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PULLING THE TRIGGER ON HUNTING REGULATIONS FOR LEAD AMMUNITION

“Like the resource [they] seek[ ] to protect . . . conservation efforts] must be dynamic, changing as conditions change, seeking always to become more effective.”

I. IT ALL STARTS WITH A BANG: AN INTRODUCTION TO THE HARMFUL EFFECTS OF LEAD AMMUNITION

In 2018, researchers at Yellowstone National Park placed a Global Positioning System (GPS) tracker on a five-year-old female golden eagle to record her movements. The tracker revealed the bird flew to an area frequented by hunters, where she likely ingested bullet fragments while scavenging carrion. Four months later, the researchers found the eagle dead. The necropsy confirmed the cause of death was lead poisoning.

Lead poisoning can cause a slow and painful death for animals. Within twenty-four hours of the eagle’s consumption of

1. RACHEL L. CARSON, Guarding Our Wildlife Resources, in 5 CONSERVATION IN ACTION 1, 2 (Fish & Wildlife Serv. 1948) (advocating for effective wildlife conservation in North America).


4. See Niemietz, supra note 2 (noting researchers found eagle dead).

5. Id. (indicating lead poisoning caused eagle’s death); Gruver, supra note 2 (explaining lead poisoning presents higher threat in fall and winter, when eagles usually roam and search for carrion).

lead, digestive stomach acids would have broken down the metal, allowing it to enter the bloodstream. The bloodstream then distributed the lead to the eagle’s “internal organs, the nervous system, the respiratory system, and the renal system.” The lead poisoning probably caused her to lose coordination, an effect analogous to a person driving while under the influence. Unable to fly straight, the eagle may have collided into trees, broken bones, and sustained head trauma. The bird may also have suffered from anemia, which saps away any energy to find food. Even if a human or other predator approached her, she would not have had the strength to fly away. After a few months, the eagle died from a bullet that a hunter likely meant for another animal.

See How Do Raptors Get Lead Poisoning?, WILDLIFE CTR. OF VA., https://www.wildlifecenter.org/how-do-raptors-get-lead-poisoning (last visited Dec. 20, 2020) (tracing process through which eagle’s body absorbs lead). Lead is extremely potent — a piece of lead the “size of a grain of rice” is sufficient to kill some species. Id. (explaining even small amounts of lead can kill eagles).


10. See Lead Ammunition Overview, supra note 9 (expressing eagles admitted to Teton Raptor Center often have broken bones and head trauma).


13. See Gruver, supra note 2 (summarizing length of time to eagle’s death from lead poisoning); see also Niemietz, supra note 2 (noting eagle died from ingested lead bullet).
This Comment argues in favor of a national ban on lead ammunition for hunting purposes. 14 Part II examines the harmful effects of lead on humans, wildlife, and the environment. 15 Part III provides an overview of the arguments against and in support of a lead ammunition ban. 16 It concludes by surveying the regulations, statutes, and caselaw addressing restrictions on lead ammunition. 17 Part IV explores recent federal and state efforts to regulate hunters’ use of lead ammunition. 18 Part V traces the implications of continued use of non-lead ammunition for wildlife and the environment. 19 Finally, Part VI urges Congress to implement legislation requiring hunters to use non-lead ammunition. 20

II. SHOOTING OURSELVES IN THE FOOT: LEAD’S IMPACT ON WILDLIFE, THE ENVIRONMENT, AND HUMANS

Lead’s physical properties and low cost make it the preferred metal for “batteries, caulks, pigments, dyes, paints, gasoline . . . ammunition, and fishing sinkers.” 21 Nonetheless, lead’s harmful effects on humans prompted federal laws banning it from paint, toys, gasoline, and other products. 22 To date, however, no federal law completely bans hunters from using lead ammunition on public land, even though studies show lead ammunition is deadly to wildlife, humans, and plants. 23

14. For an analysis of the need for a national ban on lead ammunition, see infra notes 178-96 and accompanying text.
15. For a discussion of the harmful effects of lead on humans, wildlife, and the environment, see infra notes 22-36 and accompanying text.
16. For a discussion of both sides of the debate surrounding lead ammunition restrictions, see infra notes 40-66 and accompanying text.
17. For a discussion of the caselaw, regulations, and statutes addressing lead ammunition restrictions, see infra notes 67-97 and accompanying text.
18. For a discussion of recent state and federal efforts to implement lead ammunition regulations, see infra notes 98-177 and accompanying text.
19. For a discussion of the positive impact of a lead ammunition ban on wildlife and the environment, see infra notes 178-92 and accompanying text.
20. For a discussion urging Congress to implement a federal lead ammunition ban for hunting, see infra notes 193-96 and accompanying text.
21. Kolb, supra note 6 (describing positive aspects of lead and its uses). These physical properties include lead’s “high density, low melting point, malleability, [and] corrosion resistance.” Id. (listing lead’s chemical properties).
23. See Lead Regulations, U.S. Env’t Prot. Agency, https://www.epa.gov/lead/lead-regulations#paint (last visited Dec. 20, 2020) (listing regulations and statutes governing use of lead in materials). Emphasizing the need for lead ammunition regulations, then-Director of the American Bird Conservancy, Dr. Michael Dry, explained that lead’s lethal environmental effects are “so well documented” in the
Scientific literature reports that lead ammunition has negatively impacted at least 130 species of animals.\textsuperscript{24} Lead exposure can cause lethargy, weakness, organ failure, and emaciation, all of which may result in an animal’s death.\textsuperscript{25} Lead exposure can also produce behavioral changes that make animals vulnerable to predation.\textsuperscript{26}

Moreover, lead ammunition negatively impacts the environment.\textsuperscript{27} It can remain in an area for one hundred to three hundred years.\textsuperscript{28} When spent lead ammunition accumulates, it pollutes nearby soil, surface water, and ground water, and contaminates the “leaves, stems, and roots” of plant species in the surrounding area.\textsuperscript{29} This contamination process results in increased concentrations of lead in highly-hunted areas, such as dove fields.\textsuperscript{30} Accordingly, lead accumulation will persist so long as hunters continue to litter the environment with it.\textsuperscript{31}

Lead exposure has a debilitating effect on humans.\textsuperscript{32} Consumption of lead can cause “high blood pressure, hearing loss, science community that the intentional release of lead into the environment should be “unacceptable.” Id. (emphasizing lead’s recognized toxic impact).


