PROGRAMA DE PÓS-GRADUAÇÃO EM ZOOLOGIA

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SELEÇÃO DE CANDIDATAS(OS) ÀS VAGAS DO PROGRAMA DE PÓS-GRADUAÇÃO EM ZOOLOGIA PARA O CURSO DE MESTRADO ACADÊMICO PARA O PRIMEIRO PERÍODO LETIVO DE 2024

PROVA DE INTERPRETAÇÃO DE TEXTO EM LÍNGUA ESTRANGEIRA

A prova escrita abaixo deve ser respondida individualmente pelas(os) candidatas(o)s em folha pautada anexa, à caneta esferográfica. Apenas o número de inscrição deve ser informado tanto no caderno de questões quanto na folha de respostas, de forma que nenhum outro tipo de identificação deve ser colocado. A prova tem tempo previsto máximo de duas (2) horas para resolução. Não podem ser consultados nenhum tipo de material nem outras pessoas. Tanto o caderno de questões quanto a folha de respostas devem ser entregues. As(os) candidatas(os) podem usar uma folha de rascunho. As respostas devem ser em língua portuguesa. É permitido o uso de dicionário impresso. A pontuação é apresentada para cada questão.

Boa prova.

Número de inscrição:

Avalie o Texto 1 e responda (em português) as perguntas 1, 2 e 3.

TEXTO 1

Attributing eponyms to species extends beyond the act of naming; it attaches the societal value system to which these individuals belong. (...) Inspired by the Rhodes Must Fall movement, Smith and Figueiredo (2022) recently proposed that the botanical community should “proactively find solutions to address how to deal with such names and epithets derived from eponyms”.

Their suggestion was not universally welcomed, with critics arguing that it is not the role of science to engage in politically motivated censorship or the ‘cleansing’ of scientific history (Mosyakin, 2022) and that name stability should be a paramount concern in taxonomy (Ceríaco *et*

al, 2023). Furthermore, it is argued that revising names of biological species (which is strongly regulated) and other comprehensive changes would be overly disruptive, requiring an overhaul of the current rules and regulations regarding nomenclature (Mosyakin, 2022; Ceríaco *et al.*, 2023).

In our opinion, these arguments against reforming biological nomenclature do not stand up to scrutiny. To begin with, the naming of species to celebrate and honour people is unambiguously a political act — whether the desire was to impress a colleague, funder or important dignitary, or to celebrate a family member, friend or collector of the specimen. Given that the scientists describing newly documented species in the 19th and early 20th centuries were predominantly of colonizing European nations (Trisos *et al*., 2021), those commemorated were almost universally white, male upper-class Europeans. Second, name revisions would not alter scientific history, as the historical name would remain as a synonym and the identity of the individuals who initially described the species would remain unaltered. This is an important point, as eponyms can provide fascinating insights into the history of biological exploration (Breure & Heiberger, 2019). Third, many biological naming conventions already include recommendations against naming proposals that are considered offensive. However, a name that is considered innocuous by some may be perceived as offensive by others, and names that were once considered inoffensive are not necessarily viewed in the same way in a post-colonial world.

Guedes, P., Alves-Martins, F., Arribas, J.M. et al. Eponyms have no place in 21st-century biological nomenclature. Nat Ecol Evol 7, 1157–1160 (2023).

1. Quais as principais críticas feitas por outros autores às sugestões de Smith e Figueiredo para lidar com nomes de espécies e epítetos baseados em epônimos, e quais foram os autores que fizeram cada uma dessas críticas? (10 pontos)
2. Segundo os autores, como eram os principais cientistas que descreveram novas espécies no século 19 e início do século 20? (10 pontos)
3. Segundo os autores, um nome pode ser considerado universalmente inofensivo por outros pesquisadores e ao longo do tempo? Justifique sua resposta com os argumentos apresentados. (10 pontos)

Avalie o Texto 2 e responda (em português) as perguntas 4, 5 e 6.

