one must stay toned and conditioned. If I fall out of practice, I quickly lose that fitness, and my writing and editing become labored. So, even though distractions abound, I protect that daily work-out at the keyboard during the first precious work hour of the day. I've learned that writing does not need long stretches of uninterrupted time. Focus and regularity are what matter. I now advise my Ph.D. students and postdocs who are going on to faculty positions to adopt daily writing as an early-career habit so that they don't repeat my years of writing frustration. At any career stage, a daily writing ritual can help improve performance—and, perhaps most importantly, job satisfaction. ■

Jeffrey J. McDonnell is a professor in the School of Environment and Sustainability at the University of Saskatchewan in Saskatoon, Canada, and Sixth Century Chair at the University of Aberdeen in the United Kingdom. He thanks his Ph.D. students and postdocs for feedback.

By Irene Nobeli

In praise of slow

I huff and puff my way up the moderate slope. Even by my own abysmal standards, this is a poor run. In the past hour, I have been overtaken by both an octogenarian and a mum pushing her toddlers in a buggy. Yet I am smiling. I am a happy runner, despite my utter mediocrity at this sport. But at work, happiness had become elusive. After a relatively relaxed Ph.D. and postdoc, I had been thrilled when I landed a tenured job. But as I worked to establish myself as a group leader, I began to feel intense pressure to be more competitive and publish more. Recently, as I wondered why I felt so discontented at my job, I realized that I could apply some lessons from running to my research.

Lesson one: In the right race, your weakness can become your strength. For more than 30 years I equated running to speed and so, lacking the fast-twitch muscles of a sprinter, I chose not to run at all. But once I finally started running, I learned that not being able to sprint makes me a better endurance runner. Similarly, I often perceived my inability to focus on a single research topic as a barrier to success as an academic scientist. But I've found that my desire to branch out to different fields helps me make connections across disciplines and see my work in new ways, which has led to unexpected and exciting insights.

Lesson two: Choose the right pace for your race. Last Christmas, a silver-haired gentleman helped me beat my (lamentable) 5K personal best by whispering, "Go at your pace, not theirs!" when I got stuck behind slower runners. I now realize that this would have been excellent advice early in my career. Some Ph.D. students push themselves too hard and burn out, but I had the opposite problem. I was happy to trundle along at the slowest pace I could get away with—but it ultimately held me back. Even though I like my slow-but-steady pace, I still needed to learn to push myself rather than drag my feet.

Lesson three: An honest race is the only race worth running. I invariably finish in the bottom quartile of the local 5K run. All I would have to do to move up a couple of hundred places is take a shortcut through the fields. Yet I don't. Nobody does. Scientists are usually like that, too—but not always. Principal investigators are pressured to keep their spot in the fast lane, postdocs are chasing the elusive permanent contract, and students are keen to make their mark. Several of my publications would have had a



“Not being able to sprint makes me a better endurance runner.”

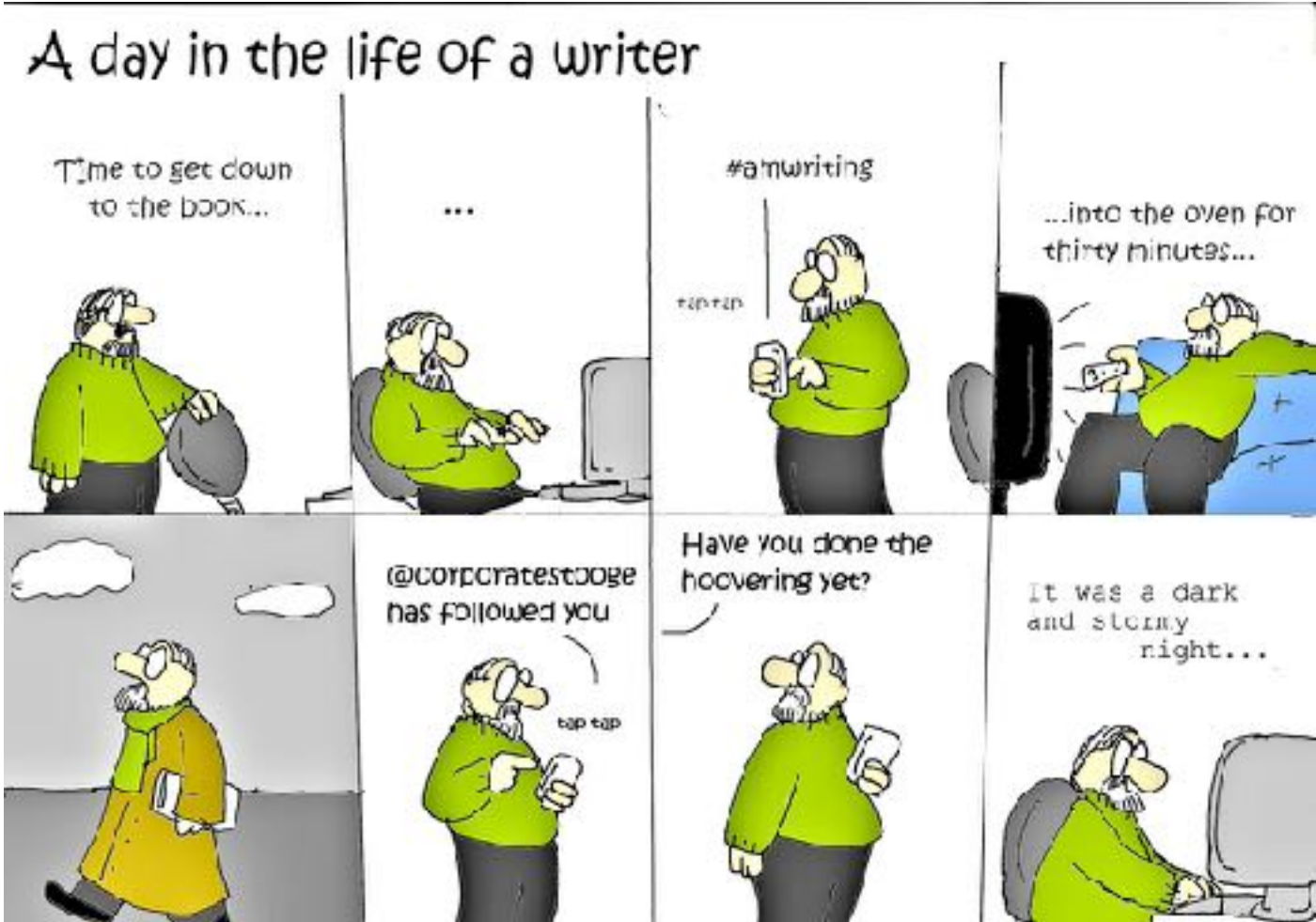
much easier ride through the reviewing system had I been slightly less honest about our findings. The temptation to cheat to get an advantage can be great. However, and this is something that is often overlooked, an advantage is only useful if you are, in fact, engaged in a competition. This brings me to the last lesson, which is the most important of all.

Lesson four: There really is no race. For me, running isn't about being faster than other runners. Likewise, my goal in research is not to “beat” my colleagues. Mark Rowlands, a philosopher, academic, and runner, argues that running makes us happy because it is a form of play and as such has intrinsic value. I don't run just to eat more peanut butter or to

save money on psychotherapy (although these are strong motivating factors in my case). I run because doing so offers a glimpse of life's real value. I now think this is the secret to being happy in research, too. I don't do research only to get invited to conferences, see my name in print, or be promoted. Like running, research is a game with its own intrinsic value. Playing this game of discovery gives me enough joy to keep me going.

Do I recommend an academic career in the slow lane? It doesn't work for everybody. Letting go of ambition in academia is a bit like leaving your GPS watch at home when heading out for a run. Scientists are ambitious; they want to be the hares leading the race ahead. But the tortoise's secret is that there is a lot of fun to be had at the back of the pack. ■

Irene Nobeli is a lecturer at Birkbeck, University of London. Send your career story to SciCareerEditor@aaas.org.