25. \textit{Lead Poisoning, supra note 12 (describing symptoms of lead poisoning in wild birds).}


28. Id. (explaining how long lead takes to decompose).


31. \textit{See 2009 Petition to DOI, supra note 27, at 25 (indicating lead accumulates in environment).}

32. \textit{See id. at 22 (explaining lead threatens human health).}
[and] anemia . . . as well as . . . nerve disorders, muscle and joint pain[,]” and death.33 Even trace amounts of lead can be harmful, leading to “kidney disease and impacts to the cardiovascular system.”34 When hunters use lead ammunition to kill an animal, the bullet fractures into hundreds of tiny pieces.35 Hunters and their families then consume these small pieces, exposing themselves to lead and its toxic effects.36

III. LOCK AND LOAD: THE SOCIAL AND LEGAL FRAMEWORK UNDERLYING A LEAD AMMUNITION BAN

A national lead ammunition ban for hunters requires the support of Congress and the public.37 In 1986, strong public support prompted the United States Fish and Wildlife Service (FWS) to prohibit the use of lead ammunition for hunting waterfowl.38 Efforts to encourage the Environmental Protection Agency (EPA) to expand this limited lead ammunition ban to cover other animals under the Toxic Substances Control Act (TSCA) fell short, as both the EPA and the United States Court of Appeals for the District of Columbia found the EPA does not have the statutory authority to regulate lead ammunition.39
A. Debate Over Lead Ammunition Alternatives and a Ban

Although lead is the most popular form of ammunition for hunters, various non-toxic forms of ammunition exist. The FWS defines non-toxic ammunition as "any shot type that does not cause sickness and death when ingested." Despite the availability of non-toxic alternatives to lead, there is significant pushback on a lead ammunition ban.

1. Opponents of a Lead Ammunition Ban

Opponents of a ban insist lead ammunition does not harm wildlife populations. Hunt for Truth Association, a nonprofit organization founded by the firearms industry, claims the lead in bullets is "not sufficiently soluble in the digestive tract of scavengers to result in poisoning." Instead, Hunt for Truth alleges the lead fragments pass through the animal quickly, as the animal digests the food it consumed along with the ammunition.

Opponents also view a lead ammunition ban as a slippery slope towards increased gun regulation. A ban "might be seen as more of an attack on hunters and the Second Amendment than . . . a conservation effort." The National Rifle Association (NRA) perceives lead bullets as not just a type of ammunition, but also as part

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40. Lead Ammunition Overview, supra note 9 (noting popularity of lead bullets for hunting); see 50 C.F.R. § 20.21(j)(1) (2019) (listing non-toxic alternatives to lead).
43. Id. (claiming traditional ammunition does not have negative impact on wildlife).
45. Id. (describing why lead does not poison animals).
47. Id. (providing Philadelphia hunter’s opinion on ban).
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of a hunter’s heritage and way of life.\textsuperscript{48} Efforts to regulate lead ammunition have prompted slogans such as “better dead, than a life without lead.”\textsuperscript{49} Moreover, the NRA alleges that the goal of a lead ammunition ban is ultimately to prohibit hunting altogether.\textsuperscript{50} In support of the view that restrictions on lead ammunition serve as a step towards a complete ban on hunting, opponents contend that non-lead alternatives are cost-prohibitive to hunters.\textsuperscript{51} For instance, copper bullets cost about thirty percent more than low-cost soft core lead bullets.\textsuperscript{52}

Further, opponents of a ban consider lead ammunition to be more effective than non-toxic alternatives.\textsuperscript{53} Manufacturers design lead bullets to shatter on impact.\textsuperscript{54} This fragmentation creates large areas of internal damage, allowing hunters to kill animals more humanely.\textsuperscript{55}

Finally, wildlife authorities and public officials may be reluctant to support a ban on lead ammunition for fear of alienating hunters.\textsuperscript{56} Hunters bring in revenue that funds “conservation pro-

\begin{itemize}
\item \textsuperscript{48} See \textit{Traditional Ammunition (Lead)}, supra note 42 (referring to lead ammunition as “traditional ammunition” to emphasize hunting as part of cultural heritage).
\item \textsuperscript{50} See \textit{Traditional Ammunition (Lead)}, supra note 42 (identifying alleged ultimate purpose of lead ammunition regulations).
\item \textsuperscript{51} See \textit{Myths: Claims and Truths}, supra note 44 (asserting lead is cheaper than alternatives).
\item \textsuperscript{52} See \textit{Lead Cored Bullets vs. Copper; Ballistics, Cost of Switching, Penetration, Fragmentation & More}, SHOOTING RANGE INDUS., LLC, http://www.shootingrangeindustries.com/lead-cored-bullets-vs-copper-ballistics-cost-of-switching-penetration-fragmentation-more/ (last visited Aug. 16, 2021) (observing non-toxic alternatives are slightly more expensive than low-cost lead ammunition).
\item \textsuperscript{53} Homogenous Copper Bullets Can Be Inhumane, TERMINAL BALLISTICS Rsch., https://www.ballisticstudies.com/Knowledgebase/Homogenous+copper+bullets+can+be+inhumane.html (last visited Jan. 11, 2021) (arguing lead bullets are more lethal than non-lead alternatives).
\item \textsuperscript{54} See \textit{Lead Ammunition Overview}, supra note 9 (describing purpose behind fracturing of lead bullets).
\item \textsuperscript{55} See id. (outlining how lead bullets are designed to kill animals).
\end{itemize}
grams, enforcement and research.”

