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### **Habitat-Oriented Bee Studies Will Improve Efforts to Conserve Native Bee Populations: An Example from Coastal Dunes.**

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It is evident that conserving some native plant populations also requires conserving pollinators. Because some native plants depend on native bees for pollination, bee nests must be protected in order to conserve both the native bee and the plant populations. To protect nesting sites it is important to be able to characterize actual and potential habitats used for nest construction. A survey to identify nest habitats of ground-nesting bees in a coastal dunes preserve produced several interesting findings.

Plant associations can be used to characterize actual and potential nest habitats, but very large sample sizes may be required to detect significant associations for bee species that are not abundant. Significant positive and negative associations were detected for *Megachile wheeleri* nests and several plant species, but not for *Anthidium palliventre* or *Osmia integra*. *M. wheeleri* is very abundant and nests in dense aggregations. *A. palliventre* and *O. integra* are commonly encountered but less abundant than *M. wheeleri*, and do not nest in dense aggregations. Even though 360 quadrats were sampled within the nesting habitat, because *A. palliventre* and *O. integra* nests were relatively rare, not enough quadrats contained bee nests to detect significant associations.

Bee and wasp populations displayed variation in nest density and nest habitat utilization. One habitat contained significantly more *M. wheeleri* nest sites than another. This "preferred" habitat also appeared to contain larger and more dense populations than the other habitat. Dense aggregations of the sphecid wasp *Bembix americana comata* were abundant in open blowsand, but individual nests were found widely scattered through two distinctly different habitats in dunes that were semi-stabilized by vegetation.

Conservation biologists are interested in protecting bees, but do not know how to access the information they need. The bee literature tends to be organism (species) centered and oriented towards a specialist audience. Conservation biologists are generally interested in getting information about bees which occur in a particular plant community, habitat, or region. These people are often botanists or wildlife biologists and don't know anything about bees, or which bee species are present in their study site. Therefore they have difficulty accessing the literature. The trend towards faunistic surveys and bee community studies is improving awareness that bees are important components of communities, and is beginning to open the literature to non-specialists. Nest architecture and biological studies can also be made more accessible by including habitat descriptors in titles and citing plant community studies that have been done within the research site. Bee biologists should consider taking a more habitat-oriented approach to bee studies which will facilitate finding bee literature during ecologically-oriented literature searches.