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Submitted to the House Agriculture Subcommittee on Horticulture and Organic Agriculture, U.S. House of Representatives

Mr. Chairman and Members of the Subcommittee, my name is Laurie Davies Adams, and I am Executive Director of the Coevolution Institute (CoE).
CoE commends the Subcommittee on Horticulture and Organic Agriculture for holding this timely hearing on a vital topic of national significance to "*review the colony collapse disorder (CCD) in honey bee colonies across the United States.*" CoE is pleased to submit these comments for the hearing record.

In brief, we don't know enough yet about this massive loss of honey bee colonies to be able to conclude responsibly about its extent, cause(s) or remedy. We also don't know what the impact is on agriculture and, if any, on native pollinators. Even as efforts are appropriately focused on how to address the CCD and meet farmers' vital pollinator needs, this alerts us to the simple but significant fact that **we can no longer take honey bees and other animal pollinators for granted**. As a major National Academy of Sciences report recommends, we must improve our scientific understanding, increase awareness about the amazing world of pollinators and their importance to our food supply and healthy ecosystems, and take action to protect pollinators and their habitat. We do know that forces like habitat destruction, improper use of pesticides, invasive species and global warming are placing our pollinator world at risk. Here are some actions that can be taken now, even as we work to address CCD and its impacts on honey bee colonies:

- Farmers can incorporate practical conservation practices now to sustain and enhance pollinators and their habitat.
- Congress can help now by strengthening the Conservation, Research and other titles of the 2007 Farm Bill in targeted ways to provide farmers and ranchers with improved pollinator assistance.
- Federal agencies and other stakeholders can help now by increasing and focusing the pollinator component of research and conservation programs, coordinating their efforts and collaborating closely with the ag community and other managers of our natural resources.
- CoE/NAPPC pledges to help now by continuing to facilitate collaborative efforts for the benefit of pollinators and pollinator habitats and the agriculture systems and ecosystems that depend upon them.
- All Americans can help now with pollinator-friendly practices in their own back yards.
- Importation of non-native bees should be avoided, absent effective protocols.

INTEREST OF COEVOLUTION INSTITUTE

The mission of CoE is to catalyze stewardship of biodiversity. CoE places a high priority on efforts to protect and enhance animal pollinators (*invertebrates, birds and mammals*) and their habitats in both working and wild lands. More information about CoE may be accessed at www.coevolution.org.

CoE is a strong advocate of a collaborative, science-based approach. CoE is honored to have a number of beneficial pollinator partnership efforts ongoing through management of the North American Pollinator Protection Campaign (NAPPC), a tri-national, public-private collaboration of scientific researchers, managers and other employees of state and federal agencies, private industry and conservation and environmental groups dedicated to ensuring sustainable populations of pollinating invertebrates, birds and mammals throughout the United States, Canada and Mexico. NAPPC's voluntary participants from nearly 140 entities are working together to:

- Promote awareness and scientific understanding of pollinators;
- Gather, organize and disseminate information about pollinators;
- Provide a forum to identify and discuss pollinator issues; and
- Promote projects, initiatives and activities that enhance pollinators.

Since its founding in 1999, NAPPC has been an instrumental cooperative conservation force in focusing attention on the importance of pollinators and the need to protect them throughout North America. More information about NAPPC and its collaborative efforts can be found at www.nappc.org. Information for those interested in pollinators can also be found at another CoE/NAPPC website www.pollinator.com dedicated to the Pollinator Partnership, a cooperative conservation outreach program.

COLONY COLLAPSE DISORDER

Based on information available to date, the consensus among NAPPC collaborators is that we don't know enough yet about this massive loss of honey bee colonies to be able to conclude responsibly what is causing the problem. We also don't know yet what the impact is, if any, on native pollinators. According to Dr. Stephen Buchmann, NAPPC International Coordinator, beekeepers in 26 states (and now occurrences in Europe) are reporting catastrophic losses. Possibly similar to "disappearing disease" of past decades, CCD may be caused by a convergence of factors (mites, viruses, bee diseases, pesticides and other environmental stresses) which may have weakened bees' immune systems.

