

Snake translocation policies and practices within the United States

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Abstract: Human–wildlife conflict with nuisance snakes (Serpentes) is rapidly increasing with human population growth and development rates. Translocation of nuisance snakes has become a widespread practice, aided by social media pages connecting people to volunteer and for-profit snake translocators. However, translocators often struggle to find information and resources from wildlife agencies about the policies required, and some may unintentionally use translocation procedures that disregard the health and survival of the snakes. The goals of this study were to (1) obtain data on policies, permitting, and training required for translocating nuisance snakes in each U.S. state that has snakes and (2) compare the policies with data on actual procedures being performed by snake translocators. This paper is a resource connecting translocators with policies and best practice information to assist them in conducting translocations legally, safely, and in the best interest of all involved, including the wildlife agencies, snake translocators, and the snakes being translocated.

Key words: human–wildlife conflict, nuisance snake, permit, policy, relocation, snake management, translocation, wildlife agency

IN RECENT DECADES, a dramatic increase in urbanization has led to human development and housing encroaching upon wildlands and biodiversity hotspots that are heavily occupied by wildlife (Reid 1998, Williams 2011, Barrington-Leigh and Millard-Ball 2015). Inevitably, this has caused an increase in the potential for human–wildlife conflict simply because people are encountering more wild animals in their daily lives. However, these wildlife encounters are becoming more concerning both for the human residents experiencing unwanted wildlife visitors to their properties as well as for the animals facing higher risk of injury or mortality (Marchini and Crawshaw 2015, Murray and St. Clair 2015).

When people encounter unwanted wildlife on their property, they essentially have 3 options: (1) leave the animal alone and wait for it to naturally leave their property, (2) manually remove the animal from their property or have it removed by someone else, or lastly, (3) kill the animal. The ideal option for the animal is for the human to leave it alone and wait for it to naturally leave the property. However, property owners may be dissatisfied with this option, par-

ticularly when the animal at hand is perceived as dangerous, and they may prefer to have the animal removed from their property by specialized businesses or willing volunteers (Bateman et al. 2021). The option of killing the animal is typically considered the least ideal option, as it is often performed inhumanely and can result in adverse effects on local ecosystems and wildlife populations, especially in the case of threatened or endangered species or species of special concern (Bluett 2001, Julien et al. 2010, Warren 2014), and fails to consider the individual welfare of the animal. Additionally, the act of killing the animal may be riskier to the resident than the other options, especially if the animal is potentially dangerous (Malhotra et al. 2021). Examples of these potentially dangerous and often persecuted animals include canids (Canidae), large felids (Felidae), hymenopterans (Hymenoptera), arachnids (Arachnida), and venomous snakes (Serpentes).

Snakes may be at an especially high risk of being killed when encountered by people. Many people fear snakes, and the reasons for this are complex. While there is strong evidence that coevolution with snakes has greatly

improved the ability of primates to rapidly detect snakes, most evidence indicates that fear of snakes is primarily learned (Kawai 2019). This learned fear likely results from cultural transfer between generations and may be further provoked by the villainized portrayal of snakes in media (Murray and Foote 1979, Sasaki et al. 2012, Pandey et al. 2016, International Union for Conservation of Nature [IUCN] 2023). The likelihood of encountering venomous and potentially life-threatening snakes is inevitably increasing due to expanding development in areas with snakes like rattlesnakes (*Crotalinae*), copperheads (*Agkistrodon contortrix*), and cottonmouths (*A. piscivorus*; Reid 1998, Williams 2011, Barrington-Leigh and Millard-Ball 2015). Furthermore, climate change may physiologically benefit some species of venomous snakes (Crowell et al. 2021), possibly leading to additional human–snake conflict in coming years. For example, rising annual temperatures may decrease snake brumation time, allowing them to be active and above ground for more days throughout the year.

Property owners may not understand how to safely handle a venomous snake and may be justifiably afraid to try to kill it, preferring to call a service to remove the snake for them. In some areas, animal control officers, police officers, and/or firefighters may be called upon to remove the snakes, but often it is their policy to euthanize the snake (La Vine et al. 1996). Some residents value wildlife and are willing to pay a fee for snake translocation (Bateman et al. 2021), while other people volunteer their time and translocate snakes for free. A recent study in the Phoenix, Arizona, USA, metropolitan area showed that residents generally opposed killing snakes, especially those people who paid a snake translocation service to remove snakes from their yards (Larson et al. 2024). Because of these factors, the United States has many individuals, either from businesses or as volunteers, willing to remove and translocate unwanted snakes found on properties into appropriate habitat away from people. Over the past decade, the internet has facilitated rapid connection between people needing a snake translocated from their property and those willing to provide this service. For example, the “Free Snake Relocation Directory” Facebook group has >97,000 members as of this article's online availability in June 2026,

and successful snake removal businesses have been established in areas with high frequencies of venomous snakes visiting residences, like the Phoenix and Tucson Metropolitan Areas of Arizona (Bateman et al. 2021).

In general, the act of deliberately moving wildlife from one site to another for the purpose of their protection and preservation is termed conservation translocation (IUCN 2013, Batson et al. 2015). Mitigation translocation is a type of conservation translocation in which the goal is to move wildlife away from areas of high human density to decrease the chances of human-caused wildlife mortality and is being used more commonly to decrease human–snake conflict (Germano et al. 2015, Sullivan et al. 2015, Bradley et al. 2022). Mitigation translocation of snakes can be further broken down into 2 subcategories: short-distance translocation and long-distance translocation. While the best way to distinguish these categories is that short-distance translocation moves a snake within its home range and long-distance translocation moves a snake outside its home range (Corbit 2015), snake translocators may not know the home range size of a given snake and therefore typically follow general rules (e.g., short distance is about 0.25–0.5 mi [0.4–0.8 km] from the site of capture and long distance is farther than 0.5 mi [0.8 km]). Translocating a snake a long distance can have negative impacts on its health and can increase mortality, but translocating a snake a short distance increases the chance of the snake reencountering humans or even returning to its original capture site (Reinert and Rupert 1999, Plummer and Mills 2000, Nowak et al. 2002, Brown et al. 2009). Though translocation efficacy is complicated, short-distance translocation is generally preferred, as it solves the acute human–wildlife conflict and moves the snake to suitable habitat within or near its home range (Cornelis et al. 2021, Choquette et al. 2023). Throughout this study, we use the term “translocation,” which is synonymous with “relocation.”

Although a purpose of mitigation translocation is to decrease snake mortality by removing it from human-occupied areas, several studies have shown that long-distance translocations may cause abnormal movement and behavior (Reinert and Rupert 1999, Plummer and Mills 2000, Roe et al. 2010, Nowak et al. 2002), in-

crease stress hormones (Heiken et al. 2016), and increase mortality (Reinert and Rupert 1999, Plummer and Mills 2000, Roe et al. 2010, Jungen 2018). Other studies have indicated that snakes translocated a short distance are more likely to return to their original site of capture (Brown et al. 2009, Holding et al. 2014, Cornelis et al. 2021, Corbit and Hayes 2022). Additionally, long-distance translocation of diseased snakes increases the chances of introducing pathogens from one population to another (Nowak et al. 2002, Brown et al. 2008, Suarez et al. 2017, Cornelis et al. 2021), and introducing snakes into new populations may have negative effects, like outbreeding depression or overpopulation (Germano et al. 2015, Cornelis et al. 2021, Choquette et al. 2023). Although more research is needed on species-specific responses to different types of translocations, long-distance translocation more often results in poorer outcomes for the translocated snakes (Cornelis et al. 2021, Choquette et al. 2023); therefore, short-distance translocation is generally recommended.

Because translocation as a mitigation strategy for human–snake conflict is widely practiced throughout the United States, it is critical to ensure that the primary goals of mitigation conservation translocation are achieved: reducing risk of snakebite to people and pets, along with decreasing snake mortality. However, it is likely that many people performing snake translocations are not versed in best practices (e.g., avoiding long-distance translocation, importance of translocating snakes to proper habitat, etc.). In the United States, wildlife management regulations relevant to snakes are established independently by each state and are only superseded by federal law in the rare cases of endangered or otherwise protected species. It is therefore relevant to investigate the policies and procedures regarding snake translocation at the state level. Permits issued by state wildlife governing agencies may require that translocators follow specific rules, receive training, and report their translocation activities to their appropriate state agency. Information on permits and training for snake translocation may be very difficult for people to find, understand, and/or the permits are difficult to obtain or are expensive, creating barriers for individuals interested in translocating snakes. Additionally, many states have laws meant to protect certain species due to their con-

servation status, but this could harm individual snakes by prohibiting their potential for translocation away from areas where they may face mortality due to human activity. Well-informed snake translocations through a state-mandated permitting process may not only decrease snake mortality and human–snake conflict but also carry the potential to bring awareness to the public of the general importance of snake conservation and preservation.

The first goal of this study was to create a comprehensive review of the permits and training currently required in each of the 48 contiguous United States for snake mitigation translocation. Such information will serve as an accessible and informative resource for snake translocators to understand which permits are required for mitigation translocation, the permit costs, training requirements, and where such permits and/or training can be obtained. Additionally, it could also provide valuable information to wildlife management agencies when reviewing and updating policies to determine the most useful and beneficial translocation permitting processes for their state. A second goal of this study was to collect data on the snake translocation practices being performed by volunteers and businesses and compare these data to the states' policies. In other words, do snake translocators actually have the proper permits when these apply, and to what extent are they following the best practices recommended by scientific research? Ultimately, these findings could generate better awareness of state translocation requirements, which in turn could lead to the use of translocation practices designed to ensure the greatest chance of survival for snakes.

Methods

Survey for state representatives

To determine the policies regarding snake translocation in each state, we corresponded with officials from state wildlife agencies to identify the single individual representative from each U.S. state best able to answer questions regarding the permitting and training for snake mitigation translocation. These individuals all held positions within their state's designated agency for wildlife control and permitting, and all agreed that they were the single most appropriate representative for their state

for understanding the laws regarding mitigation translocation of snakes. A survey consisting of 16 questions regarding the state laws pertaining to snake translocation (Appendix 1) was approved by the Institutional Review Board (IRB; approval #2022-015) at California Polytechnic State University, San Luis Obispo. After providing written informed consent, all wildlife representatives answered questions pertaining to the correspondent’s job position in their agency, the permit(s), fee(s), laws, and training associated with legal snake translocation, the rationale behind these permits and laws, and the repercussions for violations of these laws. We emailed the survey as a Google Forms link to each state representative. After survey completion, confirmation emails were sent to each state representative summarizing the data we collected for their state. At this time, officials could either edit their responses or approve the data. Our final list of state policies and procedures regarding snake translocation is therefore up to date as of November 2022 and approved by each of the state wildlife agencies.