Hunters also pay for “license fees and excise taxes on guns, ammunition and angling equipment[,]” which account for “sixty percent of the funding for state wildlife agencies.” In 2016, for instance, hunters and fishers spent eighty-one billion dollars on expenses relating to hunting and fishing, ten percent of which went towards “licenses, stamps, tags, . . . permits[,]” and other expenditures.

2. Proponents of a Lead Ammunition Ban

Conversely, proponents of a ban cite studies conducted as early as 1965 that point to the toxic effects of lead ingestion in wildlife. Proponents note the price of non-lead ammunition is about the same as premium lead ammunition. Indeed, as non-lead alternatives rise in popularity, higher production rates may reduce the difference between the two prices. Ammunition is also the least costly aspect of hunting — the benefits of non-lead ammunition for the environment, animals, and human health may outweigh the marginal price difference between low-cost lead ammunition and lead-free ammunition.

Proponents also argue that non-lead ammunition is just as lethal as lead ammunition despite their difference in design.

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57. Urbina, supra note 56 (outlining wildlife conservation programs that hunting funds).
60. See generally Golden, Warner & Coffey, supra note 6, at 133 (citing several studies that found ingesting lead is harmful to waterfowl).
61. See Resources for Hunters, WILDLIFE CR. OF VA., https://www.wildlifecenter.org/resources-hunters (last visited Jan. 11, 2021) (remarking price of non-toxic and premium lead ammunition is equivalent).
62. Lead Cored Bullets vs. Copper, supra note 52 (predicting alternative ammunition may reduce lead ammunition price).
63. See Resources for Hunters, supra note 61 (noting greater benefits of lead-free ammunition).
per bullets “mushroom,” or expand into “frontal petals” instead of fragmenting like lead bullets.\(^{65}\) As such, non-toxic bullets made from steel, copper, and tungsten kill animals cleanly by cutting through them like knives.\(^{66}\)

B. Lead Shot and the Waterfowl Ban

The Department of the Interior (DOI) protects and conserves federal land and wildlife.\(^{67}\) The FWS, a bureau within the DOI, is charged with protecting threatened and endangered species, conserving wildlife habitats, and enforcing wildlife laws.\(^{68}\) Although researchers first reported incidences of waterfowl mortality by lead poisoning from bullets in 1894, the FWS did not move to phase out the use of lead shot for waterfowl until almost one hundred years later in 1986.\(^{69}\) That year, an estimated 1.5 million ducks and eighty thousand geese died from ingesting spent lead ammunition.\(^{70}\) The FWS then successfully implemented a complete ban on lead ammunition for hunting “waterfowl, coots, and certain other species” in 1991.\(^{71}\) Almost a decade later, a study found the ban saved millions of waterfowl from fatally ingesting lead ammunition.\(^{72}\)
Other animals not covered under the waterfowl lead ban, including upland birds and mammals, continue to suffer lead-related deaths. Deer hunters often leave internal organs and tissues at the kill site — a so-called “gut-pile” — which allows the hunter to transport the animal more easily. Scavengers, like eagles, then consume the lead-laden organs, resulting in severe lead poisoning or death.

C. The Environmental Protection Agency and the Toxic Substances Control Act

The TSCA grants the EPA the authority to regulate “chemical substances” that “present an unreasonable risk of injury to health or the environment.” Under section 21 of the TSCA, an individual can petition the EPA to initiate a proceeding for a rulemaking. In 2012, over one hundred organizations petitioned the EPA to regulate the lead in ammunition under the TSCA. The EPA previously denied a 2010 petition to regulate the lead in bullets, sinkers, and fishing gear, claiming the Agency did not have the authority to regulate ammunition or firearms under the TSCA. The TSCA excludes from the definition of “chemical sub-


Golden, Warner & Coffey, supra note 6, at 135 (describing hunters’ methods after killing large animals).

See id. (outlining process through which scavenger birds ingest lead). Lead ammunition can cause primary or secondary lead poisoning. 2009 Petition to DOI, supra note 27, at 12 (explaining two ways lead ammunition is toxic to animals). “Primary poisoning occurs when the animal consumes the ammunition,” whereas secondary poisoning occurs when an animal ingests the lead in carrion accidentally. Id. (clarifying difference between primary and secondary poisoning).


See Ctr. for Biological Diversity et al., Petition to the Environmental Protection Agency to Ban Lead Shot, Bullets, and Fishing Sinkers Under the Toxic Substances Control Act, U.S. ENV’T PROT. AGENCY 1, 7 (Aug. 3, 2010) [hereinafter 2010 Petition to EPA], https://www.biologicaldiversity.org/campaigns/get_the_lead_out/pdfs/Final_TSCA_lead_ban_petition_8-3-10.pdf (petitioning EPA to implement ban on lead ammunition); see also Lead in Ammunition and Fishing Sinkers, 75 Fed. Reg. 58,377,
stance” sales that are subject to tax under section 4181 of the Internal Revenue Code, which includes shells and cartridges. In addition to firearms and ammunition, the EPA determined the TSCA exempts seven other types of materials from EPA regulation: “pesticides, tobacco, specified nuclear material . . . food, food additives, drugs, and cosmetics.” Due to the TSCA exemptions, the 2012 petition urged the EPA to regulate the toxic lead inside the ammunition, not the ammunition itself.

The 2012 petition relied on the legislative history of the TSCA and an Internal Revenue Service (IRS) ruling in determining the EPA possessed the authority to regulate the lead in ammunition. A 1968 IRS ruling states, “[T]he tax imposed upon sales of shells and cartridges by section 4181 . . . does not apply to sales of separate parts of ammunition such as . . . bullets[ ] and powder.” Accordingly, supporters of the petition reasoned that the lead in bullets is not included in the TSCA’s exclusions to the term “chemical substance”; thus, the EPA had the authority to regulate the lead in ammunition. The TSCA’s legislative history reinforces this conclusion. The House of Representatives report for the TSCA states, “Although the language of the bill is clear on its face as to the exemption for pistols, revolvers, firearms, shells, and cartridges . . . the Committee does not exclude from regulation under the bill chemical components of ammunition.” Similarly, the Senate report notes “chemical substance” does not include “firearms and ammunition.”

