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Submitted to the Natural Resources Subcommittee on Fisheries, Wildlife and Oceans, U.S. House of Representatives

Chairwoman Bordallo and Members of the Committee, my name is Laurie Davies Adams; and I am Executive Director of the Coevolution Institute (CoE). CoE commends you for your leadership in holding this pollinator oversight hearing during National Pollinator Week. CoE is pleased to submit these comments for today's hearing record.

CoE believes targeted enhancements to (1) public lands management programs, and (2) programs under the Farm Bill designed to assist private land owners could provide tremendous benefits to pollinators and pollinator habitat—and the agriculture and wildlife ecosystems that depend upon them.

CoE urges the Fisheries, Wildlife and Oceans Subcommittee to use the public record resulting from today's oversight hearing to lay the foundation for policy enhancements regarding the management of **public** lands for the benefit of pollinators and wildlife ecosystems. This Subcommittee and the full Natural Resources Committee have jurisdiction over agencies that manage federal public lands involving about 640 million acres—more than one-fourth of the total acreage in the United States.

This would complement ongoing efforts to amend the Farm Bill to better assist private landowners. Farmers and ranchers manage over 800 million acres of cropland, pasture, and private forests. CoE is supporting legislation in both the House and Senate that would strengthen Farm Bill programs to benefit pollinators and pollinator habitat on **private** lands. This includes the Pollinator Protection Act, H.R. 1709, introduced by Representative Alcee Hastings, which would amend the Research Title of the Farm Bill to advance research on Colony Collapse Disorder (CCD) and honey bees. There are a number of cosponsors, including Representative Earl Blumenauer, a long-time pollinator advocate. We are pleased that Representatives Hastings and Blumenauer are testifying today before this Subcommittee.

On the Senate side, the Pollinator Habitat Protection Act, S. 1496, has been introduced in the Senate by Senator Max Baucus 31 cosponsors. S. 1496 would amend the Conservation Title of the Farm Bill to help agricultural producers better address pollinator and pollinator habitat needs on private lands. Today, Senator Barbara Boxer is reportedly introducing the Pollinator Protection Act, which would amend the Research Title. The Boxer bill complements the S. 1496 habitat conservation provisions and is

closely aligned with H.R. 1709—while expanding the scope of research to include native pollinators and pollinator habitat. CoE is pleased that Representative Hastings has indicated support for the enhancements included in the Boxer bill.

CoE supports each of these bills and their important policy objectives. There are indications these pollinator research and conservation proposals will receive serious consideration during markup of the Farm Bill, and CoE is committed to working with the sponsors of these bills to achieve that positive outcome.

INTEREST OF COEVOLUTION INSTITUTE (CoE)

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. A NAPPC task force worked tirelessly for four years in support of a survey of pollinators' status in North America by the National Academy of Sciences, National Research Council. That report was released at a day-long CoE/NAPPC Pollinator Symposium hosted by the U.S. Department of Agriculture (USDA) last October. At that symposium, USDA also announced a proclamation by the Secretary of agriculture designating this week as National Pollinator Week.

More information about NAPPC and its collaborative efforts can be found at www.napppc.org. Information for those interested in pollinators and National Pollinator Week can also be found at another CoE/NAPPC website www.pollinator.com dedicated to the Pollinator Partnership, a cooperative conservation outreach program.

NATURAL RESOURCE AGENCIES ARE KEY COE/NAPPC PARTNERS

Representatives of the Department of Interior's U.S. Fish and Wildlife Service, National Park Service, U.S. Geological Survey and Bureau of Land Management have been actively involved in NAPPC from the beginning. The same is true for the U.S. Forest Service in the Department of Agriculture.

