

Why “Best Management Practices” Cannot Protect Native Bees from Honey Bee Apiaries

**Grand Canyon Trust
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Many U.S. Forest Service and BLM land managers are facing permit requests for honey bee apiaries. Some land managers may assume that the negative impacts of honey bee apiaries on public land ecosystems, natural resources, and wildlife can be mitigated through Best Management Practices (BMPs).^{*} Best Management Practices for honey bee permitting on public lands have been published most recently by the Xerces Society in 2018,¹ and nearly identical (in some cases, verbatim) BMPs are found in the 2015 “Pollinator-Friendly Best Management Practices for Federal Lands” (pages 36-39).²

Unfortunately, Best Management Practices for honey bees **cannot** effectively mitigate the negative impacts of honey bee apiaries on public lands. There is no reliable data on population size and trends for most North American native pollinators, and land management agencies lack the resources and time necessary to determine the impacts of honey bees on public lands ecosystems. Nor can managers answer many of the BMP questions (see below). Even in low densities, negative impacts of managed honey bees on wild, native pollinators have been demonstrated repeatedly in the scientific literature.³ At high densities, such as those found in multi-hive apiaries proposed by commercial beekeeping companies, the severity and geographical span of impacts on native bee and plant populations cannot be predicted, and are all-but-certain to be highly significant.

In this document, we respond to each question and recommendation posed by the most recent (2018) best management practices for honey bees on public lands.¹ In doing so, we intend to show how these best management practices are infeasible and incompatible with scientific and land management realities. We emphasize that BMPs can neither be used to justify honey bee permitting on public lands, nor to maintain the illusion that honey bee permitting can occur without significantly harming native pollinator and plant populations.

Best Management Practice Recommendation	Response
Are populations of endangered or threatened pollinators present on the land?	Despite widespread acknowledgement of pollinator declines and disappearances, only two bee species (out of 4,000) are listed as endangered or threatened in the contiguous U.S. ⁴ One of these occurs only in the upper Midwest, ⁵ and critical habitat for the other has still been neither identified nor protected. ⁶ Furthermore, endangered status for these two species leaves the other ~3,998 species unprotected. Thus, this BMP is largely irrelevant to protecting native bees on national forests.

* Articles and other works cited in this document are available via links on the final page.

Best Management Practice Recommendation	Response
<p>If rare species of bees and butterflies, including threatened or endangered species, special status, sensitive, or other species of concern, are known to exist within the flight area where the hives are to be placed, assessment of potential risks to these populations should be undertaken.</p>	<ul style="list-style-type: none"> ● As above, over 99.9% of native bees are <i>not</i> federally listed, nor are most bees' population levels and trends even known; thus native bee species are not considered "special status" or "sensitive."⁷ This diversity and lack of knowledge means that rare, localized species almost certainly exist on many western public lands, but their identity, host plants, and nesting habitats may be unknown. Only a few butterfly species are protected. ● Even if a species were known to be rare, it would require pollinator surveys by bee experts to determine if it was present in a certain area. Data on the distribution of many bee species is incomplete. ● The flight area of honey bees is not well defined and depends upon the number of hives present and on floral resource availability. At high densities, as in 40-hive apiaries, honey bees will need to fly much further than they are known to forage when in lower densities. ● It would take multi-year studies to successfully assess potential risks or damage to local pollinators, and these studies would likely involve introducing honey bees to measure their effects, which could impact fragile pollinator populations.
<p>If it is possible that rare or declining pollinator species can be found in the area, efforts should be made to determine if they are present. Consulting scientists with expertise in pollinator surveys and species identification is recommended.</p>	<p>Given the lack of data on most pollinators and the prevalence of pollinator declines, "it is possible that rare or declining pollinator species could be found" on <i>all</i> public land areas of beekeeping interest. However, to "determine if [rare or declining pollinator species] are present," land management agencies would need to:</p> <ol style="list-style-type: none"> 1) determine which species of pollinators are present 2) determine their population sizes (are they rare or declining?) 3) assess honey bee impacts to these species. <p>Determining that information would require significant financial investment by public agencies, and decades of monitoring before permits could be granted. The agencies do not have the budget, staffing, expertise, or time needed for this.</p>
<p>In cases where a particular pollinator species is critically imperiled, every remaining population and individual may be essential to the species' immediate and long-term survival.</p>	<p>Precisely. And again, due to lack of data and the high number of species particularly in the arid West (e.g., 1,100 bee species in Utah, 1,300 in Arizona), which species of pollinators are critically imperiled is simply not known. And even for those identified as imperiled, like the Franklin's bumblebee, specific locations of remaining populations are unknown.</p>