<https://twitter.com/byMorganWright>

Learning from rejections

I experienced the first rejections of my scientific career when I applied to graduate school. I had graduated as the top student from my undergraduate program, but I didn't get into my top choice for grad school. In fact, about half my applications were met with rejection. I did not know how to cope. I felt that I had let my family and teachers down, and I was embarrassed and bitter. That was 3 years ago. Since then, I've continued to experience the rejections that are a routine part of scientific training and research. But I have learned that, with the right mindset and some initiative and introspection, I can transform rejections into useful lessons to strengthen my future work.

I did get into my second-choice graduate school. But I continued to learn the lessons of rejection when I failed to win a small-scale writing contest. At first, I felt rather discouraged. I worried that asking for feedback might seem inappropriate and that I might come across as a sore loser. But I reasoned that there was no better way for me to improve than to take the initiative and ask. I took my time drafting the email to make sure that my tone was sincere, and I ended up receiving valuable comments that equipped me to go on to win two similar competitions.

Following up after rejections can also open the door to unexpected opportunities. A year ago, for example, I applied unsuccessfully for a science writing internship.

I asked the editor whether there were any other ways I could contribute, and I was surprised to learn that I was welcome to pitch ideas for articles that I wanted to write. (The editor also assured me that my application was of decent quality, which restored my confidence in my writing ability.) A few months later, I contacted the editor with a pitch, and I was thrilled to be offered a paid contract to contribute an article.

Even when you don't get individual feedback or immediate further opportunities, you can still help yourself by trying to figure out why your application wasn't successful. Last year, for example, when my application for a short-term fellowship to do research in Germany was rejected, I decided to look more closely at the winners from past years. I found that almost all of the funded fellows studied disease biology, while my proposal had focused more on using biology for engineering and materials applications. Realizing that my rejection was due—at least in part—to the fact that it was a bad fit, and not necessarily a reflection on the



***“With the right mindset ...
I can transform rejections
into useful lessons.”***

quality of my proposal, made me feel better about my research. I also learned that it's important to do my homework. Now, I ensure that my application is a good fit by learning who was successful, and sometimes even contacting them for advice, before submission.

In other cases, understanding the reasons behind a rejection can suggest concrete ways to strengthen your work. For example, after looking into the students who were chosen for a program to work as journalists at a conference—which I was rejected from 2 years in a row—it dawned on me that the organizers were looking for people with experience writing informal blog-style articles. I didn't have this type of background, and I had been selling myself as an academic writer.

So, I started reading more scientific blogs and recently got an opportunity to start writing for one, which I hope can help me avoid a third rejection. I also learned that sometimes I need to be patient and put in the time and work to accumulate credentials if I am not a good fit at the moment.

There's a lot of advice out there about not feeling down after rejections. I beg to differ. I believe that it's OK to be stressed, upset, frustrated, and even to harbor self-doubt. The important thing is to harness these feelings so that they lead to something productive. Frankly speaking, I still have a hard time when my applications fail. As a final-year Ph.D. student applying for postdoc fellowships, I get worried even thinking about potential rejection. But as I contend with these negative thoughts, I remind myself to pick myself up and transform rejections into positive lessons. ■

Andy Tay is a graduate student at the University of California, Los Angeles. Send your career story to SciCareerEditor@aaas.org.



J. Mead
National Museum of Natural History
Smithsonian Institution
Washington, DC USA 20560

9 august, 1995

Dear Jim,

Included is a photograph of a baleen whale which was washed up in Gambia, West Africa. The photograph was taken around New Year '95. I know nothing more about the observation while I do not know the person who took the picture. I can speculate on what species it might be but I have not enough experience to tell the species.

If you have time, I would appreciate if you could send me a short note (or fax) telling what species (or spp) it might be.

Best wishes from Sweden.

Tom Arnbom
Department of Zoology
Stockholm University
S-106 91 Stockholm
Sweden
Fax: +46 8 167715

By Charles G. Hoogstraten

Fighting through the darkness

During the fourth year of my Ph.D. program, I found myself walking through the door of my university’s counseling center, seeking help for a dangerously strong urge to commit suicide. With the help of the compassionate people in that office, I pulled through the immediate crisis. Long-term counseling helped me understand it as the climax of a tendency to clinical depression that has plagued me for much of my life. It has been many years since I was a danger to myself. But ongoing low-level depression, the sense that I don’t deserve my success, and periodic more serious bouts of psychological disease still haunt me, even as I have done work that I am proud of.

My career in academia, with its flexibility and self-direction but also its daunting stress levels, has been both a blessing and a burden in my battle with depression. Depression, in turn, has not made it any easier to meet the challenges of academic life. I am fortunate to work in a department and at an institution that see younger faculty members as individuals to be invested in and supported. But the cost of depression to my career—in students’ manuscripts that sat on my desk too long, in editors disappointed by unfinished reviews, in productivity gaps that give funders pause—has been real. Every individual’s experience with mental illness is unique. Nevertheless, I will hazard sharing some of my own hard-won lessons with others who find themselves grappling with their own recalcitrant minds.

FIRST AND FOREMOST, GET HELP. If you encounter a problem in your research that you lack the expertise to solve, you don’t hesitate to collaborate. Taking care of your mind is just the same. There are talented experts out there, and you need to take advantage of them. I have benefited enormously from group and individual cognitive behavioral therapy. I know others who describe going on the right antidepressant as “when the lights came on.” What works best is different for everyone, so be persistent. Many health insurance plans have good mental health coverage, and most universities have in-house counselors familiar with the particular stresses of academic life. The phone number for the U.S. Suicide Prevention Lifeline is 1-800-273-8255. If you need it, use it. Today.

STEP OUT OF THE CLOSET—THOUGHTFULLY. I was loath to disclose my struggles to my advisers because I worried that



“Academia ... has been both a blessing and a burden in my battle with depression.”

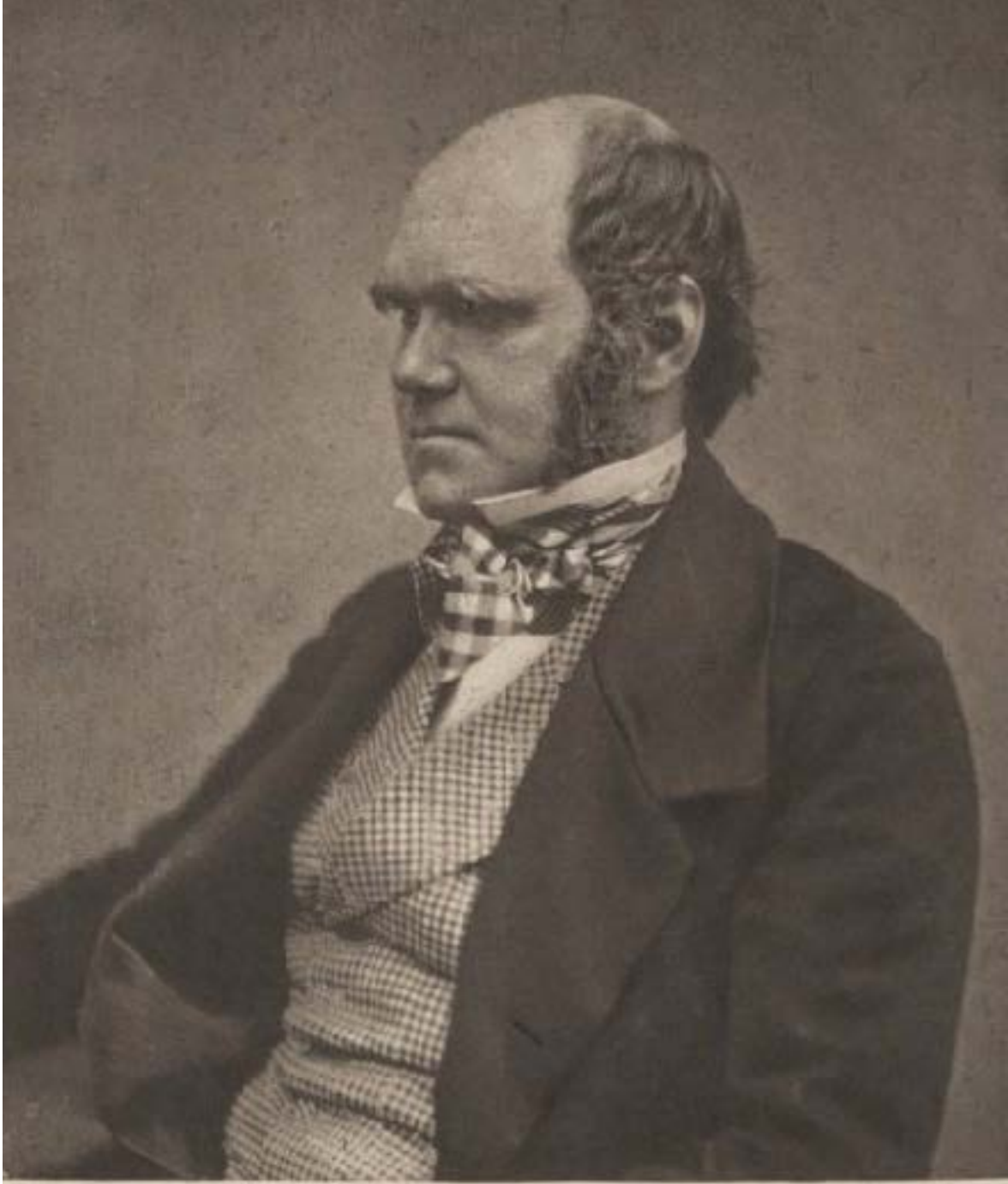
group of peers who face similar challenges and can provide mutual support. Learning that you share your experiences with people you respect can be the most powerful tonic of all.

