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The Danger of Deception: Do Endangered Species have a Chance?

SUMMARY

Insects and other invertebrates perform the vital services of pollination, seed dispersal, and nutrient recycling and are food for wildlife. Native insects are also worth over 57 billion dollars a year to the U.S. economy. Many invertebrates are currently faced with extinction. While the Endangered Species Act [ESA] has been very successful in protecting and recovering some invertebrates, the U.S. Fish and Wildlife Service [USFWS] often does not follow the law or take the recommendations of its own scientists in making decisions regarding ESA listing and critical habitat. Although Julie McDonald may have provided the most egregious examples of illegal activity at the expense of endangered species, there continue to be other, ongoing examples of the U.S. Fish and Wildlife Service violating the law and ignoring science.

Salt Creek Tiger Beetle (Cicindela nevadica lincolniana) Critical Habitat

A multi-agency team of scientists initially proposed over 36,000 acres of critical habitat for the recovery of the Salt Creek Tiger Beetle. At the prompting of the USFWS, this team revised the proposal to 15,000 acres of critical habitat. The USFWS then proposed only 1,795 acres of critical habitat. One scientist on the team has called the decrease from 15,000 acres to 1,795 acres ludicrous. This decision was not based upon the scientific information available regarding the species and the area needed for its recovery.

Miami Blue Butterfly (Hemiargus thomasi bethunebakeri) Listing

This butterfly was originally petitioned for listing when there were less than 100 individuals known to exist. The field office and region prepared an emergency rule to list the species because it was limited to one population and threats were imminent. The DC office failed to follow through on the listing even though all of the information available showed that listing was both scientifically and legally justified. The number of butterflies remains critically low yet the USFWS has not taken action to list this species.

Island Marble butterfly (Euchloe ausonides insulanus) Listing

The USFWS denied listing this species, which has fewer than 1,000 estimated individuals left in its population. There continue to be multiple threats to the survival of this butterfly. The field office initially was preparing a rule to list the species, but the regional office failed to follow through with the listing.

In addition to interfering with scientific decisions concerning endangered species, in the tenure of this administration the USFWS has systematically failed to implement the Endangered Species Act. In particular, they have been dragging their feet in listing new species, having listed the fewest new species of any administration since the ESA was passed. To date, the administration has protected just 60 U.S. species, compared to 522 protected under the Clinton administration and 231 protected under the elder Bush's administration. Until the courts forced the U.S. Fish and Wildlife Service to protect the polar bear last week, the agency had not protected a new U.S. species for 735 days. This drought in protection of new species far surpassed the last such drought, which occurred when James Watt was Secretary of Interior and went 382 days without protecting a species in 1981 and 1982. This previous drought led Congress to amend the Endangered Species Act to include mandatory timelines for listing species.

The lack of new listings is not for a lack of deserving species. There are currently 281 species that are candidates for listing, including many invertebrates.

It is imperative that the USFWS and Department of Interior fix the ESA listing process by allowing agency scientists to do their jobs unhindered by political interference and by listing all of the candidate species in the next five years. Congress could help this process by increasing funding for listing of new species and ESA implementation overall and by providing clear direction to the agency that increased funding be used to provide protection to candidate species.

IMPORTANCE OF INVERTEBRATES

Butterflies, dragonflies, beetles, worms, starfish, mussels, and crabs are but a few of the millions of invertebrates at the heart of a healthy environment. Invertebrates build the stunning coral reefs of our oceans; they are essential to the reproduction of most flowering plants, including many fruits, vegetables, and nuts; and they are food for birds, fish, and other animals.

Of the more than one million species of animals in the world, 94 percent are invertebrates. The services they perform—pollination, seed dispersal, food for wildlife, nutrient recycling—are critical to life on our planet. Indeed, without them whole ecosystems would collapse. But when decisions are made about environmental policy and land management, these vital and diverse creatures are often overlooked.