Best Management Practice Recommendation	Response
<p>There is potential that honey bees may transmit diseases to native bees (e.g., spread of deformed wing virus from honey bees to bumble bees causing wing damage) and may compete for floral resources (e.g., decreased fecundity in bumble bees).</p>	<ul style="list-style-type: none"> Disease transmission and competition are two major, inevitable problems—these are not merely “potential” consequences of apiary permitting. Transmission of several lethal viruses from managed honey bees to wild bees has been well documented.⁸ Disease transmission may also occur in the opposite direction, with native bees infecting honey bees with novel diseases and parasites that could decimate honey bee populations. Diseases acquired on public lands could easily spread to other beekeepers’ bees via crop pollination events like the annual California almond pollination, which concentrates honey bees from around the country. With large numbers of honey bees, competition for floral resources—pollen and nectar—is also inevitable. Both honey bees and native pollinators require these resources to survive and reproduce. Honey bee hives, with 10,000-40,000 bees each, will overwhelmingly outcompete native bees, most of which are solitary or live in small colonies.⁹ In the face of such competition, native bees are likely to starve or to be forced to leave the area.
<p>Are there invasive plant populations, or ongoing efforts to eradicate invasive plant species, that would be affected by the inclusion of honey bees?</p>	<p>Flowering invasive plants are pervasive on public lands throughout the Intermountain West and Southwest. Studies have shown that honey bees preferentially pollinate some invasive plants, particularly species with which they may have co-evolved in Eurasia.¹⁰ In this way, honey bees help boost the reproduction and spread of invasives.</p>
<p>Honey bees may not be compatible with invasive plant species management. If honey bees increase seed production of the invasive species in question (e.g., yellow star thistle), land managers may want to exclude honey bees during periods of bloom.</p>	<ul style="list-style-type: none"> Honey bees are likely to increase seed production in many invasive plants, as they do in yellow star thistle. Honey bees tend to focus their foraging on the most abundant flowers, which often disproportionately benefits invasive plants.¹¹ However, the lack of studies examining specific species makes this BMP ineffective at delineating which invasive species honey bees would help spread. Excluding honey bees during periods of bloom is the opposite of what beekeepers want to do. Excluding honey bees effectively would require mapping all the locations of invasive species.
<p>What are the potential impacts to other wildlife?</p> <p>-Are there bears in the area that will be attracted to the apiary as a food source?</p>	<p>This question does not consider indirect or trickle-up effects of pollinator community changes on wildlife. Honey bees have been shown to reduce native pollinator populations and change which plants are pollinated. Depending upon the palatability of plants favored by honey bees, these changes in vegetation could impact populations of grazing ungulates, seed-eating birds, and rodents, and on to the species that prey on them. However, like other impacts of honey bees, these effects on wildlife would be difficult to predict or guard against.</p>