REALIZE THAT THE ROAD IS LONG. One of the worst mistakes I made was repeatedly assuming that, when I was feeling well and productive, I was home free—only to be caught flat-footed when my depression flared again. Staying ahead of the situation by keeping a support network in place, even across the frequent relocations that are part of an academic’s life, is critical.

ALWAYS REMEMBER THAT YOU ARE NOT ALONE. There are more people who care about you and want to help you than you realize, and more people who have fought the same fight than you can imagine. ■

Charles G. Hoogstraten is an associate professor of biochemistry and molecular biology at Michigan State University in East Lansing.

openness would limit my future opportunities. I have since seen that advisers often realize that something is up even if you don’t tell them, and—depending on the individual—things may go better if they know what is happening and that you are working to deal with the problem. Now that I am a faculty member, I have been surprised and gratified at my colleagues’ compassionate, supportive responses whenever I have chosen to discuss my illness with them. Experiences like these help lift the shame that is a key part of the depressive cycle. That said, there is certainly a time and a place for confidences. It may be wise to start by telling a trusted mentor who is not immediately responsible for evaluating you. Look for a



By Jeffrey J. McDonnell

Paper writing gone Hollywood

“So you want to be a writer?” one of my professors asked me when he learned I was interested in a career as an academic scientist—a pointed warning that a life of science is also a life of writing. But even knowing this in advance, I found that writing was a challenge as I made my way down the tenure track. I had trouble finding stories in my data sets. Even when I had a good tale, I struggled to tell it. I tried starting with the opening sentences and hoping I’d make it to the paper’s end. But more often than not, I wrote my way down many blind alleys. My permanently unfinished papers outnumbered my published ones. Worst of all, I was not helping my Ph.D. students and postdocs learn proper writing craft.

My big break came shortly after getting tenure. In a passing conversation, a senior colleague mentioned that his process for writing research papers centered on structure. Rather than focus on words and sentences, the part of writing that so bogged me down, he highlighted the importance of outlining the overall story to be told. I had thought that the standard paper structure—introduction, methods, results, discussion, conclusions—was enough to keep me on track. But my colleague helped me realize that, even with those sections, there is still enough freedom to get stuck in writing cul-de-sacs.

I now see each of the standard paper sections as its own Russian nesting doll. Writing papers is easiest when you spend considerable thought and time stacking all these pieces first. I call it the top-down writing approach.

Each of my group’s papers now starts with a storyboard session at a whiteboard. I pretend to be a big-time Hollywood producer and ask the Ph.D. student or postdoc to play the role of would-be movie director pitching a new movie to me. Their pitch must answer three questions: What is the status quo? What is wrong with the status quo? How does this new paper go beyond the status quo?

This approach helps frame the story and place key figures and technical findings in context. Balancing each of the status quo elements is a great way to set up the introduction—often the toughest section for early-career scientists to write—and to lead the reader to the research questions or hypotheses. Say too little about what we already know and one risks losing a large audience who may be unfamiliar with the topic. Too little about what’s wrong with the current state of knowledge and the reader may



“I ... ask the Ph.D. student or postdoc to play the role of would-be movie director.”

wonder why we need yet another paper on that topic. Too little about how the work goes beyond what others have done and the novelty is unclear. The result is a roadmap of the novel elements in the work, which brings the discussion—the other tough section for the writing newcomer—into final focus.

Once the pitch makes sense, we go back and forth stacking the Russian dolls on the whiteboard until the outline subheadings become paragraph topics, with every paragraph explicitly represented in the outline. Honing this outline prior to any writing allows us to determine whether the research story resonates from start to finish. We might spend days or weeks on the outline to get it right, but it’s time well spent. The slavish adherence to nested headings

shows at a glance whether the paper makes a clear and worthy contribution; whether the title, objectives, and results are properly aligned; what figures are truly essential to the storyline; and whether the message hums. Writing then becomes a much easier process of filling in the blanks. The paper is effectively finished before the sentence writing starts.

I haven’t mastered the writing game, and I am still constantly learning. But the top-down approach has been a game changer in my group. Now, when a new grad student indicates an interest in an academic career, I ask, “So you want to be a Hollywood producer?” ■

Jeffrey J. McDonnell is a professor in the School of Environment and Sustainability at the University of Saskatchewan in Saskatoon, Canada, and Sixth Century Chair at the University of Aberdeen in the United Kingdom. He thanks the faculty, students, and postdocs at the Global Institute for Water Security for feedback.



"Tell us again, Grandpa, about the time you almost had Tarzan for lunch."

<https://corticalchauvinism.com/2014/05/12/storytelling-learning-and-autism/>

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ON
THE ORIGIN OF SPECIES

BY MEANS OF NATURAL SELECTION,

OR THE

PRESERVATION OF FAVOURED RACES IN THE STRUGGLE
FOR LIFE.

By CHARLES DARWIN, M.A.,

FELLOW OF THE ROYAL, GEOLOGICAL, LINNEAN, ETC., SOCIETIES;
AUTHOR OF 'JOURNAL OF RESEARCHES DURING H. M. S. BEAGLE'S VOYAGE
ROUND THE WORLD.'

LONDON:

JOHN MURRAY, ALBEMARLE STREET.