These collaborative relationships have grown to the point at which the U.S. Fish and Wildlife Service (96 million acres in wildlife refuge system, plus significant role regarding private lands), National Park Service (84 million acres) and U.S. Forest Service (190 million acres of forests and grasslands) have each signed a Memorandum of Understanding with CoE. This Thursday, during National Pollinator Week, the Bureau of Land Management (manages 270 million acres) and CoE will sign a Memorandum of Understanding. The U.S. Geological Survey, which cosponsored the NAS study on pollinators, is working toward a Memorandum of Understanding with CoE.

On the private lands side of the equation, the USDA Natural Resources Conservation Service (NRCS) and CoE will be signing a Memorandum of Understanding at Wednesday’s VIP reception at USDA, honoring pollinators and Dr. E. O. Wilson.

Each of these agreements and partnerships represents a commitment to working together for the benefit of pollinators. Together the partnerships cover about half of the land acreage in the United States. That represents a great deal of potential to benefit pollinators and pollinator habitat.

POLLINATORS ARE CRITICAL TO WILDLIFE AND HEALTHY ECOSYSTEMS

Pollinating bees and other insects are often thought of only as crop pollinators. However, these organisms are equally important as “keystone mutualists” in natural habitats.

Selected **pollinator-wildlife fact sheets**—*ranging from sage grouse, to songbirds, to bears, to invasive species*—are attached to this statement. These examples help put a real face on why pollinators are important to the “larger” species we typically think of as wildlife. Each one also includes practical steps that can be taken to help both pollinators and their dependent wildlife species. Additional fact sheets and related resource materials are available under the “Public Lands” section at <http://www.pollinator.org/resources.htm>

Flowering plants and the myriad wildlife dependent upon them for food, nesting materials and shelter could not survive or reproduce without pollinators. Self-sustaining pollinator populations are critical to maintaining the health and future availability of native plants and other natural resources on all of our public lands (forests, grasslands, wetlands and deserts). Pollinators assist plants in reproducing the leaves, roots, tubers, bulbs, fruits, seeds, and nuts needed by bears and many other wildlife species for food and survival. Often pollinators live in a patchwork quilt of remnant natural patches (“habitat islands”) but fly some distance to visit agricultural crops or wildflowers adjacent to these lands. It is essential that the lives and welfare of pollinators and their co-adapted flowering plants be considered as essential ecosystem components of agricultural production systems and for the continued health of wild lands; forests, wetlands, deserts, prairies, mountains and meadows.

Around the world, roughly 200,000 species of animals visit 80 percent of the known quarter million angiosperm species, the flowering plants. Less than 20 percent of the world’s flowering plants are pollinated by the wind (mainly cereals and most nut crops), or by water (rarely), or reproduce asexually. Pollination (the transfer of pollen grains from flower to flower on the same or different plants) results in fruit formation and seed formation. The highest quality seeds (those with greatest genetic fitness and vigor following germination) result from “outcrossed” pollination and subsequent fertilization between unrelated individuals. Without pollination the world would be a vastly different place for all life.

Bees (3,950 U.S. species) and roughly 17,000 described total species are the champion pollinators, by far—the most highly evolved floral specialists. Bees visit flowers for nectar and pollen for themselves and their larvae. Bees also collect nest-building (plant fibers, resins and leaves) and courtship materials (floral scents) from certain flowers. Globally, other pollinating insects include flies, numerous beetles, most butterflies and some moths, many wasps, and a few minor pollinator groups including thrips and ants.

Some vertebrate animals are pollinators. At least 1,035 vertebrates are effective pollinators; at least 219 mammals (including 168 bat species, 659 bird, and 2 lizard species) visit flowers and pollinate them.