Best Management Practice Recommendation	Response
Is there sufficient infrastructure to support the drop-off and storing of the proposed operation?	
Commercial beekeepers may bring anywhere between 4 and 400 hives, depending upon the size of the operation.	Requests of far more than 400 hives have already been made (for example, Adee Honey Farms has requested up to 4,900 hives on each of three National Forests in Utah.) ¹² If beekeepers are allowed to pasture their bees on public lands for minimal cost, requests of such magnitude are certain to increase.
Access roads must be appropriate for the required transport, and should not result in excess erosion, road damage, etc.	Although this is a comparatively insignificant issue for native bees, allowing apiaries on public lands requires the perpetuation—and creation—of roads in prime pollinator habitat. Soil compaction and habitat fragmentation caused by roads further impacts biodiversity on public lands.
If the above considerations have been made and a decision to move forward with apiary placement is under consideration, we recommend:	
Any apiary (no matter the number of hives), needs to be more than 4 miles from:	Honey bees have been known to fly over 8 miles from an isolated hive. ¹³ When many hives are brought to the same concentrated area, this area of impact will increase greatly. There are no studies predicting how far honey bees will fly when kept at the densities many beekeepers propose in their permits. Four miles is not an appropriate buffer around honey bee hives.
-Known locations of pollinators that are listed on state or federal endangered species acts, or designated as special status, sensitive, or other species of concern (this includes plants with specific and important native pollinator relationships that can lead to decline in plant production)	<ul style="list-style-type: none"> • Once again, we lack sufficient knowledge. Only two species of bee (out of 4,000) are listed as endangered or threatened in the contiguous U.S., and the population levels and trends of almost all native bees are not known, so no “special status” is granted them.¹⁴ From the National Research Council’s <i>Status of Pollinators in North America</i>: “For most pollinator species, the paucity of long-term population data and the incomplete knowledge of even basic taxonomy and ecology make definitive assessment of status exceedingly difficult.”¹⁵ • While many native pollinators are thought to specialize on certain plants, most of these plant-pollinator relationships have not been studied. • Because we lack the knowledge to successfully avoid impacting native pollinators and plants, neither the Forest Service nor BLM are able to fulfill the requirements of the BMPs.

Best Management Practice Recommendation	Response
-Wilderness or wilderness study areas, as well as congressionally designated preserves and monuments.	When hives are clustered together, honey bees will disperse farther in search of forage than they will from individual hives and could affect these protected areas. At lower elevations, honey bees may also leave their hives and establish persistent, feral colonies on public lands.
-Habitats of special value for biodiversity and/or pollinators (e.g. high-elevation meadows, wet meadows, etc.)	<ul style="list-style-type: none"> • Sites for hives are generally selected by beekeepers, then approved by land managers. Habitats of special value for biodiversity and pollinators are exactly where beekeepers will choose to place their hives. Indeed, for large apiaries, only the most biodiverse areas with the highest concentration of wildflowers—and native bees—will have enough forage for honey bees. Yet these are the exact sites that best management practices suggest should be avoided. • The term “special value” lacks specificity and thus will not afford protections when beekeepers and biodiversity inevitably compete for the same areas.
Each apiary should have no more than 20 hives.	<ul style="list-style-type: none"> • 20 hives is 200,000-800,000 honey bees, which in 3 months would consume the pollen needed to rear two million wild, native bees.¹⁶ An apiary of that size is likely to have a massive impact on pollinator populations in the area. • In Region 4, where a region-wide apiary permitting policy has been issued, this Best Management Practice was specifically rejected: (“<i>The Xerces report should not be used to limit the number of hives on NFS land.</i>”)¹⁷ Such policies will allow for even larger apiaries than BMPs condone, magnifying the detrimental impacts to native bees across even greater swaths of forest land.
Apiaries should be separated by at least 4 miles.	At this distance, honey bees will likely impact all the area in between apiaries and well beyond, leaving no refuge within which native bees would be spared from honey bee competition and disease transmission.

National Environmental Policy Act regulations define “categorical exclusion” as “a category of actions which do not individually or cumulatively have a significant effect on the human environment...” (40 CFR Section 1508.4). Honey bees forage miles from their hives, and honey bee companies want to place apiaries year after year in locations that provide the most flowers. Individually and cumulatively, honey bee apiaries have significant effects on native bees and plants. We believe that issuing a permit for apiaries on national forest lands with a Categorical Exclusion is not legally defensible.

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For more information, contact maryobrien10@gmail.com