82. See 2012 Petition to EPA, supra note 78, at 3 (advocating for EPA regulation of lead ammunition).
83. Id. at 55 (supporting EPA’s authority to regulate lead ammunition).
85. See 2012 Petition to EPA, supra note 78, at 55 (asserting lead in ammunition falls within “chemical substance” in TSCA).
86. See id. at 56 (arguing legislative history supports contention that EPA has authority to regulate lead ammunition).
nition (to the extent subject to taxes imposed under section 4181 of the Internal Revenue Code).”

The EPA nevertheless denied the 2012 petition for lack of authority under the TSCA to regulate ammunition. Trumpeter Swan Society, one of the organizations behind the 2012 petition, subsequently filed suit against the Agency. The D.C. Circuit agreed with the EPA and found the Agency did not have the statutory authority to regulate the lead in ammunition. Although the 2012 petition urged the EPA to regulate the lead components inside of ammunition, the D.C. Circuit focused on the petition’s mention of spent lead ammunition and its effect on wildlife and humans; the court thus concluded the petition instead sought regulation of spent ammunition. Because a shooter can only spend a bullet after it is “contained in a cartridge or shell,” the EPA could not regulate the spent ammunition without also regulating the prohibited “shells and cartridges” in section 4181 of the Internal Revenue Code. Accordingly, the D.C. Circuit affirmed the district court’s dismissal of the complaint.

In 2015, President Obama signed the National Defense Authorization Act for Fiscal Year 2016 (NDAA) into law, which the NRA supported. Although the law aimed to provide funds for the

90. See Trumpeter Swan Soc’y v. EPA, 774 F.3d 1037, 1038 (D.C. Cir. 2014) (summarizing district court proceedings). The EPA denied the 2012 petition in a letter, stating it was substantially similar to the 2010 petition and, as such, did not constitute a new, cognizable petition. See Letter from James Jones, supra note 89 (declaring 2012 petition not cognizable). Because the 2012 petition did not constitute a “cognizable” petition, the EPA’s denial of the petition was not subject to judicial review. See Trumpeter Swan Soc’y, 774 F.3d at 1041 (explaining problem with EPA’s reasoning). The district court nevertheless found the term was ambiguous, deferred to the EPA’s interpretation, and dismissed the complaint. Id. at 1040 (stating district court’s findings). The D.C. Circuit disagreed, finding the EPA cannot declare a petition that meets the statutory requirements “not cognizable.” Id. at 1041 (explaining circuit court’s holding).
91. See Trumpeter Swan Soc’y, 774 F.3d at 1043 (finding EPA cannot implement ban on lead ammunition).
92. Id. at 1042 (concentrating on spent ammunition).
93. Id. (finding EPA cannot regulate lead ammunition).
94. See id. at 1044 (affirming lower court’s dismissal).
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U.S. military, it also contained a provision to exclude shot shells and cartridges, as well as their components, from the term “chemical substance” in the TSCA.96 This addition to the statute prevents the EPA from regulating the lead in ammunition under the TSCA, but it does not preclude other agencies or Congress from exercising their authority to implement a ban on lead ammunition.97

IV. NOT BY A LONG SHOT: THE PRESENT STATE OF LEAD AMMUNITION REGULATIONS

Federal agencies, Congress, and states have attempted to restrict the use of lead ammunition for hunting.98 In the absence of legislative or regulatory restrictions on lead ammunition, some states implemented educational programs to encourage and incentivize the voluntary use of non-lead alternatives.99 Nonetheless, these restrictions and programs have failed to provide a comprehensive framework of protection for wildlife and the environment.100

A. Federal Agencies and the Administrative Procedure Act

The day before President Trump’s inauguration on January 20, 2017, then-Director of the FWS, Dan Ashe, issued FWS Director’s Order 219 (Order 219).101 Recognizing lead’s harmful effects on species not covered by the 1991 regulation for waterfowl hunting, Order 219 banned all lead ammunition from “Service lands, waters, and facilities.”102 The Order provided that the ban would not be fully effective until 2022, allowing the FWS to work with states, wildlife associations, and tribes to facilitate the ban’s implementa-

98. For a discussion of the federal and state attempts to regulate use of lead ammunition for hunting, see infra notes 101-77 and accompanying text.
99. For a discussion of programs encouraging the voluntary use of non-lead ammunition, see infra notes 146-67 and accompanying text.
100. For a discussion of the limited wildlife protections that the regulatory and voluntary use of non-lead ammunition affords, see infra notes 162-64 and accompanying text.
102. Id. (noting 1991 lead ammunition ban only benefits waterfowl).
Order 219 also specified that it would remain in effect until the FWS incorporated it into the Service Manual or revoked it. 104

FWS Director’s Orders are limited to: “(1) Temporary policy and procedures, (2) Delegations of authority, (3) Emergency policy, (4) Special assignments or functions, and (5) Initial statements establishing new organizational units or transferring functions.” 105 This is consistent with the scope of the Administrative Procedure Act (APA), which controls how administrative agencies promulgate rules and regulations. 106 The APA allows agencies to deviate from the prescribed rulemaking process for “interpretive rules, general statements of policy, . . . rules of agency organization, procedure, or practice” and when public input would be “impracticable.” 107

Courts and Congress have criticized agencies for failing to follow the APA’s prescribed rulemaking process by issuing rules that are not merely interpretive or internal, but instead “establish new policy decisions that the agency treats as binding.” 108 A rule is “binding” if it reasonably leads “affected private parties . . . to believe that failure to conform will bring adverse consequences,” contains “mandatory language,” or includes terms demonstrating it