Pollination is only one of the essential “ecosystem services” insects provide. Others include animal and plant decomposition, soil formation, bioturbation and nutrient cycling. Pollinators themselves are also

food for other animals. Pollinating insects, mammals and birds are integral species in food webs and biogeochemical cycles. The end result of pollination is fertilization and seed set. Healthy seedlings become carbon-sequestering shrubs and trees which in turn maintain life through transpiration and oxygen production. It is not often recognized that nearly all native bees in the United States are solitary and ground-nesting species. The burrowing activities (bioturbation) of these bees aerate soils, allowing water and other nutrients to infiltrate. Vast quantities of nitrogen-rich pollen, and bee feces, are injected below ground, thereby fertilizing the root zone. Bees, like ants and other soil arthropods, aid in soil formation. The pollinating activities of bees, other insects, mammals and birds produce nutritious crops of fruits and seeds which maintain other wildlife. Those seed crops are dispersed and buried, forming seed banks which are the insurance policy for future generations of flowering plants.

Many North American songbirds and game birds—including those which migrate seasonally between Canada, the U.S., and Mexico—enjoy a diverse diet of berries, fruits, and seeds from plants that depend on animal pollinators for successful reproduction. Pollinators themselves also provide an important source of protein, especially for growing fledglings that require the added fats and proteins contained in caterpillars, other larvae, butterflies, moths, flies, and beetles. Nutrients within the bodies of pollinators are also food for other wildlife (including spiders, lizards, rodents, bats, bears and many songbirds).

POLLINATORS ARE AT RISK

A range of human activities and landscape transformations are adversely impacting pollinators and species that depend upon them—including wildlife and humans. Massive habitat loss, fragmentation and degradation, invasive species, misuse of pesticides, and now perhaps, global climate change, are among the causal factors that are arguably placing a growing number of pollinators and wildlife ecosystems at risk. Researchers are identifying a growing list of pollinators that are threatened or critically imperiled. Humans and wildlife are adversely affected by pollinator losses—in terms of both food and ecosystems.

Over a decade ago, biologist E.O. Wilson issued a call to action:

“The evidence is overwhelming that wild pollinators are declining around the world. Most have already experienced a shrinking of range. Some have already suffered or face the imminent risk of total extinction. Their ranks are being thinned not just by habitat reduction and other familiar agents of their impoverishment, but also by the disruption of the delicate “biofabric” of interactions that bind ecosystems together. Humanity, for its own sake, must attend to the forgotten pollinators and their countless dependent plant species.”

Around the globe, some pollinators have been locally extirpated or gone extinct as species. Extinctions include honeycreeper birds in Hawaii, several butterflies (e.g. the Xerces blue) and seven species of yellow-faced *Hylaeus* bees in Hawaii. Franklin’s bumble bee in the Pacific Northwest could be the first U.S. bumble bee extinction. Some pollinators are threatened or critically imperiled. At least 2 bat and 13 bird species in the U.S. are federally listed under the Endangered Species Act. Migratory species, including some bats, birds and butterflies (e.g. monarchs) are imperiled not over their entire range but at sites where they congregate.

Today, pollinators are being adversely affected by global change, climate and anthropogenic changes wrought by humans on the landscape, competing uses for public lands. Management of public lands can have direct and long-lasting effects on pollinator populations. Grazing, mining and forestry often impact pollinators and the native plants they visit. Soil compaction may result from overgrazing, trampling plants and eliminating floral resources for pollinators. Wildfires and controlled burns impact some pollinators more than others, but there are almost no existing guidelines for prescribed burns and pollinator management in grasslands or forests. Nests of ground-nesting bees are usually safe from the direct heat of fires, but guilds of twig and wood-nesting bees, along with the immature stages of butterflies and moths, wasps, flies etc. are often destroyed by fires. Blooms of fireweed and other plants

often provide intense flushes of blooms, with nectar and pollen, following fires. Mowing regimes impact pollinators along with husbandry of native plants along highway, railway and power line rights of way. Herbicides affect pollinators by eliminating blooms of native but often delegated as “weedy” plants, which are invaluable floral hosts. Vegetative restoration or reclamation of mined lands, by land managers and restoration ecologists should consider how pollinator populations will be re-introduced, restored, or monitored in future years.