Survey for snake translocators

Simultaneously, we drafted a survey for individuals who translocate snakes throughout the United States. This survey (Appendix 2) was also approved by the IRB at California Polytechnic State University, San Luis Obispo (approval #2022-015). After obtaining written informed consent, respondents answered 19 questions pertaining to their demographics, the distance they typically translocate snakes from their points of capture, how many snakes they translocate per year, whether they translocate snakes as part of a business, agency, or as volunteer work, their knowledge of their state’s laws pertaining to snake translocation, whether or not they hold permits or training for translocation, and if so, which permits they hold. For each state, we emailed the survey to the first 5 businesses appearing in a Google search for “snake translocation/relocation services in (insert state)” that advertised for snake translocations on their website. If the information was public, the email was directed toward the business owner; otherwise, the email was directed to the business email address publicly adver-

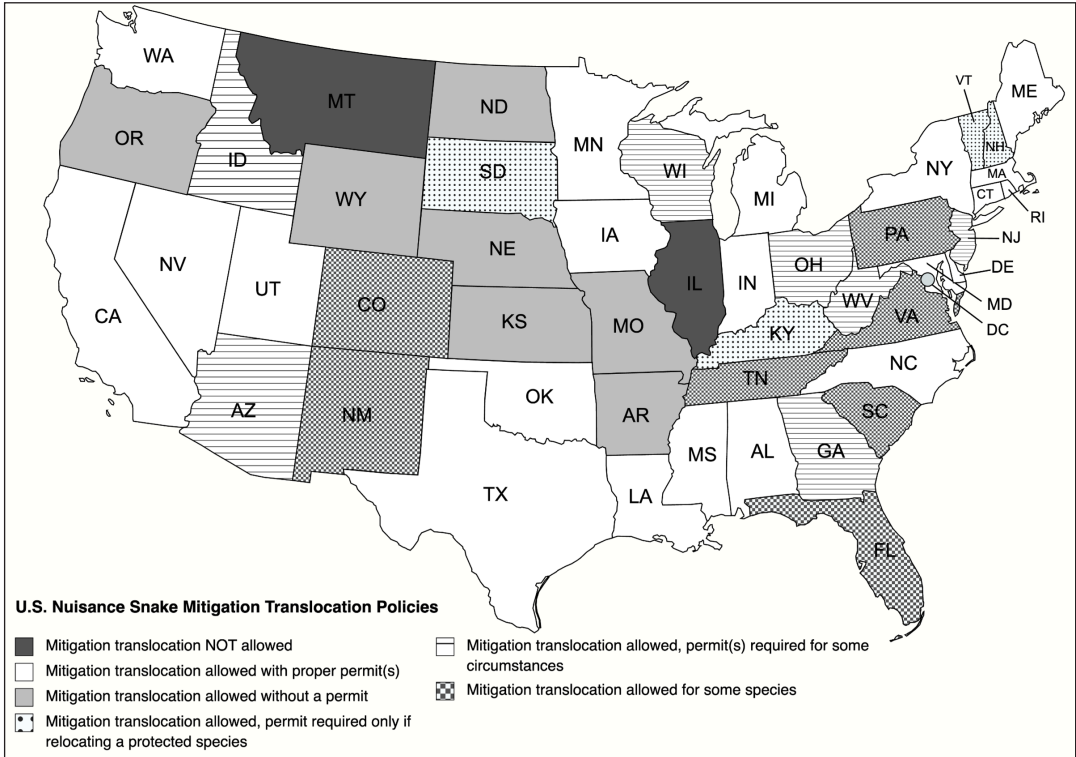


Figure 1. Map of the contiguous United States summarizing nuisance snake (Serpentes) mitigation translocation policies as of 2022 by state. See Table 1 and Appendix 3 for permits required by each state.

tised on the webpage. Additionally, we used a shotgun approach to attempt to reach as many independent snake translocators as possible by distributing the survey on social media using the Facebook group, “Free Snake Relocation Directory.” The survey was posted in the Facebook group, calling for responses from anyone in the United States that translocated nuisance snakes. Because this was a public post, we were unable to control for the equal distribution of survey responses among states. It is important to note that most snake translocators in the sample were residents of the eastern half of the United States, coastal California, and Texas, likely because these areas have widespread human–snake conflict. Notably, the sample may not be representative of all snake translocators due to the limitations in our survey distribution methods and because some translocators operating without permits may have been reluctant to participate.

Results

Survey of wildlife officials on snake translocation policies

We received complete survey responses from the wildlife representatives responsible for overseeing snake translocation permitting from all 48 contiguous states. After sending confirmation emails with the information that we deduced based on the surveys, we received responses with confirmations/corrections from all states except for Georgia, Mississippi, Nevada, Ohio, Oregon, Virginia, and Washington. Overall, 46 states allow mitigation translocation of snakes, with most ($N = 39$) requiring permits in all or certain circumstances, while 2 states do not allow mitigation translocation of snakes (Illinois and Montana; Figure 1; Table 1; Appendix 3). Of the 39 states that do require permits for either all or some circumstances of mitigation translocation, 14 states do not offer or require any form of training and/or certifications, while a form of training, course, certification, or exam is required in 19 states. Furthermore, 7 states require previous experience and/or qualifications for some permits but do not provide any training.

Of the states that do allow mitigation translocation, 7 states do not require permits or training under any circumstance (Arkansas, Kansas, Missouri, Nebraska, North Dakota, Oregon,

South Carolina, and Wyoming). Although Missouri does not legally require a permit to translocate snakes, translocations must be in accordance with the instructions of an agent of the Missouri Department of Conservation. In most cases, the agent is on call during business hours and will grant permission for short-distance translocation. Although South Carolina does not require permits for translocations, the southern hog-nosed snake (*Heterodon simus*) is prohibited to take or translocate due to the species’ conservation status; all other species do not require a permit to translocate. Furthermore, 4 states allow translocation but do not require permits unless a protected/threatened/endangered species is being translocated (Kentucky, New Hampshire, South Dakota, and Vermont; Table 1; Appendix 3).

Of the various types of permits required across the United States for mitigation of snake translocation, some of the most common permits are Scientific Collecting Permits and Nuisance Wildlife Control Operator Permits, with Threatened and Endangered Species Permits and Protected Species Permits often required for the translocation of specific species within a given state. About half of the permits required for the various circumstances of snake translocation cost <\$50 USD annually, while about a third are free of charge. Eight of the permits required for specific circumstances of translocation are >\$100 USD annually, with the highest being \$250 USD for the Connecticut Nuisance Wildlife Control Operator Permit (valid for 2 years).

Ten states require a single permit for any circumstance of snake translocation (California, Delaware, Maine, Maryland, Massachusetts, Nevada, Rhode Island, Texas, Utah, and Washington), while most other states require different permits for varying circumstances of snake translocation (Appendix 3). Some of these circumstances include obtaining a separate permit for translocating through a business or charging for commercial services ($n = 13$; Alabama, Arizona, Georgia, Indiana, Iowa, Louisiana, Michigan, New Mexico, New York, North Carolina, Ohio, Oklahoma, and West Virginia), translocating as a volunteer ($n = 6$; Indiana, Iowa, Louisiana, Michigan, North Carolina, and Oklahoma), translocating protected/threatened/endangered species ($n = 14$; Alabama, Connecti-

Table 1. Permitting requirements for snake (Serpentes) mitigation translocation in the 48 contiguous United States, as of 2022. Refer to supplemental materials for details including conditions for translocation, names(s) and costs of required permits, and links to permit portals (see Appendix 3).

State	Mitigation translocation allowed?	Permit required?
Alabama	Yes	Yes
Arizona	Yes	In some circumstances
Arkansas	Yes	No
California	Yes	Yes
Colorado	For some species	Yes
Connecticut	Yes	Yes
Delaware	Yes	Yes
Florida	For some species	For some species
Georgia	Yes	In some circumstances
Idaho	Yes	In some circumstances
Illinois	No (except for research purposes)	Yes
Indiana	Yes	Yes
Iowa	Yes	In some circumstances
Kansas	Yes	No
Kentucky	Yes	For some species
Louisiana	Yes	Yes
Maine	Yes	Yes
Maryland	Yes	Yes
Massachusetts	Yes	Yes
Michigan	Yes	Yes
Minnesota	Yes	Yes
Mississippi	Yes	Yes
Missouri	Yes	No
Montana	No	No
Nebraska	Yes	No
Nevada	Yes	Yes
New Hampshire	Yes	For some species
New Jersey	Yes	Yes
New Mexico	For some species	For some species
New York	Yes	In some circumstances
North Carolina	Yes	Yes
North Dakota	Yes	No
Ohio	Yes	In some circumstances
Oklahoma	Yes	Yes
Oregon	Yes	No
Pennsylvania	For some species	For some species
Rhode Island	Yes	Yes

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South Carolina	For some species	For some species
South Dakota	Yes	For some species
Tennessee	For some species	For some species
Texas	Yes	Yes
Utah	Yes	Yes
Vermont	Yes	For some species
Virginia	For some species	Yes
Washington	Yes	Yes
West Virginia	Yes	In some circumstances
Wisconsin	Yes	Yes
Wyoming	Yes	No

cut, Indiana, Iowa, Michigan, Minnesota, Mississippi, New Jersey, New York, North Carolina, Ohio, Oklahoma, South Dakota, and Wisconsin), and translocating venomous species ($n = 4$; Florida, Louisiana, New Jersey, and Pennsylvania).

Within the states that allow translocation with the proper permits for varying circumstances, some states have species that are prohibited to take or translocate. For example, Colorado requires a Scientific Collecting License for all circumstances of translocation, but rattlesnakes are not allowed to be translocated off the landowner’s property; rattlesnake translocations are handled on a case-by-case basis through the appropriate regional office. In Pennsylvania, translocations are allowed with varying permits for most species, but many species are prohibited to take or translocate, including timber rattlesnakes (*Crotalus horridus*), eastern copperheads, eastern massasaugas (*Sistrurus catenatus*), rough green snakes (*Opheodrys aestivus*), and Kirtland’s snakes (*Clonophis kirtlandii*). Timber rattlesnakes are also prohibited to translocate in Virginia, but all other species can be translocated with a Commercial Nuisance Animal Provider Permit. In New Mexico, a permit is only required if translocating as a business or commercial service, but the New Mexico ridge-nosed rattlesnake (*Crotalus willardi obscurus*) and mottled rock rattlesnake (*Crotalus l. lepidus*) are prohibited to take or translocate. Furthermore, Tennessee requires a Nuisance Animal Damage Control Permit for all circumstances of translocation, but translocating ven-

omous species is currently prohibited. All nuisance venomous snakes that are unwanted by residents in Tennessee must be euthanized on site in compliance with the euthanasia guidelines from the American Veterinarian Medical Association and may not be translocated. Additionally, Tennessee prohibits the translocation of protected species, including the rough earth snake (*Virginia striatula*), Kirtland’s snake, and western ribbon snake (*Thamnophis proximus*). As Florida has the greatest number of introduced and invasive reptile species in the United States (Engeman et al. 2011, Engeman and Avery 2016, Krysko et al. 2016), it has implemented policies regarding these prohibited, nonnative reptiles. Specifically, all prohibited, nonnative reptiles require an Eradication and Control Permit to capture. However, these species cannot be translocated but must be brought to the permittee’s designated control site to be euthanized within 24 hours of capture.