103. Id. (explaining FWS’s two-year delay of ban).
105. Preparation and Issuance of Director’s Orders, supra note 104 (explaining purpose and scope of FWS Director’s Orders).
107. 5 U.S.C. § 553(b) (2018) (specifying circumstances under which agencies may deviate from rulemaking process). The rulemaking process entails first publishing a proposed rule in the Federal Register, which includes a description of the rule and its source of legal authority, to allow the opportunity for public comment. Id. § 553(b)-(c) (outlining APA’s rulemaking process). After the comment period closes, the proposing agency issues a final rule in the Federal Register responding to issues the public comments raised. Id. § 553(c) (specifying next steps after notice-and-comment period). The final rule is then codified in the Code of Federal Regulations (CFR). Nylander, supra note 106, at 39 (explaining APA’s rulemaking requirements).
“will be regularly applied.” Accordingly, if an agency establishes “a change in substantive law or policy... administered with binding effect,” it cannot rely on the APA’s policy statement exemption and must instead abide by prescribed rulemaking procedures. In effect, the APA offers members of the public the opportunity to consider, review, and critique an agency’s proposed rule before it becomes binding.

The FWS Director issued Order 219 without adhering to the APA’s rulemaking process. Order 219’s explanation that it was FWS policy to require the use of non-toxic ammunition on Service land by 2022 appears to indicate that the Order was not binding; however, the Order also stated it was to take effect immediately, demonstrating its binding impact on the public. Notably, the FWS followed the APA’s rulemaking process in 2010 when it required the use of non-lead ammunition for the depredation hunting of migratory birds.

In March of 2017, the Trump Administration’s new Secretary of the Interior, Ryan Zinke, revoked Order 219 on his first day in the position. Secretarial Order No. 3346 repealed Order 219 before the Order was to take effect immediately, fulfilling the FWS’s policy to require the use of non-toxic ammunition on Service land by 2022.


110. Id. at 1355 (summarizing when agencies must follow APA’s rulemaking process).

111. See 5 U.S.C. § 553(c) (providing for public input on administrative regulations); see also Anthony, supra note 109, at 1314 n.7 (explaining APA’s notice-and-comment requirements).

112. See Order 219, supra note 101 (stating Order is effective immediately despite failing to follow APA requirements); see also 5 U.S.C. § 553(b)-(c) (prescribing APA’s rulemaking procedures).

113. See Order 219, supra note 101 (explaining FWS’s policy and effective date of Order 219).


cause (1) it was not mandated by existing law, and (2) the FWS implemented it “without significant communication, consultation, or coordination with affected stakeholders.”116 Although the Secretarial Order did not define “affected stakeholders,” this term may include the public, wildlife associations, sportspersons, ammunition manufacturers, and policymakers.117

In 2009, the National Park Service (NPS) announced its aim to eliminate the use of lead ammunition on federal land by 2010 and, like the FWS, did so without following the APA’s rulemaking process.118 The NPS’s press release failed to address how the Agency would phase out the use of lead ammunition.119 The statement instead detailed the Agency’s requirement that rangers and resource managers use non-lead ammunition and announced the Agency’s intent to develop public awareness materials on the harmful effects of lead.120 After receiving public backlash against the complete ban on lead ammunition, the NPS issued another press release asserting the non-lead ammunition requirement only applied internally to NPS officers and any future lead ban applicable to the public would entail “public involvement, comment, and review.”121

characterization of lead as “traditional,” approved the revocation of Order 219 because it “preserves the ability of hunters and target shooters to participate in their traditions.” Secretary Zinke Downs Last-Minute Lead Ban; Preserves Sportsmen’s Ability to Participate in Traditions, NAT’L SHOOTING SPORTS FOUND. (Mar. 2, 2017), https://www.nssf.org/secretary-zinke-downs-last-minute-lead-ban-preserves-sportsmens-ability-to-participate-in-traditions/ (supporting Secretarial Order 3346).


119. See id. (failing to address phase-out plan for lead ammunition).

120. Id. (explaining NPS’s actions to reduce use of lead ammunition).

B. Federal Agencies and Congress

In 2012, the Center for Biological Diversity, Sierra Club, and Grand Canyon Wildlands Council filed suit against the United States Forest Service (USFS), seeking a declaratory judgment that the USFS violated the Resource Conservation and Recovery Act (RCRA) by failing to regulate the use and disposal of lead ammunition on forest floors.122 The RCRA governs the disposal of hazardous waste and aims to reduce or eliminate future waste.123 During oral argument, the USFS recognized its authority to ban the use of lead bullets, remove discarded bullets from Forest Service land, and require hunters to do the same.124 At the time, however, Congress prevented federal agencies from using federal funds to regulate the lead content of ammunition under “any . . . law.”125 This effectively

release); see Lead Ammo Ban by National Park Service an Anti-Hunting Move, NAT’L RIFLE ASS’N (Mar. 11, 2009), https://www.nraila.org/articles/20090311/lead-ammo-ban-by-national-park-service (stating NPS’s lack of notice to sportsperson community was “deliberate attempt” to deter hunting). Although the NPS has not established a requirement that hunters use non-lead ammunition, it has encouraged hunters to maintain the “proud tradition of wildlife conservation” by using non-lead bullets. Lead Bullet Risks, NAT’L PARK SERV., https://www.nps.gov/redw/learn/nature/lead_bullets.htm (Aug. 21, 2020) (discouraging hunters from using lead bullets).