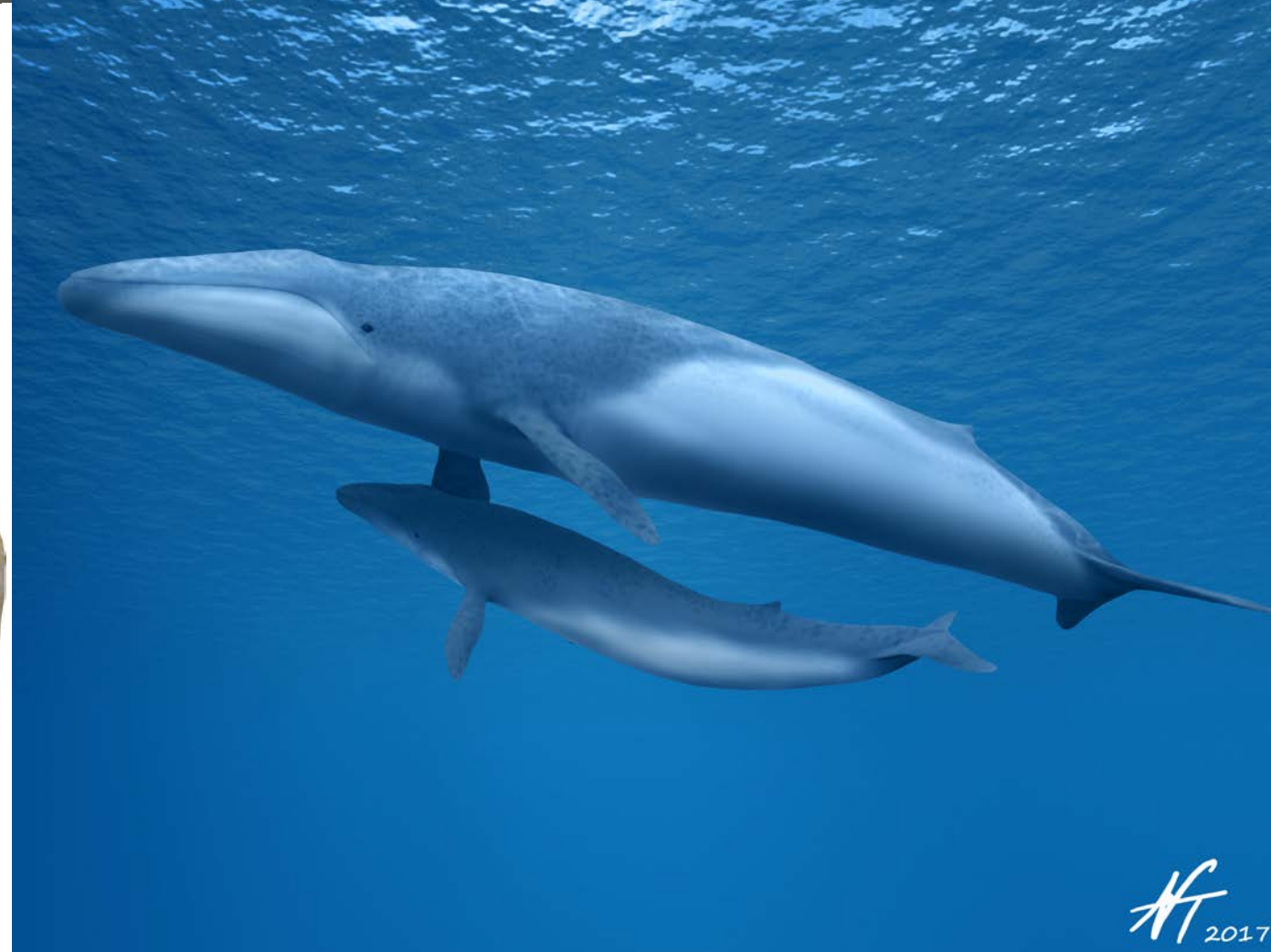
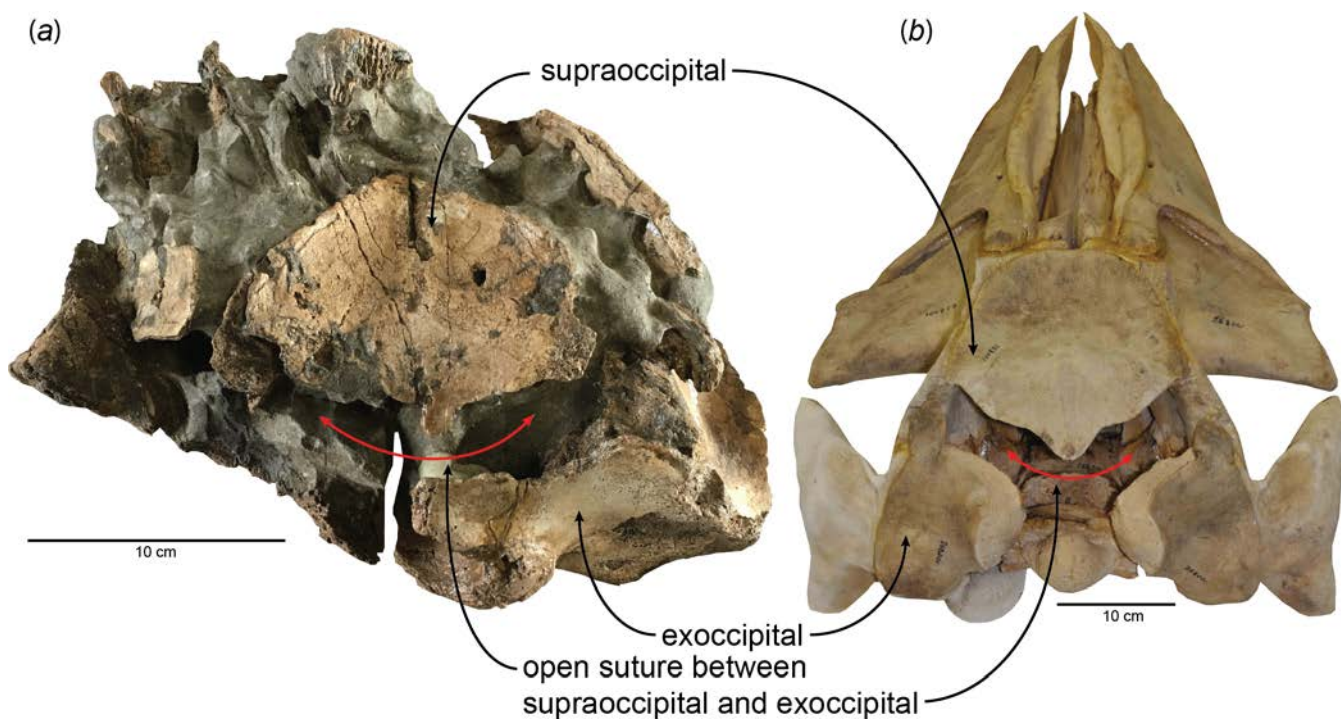
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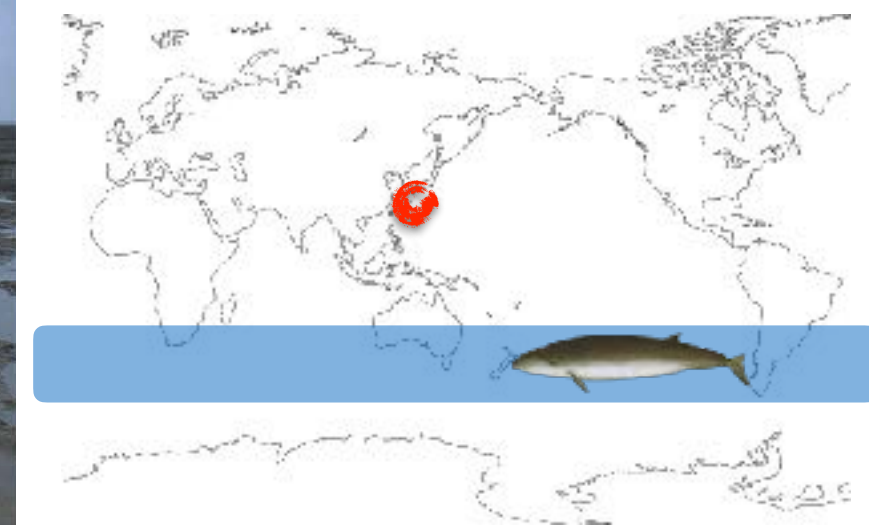
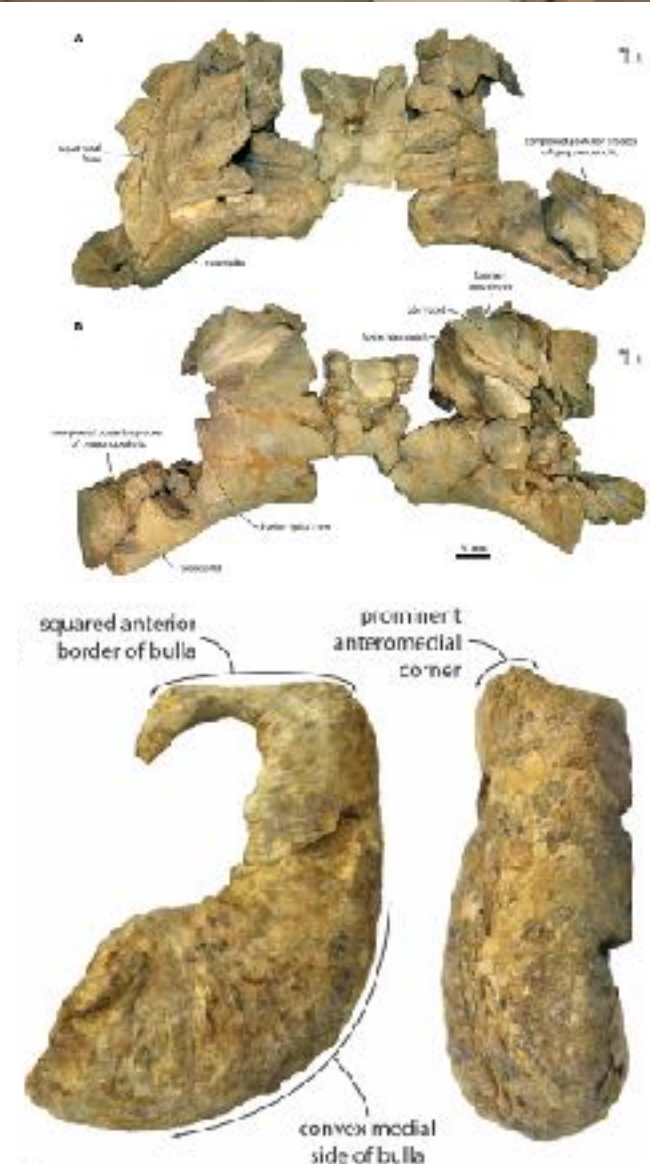
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“...the most important single result of Darwin’s collections of fossil mammals during the voyage of the Beagle”







