BEFORE THE TEXAS PARKS AND WILDLIFE DEPARTMENT
PETITION TO BAN USE OF GASOLINE AND OTHER TOXIC SUBSTANCES TO
HUNT SNAKES

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Notice of Petition

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Submitted this 9th day of March, 2016

Pursuant to Texas Government Code § 2001.021 and 31 Texas Administrative Code § 51.2, the Center for Biological Diversity, Texas Snake Initiative, Karin Ascot, Lisa K. Pritchard, Rosalie Uht, Kelly M. Clark, Jeff Woodman, Susan Teegarden, and John Watson hereby petition the Texas Parks and Wildlife Department to ban the use of gasoline and other toxic substances to hunt snakes in Texas. Gassing is an indiscriminate method that harms wildlife and habitat, including federally-endangered species that inhabit holes and crevices along with rattlesnakes.
The Center for Biological Diversity ("Center") is a non-profit, public interest environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center is supported by over 990,000 members and online activists throughout the United States, including nearly 11,000 members and supporters in Texas. The Center and its members are concerned with the conservation of rare wildlife and their essential habitats.

Texas Snake Initiative ("TXSI") is a new non-profit organization designed to educate Texans about wild snake species native to the state. TXSI uses positive, educational messages to counteract the negative messages spread about snakes in Texas. TXSI works to help Texans understand snakes as beneficial, wild animals just like any other species that play important roles in their ecosystems.
TABLE OF CONTENTS

I. INTRODUCTION .................................................................................................................. 5

II. JUSTIFICATION FOR THE BAN ON GASSING WILDLIFE ......................................  6
   A. Gassing Harms Non-Target Wildlife and Destroys Habitats .................................. 6
   B. Gassing Pollutes Water, Creates Wildfire Risk, Contaminates Meat, Violates Hunter Ethics ........................................................................................................................................................................9
   C. Most States Have Banned This Harmful Practice ................................................. 10

III. PROPOSED RULE AMENDMENT ............................................................................ 10

IV. CONCLUSION ............................................................................................................... 11

V. LITERATURE CITED .................................................................................................. 11
I. INTRODUCTION

This petition seeks a ban on the use of gasoline and other toxic substances to hunt snakes in Texas. Specifically, Petitioners request an amendment to the rule setting allowable methods for taking nongame wildlife in Texas, 31 TAC § 65.328. Most states across the country -- including all of the states bordering Texas -- have banned this harmful practice.

As this petition explains, snake hunters in Texas can now legally pour gasoline or other toxic substances into holes and crevices with the goal of driving out snakes, a practice commonly referred to as “gassing.” The fumes and drowning effect of the gasoline force the dazed and poisoned snakes from their homes, where they can be captured by hunters.

This method of hunting snakes also kills non-target wildlife that live in the same dens. Gassing harms a wide variety of wildlife, including endangered karst invertebrates, economically important pollinators, and charismatic animals like burrowing owls. Gassing poisons animals directly or indirectly harms them by interfering with feeding and reproduction. The effects of gasoline poisoning make habitat unsuitable for wildlife long after the rattlesnakes are collected.

Gassing wildlife has health and safety implications for people too. Pouring gasoline or other toxic substances into holes in the earth threatens to contaminate groundwater. Gassing also risks igniting a fire or explosion. And hunters often sell snakes that have been doused with gas for meat, which may be contaminated and unsafe to eat.

Numerous professional wildlife science organizations, including the American Society of Ichthyologists and Herpetologists and The Wildlife Society, oppose use of gassing because of its harmful effects on wildlife and their habitats (see, e.g., Mushinsky & Savitzky undated; SWCHR 2010; TWS undated; Reber and Reber 1994). More than 9,000 people supported the Texas Parks and Wildlife Department’s proposed ban during the state’s yearlong round of research and public hearings (Conniff 2014b).

For all these reasons and those explained below, Petitioners request that the Texas Parks and Wildlife Department grant this petition and ban the use of gasoline and other toxic substances to hunt snakes.