Of the 39 states that do require permits for either all or some circumstances of mitigation translocation, 14 states do not offer or require any form of training and/or certifications (Alabama, Colorado, Idaho, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, New Hampshire, New Mexico, South Carolina, South Dakota, Texas, and Utah). A form of training, course, certification, or exam is required in 19 states either for all or some circumstances of mitigation translocation (Connecticut, Delaware, Georgia, Indiana, Iowa, Maine, Maryland, New Jersey, New York, North Carolina,

Ohio, Oklahoma, Pennsylvania, Rhode Island, Tennessee, Vermont, Virginia, Washington, and West Virginia). For venomous snake translocations, a designated venomous snake training is required in 4 states (Maryland, New Jersey, New York, and Pennsylvania). Furthermore, 7 states require previous experience and/or qualifications for some permits, but do not provide any training (Arizona, California, Florida, Massachusetts, North Carolina, Ohio, and Wisconsin). For translocating venomous snakes in Florida, an individual must obtain a License to Possess or Exhibit Venomous Reptiles. This license has a requirement of at least 1,000 hours of working experience with a species in the same biological family to be translocated.

Survey of snake translocators on snake translocation procedures

We received 177 responses from individuals in 31 of the 48 states to our survey of individuals performing snake translocations. We received the most responses from Texas ($n = 40$), California ($n = 25$), Florida ($n = 17$), Georgia ($n = 16$), and Alabama ($n = 14$). Most respondents ($N = 173$) reported the species of snakes they translocate (Table 2). We discovered that 18% ($n = 32$) of all snake translocator respondents did not know if any permits were required in their state, while 57% ($n = 102$) believed that a permit was either always required under any circumstance, required for only certain species, or required only for certain circumstances for their respective states. However, only 30% ($n = 53$) of respondents claimed they possessed the appropriate permit for translocating snakes in their state. A comparison of actual requirements, according to the wildlife officials, and the type of permit reported by the translocators, showed that of those 53 individuals who claimed to have the correct permits, only 55% ($n = 29$) actually had the appropriate permit(s) for their respective states to legally translocate snakes for human–snake conflict mitigation.

Most translocators who responded to our survey were between the ages of 30 and 65 (69%), and their highest level of education was either a high school degree or equivalent (30%), or a bachelor's degree (29%). We found that about 65% of respondents operate as volunteers (including those accepting donations), 9% operate as a Limited Liability Company (LLC), 8% are

employed by wildlife agencies or similar, 8% work for nonprofit organizations, and 7% operate as a Sole Proprietorship. About 44% of all respondents perform all translocations for free without accepting donations, while 38% accept donations, 6% charge a specific fee based on their time spent or distance traveled, and 2% charge a flat rate for all translocations. Hourly rates ranged from \$37–\$125 USD per hour while flat rate fees ranged from \$100–\$150 USD. A list of the most common species translocated by respondents in each state is provided (Table 2). When translocating snakes, participants reported they translocate the following number of snakes per year: most respondents (40%) translocate up to 10 snakes per year, 35% translocate between 10 and 30 snakes per year, 17% translocate between 30 and 100 snakes per year, and a few respondents (8%), primarily owners of snake translocation businesses, translocate >100 snakes per year.

Based on the results of our survey of state wildlife representatives, most states either recommend short-distance translocation but do not enforce it, or do not have any requirements or recommendations for translocation distance. It was unclear from many survey responses whether short-distance translocation was legally required or simply recommended. When translocating snakes to a new location, 36% of people responded that they translocate the snakes to a new location that is within 0.25 mi (0.4 km) from the snake's original capture location, while 22% translocate the snakes within 0.5 mi (0.8 km) from the original capture location, 18% translocate <1 mi (1.6 km) from the original capture location, 10% within 5 mi (8.0 km) of the original capture location, and 4% translocate the snakes >5 mi (8.0 km) from their original capture locations. For snake release locations, only 3% claimed to translocate all the snakes that they capture to a single location, while 94% translocate individual snakes to new and appropriate habitat near where they were found.

Discussion

This study revealed that most of the U.S. states allow mitigation translocation of nuisance snakes. The states vary dramatically in terms of species allowed to be translocated and other requirements. Many states require permits and/

Table 2. The snake (Serpentes) species translocated by survey respondents ($N = 173$). Our study did not quantify how many individual snakes are translocated in each state, so species are shown in alphabetical order.

State (# of responses)	Species
Alabama (14)	Copperhead (<i>Agkistrodon contortrix</i>), cottonmouth (<i>Agkistrodon piscivorus</i>), eastern diamond-backed rattlesnake (<i>Crotalus adamanteus</i>) eastern kingsnake (<i>Lampropeltis getula</i>), racer (<i>Coluber constrictor</i>), rat snake (<i>Pantherophis</i> spp.), timber rattlesnake (<i>Crotalus horridus</i>), watersnake (<i>Nerodia</i> spp.)
Arizona (10)	California kingsnake (<i>Lampropeltis californiae</i>), coachwhip (<i>Masticophis flagellum</i>), desert nightsnake (<i>Hypsiglena chlorophaea</i>), gophersnake (<i>Pituophis catenifer</i>), Mojave rattlesnake (<i>Crotalus scutulatus</i>), speckled rattlesnake (<i>Crotalus pyrrhus</i>), western diamond-backed rattlesnake (<i>Crotalus atrox</i>)
Arkansas (4)	Copperhead (<i>Agkistrodon contortrix</i>), Dekay's brownsnake (<i>Storeria dekayi</i>), gartersnake (<i>Thamnophis</i> spp.), ratsnake (<i>Pantherophis</i> spp.), watersnake (<i>Nerodia</i> spp.)
California (25)	California kingsnake (<i>Lampropeltis californiae</i>), coachwhip (<i>Masticophis flagellum</i>), gophersnake (<i>Pituophis catenifer</i>), red diamond rattlesnake (<i>Crotalus ruber</i>), speckled rattlesnake (<i>Crotalus pyrrhus</i>), striped racer (<i>Coluber lateralis</i>), western rattlesnake (<i>Crotalus oreganus</i>)
Colorado (3)	Gartersnake (<i>Thamnophis</i> spp.), gophersnake (<i>Pituophis catenifer</i>), prairie rattlesnake (<i>Crotalus viridis</i>)
Connecticut (1)	Copperhead (<i>Agkistrodon contortrix</i>), Dekay's brownsnake (<i>Storeria dekayi</i>), gartersnake (<i>Thamnophis</i> spp.)
Delaware (0)	Information not available
Florida (17)	Cottonmouth (<i>Agkistrodon conanti/piscivorus</i>), eastern coralsnake (<i>Micrurus fulvius</i>), eastern diamond-backed rattlesnake (<i>Crotalus adamanteus</i>), gartersnake (<i>Thamnophis</i> spp.), pygmy rattlesnake (<i>Sistrurus miliarius</i>), racer (<i>Coluber constrictor</i>), ring-necked snake (<i>Diadophis punctatus</i>), ratsnake (<i>Pantherophis</i> spp.), watersnake (<i>Nerodia</i> spp.)
Georgia (17)	Copperhead (<i>Agkistrodon contortrix</i>), cottonmouth (<i>Agkistrodon conanti/piscivorus</i>), Dekay's brownsnake (<i>Storeria dekayi</i>), eastern diamond-backed rattlesnake (<i>Crotalus adamanteus</i>), eastern kingsnake (<i>Lampropeltis getula</i>), gartersnake (<i>Thamnophis</i> spp.), pygmy rattlesnake (<i>Sistrurus miliarius</i>), racer (<i>Coluber constrictor</i>), ratsnake (<i>Pantherophis</i> spp.), timber rattlesnake (<i>Crotalus horridus</i>), watersnake (<i>Nerodia</i> spp.)
Idaho (1)	Western rattlesnake (<i>Crotalus oreganus</i>)
Illinois (1)	Gophersnake (<i>Pituophis catenifer</i>), ratsnake (<i>Pantherophis</i> spp.)
Indiana (1)	Ratsnake (<i>Pantherophis</i> spp.)
Iowa (0)	Information not available
Kansas (1)	Dekay's brownsnake (<i>Storeria dekayi</i>), gartersnake (<i>Thamnophis</i> spp.), gophersnake (<i>Pituophis catenifer</i>), racer (<i>Coluber constrictor</i>), ratsnake (<i>Pantherophis</i> spp.)
Kentucky (0)	Information not available
Louisiana (2)	Cottonmouth (<i>Agkistrodon piscivorus</i>), ratsnake (<i>Pantherophis</i> spp.), watersnake (<i>Nerodia</i> spp.)
Maine (0)	Information not available
Maryland (0)	Information not available
Massachusetts (2)	Copperhead (<i>Agkistrodon contortrix</i>), gartersnake (<i>Thamnophis</i> spp.), milksnake (<i>Lampropeltis triangulum</i>), ratsnake (<i>Pantherophis</i> spp.), ring-necked snake (<i>Diadophis punctatus</i>), timber rattlesnake (<i>Crotalus horridus</i>)
Michigan (0)	Information not available
Minnesota (0)	Information not available
Mississippi (0)	Information not available

