Fe - Fog Ecology

Joh, I have taken the liberty of changing the title slightly. I think if Kurt Loris is there, I could leave the plains, as I know less about them anyway. I think the dunes story would be sufficient. And it all ties in with fog being just one – very important – component of the ecosystem. I have written an abstract and have a lot of notes. You will see that I need a few additional papers and books. Please send any and all up with Graeme – you have my permission.

I don't see Kurt Loris's paper in the final list. Have I overlooked it? Do you know if he is still coming. Why is Snake's paper in the desert section and not the fog measurement section??

What do you think of the final section of the abstract? Is it too far out of line. It is the type of thing that senior scientists do when they have no new data. Another idea is, is there a section of the beetle population data that could be put in here referring to fog, rain and long-term beetle numbers. You may have something off the top of your head that would make a better conclusion.

The Ecology of Fog in Namib Sand Dunes

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Abstract: Mobile sand dunes occupy more than 70% of the coastal Namib Desert, an area that receives less than 20 mm of rain per year. Fog occurs on 60-200 days per year making it a predictable source of water for desert organisms and the basis of functioning of the mobile dune ecosystem. Rain is essential for germination and establishment of two perennial plant species, one grass *Stipagrostis sabulicola* and one dwarf shrub *Trianthema hereroensis*, that use fog water for continued growth and reproduction. These two plant species support a vertebrate (oryx, lizards, golden mole) and invertebrate fauna (tenebrionid beetles, fish moths, termites, ants) that directly or indirectly use fog as their sole water source and wind blown plant detritus for much of their energy needs. As an arid and newly independent country with a long colonial history, the Namibian education system is looking for examples of functioning or arid ecosystems that are applicable if not unique to itself. The Namib fog ecosystem provides examples of marine-terrestrial interactions linked by fog, of the importance of water for living organisms, of the role of subsidies in energy-limited ecosystems, of the interactions between plants and animals, of adaptations to arid environments and it can be used to simply draw attention to the potential effects of global climate change.

1. INTRODUCTION

1.1 Brief overview of the Namib Sand Sea

Age (since Benguela upwelling became established which would have coincided with fog presence), source of sand, main types of dunes, dominant winds & sand movements, aspects of a dune: slipface, slope etc. (John Ward papers on dunes, Lancaster's book (from Gobabeb), Ward Lancaster and Seely in SAJS)

1.2 Flora of the Sand Sea within 60 km of the coast

Stipagrostis sabulicola (Louw and Seely – or the other way around), Trianthema hereroensis – (Louw , de Vos and Seely and all Karen Nott papers) Especially NB is Seely paper in Isreal Journal of Botany commemorative issue for Evanari (for Kahani Dune)

1,3 Fauna of the Sand Sea

Tenebrionids (all seely, Hamilton, Henwood, Roberts, Janet Rasmussen,), fishmoths (Rick Watson), ants (Barbara Curtis), termites (Seely and Crawford), golden moles (Laura Fielden and Seymour), Mike Robinson on Aporosaura, all Angolosaurus papers with Seely/ Mitchell etc., Hattingh, Canadian guy who did uptake of water from unsaturated atmospheres by larvae – very NB – should be in physiology paper.

Could bring in mention of climate change and possible consequences for upwelling. Wish I knew what they were. What effect an increase or a decrease in fog would have on the ecosystem. I could say that change in fog frequency and amount would have bigger effect that change of rain?

Could also give it a pedagogic twist, say that we are using this to explain the use of drought subsidies – even more far fetched, but what do you think?

5. REFERENCES