1 Under Texas law, “any interested person” may request that the Texas Parks and Wildlife Department amend a rule by submitting a petition that meets certain criteria. Tex. Govt. Code Ann. § 2001.021; 31 TAC § 51.2 (providing that petition must “clearly state or describe the complete text of the proposed rule or amendment” and “explain the reason or justification for the requested regulatory action”). Within 60 days of submission, the state agency must initiate a rulemaking procedure or deny the petition by stating its reasons. Tex. Govt. Code Ann. § 2001.021. An “interested person” includes Texas residents and private organizations located in Texas. Id.
II. JUSTIFICATION FOR THE BAN ON GASSING WILDLIFE

A. Gassing Harms Non-Target Wildlife and Destroys Habitats

Texas rattlesnake hunters now legally use gasoline to drive rattlesnakes from their dens. Referred to as “gassing,” a snake hunter pushes a hose down a burrow or into a crevice, pours a few ounces (about 50 ml) of gasoline into a funnel on the hose, and then sends air through the hose to push the gasoline into the hole (often using a garden sprayer). The fumes sometimes drive the snake out into the open where it can be captured (Howard 2005). This practice is commonly used by hunters targeting western diamondback rattlesnakes (*Crotalus atrox*) for rattlesnake roundups, such as the one held in March in Sweetwater, Texas (Greer 2009).

**Lethal and Sub-Lethal Effects of Gassing on Wildlife**

While many snakes emerge as a result of gassing and are then captured, additional snakes and other animals in the dens can rapidly succumb to the gas and do not emerge (Warwick 1991). The toxic effects of gasoline fumes have been known for over 100 years, and controlled experiments have revealed highly detrimental and fatal consequences (e.g. Johnson 1913; Speake and Mount 1973; Campbell et al. 1989; Warwick 1991).

For example, in an experiment by Campbell et al. (1989), rattlesnakes, other snakes, lizards, toads, and crickets lost sensory perception and motor control when exposed to gasoline. The researchers found that a 30-minute vapor exposure produced a “dramatic and obvious” effect on the test subjects and resulted in a range of outcomes from short-term impairment to death. Lizards, toads and insects exposed for just ten minutes showed an impaired ability to right themselves and forage for food. The toxin can permanently damage sensory systems, which results in a reduced ability to carry out life functions such as feeding, locating shelter, and ultimately reproducing.

Most studies have assessed short and medium-term effects of exposure to gas fumes; longer-term studies may produce even greater mortality among exposed animals. Thus, even those animals that survive the gassing event may have a severely reduced life span. It has been observed that gassed snakes later kept in captivity usually die within approximately a year (W. Stout, pers. comm. cited in Warwick 1991).

**Texas Wildlife that Depend on Dens and Crevices**

Various snakes other than western diamondback rattlesnakes use dens and crevices in Texas and are harmed by gassing. These include massasauga rattlesnakes (*Crotalus catenatus*), racers (*Coluber constrictor*), coachwhips (*Masticophis flagellum*), glossy snakes (*Arizona elegans*), gophersnake (*Pituophis catenifer*), Texas indigo snakes (*Drymarchon melanurus erebennus*), and Louisiana pine snakes (*Pituophis ruthveni*) (SWCHR 2010; Campbell et al. 1989). It has been estimated that for every 100 rattlesnakes killed by gassing dens, about 40 harmless snakes are also killed (Klauber 1972).
Not just snakes are harmed by gassing, as any species of wildlife that shares holes and crevices with snakes can suffer from exposure to gas fumes. Other burrowing reptiles in Texas that may be harmed by gassing include Texas tortoises (*Gopherus berlandieri*), ornate box turtles (*Terrapene ornata ornata*), spiny lizards (genus *Sceloporus*), collared lizards (genus *Crotaphytus*), tree lizards (*Urosaurus ornatus*), and earless lizards (*Cophosaurus texanus*).

Even mammals and birds can be harmed by gassing. Mammals known to share rattlesnake burrows include pocket gophers (Family Geomyidae), kangaroo rats (genus *Dipodomys*), ringtails (*Bassariscus astutus*), bobcats (*Lynx rufus*), kit foxes (*Vulpes macrotis*), Palo Duro deermice (*Peromyscus truei comanche*), and even ocelots (*Leopardus pardalis*). As for birds, burrowing owls (*Speotyto cunicularia*) use underground burrows as nest sites in the spring, when rattlesnake roundups primarily occur (TPWD undated). Even pollinators such as bumblebees (genus *Bombus*) share dens with rattlesnakes and can be harmed by gassing.