Invasive species affect both pollinating animals and pollinated plants by disrupting the structure and function of ecosystems. Non-native plants can alter the community composition of natural habitats, reducing food and shelter resources available for all species of wildlife. Twenty-one species of non-native bees have been introduced and become established in the United States. Some of these introduced bees compete for floral resources, and nesting sites with native bees and other pollinators.

Researchers are finding that the outcome of many efforts to sustain and restore wildlife and natural ecosystems on public lands is dependent on the presence of pollinating partners for native plants. For example, field researchers are finding that efforts to restore native grassland ecosystems can fail if pollinating partners for native flowering plants and forbs are missing.

At least 20, and perhaps as many as 25, of the vertebrate pollinator species may already be extinct. At least 47 are globally endangered, 40 are rare, and 43 are vulnerable. The status of other wildlife species at risk is subject to further refinements and study.

NATURAL RESOURCE MANAGEMENT PROGRAMS FOR PUBLIC LANDS CAN BE “POLLINATED” TO BETTER ADDRESS POLLINATOR NEEDS

CoE recommends that existing natural resource management programs for public lands be strengthened to better address pollinator and pollinator habitat needs. This is NOT a request for *new* programs, but rather *enhancements* to existing programs as a pragmatic approach that can yield meaningful results with limited resources. To date, consideration of pollinators in federal, state, county and city parks, or on the millions of acres of federally or privately managed public lands, has been limited at best. The NAPPC collaboration has been an important catalyst in helping public and private land managers become more aware of pollinator-friendly practices. Natural resources on public and privately managed lands can be thoughtfully and carefully managed to promote pollinators and their plants.

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 through modest enhancements. Pollinators and healthy wildlife ecosystems deserve no less.

POLLINATOR-BENEFICIAL PRACTICES FOR MANAGEMENT OF PUBLIC LANDS

CoE believes a proven suite of pollinator-beneficial best management practices is available to be integrated into public lands management policies and programs. For example—

- ◆ Promote and maintain diverse communities of native plants that bloom from spring to fall. For re-vegetation, plant in clumps not individual plants. Use seed or nursery stock from local or regional (similar genetic material) whenever possible. One reported obstacle is a chronic shortage of seed and nursery stock for native plants.
 - *CoE urges the Subcommittee to pursue policies to strengthen the availability of seed and nursery stock for native plants.*

- ◆ Avoid use of introduced species or modern hybrids.
- ◆ Provide nesting areas for native bees and other pollinators. Create or maintain patches of bare earth, vertical banks and sand piles as nesting areas for solitary bees.
- ◆ Whenever possible, leave standing dead trees or dead limbs in place. Far from being eyesores, dead trees are important nesting sites for leafcutter and mason bees, and vital habitat for other wildlife. Twig and wood-nesting bee habit can be augmented by drilling holes of various sizes (2 – 8 mm diameters) into dead wood, or by providing drilled board bee trap nests.
- ◆ Avoid large-scale aerial insecticide spraying. Malathion and other toxic materials which have been used to control pest insects (e.g. aerial spraying for rangeland grasshoppers) are highly toxic to bees and other pollinators. Use integrated pest management. If sprays are necessary, apply materials at night when pollinators are inactive.
- ◆ If prescribed burns are needed, try to burn when resting stages (pupae) of larvae of butterflies, moths, flies and beetles are not present. Most ground-nesting bees will be safe from fires, if they are rapid-moving, due to the depths underground at which these bees nest.
- ◆ Invasive plants may choke out native plants and lessen or eliminate natural floral resources (pollen and nectar) for native bees and other pollinators. Whenever possible use manual methods of plant removal. If herbicides are necessary, they should be used carefully and with spot applications to cut stumps or individual plants. Avoid conditions that may favor non-native introduced bees to become established and increase their populations.
- ◆ Create topographic and biotic diversity in habitats. Establishing windbreaks or clumps of trees will favor increased diversity and facilitate the re-establishment of pollinator populations. Bringing dead trees (or even wooden or metal stands) into a grassland, clearing or meadow will serve as perching sites for birds. Frugivorous birds will use them, and defecate seeds from native fruit-bearing plants and trees. This is a more cost-effective and effective way to re-vegetate barren or less diverse areas than by human planting and other interventions.