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Missouri (2)	Copperhead (<i>Agkistrodon contortrix</i>), cottonmouth (<i>Agkistrodon piscivorus</i>), gartersnake (<i>Thamnophis</i> spp.), ratsnake (<i>Pantherophis</i> spp.), ring-necked snake (<i>Diadophis punctatus</i>)
Montana (1)	Prairie rattlesnake (<i>Crotalus viridis</i>)
Nebraska (2)	Dekay's brownsnake (<i>Storeria dekayi</i>), gartersnake (<i>Thamnophis</i> spp.), gophersnake (<i>Pituophis catenifer</i>), ratsnake (<i>Pantherophis</i> spp.)
Nevada (2)	California kingsnake (<i>Lampropeltis californiae</i>), gophersnake (<i>Pituophis catenifer</i>), western rattlesnake (<i>Crotalus oreganus</i>)
New Hampshire (0)	Information not available
New Jersey (0)	Information not available
New Mexico (0)	Information not available
New York (0)	Information not available
North Carolina (4)	Copperhead (<i>Agkistrodon contortrix</i>), Dekay's brownsnake (<i>Storeria dekayi</i>), gartersnake (<i>Thamnophis</i> spp.), racer (<i>Coluber constrictor</i>), ratsnake (<i>Pantherophis</i> spp.), timber rattlesnake (<i>Crotalus horridus</i>)
North Dakota (0)	Information not available
Ohio (0)	Information not available
Oklahoma (2)	Copperhead (<i>Agkistrodon contortrix</i>), cottonmouth (<i>Agkistrodon piscivorus</i>), pygmy rattlesnake (<i>Sistrurus miliarius</i>), ratsnake (<i>Pantherophis</i> spp.)
Oregon (0)	Information not available
Pennsylvania (2)	Gartersnake (<i>Thamnophis</i> spp.), ratsnake (<i>Pantherophis</i> spp.), timber rattlesnake (<i>Crotalus horridus</i>)
Rhode Island (0)	Information not available
South Carolina (4)	Copperhead (<i>Agkistrodon contortrix</i>), Dekay's brownsnake (<i>Storeria dekayi</i>), eastern hog-nosed snake (<i>Heterodon platirhinos</i>), racer (<i>Coluber constrictor</i>), ratsnake (<i>Pantherophis</i> spp.), timber rattlesnake (<i>Crotalus horridus</i>), watersnake (<i>Nerodia</i> spp.)
South Dakota (0)	Information not available
Tennessee (5)	Copperhead (<i>Agkistrodon contortrix</i>), cottonmouth (<i>Agkistrodon piscivorus</i>), gartersnake (<i>Thamnophis</i> spp.), gophersnake (<i>Pituophis catenifer</i>), ratsnake (<i>Pantherophis</i> spp.), watersnake (<i>Nerodia</i> spp.)
Texas (40)	Coachwhip (<i>Masticophis flagellum</i>), copperhead (<i>Agkistrodon contortrix</i>), coralsnake (<i>Micrurus tener</i>), cottonmouth (<i>Agkistrodon piscivorus</i>), Dekay's brownsnake (<i>Storeria dekayi</i>), gophersnake (<i>Pituophis catenifer</i>), ratsnake (<i>Pantherophis</i> spp.), watersnake (<i>Nerodia</i> spp.), western diamond-backed rattlesnake (<i>Crotalus atrox</i>), western massasauga rattlesnake (<i>Sistrurus tergeminus</i>), yellow-bellied kingsnake (<i>Lampropeltis calligaster</i>)
Utah (2)	Western rattlesnake (<i>Crotalus oreganus</i>), ratsnake (<i>Pantherophis</i> spp.)
Vermont (0)	Information not available
Virginia (5)	Copperhead (<i>Agkistrodon contortrix</i>), Dekay's brownsnake (<i>Storeria dekayi</i>), gartersnake (<i>Thamnophis</i> spp.), ratsnake (<i>Pantherophis</i> spp.), watersnake (<i>Nerodia</i> spp.)
Washington (1)	Gartersnake (<i>Thamnophis</i> spp.), gophersnake (<i>Pituophis catenifer</i>), rubber boa (<i>Charina bottae</i>)
West Virginia (1)	Copperhead (<i>Agkistrodon contortrix</i>), gartersnake (<i>Thamnophis</i> spp.), ratsnake (<i>Pantherophis</i> spp.)
Wisconsin (1)	Gartersnake (<i>Thamnophis</i> spp.), ratsnake (<i>Pantherophis</i> spp.), watersnake (<i>Nerodia</i> spp.)
Wyoming (0)	Information not available

or training to legally translocate snakes, while a few states have no requirements. In general, requirements for permits and/or training may be helpful in ensuring that translocators move snakes using proper and safe procedures. Permits may also require reporting to the permitting body, providing information on human–wildlife conflict to state agencies so that they are informed about the extent of these interactions and translocations in their states. Training is an excellent way to ensure that snake translocators know how to handle snakes in ways that are safe to both them and the snakes. However, requiring in-person training may introduce logistical barriers to people hoping to help their communities by translocating nuisance snakes. Many states appear to have robust policies that meet their human–wildlife conflict mitigation needs; Table 1 and Appendix 3 are resources for wildlife officials to evaluate their own policies and compare them to those of other states.

The alternative to translocating nuisance snakes may be euthanasia, which can be dangerous for people to perform and, for obvious reasons, is a poor outcome for the individual snakes. We advocate the continued refinement of policies that allow responsible translocation of nuisance snakes by permitted individuals for 2 main reasons. First, research performed on mitigation translocation of nuisance snakes in the United States generally shows that snakes translocated short distances have positive outcomes (e.g., high survival, little impact on movement, low stress response, little interruption to thermoregulation and other physiological processes) and only occasionally return to the site of capture (Brown et al. 2009, Holding et al. 2014, Cornelis et al. 2021, Corbit and Hayes 2022). Second, human encounters with venomous snakes in the United States will likely rise in the future due to development and climate change (Reid 1998, Williams 2011, Barrington-Leigh and Millard-Ball 2015, Crowell et al. 2021), making efforts to coexist with snakes that much more important. Regulations requiring permits or training for translocation should not be a barrier to translocation, but rather an aid to help educate translocators on how best to conduct snake translocations.

Two states (Montana and Illinois) do not allow translocation of snakes under any circumstances. In general, wildlife officials reported

that their policies reflect that they do not perceive translocation as a useful strategy to mitigate human–snake conflict. The Montana wildlife official noted that the only potentially dangerous snake, the prairie rattlesnake (*Crotalus viridis*), is widespread and common, with euthanasia as the preferred method to control nuisance venomous snakes:

“Montana FWP [Fish, Wildlife, and Parks] is unlikely to consider snake translocations for management because there are no ESA [Endangered Species Act] listed species in Montana. The three species of concern are unlikely to cause conflict with humans and the only venomous snakes, the prairie rattlesnake, is widespread, abundant, ample high-quality habitats exists and is secure, and the population is stable. For these reasons, a translocation project is unlikely to gain support from either wildlife managers or the Fish and Wildlife Commission that would grant approval.”

—Montana Fish, Wildlife, and Parks Non-game Bureau Chief

In contrast, Illinois, which allows translocation only for scientific research, prohibits mitigation translocation because they are concerned that translocation can cause aberrant movement behaviors and spread diseases, and they described alternative approaches to snake management:

“Educating the public of [the snakes’] benefits, while at the same time dispelling myths about them, is a better method to address this issue than run out, move the snake several miles down the road, and then the snake ends up just crawling off in a straight line trying to find a familiar scent trail, until it is either predated or killed... [Instead, they] reach out to landowners and explain to them that a snake in their yard is a naturally occurring thing and that snakes are generally near human habitation to assist in nuisance rodent control... Other potential issues include moving a potentially diseased snake to another area, which could be detrimental to other snake populations.”

—Illinois Southern Region E&T Recovery Species Specialist/Herpetologist

Ultimately, while the educational aspects of these policies in Montana and Illinois are beneficial to the public, policies that prohibit mitigation translocation under any circumstances negatively impact the snakes that are killed. Furthermore, property owners experiencing unwanted and potentially dangerous snakes are left in vulnerable and undesirable situations, resulting in human–wildlife conflict that could otherwise be mitigated with translocations. While aberrant movements and poor survival have been observed in some studies following long-distance translocation, this is rare with short-distance translocation (Cornelis et al. 2021, Choquette et al. 2023). Similarly, moving snakes short distances (e.g., within their home ranges; Corbit 2015) should not spread disease.

A relatively low number of translocators responding to our survey possessed the proper permits. There are various reasons why people may not have the required permits, including the possibility that they may be too expensive. However, people are often unaware of what permits are required in their state either because the information is difficult to find, or they assume or fail to question if permits are needed. Qualitatively, whether translocators had the required permits appeared to differ among states. For example, in California, 4 respondents stated they had the appropriate permit, but only 1 individual had the correct California Scientific Collecting Permit authorizing mitigation translocation of all snakes. The other 3 respondents reported holding a California Fishing License, which they erroneously believed to cover mitigation translocation of snakes. On the other hand, in Texas, 14 respondents stated that they had the appropriate permit, and most ($n = 12$) did have the correct Texas Hunting License authorizing legal mitigation translocation of snakes. However, when considering the demographics of respondents and the data reported here, it is important to remember that our sample of respondents may not be representative of all snake translocators due to our shotgun approach in distributing the survey. Furthermore, it is possible that some translocators who knowingly operate without permits did not participate in our survey out of fear for potential prosecution or other action. If this is true, then the proper permitting of snake translocators in the United States may be even lower than what we report.

Despite most states not enforcing specific translocation distance regulations, we found that most translocators in our sample aim to perform short-distance translocations. Also, for snake release locations, only 3% claimed to translocate all the snakes that they capture to a single location, while 94% translocate individual snakes to new and appropriate habitat near where they were found. Importantly, these results should be treated with caution given that our sample of snake translocators is likely not representative of all people who translocate snakes in the United States. However, the data are encouraging because they suggest that those translocators responding to our survey may be aware of the common negative implications of long-distance translocation of snakes (Sullivan et al. 2015, Cornelis et al. 2021, Choquette et al. 2023) and choose short-distance translocation to nearby habitat with the best interest of the snakes in mind.

Management implications

Our findings serve as a resource for snake translocators interested in understanding state requirements associated with mitigation translocations, including information about where to obtain any required permits and training that can otherwise be difficult to find. Given the important service snake translocators provide to humans and the likely associated benefits to snake populations, we believe their translocation efforts should be encouraged. It is critical, however, that these efforts be monitored by state wildlife agencies through their permitting process to ensure that evidence-based best practices are followed, including short-distance translocation. In addition, maintaining accurate records of snake translocations can help to understand the temporal and spatial dynamics of human–snake conflict and inform snake management policy. Permit holders who perform translocations generally must provide regular reports to their state, which, while variable in content, generally include such data as the species, size, and sex of the snakes, and the dates and locations of the translocations. These data allow state wildlife agencies to monitor trends over time in relation to issues pertinent to snake populations in their states (e.g., increases or decreases in nuisance snake encounters due to growing urbanization, trends in snake size over

time, and many other variables). While mandating permits could discourage some people from translocating snakes, especially if permits were expensive, some states that currently require permits have numerous permitted translocators, suggesting that permits may not be a large deterrent.

While it is not our goal to directly change state policies, this paper can be used as a resource by state wildlife and management agencies responsible for overseeing the regulations regarding nuisance snake translocations to open the discussion about what policies should be implemented, altered, or removed for the benefit of the state, landowners, and snake populations. In some areas, a majority of residents do not want snakes to be killed, making this discussion important for manager–community relations. For policymakers, we recommend (1) making information about permitting systems clear and accessible, (2) providing clear guidelines for snake translocations (e.g., recommending or requiring short distance), (3) providing training and resources on translocation practices, and (4) implementing translocation reporting requirements for snake translocators to monitor trends in human–snake conflict over time. Importantly, permits should be accessible (e.g., easy to find and apply for, and free or low in cost) to avoid unnecessary roadblocks to those wanting to aid in the coexistence of humans and snakes. Mitigation translocation should ideally result in decreased snake mortality and decreased human–snake conflict, and the best way to ensure that both goals are achieved is to provide snake translocators with resources and/or training through a robust permitting process.

Acknowledgments

Two anonymous reviewers and the associate editor, K. Carlisle, provided valuable feedback on an earlier version of this manuscript.

Supplemental material

Supplemental materials can be viewed at <https://digitalcommons.usu.edu/hwi/vol18/iss3/5>.