**Risk to Endangered Karst Invertebrates**

Texas wildlife that depend upon karst habitats are particularly vulnerable to contaminants like gasoline. Karst environments are characterized by sinkholes, caverns, and other features that are typically created by long-term chemical action of water on calcareous rocks. These features become key habitats for highly specialized organisms, such as rare cave invertebrates. These troglobites are often characterized by small or absent eyes, pale coloration, and attenuated appendages (USFWS 2015). Some of Texas’s karst invertebrates are known only from single sites, making them some of the rarest and most geographically limited organisms in the world.

The primary threat to endangered karst invertebrates is loss of habitat, including through contamination (USFWS 2015). Karst has little capacity for self-purification and is therefore particularly susceptible to pollution and contamination (USFWS 1994). The management guidelines for Texas karst invertebrates emphasize “preventing contamination of the water entering the system” and restricting use of toxic substances such as gas (Campbell 2003). Multiple studies have demonstrated the toxicity of vapors from volatile petroleum-based chemicals to invertebrate life (e.g. Freeborn and Atsatt 1918; TPWD 2013).

Many areas of Texas where karst invertebrates live are close to areas where snakes are collected using the harmful gassing method (for map see Adam et al. 1994, p. 326). To be sure, the U.S. Fish and Wildlife Service has listed more than 20 Texas karst species as endangered or threatened under the Endangered Species Act (“ESA”), and most of these species are invertebrates that inhabit caves and crevices along with rattlesnakes (TPWD 2014). The following 16 species of karst invertebrates are listed as endangered in Travis, Williamson, and Bexar Counties, Texas (USFWS 2015; Veni 2007) and are vulnerable to gassing:

- Coffin Cave mold beetle (*Batrisodes texanus*) [Williamson County]
- Tooth Cave spider (*Neoleptoneta myopica*) [Travis County]
- Tooth Cave ground beetle (*Rhadine persephone*) [Williamson and Travis counties]
- Tooth Cave pseudoscorpion (*Tartaroceagris texana*) [Travis County]
- Kretschmarr Cave mold beetle (*Texamaurops reddelli*) [Travis County]
- Bee Creek Cave harvestman (*Texella reddelli*) [Travis County]
Bone Cave harvestman (*Texella reyesi*) [Williamson and Travis counties]
Cokendolpher Cave Harvestman (*Texella cokendolpheri*) [Bexar county]
Government Canyon Bat Cave Spider (*Neoleptoneta microps*) [Bexar county]
Madla's Cave Meshweaver (*Cicurina madla*) [Bexar county]
Robber Baron Cave Meshweaver (*Cicurina baronia*) [Bexar county]
Government Canyon Bat Cave Meshweaver (*Cicurina vespera*) [Bexar county]
Braken Bat Cave Meshweaver (*Cicurina venii*) [Bexar county]
Unnamed Beetle (*Rhadine infernalis*) [Bexar county]
Helotes mold beetle (*Batrisodes venyivi*) [Bexar county]
Unnamed Beetle (*Rhadine exilis*) [Bexar county]

Section 9 of the ESA makes it unlawful for any person – including private and public entities – to “take” individuals of an endangered species. 16 U.S.C. § 1538(a) (protecting endangered species). The ESA also makes it unlawful to cause another party to take listed species. 16 U.S.C. § 1538(g). Courts have read this provision to apply to government authorizations of activities that cause take and that, but for the authorization, would not occur. See, e.g., *Strahan v. Coxe*, 127 F.3d 155 (1st Cir. 1997) (state violated ESA’s take prohibition by authorizing fishing in manner that caused take of endangered northern right whales); *Defenders of Wildlife v. Environmental Protection Agency*, 882 F.2d 1294, 1301 (8th Cir. 1989) (take prohibition violated where endangered ferret died from ingesting strychnine bait distributed pursuant to EPA’s registration scheme and “relationship between the registration decision and the deaths of endangered species is clear.”). As such, the continued allowance of gassing that leads to the deaths of endangered karst invertebrates subjects the Texas Parks and Wildlife Department to the risk of liability under the ESA.

