**Honours essay options**

**Timm Hoffmann**

Using southern African case studies, critically discuss the impact that landscape fragmentation might have on ecosystem services.

READING: Mitchell et al 2015. Reframing landscape fragmentation’s effects on ecosystem services. Trends in Ecology & Evolution 30(4): 190-198.

**Mike Picker**

Write an essay on the varied ecological impacts of termites and their termitaria.

Focus on pedogenesis, and influences on community composition and higher level ecosystem functioning.

**Susan Cunningham**

What is “behavioural buffering” in the context of climate change, could it help animals persist in warming environments, and are there any costs?

**Mike Lucas**

Should we worry about climate change, or will technological advances "save the day"?

**Colin Attwood**

From sponges to blue whales: Adaptations to filter-feeding across the phyla and vulnerability to plastic particles.

In this essay contrast how different phyla have adapted anatomically and behaviourally to this most prevalent form of feeding in the ocean, and how each is affected by the recent threat of particulate plastic waste.

**John Bolton**

Seaweed diseases and their current and potential impacts on global seaweed aquaculture

**Coleen Moloney**

Mixotrophy in marine ecosystems: an important but neglected ecological process.

Mixotrophy is the capability of living organisms to use both autotrophic and heterotrophic modes of nutrition. It is much more widespread than was previously documented. Recent studies have suggested that including mixotrophy in conventional depictions of marine planktonic foodwebs might fundamentally change our understanding of how these foodwebs function and the roles of different groups in biogeochemical cycles. In this essay, document new understanding of marine mixotrophy and discuss how it might influence the uptake and transfer of macronutrients (carbon, nitrogen and phosphorous) among traditional "phytoplankton" groups.

**Deena Pillay**

Why is biodiversity conservation relevant?

**Justin O’Riain**

Are PCB's a threat to our marine apex predators in South Africa?  Review the current literature on PCB levels in marine apex predators in South Africa and globally and infer from this the likely threat to the reproduction and survival of South Africa's marine apex predators.

**Jeremy Midgley**

Solutions to the rhino poaching problem

**Peter Ryan**

Allochrony as a segregating mechanism. Closely related species that have limited ecological segregation (sometimes termed allospecies) are usually segregated spatially, but resource use also can be segregated in time. This is perhaps best demonstrated in central place foragers such as colonial seabirds, which are constrained to forage within commuting distance of their colonies during the breeding season. By breeding at different times, closely related species can occupy the same breeding location. Review the evidence for allochrony in seabirds and other organisms, and consider how such species might be affected by climate change.

**Ed February**

Another nuclear reactor.

Does South Africa need one?

**Jacquilene Bishop**

How is DNA sequencing of ancient samples providing us with a better understanding of the prehistory of the human species?

**Anusuya Chinsamy-Turan**

Feathered dinosaurs, and the evolution of birds

**Cecile Reed**

“Cape Town is about to run out of freshwater.  Debate: 1) possible reasons behind this crisis, 2) options for combating an immediate worst case scenario and 3) how to prevent history repeating itself in years to come”.

**Arjun Amar & Petra Sumasgutner**

Exploring Gloger’s eco-geographic rule

Gloger’s eco-geographic rule states that animals should be darker in more humid or wetter environments (Gloger 1833). Evidence has recently been presented that it also applies to plants (Koski & Ashman, 2015). In this essay, I would like to you discuss the origin of this eco-geographic rule, the empirical support for this rule and the likely mechanisms that are proposed to explain it (e.g. Burtt & Ichida, 2004; Tate et al. 2016).

References

Gloger, C. L. *Das Abändern der Vögel durch Einfluss der Klima's* (A. Schulz, 1833).

Koski, M. H., & Ashman, T. L. (2015). Floral pigmentation patterns provide an example of Gloger's rule in plants. *Nature Plants*, *1*, 14007.

Burtt Jr, E. H., & Ichida, J. M. (2004). Gloger's rule, feather-degrading bacteria, and color variation among song sparrows. *The Condor*, *106*(3), 681-686.

Tate, G. J., Bishop, J. M., & Amar, A. (2016). Differential foraging success across a light level spectrum explains the maintenance and spatial structure of colour morphs in a polymorphic bird. *Ecology letters*, *19*(6), 679-686.

**Tony Verboom**

Plants and the terminal Cretaceous extinction event

I would like this essay to explore how plants survived the terminal Cretaceous extinction event, and how this event affected the composition and structure of plant communities worldwide.