Literature cited

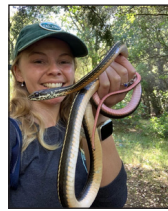
- Barrington-Leigh, C., and A. Millard-Ball. 2015. A century of sprawl in the United States. *Proceedings of the National Academy of Sciences* 112:8244–8249. <https://doi.org/10.1073/pnas.1504033112>
- Bateman, H. L., J. A. Brown, K. L. Larson, R. Andrade, and B. Hughes. 2021. Unwanted residential wildlife: evaluating social-ecological patterns for snake removals. *Global Ecology and Conservation* 27:e01601. <https://doi.org/10.1016/j.gecco.2021.e01601>
- Batson, W. G., I. J. Gordon, D. B. Fletcher, and A. D. Manning. 2015. Translocation tactics: a framework to support the IUCN Guidelines for wildlife translocations and improve the quality of applied methods. *Journal of Applied Ecology* 52:1598–1607. <https://doi.org/10.1111/1365-2664.12498>
- Bluett, R. D. 2001. Drowning is not euthanasia: springboard or siren's song? *Wildlife Society Bulletin* (1973–2006) 29:744–748.
- Bradley, H. S., S. Tomlinson, M. D. Craig, A. T. Cross, and P. W. Bateman. 2022. Mitigation translocation as a management tool. *Conservation Biology* 36:e13667. <https://doi.org/10.1111/cobi.13667>
- Brown, J. R., C. A. Bishop, and R. J. Brooks. 2009. Effectiveness of short-distance translocation and its effects on western rattlesnakes. *Journal of Wildlife Management* 73:419–425. <https://doi.org/10.2193/2007-558>
- Brown, T. K., J. M. Lemm, J.-P. Montagne, J. A. Tracey, and A. C. Alberts. 2008. Spatial ecology, habitat use, and survivorship of resident and translocated red diamond rattlesnakes (*Crotalus ruber*). Pages 377–394 in W. K. Hayes, K. R. Beaman, M. D. Cardwell, and S. P. Bush, editors. *The biology of the rattlesnakes*. Loma Linda University Press, Loma Linda, California, USA.
- Choquette, J. D., J. D. Litzgus, J. X. Y. Gui, and T. E. Pitcher. 2023. A systematic review of snake translocations to identify potential tactics for reducing postrelease effects. *Conservation Biology* 37:e14016. <https://doi.org/10.1111/cobi.14016>
- Corbit, A. G. 2015. The dynamics of human and rattlesnake conflict in Southern California. Dissertation, Loma Linda University, Loma Linda, California, USA.
- Corbit, A. G., and W. K. Hayes. 2022. Human–wildlife conflict at a suburban–wildlands interface: effects of short- and long-distance translocations on red diamond rattlesnake (*Crotalus ruber*) activity and survival. *Diversity* 14:130. <https://doi.org/10.3390/d14020130>
- Cornelis, J., T. Parkin, and P. W. Bateman. 2021. Killing them softly: a review on snake translocation and an Australian case study. *Herpetological Journal* 31:118–131. <https://doi.org/10.1080/14494275.2021.1911111>

- org/10.33256/31.3.118131
- Crowell, H. L., K. C. King, J. M. Whelan, M. V. Harmel, G. Garcia, S. G. Gonzales, P. H. Maier, H. Neldner, T. Nhu, J. T. Nolan, and E. N. Taylor. 2021. Thermal ecology and baseline energetic requirements of a large-bodied ectotherm suggest resilience to climate change. *Ecology and Evolution* 11:8170–8182. <https://doi.org/10.1002/ece3.7649>
- Engeman, R. M., and M. L. Avery. 2016. Prioritizing management and research actions against invasive reptiles in Florida: a collaboration by an expert panel. Staff publications 1862. U.S. Department of Agriculture, National Wildlife Research Center, Fort Collins, Colorado, USA.
- Engeman, R., E. Jacobson, M. L. Avery, and W. E. Meshaka, Jr. 2011. The aggressive invasion of exotic reptiles in Florida with a focus on prominent species: a review. *Current Zoology* 57:599–612. <https://doi.org/10.1093/czoolo/57.5.599>
- Germano, J. M., K. J. Field, R. A. Griffiths, S. Clulow, J. Foster, G. Harding, and R. R. Swaisgood. 2015. Mitigation-driven translocations: are we moving wildlife in the right direction? *Frontiers in Ecology and the Environment* 13:100–105. <https://doi.org/10.1890/140137>
- Heiken, K. H., G. A. Brusch, IV, S. Gartland, C. Escallón, I. T. Moore, and E. N. Taylor. 2016. Effects of long distance translocation on corticosterone and testosterone levels in male rattlesnakes. *General and Comparative Endocrinology* 237:27–33. <https://doi.org/10.1016/j.ygcen.2016.07.023>
- Holding, M. L., J. A. Frazier, S. W. Dorr, S. N. Henningsen, I. T. Moore, and E. N. Taylor. 2014. Physiological and behavioral effects of repeated handling and short-distance translocations on free-ranging northern Pacific rattlesnakes (*Crotalus oreganus oreganus*). *Journal of Herpetology* 48:233–239. <https://doi.org/10.1670/11-314>
- International Union for Conservation of Nature (IUCN). 2013. Guidelines for reintroductions and other conservation translocations. Version 1.0. International Union for Conservation of Nature, Gland, Switzerland.
- International Union for Conservation of Nature (IUCN). 2023. IUCN SSC guidelines on human–wildlife conflict and coexistence. First edition. International Union for Conservation of Nature, Gland, Switzerland. <https://doi.org/10.2305/YGIIK2927>
- Julien, T. J., S. M. Vantassel, S. R. Groepper, and S. E. Hygnstrom. 2010. Euthanasia methods in field settings for wildlife damage management. *Human–Wildlife Interactions* 4:158–164. <https://doi.org/10.26077/kwg7-0214>
- Jungen, M. T. 2018. Eastern diamondback rattlesnake (*Crotalus adamanteus*) telemetry techniques and translocation. Thesis, Marshall University, Huntington, West Virginia, USA.
- Kawai, N. 2019. The fear of snakes: evolutionary and psychobiological perspectives on our innate fear. Springer Nature, Singapore. <https://doi.org/10.1007/978-981-13-7530-9>
- Krysko, K. L., L. A. Somma, D. C. Smith, C. R. Gillette, D. Cueva, J. A. Wasilewski, K. M. Enge, S. A. Johnson, T. S. Campbell, J. R. Edwards, M. R. Rochford, R. Tompkins, J. L. Fobb, S. Mullin, C. J. Lechowicz, D. Hazelton, and A. Warren. 2016. New verified nonindigenous amphibians and reptiles in Florida through 2015, with a summary of over 152 years of introductions. *Reptiles & Amphibians* 23:110–143. <https://doi.org/10.17161/randa.v23i2.14119>
- Larson, K. L., J. A. G. Clark, H. L. Bateman, A. Enloe, and B. Hughes. 2024. To kill or not to kill? Exploring normative beliefs and attitudes toward snakes. *Biological Conservation* 290:110399. <https://doi.org/10.1016/j.biocon.2023.110399>
- La Vine, K. P., M. J. Reeff, J. A. DiCamillo, and G. S. Kania. 1996. The status of nuisance wildlife damage control in the states. Pages 8–12 in R. M. Timm and A. C. Crabb, editors. *Proceedings of the Seventeenth Vertebrate Pest Conference*, University of California, Davis, California, USA.
- Malhotra, A., W. Wüster, J. B. Owens, C. W. Hodges, A. Jesudasan, G. Ch, A. Kartik, P. Christopher, J. Louies, H. Naik, V. Santra, S. R. Kuttalam, S. Attre, M. Sasa, C. Bravo-Vega, and K. A. Murray. 2021. Promoting co-existence between humans and venomous snakes through increasing the herpetological knowledge base. *Toxicon*: X 12:100081. <https://doi.org/10.1016/j.toxcx.2021.100081>
- Marchini, S., and P. G. Crawshaw, Jr. 2015. Human–wildlife conflicts in Brazil: a fast-growing issue. *Human Dimensions of Wildlife* 20:323–328. <https://doi.org/10.1080/10871209.2015.1004145>
- Murray, E. J., and F. Foote. 1979. The origins of fear of snakes. *Behaviour Research and Therapy* 17:489–493. [https://doi.org/10.1016/0005-7967\(79\)90065-2](https://doi.org/10.1016/0005-7967(79)90065-2)

- Murray, M. H., and C. C. St. Clair. 2015. Individual flexibility in nocturnal activity reduces risk of road mortality for an urban carnivore. *Behavioral Ecology* 26:1520–1527. <https://doi.org/10.1093/beheco/arv102>
- Nowak, E. M., T. Hare, and J. McNally. 2002. Management of “nuisance” vipers: effects of translocation on western diamond-backed rattlesnakes (*Crotalus atrox*). Pages 533–560 in G. W. Schuett, M. Höggren, M. E. Douglas, and H. W. Greene, editors. *Biology of the vipers*. Eagle Mountain Publishing, Eagle Mountain, Utah, USA.
- Pandey, D. P., G. S. Pandey, K. Devkota, and M. Goode. 2016. Public perceptions of snakes and snakebite management: implications for conservation and human health in southern Nepal. *Journal of Ethnobiology and Ethnomedicine* 12:22. <https://doi.org/10.1186/s13002-016-0092-0>
- Plummer, M. V., and N. E. Mills. 2000. Spatial ecology and survivorship of resident and translocated hognose snakes (*Heterodon platirhinos*). *Journal of Herpetology* 34:565–575. <https://doi.org/10.2307/1565272>
- Reid, W. V. 1998. Biodiversity hotspots. *Trends in Ecology & Evolution* 13:275–280. [https://doi.org/10.1016/S0169-5347\(98\)01363-9](https://doi.org/10.1016/S0169-5347(98)01363-9)
- Reinert, H. K., and R. R. Rupert, Jr. 1999. Impacts of translocation on behavior and survival of timber rattlesnakes, *Crotalus horridus*. *Journal of Herpetology* 33:45–61. <https://doi.org/10.2307/1565542>
- Roe, J. H., M. R. Frank, S. E. Gibson, O. Attum, and B. A. Kingsbury. 2010. No place like home: an experimental comparison of reintroduction strategies using snakes. *Journal of Applied Ecology* 47:1253–1261. <https://doi.org/10.1111/j.1365-2664.2010.01886.x>
- Sasaki, K., S. F. Fox, and D. Duvall. 2012. Reproductive ecology and human-caused mortality in the Japanese mamushi snake (*Gloydius blomhoffii*) on the northernmost main island of Japan. *Journal of Herpetology* 46:689–695. <https://doi.org/10.1670/11-023>
- Suarez, B. M., J. G. Ewen, J. J. Groombridge, K. Beckmann, J. Shotton, N. Masters, T. Hopkins, and A. W. Sainsbury. 2017. Using qualitative disease risk analysis for herpetofauna conservation translocations transgressing ecological and geographical barriers. *EcoHealth* 14:47–60. <https://doi.org/10.1007/s10393-015-1086-4>
- Sullivan, B. K., E. M. Nowak, and M. A. Kwiatkowski. 2015. Problems with mitigation translocation of herpetofauna. *Conservation Biology* 29:12–18. <https://doi.org/10.1111/cobi.12336>
- Warren, K. 2014. Reptile euthanasia—no easy solution? *Pacific Conservation Biology* 20:25–27. <https://doi.org/10.1071/PC140025>
- Williams, J. N. 2011. Human population and the hotspots revisited: a 2010 assessment. Pages 61–81 in F. Zachos and J. Habel, editors. *Biodiversity hotspots*. Springer, Berlin, Heidelberg, Germany. https://doi.org/10.1007/978-3-642-20992-5_4

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Bedard, R. E., M. Rottenborn, and E. Taylor. Snake translocation policies and practices within the United States. *Human–Wildlife Interactions* 18(3).