Beyond harming or killing wildlife that live in dens and crevices with rattlesnakes, gassing can make these important habitats uninhabitable for years (Franke 2000; Warwick et al. 1991). The effects of contamination with gasoline or other toxic substances are long-lasting, especially in karst ecosystems, which lack any means of filtering out the contaminants. Such impacts could place other karst invertebrates at risk, as more than 130 species of Texas karst invertebrates are listed as species of greatest conservation need in the Texas Conservation Action Plan.

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2 “Take” means to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” 16 U.S.C. § 1532(19). “Harm” is further defined to include significant habitat modification or degradation which “actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering.” 50 C.F.R. § 17.3. The ESA provides for civil penalties of up to $25,000 per violation, and criminal penalties of up to $50,000 and one year imprisonment per violation. 16 U.S.C. § 1540(a), (b).
B. Gassing Pollutes Water, Creates Wildfire Risk, Contaminates Meat, Violates Hunter Ethics

Water pollution is another risk from gassing. Chemicals introduced into the ground leach into groundwater and could contaminate water supplies for humans and livestock (Reber and Reber 1994), as well as wildlife. Moreover, intentional discharge of gasoline where leaching could cause water pollution violates Texas law. Tex. Water Code § 7.145 (providing that it is illegal to discharge or allow the discharge of a waste or pollutant into or adjacent to water in the state that causes or threatens to cause water pollution).

Water pollution from dumping gasoline into karst ecosystems could also harm the Central Texas springs that people enjoy for swimming. For example, Barton Springs Pool is visited by hundreds of thousands of people each year. And San Marcos Springs is a recreational destination for thousands and is home to several endangered species, including the fountain darter (*Etheostoma fonticola*), San Marcos salamander (*Eurycea nana*), San Marcos gambusia (*Gambusia georgei*), Comal Springs riffle beetle (*Heterelmis comalensis*), and Texas wild rice (*Zizania texana*). Contamination by gasoline would be an additional threat to these springs that are already harmed by water pollution from rapid urbanization. In addition, springs throughout the Hill Country are likely used for recreation and could be polluted with gasoline.

The chances of fire and explosion are greatly increased by gasoline use for hunting snakes (Reber and Reber 1994). Gasoline sprayed or dumped into dens and crevices can travel throughout the tunnel system, and one snake hunter could unknowingly drop a cigarette where another hunter sprayed gasoline. Gasoline ignited on the ground will cause a fire; gasoline ignited in the confines of an animal burrow can cause an explosion (Reber and Reber 1994).

In addition, the sale of meat drenched in gasoline may be illegal because of possible health risks, as gassed snakes may absorb carcinogens (Cox and Meinzer 1991). Some potentially hazardous components of gasoline include hydrocarbons, which have caused tumors in the liver, skin, and kidneys of laboratory animals; benzene, which has been linked to high incidence of leukemia in humans; and ethylene dibromide and ethylene dichloride, both of which may cause genetic mutations and tumors (Reber and Reber 1994).

Gassing snakes also violates basic tenets of hunter ethics. Weir (1992) explains: “Spraying snakes while they are sleeping in their dens is not sport; it is slaughter by chemical extermination. An analogous form of deer hunting would be to fence the woods, leaving only a narrow opening at one end, and then burn the forest, shooting the deer and other animals as they run through the gate. Such methods are hardly sport.” Snake hunters could rely on other methods that do not negatively impact surrounding ecosystems. For example, snake hooks enable snakes to be captured without damaging critical burrows or other habitats.

Because of the availability of alternative methods for hunting snakes, a ban on gassing would not end rattlesnake roundups in Texas. Moreover, many rattlesnake events currently discourage the collection of snakes by gassing, and several roundup organizers have expressed a desire to work cooperatively with the Texas Parks and Wildlife Department to promote safe and effective collection practices (TPWD 2014). While people who depend on gassing of snakes for
commercial purposes could be affected by the requested rule amendment, the Texas Parks and Wildlife Department has found that “any direct impact of the proposed rule on local economies will be extremely minimal” (TPWD 2013).

