Co-Variate Discussion:

I will confine my comments to the chart that you sent me. Currently the data is in a different form, but is not available until Hans get finished with his programming – which is taking too long for you guys.

There is no reason why you shouldn’t approach the questions with a completely fresh approach anyways.

Introductory comments follow:

Column A: plant abbreviation

Column B: estimate of reward per flower(inflorescence) per species. Just a very rough estimate. Don’t exaggerate the meaning to many significant figures; it is just the linear measurements (h \* w \* d) of the flower. Just a perceptual estimate of the difference between what is likely to be a rewarding experience versus a not so rewarding one.

Column C: plant name

Column D: the basic ecological life form of plant

Column E: Classic description of floral structure. Bowl or platform flowers do not exclude any possible vector species (+/-). “Exclusion” states the type of physical exclusion the floral morphology results in. Wind pollination, when the major form of pollination, is mentioned for plant species upon which ~~vectors~~ pollen robbers have been observed. “Tiny & low-mid is a category that should just be omitted and changed to bowl&platform. Wind are a unique kind of bowl&platform

Column F: Describes the insect morphologies excluded by column E.

Column G: Exclusion by size: feeble excludes **all** large insects completely. Strong undoubtedly should be also size correlated in some numeric way as well.

Column H: Describes morphology of flower of each plant species relative to corolla shape and the types of vectors it succeeds in excluding.

Column I: a short-hand reference to column H.

Column J: Listing of known plant species which have co-evolved with vector specialists (density-independent specialization over wide geographic ranges).

Column K: Listing of the potential vector genera that may be available in the field data that are, in fact, specialists on the plant. Comp=several different genera of vectors which are semi-specialized to several related genera of Compositae. This category also includes butterflies with known host plants for their larvae, since the females have to visit those plants over all others choices in the environment for oviposition.

Column L: Exclusion for physically closed flowers that must be pried open by the vectors in order to achieve the pollen and nectar. Very few types of pollinators know how to do this.

Column M: Exclusion by flower color. (We are on very thin ice here, since we do not have photos of the flower types with UV filters (e.g., insect eyes). However, flowers that are red, blue and violet, generally are seen as gray by most insects, and therefore unattractive. Bumblebees, honeybees and hummingbirds see these colors very clearly and are differentially attracted to them. Bright signifies white, yellow or potentially UV-reflective flowers. (admittedly guesswork here).

Column N: Exclusion suspended flower that must be approached from the bottom while in flight (tricky flying, to say the least); which very few vector species are either able to do or care to spend the extra effort to do.

Column o: time of diel availability. Very few of our vectors are active at night, and very few of the flowers are visible at night. Categories refer to time of availability.

Column P: Handling Exclusion is relevant to bees and the bee-wasp ()Pseudomasaris) ONLY. It pertains to challenge the bee has in collecting the pollen to carry back to the nest. Huge pollen cannot be swallowed, nor carried in a hairy pouch; tiny pollen can be swallowed, but is not efficiently carried in a hairy pouch. Other pollen types can be carried in the usual furry pouch, in the stomach or glued to the hind-legs (i.e., bumble- and honey-bees).

Column Q: Can the bee land on the flower. “not useful” is only for mating. “Weak” you can land on it but not so much advertising.

Column R: Refers to the position of the pollen in a bilaterally symmetrical and horizontally positioned flower. “Nototribic” refers to the problem of requiring the vector to turn upside-down inside the flower to gather the resource (only several megachilid bees in our system our able to do this).

Column S: Refers to the community type in which the plant species is most likely to be encountered (soil-water endemism, etc.)

Column T: Genetic compatibility of breeding system refers to the necessity of outcrossed pollen for seed fertilization or not. (A few species are guesswork)

Column U: Immigration traits of the seeds/fruit. For modelling the likelihood of plants to invade new research plots. Potential is higher for seeds scattered by wind or translocated by animals in their stomachs/poop (i.e., fruit) than for run-of-the-mill seeds that just drop to the ground under the parent plant.