**PROGRAMA DE PÓS-GRADUAÇÃO EM ZOOLOGIA**

**EDITAL n. 05*/*2022**

**SELEÇÃO DE CANDIDATES ÀS VAGAS DO PROGRAMA DE PÓS-GRADUAÇÃO EM ZOOLOGIA PARA O CURSO DE MESTRADO ACADÊMICO PARA O PRIMEIRO PERÍODO LETIVO DE 2023**

**PROVA DE INTERPRETAÇÃO DE TEXTO EM LÍNGUA ESTRANGEIRA**

A prova escrita abaixo deve ser respondida individualmente pelos candidatos 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 consiste em perguntas de interpretação de texto em língua estrangeira e tem tempo previsto máximo de duas (2) horas para resolução. As respostas devem ser em língua portuguesa. É permitido o uso de dicionário impresso. Não podem ser consultados nenhum outro tipo de material nem outras pessoas.

Boa prova.

**Número de inscrição:**

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

**TEXTO 1**

Recent analyses have reported catastrophic global declines in vertebrate populations. However, the distillation of many trends into a global mean index obscures the variation that can inform conservation measures and can be sensitive to analytical decisions. For example, previous analyses have estimated a mean vertebrate decline of more than 50% since 1970 (Living Planet Index2). Here we show, however, that this estimate is driven by less than 3% of vertebrate populations; if these extremely declining populations are excluded, the global trend switches to an increase. The sensitivity of global mean trends to outliers suggests that more informative indices are needed. We propose an alternative approach, which identifies clusters of extreme decline (or increase) that differ statistically from the majority of population trends. We show that, of taxonomic-geographic systems in the Living Planet Index, 16 systems contain clusters of extreme decline (comprising around 1% of populations; these extreme declines occur disproportionately in larger animals) and 7 contain extreme increases (around 0.4% of populations). The remaining 98.6% of populations across all systems showed no mean global trend. However, when analysed separately, three systems were declining strongly with high certainty (all in the Indo-Pacific region) and seven were declining strongly but with less certainty (mostly reptile and amphibian groups). Accounting for extreme clusters fundamentally alters the interpretation of global vertebrate trends and should be used to help to prioritize conservation efforts.

*Leung, B., Hargreaves, A. L., Greenberg, D. A., McGill, B., Dornelas, M., & Freeman, R. (2020). Clustered versus catastrophic global vertebrate declines. Nature, 588(7837), 267–271*

1. Qual a proposta alternativa apresentada pelos autores? Descreva o resultado encontrado a partir dessa nova abordagem.
2. Quais as limitações dos antigos índices globais de diversidade, que a proposta alternativa deste artigo visa substituir?  Descreva o resultado encontrado a partir dessa nova abordagem.

**Avalie o Texto 2 e responda (em português) as perguntas 3, 4 e 5.**

**TEXTO 2**

Global civilization is reaching important boundaries of what the Earth’s biosphere can support (Steffen et al. 2015). Human activities are altering the distribution and flows of surface, subsurface and atmospheric waters at regional scales, undermining the resilience of aquatic, riparian and coastal ecosystems (Rodell et al. 2018). In clarion calls published over the past quarter century (see Ripple et al. 2017, 2019) the world community of scientists has identified eight global and overlapping trends of environmental deterioration, all of immediate concern for human happiness and prosperity (Heino et al. 2009; Vörösmarty et al. 2010). Freshwater ecosystems are central to five of these trends: declining freshwater availability, forest loss, dwindling biodiversity, climate change, and human population growth. Although the profound consequences of anthropogenic activities on the biosphere are widely appreciated, freshwaters are often missing from the discussion (e.g., Lenton et al. 2019).

Freshwater (<500 ppm dissolved salts) is a renewable, but effectively finite, natural resource. Well-managed watersheds and waterbodies provide critical ecosystem services that maintain local and regional hydro-climatic regimes, and support human food and energy production, waste disposal and remediation, transportation, and recreation (Aldaya et al. 2012; Hoekstra and Mekonnen 2012).

*Albert, J.S., Destouni, G., Duke-Sylvester, S.M. et al. Scientists’ warning to humanity on the freshwater biodiversity crisis. Ambio 50, 85–94 (2021). https://doi.org/10.1007/s13280-020-01318-8*

1. Como a alteração nos fluxos de água derivada de ações antrópicas afeta os ecossistemas aquáticos?
2. Quantas e quais as tendências de deterioração ambiental que estão estritamente correlacionadas com os ecossistemas dulcícolas?
3. Quais os serviços ecossistêmicos que ambientes aquáticos fornecem à população humana?