Immediate funding for objective, rigorous science is needed to address this problem as well as an assessment of the entire pollination network. That's the only way to address CCD and also prevent future, potentially even more serious, problems. As an investigative strategy is developed, CoE would recommend including controlled research that involves native bees and some of the suspected causes of CCD in order to analyze the impact that certain factors (neonicotinoids, for example) may have on non-*Apis mellifera* bees. This is especially important to determine if sub-lethal effects from new classes of pesticides are affecting the navigational abilities of bees. CoE's current position is posted at http://www.nappc.org, and any additional information on colony collapse disorder will be posted as it becomes available.

Our NAPPC listserv has been an important tool in which scientists, natural resource managers, agency officials and other stakeholders can exchange and debate information on CCD and dialog about possible causes, extent of problems, implications for agriculture and healthy ecosystems, and potential remedies.

ACTION OPTIONS RE CCD & HONEY BEES

CoE believes it is appropriate to seek answers from key stakeholders to a number of questions. Responses this Subcommittee receives could be key in determining the fate of our pollinating partners—honey bees as well as other native and managed pollinators.

- What are USDA and other researchers able say about the CCD threat, and what actions are they recommending to address the threat?

- If researchers don't have the answers now, what is being done to get the answers; and how long will it take? Spring and pollinator season are fast approaching!
- What can agricultural producers do in terms of pest management and conservation practices to help keep honey bee colonies viable?
- How concerned should agriculture, and indeed consumers, be about the sufficiency and sustainability of our pollinating partners and their role in helping to produce our food?
- What are the economic and nutritional implications for producers and our food supply if the losses prove to be as great as feared?
- What other pollinator options exist for producers?
- How important are native pollinating species in pollinating agricultural crops—both managed and wild? Studies have demonstrated the potential for native pollinators to enhance the services of managed pollinators. More study is needed to determine if they help fill the gap that CCD may create. Can we work toward this in the near term? In the longer term?
- Is CCD impacting other managed pollinators and native pollinators?
- Pollinators are essential partners in healthy ecosystems. Game and other wildlife depend on pollinators for their food, directly and indirectly. What are the ecosystem implications of CCD?

IMPORTING POLLINATORS FROM OTHER NATIONS AND ECOREGIONS TO PROVIDE CROP POLLINATOR SERVICES CARRIES HIGH RISKS

If CCD proves to be a serious problem this year, CoE cautions against scrambling to fill the void by importing other managed non-native pollinator species from other countries or other eco-regions. If CCD proves to be a persistent problem, the pressure to allow such remedies could grow. We need to avoid compounding one problem by creating others that could make the situation far worse. Imported species intended for a good use can quickly become out-of-control ***invasive*** species (including pests and diseases the imported species may carry and introduce).

CoE has grave concerns about serious risks created by trans-boundary shipments of pollinators and is opposed to "importing" non-native species from other nations or other ecosystems. By trans-boundary, CoE regards both international political and bio-geographic boundaries as important. Ecosystems don't recognize political boundaries. As experiences have repeatedly demonstrated, longer term impacts could result that, while unintended, could be devastating and even irreversible in terms of introduced parasites and diseases and adverse impacts on native pollinators and agricultural systems and ecosystems.

Honey bees and production agriculture have already been adversely affected by the following:

- The international movement of European honey bees has resulted in the movement of their diseases around the world. Of particular concern have been the recent introduction and invasion of North America, including Mexico, by honey bee tracheal mites, and the more devastating Varroa mite.
- The transport of the African subspecies of the Western honey bee, *Apis mellifera scutellata* into the Americas. That introduction in Brazil in 1956, and the subsequent escape of those bees resulted in the invasion of tropical, subtropical, and warm temperate areas of the Americas with the so-called "killer bees," "assassin bees," or "Africanizadas." The disruption caused by that invasion has had serious adverse effects on the regions' bee keeping industries. Effects on natural ecosystems have not been well investigated, but, in places, it appears that the abundance (although not necessarily diversity) of native bees has declined, presumably through competition for food and nest-sites.

Additional examples are available involving trans-boundary shipments of managed bumble bees as pollinators. Again, while the examples provided are primarily trans-boundary across political jurisdictions, an ecosystem can be equally harmed by importation of a non-native species from another ecosystem within the same nation.