122. See Ctr. for Biological Diversity v. U.S. Forest Serv., No. CV-12-8176-PCT-SMM, 2013 U.S. Dist. LEXIS 92771, at *3-4 (D. Ariz. July 1, 2013) (explaining purpose behind lawsuit). The statute provides that any person can commence a civil action under the RCRA against any governmental agency that allegedly violates the RCRA. 42 U.S.C. § 6972 (2018) (establishing mechanism by which individuals can commence civil action under RCRA). To state a claim under the RCRA, the plaintiff must establish the defendant “has contributed or . . . is contributing to the past or present handling . . . or disposal of any solid or hazardous waste.” Id. § 6972(a)(1)(B) (requiring claimant establish defendant contributed to RCRA violation). The district court dismissed the case twice, the first time for lack of standing and the second time on justiciability grounds. See Ctr. for Biological Diversity v. U.S. Forest Serv., 925 F.3d 1041, 1046-47 (9th Cir. 2019) (summarizing prior case history). The United States Court of Appeals for the Ninth Circuit reversed the district court’s dismissal and remanded for consideration of the merits of the case. Id. at 1053 (reversing and remanding district court’s decision).


124. Ctr. for Biological Diversity, 925 F.3d at 1045 n.1 (explaining USFS stated it had authority to regulate lead ammunition on Forest Service land); see also 36 C.F.R. § 261.70(a)(4) (2020) (noting USFS can issue regulations to protect threatened or endangered animals).

precluded any federal agency from successfully requiring hunters to use non-lead ammunition. 126

Instead, Congress could support restrictions on lead ammunition for hunting. 127 In July of 2020, Representative Ted Lieu of California introduced the Lead Endangers Animals Daily Act (LEAD Act). 128 The bill required the Secretary of the Interior to implement regulations prohibiting the use of lead ammunition on FWS land. 129 The prohibition was not applicable to government officials who manage wildlife, law enforcement officers, and active members of the U.S. military. 130 Violators of the LEAD Act would receive a five hundred-dollar penalty. 131 Despite evidence demonstrating that the reduction of lead is beneficial to the environment, wildlife, and hunters, the bill did not receive a vote before the legislative session ended. 132

C. States’ Lead Ammunition Legislation

Although no federal ban on lead ammunition exists for hunting, individual states have enacted laws to reduce hunters’ use of lead ammunition. 133 This patchwork of legislation protects some animal and plant species from the detrimental effects of lead. 134

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126. See Consolidated Appropriations Act, 2019 § 418 (regulating agencies’ use of federal funds).


128. Id. (introducing LEAD Act on July 9, 2020).

129. See id. § 3(a) (requiring DOI secretary to ban lead ammunition).

130. See id. § 3(c) (stating exceptions to proposed lead ammunition prohibition).

131. See id. § 3(d) (discussing penalty for violating proposed lead ban). Although first-time violators pay a five hundred-dollar penalty, this penalty increases to between one thousand and five thousand dollars with subsequent violations. Id. (explaining fines increase with subsequent violations).


134. See id. (summarizing benefits of state lead regulations).
The state regulations fall roughly within three categories: (1) a complete ban on the use of lead ammunition for all hunting, (2) a ban on lead ammunition for hunting certain animals or in particular areas, and (3) no further regulation past the federal ban for waterfowl.135

1. Category One: California’s Complete Ban on Lead Ammunition for Hunting Purposes

In 2013, California became the first state to require that hunters use non-lead ammunition for all firearms. In 2007, California banned lead ammunition in condor ranges in an effort to protect the declining condor population. Although the 2007 ban helped reduce condors’ exposure to lead, it was ineffective in...
protecting the species. Condors often travel outside their protected ranges, where they consume the spent lead hunters leave behind in carcasses. One study found that over the span of ten years, if less than one percent of carcasses are contaminated with lead, a condor has an eighty-five to ninety-eight percent chance of becoming lethally exposed to it. Condors are not the only species in California that lead endangers — bald eagles, golden eagles, mountain lions, and bears also suffer from hunters’ use of lead ammunition.

California’s 2013 ban on lead ammunition for all hunting served to remedy this problem by reducing the amount of lead that hunters deposit into the environment. To ease the ban’s burden on the hunting industry, California phased in the non-lead ammunition requirement, which went into full effect on July 1, 2019. To discourage people from ignoring the ban, California also imposed a considerable fine for violations.

2. Category Two: States That Expand upon the Waterfowl Ban

Some states, like Pennsylvania, expand upon the federal waterfowl ban to require non-lead ammunition when hunting in certain areas or for specific species. Pennsylvania prohibits hunters from using lead ammunition to hunt “small game” on the protected Middle Creek Wildlife Management Area. The Pennsylvania Game Commission (PGC) owns and operates the Middle Creek Wildlife

California condors required treatment for lead poisoning between 1997 and 2012. Id. (explaining lead continues to impede condor population growth).

138. See Ravindran, supra note 49 (noting lead ban on condor ranges does not reduce condors’ lead exposure completely).

139. See id. (analyzing how geographic bans on lead ammunition do not prevent condors from consuming lead).

140. See Stephens, supra note 137 (illustrating lethal effects of lead left behind in carcasses).

141. Ravindran, supra note 49 (listing other species lead ammunition adversely affects).


143. See id. (laying out phased-in approach to full lead ammunition ban).

144. See Cal. Fish & Game Code § 3004.5(g) (West 2013) (establishing fine for using lead ammunition). California imposes a five hundred-dollar fine on the first offense and up to a five thousand-dollar fine for subsequent offenses. Id. (describing fine for violating ban).