Consider the Facts

More than two-thirds of flowering plants require insects for pollination.

Insects, worms, and mites are vital in helping microbes break down dung and dead plant and animal matter.

Insects and other invertebrates play pivotal roles in nearly every food chain. Eighty nine percent of birds depend upon insects at some point in their life cycle. Small flies are the most important food source for juvenile salmon. Even the mighty grizzly bear can eat 30,000 cutworm moths a day. Some grizzly bears get 1/3 of their yearly supply of food from these insects.

Invertebrates are also very important for medicine and technology. Horseshoe crabs are used extensively in the biomedical and pharmaceutical industries. Pharmaceutical companies use a blood enzyme from horseshoe crabs to test the safety of their products. Spider silk is being used to understand how to make better parachutes and sea stars are being studied to understand how to make better photoreceptors. Studies of the interactions among ants in a colony have led to breakthroughs in managing shipping terminals. What other discoveries await us?

Invertebrates Contribute to the Economy

According to a recent paper in the journal *Bioscience*, the benefits of insects to the U.S. economy is worth more than \$57 billion per year. Insects are a critical food source for the animals that drive a \$50-billion-per-year recreation industry (game bird hunting, fishing and bird watching). Pollination by non-honeybee insects, primarily native bees, supports \$3 billion annually in agricultural crops. Native insects that control pests save growers an estimated \$4.5 billion per year.

According to E.O. Wilson, Pulitzer Prize-winning author and renowned scientist, “So important are insects and other land-dwelling arthropods that if all were to disappear, humanity probably could not last more than a few months.”

Importance of Endangered Insects

A rare and endangered species of insect or other invertebrate is unlikely to determine the fate of an ecological system, but as a group these species may have a profound effect. Ecosystem functions, such as the recycling of nutrients, often are done by specialists like the American burying beetle (a species listed as Threatened) rather than generalists.

Endangered species also can act as keystone species in small, specialized systems, such as caves, oceanic islands, or some pollinator–plant relationships. For example, some plant species rely on only one or few species of pollinators. Decreased abundance or loss of any of these pollinators can lead to the extinction of plants.

Some endangered species might provide useful products, such as new defenses against diseases and tools for studying various ecosystem or organismal processes, as well as direct material benefits. For instance, Scientists recently discovered that highly endangered Hawaiian picture wing flies (*Drosophila* spp.) may possess auto-immune system characteristics previously unknown to medical science.

Endangered invertebrates can act as “Canaries in a coal mine” and can be used as indicator species. Aquatic insects have been used for decades to assess water quality, endangered butterflies can be used to determine the condition of meadow and prairie habitats and some rare snails can be used to assess the health of old growth forests. Protecting habitat based on these small animals may also protect habitat for other more charismatic species.

INSECT EXTINCTIONS AND ENDANGERMENT

The Xerces blue butterfly, Antioch katydid, Tobias’ caddisfly, Roberts’ s alloverlan stonefly, Colorado burrowing mayfly, and Rocky Mountain grasshopper all were driven extinct by humans.

In the United States, the Natural Heritage Program lists 210 insect species either as presumed extinct or as missing and possibly extinct. Many scientists believe that these numbers underestimate actual insect extinction and that many hundreds, or perhaps thousands, of species have gone extinct unnoticed in North America.

The USFWS lists 57 insects as either endangered or threatened but many more may be on the brink of extinction. To illustrate, 4.6% of the endangered animal species listed by the USFWS, are insects, yet insects make up more than 72% of global animal diversity. Of all vertebrates that are known to exist in the United States, approximately 18% are listed as threatened or endangered. If we assume that insects and vertebrates face similar destructive forces at similar levels of intensity, then one should expect to find on the order of 16,000 at-risk insect species in the United States alone. Although this assumption oversimplifies the situation, it shows that the 57 insects listed as endangered and threatened by USFWS are a significant underestimate. The Natural Heritage Program may be closer to the mark for select groups of insects for which we have more information. It estimates that 20% of stoneflies, 10% of tiger beetles 7% of butterflies, and 8% of dragonflies and damselflies are critically imperiled or imperiled in the United States. In addition, the Xerces Society has produced a *Red List of Pollinator Insects of North America*. The *Red List* is the most complete assessment of the status of the continent's at-risk pollinators. Fifty butterflies and moths and 51 bees are listed as critically imperiled, imperiled or vulnerable.

