Rapid Ohia death and Hawaiian forest communities:

I. Possible research Questions:

2. Thanks also for the ohia summary.  Sounds like ohia and the contemporary forests are perfectly setup for a major shift, at least vegetation wise.  You guys previously proposed studying alternate stable states among ohia v. koa forest, would you anticipate something similar following disease-driven ohia mortality? Ohia v. ferns or ohia v. invasives?  Could this disease just stop recruitment and colonization of ohia onto 'virgin' lava areas?  
  
3. Here are the questions that initially motivated me:  
  
A. **What are the community and ecosystem consequences of ohia mortality, caused by*Ceratocystis fimbriata?*** I am interested in the the consequences of species extinctions, and disease outbreaks like this offer an opportunity to examine what happens when a single species is naturally manipulated, which is rare in other types of disturbance (in my opinion).  This is a pretty broad question, and could be addressed in so many ways.  Changes in vegetation will be a primary change to measure, and it sounds like they could be major, as might changes in leaf litter and resulting nutrient flux, etc.  But I am also interested in direct and indirect effects on invertebrates and birds that include grazers, pests, pollinators, non-consumers (habitat users) etc.  I tend to take a food-webby perspective on addressing this question, thinking about the ins-and-outs of focal species.  If there is a well-developed food/interaction web, that could help direct the question towards certain interactions that are most likely to be severed by the death of ohia, and the people who know the forests best (ie, not me) could help identify important interactions.  Incorporating multiple scales and some time will be important, because obviously, at the scale of a tree, there may be big effects on less mobile consumers like invertebrates, but for mobile birds, they may just fly to intact forest to get what they need.  
  
B. **Will changes in forest structure and composition affect avian malaria dynamics?** Presumably the decline in live ohia, and the response of other vegetation, will affect native and non-native birds, and conceivably will affect mosquito habitat.  This is also a big question, but probably not radically different from what Dennis and Carter have been doing for years.  Its also a variation on or a piece of my previous question.   
  
C. **Are there differences in tree susceptibility, and what factors affect which individuals or chunks of forest are susceptible?** Are there alternate hosts and reservoirs, and does the tree/vegetation community affect spread? This is less within my skill set and background, but its (obviously) critical to understanding the disease, limiting spread and developing conservation strategies, and predicting the effects on the community.  A lot of other people would ask this first.   
  
I have a bias towards addressing A and C simultaneously, based on experience.  By the time I began studying the community level-effects of frog declines and extinctions in Sierra Nevada lakes, there were so few intact, disease-free frog populations left that I was somewhat limited in my ability to compare communities pre- and post- frog decline.    
  
5. for rapidly assessing community changes, the people best qualified are the researchers who already know a regions' flora/fauna best.  I am, essentially, an aquatic ecologist who focuses on high mountain lakes.