146. See id. (stating hunters must use non-toxic shot to hunt small game in protected areas like Middle Creek Wildlife Management Area). “Small game” includes squirrels, ruffed grouses, rabbits, pheasants, bobwhite quails, hares, woodchucks, crows, starlings, and English sparrows. Seasons and Bag Limits, Pa. Game
Management Area to ensure the preservation of wildlife on the land.\textsuperscript{147}

Although Pennsylvania does not ban lead ammunition for all hunting, the PGC began conducting education campaigns in 2017 to warn hunters of lead ammunition’s detrimental effects on human health and wildlife.\textsuperscript{148} The education campaigns include newsletter articles explaining the effects of lead toxicosis in eagles specifically, as well as YouTube videos describing lead’s harmful impact.\textsuperscript{149} The purpose of this educational outreach is to encourage hunters to choose non-lead alternatives voluntarily.\textsuperscript{150}

Other states have also considered implementing educational outreach programs to highlight the benefits of non-lead ammunition.\textsuperscript{151} For example, in 2014, Oregon conducted a survey to gather information from hunters and the general public about their perceptions surrounding the use of lead ammunition and its impact on wildlife.\textsuperscript{152} The survey results indicated that although fifty-one percent of the non-hunting public strongly agreed that “[i]ngestion of lead can be fatal to animals,” only twenty percent of


\textsuperscript{148} See Burns, supra note 46 (explaining PGC’s education campaign). Between 2006 and 2016, thirty percent of the eagles PGC examined contained detectable levels of lead in their liver. See Bald Eagles and Lead, Pa. Game Comm’n 1, 2, https://www.pgc.pa.gov/Wildlife/WildlifeSpecies/BaldEagles/Documents/eagle-lead%20brochure2%204web.pdf (last visited Feb. 12, 2021) (explaining result of PGC’s examination of bald eagles). The Communications Director of the PGC, Travis Lau, explained the PGC’s preference for educational materials encouraging hunters to use non-lead ammunition, stating hunters have no opposition to the educational information the PGC releases on lead ammunition. Burns, supra note 46 (noting hunters are skeptical of information but do not object to it). In contrast, Lau expressed that both the PGC and Pennsylvania legislators were not interested in banning lead ammunition for hunting. Id. (comparing support for education campaigns with lack of support for non-lead regulations).

\textsuperscript{149} See Bald Eagles and Lead, supra note 148 (outlining lead ammunition’s danger to bald eagles); Pa. Game Comm’n, Webinar: Lead Toxicity in Bald Eagles in Pennsylvania, YouTube (Oct. 26, 2018), https://www.youtube.com/watch?v=MVzn3aPGyVk (discussing lead toxicity in bald eagles).

\textsuperscript{150} See Bald Eagles and Lead, supra note 148 (suggesting hunters can help prevent lead poisoning in wildlife by switching to non-lead ammunition).


\textsuperscript{152} Lead Ammunition Survey Summary, Or. Dep’t of Fish & Wildlife 1, 1 (Jan. 27, 2016), https://www.dfw.state.or.us/wildlife/lead/ODFW_Final_General_Summary_27_Jan_16.pdf (explaining purpose of survey).
hunters strongly agreed with the statement. Further, almost forty percent of hunters stated under no circumstances would they switch to non-lead ammunition.

In addition to educating hunters, states also incentivize the use of non-lead ammunition. Utah’s non-lead program, established in 2010, offered hunters a twenty-five-dollar rebate for purchasing non-lead ammunition for use on Utah’s Zion Unit. Utah then modified its program in 2020, allowing hunters to receive a coupon for non-lead ammunition worth up to fifty dollars. Hunters can also participate in the “condor prize drawing” by demonstrating to Utah’s Division of Wildlife Resources that they are hunting with non-lead ammunition. The winner of the drawing receives five hunting rifles worth a total of eight hundred dollars.

Finally, Minnesota urges hunters to use non-lead ammunition voluntarily by hosting shooting clinics. At these clinics, hunters can compare the results of lead and copper bullets. The clinic demonstration sets out two rows of water jugs, one for the copper bullets and one for the lead bullets. A participant then shoots through one line of jugs with a copper bullet and the other line...
with a lead bullet. The copper bullet passes through more jugs and remains intact, while the lead bullet turns into fine dust-like particles.

This demonstration allows hunters to witness firsthand the different effects of lead and non-lead ammunition and encourages them to make informed decisions. The demonstration’s success, however, depends on hunters’ willingness to switch to non-lead ammunition voluntarily. Of the five hunters who decided to participate in a clinic, at least two chose to switch to non-lead ammunition.

3. Category Three: States That Limit Lead Ammunition Regulations to the Waterfowl Ban

The majority of states have not implemented lead ammunition restrictions beyond the requisite regulations for waterfowl. A few states have tried to institute more expansive ammunition regulations. Strong opposition to lead ammunition restrictions, however, continues to prevent the realization of this goal.

163. Id. (explaining demonstration process).
164. Id. (discussing results of demonstration).
165. Id. (noting demonstration’s purpose is to encourage hunters to choose non-lead ammunition voluntarily).
166. See id. (summarizing number of attendees who stated they would switch to non-lead ammunition).
167. McCormick, supra note 162 (quantifying demonstration’s success in convincing hunters to switch to non-lead ammunition).
168. For an overview of state regulations that limit restrictions on lead ammunition to the federal waterfowl ban, see supra note 135.
169. See N.Y. Assemb., 703 Legis., 242nd Sess. (N.Y. 2019) (banning lead ammunition on state and federal public lands). Similarly, Minnesota also tried to expand upon its lead ammunition regulations. Greg Stanley, Minnesota Is Asked to Ban Lead in Ammunition, Fishing Tackle, STARTRIBUNE (Nov. 4, 2019, 7:23 PM), https://www.startribune.com/minnesota-is-asked-to-ban-lead-in-ammo-fishing-tackle/562293012/ (summarizing Minnesota’s efforts to regulate lead ammunition). In 2015 and 2016, Minnesota’s Department of Natural Resources (DNR) proposed banning lead shot on some public land, but public opposition caused DNR to abandon the plan. See id. (explaining DNR dropped plans to ban lead shot). The following year, the Minnesota Legislature passed a bill prohibiting the DNR from regulating lead until July 1, 2019. Laura Bies, Minnesota Rejects Lead Ammunition Ban, WILDLIFE SOCIETY (Nov. 15, 2019), https://wildlife.org/minnesota-rejects-lead-ammunition-ban/ (describing legislative response to DNR’s proposed rule regulating lead ammunition).
In 2019, New York introduced legislation that would prohibit hunters’ use of lead ammunition in “wildlife management areas, state forests, forest preserves, state parks, and other state owned land.”\textsuperscript{171} The bill did not pass because it failed to receive a vote.\textsuperscript{172} Even without legislative restrictions on lead ammunition, New York’s Department of Environmental Conservation continues to encourage hunters to choose non-lead ammunition voluntarily.\textsuperscript{173} Similarly, Vermont introduced a bill in 2015 banning the use of lead ammunition for hunting.\textsuperscript{174} The bill’s advocates pointed to decades of research demonstrating that lead poses a significant threat to wildlife and humans.\textsuperscript{175} The NRA opposed the bill, declaring that the science behind lead poisoning in animals and humans is “faulty” and claiming a non-toxic ammunition requirement would be considerably more expensive for hunters.\textsuperscript{176} Nevertheless, like New York, Vermont ultimately failed to pass the bill.\textsuperscript{177}