A new archaic
Toipahautea waitaki (Lea)
Late Oligocene, New
Zealand) and the origins
of crown Mysticeti

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A new article and opinion
article (Late September)
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1000 m

Crossing the equator: a northern occurrence of the pygmy right whale

Cheng-Hui Tiao  and ...[illegible]

A light whale (Mysticeti, Balaenidae) from the Pleistocene of Taiwan

Cheng-Hsi, Tsai  and Chu-Hsiung Cheng¹

Altai deer
Current patterns of biological distribution result from the direct past of persecution. Species appear at high latitudes of both hemispheres, but mainly between a pair of divisions. However, the timing, pathway, and drivers of their dispersal distribution describe a new level, a few sympatric bulls apart from the bar. Since the 1950s, but not including the possibility of historical signs as the presence of the ecological horizon (or the increase) of Taiwan. The sympatric bulls in specimens show morphological features that are identical to other Chinese deer. The anterior length is 1.7 mm, rectangular, and the 1 mm tail, 1 mm

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<https://doi.org/10.1093/geronl/43.6.569>

A phasianid bird from the Pleistocene of Tainan: the very first a fossil from Taiwan

Chang-Hsin Tsai^{1,2}, Gerald Meyer²

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Thatchellithichnus on a Pliocene grey whale
as possible tracemakers

Alberto Collares, Cheng-Hai Tsai, Giovanni Coriati,
with a figure

MIocene and

... a review ... Nauti

Page 11 of 11

SPECIAL ISSUE ARTICLE

Taxonomic revision of *Chinemys pani* (Testudines: Geoemydidae) from the Pleistocene of Taiwan and its implications of conservation paleobiology

Yi-Lu Liaw¹Cheng-Hsin Tsai^{1,2,3}✉

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Abstract
Proper taxonomic identification is
sity and the underlying evolution
the holotype of *Chinensis* pond.
Taiwan, this actual specimen was
publication and was most likely
to show that *Chinensis* pond is
septic, though not ideal, prese-
reliable taxonomic identifica-
tion of three longitudinal ke-
notes anteriorly short-sided,
addition, we also confirm il-
lustrated the new taxon: *Chin-
ensis* reusell. Our taxonomic
Taiwan confirms the exist-
Importantly, this study of
diversity in Taiwan and give
concluded to conservation po-

KEYWORDS
biodiversity, conservation, chili

Eurasian wanderer; an island sabre-toothed cat (Machairodontinae) in the Far East

by CHENG-HSIU TSAI^{1,2,*} and ZHANG JACK TSENG³

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Abstract: *Ida. mirabilissima*, including the form *Ida. mirabilis* Hemmelen, was an exotic *Platylabus curvatus* large that occupied a niche, e.g., paleo-ecology and is thought to have had a profound impact on large-scale structure. Recent ancient molecular studies on *Hemmelius* suggest a wider distribution than the inferred from the fossil record, highlighting a need for additional *Ida. mirabilis* fossil collection and research; i.e., understand geographic regions. After the original publication 60 years ago that identified a *Ida. mirabilis* canyons all as *Ida. mirabilis*, in Taiwan, there was no review its identifi-

Island evolution
Dwarfism and
extinction

...and giant...

Antismism drive human-mediated

[illegible][illegible]

Small-bodied cats (*Machirodoninae*) represent a rapidly diverging lineage of Felidae that is not genetically aligned with extant large Panthera leopards and relatives. Pajmans also occupied different ecological niches (et al. 2016). The eventual extinction of the end of the Pliocene remains a subject of intense research on various aspects of paleoecology (Barnett et al. 2016). The megafaunal extinction during the Pliocene is controversial, given that human

ISLAND EVOLUTION

Dwarfism and gigantism drive human-mediated extinctions on islands

Roberto Rozzi^{1,2*,†}, Mark V. Lomolino³, Alexandra A. E. van der Geer⁴, Daniele Silvestro^{5,6}, S. Kathleen Lyons⁷, Pere Bover⁸, Josep A. Alcover⁹, Ana Benítez-López^{10,11}, Cheng-Hsiu Tsai¹², Masaki Fujita¹³, Mugino O. Kubo¹⁴, Janine Ochoa¹⁵, Matthew E. Scarborough¹⁶, Samuel T. Turvey¹⁷, Alexander Zizka^{18,19}, Jonathan M. Chase^{1,20}

Islands have long been recognized as distinctive evolutionary arenas leading to morphologically divergent species, such as dwarfs and giants. We assessed how body size evolution in island mammals may have exacerbated their vulnerability, as well as how human arrival has contributed to their past and ongoing extinctions, by integrating data on 1231 extant and 350 extinct species from islands and paleo islands worldwide spanning the past 23 million years. We found that the likelihood of extinction and of endangerment are highest in the most extreme island dwarfs and giants. Extinction risk of insular mammals was compounded by the arrival of modern humans, which accelerated extinction rates more than 10-fold, resulting in an almost complete demise of these iconic marvels of island evolution.