INVERTEBRATES AND THE ENDANGERED SPECIES ACT

The first invertebrate listed under the Endangered Species Act was the Schaus swallowtail butterfly on April 28, 1976. This was followed by six California butterflies on June 1, 1976.

The Endangered Species Act has always treated vertebrates more generously than it does invertebrates. The Act authorizes the protection of species, subspecies, and “distinct population segments” of vertebrates, yet only species and subspecies of invertebrates may be protected. This provision was a compromise between the House of Representatives and the Senate in 1978 after the House voted to eliminate protection for invertebrates altogether. Insects are also singled out as the only group that cannot be protected if a particular species is determined by the Secretary of Agriculture to be an agricultural pest. However, this provision has never been used, as any serious pest would not likely be an endangered species.

Even with these restrictions, the Endangered Species Act remains one of the most important environmental laws in the world for the conservation of insects and other invertebrates, and the habitat upon which they depend. There is no other national law in the U.S. that specifically protects invertebrates and their habitats.

THE XERCES SOCIETY'S EFFORTS TO PROTECT AT-RISK INVERTEBRATES

The Xerces Society works through all available methods to protect invertebrates and their habitats. We consult with private landowners, providing them with the information and tools to protect habitat on private lands. We join efforts with federal, state and county agencies to restore, enhance and protect habitat on public lands. The Xerces Society works on cooperative efforts with multiple stakeholders to protect the most vulnerable animals in the country. The Xerces Society has a very positive, cooperative relationship with the USFWS, other federal, state and county land management agencies as well as farmers and other landowners.

When a species is at risk of extinction, the formal listing of that species under the Endangered Species Act and the designation of critical habitat are tools that spur conservation and research on these animals and engage agencies and private landowners. In my experience, the United States Endangered Species Act is one of the most powerful tools for the conservation of these animals and their habitats in the world.

USING SCIENCE (NOT POLITICS) TO PROTECT SPECIES

Over the past seven years there have been many instances of decisions at the USFWS that were based on politics rather than the available science. Many of these have involved insects and other invertebrates. One of the most egregious examples of this was in the designation of critical habitat for the Hawaiian picture-wing flies.

After pressure from conservation groups, the USFWS designated 11 species of Hawaiian picture-wing flies (*Drosophila aglaia*, *D. differens*, *D. hemipeza*, *D. heteroneura*, *D. montgomeryi*, *D. musaphilia*, *D. neoclavisetae*, *D. obatai*, *D. ochrobasis*, *D. substenoptera*, and *D. tarphytrichia*) as endangered, and one species (*D. mulli*) as threatened. But in 2006, it proposed a total of 18 acres as critical habitat for the flies. This is less than 1 ½ acres per fly, which was not adequate for survival of the species nor was it scientifically or legally defensible.

There have also been many other cases of abuse. To see a more complete list of invertebrates where science has taken a back seat to politics in ESA decisions, please see appendix 1.

Politics still often trumps science in listing and critical habitat decisions

In our efforts to protect these animals we continue to see recommendations of USFWS scientists overruled by their superiors. This interference has a negative impact on the recovery of the species involved as well as a demoralizing effect on USFWS scientists who are trying to do their job. In the long run, these decisions cost tax payers more money as the issues will need to be resolved in court.

