Questions Needing to be Addressed (from CY2005 meeting notes):

1. Improve Methods to Predict Bark Beetle Activity
    a. Duration of outbreak (rate of spread); when will it occur? Traps, Risk Map.
    b. Other sources to predict landscape outbreak/susceptibility/impacts. Remote sensing, climatology, FIA data.
    c. Stress physiology and climate change.
    d. Long-term management affects.
    e. Quantification of low, moderate, high bark beetle activity (species specific).
    f. What constitutes an "outbreak?" Use of SPB model definition?
    g. Spruce beetle activity in blue spruce.
    h. Is MCH affective against spruce beetle? If so, at what levels?

2. Clarify Interactions between Bark Beetles and Fire
    a. Fire, fuels, and beetles. Interaction among efforts is needed to define long-term ecological relationships. How do dwarf mistletoes or other pathogens interact in these relationships?
    b. How does the above mesh with National Fire Plan?
    c. Are applicable study plans available?
    d. What are slash-treatment alternatives?
    e. What fuels treatments may change hazard ratings (for bark beetles)? How do those principles apply to southern hardwoods?

3. Develop Technologies for Using Bark Beetle Pheromones
    a. Need to emphasize the semiochemicals are only a part of a sound IPM program.
    b. What is the effectiveness of semiochemicals at varying spatial scales?
    c. Can we summarize what is currently known about the effectiveness of various semiochemicals?
    d. What is an appropriate "clearing house" for semiochemical information?
    e. How does the genetic makeup of hosts affect semiochemical behavior—and can that be manipulated to our advantage?
    f. What is the cost-effectiveness of semiochemical applications?
    g. What is the effectiveness of mass trapping? When does it work, when doesn't it?
    h. Do "push-pull" strategies work?
    i. Are there more effective releasers available? Med-i-cell, for example?

4. Develop Methods to Protect High-Value Resources
    a. Evaluation of spray delivery systems such as electrostatic, or injections.
    b. What is the effectiveness of preventive sprays for true firs?
    c. Can we/should we develop guidelines for preventive treatments, or use of semiochemicals to protect trees?
    d. How effective are NHV (or green leaf volatiles) in protecting conifers and hardwoods?
    e. What is the role of silviculture (and/or other IPM strategies) in protecting trees or stands?

5. Other/Miscellaneous
    a. Use of lethal trap trees with systemic chemicals.
    b. Education technology and methods.
    c. Taxonomy and identification skills are lacking. How best to strengthen?
    d. In all the above categories, how can we better implement the need for sound IPM strategies?
    e. What are the political/legal ramifications of what we do?