Birds - dinosaurs in the Cenozoic sky

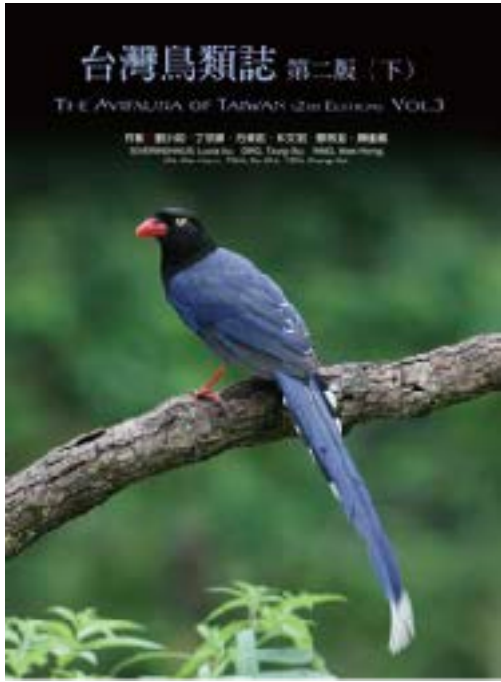
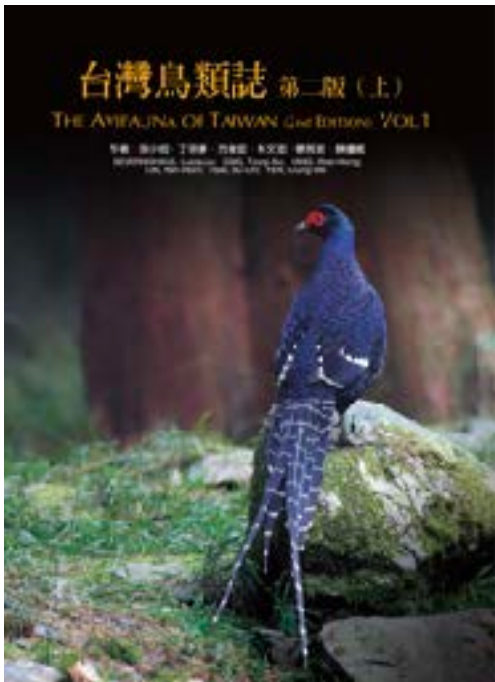
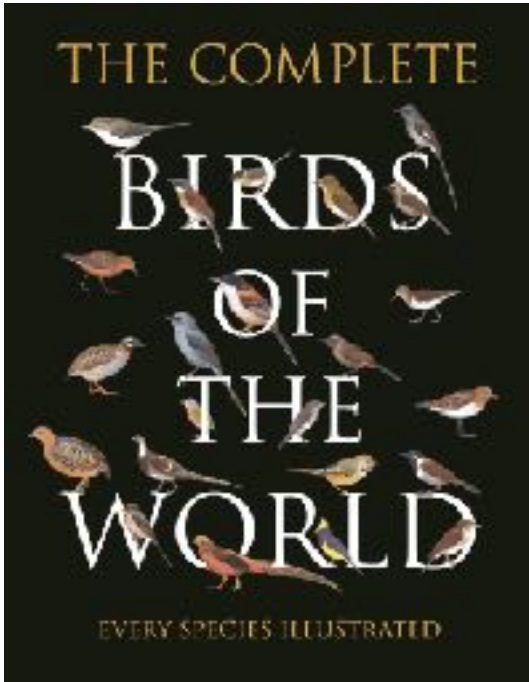


TABLE VII
ESTIMATED NUMBER OF SPECIES OF BIRDS

Epoch	Contemporaneous families ^a	Contemporaneous species	Faunal turnovers	Species evolved
Recent	148 (95 + 53)	8,656	—	—
Pleistocene	153 (100 + 53)	10,653	2	21,306
Pliocene	154 (101 + 53)	10,705	3	32,115
Oligocene	130 (82 + 48)	8,157	3	24,471
Eocene	94 (70 + 24)	5,164	4	20,656
Paleocene	52 (40 + 12)	2,770	2	5,540
Maestrichtian	43 (37 + 6)	2,023	3	6,069
Campanian	23 (20 + 3)	1,067	3	3,201
Santonian	19 (17 + 2)	850	1	850
Coniacian	18 (17 + 1)	744	2	1,488
Turonian	16	600	1	600
Cenomanian	15	563	4	2,252
Albian	11	413	3	1,239
Aptian	8	300	1	300
Neocomian	7	263	3	789
Portlandian	4	150	1	150
Kimmeridgian	3	113	3	339
Total				153,624

^a Figures in parentheses refer to nonpasserine and passerine families, respectively.

Table 1 | The proposed set of definitions for the major dinosaurian clades

Clade	Definition
Dinosauria	The least inclusive clade that includes <i>P. domesticus</i> , <i>T. horridus</i> and <i>D. carnegii</i>
Ornithoscelida	The least inclusive clade that includes <i>P. domesticus</i> and <i>T. horridus</i>
Saurischia	The most inclusive clade that contains <i>D. carnegii</i> , but not <i>T. horridus</i>
Theropoda	The most inclusive clade that contains <i>P. domesticus</i> , but not <i>D. carnegii</i> or <i>T. horridus</i>
Ornithischia	The most inclusive clade that contains <i>T. horridus</i> , but not <i>P. domesticus</i> or <i>D. carnegii</i>
Sauropodomorpha	The most inclusive clade that contains <i>D. carnegii</i> , but not <i>T. horridus</i> , <i>P. domesticus</i> or <i>H. ischigualastensis</i>
Herrerasauridae	The least inclusive clade that includes <i>H. ischigualastensis</i> and <i>Staurikosaurus pricei</i> ³⁷

The Cenozoic star - saber-toothed cats

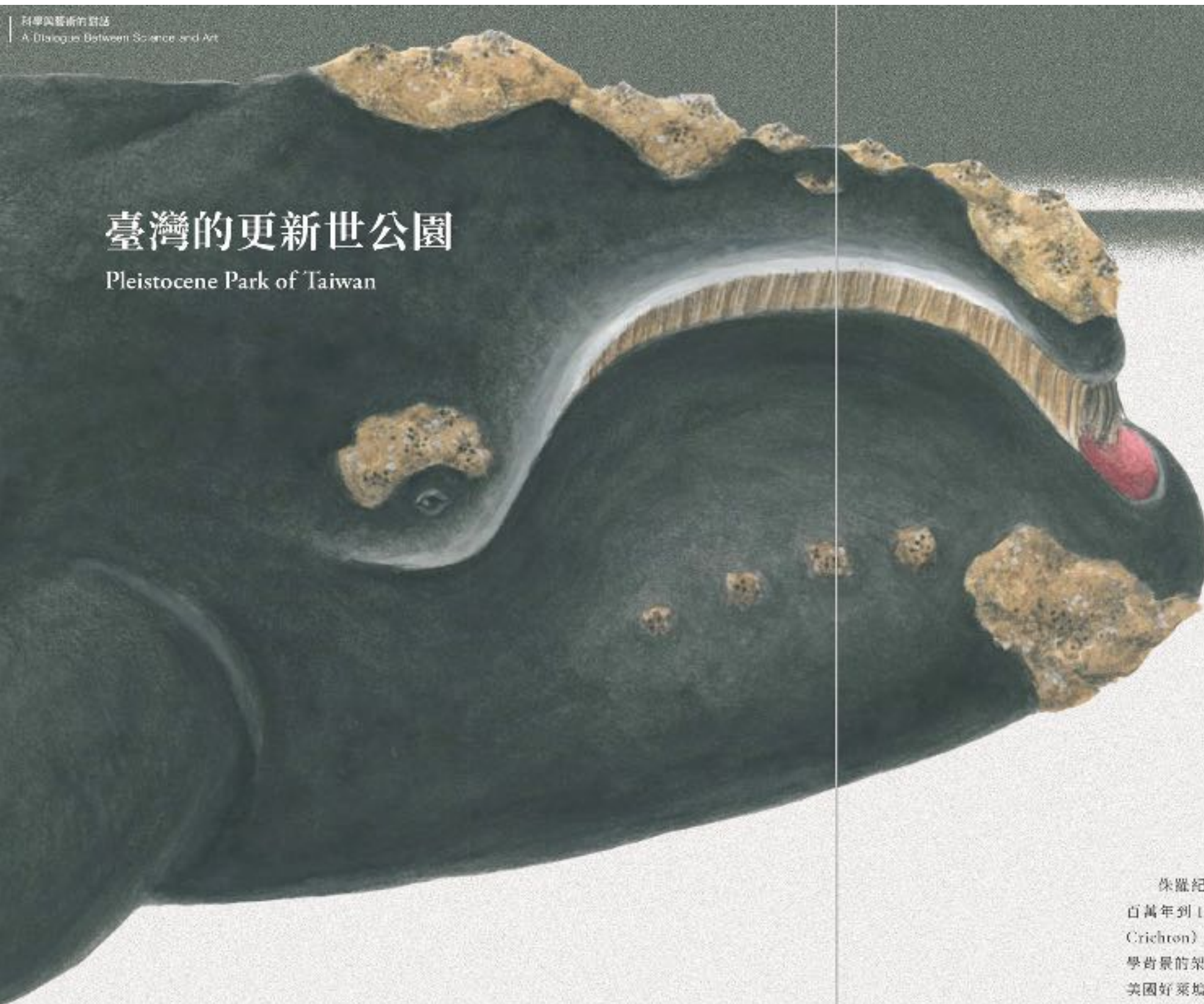


Tsai and Tseng 2022

FIG. 3. Global distribution of the genus *Homotherium* from the Pleistocene; see Table 1 for data sources.