*Salt Creek Tiger Beetle (*Cicindela nevadica lincolniana*) Critical Habitat*

A multi-agency team of scientists initially proposed over 36,000 acres of critical habitat for the recovery of the Salt Creek Tiger Beetle. At the prompting of the USFWS, this team revised the proposal to 15,000 acres of critical habitat. The USFWS then proposed only 1,795 acres of critical habitat. One scientist on the team has called the decrease from 15,000 acres to 1,795 acres ludicrous. This decision was not based upon the scientific information available regarding the species and the area needed for its recovery.

On October 6, 2005, the USFWS listed the Salt Creek tiger beetle as endangered under the U.S. Endangered Species Act. The beetle is only found in a few remnant saline marshes near Lincoln, Nebraska. The Salt Creek tiger beetle is one of the rarest insects in the world and occupies one of the most restricted ranges of any insect in the United States.

Since the late 1800s, over 90 percent of the Salt Creek tiger beetle's saline marsh habitat has been destroyed or severely degraded through commercial, residential, industrial, and agricultural development and road projects. Although formally much more common only three small

populations of this beetle remain, and the known adult population size in over the last three years has fluctuated from a low of only 153 individuals to a high of just over 600 individuals.

The Salt Creek tiger beetle is considered an “indicator” species. Its presence signals the existence of a healthy saline marsh – the groundwater feeding these wetlands pass through rock formations containing salts deposited by an ancient sea that once covered Nebraska. Over the past century, more than 230 species of birds have been reported using eastern Nebraska saline marshes, including the least tern, piping plover, and peregrine falcon. These saline wetlands are also home to several salt-adapted plants that are found nowhere else in Nebraska. In addition, a healthy saline marsh provides numerous benefits for people, including water purification and flood control, as well as an area for bird watching and other outdoor recreation.

On May 4, 2005 a team of scientists from the University of Nebraska-Lincoln, Nebraska Game and Parks Commission, Lower South Platte Natural Resource District and the Nebraska Field Office of the U.S. Fish and Wildlife Service produced an “Advance Concept Paper” proposing 36,906 acres of critical habitat for the Salt Creek tiger beetle.

USFWS staff at the regional office subsequently asked the authors of the Advance Concept Paper to revise their paper and reduce the acreage of the critical habitat proposal. The authors revised their recommendation to 15,000 acres of critical habitat, distributed across six recovery areas. Team members expressed that 15,000 acres was the bare minimum amount of habitat needed in order for the species to recover.

The USFWS then proposed a total of only 1,795 acres of critical habitat in four areas (Proposed Rule Federal Register / Vol. 72, No. 238 / Wednesday, December 12, 2007). There was no scientific rationale for the USFWS to cut over 13,000 acres from the previous proposal. The USFWS has not provided any scientific justification for how 1,795 acres would allow the recovery and long term maintenance of the Salt Creek tiger beetle. One of the scientists who co-authored the Advanced Concept Paper has called the decrease from 15,000 acres to 1,795 acres “ludicrous”.

The best available scientific evidence as presented in the Advanced Concept Paper clearly shows that the current proposed critical habitat is woefully inadequate for the recovery and long term maintenance of the Salt Creek Tiger Beetle.

Miami Blue Butterfly (Hemiargus thomasi bethunebakeri) Listing

This butterfly was originally petitioned for listing when there were less than 100 individuals known to exist. The field office and region prepared an emergency rule to list the species because it was limited to one population and threats were imminent. The DC office failed to follow through on the listing even though all of the information available showed that listing was both scientifically and legally justified. The number of butterflies remains critically low yet the USFWS has not taken action to list this species.

The Miami Blue is endemic to Florida. The range of this butterfly, which once occurred along the Florida coast (from about St. Petersburg to Daytona) as well as several western barrier islands including Sanibel, Marco Island, and Chokoloskee south through the Florida Keys to Key

West and the Dry Tortugas, has been shrinking for many years. Ever-expanding urbanization and the associated loss of coastal habitat have all but eliminated the Miami blue from the the south Florida mainland. In recent years, this alarming trend of decline has continued in the Florida Keys. Once widespread and locally abundant, the butterfly has become considerably rarer and was thought to have been extinct with no verified records for the period from March 1992 to October 1999. The species was rediscovered on 29 November 1999 as part of a small breeding colony within the boundaries of Bahia Honda State Park on Bahia Honda Key.