Appendix 1. Survey questions for wildlife representatives.

Introduction given before taking survey: This survey is designed to gather information from you about the permits required to relocate snakes in your state, if applicable. We define relocation (=translocation) as the movement of animals from areas with potential conflict with humans into natural areas. Short-distance relocation is generally defined as moving an animal within their likely home range (e.g., < 1/2 mile for rattlesnakes), while long-distance relocation is generally defined as moving an animal outside their likely home range (e.g., > 1/2 mile for rattlesnakes). In general, this survey is not asking about permits to scientists to conduct research on snake relocation. Instead, this survey asks for information about permits for members of the public who are interested in relocating snakes from areas of conflict. In some questions, we ask you to provide names of specific snake species. If appropriate, please group snakes using terms like “all open season snakes” or “all venomous snakes.” You may choose to include species names where appropriate. Please follow the convention where “venomous snakes” refers to those that are dangerously venomous to people, pets, and livestock (e.g., rattlesnakes and other vipers, coral snakes). Information from this survey will be published in a resource document. All reports will indicate that the information is current “as of 2022.” We appreciate your effort to answer all questions to the best of your ability and thank you for participating in our study.

1. Please indicate your first and last name
2. Please indicate your official (work) email
3. Please choose your state
4. Please indicate the agency you represent (e.g., California Department of Fish and Wildlife)
5. Please indicate your job title
6. Does your state allow relocation of snakes (either venomous or non-venomous) as a management strategy to mitigate human-snake conflict? Please select all that apply.
 - a. Options:
 - i. Yes
 - ii. No
 - iii. Only for certain species (please enter species names or groups below in “Other”)
 - iv. Only for certain permittees or people with certain qualifications (please clarify who these groups are below in “Other”)
 - v. Only for short-distance relocation, not long-distance
 - vi. Only for long-distance relocation, not short-distance
 - vii. Other
7. If you answered “No” to question #6 (snake relocation is not allowed in your state), what alternative methods does your agency recommend for mitigating human-snake conflict? If you did NOT answer “No” to question #6, please leave blank and proceed to question #9.
8. If you answered “No” to questions #6 (snake relocation is not allowed in your state), what is/are the perceived reason(s) for this rule? Please select all that apply. After answering,

please proceed to question #15. If you did NOT answer "No" to question #6, please leave blank and proceed to question #9.

- a. Options:
 - i. Relocation can lead to poor outcomes for the snakes
 - ii. Relocation can spread disease
 - iii. Relocation can be dangerous to people
 - iv. It is too difficult to find appropriate habitat to release the snakes
 - v. Other
9. Does your state require that a person has a permit to relocate snakes? Please check all that apply.
 - a. Options:
 - i. Yes for all species under any circumstances
 - ii. No for all species under any circumstances
 - iii. Only for certain species (please enter species names or groups below in "Other")
 - iv. Only for certain circumstances (e.g., short-distance only, etc.) (please explain below in "Other")
 - v. Other
10. If your state requires a permit for relocating snakes, what type(s) of permit is/are required? Please enter the name(s) of the permit type(s). If multiple types, please separate different permit options by semicolons.
11. Is there a fee associated with permits to relocate snakes in your state? If multiple types, please separate different permit options by semicolon including the permit type and fee (annual dollar amount).
12. Does your state require any training for relocating snakes?
 - a. Options:
 - i. Yes
 - ii. No
 - iii. Only for certain species (please enter species names or groups below in "Other")
 - iv. Other
13. We plan to direct people interested in doing snake relocations to resources for obtaining PERMITS. Please enter the appropriate application method(s) below (e.g., website link, phone number, email, address if in person, etc.).
14. We plan to direct people interested in doing snake relocations to resources for obtaining TRAINING. Please enter the best method(s) for finding the training required for snake relocation (e.g., website link, phone number, email, address if in person, etc.). If no training is required, please enter "no training required".
15. To the best of your knowledge, are there any repercussions if someone is found relocating snakes without the proper permit and/or training?
 - a. Options:
 - i. Yes (please explain the repercussions below in "Other")
 - ii. No
 - iii. Only for certain species (please enter species names or groups and explain the repercussions below in "Other")
 - iv. Other

16. Is there any other information you would like to provide us regarding snake relocation in your state?

Bedard, R. E., M. Rottenborn, and E. Taylor. Snake translocation policies and practices within the United States. *Human–Wildlife Interactions* 18(3).

Appendix 2. Survey for snake relocators.

Introduction given before taking survey:

This survey is aimed at people in the United States who relocate (=translocate) snakes away from areas of potential conflict, either for volunteer purposes, as part of a business, or as a job duty (e.g., animal services, fire/police dept, etc.). Information from this survey will be published in a resource document, which will assist people who wish to conduct snake relocations in finding information on best practices. All reports will indicate that the information is current “as of 2022.” If you are part of a multi-employee business where many individuals relocate snakes, please identify a single person from the company to complete this survey on behalf of the company. We define relocation (=translocation) as the movement of animals from areas with potential conflict with humans into natural areas. Short-distance relocation is generally defined as moving an animal within their likely home range (e.g., < ½ mile for rattlesnakes), while long distance relocation is generally defined as moving an animal outside their likely home range (e.g., > ½ mile for rattlesnakes). For this survey, we are asking about mitigation relocation, which is moving snakes for the safety of people, pets, livestock, or the snakes themselves. In some questions, we ask you to provide names of specific snake species. If appropriate, please group snakes using terms like “all open season snakes” or “all venomous snakes.” You may choose to include species names where appropriate. Please follow the convention where “venomous snakes” refers to those that are dangerously venomous to people, pets, and livestock (e.g., rattlesnakes and other vipers, coral snakes). All questions in this survey are optional, but we appreciate your effort to answer all questions to the best of your ability.

1. Please select your age range
 - a. Options:
 - i. 18 – 30 years of age
 - ii. 30 – 65 years of age
 - iii. Over 65 years of age
2. Please choose your state
3. Please indicate your county of residence. If you choose to decline this information, please state "decline".
4. Please indicate your city/town/region of residence. If you choose to decline this information, please state "decline".
5. Please select your highest level of education completed.
 - a. Options:
 - i. High school or equivalent (i.e., you've earned a high school diploma or General Equivalency Diploma (GED))
 - ii. Associates Degree
 - iii. Bachelor's Degree (BA or BS)
 - iv. Master's Degree (MS or MA)
 - v. Doctoral Degree (PhD) or equivalent
 - vi. Other
6. Which of the following best describes the operation through which you perform snake relocations?
 - a. Options:
 - i. Sole Proprietorship

- ii. Limited Liability Company (LLC)
 - iii. Non-profit Organization
 - iv. Volunteer work (can include donations)
 - v. Employed by Animal Services, Police, Fire Dept., or similar
 - vi. Other
- 7. Which of the following best describes your compensation model for snake relocations?
 - a. Options:
 - i. Free for all relocations (i.e., no payments or donations accepted)
 - ii. Donations accepted
 - iii. Flat rate fee for all relocations (please indicate the flat rate fee below in "Other")
 - iv. Fee based on distance travelled to capture and relocate (please indicate the fee per distance travelled below in "Other")
 - v. Fee based on time spent to capture and relocate (please indicate the fee per hour below in "Other")
 - vi. Other
- 8. To the best of your knowledge, does your state require that a person has a permit to relocate snakes? Please check all that apply.
 - a. Options:
 - i. Yes, permit required for all species under any circumstances
 - ii. No permit required for all species under any circumstances
 - iii. Only for certain species (please enter species names or groups below in "Other")
 - iv. Only for certain circumstances (e.g., short-distance only (<1/2 mile), etc.) (please explain below in "Other")
 - v. I don't know
- 9. Do you currently have any state-issued permits to relocate snakes?
 - a. Yes (Please indicate the permit type(s) below in "Other", e.g., Scientific Collecting Permit, etc.)
 - b. No
 - c. Prefer not to say
- 10. To the best of your knowledge, does your state require any training(s) to relocate snakes?
 - a. Options:
 - i. Yes
 - ii. No
 - iii. I don't know
 - iv. Only for certain species (please enter species names or groups below in "Other")
 - v. Other
- 11. Have you completed any state mandated training(s) for relocating snakes?
 - a. Options:
 - i. Yes
 - ii. No
 - iii. Prefer not to say
- 12. On average, how many snakes do you relocate each year?
 - a. Options:
 - i. 0 – 10
 - ii. 10 – 30

- iii. 30 – 50
 - iv. 50 – 100
 - v. 100+
13. Please indicate up to the three most common species of snakes that you relocate. Please list the species names in order from the most common to least commonly relocated. If species are unknown, please insert "unknown".
14. What is the approximate distance that you aim to relocate snakes?
- a. Options:
 - i. Less than 1/4 of a mile from original capture location
 - ii. Less than 1/2 of a mile from original capture location
 - iii. Less than 1 mile from original capture location
 - iv. Less than 5 miles from original capture location
 - v. Greater than 5 miles from original capture location
15. Which of the following most accurately describes where you relocate snakes to?
- a. Options:
 - i. I relocate snakes to appropriate habitat near where they were found
 - ii. I relocate all snakes to a single location
16. What do you perceive as likely problems with snake relocations? Please select all that apply.
- a. Options:
 - i. Snake relocations can cause abnormal movement behaviour in snakes increasing their likelihood of death (by car, predator, etc.)
 - ii. Snake relocations can disrupt natural gene flow among populations of snakes
 - iii. Snake relocations can increase human-snake conflict
 - iv. Snake relocations can be dangerous to the relocator
 - v. Snake relocations can introduce and/or spread diseases in snake populations (i.e., snake fungal disease)
 - vi. Snake relocations can disrupt social dynamics among populations of snakes
 - vii. No issues are associated with snake relocation
17. From your experience, which group(s) of people are MORE likely to reach out to you for snake relocations? (e.g., lower/higher income, lower/higher education, religious/non-religious, rural/suburban, etc.)? If you have not noticed any differences in the group(s) of people who have reached out to you to relocate snakes, please state "no differences noticed". This is an open-ended question. Please answer however you would like.
18. When you relocate a snake from a residential property, do you provide any educational outreach regarding snakes, living safely in areas with snakes, the benefits of snakes, or other? Please explain.
19. Please indicate your name and email address if you consent to us contacting you regarding follow up questions. Your identity and contact information will never be shared. If you wish to remain anonymous, please state "decline".