臺灣的更新世公園

Pleistocene Park of Taiwan



蔡政修
Tsai, Cheng-Hsin

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臺灣自然科學
I 由繪圖師陳正廷繪製



<https://www.royalalberthall.com/tickets/events/2018/jurassic-park-in-concert/>

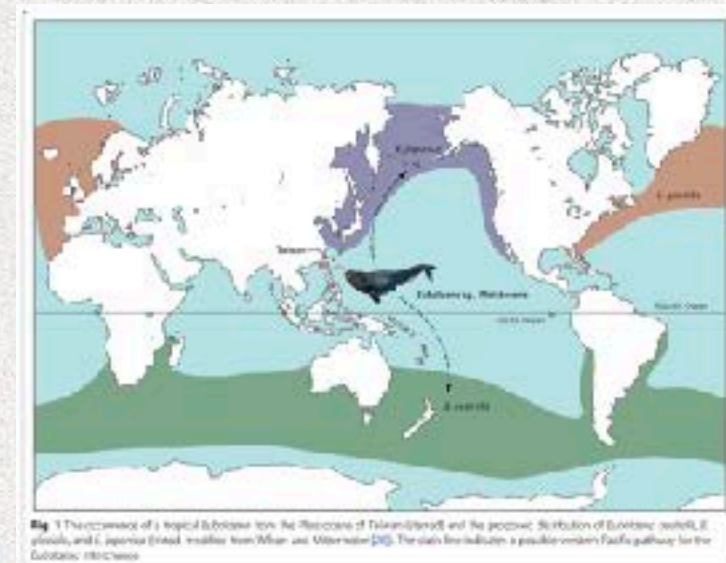
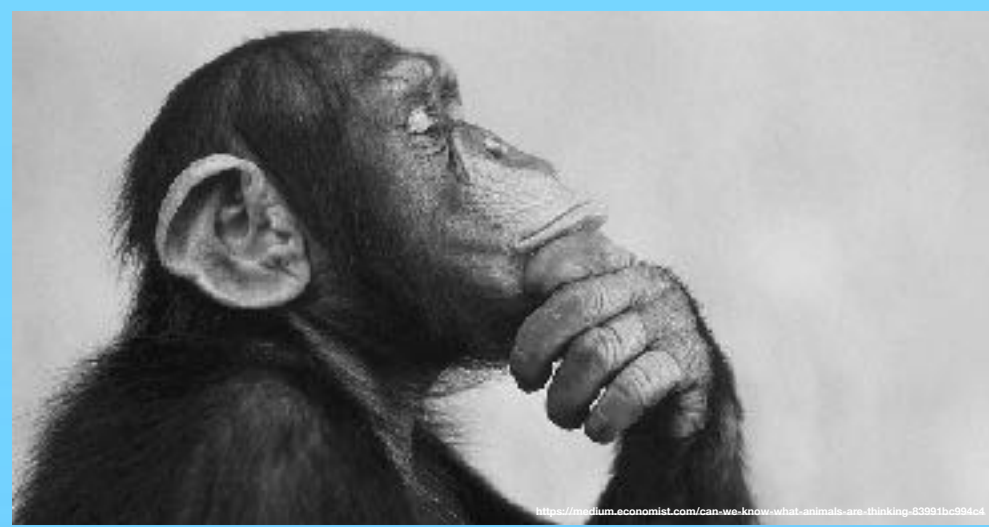


Fig. 1 The occurrence of a typical Euboscra from the Pleistocene of Taiwan (indicated by a black dot) and the geographic distribution of Euboscra species (E. asiatica, E. japonica, E. japonica, and E. japonica) (indicated by red dots). The dashed line indicates a possible eastern Pacific pathway for the Euboscra lineage.

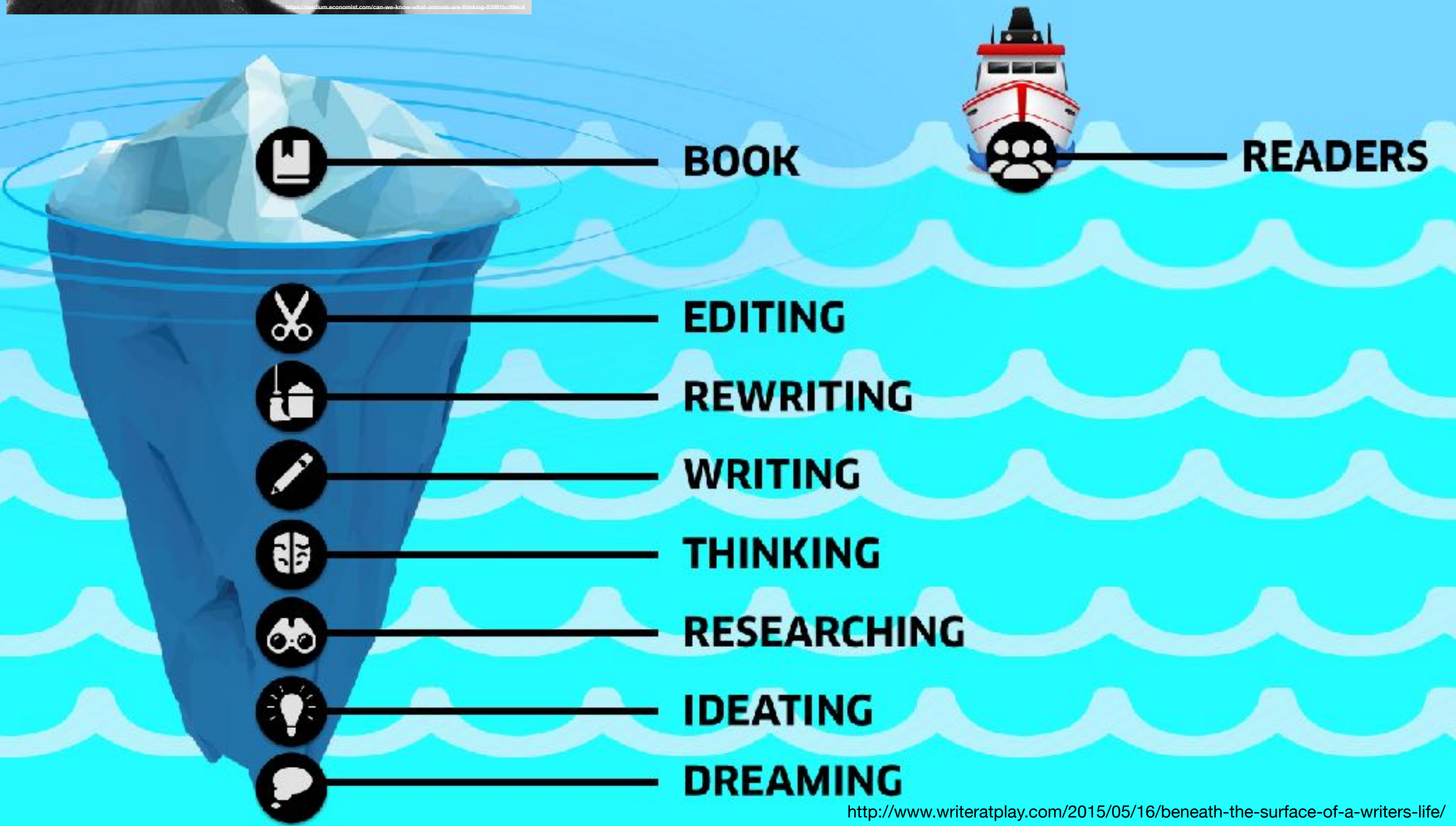
更新世公園，不是侏羅紀公園嗎？

侏羅紀 (Jurassic)，是地球生命歷史中距離我們現在大約 2 億 1 百萬年到 1 億 4 千 5 百萬年前的這一段時間。1990 年由克里頓 (M. Crichton) 所寫出的《侏羅紀公園 (Jurassic Park)》，這本有著科學背景的架構和豐富的想像力來讓這古大型恐龍復活的小說，進而由美國好萊塢拍攝出了在 1993 年上映的同名電影，讓「侏羅紀」這個地質年代的名稱幾乎就和所有古生物研究的年代劃上等號。換句話說，中生代的侏羅紀這一段 5 千多萬年的時期聲名大噪，似乎成了生命至少在 30 幾億年前起源到離我們最近的一個地質時代；更新世 (Pleistocene) 所有古生物研究時間點的代名詞。