This problem and the demonstrated risks involved are so great that NAPPC collaborators teamed up last year and produced a "Bee Importation White Paper" focused on the risks and consequences of importing non-native bumble bees. The following excerpt captures what is at stake:

> "Non-native species introductions may have dramatic negative consequences. In the last century, invasive species of all types have cost the U.S. an estimated $137 billion in damages (Pimentel et al. 2000). Yet introductions of exotic plants and animals persist, partly because those who introduce exotic plants and animals may not fully understand or bear the consequences of their behavior (Perrings et al. 2002), which can be devastating on both economic and ecological scales." [p. 23]

The full report is available at http://www.pollinator.org/Resources/BEEIMPORTATION_AUG2006.pdf and includes a number of key recommendations. If trans-boundary shipments of pollinating species are considered, the greatest care must be undertaken in developing effective protocols to prevent such unintended consequences.

Based in part on that report's recommendations, CoE urges the following policy and protocols:

- Trans-boundary movement of pollinators should fall under the regulations and agencies that govern other beneficial organisms, such as biocontrol agents.
- Appropriate quarantine facilities should be established in recipient countries and zones to assure the health of the pollinators being moved in (for example, Australian quarantine facilities for European Honeybees).
- Veterinary, or equivalent, pollinator certifications of being disease-free should be established prior to shipment (for example, APHIS regulations for honeybees intended for shipment to U.S.).
- More information/research on diseases of pollinators other than Apis, especially bumble bees, is urgently required.
- A major initiative should be undertaken to consider the potential use ("domestication") of endemic species for local use in pollination, instead of primary reliance on introduction of exotic species.
- Sanitary inspection and certification should be established for the operation of pollinator rearing and husbandry facilities.
- Risk Assessments should take into consideration environmental risks, and potential agronomic benefits, prior to importation of any pollinator across international and biogeographic borders.

Until such protocols can be implemented, trans-boundary (international and biogeographic) movement of pollinators should be curtailed immediately, both in the U.S. and globally.

CCD IS A SIGNIFICANT WAKEUP CALL THAT WE MUST PAY ATTENTION TO THE WIDER WORLD OF POLLINATORS

The current CCD problem alerts us to the simple but significant fact that we can no longer take honey bees and other insect and animal pollinators for granted. We do know that forces like habitat destruction, improper use of pesticides, invasive species and global warming are placing our pollinator world at risk.

The National Academy of Sciences released a major report last October on the status and health of pollinators in North America that included a number of recommendations on research and conservation action. That report was released at a day-long Pollinator Symposium put together by CoE/NAPPC and hosted by USDA. In essence, the report recommends that we must improve our scientific understanding, increase awareness about the amazing world of pollinators and their importance to our food supply and healthy ecosystems, and take action to protect pollinators and their habitat.

Gleaning from recommendations in this report, CoE would urge the Subcommittee to help build a record by seeking answers to the following questions:

- What other threats do our pollinating partners—and the farmers and consumers who depend upon their services—face that we need to be paying attention to?
- What are researchers doing beyond honey bees? What are farmers doing? Many native pollinators can and do play significant pollinating roles, both as wild and managed inputs—for example,

managed bumble bees, leafcutter bees, alkali bees, and orchard bees a variety of field and greenhouse crops and tree fruit and nut crops.

- What research is USDA currently conducting on pollinators, and what is it telling us?
- Is USDA undertaking any additional research as a result of the NAS report?
- What research and conservation activities related to pollinators and pollinator conservation are being undertaken by other federal agencies?
- Are USDA and other agencies coordinating their pollinator activities? Can they do a better job and benefit pollinators and their respective missions?
- Does USDA need any additional authority or funding from the Congress to get the job done?
- What are producers doing to better manage their pesticide use to minimize impacts on honey bees and native pollinators?
- Are producers practicing any pollinator conservation measures, habitat or other?
- What role if any do producers see for native pollinators playing in pollinating their crops? Do producers see an increased potential for native pollinators?