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Appendix 3. Permits required for snake mitigation translocation in the 48 states of the United States, with associated fees/training, and where to find information. The data in this table are current as of 2022.

State	Is mitigation translocation allowed?	Reason for translocation	Permit required for given reason of translocation	Fees/Training for permits and where to obtain them	Other important information
Alabama	Yes	Translocation business or removal from others' properties	Nuisance Wildlife Control Operator Permit	no fee, no training, www.outdooralabama.gov or contact local district office	
		Translocation of protected species	Protected Species Permit	no fee, no training, 334-242-3469	
Arizona	Yes	Translocation business or commercial services	Wildlife Service License	initial fee: \$245, renewal fee: \$95 (valid until the third Dec. from the date issued), no training offered but applicant must obtain min. 6 months of experience, https://www.azgfd.com/license/speciallicense/wildlifservice/	
		Translocation as a volunteer	No permit required	N/A	
Arkansas	Yes	Translocation of any kind	No permit required	N/A	
California	Yes	Translocation of any kind	Scientific Collector's Permit	\$410 for 3 years or \$137 per year, no training required but applicant must demonstrate qualifications, https://wildlife.ca.gov/Licensing/Scientific-Collecting	
Colorado	Yes, but not all species	Translocation of any kind beyond same property	Scientific Collector's License	\$29.13 (valid until Dec. 31 of year issued), no training, https://cpw.state.co.us/aboutus/Pages/SWL-Applications.aspx	Rattlesnakes are typically not allowed to be translocated beyond the same property. Contact the appropriate regional office.

State	Is mitigation translocation allowed?	Reason for translocation	Permit required for given reason of translocation	Fees/Training for permits and where to obtain them	Other important information
Connecticut	Yes	Translocation of all non-venomous snakes or copperheads beyond same property	Nuisance Wildlife Control Operator License	\$250 (valid for 2 years), certification course and exam required, https://portal.ct.gov/DEEP/Wildlife/Nuisance-Wildlife/How-to-Become-a-NWCO	
		Translocation of ratsnakes (<i>Pantherophis alleghaniensis</i>)	Nuisance Wildlife Control Operator Special Permit	no fee, but Nuisance Wildlife Control Operator License required (see above)	
		Translocation of timber rattlesnakes (<i>Crotalus horridus</i>)	Scientific Collector's Permit	\$25 (valid for 3 years), training offered but not required, https://portal.ct.gov/-/media/DEEP/wildlife/forms_applications/collectwildpdf.pdf	
Delaware	Yes	Translocation of any kind	Nuisance Wildlife Control Certification and Permit	certification exam: \$250 (valid for 5 years), annual permit: no fee (valid for one year), https://firststeps.delaware.gov/nuisance_wildlife/ or Jessica.Haggerty@Delaware.gov or 302-735-3600	
Florida	Yes, but not all species	Translocation of native, non-venomous species	No permit required	N/A	
		Translocation of venomous species	License to Possess or Exhibit Venomous Reptiles (VRC)	\$100 (valid for 1 year), 1000 hours of experience per family of snake required, no training offered, https://myfwc.com/license/captive-wildlife/venomous/	
		Removal of prohibited non-native species	Eradication and Control Permit	no fee (valid for 1 year), no training, nonnativepermitappss@myfwc.com	Non-native species cannot be translocated and must be brought to the permittee's designated control site to be euthanized within 24 hours of capture.

State	Is mitigation translocation allowed?	Reason for translocation	Permit required for given reason of translocation	Fees/Training for permits and where to obtain them	Other important information
Georgia	Yes	Translocation business or commercial services	Nuisance Wildlife Control Operator License and Commercial Trapping License	\$45 (valid until March 31 of year issued), certification exam required, https://gadnrle.org/sites/default/files/le/pdf/Special-Permits/Nuisance%20Wildlife%20Control%20Application%20Packet.pdf or 770-918-6408	
		Translocation as a volunteer	No permit required	N/A	
Idaho	Yes	An individual's safety or property is threatened	No permit required	N/A	
		An individual's safety or property is NOT threatened AND <4 native, wild caught snakes are in possession	Idaho Hunting License	\$15.75 (valid for 1 year) or \$34.75 (valid for 3 years), no training, https://idfg.idaho.gov/licenses	
		An individual's safety or property is NOT threatened AND ≥4 native, wild caught snakes are in possession	Idaho Hunting License AND Idaho Captive Permit	Hunting License: \$15.75 (valid for 1 year) or \$34.75 (valid for 3 years), Captive Permit: \$23.50 (valid for 3 years), no training, https://idfg.idaho.gov/licenses	
Illinois	No, translocation only allowed for research purposes	Research as part of an accredited educational or research facility	Illinois Department of Natural Resources Permit	no fee (validity time of permit varies), no training required but must belong to accredited educational or research facility, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3563&ChapterID=41 or Scott.Ballard@illinois.gov	

State	Is mitigation translocation allowed?	Reason for translocation	Permit required for given reason of translocation	Fees/Training for permits and where to obtain them	Other important information
Indiana	Yes	Translocation business or commercial services or translocation of endangered species	Nuisance Wild Animal Control Permit	\$25 (valid until Dec. 31 of the year issued), certification exam required, https://www.in.gov/dnr/fish-and-wildlife/licenses-and-permits/permits-commercial-licenses/ or 317-233-6527 or LPetercheff@dnr.in.gov	
		Translocation as a volunteer	Indiana Hunting License OR Indiana Fishing License	Fishing License: \$25 (valid for one year), Hunting License: \$20 (valid for one year), no training, https://www.in.gov/dnr/fish-and-wildlife/indiana-fish-and-wildlife-online-license-system/	
Iowa	Yes	Removal of snake by homeowner off property if there is an imminent threat to human safety	No permit required	N/A	
		Translocation as a volunteer, business, or commercial services	Wildlife Nuisance Control Operator Permit	\$25 (valid through Jan. 10), certification exam required, https://www.iowadnr.gov/Hunting/Landowner-Assistance	
		Translocation of threatened or endangered species	Wildlife Nuisance Control Operator Permit AND approval from DNR director	\$25 (valid through Jan. 10), certification exam required, https://www.iowadnr.gov/Hunting/Landowner-Assistance	
Kansas	Yes	Translocation of any kind	No permit required	N/A	
Kentucky	Yes	Translocation of copperbelly watersnakes (<i>Nerodia erythrogaster</i>)	Permission from the Kentucky Fish and Wildlife Commissioner	no fee, no training, https://fw.ky.gov/More/Pages/District-Commission-Members.aspx	

State	Is mitigation translocation allowed?	Reason for translocation	Permit required for given reason of translocation	Fees/Training for permits and where to obtain them	Other important information
		Translocation of all other species	No permit required	N/A	
Louisiana	Yes	Translocation business or commercial services	Hunting License AND Trapping License AND Fishing License AND Nuisance Wildlife Control Operator (NWCO) Permit	Hunting License: \$20, Trapping License: \$32.50, Fishing License: \$17 (valid for one year), NWCO: No fee, no training, https://www.wlf.louisiana.gov/page/recreational-fishing-licenses-and-permits	
		Translocation as a volunteer	Louisiana Fishing License	\$17 (valid for one year), no training, https://www.wlf.louisiana.gov/page/recreational-fishing-licenses-and-permits	
		Translocation of venomous species or constrictors over 8 feet	Restricted Snake Permit	no fee, no training, valid until Dec. 31 of year issued, klejeune@wlf.la.gov or 337-735-8676	
Maine	Yes	Translocation of any kind	Animal Damage Control Permit	no fee (valid for two years), certification course and exam required, https://www.maine.gov/ifw/about/contact/index.html	
Maryland	Yes	Translocation of any kind	Wildlife Damage Control Permit OR Scientific Collector's Permit	Wildlife Damage Control Permit: \$25 (valid for one year), Scientific Collector's Permit: \$10 (valid for one year), written test required for Wildlife Damage Control Permit and specialized training for venomous snake handling required, https://dnr.maryland.gov/wildlife/pages/licenses/nuisancecoop.aspx	

State	Is mitigation translocation allowed?	Reason for translocation	Permit required for given reason of translocation	Fees/Training for permits and where to obtain them	Other important information
Massachusetts	Yes	Translocation of any kind	Scientific Collector's Permit or written letter of authorization from the director of Massachusetts Department of Fish and Wildlife	no fee (valid for one year), no training required but only qualified people are permitted, michael.t.jones@mass.gov	
Michigan	Yes	Translocation of non-protected species as a volunteer	Recreational Fishing License	\$26, no training, https://www.mdnr-elicense.com/	
		Translocation business or commercial services	Scientific Collector's Permit	no fee (valid until Dec. 31 of the year issued), no training, www.michigan.gov/scientificcollectorspermit	
		Translocation of species of special concern	Scientific Collector's Permit	no fee (valid until Dec. 31 of the year issued), no training, www.michigan.gov/scientificcollectorspermit	
		Translocation of threatened or endangered species	Threatened and Endangered Species Permit	no fee (valid for up to 3 years), no training, reitzc@michigan.gov	
Minnesota	Yes	Translocation of non-protected species	Non-game Removal Permit	no fee (valid for one year), no training, https://www.dnr.state.mn.us/permits/animals/index.html	
		Translocation of threatened or endangered species	Threatened and Endangered Species Permit	no fee (valid for one year), no training, https://www.dnr.state.mn.us/nhnrp/endangered_permits.html#:~:text=A%20permit%20is%20required%20to,assessment%20of%20all%20relevant%20information.	
		Translocation of timber rattlesnakes (<i>Crotalus horridus</i>)	Timber Rattlesnake Translocation Permit	no fee, permit and training are available to a small group of professionals that work in areas with Timber Rattlesnake (<i>Crotalus horridus</i>) conflicts. Permit only available for park officials, conservation officers, biologists, city employees, etc.	

State	Is mitigation translocation allowed?	Reason for translocation	Permit required for given reason of translocation	Fees/Training for permits and where to obtain them	Other important information
Mississippi	Yes	Translocation of non-protected species	Small Game Hunting/Freshwater Fishing License	\$12.29, no training, https://www.mdwfp.com/license/ or Scott Peyton: (601)576-6060	
		Translocation of protected species or possession of any species beyond legal possession limits	Scientific Collector's Permit	\$1, no training, https://www.mdwfp.com/museum/seek-study/permits/scientific-collecting/	
Missouri	Yes	Translocation of any kind	No permit required but snakes must be relocated in accordance with the instructions of an agent of the Missouri Department of Conservation.	local agents for the Missouri Department of Conservation: https://mdc.mo.gov/contact-engage/local-mdc-contacts	
Montana	No	Translocation of any kind	N/A	N/A	
Nebraska	Yes	Translocation of any kind	No permit required	N/A	
Nevada	Yes	Translocation of any kind	Permit for the Release of Live Wildlife	no fee, no training required but can be provided through jljones@ndow.org , https://www.ndow.org/wp-content/uploads/2021/11/Instructions-Permit-for-the-Release-of-Live-Wildlife-ADA.pdf	
New Hampshire	Yes	Translocation of ≤ 2 individuals of species NOT of greatest conservation need	No permit required	N/A	These animals may be relocated on the property owned by the 'capturing' landowner or to another property with written landowner permission prior to release.