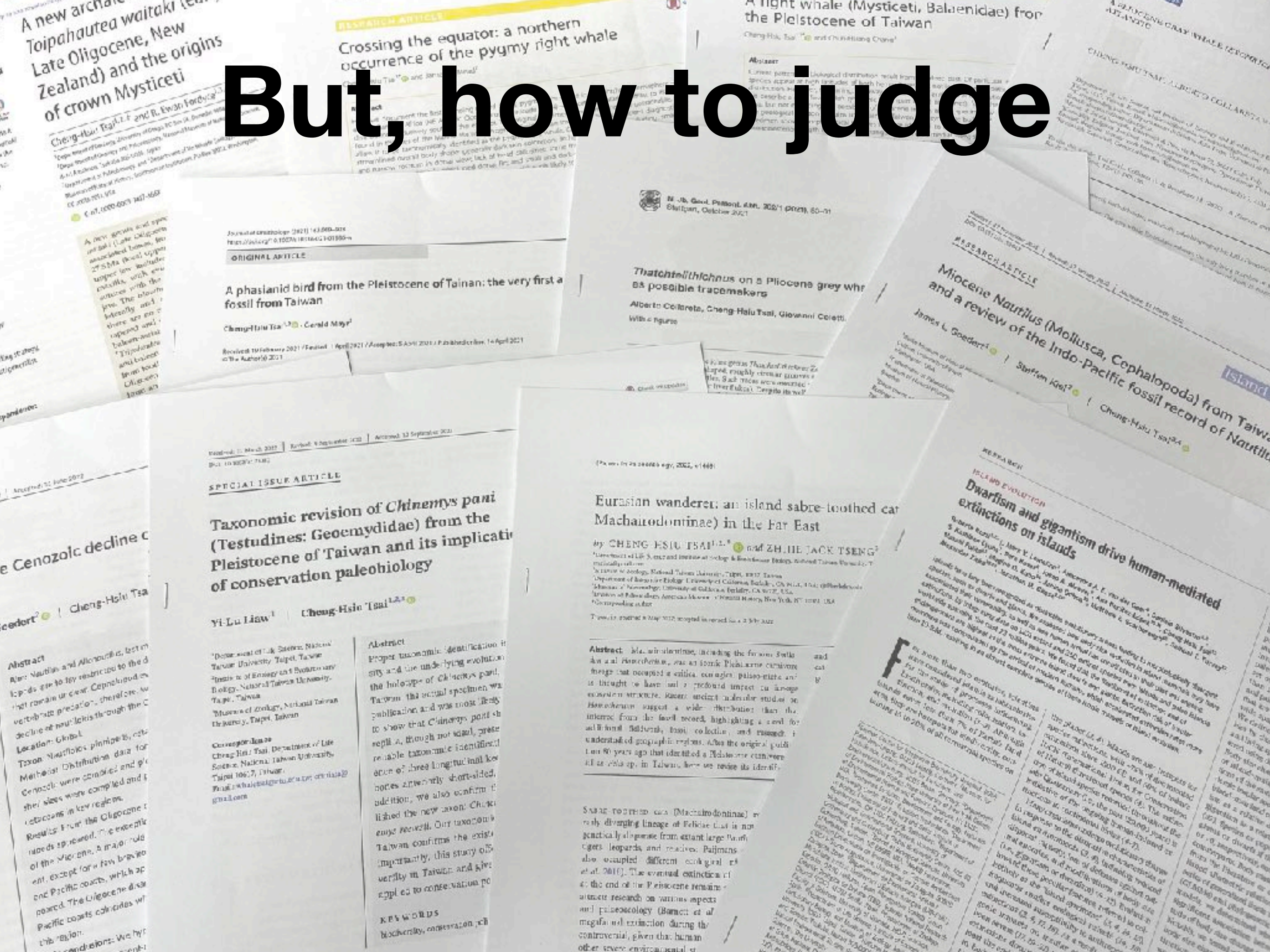


<https://medium.economist.com/can-we-know-what-animals-are-thinking-53991bc094c4>



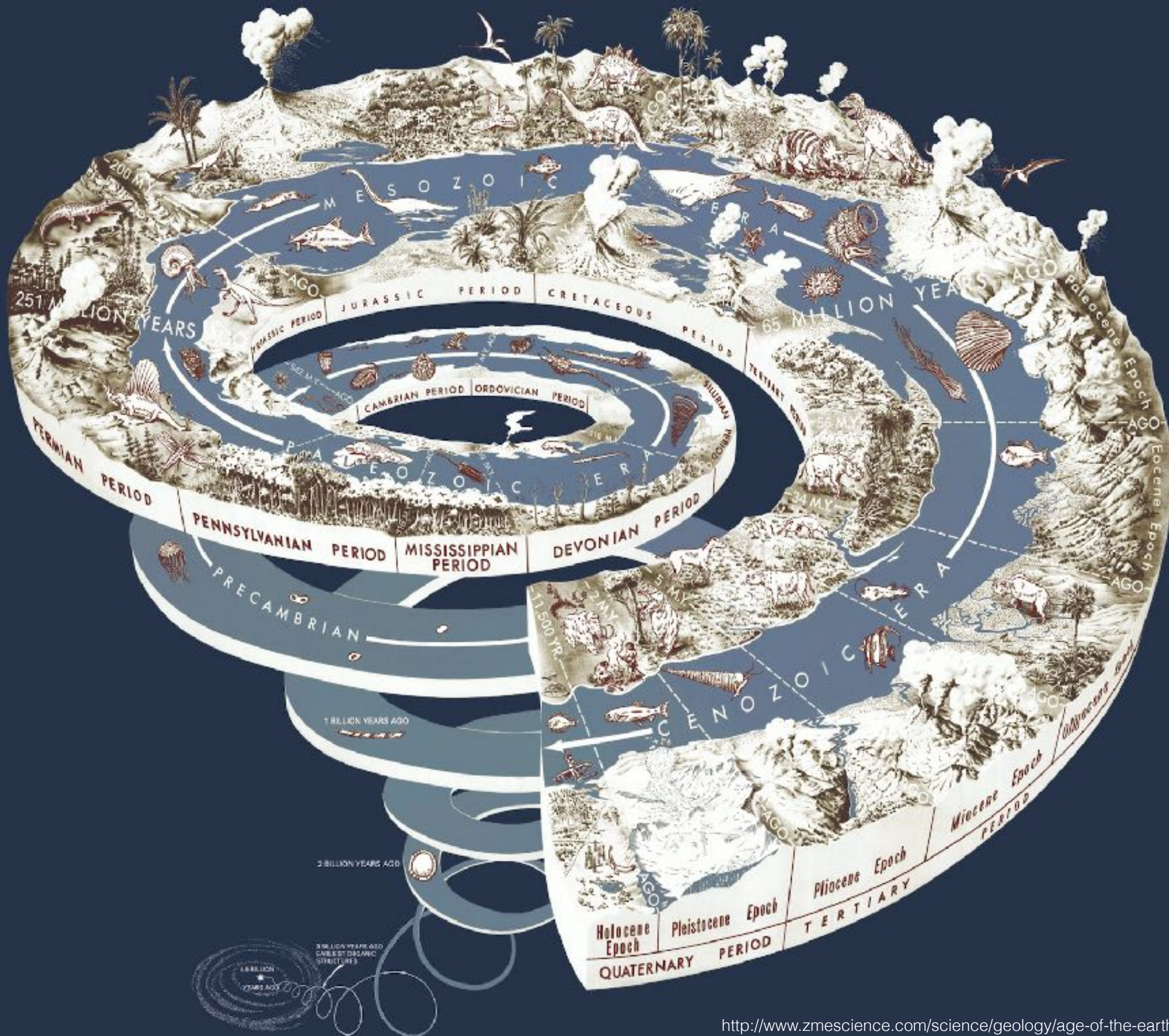
KEEP
BELIEVING
YOURSELF

But, how to judge



[illegible]





Be confident (but not arrogant) and feel free to share your stories/ideas/finds with evidence/support and clear logic flow then, time would tell