PRACTICAL ACTIONS CAN BE TAKEN NOW

Even as efforts are appropriately focused on how to address CCD and its impact on managed honey bee colonies and to meet farmers' vital pollinator needs, there are practical steps that can be taken now that can provide near-term benefits and lay the foundation for longer-term solutions:

- Farmers can incorporate practical conservation practices now to sustain and enhance their pollinating partners to sustain and enhance pollinators and their habitat.
- Since ecosystems are interconnected, neighboring landowners—including homeowners in their own back yards—can help in simple but important ways to protect pollinators and provide habitat.
- Congress can help by strengthening the Conservation, Research and other titles of the 2007 Farm Bill in targeted ways to provide farmers and ranchers with the improved science and financial and technical assistance they need to implement effective conservation management practices. CoE will be submitting recommended changes to the 2007 Farm Bill in the near future for the Committee's consideration.
- Federal agencies and other stakeholders can help now by increasing and focusing the pollinator component of research and conservation programs, coordinating their efforts and collaborating closely with the ag community and other managers of our natural resources.
- CoE and many NAPPC partners pledge to help now by continuing to facilitate collaborative efforts for the benefit of pollinators and pollinator habitats and the agriculture systems and ecosystems that depend upon them.
- Indeed all Americans can help now with pollinator-friendly practices in their own back yards.

FARM BILL PROGRAMS CAN BE "POLLINATED" TO BETTER ADDRESS POLLINATOR NEEDS

CoE respectfully submits that existing farm bill conservation, forest management and other programs designed to work with and assist farm, ranch and forest land managers can be strengthened to better address managed and native pollinator needs by "pollinating" authorizing language in the next farm bill reauthorization through modest but significant language changes.

Conservation authorities and other selected programs under the farm bill can be highly effective in addressing factors which can contribute to pollinator declines including: habitat fragmentation, loss, and degradation causing a reduction of food sources and sites for mating, nesting, roosting, and migration; improper use of pesticides and herbicides; aggressive competition from non-native species; disease, predators, and parasites; climate change; and lack of floral diversity.

Effective pollinator protection practices often overlap and complement other conservation practices, particularly those designed to improve wildlife habitat, and vice versa. In other instances, a practice designed to achieve wildlife or other conservation practices could generate significant pollinator benefits by integrating modest enhancements.

CoE applauds pollinator awareness and pollinator conservation assistance actions already being taken under existing authorities and facilitated through the NAPPC collaboration, particularly by the Natural Resources Conservation Service (NRCS), the U.S. Forest Service (USFS), the Cooperative State Research, Extension and Education Service (CSREES) and the Agricultural Research Service (ARS) in USDA as well as the U.S. Fish and Wildlife Service (USFWS) and the National Park Service (NPS). We are also working closely with the Bureau of Land Management (BLM), the U. S. Dept. of State and the U. S. Department of Defense.

The focused objective of targeted modifications to authorizing language is to equip and direct USDA agencies to build on these early pollinator efforts and do better. Pollinators and agriculture deserve no less. This can be accomplished by inserting modest language changes as appropriate to ensure agencies have the direction and authority in implementing programs to (1) improve awareness about the importance of pollinators to agricultural producers and ecosystem health, and (2) work with farmers, ranchers and foresters in facilitating pollinator stewardship, protection and habitat conservation.

Candidate programs for such "pollinating" language include EQIP, the Conservation Reserve Program (CRP), the Conservation Security Program, the Wildlife Habitat Incentives Program, the Farm and Ranchlands Protection Program, the Grasslands Reserve Program, the Wetlands Reserve Program and the Watershed Rehabilitation Program, all capably operated by NRCS. Conservation assistance programs operated by USFS could be similarly augmented. The MOA between CoE and USFS identifies common ground in programs dealing with healthy forests, invasive species and resource valuation and use.

For example, in authorizing language for EQIP [P.L. 107-171, Subtitle D], additional direction and clarification of authority regarding pollinators could be provided through insertion of "or pollinators" at the end of Section 1240(b), (e)(2), so that it would read: "In determining the amount and rate of incentive payments, the Secretary may accord great significance to a practice that promotes residue, nutrient, pest invasive species, ~~or~~ air quality management**, or pollinator habitat and protection.**"

If this authority is complemented by conservation assistance providers making producers aware of pollinator needs and pollinator-friendly practices, it would be clear that the statutory authority and direction exists to provide EQIP incentive payments to help producers meet part of the costs of pollinator-friendly practices. Authorizing language making it clear that incorporating pollinator-friendly practices is an important component of criteria to be used in determining CSP payments represents another good example.