In June of 2000 the North American Butterfly Association petitioned the USFWS to list the Miami Blue as a federally endangered species on an emergency basis. The petitioners cited habitat loss and fragmentation, mismanagement of existing habitat (e.g. fire suppression), unethical collecting, and the influence of mosquito control chemicals as threats to this butterfly's continued survival.

On January 3, 2002, the USFWS announced a positive 90-day finding for the petition to list the Miami blue, initiated a status review, and sought data and information from the public. In this finding, the USFWS indicated that the Miami blue appeared to be in danger of extinction, but did not believe the threats to be so great that extinction was imminent. However, the USFWS indicated that they could issue an emergency rule when an imminent threat posed a significant risk to the well-being of the species.

In June 2002, the USFWS initiated a contract with the McGuire Center for Lepidoptera and Biodiversity at the University of Florida to conduct a one-year status survey of the Miami blue throughout its historic Florida range and to monitor the known population at Bahia Honda State Park. Although extensive field surveys were conducted, no additional wild populations of the Miami blue were discovered. A detailed assessment of the Bahia Honda State Park population confirmed a series of small breeding colonies with a total estimate of less than 100 individuals at any time.

As the USFWS dragged their feet the State of Florida took action. On December 10, 2002 the State of Florida declared the Miami blue to be an endangered species on an emergency basis. This was one of the very few times that the State of Florida had taken emergency action for any reason, and the first time it had done so on behalf of an endangered species. Although this was a good step state listing does not provide the comprehensive protection of the ESA. On November 19, 2003, the State of Florida unanimously approved the species management plan and the resulting addition of the Miami blue to Florida's endangered species list. The listing by the State of Florida did provide increased protection for this species and provided some funding for a captive breeding program. In February 2003, under consultation of the USFWS, Florida DEP, and the State of Florida (Florida Fish and Wildlife Conservation Commission), a captive colony of the Miami blue was initiated at the University of Florida in Gainesville from wild eggs collected at Bahia Honda State Park.

The field office and region prepared an emergency rule to list the species because it was limited to one population and threats were imminent. The DC office failed to follow through on the listing even though all of the information available showed that listing was both scientifically

and legally justified. In December 2004 the USFWS acknowledged that the butterfly merited protection, but declined to add it to the federal list of endangered species citing lack of funding. They subsequently put it on the candidate list.

Although the state of Florida became involved, the recovery of the Miami Blue is anything but certain. Initial areas slated for reintroduction and recovery were disallowed because of the perceived need for mosquito control. As a result, initial reintroductions were delayed and divided into Phase I and Phase II areas-making aggressive recovery actions more challenging.

In 2006, a small number of additional Miami Blue colonies were discovered in the Key West National Wildlife Refuge. The University of Florida is currently working with the State of Florida and the Refuge biologists to determine the exact colony locations and estimates of the population sizes.

Dr. Jaret Daniels, a butterfly expert with the McGuire Center for Lepidoptera and Biodiversity (University of Florida), suggests that although the captive propagation program has gone well, the current species' distribution, dangerously low wild population numbers, limited areas available for reintroduction, and limited funding leaves the butterfly extremely vulnerable to extinction. He believes that federal listing would benefit the recovery of this species because of access to additional funding And better protection from threats such as mosquito control.

Island Marble butterfly (Euchloe ausonides insulanus) Listing

The USFWS denied listing this species, which has fewer than 1,000 estimated individuals left in its population. There continue to be multiple threats to the survival of this butterfly. The field office initially was preparing a rule to list the species, but the regional office failed to follow through with the listing.