State	Is mitigation translocation allowed?	Reason for translocation	Permit required for given reason of translocation	Fees/Training for permits and where to obtain them	Other important information
		Translocation of a species of greatest conservation need	Scientific Collector's Permit	\$25 (valid through end of calendar year), no training, brendan.clifford@wildlife.nh.gov or https://www.wildlife.state.nh.us/licensing/forms.html	timber rattlesnake (<i>Crotalus horridus</i>), eastern hog-nosed snake (<i>Heterodon platirhinos</i>), northern black racer (<i>Coluber constrictor constrictor</i>), smooth greensnake (<i>Opheodrys vernalis</i>), eastern ribbonsnake (<i>Thamnophis sauritus</i>)
New Jersey	Yes	Translocation of endangered species	Endangered Species Permit	\$7 (valid for one year), no training, https://www.state.nj.us/dep/fgw/pdf/xotic_endapp.pdf	
		Translocation of venomous species	Authorization letter from Fish and Wildlife's Endangered & Nongame Species Program	no fee (valid for one year), training is provided by F&W Endangered & Nongame Species Program, https://nj.gov/dep/fgw/contact.htm	
		Translocation on construction site	Scientific Collector's Permit	\$22 (valid for one year), no training, https://nj.gov/dep/fgw/scicolperm.htm	
New Mexico	Yes, but not all species	Translocation business or commercial services	Commercial Collecting Permit	\$50 (valid until April 1 of year issued), no training, DGF.permits@state.nm.us or https://www.wildlife.state.nm.us/enforcement/special-use-permits/	Prohibited from take: New Mexico ridge-nosed rattlesnake (<i>Crotalus willardi obscurus</i>), mottled rock rattlesnake (<i>Crotalus l. lepidus</i>)
		Translocation of any kind by non-residents	Nongame Hunting License and appropriate land stamps	\$65 (valid until April 1 of year issued), no training, https://onlinesales.wildlife.state.nm.us/	
		Translocation as a volunteer	No permit required	N/A	
		An individual's safety or property is threatened	No permit required but must be reported to NMAC within 30 days	N/A	

State	Is mitigation translocation allowed?	Reason for translocation	Permit required for given reason of translocation	Fees/Training for permits and where to obtain them	Other important information
New York	Yes	Translocation of non-protected, non-venomous species as a business/commercial service or as a volunteer	Nuisance Wildlife Control Operator License	\$50 for general, no fee for municipal license (valid for one year), certification exam required, https://www.dec.ny.gov/permits/28635.html or Special Licenses@dec.ny.gov or 518-402-8985	Non-venomous snakes should be moved only as far as appropriate habitat on the property away from the dwelling they are removed from. Venomous snakes should be moved only as far as it is safe from immediate danger to the snake, and no more than 200m. If a non-listed, non-venomous species is naturally existing outside of the home, a NWCO cannot relocate the animal without a special permit from the NYSDEC, which may be denied if there is no reason to move the animal. The special permit would need to be obtained by the landowner.
		Translocation of endangered or threatened species	Endangered/Threatened Species-Scientific License	no fee, training/experience required for venomous snakes, https://www.dec.ny.gov/permits/25012.html ; Special Licenses@dec.ny.gov; 518-402-8985	
North Carolina	Yes	Translocation as a volunteer	Wildlife Collector's License	\$12 (valid for one year), no training, https://www.ncwildlife.org/Licensing/Other-Licenses-and-Permits/Wildlife-Collection	
		Translocation business or commercial services	Wildlife Control Agent License	\$150 initially, \$50 renewal fee each year after, certification course and exam required, https://www.ncwildlife.org/WCA	
		Translocation of endangered or threatened species	Endangered Species Permit	\$10 (valid for one year), no training required but relevant experience required, https://www.ncwildlife.org/Licensing/Other-Licenses-and-Permits/Endangered-Species-Permit	

State	Is mitigation translocation allowed?	Reason for translocation	Permit required for given reason of translocation	Fees/Training for permits and where to obtain them	Other important information
North Dakota	Yes	Translocation of any kind	No permit required	N/A	
Ohio	Yes	Translocation business or commercial services	Commercial Nuisance Wild Animal Control Operator Permit	\$40 (valid for one year), certification exam required, https://ohiodnr.gov/buy-and-apply/regulatory-permits/commercial-wildlife-permits/nuisance-wild-animal-control-operator	
		Translocation of endangered or threatened species or "collectable" reptiles	Scientific Collector's Permit OR Chief's Letter Permit	Scientific Collector's: \$25 (valid for one year), no training required but relevant experience must be provided, https://ohiodnr.gov/buy-and-apply/special-use-permits/collecting-research/scientific-collecting-wild-animals , Chief's Letter: no fee but relevant experience must be provided, https://ohiodnr.gov/discover-and-learn/safety-conservation/about-ODNR/wildlife/documents-publications/permits	
Oklahoma	Yes	Translocation as a volunteer	Oklahoma Hunting License	\$25, no training, https://www.wildlifedepartment.com/licensing/other-permits-and-licenses or (405) 521-3852	
		Translocation business or commercial services	Nuisance Wildlife Control Operator's Permit	\$75 (valid for one year), certification exam required, training provided at http://wildlifecontroltraining.com , https://www.wildlifedepartment.com/licensing/other-permits-and-licenses or (405) 521-3852	
		Translocation of protected species	Scientific Collector's License	\$10 (valid for one year), no training, https://www.wildlifedepartment.com/licensing/other-permits-and-licenses , (405) 521-3852	
Oregon	Yes	Translocation of any kind	No permit required	N/A	

State	Is mitigation translocation allowed?	Reason for translocation	Permit required for given reason of translocation	Fees/Training for permits and where to obtain them	Other important information
Pennsylvania	Yes, but not all species	Translocation of non-venomous, non-protected species	Fishing License	\$22.97 (valid for one year), no training, https://www.fishandboat.com/Fish/FishingLicense/Pages/BuyAFishingLicense.aspx	Translocation of following species not permitted: timber rattlesnake (<i>Crotalus horridus</i>), eastern copperhead (<i>Agkistrodon contortrix</i>), eastern massasauga (<i>Sistrurus catenatus</i>), rough-greensnake (<i>Opheodrys aestivus</i>), Kirtland's Snake (<i>Clonophis kirtlandii</i>)
Rhode Island	Yes	Translocation of any kind	Nuisance Wildlife Control Specialist License	\$25 (valid for one year), certification exam required, DEM.DFW@dem.ri.gov or 401-789-0281	Ideally translocations are done in coordination with a DFW wildlife biologist, who can be reached at DEM.DFW@dem.ri.gov or 401-789-0281.
South Carolina	Yes, but not all species	Translocation of non-protected species	No permit required	N/A	southern hog-nosed snake (<i>Heterodon simus</i>) is the only species that is protected and cannot be relocated
South Dakota	Yes	Translocation of non-threatened, non-endangered species	No permit required	N/A	
		Translocation of threatened or endangered species	Endangered Species Permit	No fee, no training required, https://gfp.sd.gov/forms/endangeredspecies/	eastern hog-nosed snake (<i>Heterodon platirhinos</i>), lined snake (<i>Tropidoclonion lineatum</i>)

State	Is mitigation translocation allowed?	Reason for translocation	Permit required for given reason of translocation	Fees/Training for permits and where to obtain them	Other important information
Tennessee	Yes, but not all species	Translocation of non-venomous, non-protected species	Nuisance Animal Damage Control Permit	No fee (valid through June 30th of year issued), training or apprenticeship required, https://www.tn.gov/twra/law-enforcement/wildlife-damage-control.html	Prohibited to translocate: rough earthsnake (<i>Virginia striatula</i>), Kirtland's snake (<i>Clonophis kirtlandii</i>), western ribbonsnake (<i>Thamnophis proximus</i>); Venomous snakes prohibited to translocate and must be euthanized on site in compliance with the euthanasia guidelines from the American Veterinarian Medical Association.
Texas	Yes	Translocation of any kind	Hunting License	\$25 (valid through August 31 of year issued), no training, https://tpwd.texas.gov/regulations/outdoor-annual/licenses/hunting-licenses-and-permits/hunting-licenses	
Utah	Yes	Translocation of any kind	Certificate of Registration	\$10, no training, https://wildlife.utah.gov/licenses/certificates-of-registration.html	
Vermont	Yes	Translocation of timber rattlesnakes (<i>Crotalus horridus</i>), northern black racers (<i>Coluber constrictor</i>), and eastern ratsnakes (<i>Pantherophis alleghaniensis</i>)	Must be a member of Vermont's Rattlesnake Response Program (which operates under the state representative's T&E Species Takings Permit)	no fee, training is required and done on an individual basis, Rattlesnake Response Program volunteers train new volunteers as needed, luke.groff@vermont.gov	The northern black racer (<i>Coluber constrictor</i>) and eastern ratsnake (<i>Pantherophis alleghaniensis</i>) are protected species that can only be translocated by members of Vermont's Rattlesnake Response Program (although not rattlesnakes).

State	Is mitigation translocation allowed?	Reason for translocation	Permit required for given reason of translocation	Fees/Training for permits and where to obtain them	Other important information
Virginia	Yes, but not all species	Translocation of all species within the same city/county or an adjoining city/county	Commercial Nuisance Animal Provider Permit	\$75 (valid for one year), training required, https://dwr.virginia.gov/forms-download/PERM/PERM-nuisance.pdf	Citizens may possess up to one of each species of native snake, except for Timber Rattlesnakes (<i>Crotalus horridus</i>).
Washington	Yes	Translocation of any kind	Wildlife Control Operator License AND State Trapper Certification	WCO License: \$50 (valid for 3 years), certification exam required, and minimum 2 years of relevant experience required, https://wdfw.wa.gov/species-habitats/living/nuisance-wildlife/wildlife-control-operators/faq#faq OR https://wdfw.wa.gov/hunting/requirements/education/trapping	
West Virginia	Yes	Translocation business or commercial services	Wildlife Damage Control Agent License	\$10, training and exam required, wvdnr.gov or contact local WVDNR District Office	
Wisconsin	Yes	Translocation of endangered or threatened species	Endangered/Threatened Species Permit	\$100 (valid for 5 years), no training required but relevant experience required, https://dnr.wisconsin.gov/topic/endangeredresources/permits.html	
		Long distance translocation (>1/2 miles) or long holding times (24 hours) for non-listed species	Scientific Research License	\$25 (valid for one year), no training required but relevant experience required, https://dnr.wisconsin.gov/topic/endangeredresources/permits.html	
Wyoming	Yes	Translocation of any kind	No permit required	N/A	