While the most obvious opportunities to improve pollinator stewardship are through USDA's conservation programs, CoE urges USDA to consider similar targeted opportunities in the research, forestry, commodity and other programs. Authorities for existing research, extension and education programs assuredly offer opportunities. Through a further exchange of ideas with USDA officials, other opportunities to productively "pollinate" programs could well be identified.

CoE would like to emphasize that this is NOT asking for *new* programs, but rather *enhancements* to existing programs as a pragmatic approach that can yield meaningful results with limited resources. Conservation programs can be highly effective in addressing factors which can contribute to pollinator declines including: habitat fragmentation, loss, and degradation causing a reduction of food sources and sites for mating, nesting, roosting, and migration; improper use of pesticides and herbicides; aggressive competition from non-native species; disease, predators, and parasites; climate change; and lack of floral

diversity. Effective pollinator protection practices often overlap and complement other conservation practices, particularly those designed to improve wildlife habitat, and vice versa. In other instances, a practice designed to achieve wildlife or other conservation practices could generate significant pollinator benefits by integrating modest enhancements.

POLLINATORS PLAY CRITICAL ROLE IN AGRICULTURE AND ARE AT RISK

Insect and other animal pollinators play a pivotal part in the production of an estimated one out of every three bites of food that humans eat and in the reproduction of at least 80 percent of flowering plants. The commodities produced with the help of animal pollinators generate significant income for agricultural producers. For example, domestic honeybees pollinate an estimated $14.6 billion worth of crops in the U.S. each year, produced on more than 2,000,000 acres. It is thus in the strong economic interest of both agricultural producers and the American consumer to help ensure a healthy, sustainable pollinator population.

Today, possible declines in the health and population of pollinators in North America and globally pose what could be a significant threat to the integrity of biodiversity, to global food webs, and to human health. A number of pollinator species are at risk. Due to several reported factors, the number of commercially managed honeybee colonies in the U.S. has declined from 5.9 million in the 1940's to 4.3 million in 1985 and 2.5 million in 1998. All indications are the problem has worsened in recent years. About 900,000 rented colonies are employed to pollinate 400,000 acres of just one major cash crop, almonds, grown in California. As one indication of the seriousness of this problem, the American Farm Bureau Federation re-activated its honey bee and apiary committee last year.

NATIONAL POLLINATOR WEEK JUNE 24-30, 2007

June 24-30, 2007 was designated as National Pollinator Week through action last fall by the U.S. Senate (S. Res. 580) and a proclamation by Secretary of Agriculture Mike Johanns. CoE/NAPPC is planning and facilitating a number of events in our Nation's capitol and at the local level throughout the country to celebrate and raise public awareness about our pollinating partners and the need to take actions that protect pollinators and their habitat. For example—

- On Monday, June 25, Dr. May Berenbaum, an internationally recognized entomologist and key witness at today's hearing, will be the featured speaker for the National Coalition for Food and Agricultural Research at a hill seminar in this hearing room, Dr. Berenbaum will be discussing research on the pollinator-agriculture connection.
- On Wednesday, June 27, a reception will be held at USDA honoring famed entomologist E. O. Wilson.
- On Friday, June 29, Secretary of Agriculture Johanns will preside over the first issue of a new pollination stamp series during a ceremony at USDA. The role of pollinators will be featured at the USDA farmer's market.

CoE would be pleased to facilitate efforts by this Subcommittee and Committee and the Congress to schedule other appropriate activities and events during National Pollinator Week and beyond.

CoE stands ready to work with this Subcommittee and interested stakeholders to help address the CCD and ensure that managed and wild pollinators are sustained and enhanced for the benefit of agriculture, consumers and healthy ecosystems.

Respectfully Submitted,

Laurie Davies Adams
Executive Director