The Island Marble butterfly was historically found in British Columbia, on Gabriola Island and on Vancouver Island from Nanaimo in the north, southward along the eastern edge of the island to Beacon Hill Park, Victoria. It appears that this butterfly inhabited coastal grasslands, and may have taken advantage of forage in adjacent prairies associated with Garry Oak woodlands. It had not been seen since 1908 and was believed to be extinct. In 1998, one small population of the Island Marble was found on San Juan Island in Washington State.

In 2005, two hundred twenty-five surveys were conducted at 110 potential Island Marble sites by staff from the Washington Department of Fish and Wildlife, USFWS, Washington Department of Natural Resources, the Xerces Society, and local volunteers. As a result of these searches, Island Marble butterflies were found at eleven new locations, although none of the sites had more than five individuals. The surveys also helped determine the extent of the original population at San Juan Island National Historical Park American Camp. The vast majority of the butterflies – and the only viable populations - are located at American Camp. Many of the individuals found at the new locations are likely strays from this main site. The total estimated population for the butterfly was under 1,000 individuals.

Responding to pressure from conservation groups in February 2006, the USFWS issued a positive 90-day finding for the Island Marble Butterfly, determining that protection may be warranted and initiating a status review of the species.

The field office initially was preparing a rule to list the species, but the regional office failed to follow through with the listing. Until September 2006, in conversations with the USFWS biologists preparing the 12 month finding they routinely stated that the species met all of the criteria for listing. A few weeks before the decision on the listing was to be announced, the same biologists informed me that they were no longer allowed to discuss the Island Marble butterfly. In November of 2006 the USFWS denied protection to this butterfly with no legal or scientific justification.

To the credit of the USFWS, they have done some work to conserve this species since the listing decision was made (the Xerces Society is part of an Island Marble working group). However their effort falls short of real protection under the Endangered Species Act. As of 2007, the population numbers were still low and possibly declining.

Conclusion

The Xerces Society for Invertebrate Conservation has worked for more than 37 years to conserve habitat for our most vulnerable animals. We often work with the U.S. Fish and Wildlife Service to protect these animals. However, the USFWS has been ignoring science in many of its endangered species decisions. For the sake of the conservation of many important species, decisions need to be made based on science not politics.

All statements made in this testimony are mine alone. That said I would like to thank Dr. Jaret Daniels, McGuire Center for Lepidoptera and Biodiversity (University of Florida), Steve Spomer (University of Nebraska, Lincoln), and Noah Greenwald and Bill Snape, (Center for Biological Diversity) for clarification on issues regarding the species mentioned above and on the ESA process.

Appendix 1.

The USFWS has violated the critical habitat provisions of the Endangered Species Act in the following invertebrate species:

Peck's Cave Amphipod (Stygobromus pecki) Critical Habitat

The final critical habitat designation included just 38.5 acres (72 Fed. Reg. 39247, July 17, 2007) which is much less than the total extent of habitat identified as essential to the conservation of the species by USFWS scientists.

Comal Springs Riffle beetle (Heterelmis comalensis) Critical Habitat

The final critical habitat designation included just 30.3 acres (72 Fed. Reg. 39247, July 17, 2007) which is much less than the total extent of habitat identified as essential to the conservation of the species by USFWS scientists.

Comal Springs Dryopid Beetle (Stygoparnus comalensis) Critical Habitat

The final critical habitat designation included just 39.5 acres (72 Fed. Reg. 39247, July 17, 2007) which is much less than the total extent of habitat identified as essential to the conservation of the species by USFWS scientists.

Pecos Assiminea Snail (Assiminea pecos) Critical Habitat

The critical habitat rule for this species dramatically reduced acreage protection from 1,523 acres to 396.5 acres. 70 Fed. Reg. 46303 (August 9, 2005).

Koster's Tryonia Snail (Juturnia kosteri) Critical Habitat

The critical habitat rule for this species dramatically eliminated acreage protection from 1,127 acres to zero acres. 70 Fed. Reg. 46303 (August 9, 2005).

