

### Participating Students and Contributions:

All students had individual projects that were related to the main research objectives. Each student turned in a written summary of their completed work and results from their research experience at the end of their term. They also presented and discussed their results as a group.

#### *Summer 2007:*

Kara Jorgensen: Kara selected Australia as her focus for the database. She was able to calculate Simpson and Jaccard indexes for the families and genera in Australia as compared to Madagascar and Southeast Asia. These indexes and a cladistic analysis (PAE; Parsimony Analysis of Endemicity) mainly support that the basal taxa in Australia are more similar to Southeast Asia than Madagascar. Although, as she and the other students learned, it was not necessarily a uniform agreement. We discussed why this might be the case and critically examined the results.

Therese Parys: Therese selected Madagascar as her focus for the database. She also conducted the same analyses as Kara for Madagascar as compared to Australia and Southeast Asia. Therese found more support linking Madagascar with Australia for the indexes at the genus level versus the PAE results, which confirmed Madagascar's assemblage as having less in common with the other two regions.

Daniel Rojas: Daniel selected Southeast Asia as his focus for the database. He also confirmed that in a cladistic analysis Southeast Asia's basal flora matched Australia more closely. However, the indexes provided more mixed results, as confirmed by Kara's research.

#### *Fall 2007:*

Kimberly Meints: Kimberly selected Australia, and also helped with corrections to Southeast Asia. Because we now had five regions to examine, she recalculated Simpson and Jaccard indexes for the families and genera in Australia and Southeast Asia as compared to all other regions. We had the most complete data for the basal ferns, so our overall analyses were based on this subset of the flora. Surprisingly, her results indicated that Australia had the highest fern similarity with Africa or India at the family level (Simpson and Jaccard respectively), but this changes at the genus level. Kim found that PAE analysis supported Australia and Africa similarities at the genus level, but at the family level, there are three parsimonious trees supported with Australia in an unresolved monophyletic group with India, Africa, and Southeast Asia.

Therese Parys: Therese returned to the project and was really enthusiastic about it. She continued with focusing on Madagascar, but also helped with corrections to other regions. Therese found for the ferns that Madagascar showed the highest similarity indexes with Africa and India at the family level, followed by Australia and Africa at the genus level.

Ashley Stilwell: Ashley selected India as her focus for the database. This proved to be the most challenging region to obtain complete floral records, however, the fern content is now relatively complete in the database. She found that India has high fern family and genus percentages with Madagascar and Australia. Yet when all are analyzed cladistically using PAE, India and Southeast Asia or Australia at the family level are supported as sharing more taxa.

Kay Wilwerding: Kay selected Africa as her focus for the database. Her results indicate that the African fern taxa share the most similarity to Madagascar and India at the family level, and Madagascar and Australia at the genus level when compared to all other groups. PAE results link Africa to Australia at the genus level, and at the family level it is paraphyletic with Madagascar at the base of the tree. These results support that Madagascar and Africa share several basal fern taxa, which may be expected considering their history, fern dispersal and geographic locations.

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