**Avalie o Texto 3 e responda (em português) as perguntas 6 e 7.**

**TEXTO 3**

Stink bugs (Hemipteran: Pentatomidae) are, in general, polyphagous on a variety of plant species. Among them, some are considered host plants, *i.e.,* plants that provide not only nutrients but allow nymphal development and adult reproduction. Some other plants are considered “associated” plants, *i.e.*, plants that provide some nutrients/water, and shelter, but on which nymphs do not complete development and adults do not reproduce (see discussions in Smaniotto and Panizzi 2015; Panizzi and Lucini 2017). The majority of stink bugs in the Neotropics spend their lifetime on host and associated plants, either cultivated or non-cultivated. This allows them to complete several generations in a year, which enables them to become quite abundant (Panizzi 1997). The dynamics in the availability of preferred host plants allow some species to be more favored than others. This depends on their polyphagy. On the one hand, more general feeders have a greater chance to succeed than those species with a more restricted diet, because they can find their hosts more easily. On the other hand, general feeders, by being more active on a greater variety of plants, may suffer greater pressure of biotic (*e.g.*, action of natural enemies) and of abiotic (*e.g.*, action of extremes of rain/sunlight/temperatures) factors.

*Panizzi AR, Lucini T, Aldrich JR. Dynamics in Pest Status of Phytophagous Stink Bugs in the Neotropics. Neotrop Entomol. 2022 Feb; 51(1):18-31. doi: 10.1007/s13744-021-00928-5*

1. Segundo o texto e a definição dos autores, qual é a principal diferença para classificar uma planta como hospedeira ou associada a uma determinada espécie de percevejo?
2. Qual a vantagem de percevejos mais generalistas em relação a espécies com dietas mais restritas? Quais são as consequências desde o ponto de vista populacional?

**Avalie o Texto 4 e responda (em português) a pergunta 8.**

**TEXTO 4**

*Aedes aegypti* and *Culex quinquefasciatus* are the main urban vectors of arthropod-borne viruses causing human disease, including dengue, Zika, or West Nile. Although key to disease prevention, urban-mosquito control has met only limited success. Alternative vector-control tactics are therefore being developed and tested, often using entomological endpoints to measure impact. Here, we test one promising alternative and assess how three such endpoints perform at measuring its effects. We conducted a 16-month, two-arm, cluster-randomized controlled trial of mosquito-disseminated pyriproxyfen (MD-PPF) in central-western Brazil. We used three entomological endpoints: adult-mosquito density as directly measured by active aspiration of adult mosquitoes, and egg-trap-based indices of female *Aedes* presence (proportion of positive egg-traps) and possibly abundance (number of eggs per egg-trap). Using generalized linear mixed models, we estimated MD-PPF effects on these endpoints while accounting for the non-independence of repeated observations and for intervention-unrelated sources of spatial-temporal variation. On average, MD-PPF reduced adult-mosquito density by 66.3; *Cx. quinquefasciatus* density fell by 55.5%, and *Ae. aegypti* density by 60.0%. In contrast, MD-PPF had no measurable effect on either *Aedes* egg counts or egg-trap positivity, both of which decreased somewhat in the intervention cluster but also in the control cluster. Egg-trap data, therefore, failed to reflect the 60.0% mean reduction of adult *Aedes* density associated with MD-PPF deployment.

*Garcia KKS et al. Measuring mosquito control: adult-mosquito catches vs egg-trap data as endpoints of a cluster-randomized controlled trial of mosquito-disseminated pyriproxyfen. Parasit Vectors. 2020 Jul 14;13(1):352. doi: 10.1186/s13071-020-04221-z*

1. Em relação à estratégia de controle usando mosquitos disseminadores de inseticidas, os métodos e resultados de pesquisa descritos no texto acima responda:
2. Qual o problema de pesquisa que o texto aborda?
3. Elabore a pergunta de pesquisa baseado no objetivo dessa pesquisa.
4. Quais os métodos de captura de mosquitos foram usados?
5. Baseado no texto qual seria a conclusão da pesquisa?