V. Dodging the Lead Bullet: Protecting Wildlife and the Environment Moving Forward

Although lead poses an undeniable risk to the health of humans, plants, and animals, ninety five percent of the ten to thirteen billion rounds of ammunition that hunters purchase each year contain lead.\textsuperscript{178} The FWS calculated hunters deposit an estimated fourteen thousand tons of lead ammunition into the environ-

\textsuperscript{171} See N.Y. Assemb., 703 Legis., 242nd Sess. (establishing lead ammunition ban on public land in New York).
\textsuperscript{172} See NY A00703, supra note 170 (noting bill died); see also N.Y. Assemb., 703 Legis., 242nd Sess. (stating bill’s effective date if passed was January, 2021).
\textsuperscript{178} See Hawkins, supra note 73, at 565 (describing negative impact of lead); see also Urbina, supra note 56 (citing statistics on lead ammunition).
This deposited lead poisons around ten to twenty million animals annually including eagles, condors, mourning doves, wild turkeys, and ducks. Moreover, a single lead bullet can pollute around 370 cubic feet of soil. Lead-laden soil kills the fungi and bacteria living within it, preventing the recycling of nutrients that plants need to thrive. Additionally, lead inhibits plant growth, impedes photosynthesis, and damages root systems. A federal lead ammunition ban would help defend, conserve, and preserve plant species across the nation from the toxic effects of lead ammunition.

Educational campaigns highlighting the negative effects of lead, as well as additional state restrictions on hunters’ use of lead ammunition can shield some wildlife and plant species from lead poisoning. But while these initiatives can help reduce the overall amount of lead hunters expel into the environment, they remain inadequate to protect and save wildlife from lead’s negative effects. Lead ammunition restrictions for specific areas or particular species neglect to protect wildlife and plant species outside the scope of these regulations. Furthermore, the current extent to which hunters choose to use non-lead ammunition voluntarily is insufficient to defend wildlife and the environment from toxic lead exposure.


180. See Urbina, supra note 56 (specifying amount of wildlife deaths each year from lead poisoning); see also Tranel & Kimmel, supra note 26, at 320-23 (listing species harmed by lead poisoning).

181. See Hawkins, supra note 73, at 552 (noting extent to which one bullet contaminates soil).

182. See Lead, supra note 29 (explaining lead kills fungi and bacteria).


184. See Lead Ammunition Overview, supra note 9 (supporting educational campaigns over legislation to encourage hunters to make ethical decisions). For an analysis of state regulations on lead ammunition, see supra notes 133-77 and accompanying text.

185. See McGlashen, supra note 133 (analyzing efforts to regulate lead).


187. See H. 460 § (1)(7) (advocating for non-lead ammunition requirements).
Essentially, a federal ban on lead ammunition is necessary to:
(1) reduce the amount of toxic lead deposited in the environment,
(2) safeguard the health of hunters and their families, and (3) protect wildlife from harmful exposure to lead.\(^{189}\) California’s statewide ban on lead ammunition, for example, illustrates the positive effects of lead ammunition regulations.\(^{190}\) As a result of the ban, California decreased the accumulation of lead ammunition in the state, protected over 280,000 hunters from lead poisoning, and promoted the recovery of the critically endangered condor species.\(^{191}\) Federal lead ammunition restrictions would extend the benefits of California’s ban throughout the United States, thereby protecting many plant and wildlife species from lead poisoning.\(^{192}\)

VI. LEAD AMMUNITION BAN IN THE CROSSHAIRS: CONCLUSION

The scientific evidence and data surrounding lead ammunition and lead poisoning demonstrate the need for a federal ban on lead ammunition.\(^{193}\) Lead poisoning in hunters, plant species, and wildlife is human-caused and entirely preventable.\(^{194}\) Despite opposition, Congress must acknowledge lead ammunition’s destructive impact on the environment and act to defend the vulnerable wildlife populations under its protection.\(^{195}\) Rather than prevent agencies from regulating the lead in ammunition, Congress should

\(^{189}\) For a discussion of the negative effects of lead ammunition, see supra notes 21-36 and accompanying text.

\(^{190}\) See CAL. CODE REGS. tit. 14, § 250.1(a) (2021) (requiring hunters use non-lead ammunition).


\(^{192}\) See Hawkins, supra note 73, at 562 (arguing national ban on lead ammunition is best means of combatting negative effects of lead ammunition).

\(^{193}\) See id. at 566 (calling for national ban on lead ammunition). For a discussion of the scientific evidence and data surrounding lead’s impact on wildlife, plant species, and humans, see supra notes 21-36 and accompanying text.


\(^{195}\) See McGlashen, supra note 133 (noting gun rights advocates have “beaten back” attempts to regulate lead).
instead implement meaningful and comprehensive hunting legisla-
tion to ban the use of lead ammunition.\footnote{196}

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\footnote{196. See LEAD Act of 2020, H.R. 7547, 116th Cong. (2020) (aiming to ban
hunters' use of lead ammunition).

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