TEXTO 2

Attalea palms provide primary habitat to *Rhodnius* spp., vectors of *Trypanosoma cruzi*. Flying from palms, these blood-sucking bugs often invade houses and can infect people directly or via food contamination. Chagas disease (CD) risk may therefore increase when *Attalea* palms thrive near houses. Despite this possible link between deforestation and CD risk, the population-level responses of Amazonian *Attalea* and their resident *Rhodnius* to anthropogenic landscape disturbance remain largely uncharted. We studied adult *Attalea* palms in old-growth forest (OGF), young secondary forest (YSF), and cattle pasture (CP) in two localities of eastern Amazonia. We recorded 1856 *Attalea* along 10 transects (153.6 ha), and detected infestation by *Rhodnius* spp. in 18 of 280 systematically-sampled palms (33 bugs caught). Distance-sampling models suggest that, relative to OGF, adult *Attalea* density declined by 70–80% in CP and then recovered in YSF. Site-occupancy models estimate a strong positive effect of deforestation on palm-infestation odds (β CP-infestation =4.82±1.14 SE), with a moderate decline in recovering YSF (β YSF-infestation =2.66±1.10 SE). Similarly, N-mixture models suggest that, relative to OGF, mean vector density sharply increased in CP palms (β YSF-density =3.20±0.62 SE) and then tapered in YSF =1.61±0.76 SE). Together, these results indicate that disturbed landscapes may support between ~2.5 (YSF) and ~5.1 (CP) times more *Attalea*-dwelling *Rhodnius* spp. per unit area than OGF. We provide evidence that deforestation may favor palm-dwelling CD vectors in eastern Amazonia. Importantly, our landscape-disturbance effect estimates explicitly take account of (i) imperfect palm and bug detection and (ii) the uncertainties about infestation and vector density arising from sparse bug data. These results suggest that incorporating landscape-disturbance metrics into the spatial stratification of transmission risk could help enhance CD surveillance and prevention in Amazonia.

Santos WS, Gurgel-Goncalves R, Garcez LM, Abad-Franch F (2021)
Deforestation effects on Attalea palms and their resident Rhodnius, vectors of
Chagas disease, in eastern Amazonia. PLoS ONE 16(5): e0252071

4. Quais as metodologias usadas pelos autores para estimar os efeitos do desmatamento para as populações de *Attalea* e *Rhodnius*? (10 pontos)

5. Segundo os autores, quais são os efeitos do desmatamento para as populações de *Attalea* e *Rhodnius*? (10 pontos)

6. Segundo os autores, quais são as implicações desses resultados para a saúde pública? (10 pontos)

Avalie o Texto 3 e responda (em português) as perguntas 7, 8 e 9.

TEXTO 3

By enhancing crop productivity and food security, insect pollinators provide a crucial ecosystem service that is under threat due to climate change. So far, the impact of climate change on insect pollinators has mostly been assessed in terms of phenological and spatial shifts, which identify changes in occurrence but fail to capture the effects of climate change on behaviour. Insect pollinators' sensory perception and behaviour are especially vulnerable to the effects of climate change both because insects have only a limited capacity to actively regulate body temperature and because the molecular processes underlying the acquisition, processing and behavioural output in response to sensory signals are temperature dependent. By impairing these processes, elevated temperatures caused by climate change — particularly increasing average temperatures and the increasing frequency and intensity of heatwaves — will have a severe impact on the ecosystem services provided by this important animal group (...).

Mechanisms such as plasticity or evolutionary adaptation could help pollinators adjust to increasing temperatures in their sensory landscape. So far, these mechanisms have mostly been assessed for more general ecological traits such as pollinator phenology and occupancy. We also need a better understanding of how differences in physiology between insect pollinator species affect their responses to temperature and, in turn, the information that they use find flowers. For example, if one sensory system is impaired, some species may be capable of using alternative sensory information, but whether this happens as a result of temperature remains unclear. The few studies that investigate the impact of temperature on insect senses and behaviour are largely restricted to a non-pollinating insect, *Drosophila*, while most research on insect pollinator sensory ecology has been focused on the honeybee *Apis mellifera* and the bumblebee *Bombus terrestris*. To better reflect the diversity of responses of insect pollinators to changes in their sensory world, a broader comparative approach is necessary as we expect that a social bumblebee from the Arctic

and a solitary butterfly from the Amazon rainforest exhibit very different responses to temperature-induced changes in sensory cues. By designing and placing research in a comparative framework, it is possible to improve both the understanding of the mechanisms underlying species responses to a warming world and the efficacy of conservation strategies.

Gérard, M., Vanderplanck, M., Restrepo, C.E. et al. Sensory perception and behaviour of insect pollinators under climate change. Nat. Clim. Chang. 13, 596–598 (2023).

7. Segundo o texto acima, como as mudanças climáticas têm afetado a segurança alimentar global? (10 pontos)
8. De acordo com o estudo acima, como as mudanças climáticas afetam a fisiologia dos insetos? (10 pontos)
9. Aponte as críticas e as soluções propostas pelos autores nos estudos de efeitos de mudanças climáticas discutidos acima. (20 pontos)