Noel's Amphipod (Gammarus desperatus) Critical Habitat

The critical habitat rule for this species dramatically eliminated acreage protection from 1,127 acres to zero acres. 70 Fed. Reg. 46303 (August 9, 2005).

Roswell Springsnail (Pyrgulopsis roswellensis) Critical Habitat

The critical habitat rule for this species dramatically eliminated acreage protection from 1,127 acres to zero acres. 70 Fed. Reg. 46303 (August 9, 2005).

Helotes Mold Beetle (Batrisodes venyivi) Critical Habitat

The final rule in question was finalized for this Bexar County (TX) karst cave species on April 8, 2003 (68 Fed. Reg. 17155). Although the proposed critical habitat rule sought to protect 958 acres, the final rule shrunk this to just 164 acres.

Robber Baron Cave Spider (Cicurina baronia) Critical Habitat

The final rule in question was finalized for this Bexar County (TX) karst cave species on April 8, 2003 (68 Fed. Reg. 17155). Although the proposed critical habitat rule sought to protect 395 acres, the final rule shrunk this to just 57 acres.

Madla Cave Meshweaver (Cicurina madla) Critical Habitat

The final rule in question was finalized for this Bexar County (TX) karst cave species on April 8, 2003 (68 Fed. Reg. 17155). Although the proposed critical habitat rule sought to protect 1,811 acres, the final rule shrunk this to just 201 acres.

Braken Bat Cave Meshweaver (Cicurina venii) Critical Habitat

The final rule in question was finalized for this Bexar County (TX) karst cave species on April 8, 2003 (68 Fed. Reg. 17155). Although the proposed critical habitat rule sought to protect 481 acres, the final rule shrunk this to just 85 acres

Government Canyon Bat Cave Meshweaver (Cicurina vespera) Critical Habitat

The final rule in question was finalized for this Bexar County (TX) karst cave species on April 8, 2003 (68 Fed. Reg. 17155). Although the proposed critical habitat rule sought to protect 116 acres, the final rule eliminated all critical habitat and protected zero acres.

Government Canyon Bat Cave Spider (Neoleptoneta microps) Critical Habitat

The final rule in question was finalized for this Bexar County (TX) karst cave species on April 8, 2003 (68 Fed. Reg. 17155). Although the proposed critical habitat rule sought to protect 304 acres, the final rule eliminated all critical habitat and protects zero acres.

Ground Beetle (Rhadine exilis) Critical Habitat

The final rule in question was finalized for this Bexar County (TX) karst cave species on April 8, 2003 (68 Fed. Reg. 17155). Although the proposed critical habitat rule sought to protect 7,557 acres, the final rule shrunk this to just 644 acres.

Ground Beetle (Rhadine Infernalis) Critical Habitat

The final rule in question was finalized for this Bexar County (TX) karst cave species on April 8, 2003 (68 Fed. Reg. 17155). Although the proposed critical habitat rule sought to protect 5,083 acres, the final rule shrunk this to just 686 acres.

Cokendolpher Cave Harvestman (Texella cokendolpheri) Critical Habitat

The final rule in question was finalized for this Bexar County (TX) karst cave species on April 8, 2003 (68 Fed. Reg. 17155). Although the proposed critical habitat rule sought to protect 395 acres, the final rule shrunk this to just 57 acres.

Riverside Fairy Shrimp (Streptocephalus woottoni) Critical Habitat

The final rule in question was finalized on April 12, 2005 (70 Fed. Reg. 19153) and protects just 306 acres despite earlier proposed rules that protected anywhere from 5,795 acres to 12,060 acres. Without rational explanation, or even acknowledgement, it contradicts the Riverside fairy shrimp's recovery plan, scientific peer reviewers, and USFWS scientists. It falsely identifies many essential habitat areas as not essential.