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Dispersal patterns of members of the *Protea*-associated *Ophiostoma splendens* complex in South Africa

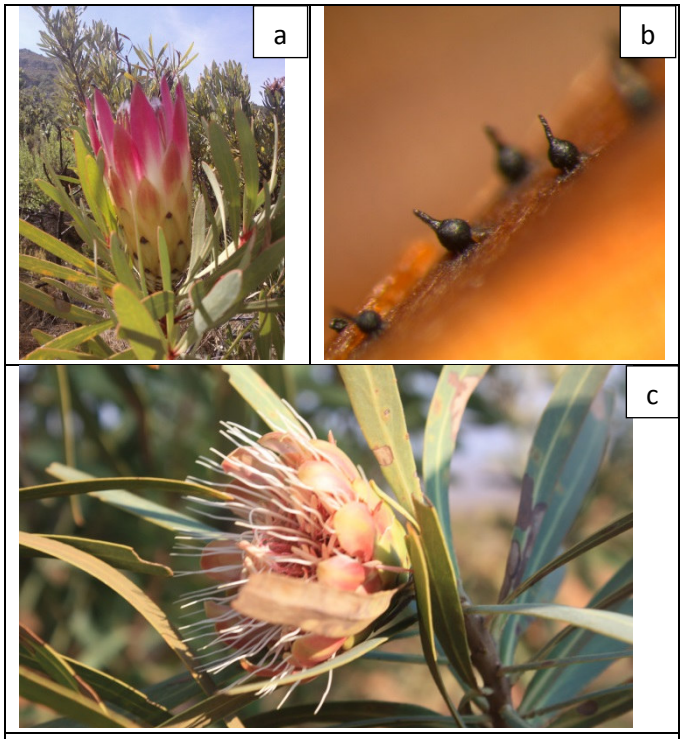

Figure 1: Sample panel of *Protea* hosts and an *Ophiostoma* species of interest. a.) *Protea repens* flower, b.) *Ophiostoma splendens* on a *Protea repens* seed inside the infructescence, and c.) A *Protea gaguedi* flower from Northern KwaZulu-Natal.

Overview: The well-known Cape plant genus *Protea* houses a suite of different organisms, which interact with each other, often forming unique ecosystems within protea seed cones. The associated organisms include bacteria, fungi, beetles and mites. I am particularly interested in ophiostomatoid fungi in the genus *Ophiostoma* found in South African *Protea* species. My research focusses specifically on members of the *Ophiostoma splendens* complex (*O. africanum*, *O. protearum* and *O. splendens*)

Protea repens presents an interesting host, which like other *Protea* species houses numerous other organisms in their cones. *P. repens* makes for an interesting host for various reasons, namely:
1.) It is phylogenetically unique from the rest of the *Protea* species
2.) Ophiostomatoid fungi hosted here seem to be host exclusive
3.) It is the most widespread *Protea* in the Cape core Subregion of the Cape Flora.

The first aim of my study is to develop microsatellites to use as an instrument to study some of the fascinating *Ophiostoma* fungi found in *Protea* species. Using microsatellite markers, the second aim is to study the dispersal patterns of *P.repens* hosted *Ophiostoma splendens*. My third aim is to study the dispersal patterns of *O. protearum* and *O. Africanum* with the intent of understanding whether geography or host dictates the movement of these species across the landscape. Overall, this will help unravel patterns of migration for these three species and, at a smaller scale, test the hypothesis of a north-south migration of *Ophiostoma* species.

In order to address these aims *Protea* infructescences from *Protea repens*, *P. caffra*, *P. dracomontana* and *P. gaguedi* have been collected from 14 locations across South Africa with an additional two locations still to be collected. The *Ophiostoma* species in question have been isolated, and my isolate number currently stands at 360 samples from different localities and different hosts. I am currently

working on the DNA extraction and primer design part of this research, and once they have been developed, I can use them to answer the research questions outlined above.

Results from this study should improve our understanding of the *Ophiostoma splendens* complex, and contribute to our understanding of the *Protea* ecosystem.