CoE believes a modest investment could be leveraged through a task force facilitated by the NAPPC collaboration to develop and assist in the integration of these and other pollinator-beneficial practices.

CoE urges the Committee to *encourage additional collaboration between natural resource agencies and other stakeholder groups like CoE/NAPPC* to help gain efficiencies, leveraging available resources to maximum effect. It is important to move away from a ‘stovepipe,’ single resource and/or single agency focus in natural resource conservation practices on public lands to a more integrated approach of achieving multiple resource goals. While positive strides are being made, much work remains to be done. 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.

It is important to *improve the research and scientific understanding* about pollinators and their role in wildlife ecosystems. The nation need not, and *should not, wait to take practical management steps that will benefit pollinators and pollinator habitat*. One basic step involves educating the public and indeed agencies’ own natural resource managers, from headquarters to the field, about pollinators and pollinator-beneficial plant regimes. Then the important next step is to integrate native plantings and other pollinator-beneficial practices into natural resource management efforts.

Despite limited resources, a number of modest but important actions are underway, led by efforts to educate the public about the importance of pollinators and actions individuals can take to benefit pollinators. While this evidence of progress should be recognized and celebrated, especially during National Pollinator Week, resources committed to date have been at best been minimal. Much of the

progress to date has been a function of individual agency employees who have recognized the importance of pollinators and have gone beyond their job responsibilities in trying to creatively make a difference—such as through participation in projects under the NAPPC collaboration.

The Subcommittee can lay the groundwork for future actions benefiting pollinators and wildlife by seeking answers to a number of key questions of the federal agencies under your jurisdiction, as well as of interested stakeholder groups. For example—

- ◆ What threats do pollinating partners in wildlife ecosystems face?
- ◆ Do natural resource agencies include and appropriately recognize pollinators and pollinator habitat in their mission statements and management plans? If not, are there plans to do so?
- ◆ What are researchers doing to increase understanding about the role of native pollinators in wildlife ecosystems, and best management practices that protect and benefit pollinators and their habitat?
- ◆ Are the agencies undertaking or planning any additional research as a result of the NAS report?
- ◆ Are the natural resource agencies coordinating their pollinator-related programs and activities? Can they do a better job of coordinating, for the net benefit of pollinators, wildlife and their respective agency missions?
- ◆ What statutory authorities guide the natural resource agencies in their pollinator-related efforts?
- ◆ Do the natural resource agencies need any additional authority from the Congress?
- ◆ What are natural resource managers doing to improve their pest management practices and minimize pesticide use to mitigate or eliminate adverse impacts on pollinators?
- ◆ Are natural resource managers implementing any pollinator conservation measures?
- ◆ Shortages of native plant seeds and nursery stock reportedly limit efforts to establish native pollinator habitat. How would the natural resource agencies address this shortage?
- ◆ If additional pollinator-related funding were available, how would the natural resource agencies propose to use make use of such funds?
- ◆ What plans do the natural resource agencies that have signed MOU's with CoE have to implement meaningful partnership efforts? Can natural resource agencies leverage scarce resources to maximum benefit by investing some funds in projects through partner groups like CoE/NAPPC?

Armed with additional information, this Subcommittee and the Congress could make informed decisions concerning whether authorizing legislation is needed to strengthen existing authorities, as well as whether additional funding is required, and for what purposes

CoE and the NAPPC collaboration stand ready to work with this Subcommittee and interested stakeholders to help public land policy makers and land managers take action to sustain and enhance habitats, for the benefit of wildlife and healthy ecosystems.

Respectfully Submitted,



Laurie Davies Adams
Executive Director

Pollinator-Wildlife Exhibits (4) Attached as Exhibits