C. Most States Have Banned This Harmful Practice

Twenty-nine states have banned the use of gas or toxic substances to collect or harass nongame wildlife, including snakes. These include the four states sharing a border with Texas: Arkansas, Louisiana, New Mexico, and Oklahoma. Oklahoma 800:25-7-7 (“It shall be unlawful to introduce, deposit, place or drain any deleterious, noxious, toxic or petroleum based substance into or around any underground dens or rock crevices for the purpose of taking reptiles or amphibians.”); 002 00 Code of Ark. Rules and Regs. 001 § 5.08 (2015) (prohibiting hunting of wildlife by use of “poisons” and “chemicals”); La. R.S. § 56:632.6 (“The use of gasoline, chemicals, or other volatile substances to flush reptiles and amphibians from natural hiding places, nests, or dens is prohibited.”); 19.35.10.9 NMAC (prescribing the allowable methods for taking reptiles and not including toxic substances).

Many states have banned gassing to prevent harm to endangered species. For example, because gassing could harm the rare gopher tortoise, which creates burrows used by eastern diamondback rattlesnakes, every state within the range of the gopher tortoise has prohibited gassing (ASIF undated). Given that Texas has numerous federally listed invertebrates that share habitats with rattlesnakes, Texas should similarly ban gassing to protect endangered wildlife protected under federal law. Moreover, as explained above, states have illegalized gassing for a variety of other reasons that go beyond concern for wildlife (SWCHR 2010).

III. PROPOSED RULE AMENDMENT

According to 31 TAC § 51.2, which provides that the petition must “clearly state or describe the complete text of the proposed rule or amendment,” Petitioners suggest the following amendment to 31 TAC § 65.328. Under the proposed rule amendment, the underlined language would be inserted into the code.

a) Any device employed or emplaced to take or attempt to take nongame wildlife shall be marked with a gear tag. The gear tag must bear the name and address of the person using the device and the date the device was set out. The information on the gear tag must be legible. The gear tag is valid for 30 days following the date indicated on the tag.

(b) Any device used to take turtles shall be set such that:
   (1) the opening or entrance to the device remains above water at all times; and
   (2) the holding area of trap provides a sufficient area above water to prevent trapped turtles from drowning.

(c) It is an offense for any person to:
   (1) use gasoline or any toxic chemical to take, flush, or otherwise obtain nongame wildlife; or
(2) knowingly possess any nongame wildlife that has been taken, flushed or otherwise obtained by use of gasoline or any toxic chemical, except as provided by subsection (e) of this section.

(d) For the purposes of this section, “toxic chemical” includes but is not limited to:

(1) substances classified by the United States Environmental Protection Agency as “total petroleum hydrocarbons” (such as gasoline, kerosene, mineral oils, benzene, toluene, xylenes, naphthalene, and other petroleum products and components);

(2) non-hydrocarbon volatile organic compounds (such as acetone, alcohol, ether, formaldehyde, carbon tetrachloride, chlorofluorocarbons, etc.);

(3) caustic substances and blistering agents (acids, alkalis, phenols, chlorides, ammonia, etc.);

(4) pesticides (including insecticides, rodenticides, herbicides, fungicides, etc.); and

(5) detergents.

(e) Subsection (c) of this section does not apply to the use of registered pesticides in accordance with labeling instructions by persons licensed under the provisions of Occupations Code, Chapter 1951 (Texas Structural Pest Control Act) or Agriculture Code, Chapter 76.

Under the Parks and Wildlife Code, the Texas Parks and Wildlife Department has the duty to manage nongame species of fish and wildlife so that they can perpetuate themselves successfully. Tex. Parks & Wild. Code § 67.002. To this end, the Department can establish any limits on take necessary to manage the species. Id. § 67.004. Consistent with these legal duties and authorities, the proposed rule amendment is intended to ensure the ability of nongame species to perpetuate themselves by protecting them from the indiscriminate application of noxious or toxic substances.

IV. CONCLUSION

Petitioners have summarized the harms caused by using gasoline and other toxic substances to capture or kill rattlesnakes and other nongame wildlife. Specifically, Petitioners have demonstrated that the harms from this practice extend far beyond the targeted rattlesnakes. Gassing kills non-target wildlife that share snake dens, including endangered species, such as karst invertebrates that live in caves and crevices with snakes. Because of the significant environmental harm caused by gassing, most states have banned the practice, including all of the states bordering Texas. Petitioners therefore request that the Texas Parks and Wildlife Department adopt the proposed rule amendment and ban the harmful practice of using gasoline to capture snakes.

V. LITERATURE CITED


